AMENDMENT REPORT

Wellington North Solar Farm

February 2021

Project Number: 20-483

NSW • ACT • QLD • VIC
W. www.nghconsulting.com.au

DOCUMENT VERIFICATION

Project Title:	Wellington North Solar Farm
Project Number:	20-483
Project File Name:	"\\10.0.11.1\Active\Projects\2020\20-483 Wellington North Solar Farm Amendment Report\Report"

Revision	Date	Prepared by	Reviewed by	Approved by
Draft V1	6/11/2020	Johanna Duck Louiza Romane	Nick Graham-Higgs	Nick Graham-Higgs
Draft V2	11/12/2020	Johanna Duck Louiza Romane	Jane Blomfield	Zeina Jokadar
Final V1.0	18/12/2020	Louiza Romane	Zeina Jokadar	Zeina Jokadar
Final V1.2	01/02/2021	Michelle Patrick	Brooke Marshall	Brooke Marshall
Final V1.2	22/02/2021	Michelle Patrick	Brooke Marshall	Brooke Marshall

NGH Pty Ltd prints all documents on environmentally sustainable paper including paper made from bagasse (a by-product of sugar production) or recycled paper.

W. www.nghconsulting.com.au
E. ngh@nghconsulting.com.au

BEGA - ACT & SOUTH EAST NSW
Suite 11, 89-91 Auckland Street
(PO Box 470) Bega NSW 2550
T. (02) 6492 8333

NEWCASTLE - HUNTER & NORTH COAST
Unit 2, 54 Hudson Street
Hamilton NSW 2303
T. (02) 4929 2301

BRISBANE
Suite 4, Level 5, 87 Wickham Terrace
Spring Hill QLD 4000
T. (07) 3129 7633

SYDNEY REGION
Unit 18, Level 3, 21 Mary Street
Surry Hills NSW 2010
T. (02) 8202 8333

CANBERRA - NSW SE & ACT
Unit 8, 27 Yallourn Street
(PO Box 62) Fyshwick ACT 2609
T. (02) 6280 5053

WAGGA WAGGA - RIVERINA & WESTERN NSW
35 Kincaid Street (PO Box 5464)
Wagga Wagga NSW 2650
T. (02) 6971 9696

GOLD COAST
19a Philippine Parade
(PO Box 466 Palm Beach QLD 4221)
Tugun QLD 4224 T. (07) 3129 7633

WODONGA
Unit 2, 83 Hume Street
(PO Box 506) Wodonga VIC 3690
T. (02) 6067 2533

NSW • ACT • QLD • VIC
W. www.nghconsulting.com.au
ABN 31 124 444 622 ACN 124 444 622

TABLE OF CONTENTS

Acronyms and Abbreviations ..... **v**
1. Introduction **1**
1.1. Background 1
1.1.1. Legislative context for this SSD amendment 1
1.2. Purpose of this report 2
1.3. Legislation 2
2. Proposed amendment **4**
2.1. Transmission line Route 4
2.2. Site access and transport route 5
2.2.1. Site access 5
2.2.2. Transport route 5
2.3. Construction compound relocation 6
2.4. Construction Personnel 6
2.5. Justification for the amendment 10
2.5.1. Eastern transmission line 10
2.5.2. Site access and transport route 10
2.5.3. Relocation of the site access construction compound 10
2.5.4. Construction personnel 10
2.6. Consultation 10
2.6.1. Summary and outcomes of consultation to date for this amendment 10
3. Amended assessment **14**
3.1. Biodiversity 15
3.1.1. Approach 15
3.1.2. Existing environment 16
3.1.3. Potential impacts 25
3.1.4. Loss of species credit species habitat or individuals 26
3.1.5. Loss of hollow-bearing trees 26
▪ Offset requirements 33
3.1.6. Safeguards and mitigation measures 36
3.2. Aboriginal Heritage 36
3.2.1. Approach 36
3.2.2. Aboriginal consultation 36

3.2.3. Consultation with Agencies 36
3.2.4. AHIMS search 36
3.2.5. Desktop assessment results 38
3.2.6. Potential impacts 39
3.2.7. Safeguards and mitigation measures 41
3.3. Visual Amenity 41
3.3.1. Visual Impact assessment 41
3.3.2. Summary 42
3.4. Traffic and transport 42
3.4.1. Approach 42
3.4.2. Existing environment 43
3.4.3. Potential impacts 46
3.4.4. Safeguards and mitigation measures 56
3.5. Other environmental aspects 59
4. Environmental Management Changes 77
4.1. Summary of Amendments 77
5. Conclusion 80
6. References 81
Appendix A Revised Mitigation measures ..... A-I
Appendix B Updated BDAR ..... B-I
Appendix C BCD BDAR Consultation ..... C-I
Appendix D Updated Aboriginal Consultation ..... D-I
Appendix E Updated Traffic Impact Assessment (TIA) ..... E-I
Appendix F Memorandum Sight Distance Report ..... F-I
Appendix G Traffic Analysis for Transmission Line ..... G-I

Figures

Figure 1-1 Locality map 3
Figure 2-1 Updated proposal layout. 7
Figure 2-2 Updated constraints map 8
Figure 2-3 Transport Route. 9
Figure 3-1 Example of White Box Woodland in the new eastern transmission line. 17
Figure 3-2 Vegetation zones within the Project site (south). 19
Figure 3-3 Threatened species polygons and targeted survey locations (south). 24

Figure 3-4 Location of areas considered for potential serious and irreversible impacts (south) 29
Figure 3-5 Impacts requiring offsets, not requiring offset and not requiring assessment (south).... 35
Figure 3-6. Location of proposed changes to AHIMS sites. 40
Figure 3-7 Daily traffic volumes on Goolma Road (GHD, 2020) 44
Figure 3-8 Weekday and seven day average hourly traffic profile on Goolma Road (two-way) (GHD, 2020) 45
Figure 3-9 AUL(S)/BAL turn treatments (GHD, 2020) 48
Figure 3-10 AM Peak cumulative construction traffic movement. 51
Figure 3-11 PM Peak cumulative construction traffic movement 53
Figure 3-12 Saturday Peak cumulative construction traffic movement 54

Table

Table 1-1 Environmental Assessment documentation lodged to date. 2
Table 2-1 Consultation summary 11
Table 3-1 Candidate species credit species returned from the BAM Calculator as requiring assessment..... 20
Table 3-2 Table of current and future vegetation integrity scores for each vegetation zone within the transmission line corridor 26
Table 3-3 Summary of species credit species loss within the transmission line corridor..... 26
Table 3-4 Hollow bearing trees impacted by the transmission line corridor 27
Table 3-5: Koala habitat assessment tool for inland areas (DoE, 2014). 31
Table 3-6 Credit requirements for the Project..... 33
Table 3-7 Breakdown of previously recorded Aboriginal sites in the region. 37
Table 3-8 Residual impact after proposed mitigation – Transmission Line 42
Table 3-9 Peak hour average surveyed traffic volume on Goolma Road (GHD, 2020)..... 45
Table 3-10 Key traffic data summary on Goolma Road (GHD, 2020)..... 45
Table 3-11 Peak daily trip generation (two-way) (GHD, 2020)..... 46
Table 3-12 Goolma Road cumulative peak hour mid-block level of service (GHD, 2020)..... 50
Table 3-13 Existing intersection performance AM Peak cumulative construction traffic movement. 52
Table 3-14 Existing intersection performance PM Peak cumulative construction traffic movement 53
Table 3-15 Existing intersection performance Saturday Peak cumulative construction traffic movement..... 55
Table 3-16 Assessment of the proposed amendments..... 59

Table 4-1 Summary of amendments and associated changes to impacts and mitigation measures. 77

Table 4-2 New/updated mitigation measures, that now form a commitment of the proposal. 78

ACRONYMS AND ABBREVIATIONS

ACHA	Aboriginal Cultural Heritage Assessment
ACHCRP	Aboriginal cultural heritage consultation requirements for proponents
AHD	Australian Height Datum
BCD	Biodiversity Conservation Division
BDAR	Biodiversity Development Assessment Report
BOM	Australian Bureau of Meteorology
BSAL	Biophysical strategic agricultural land
dB(A)	Decibels, a measure of A-weighted *(c.f.)* sound levels.
DECC	Department of Climate Change (now BCD)
DECCW	Department of Climate Change and Water (now BCD)
DP	Deposited Plans
DPIE	Department of Planning Industry and Environment
EIS	Environmental Impact Statement
EL	Exploration Licence
EMFs	Electromagnetic fields
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW)
EPA	(NSW) Environment Protection Authority
GDE	Groundwater Dependent Ecosystems
ha	hectares
ICNG	Interim Construction Noise Guideline
ICNIRP	International Commission on Non-Ionizing Radiation Protection
km	Kilometres
kV	kilovolts
LGA	Local Government Area
m	metres
ML	Megalitres
MW	Megawatt

MWh	Megawatt hours
NML	Noise Management Level
NPfI	NSW Policy for Industry
NSW	New South Wales
OEH	(NSW) Office of Environment and Heritage (formerly DECC, DECCW; now BCD)
PV	Photovoltaic
RAPs	Registered Aboriginal Parties
RBL	Rating Background Level - the level of background noise
RNP	*Road Noise Policy*
SEARs	Secretary's Environmental Assessment Requirements
SSD	State Significant Development

1. INTRODUCTION

1.1. Background

The Wellington North Solar Farm ('The Project') proposal site is located approximately 7 kilometres (km) north east of Wellington, within the Dubbo Regional Local Government Area (LGA) (Figure 1-1). The Project includes the construction, operation and decommissioning of a photovoltaic (PV) solar farm and associated infrastructure that would produce up to 300 Megawatts (MW) of electricity.

In July 2020, Lightsource bp ('The Proponent') purchased the Wellington North Solar Farm from AGL. Lightsource bp is a global leader in the development, acquisition and long-term management of large-scale solar projects and smart energy solutions. The company is Europe's largest developer and operator of utility-scale solar projects. Lightsource bp has commissioned 1.3 Gigawatt (GW) of solar capacity and manages approximately 2 GW of capacity under long-term operations and maintenance contracts. Lightsource bp has most recently commenced development of the Wellington Solar Farm located on land located south of the proposed Wellington North Solar Farm.

1.1.1. Legislative context for this SSD amendment

The proposal requires development consent under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The proposal is considered State Significant Development (SSD) as it is development for the purpose of electricity generating works with a capital cost of greater than $30 million (clause 20, Schedule 1 of the *State Environmental Planning Policy (State and Regional Development) 2011).*

An Environmental Impact Statement (EIS) was prepared by NGH Environmental (NGH Environmental, 2018) on behalf of the proponent at the time and was submitted to NSW Department of Planning, Industry and Environment (DPIE). The EIS was placed on public exhibition from 22 August 2018 to 19 September 2018. During this period, submissions were invited from the local community, government agencies, interested parties and other stakeholders. DPIE received a total of 13 submissions during the exhibition period, including four from members of the public, two in objection and two in support, and nine submissions from government agencies. The Submissions Report (NGH Environmental, 2019) provides a response to all the issues and comments raised during the public exhibition.

The Wellington North Solar Farm proposal remains generally as detailed in Section 4 of the EIS (NGH Environmental, 2018).

This report is to supplement the amendments applied for in the Amendment Report (v3) submitted by NGH on behalf of AGL, dated 19 August 2019. Lightsource bp have made changes to the southern portion of the transmission line route, site access and transport route, construction compound location and number of construction personnel. These changes have been made in response to further detailed design.

1.2. Purpose of this report

The purpose of this document is to describe any substantive changes made to the proposal since the public exhibition of the documents listed in Table 1-1. This Amendment Report provides an updated environmental assessment considering the changes. New measures of avoidance, management and mitigation are also outlined.

Table 1-1 Environmental Assessment documentation lodged to date.

Date	Event/Document	Reference document
10 August 2018	Environmental Assessment (EIS) lodged with the Department of Planning, Industry and Environment (DPIE).	NGH Environmental (2018) Wellington North Solar Farm Environmental Impact Statement V2.2.
19 March 2019	Submissions Report lodged with DPIE.	NGH Environmental (2019) Wellington North Solar Farm Submissions Report V1.
19 August 2019	Amendment Report lodged with DPIE	NGH Environmental (2019) Wellington North Solar Farm Amendment Report V3.

1.3. Legislation

This application is made under Clause 55 of the *Environmental Planning and Assessment Regulation 2000*. This Amendment Report describes proposed changes to an SSD application that are considered to be substantially the same as the development described in the EIS. This report considers whether the proposed amendments are comparable to the development described within the EIS, specifically relating to:

- Development size, scale and footprint.
- Intensity, including existing developments.
- Use of the land.
- Project life and hours of operation.
- Extent, duration and severity of impacts.

The proposed safeguards and mitigation measures described in the EIS and the few additional measures outlined in this report would enable impacts to be either avoided, minimised or appropriately managed.

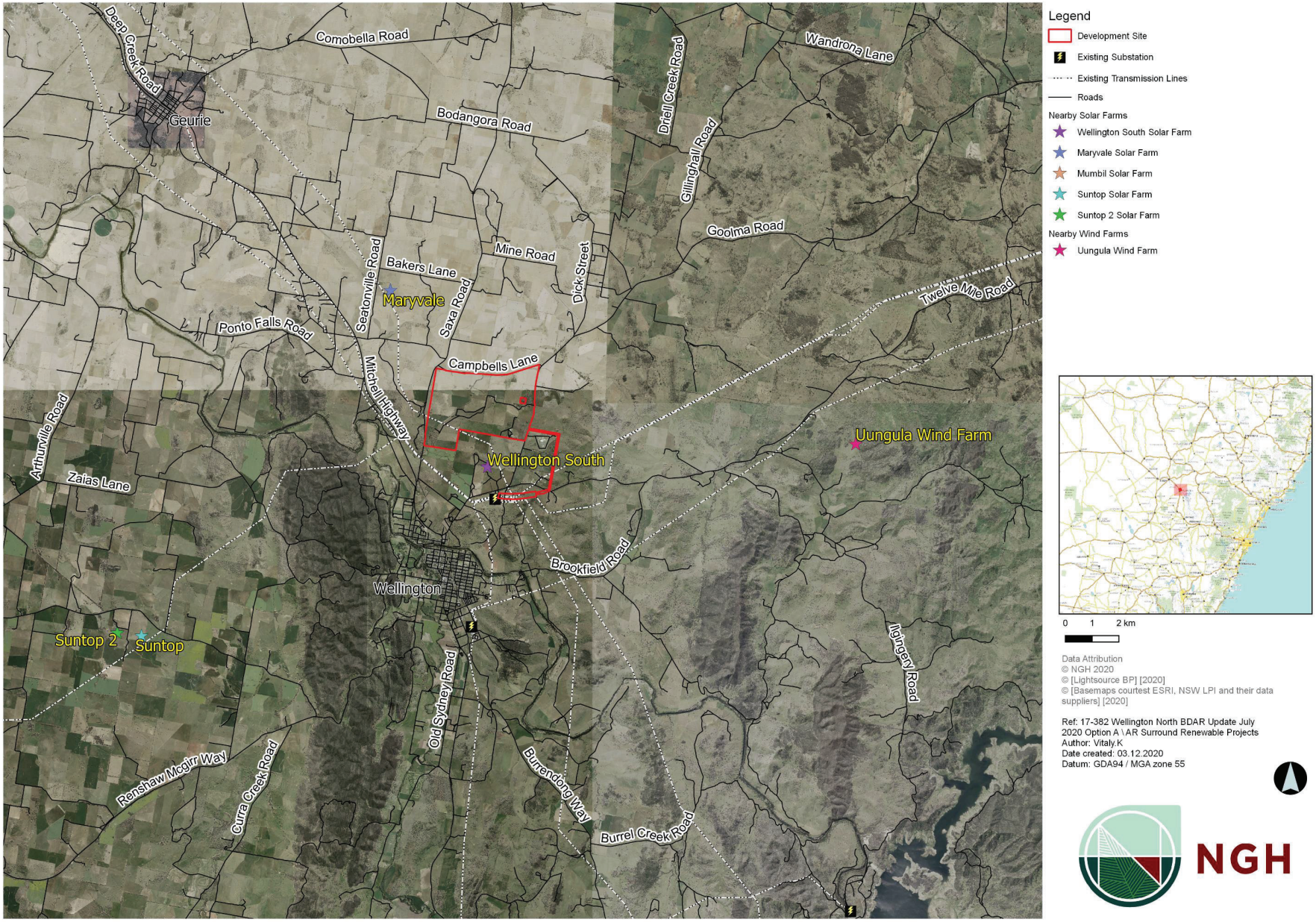

Figure 1-1 Locality map.

2. PROPOSED AMENDMENT

The Wellington North Solar Farm proposal remains generally as detailed in Section 4 of the EIS (NGH Environmental, 2018), and the Amendment Report (v3) (NGH 2019). However, four changes are now proposed and are detailed in this section.

The Proponent has made the following changes to the proposal:

- Transmission line route (Section 2.1).
- Site access and transport route (Section 2.2).
- Relocation of laydown (construction compound) (Section 2.3).
- Construction personnel (Section 2.4).

The amendments are considered to result in a development that would be substantially the same as the development described in the EIS. The justification for the amendments is provided within Section 2.5 of this report. Updated consultation and assessment are provided in Section 2.6 and Section 3.

2.1. Transmission line Route

Two options for the development of the transmission line were described in the EIS, these were superseded by the 'new eastern transmission line' as described in the first Amendment Report (NGH, 2019). Lightsource bp has now proposed a change to this transmission line option. The justification for this is provided within Section 2.5 of this report. For this Amendment Report, the updated location for the transmission line relates to the southern portion of the transmission corridor, located within Lot 32 DP622471. The changes can be seen in the updated proposal layout and constraints map provided in Figure 2-1 and Figure 2-2. This portion is located between Twelve Mile Road and the Wellington Substation. The options for this portion include two overhead and/or underground routes for the 330kV transmission line (refer to Option A and Option B in Figure 2-1).

The transmission line would occur within:

- Lot 106, DP 2987
- Lot 73, DP 750760
- Lot 2, DP 1053234
- Lot 32, DP 622471
- Lot 1, DP1226751
- Lot 1, DP 1249719
- Lot 7, DP 810725

Near TransGrid's Wellington Substation the proposed new eastern transmission line may need to be located underground for a portion of the route, in order to avoid the relocation of existing transmission lines located within the proposed transmission line corridor (refer to Figure 2-1).

Consistent with the previous amendment:

- The final alignment of the transmission line would have an easement up to 60m wide.
- The transmission line would have a maximum development footprint of up to 15.48ha.

For the proposed amendment, a 200m transmission line corridor to the east of the existing Wellington Substation was assessed to allow flexibility in selection of either an overhead or underground transmission line (Option A and Option B). This was undertaken to identify the most

appropriate route within the study area. The area of vegetation removed within the easement would be up to approximately 15.48ha (as determined in the revised BDAR-v2.4, NGH 2020b). The proposed amendment would not impact any additional receivers.

As stated in the Amendment Report (NGH, 2019), the assessment of environmental impacts concluded the eastern transmission line was justified as it is the most feasible option. The investigations in this Amendment Report show there would be no substantive additional impacts or changes to mitigation strategies and would be consistent with the EIS. Updated investigations of impacts have been included in this report.

2.2. Site access and transport route

The EIS described the main vehicular access route to the Project site as being from Campbells Lane via Cobbora Road. Lightsource bp now proposes to access the Project site from the south via the Mitchell Highway and Goolma Road. Three site access options were described and assessed in the EIS and previous Amendment Report. The Proponent has now committed that all construction and operational site access would be via a single access point off Goolma Road. These changes can be seen in the updated proposal layout provided in Figure 2-1 and transport route map provided in Figure 2-3 and the justification for this is provided within Section 2.5 this report.

2.2.1. Site access

The EIS described three vehicular access points (refer to *Traffic Impact Assessment* (GHD, 2018) (Appendix K of the EIS).

All construction and operational site access would now be via Goolma Road at the driveway of the associated landowner (previous Access Point 3), refer to Figure 2-1.

Access off Goolma Road at the existing Soil Conservation facility (Access Point 2) and Campbells Lane (Access Point 1) are no longer proposed for access during any stages of the Project including construction, operation or decommissioning.

The updated Traffic Impact Assessment is summarised in Section 3.4 and provided in Appendix E.

2.2.2. Transport route

The EIS proposed the main transport route for construction materials would utilise Cobbora Road via the Golden Highway or the Mitchell Highway. Under this proposed amendment, all construction and operational access would be from the south via the Mitchell Highway and Goolma Road at the existing landowners driveway. The impacts of this change have been assessed in the updated *Traffic Impact Assessment* (GHD, 2020). The updated Traffic Impact Assessment is summarised in Section 3.4 and provided in Appendix E.

In response to Roads and Maritime Services (now Transport for NSW; TfNSW) submission for the EIS, the Proponent has now committed, as part of this proposed amendment, that all construction and operational site access would be via Goolma Road at the existing landowners driveway, including all heavy vehicle access. This site access option would require a short auxiliary left turn lane (AUL(S)) and a Basic Right Turn (BAR) treatment from Goolma Road onto the site.

2.3. Construction compound relocation

In the EIS there was a construction compound located near the construction site access point on Campbells Lane (Access Point 1). Given the proposed changes to the construction site access point, the Proponent now propose to relocate that construction compound to the entrance of the proposed new site access point on Goolma Road (Access Point 3). The updated location of this construction compound can be seen in the updated proposal layout and constraints map provided in Figure 2-1 and Figure 2-2.

The proposed location is still within the Development Footprint which was assessed in full in the EIS. As such, no further assessment of this change is included in the Amendment Report.

2.4. Construction Personnel

The EIS proposed up to 250 personnel would be required on site during peak construction. The Proponent now propose up to 400 personnel on site during peak construction.

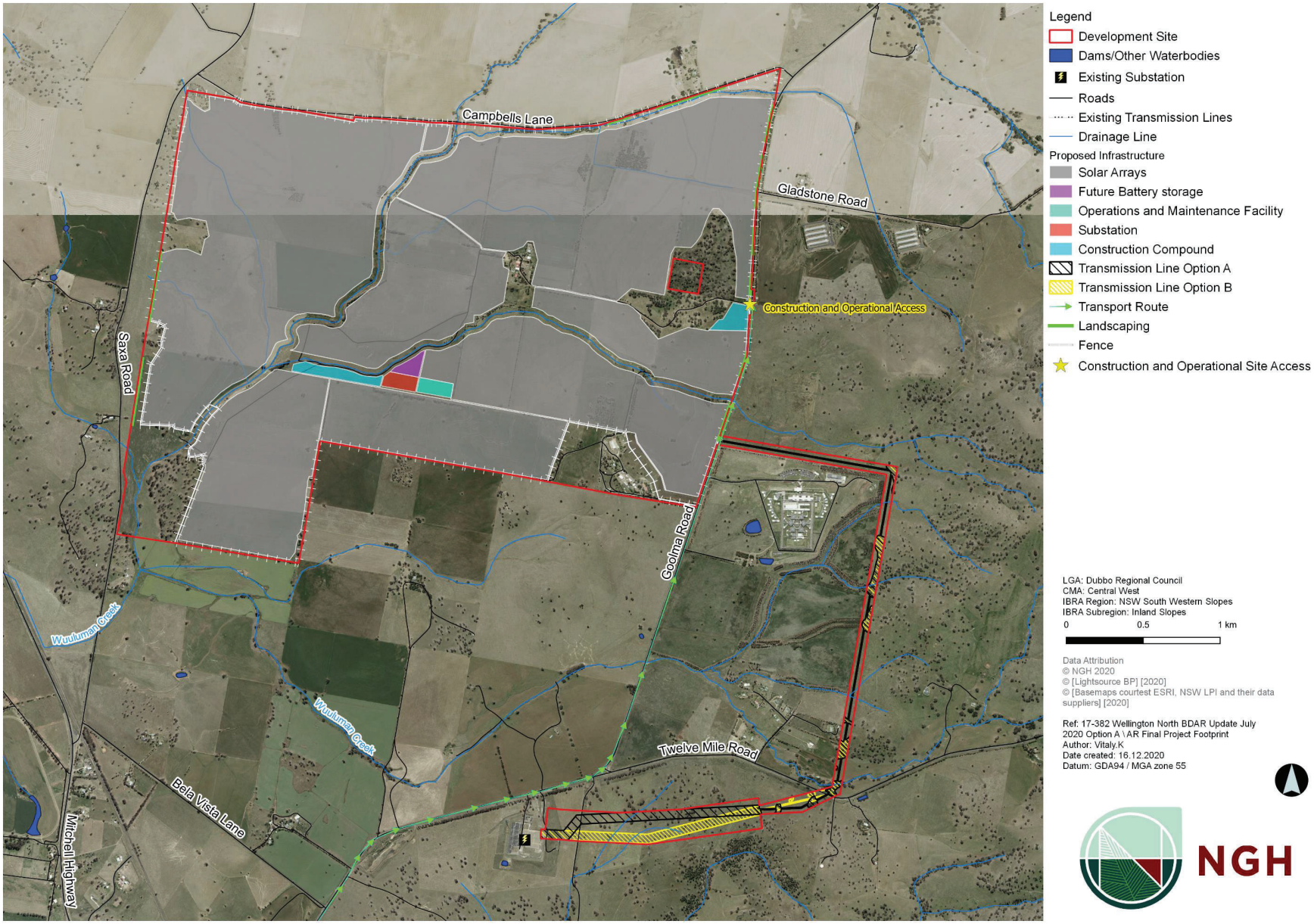

Figure 2-1 Updated proposal layout.

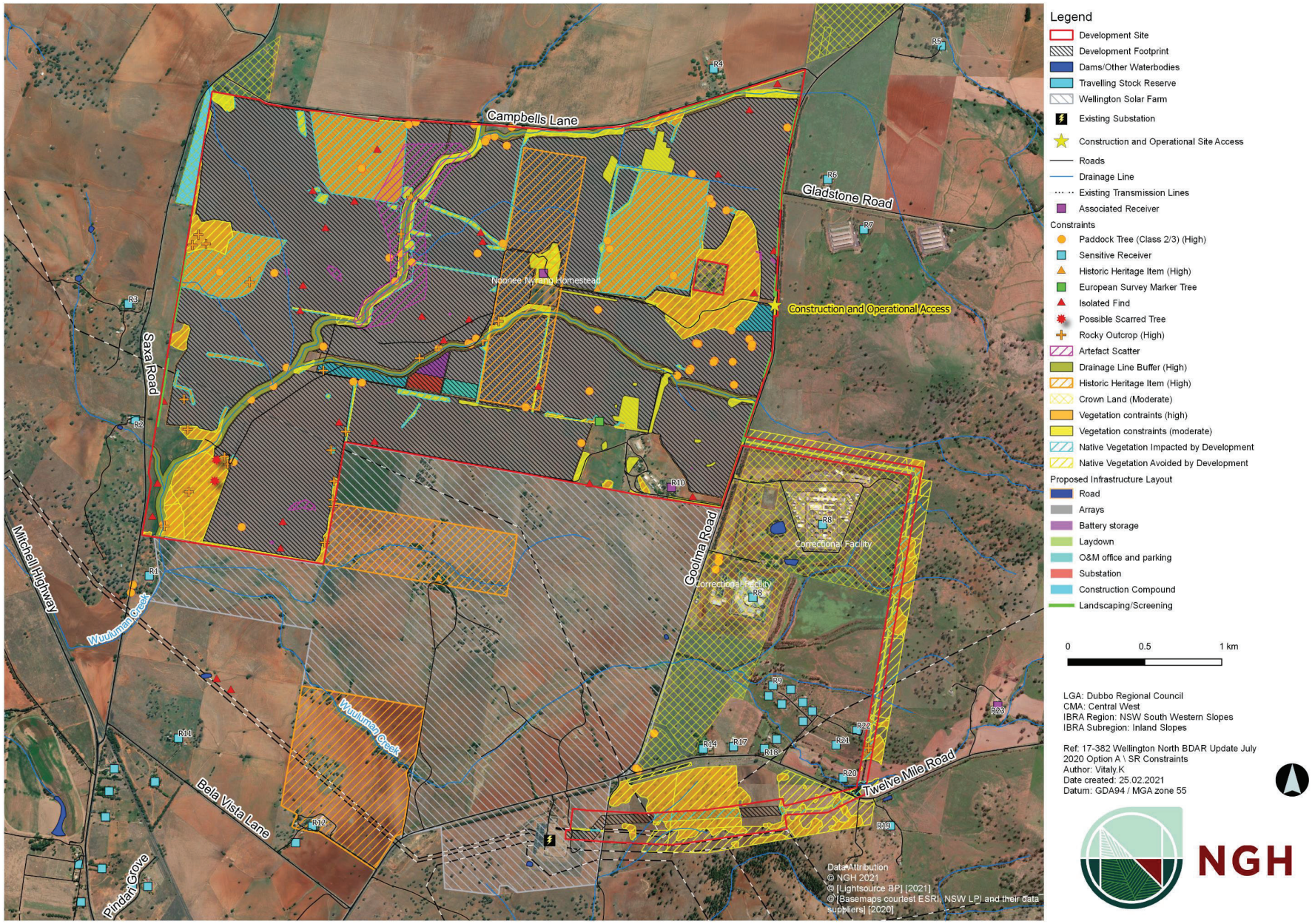

Figure 2-2 Updated constraints map

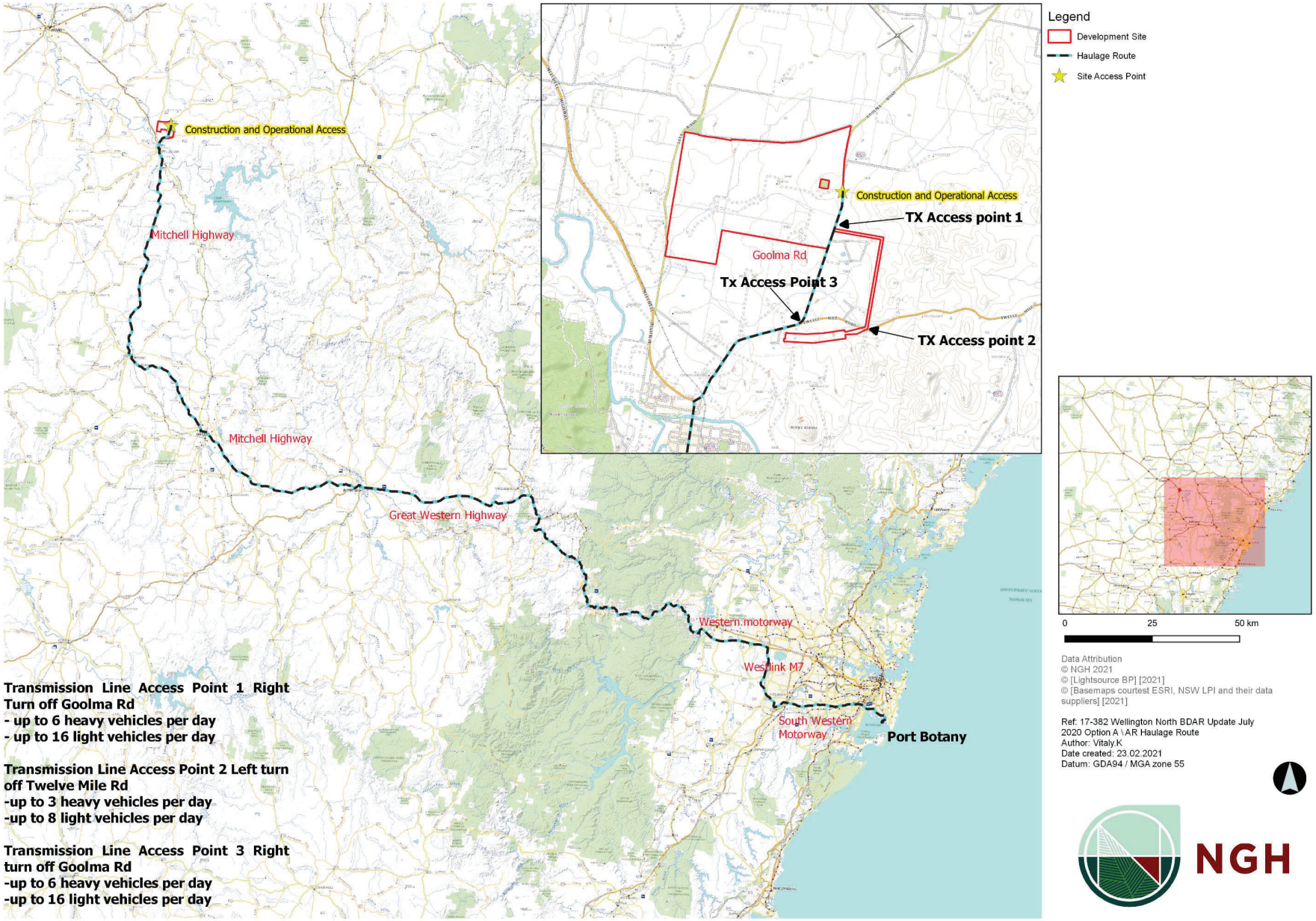

Figure 2-3 Transport Route.

2.5. Justification for the amendment

The amendments described within this report result in a development that is considered to be substantially the same as the development described in the EIS and as previously amended (NGH, 2019). Justification for the amendments is provided below.

2.5.1. Eastern transmission line

The proposed amendment to the new eastern transmission line is considered to provide the most feasible alignment options for the Project's access to TransGrid's Wellington Substation. An assessment of the changes in environmental impacts for the amended new eastern transmission line has been undertaken. Investigation has shown no substantive additional impacts or changes to mitigation strategies as detailed in Section 3 of this report.

2.5.2. Site access and transport route

It was determined to be more appropriate that all construction and operational site access for the solar farm would be via the Mitchell Highway and Goolma Road at the existing landowners driveway. This amendment would result in a reduction in impact to residences along Cobbora Road and Campbell's Lane, as no construction or operational traffic would access the site off Cobbora Road and Campbell's Lane.

Access for the transmission line has three access points, two from Goolma Road and one from Twelve Mile Road. This is discussed further in Section 3 of this report.

2.5.3. Relocation of the site access construction compound

The relocation of the construction compound that had been located at the Campbell's Lane site access point to the new construction site access point provides more direct access to construction vehicles entering the site from the construction access point which is proposed at the existing landowners driveway off Goolma Road.

2.5.4. Construction personnel

The number of construction personnel required during peak construction was estimated by the Proponent based on a review of actual personnel required during construction of solar farm projects across their Australia-wide portfolio. The increased number of construction personnel during peak construction will increase employment benefits, and benefits to local businesses including contractors and accommodation providers.

2.6. Consultation

2.6.1. Summary and outcomes of consultation to date for this amendment

Previous consultation was undertaken for the new eastern transmission line, and consultation outcomes can be seen in the previous Amendment Report (NGH, 2019). Additional feedback on the amendments described in this Amendment Report was requested from key community stakeholders via an addressed mail drop. The purpose was

to seek comments from the affected receivers about the proposed amendments to traffic management and amenity (including visual). In addition, a virtual meeting was offered to affected receivers to discuss the changes to the Project. Over the 5 week period of consultation, no responses were received (refer to neighbours' summary in Table 2-1 below).

Consultation with other key stakeholders (direct phone calls and emails) was undertaken regarding the proposed changes to traffic management between the 29th September 2020 and 7th December 2020. The outcomes of this consultation are provided in Table 2-1 below, outcomes from the community mail drop are also included below.

Table 2-1 Consultation summary

Impact/Issue	Stakeholder group	Engagement activity	Outcome/s and/or where addressed in this amendment report
Traffic impacts (refer to traffic impact assessment in section 3.4 of this report and Appendix E)	Wellington/Macquarie Correctional Centre (Wellington Complex)	A phone call with Brad Peebles (Governor Macquarie Correction Centre) was made to describe the proposed changes to the site access and transport route.	Brad Peebles confirmed that Wellington Complex has no objections with the site access and transport route as described.
		This was followed up by an email giving further detail and mapping of the changes.	No further comments received.
	Dubbo Regional Council	A phone call with Steven Jennings (Manager Growth Planning) was made to describe the proposed changes to the site access and transport route.	Steven Jennings noted no concerns in principle, but committed to providing the proposed changes to Dubbo Regional Council Traffic Engineer. In addition to the amendment discussions multiple discussions have been held with the Property Development Team at Dubbo Regional Council regarding the dedication and closure of the paper roads located on the Project site.
		A meeting with TfNSW (Alexandra Power and Ainlsey Bruem), Dubbo Council (Peter James and Daryl Quigley), GHD (Sean Clarke), Lightsource bp (Diana Mitchell) and NGH (Louiza Romane) was undertaken to workshop the proposed transport route	Council noted that the condition of surrounding local roads Bella Vista Lane and Campbells Lane are considered unsuitable for the proposed access for the construction of the Wellington North Solar Farm.

Impact/Issue	Stakeholder group	Engagement activity	Outcome/s and/or where addressed in this amendment report
		and site access and potential alternatives.	Council raised concerns in relation to the curve to the south of the site access to the Wellington North Solar Farm as it may impact on the Safe Intersection Sight Distance for the access to the Wellington North Solar Farm. The Safe Intersection Site Distance would be taken into consideration during detailed design and in consultation with Council.
		The Memorandum for the horizontal and vertical distances for Approach Sight Distance (ASD) was prepared by GHD and this has been provided to Dubbo Regional Council for review.	The results from the assessment show that horizontal and vertical distances for Approach Sight Distance (ASD) requirements are met and the proposed location of the intersection's AUL will have negligible effects on existing sight distances.
	Transport for NSW	A phone call with Bevan Crofts (Development Assessment Officer) was made to describe the proposed changes to the site access and transport route.	Bevan Crofts noted that justification of the intersection upgrade would need to be supported by management of commuter and heavy vehicle peak hourly movements to ensure they are below the thresholds set by AustRoads Guide to Road Design Part 4.
		This was followed up by an email giving further detail and mapping of the changes.	No further comments received.
		The draft Traffic Impact Assessment (TIA) was provided to Ainslee Bruem (A/Manager Land Use Assessments).	Bevan Crofts noted that there were no further comments to raise prior to review of the draft TIA.

Impact/Issue	Stakeholder group	Engagement activity	Outcome/s and/or where addressed in this amendment report
		A meeting with TfNSW (Alexandra Power and Ainlsey Bruem), Dubbo Council (Peter James and Daryl Quigley), GHD (Sean Clarke), Lightsource bp (Diana Mitchell) and NGH (Louiza Romane) was undertaken to workshop the proposed transport route and site access and potential alternatives.	TfNSW noted that the storage length of the CHR on the Mitchell Highway/Goolma Road intersection may be reaching capacity as a result of the traffic associated with construction of the Wellington North Solar Farm, and that works may be required to manage impacts to through traffic along the Mitchell Highway. TfNSW requested an assessment of traffic volumes and storage capacity of the CHR during AM and PM peaks Monday – Saturday. TfNSW requested concept plans of the intersection treatments. Concept plans of the proposed intersection treatments will be prepared during detailed design. The concept plans will be informed by traffic modelling including traffic counts and SIDRA modelling, and will be prepared in consultation with TfNSW.
		The Memorandum for the horizontal and vertical distances for Approach Sight Distance (ASD) was prepared by GHD and this has been provided to TfNSW for review.	The results from the assessment show that horizontal and vertical distances for Approach Sight Distance (ASD) requirements are met and the proposed location of the intersection's AUL will have negligible effects on existing sight distances.
	Transport route neighbours on Goolma Road.	Letters were sent to all landowners adjacent to the transport route along Goolma Road (7 properties). The letter provided a description of the Project changes and offering a virtual meeting to	No responses were provided from 5 of the landowners, and 2 return to senders were received. Letters were sent in early October 2020. Those that were returned were the Dubbo Regional Council Quarry, and a private landowner. The

Impact/Issue	Stakeholder group	Engagement activity	Outcome/s and/or where addressed in this amendment report
		speak with the Proponent in relation to the changes.	information was subsequently emailed to the private landowner who did not provide a response. Council was contacted to assist with retrieving correct landholder details. Kim Edwards (LIS and E-Services Coordinator) noted that Council is not authorised to forward landowner information or act on the Proponents behalf to distribute the information.

3. AMENDED ASSESSMENT

The changes described in Section 2 of this Amendment Report would have similar types and similar magnitude of impacts as those previously presented. Due to the incorporation of new areas to the Development Site, the following specialist reports have been provided as appendices and summarised in this report:

- Biodiversity Development Assessment Report (BDAR) (Appendix B) (NGH, 2021). Updated report provided, removing the previously assessed transmission line options and construction and operational access on Campbells Lane and replacing these with the proposed new eastern transmission line and site access at Goolma Road. The updated report is summarised in Section 3.1.
- Traffic Impact Assessment (Appendix E; GHD, 2021). Updated report, removing the construction and operational site access from Campbells Lane and relocating it to Goolma Road, as well as incorporating increased traffic vehicle numbers. The updated report is summarised in Section 3.4.
- Site access. The Strategic Design for horizontal and vertical distance for the Approach Sight Distance (ASD) requirements for the entrance intersecting with Goolma Road (GHD 2021) are provided (Appendix F). The Memorandum has been summarised in Section 3.4.

Previous Aboriginal Cultural Heritage, noise and visual impact assessments were reviewed and addressed within this report as follows:

- The EIS ACHA (NGH, 2018) and Addendum Aboriginal Cultural Heritage Assessment (NGH, 2019a) were considered. An assessment of the proposed amendments and consultation with RAPs (Appendix D) is included in this report (Section 3.2).
- The Noise and Vibration Assessment (Renzo Tonin, 2019) was considered. Consultation was undertaken with Renzo Tonin and Associates to review the amendments against findings of the 2019 report. No changes to the report were required to the 2019 report. Noise and vibration are addressed in Section 3.5

- NGH reviewed the visual assessment of the amendments with consideration of the EIS visual impact assessment (VIA) (Moir, 2018) and previous amendment (NGH, 2019). An assessment is included in this report (Section 3.3).

Summaries of the additional assessments/review of impacts are provided below. These are considered the key environmental aspects affected by the amendments. Assessments of the proposed amendments for all other relevant environmental aspects are provided in Table 3-16.

3.1. Biodiversity

3.1.1. Approach

An amended BDAR was prepared by NGH, previously branded NGH Environmental, (NGH, 2019b). Lightsource bp have since acquired the Project and are requesting two alterations to the original proposal, requiring the BDAR to be amended. These amendments include:

- Amendments to the transmission line corridor, to allow flexibility in the detailed design of the transmission line. The proposed transmission line corridor is 60 metres wide from Goolma Road to Twelve Mile Road. However, the corridor widens to 200 metres between Twelve Mile Road and the Wellington Substation to allow for two different route options to be constructed for the transmission line (Option A and Option B). While flexibility is required as to which option would be constructed, for the purposes of this BDAR Option A has been selected, as it would have a larger biodiversity impact on White Box Woodland.
- Amendments to the Project's site access point. This access point was proposed as one operational site access point but will now serve as the Project's only construction and operational access point. Therefore, an upgraded intersection treatment is now required.

The amended BDAR V3.2, aims are to:

1. Address the requirements of the NSW Biodiversity Assessment Methodology (BAM) pursuant to the *Biodiversity Conservation Act 2016* and the requirements of the SEARs in relation to biodiversity.
2. Assess the Project in relation to MNES as per the EPBC Act.

The BDAR (Version 3.2) is included in Appendix B and the report findings for the new eastern transmission line are summarised below.

The assessment approach involved literature reviews, database searches, and field surveys conducted in accordance with relevant survey guidelines. The proposed solar farm conforms to the definition of a site-based development according to the BAM, as it is a development other than a linear shaped development, or a multiple fragmentation impact development.

Targeted surveys within the study area for the new eastern transmission line route were undertaken between the 3rd - 5th December 2018 (for flora) and the 15th – 18th and 29th – 31st January 2019 (for fauna).

The following assumptions for clearing within the new eastern transmission line route were:

- In treed areas the line is buffered to be 60m total width.

- In grassed areas the line is buffered to be 7m (allowing for a 5m track and additional allowance for power poles).

The following methods were adopted during the surveys:

- Vegetation Integrity Survey plots. A total of 15 plots were completed for the transmission line. Previously 28 plots were completed for the main site.
- Random meander and targeted searches for threatened flora species.
- Fauna habitat assessment. Trees within the Project site were inspected for hollows, and the number, size and occupancy of the hollows, as well as the species, diameter at breast height and height of the hollow-bearing trees were all recorded.
- Targeted fauna surveys were conducted with the aim of identifying occurrence or defining habitat for threatened fauna species.

The aims of the site surveys were as follows:

- Determine vegetation communities present within the Project site, their condition and extent.
- Identify potential EECs within the Project site and determine their condition and extent.
- Conduct searches for threatened flora and fauna species predicted to occur in the Project site, in accordance with the BAM.
- Assess the availability and extent of flora and fauna habitat, particularly threatened species habitat, such as hollow-bearing trees.

A BAM Credit assessment was completed by an accredited assessor. The assessment ID for this proposal is 00009144/BAAS18149/17/00009145/Revision 7.

The number of construction personnel and the relocation of the construction compound do not change the conclusions of the BDAR as the impacts would be less or the same. The proposed construction compound is located within an area assessed in the BDAR presented in the EIS. As such, these changes are not discussed further within this section.

3.1.2. Existing environment

Native vegetation

Further vegetation integrity plots were undertaken on the 5th December 2018 to survey the transmission line route. One Plant Community Type (PCT) was identified along the transmission line route and stratified into three separate zones of a similar broad condition state. Thirteen vegetation integrity plots were undertaken in these zones.

The PCT identified in the transmission line route was:

- White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion (PCT 266).

This PCT forms part of the listed EEC – White Box – Yellow Box – Blakely's Red Gum woodland and Inland Grey Box Woodland.

WHITE BOX GRASSY WOODLAND IN THE UPPER SLOPES SUB-REGION OF THE NSW SOUTH WESTERN SLOPES BIOREGION (PCT 266)

The remnant woodland within the transmission easement is of moderate condition and is currently used for grazing. It is characterised by an overstorey of White Box (*E. albens*) that have been partially cleared through past agricultural practices, refer to Figure 3-1. The understorey is a mix of exotic and native grasses and forbs such as Wallaby Grass (*Rytidosperma* spp), Spear Grass (*Austrostipa* spp.), Fuzzweed (*Vittadinia cuneata*) and climbing saltbush (*Einadia nutans*). The woodland is also present in the Wuuluman Creek and is characterised by an overstory of White Box (E. albens) along Wuuluman Creek. The exotic Pepper Tree (**Schinus molle*) is also abundant in this zone. The understorey is a mix of exotic and native grasses and forbs such as Couch (*Cynodon dactylon*) and Early Spring Grass (*Eriochloa pseudoacrotricha*). Fallen timber is present along the Wuuluman Creek.

Within the new eastern transmission line for PCT 266 (refer to Figure 3-2) the study area and development footprint for Option A occurred as:

- PCT 266 Moderate condition 41.9 ha; Development Footprint 7.56 ha.
- PCT 266 Creekline 0.8 ha; Development Footprint 0.5ha
- PCT 266 Derived Grassland 51 ha; Development Footprint 2.00ha.

Figure 3-1 Example of White Box Woodland in the new eastern transmission line.

Derived Grassland

Approximately 2.0ha (Impact Area) of vegetation within the new eastern transmission line is comprised of a mix of native and exotic grasses. These areas have been ploughed previously and are currently used for grazing of stock.

Cleared Areas (Non-native vegetation)

Approximately 5.346ha (Impact Area) of vegetation within the new eastern transmission line is comprised of exotic vegetation crops of Lucerne (**Medicago sativa*) and Kale (**Brassica oleracea*).

Rivers and Streams

The new eastern transmission line would cross Wuuluman Creek (0.50ha Impact Area). The creekline at this location has a canopy of White Box (*Eucalyptus albens*) and Pepper Trees (**Schinus molle* var. areira). The understorey is a mix of exotic and native grasses and forbs such as Couch (*Cynodon dactylon*) and Early Spring Grass (*Eriochloa pseudoacrotricha*). Fallen timber is present along the creekline.

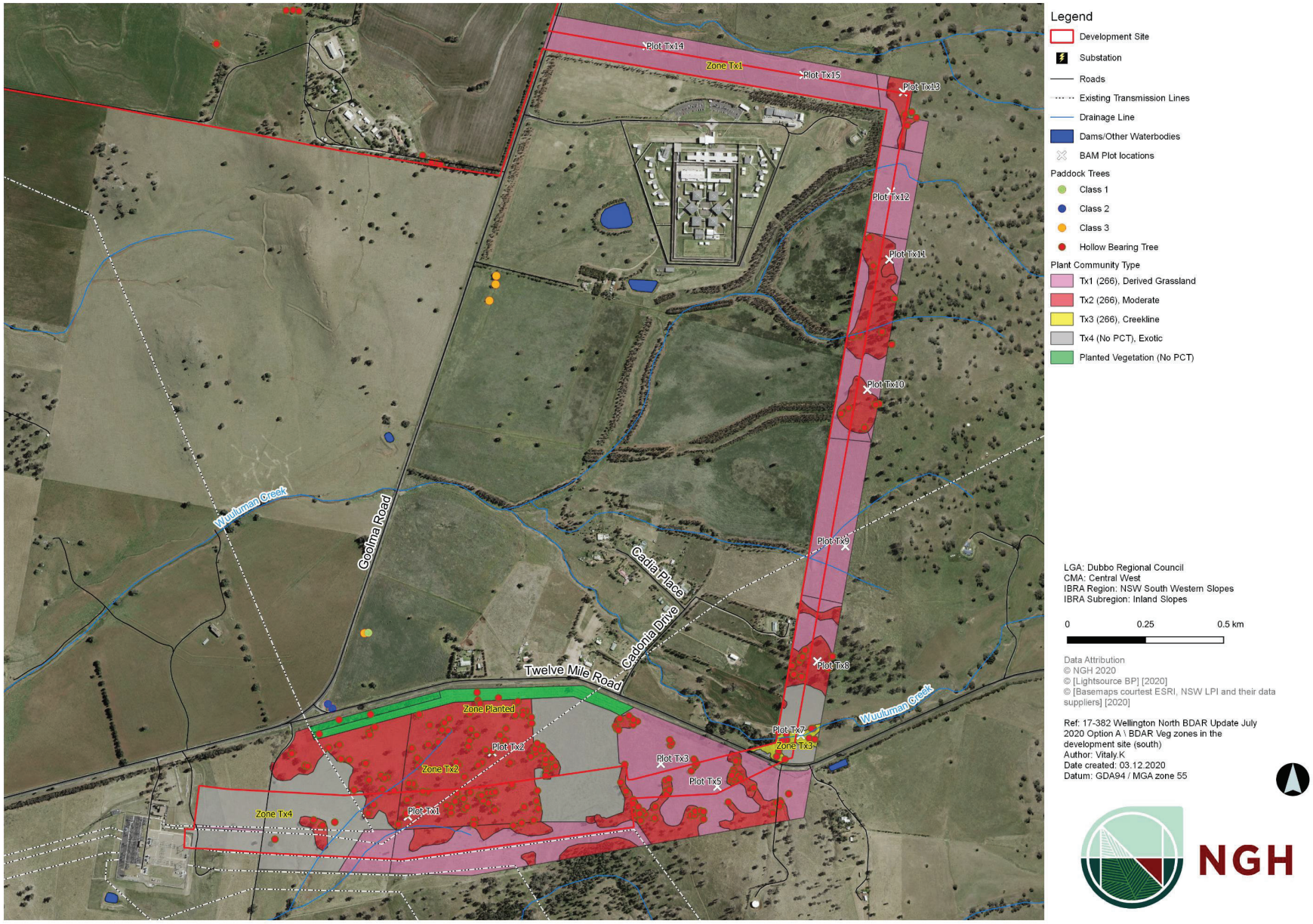

Figure 3-2 Vegetation zones within the Project site (south).

Threatened species

The following threatened species were identified from the BAM Calculator as potentially being present and requiring targeted survey (including within the new eastern transmission line route). Table 7-1 states whether each species was detected during surveys and furthermore if they are expected to be impacted by the Project and therefore are required to be offset.

Table 3-1 Candidate species credit species returned from the BAM Calculator as requiring assessment.

Species Credit Species	Biodiversity risk weighting	Survey Time	Assumed to occur/survey/ expert report	Present on site?	Species polygon area or count
FAUNA					
Pink-tailed Legless Lizard *Aprasia parapulchella*	2.00	September - November	Surveyed Oct 2017 Not surveyed for in transmission line route	Assumed present in transmission line route	0.56ha (Rocky areas in transmission line easement)
Bush Stone Curlew *Burhinus grallarius*	2.00	All Year	Surveyed Jan 2019	No	-
Glossy Black Cockatoo *Calyptorhynchus lathami*	2.00	May - August	Surveyed May 2018 Not surveyed for in transmission line route	Assumed present in transmission line route	8.06ha (100m buffer around medium to large hollows in transmission line easement)
Gang-Gang Cockatoo *Callocephalon fimbriatum*	2.00	October - January	Surveyed Oct 2017 and Jan 2019	No	-
Large-eared Pied Bat *Chalinolobus dwyeri*	3.00	September - March	Surveyed December 2017	No	-
Eastern Pygmy Possum *Cercartetus nanus*	2.00	October - March	Surveyed Oct 2017	No	-

Species Credit Species	Biodiversity risk weighting	Survey Time	Assumed to occur/survey/ expert report	Present on site?	Species polygon area or count
Little Eagle *Hieraaetus morphnoides*	1.5	August - October	Surveyed Oct 2017 Not surveyed for in transmission line route	No	-
White Bellied Sea-Eagle *Haliaeetus leucogaster*	2.00	July-December	Surveyed Oct 2017	No	-
Swift Parrot *Lathamus discolor*	3.00	May - August	Surveyed Oct 2017	No – not within mapped important area	-
Square-tailed Kite *Lophoictinia isura*	1.5	September - January	Surveyed Oct 2017 and Jan 2019	No	-
Superb Parrot *Polytelis swainsonii*	2.00	September - November	Surveyed Oct 2017 Not surveyed for in transmission line route	Foraging only	-
Eastern Bent-wing bat *Miniopterus schreibersii oceanis*	3.00	November - February	Surveyed Dec 2017	Yes. Foraging only. No Breeding Habitat	-
Southern Myotis *Myotis macropus*	2.00	November – March	Surveyed December 2017	Yes	0.22ha – (Combined area of hollow bearing trees within 200m of watercourse)
Barking Owl *Ninox connivens*	2.00	May - December	Surveyed Oct 2017 Not surveyed for in transmission line route	Assumed Present in transmission line route	8.06ha (100m buffer around large hollows>20cm in transmission

Species Credit Species	Biodiversity risk weighting	Survey Time	Assumed to occur/survey/ expert report	Present on site?	Species polygon area or count
					line easement)
Masked Owl *Tyto novaehollandiae*	2.00	May – August	Not surveyed for in transmission line route	Assumed Present in transmission line route	8.06ha (100m buffer around large hollows>20cm in transmission line easement)
Squirrel Glider *Petaurus norfolcensis*	2.00	All Year	Surveyed Oct 2017 and Jan 2019	No	-
Brush-tailed Phascogale *Phascogale tapoatafa*	2.00	All Year	Surveyed Oct 2017 and Jan 2019	No	-
Koala *Phascolarctos cinereus*	2.00	All Year	Surveyed Oct 2017, Oct 2018 and Jan 2019	No	-
Grey-headed Flying Fox *Pteropus Poliocephalus* (Breeding camps)	2.00	October - December	Surveyed Oct 2017 and Oct 2018	Foraging only. No Breeding Camps.	-
Regent Honeyeater *Anthochaera phrygia*	3.00	September - December	Surveyed Oct 2017	No – not within mapped important area	-
FLORA					
Ausfeld's Wattle *Acacia ausfeldii*	2.00	Any	Surveyed Oct 2017 and Dec 2018	No	-
Bluegrass *Dichanthium setosum*	2.00	December – May	Surveyed Feb 2018	No	-
Euphrasia *Euphrasia arguta*	3.00	-	Surveyed Oct 2017 and Dec 2018	No	-

Species Credit Species	Biodiversity risk weighting	Survey Time	Assumed to occur/survey/ expert report	Present on site?	Species polygon area or count
Small Purple-pea *Swainsona recta*	1.00	September - October	Surveyed Oct 2017 Not surveyed for in transmission line route	No	-
Silky Swainson-Pea *Swainsona sericea*	2.00	September - February	Surveyed Oct 2017 and Dec 2018.	No	-
Zieria obcordata *Zieria obcordata*	3.00	All	Surveyed Oct 2017 and Dec 2018.	No	-

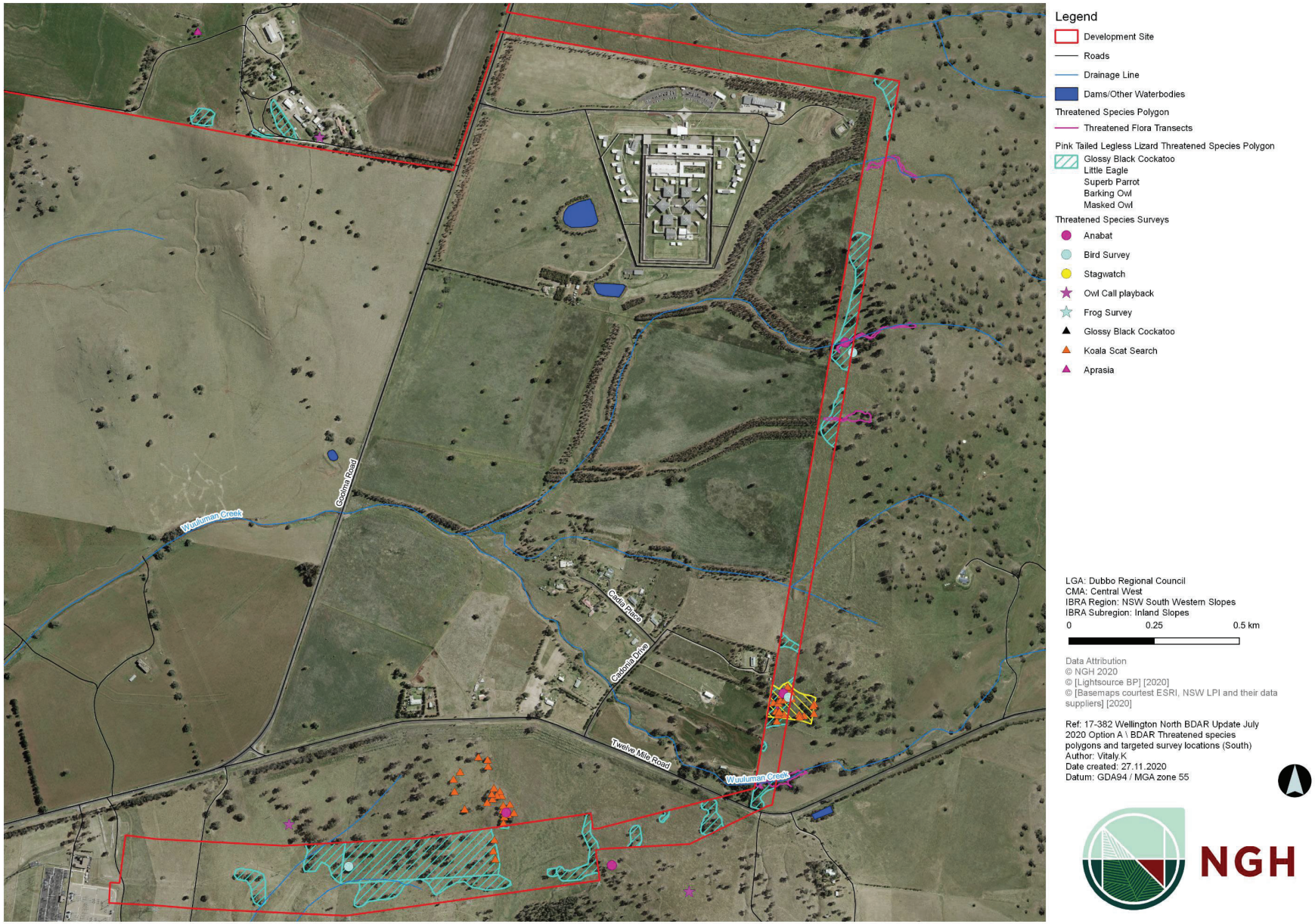

Figure 3-3 Threatened species polygons and targeted survey locations (south).

Site survey deficiencies

Six species credit species were unable to be surveyed during the appropriate survey times in the new eastern transmission line easement. These species (Pink-tailed Legless Lizard, Glossy Black Cockatoo, Little Eagle, Superb Parrot, Masked Owl and Barking Owl) were assumed to be present within suitable habitat within the transmission line easement (refer to Figure 3-3) and generated credits within the BAM Calculator.

3.1.3. Potential impacts

Avoidance of impacts

To inform the development of the most appropriate proposal, an environmental constraints analysis of the Project site was undertaken in the early planning stages to assist with designing the solar farm layout and planning the detailed methodologies for the environmental assessment.

The following methodologies were adopted for the design of the new eastern transmission line route:

- Minimising the impact to areas of moderate condition remnant vegetation (EEC's). These were areas of White Box Grassy Woodland and Yellow Box Woodland with a grazed understorey.
- Buffering waterways in accordance with their classifications and the "Guidelines for Riparian Corridors on Waterfront Land" (NSW office of Water, 2012) to minimise impacts on hydrology and water quality.
- Avoiding impacts to rocky outcrops, where practicable.
- Avoiding impacts to Hollow-bearing trees, where practicable.
- Locating ancillary facilities in areas where there are no biodiversity values.
- Making provision for the ecological restoration, rehabilitation and/or ongoing maintenance of retained native vegetation habitat on the Project site.

Impacts on native vegetation

Approximately 10.06ha of native vegetation would be cleared along the new eastern transmission line easement. Two management zones would occur in this transmission line easement. These are:

- Management Zone 1: A 7m wide corridor would be cleared surrounding the transmission line to include the installation of the powerline and provide an access track. In this management zone, both understorey and overstorey vegetation would be removed.
- Management Zone 2: A 60m wide corridor surrounding the transmission line would be cleared of overstorey trees above 4m tall. In this management zone only overstorey vegetation would be removed.

The changes in vegetation scores from the transmission line easement for each of these management zones are shown in Table 3-2.

Table 3-2 Table of current and future vegetation integrity scores for each vegetation zone within the transmission line corridor

Zone ID	PCT	TEC and/or threatened species habitat?	Area of impact (ha)	Current vegetation Integrity Score	Future vegetation Integrity Score
Tx-1	266_Derived Grassland	EEC – White Box-Yellow Box-Blakely's Red Gum Woodland	2	25.6	**0.0**
Tx -2	266_Moderate	EEC – White Box-Yellow Box-Blakely's Red Gum Woodland			
			7.56	49.5	**0.0**
Tx-3	266_Creekline	EEC – White Box-Yellow Box-Blakely's Red Gum Woodland			
			0.50	69.8	**0.0**
		Total:	**10.06 ha**		

3.1.4. Loss of species credit species habitat or individuals

The loss of species credit species habitat or individuals as a result of clearing within the new eastern transmission line corridor is documented in Table 3-3 below.

Table 3-3 Summary of species credit species loss within the transmission line corridor

Species Credit Species	Biodiversity risk weighting	Area of habitat lost (ha)
Pink-tailed Legless Lizard (*Aprasia parapulchella*)	2	0.56
Glossy Black Cockatoo (*Calyptorhynchus lathami*)	2	8.06
Barking Owl (*Ninox connivens*)	2	2.13
Masked Owl (*Tyto novaehollandiae*)	2	2.13

3.1.5. Loss of hollow-bearing trees

212 Hollow-bearing trees were recorded within the transmission line study area. 57 of these Hollow-bearing trees occur within the development footprint and would be removed by the Project. The number of hollow bearing trees in each zone are shown in Table 7-6.

Table 3-4 Hollow bearing trees impacted by the transmission line corridor

Zone	Description	HBTs within zone	HBTs impacted
Tx 1	266_Derived Grassland	1	0
Tx 2	266_Moderate	196	51
Tx 3	266_Creekline	10	6
Tx 4	Exotic	5	0
TOTAL		**212**	**57**

Direct and indirect impacts unable to be avoided

The construction and operational phases of the Project have the potential to impact biodiversity values at the site that cannot be avoided. Consistent with the EIS these apply to the amended transmission line route.

Construction and decommissioning

In addition to the offset requirement, direct impacts that must be managed during construction and decommissioning include:

- Habitat clearance for permanent and temporary construction facilities (e.g., solar infrastructure, transmission lines, compound sites, stockpile sites, access tracks). The consequences of this impact may include:
    - Direct loss of native flora and fauna habitat from clearing, including removal of hollow bearing trees and habitat for Southern Myotis (*Myotis Macropus*) and Glossy Black Cockatoo.
    - Displacement of resident fauna.
    - Injury and mortality to fauna during clearing of fauna habitat.
    - Disturbance to fallen timber, dead wood, bush rock and riparian vegetation.

A commitment to a Biodiversity Management Plan to address the risks during construction and decommissioning forms part of the Project.

Indirect impacts identified in the BDAR included:

- Risks for soil and water contamination.
- Introduction and spread of weeds and pathogens.
- Creation of barriers to fauna movement.
- Generation of excessive dust, light or noise.

Operation

Consistent with the EIS, the potential impacts during operation of the transmission line include:

- Indirect impacts identified in the BDAR - risks for light spill, weed encroachment, increased vehicle traffic, fences, pest animals, and mobilisation of sediments.

Serious and Irreversible Impacts (SAIIs)

One threatened ecological community would be impacted on by the transmission line (refer to Figure 3-4 that is listed as a potential SAII entity in the 'Guidance to assist a decision-maker to determine a serious and irreversible impact' (DPIE, 2019). This is the:

- White Box-Yellow Box- Blakely's Red Gum Woodland EEC (Box-gum Woodland)

One threatened species observed within the Project site is listed as an SAII entity in the Guidance to assist a decision-maker to determine a serious and irreversible impact. This is the:

- Large Bent-winged Bat (*Miniopterus schreibersii oceanensis*).

An assessment of the impacts to the Box-gum woodland and Large Bent-winged Bat was undertaken under the Guidance to assist a decision-maker to determine a serious and irreversible impact. Based on these criteria, it is considered unlikely the Project would have a serious and irreversible impact on the White Box-Yellow Box- Blakely's Red Gum Woodland EEC and the Large Bent-winged Bat (*Miniopterus schreibersii oceanensis)*.

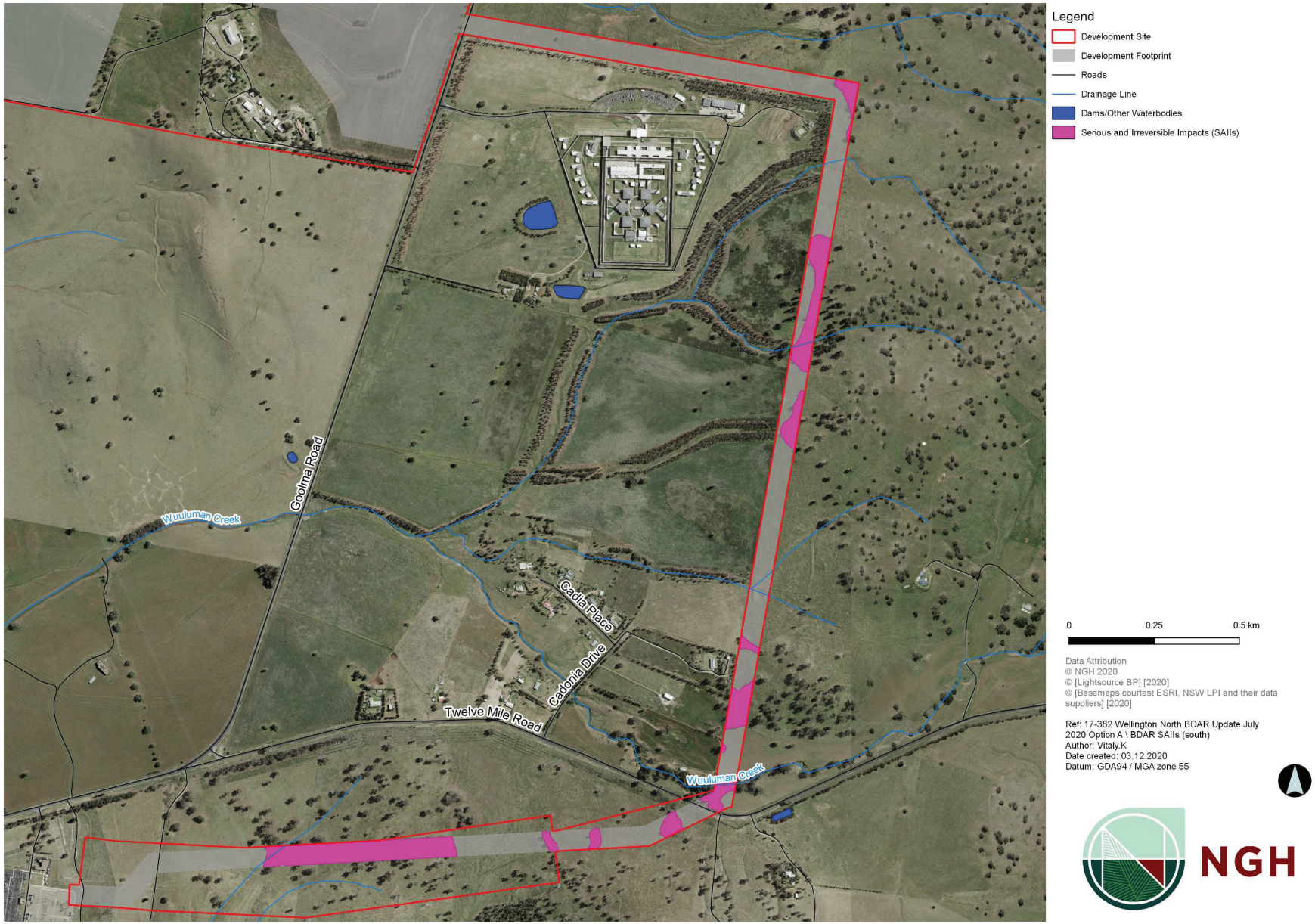

Figure 3-4 Location of areas considered for potential serious and irreversible impacts (south)

Matters of National Environmental Significance

Threatened Ecological Communities

The White Box Woodland within the new eastern transmission line easement meets the condition threshold of the EPBC listed community and is considered to form part of a White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland. The woodland vegetation community in the transmission line easement that will be impacted covers 8.06ha. An assessment of significance was undertaken for this community and concluded that a significant impact was unlikely on the basis that the proposal would not significantly:

- Reduce the extent of the ecological community
- Increase fragmentation of an ecological community
- Modify or destroy abiotic factors
- Cause a substantial change in the species compositions
- Cause a substantial reduction in the quality or integrity of an occurrence of an ecological community.

An EPBC referral is not considered necessary for this community.

Threatened Fauna and Flora

Eleven EPBC listed species were considered to have the potential to occur within the Development Site (Solar Farm and eastern transmission line easement):

- Regent Honeyeater (*Anthochaera phrygia*).
- Painted Honeyeater (*Grantiella picta*).
- Swift Parrot (*Lathamus discolor*).
- Superb Parrot (*Polytelis swainsonii*).
- Large-eared Pied Bat (*Chalinolobus dwyeri*).
- Corben's Long-eared Bat (*Nyctophilus corbeni*).
- Koala (*Phascolarctos cinereus*).
- Grey-headed Flying Fox (*Pteropus Poliocephalus*).
- Pink-tailed Worm-lizard (*Aprasia parapulchella*).
- Striped Legless Lizard (*Delmar impa*r).
- Small Purple-pea (*Swainsona recta*).

Surveys were undertaken for these species and only one of these species was detected.

The Grey-headed Flying Fox was observed foraging along Tributary 1 and flying overhead. An assessment of significance has been completed for the Grey-headed Flying-Fox (Appendix I of the BDAR) and concluded that a significant impact was unlikely on the basis that the proposal would not:

- Lead to a reduction of the size or area of occupancy of an important population, or fragment or disrupt the breeding cycle of an important population.
- Affect habitat critical to the survival of the species.
- Affect habitat or introduce disease such that the species would decline.
- Introduce invasive species harmful to the Grey-headed Flying Fox.
- Interfere with the recovery of the species.

An EPBC referral is not considered necessary for this species.

Known records of the Superb Parrot occur within 10km of the Development Site. The Superb Parrot was unable to be surveyed for during the breeding season in the transmission line easement. 57 suitable hollow bearing trees would be removed within the transmission line easement. An assessment of significance has been completed for the Superb Parrot (Appendix I of the BDAR) and concluded that a significant impact was unlikely on the basis that the proposal would not:

- Lead to a reduction of the size or area of occupancy of an important population, or fragment or disrupt the breeding cycle of an important population.
- Affect habitat critical to the survival of the species.
- Affect habitat or introduce disease such that the species would decline.
- Introduce invasive species harmful to the Grey-headed Flying Fox.
- Interfere with the recovery of the species.

An EPBC referral is not considered necessary for this species.

The EPBC Referral Guidelines for the Koala (DoE, 2014) documents the 'Koala habitat assessment tool' to assist proponents in determining if a proposal may impact on habitat critical to the survival of the Koala. The tool is provided as Table 3-5 below as it applies to the proposal. Impact areas that score five or more using the habitat assessment tool contain habitat critical to the survival of the Koala. The assessment in Table 3-5 resulted in a score of 4 and as such habitat within the study area is not considered to be critical to the survival of the Koala. An assessment of significant impact is not required for the Koala.

Table 3-5: Koala habitat assessment tool for inland areas (DoE, 2014).

Attribute	Score	Inland	Applicable to the proposal?
Koala occurrence	+2 (high)	Evidence of one or more koalas within the last 5 years.	
	+1 (medium)	Evidence of one or more koalas within 2km of the edge of the impact area within the last 10 years.	
	0 (low)	None of the above.	✓
Vegetation composition	+2 (high)	Has forest, woodland or shrubland with emerging trees with 2 or more known koala food tree species, **OR** 1 food tree species that alone accounts for >50% of the vegetation in the relevant strata.	✓ White Box and Yellow Box are listed food trees.
	+1 (medium)	Has forest, woodland or shrubland with emerging trees with only 1 species of known koala food tree present.	

Attribute	Score	Inland	Applicable to the proposal?
	0 (low)	None of the above.	
Habitat connectivity	+2 (high)	Area is part of a contiguous landscape ≥1000 ha.	✓ Remnant vegetation can connect to large stands of woodlands south and west of Goolma Road.
	+1 (medium)	Area is part of a **contiguous landscape** <1000 ha, but ≥500 ha.	
	0 (low)	None of the above.	
Key existing threats	+2 (high)	Little or no evidence of koala mortality from vehicle strike or dog attack at present in areas that score 1 or 2 for koala occurrence. Areas which score 0 for koala occurrence and have no dog or vehicle threat present.	
	+1 (medium)	Evidence of infrequent or irregular koala mortality from vehicle strike or dog attack at present in areas that score 1 or 2 for koala occurrence, **OR** Areas which score 0 for koala occurrence and are likely to have some degree of dog or vehicle threat present.	✓ Some degree of Vehicle Threat present along Goolma Road.
	0 (low)	Evidence of frequent or regular koala mortality from vehicle strike or dog attack in the study area at present, **OR** Areas which score 0 for koala occurrence and have a significant dog or vehicle threat present.	
Recovery value	+2 (high)	Habitat is likely to be important for achieving the interim recovery objectives for the relevant context, as outlined in Table 1.	
	+1 (medium)	Uncertain whether the habitat is important for achieving the interim recovery objectives for the relevant context, as outlined in Table 1.	

Attribute	Score	Inland	Applicable to the proposal?
	0 (low)	Habitat is unlikely to be important for achieving the interim recovery objectives for the relevant context, as outlined in Table 1.	✓ Study area is not considered a habitat refuge nor does it provide important connectivity to large areas surrounding a habitat refuge.
Total	**4**	**Decision: Habitat not critical to the survival of the Koala— assessment of significance not required**	

▪ Offset requirements

The following updated credit requirement (refer to Table 3-6) is generated for the Project (inclusive of the new eastern transmission line, refer to Figure 3-5), and shows an increase in credits required.

Table 3-6 Credit requirements for the Project

Ecosystem Credits	Offset credits required
White Box Grassy Woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion (PCT 266)	322
Paddock Trees – White Box Grassy Woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion (PCT 266)	7
Subtotal:	**329**
Yellow Box Grassy Woodland on lower hillslopes and valley flats in the Southern NSW Brigalow Belt South Bioregion (PCT437)	256
Paddock Trees - Yellow Box Grassy Woodland on lower hillslopes and valley flats in the Southern NSW Brigalow Belt South Bioregion (PCT437)	25
Subtotal:	**281**
TOTAL	**610**

Species Credits	Offset Credits Required
Southern Myotis (*Myotis Macropus*)	5
Pink Tailed Legless Lizard (*Aprasia parapulchella*)	14
Glossy Black Cockatoo (*Calyptorhynchus lathami*)	204
Barking Owl (*Ninox connivens*)	204
Masked Owl (*Tyto novaehollandiae*)	204
TOTAL:	**631**

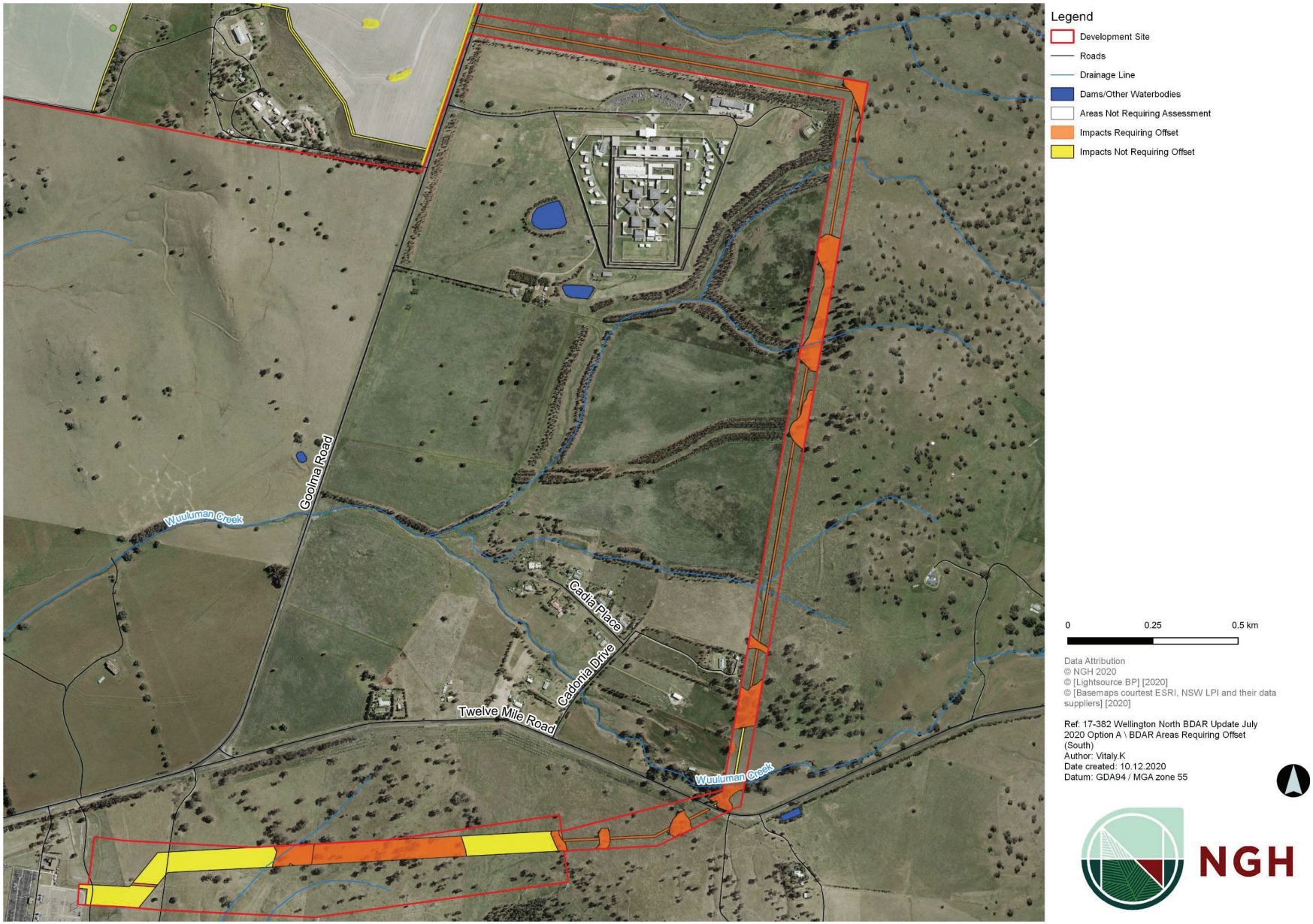

Figure 3-5 Impacts requiring offsets, not requiring offset and not requiring assessment (south)

3.1.6. Safeguards and mitigation measures

The safeguards and mitigation measures to manage the new eastern transmission line biodiversity impacts would be consistent with the EIS. Although the credit requirement would change, no additional safeguards would be required to manage biodiversity impacts.

3.2. Aboriginal Heritage

3.2.1. Approach

An Aboriginal Heritage desktop study was undertaken by NGH archaeologists Kirsten Bradley and Emily Dillon to assess if the proposed amendments would have a significant impact on the heritage values previously assessed for the Project by NGH as part of the Aboriginal Cultural Heritage Assessment (ACHA) and/or the Addendum ACHA (NGH 2018 and NGH 2019a). The proposed amendments include:

- Transmission line route
- Construction and operational site access
- Transport route
- Construction compound location

3.2.2. Aboriginal consultation

Additional consultation with the Registered Aboriginal Parties (RAPs) for this Project was also undertaken to inform the Aboriginal stakeholders of the proposed amendments. A summary of the desktop study assessing the proposed changes to the Project was sent as a letter via email to each RAP on the 1st of October 2020. A 28 day period was provided to each RAP to review, comment, and respond to the letter. A copy of the letter sent to the RAPs as part of the additional consultation undertaken for the proposed changes is provided in Appendix D.

No comments regarding the proposed changes were provided from any of the RAPs and the desktop heritage assessment provided in consultation with the RAPs is subsequently provided as the desktop assessment results below in this section.

3.2.3. Consultation with Agencies

A letter provided by Heritage NSW (dated 27/09/2019) outlined concern about the locally listed Noone Nyrang Homestead. The homestead has been since removed from the development footprint. Heritage NSW has provided subsequent advice that indicates there are no outstanding issues in the letter and support the proposal.

3.2.4. AHIMS search

The Aboriginal Heritage Information Management System (AHIMS) provides a database of previously recorded Aboriginal heritage sites in NSW. A search provides basic information about any sites previously identified within a search area. However, a register search is not conclusive evidence of the presence or absence of Aboriginal heritage sites, as it requires

that an area has been inspected and details of any sites located have been provided to the register to be added. As a starting point, the search will indicate whether any sites are known within or adjacent to the proposed changes to the proposal since the ACHA and Addendum ACHA were undertaken.

Given the extended timeframe which has lapsed since the AHIMS searches for the ACHA (NGH; 2018) and Addendum ACHA (NGH; 2019a) were undertaken a new search of the AHIMS database was conducted centred on the Wellington North Solar Farm Development Site which incorporates the proposed changes on the 1st of October 2020. The AHIMS Client Service Number was: 539763. The search area extended from Lat, Long: -32.5646, 148.8682 to Lat, Long: -32.447, 149.0548 with a buffer of 50 metres. There were 119 Aboriginal sites and no declared Aboriginal Places recorded in the search area. Of the 119 sites noted in the search a total of 95 sites were listed as valid, 23 sites as destroyed and 1 site as not a site.

The results of the AHIMS search are shown in Figure 3-6 and Table 3-7.

Table 3-7 Breakdown of previously recorded Aboriginal sites in the region.

Site Type	Number
Artefact	88
Restricted sites	12
Modified Tree	9
Artefact and Potential Archaeological Deposit (PAD)	2
Potential Archaeological Deposit (PAD)	2
Burial	1
Stone arrangement, Stone Quarry and Artefact	1
Stone Quarry and Stone Arrangement	1
Ceremonial Ring (Stone or Earth) and Artefact	1
Ceremonial Ring (Stone or Earth) and Modified Tree (Carved or Scarred)	1
Aboriginal Ceremony and Dreaming and Stone Arrangement	1
TOTAL	**119**

The AHIMS sites within the Development Site were all recorded and assessed in the ACHA and Addendum ACHA (NGH, 2018 and NGH, 2019a) previously undertaken for this Project. It should be noted that the single site listed as 'not a site' is located within the proposed transmission line corridor; however, this site is invalid as it was mistakenly submitted by NGH. This error has been rectified with AHIMS with the site listed as invalid/not a site however it is unable to be removed from the AHIMS database despite this data error.

An email was sent to Heritage NSW on the 21st of October 2020 to confirm that none of the restricted AHIMS sites would be impacted by the proposed amendments to the Proposal. An email reply on the 22nd of October 2020 from Heritage NSW Senior Heritage Information Officer confirmed that none of the restricted AHIMS sites would be impacted by the proposed amendments.

3.2.5. Desktop assessment results

The alignment of the new transmission route has been previously surveyed by NGH and Aboriginal community representatives on the 28th and 29th of November 2018 with the survey results reported on in the Addendum ACHA (NGH, 2019a). No further survey work is considered necessary for this proposed design alteration as it has been sufficiently assessed in the prior assessment undertaken for Aboriginal Heritage for the Project (NGH, 2018 and NGH, 2019a). The proposed alignment will not change any of the previous recommendations in the ACHA or Addendum ACHA. The AHIMS site shown in the proposed works area in the Figure 3-6 is noted to be invalid on AHIMS as it was incorrectly submitted by NGH. This error has been rectified with AHIMS with the site listed as invalid/not a site however it is unable to be removed from the AHIMS database despite this data error. Consequently, no additional valid sites beyond those listed in the ACHA and Addendum ACHA will be impacted by the proposed transmission line change.

Three access options were originally described and assessed as part of the EIS. Lightsource bp has now committed to all construction site access occurring via Goolma Road at Access 3. As part of this, an intersection upgrade is required to allow heavy vehicle access. This will require the upgrade of the intersection for 50 metres either side of the access point to allow for basic left hand turns and basic right hand turns. There has been previous heritage survey in the property adjacent to and along the fence line in this area by NGH and the proposed works are to occur within an extensively disturbed road corridor. NGH undertook an additional extensive AHIMS search of the area on the 1st of October 2020 (AHIMS ID 539763) and no additional AHIMS sites were noted to occur in the area. Consequently, NGH does not believe that an additional site inspection is warranted, due to the proximity of previous survey, disturbed nature of the area and a lack of sensitive landforms or previously recorded sites. NGH believed that the proposed works are unlikely to impact upon any *in situ* Aboriginal cultural heritage and the proposed works may proceed with caution. The proposed access works will not change any of the previous recommendations in the ACHA or Addendum ACHA.

As a result of this access point change, the originally proposed haulage route has also been amended. There are no proposed works associated with this change and consequently there is no potential for impact on Aboriginal cultural heritage and no further assessment is needed.

The construction compound area was originally proposed to be located near the construction site access point on Campbells Lane (Access Point 1); however, Proponent now propose it being located at the entrance of the new Goolma Road Access as shown in Figure 2-1. This area has been previously surveyed for Aboriginal cultural heritage as part of the original ACHA survey by NGH and Aboriginal Community representatives between the 19th and 27th of February 2018 and will not impact upon any additional Aboriginal cultural heritage sites beyond those previously assessed. This proposed design alteration has been sufficiently assessed in the prior assessment undertaken for Aboriginal Heritage for the Project (NGH, 2018 and NGH, 2019a). Consequently, NGH considers that no further assessment is required and that no additional sites beyond those listed in the ACHA and Addendum ACHA will be impacted by the proposed change.

3.2.6. **Potential impacts**

No additional valid Aboriginal heritage sites beyond those previously assessed as part of the ACHA and the Addendum ACHA would be impacted by the proposed changes.

The proposed changes to the proposal would not have an impact on the heritage values previously assessed for the Project as part of the ACHA and the Addendum ACHA (NGH, 2018 and NGH, 2019a).

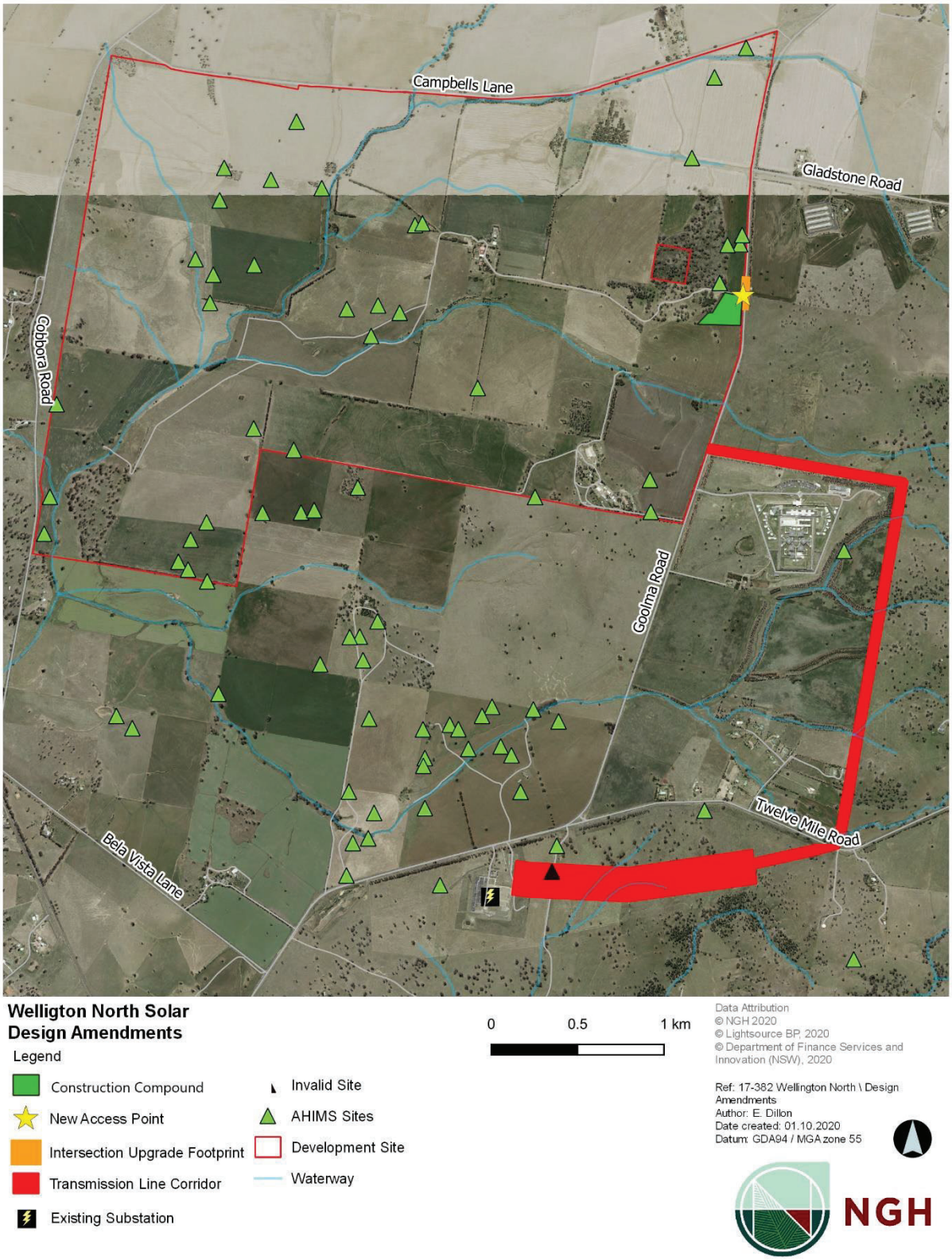

Figure 3-6. Location of proposed changes to AHIMS sites.

3.2.7. Safeguards and mitigation measures

The recommendations, safeguards and mitigation measures for the proposed changes in regard to Aboriginal heritage were not altered from those outlined in the initial EIS, ACHA and addendum ACHA for this Project.

3.3. Visual Amenity

3.3.1. Visual Impact assessment

NGH has completed a desktop assessment of visual amenity for the amendments described in this report.

The changes to the site access and transport route, relocation of the construction compound and number of construction personnel do not change the conclusions of the EIS Visual Impact Assessment for any particular receivers as the impacts would be the same or less. This is due to:

- the reasonable separation of receivers from the amended site access and upgrades proposed;
- traffic impacts of a similar nature to the existing traffic already travelling along the transport route including traffic associated with solar farms under construction; and
- separation of the construction compound from receivers.

As such, these amendments (physical changes to the proposal) are not discussed further within this section.

This VIA, therefore, only relates to the section of the new eastern transmission line between Twelve Mile Road and TransGrid's Wellington Substation. The change is to the alignment to provide construction options within a defined corridor. This corridor does not substantially change from that proposed in the previous amendment (NGH, 2019).

The environmental assessment of the potential impacts found that the amended new eastern transmission line is substantially the same as the development described in the EIS. The methodology in determining the visual impact rating is also consistent with the previous amendment. Views of the surrounding landscape and the rural character as viewed by residents located along Twelve Mile Road are considered to be reasonably maintained. Although the new eastern transmission line (southern portion) may be visible to residences fronting Twelve Mile Road and road users, impacts are considered to be minimal due to the separation provided by rural land and filtered views provided by existing vegetation (established trees).

The potential construction and operational impacts of the amendments to the new eastern transmission line do not require mitigation as shown in Table 3-8.

Table 3-8 Residual impact after proposed mitigation – Transmission Line

Viewpoint	Visual Sensitivity	Visual Effect	Potential impact	Visual mitigated residual impact
R14, 17, 18 (as the receivers affected by this amendment) and road users of Twelve Mile Road	Moderate	Low	Moderate	No change, remains Moderate. View direction generally north and south. Distance to site between approximately 340-397m (edge of the options corridor to the dwellings): • R14 is 397m north • R17 is 380m north • R18 is 340m north Land use is large lot residential. Elevation at site of dwellings approximately 360m AHD. Elevation at site of works approximately 340-400m AHD. Views of the transmission line will be limited by the separation proposed, minimal size/obstruction created by the transmission line structure and existing established trees. The existing built environment includes multiple high voltage overhead transmission lines connecting to the existing Wellington substation within close proximity to the proposed transmission line, as such, the proposed infrastructure is not considered out of character with the existing landscape. No mitigation measures are considered to be required for moderate impacts.

3.3.2. Summary

Three dwellings (R14, R17 and R18) will be greater than 340m from the proposed amended new eastern transmission line easement (options area) and a greater distance from the final location of the transmission line. No other dwellings would be impacted by these amendments. As such, the proposed amendments are not considered to require mitigation for any receivers.

3.4. Traffic and transport

3.4.1. Approach

The Traffic Impact Assessment for the proposed Wellington North Solar Farm, prepared by GHD, has been updated based on the proposed changes set out in Section 2 of this report. The updated report is provided in Appendix E and is summarised below. It includes

consideration of traffic impacts from the construction and operation phases of the proposal in accordance with the SEARs.

The vertical sight distance assessment was prepared by GHD for the strategic design of a Basic Right Turn (BAR) and an Auxiliary Left Turn (AUL) at the intersection between Goolma Road and the proposed Access Road. The assessment has been provided in Appendix F.

3.4.2. Existing environment

Existing road network characteristics

The surrounding road network of the proposed changes to the transmission line, site access and transport route include:

- **Goolma Road** which functions as a sub-arterial road with a north-south alignment. Goolma Road runs between Gulgong in the north and Wellington in the south, forming priority-controlled intersections at Mitchell Highway and Campbells Lane.
- **Twelve Mile Road** is a local road running in a north eastern alignment from Goolma Road near TransGrid's Wellington Substation to Goolma Road, 8.6km south of Goolma. The road is approximately 43.8km long and is used by local residents.
- **Mitchell Highway** forms part of the arterial road network and runs from Dubbo in the north to Bathurst to the south. In the vicinity of the Wellington North Solar Farm, Mitchell Highway has a north-south alignment and forms priority-controlled intersections at Goolma Road and Cobbora Road. Mitchell Highway is a state road providing access from the Wellington North Solar Farm to Wellington town centre. Access to the Wellington North Solar Farm via Mitchell Highway is provided through its intersection with Cobbora Road south-west of the site and its intersection with Goolma Road south of the site.

The proposed transmission line route would be accessed via Goolma Road and Twelve Mile Road. There are three access points, access point one will use existing gates on Goolma Road, the second access point will use existing gates on Twleve Mile Road and the third is the intersection of Goolma Road and Twleve Mile Road. At the proposed transmission line route, Goolma Road and Twelve Mile Road are both sealed with one lane in each direction and an undivided carriageway. There is unrestricted parking and no dedicated pedestrian, bicycle facilities or public transport.

Access to the main site would be located at the existing landowners driveway on Goolma Road and would be accessed from the south via the Mitchell Highway. Currently, the site access intersection does not provide a AUL(S)/BAR treatment, with no shoulder or road widening provided on the major road.

The results from the horizontal and vertical distances for Approach Sight Distance (ASD) assessment completed by GHD determined the requirements are met and the proposed location of the intersection's AUL will have negligible effects on existing sight distances.

Goolma Road traffic volumes

The identified daily traffic volumes on Goolma Road is shown in Figure 3-7 with the surveyed weekday average and seven day average (weekday and weekend) in Figure 3-8.

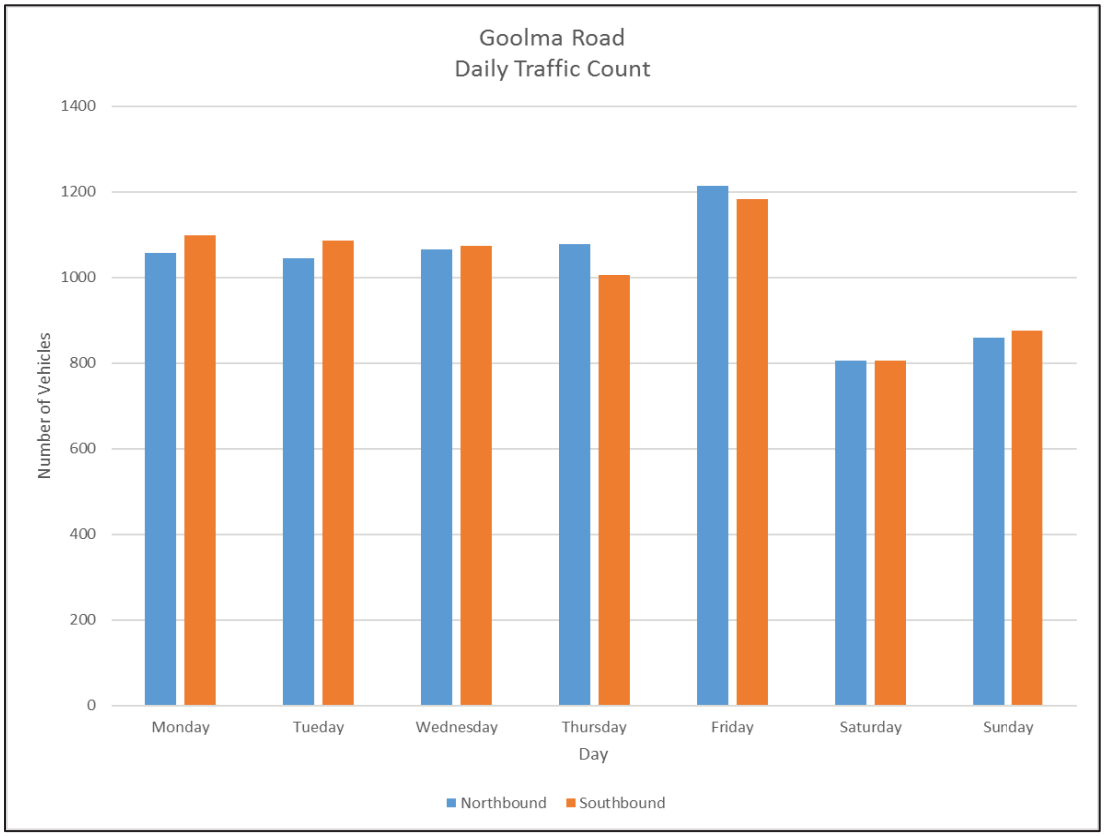

Figure 3-7 Daily traffic volumes on Goolma Road (GHD, 2020)

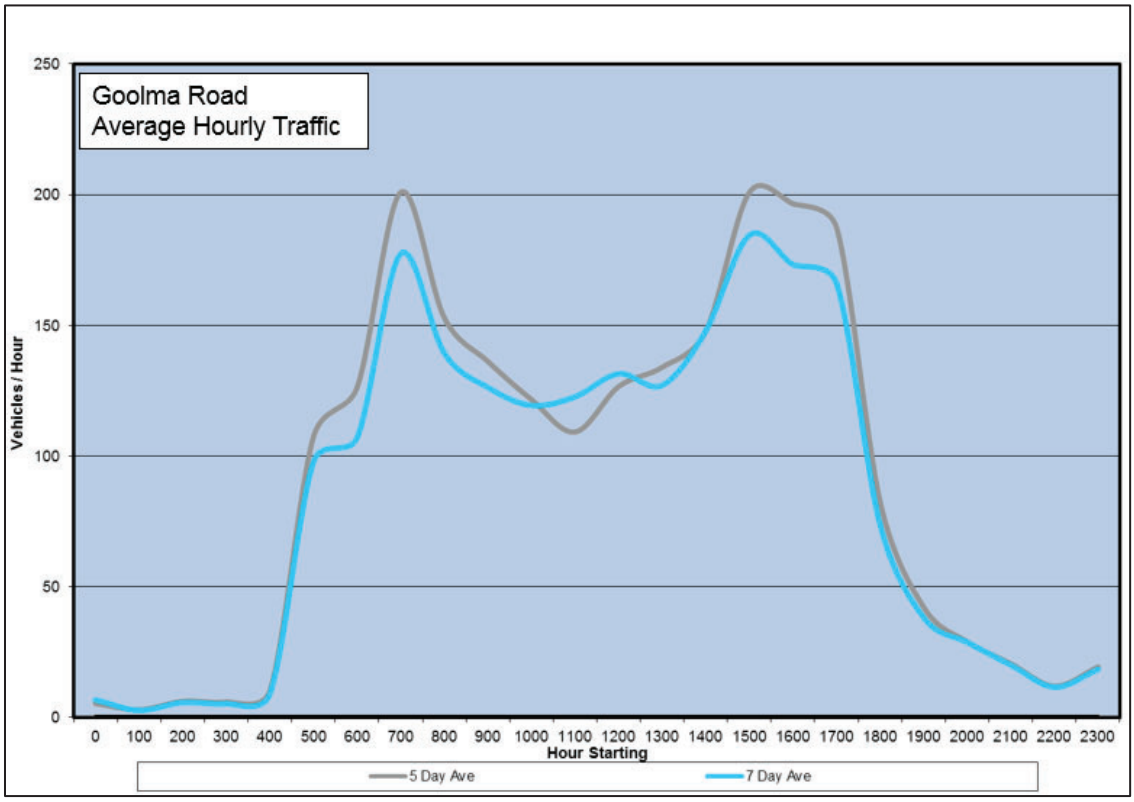

Figure 3-8 Weekday and seven day average hourly traffic profile on Goolma Road (two-way) (GHD, 2020)

Table 3-9 outlines the highest recorded vehicle movements within an hour period during the AM and PM periods, while Table 3-10 summarises 85 percentile traffic speeds and the percentage of heavy vehicles on Goolma Road.

Table 3-9 Peak hour average surveyed traffic volume on Goolma Road (GHD, 2020)

Goolma Road	Average Weekday AM Peak Hour (veh/h)*	Average Weekday PM Peak Hour (veh/h)*	Saturday Peak Hour (veh/h)*
Northbound	157	66	57
Southbound	44	135	94
Total	***201***	***201***	***151***

Notes:

(*) veh/h = vehicles per hour

Table 3-10 Key traffic data summary on Goolma Road (GHD, 2020)

Key Data Description	Amount
Weekday % Heavy Vehicles	18 %

Weekend % Heavy Vehicles	11 %
85 percentile speed	104.7 km/h

3.4.3. Potential impacts

Construction impacts

The potential traffic, transport and road safety impacts associated with construction of the Project relate primarily to the increased numbers of heavy vehicles on the road network which may lead to:

- Increased collision risks (other vehicles, pedestrians, stock and wildlife).
- Damage to road infrastructure.
- Associated noise and dust (particularly where traffic is on unsealed roads) which may adversely affect nearby receivers.
- Disruption to existing services (school buses).
- Reduction of the level of service on the road caused by platooning of construction traffic.

For the Project construction, including the new transmission line option, the peak construction workers and number of vehicles are different than that proposed in the EIS.

Daily construction traffic generation provided by Lightsource bp was based upon the current construction activity across Lightsource bp's Australian portfolio and extrapolated to be representative of the Wellington North Solar Farm.

During its peak construction period, consideration was given to how the workforce (consisting of some 400 workers) will be transported to and from the site and nearby population centres (i.e. to the town of Wellington, Dubbo and Orange) via a shuttle bus system. Such a system aims to reduce traffic generation within the surrounding road network, reduce parking demand on the Project site and improve- safety for the workers and the public, by reducing the fatigue of workers that would generally be required to drive between accommodation and the site.

Based on the information estimated by the client, the daily vehicle two-way trips outlined for the Project during the peak construction activity is summarised in Table 3-11.

Table 3-11 Peak daily trip generation (two-way) (GHD, 2020)

Vehicle Type	Number of Trips (two-way)
Light Vehicles	132
Staff Shuttle Buses	80
Heavy Vehicles	55
Total	***267***

Based on an anticipated modal split of 80 percent of the workers travelling by shuttle bus, it is estimated that this could generate 16 inbound and 16 outbound trips during each of the AM and PM peak periods. Additionally, the remaining 20 percent of workers travelling by private means would potentially car-pool. Assuming a rate of 1.2 persons per private vehicle, it is anticipated that such an arrangement would generate up to 66 inbound trips in the AM peak period and visa-versa in the PM peak period (total of 132 daily trips).

Heavy vehicle movements will be spread throughout the day.

It is anticipated there will be two over-size/over-mass vehicles during construction (one each to deliver the transformer and switchgear for the substation).

The construction of the transmission line would result in minimal traffic along Goolma Road and Twelve Mile Road. Vehicle access is expected to be of short duration Access is required at 3 locations for vehicle (up to 15 heavy vehicles and 40 light vehicles) movement efficiency. The three access points have the following vehicle movements during construction:

- Access Point 1 (Goolma Road gates) – up to 6 heavy vehicles and 16 light vehicles per day.
- Access point 2 (Twelve Mile Road gates) - up to 3 heavy vehicles and 8 light vehicles per day.
- Access point 3 (Twelve Mile Road and Goolma Road intersection) - up to 6 heavy vehicles and 16 light vehicles per day.

No road upgrades are anticipated for the construction of the transmission line. The access requirements are included in Appendix G.

The increase in traffic has potential to increase collision risks, damage to road infrastructure, sediment transfer, noise and dust and disruption to normal traffic impacts. This is likely to be minimal due to the nature of the construction of a transmission line. There is likely going to be limited additional traffic as the construction requires less equipment and should be constructed relatively quickly.

A review was undertaken at the intersection of Goolma Road and the proposed site access. This was established on the base 2018 traffic survey and the construction traffic volumes, notably for the left turn movement from the major road (considered as the worst turn movement) as vehicles will be arriving from the south during the AM period. Vehicles exiting the Project site (primarily in the PM period) will exit via the site access point and will be required to give way to through travelling vehicles along Goolma Road. Any queuing that may result, will be within the Project site and the intersection upgrade would ensure suitable visibility is maintained. The assessment results of the strategic design determined the horizontal and vertical distances for Approach Sight Distance (ASD) requirements are met and the proposed location of the intersection's AUL will have negligible effects on existing sight distances.

Based on the warrants, it is proposed that consideration could be given to the provision of a short auxiliary left turn lane (AUL(S)) from Goolma Road into the site (Figure 3-9). Although it is anticipated that all vehicles will be travelling to and from the south, incorporating shoulder widening on the eastern verge (i.e. BAR type treatment), would facilitate improved safety for southbound movement as well as facilitating the turn path of larger vehicles exiting the site, if required.

In conjunction with the AUL(S)/BAR treatment, it is recommended to advise travelling motorists of the potential increase in turning movements at the site access. This may incorporate truck-turning advance warning signs provided on both the northern and southern approaches to the intersection.

The treatments should be designed to accommodate articulated vehicles up to 19m in length (anticipated typical maximum vehicle length). Larger vehicles will require special permit and traffic management when required.

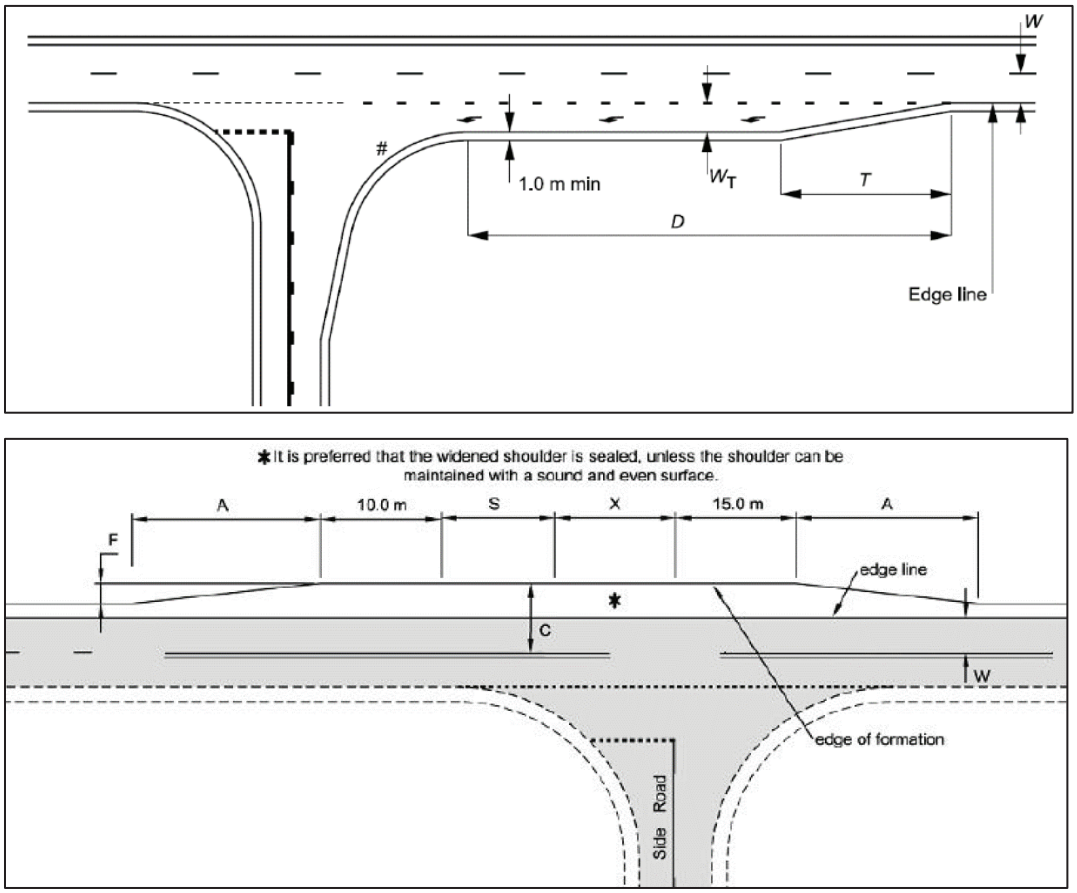

Figure 3-9 AUL(S)/BAL turn treatments (GHD, 2020)

A summary of the traffic impacts associated with the construction activity of the facilities that may occur concurrently with WNSF is summarised below.

Maryvale Solar Farm

- Access routes within the vicinity of the Wellington North Solar Farm site include:
  - Mitchell Highway from Dubbo to Wellington.
  - Cobbora Road and Maryvale Road.
  - Maryvale Solar Farm site Access off Seatonville Road.
- Period of construction: 12 months.
- Staff numbers: Up to 150 personnel.
- Estimated typical vehicle movements:
  - Light vehicles: 75 vehicle movements per day.
  - Heavy vehicles: 20 vehicle movements per day.
  - Use of a shuttle bus for workers to travel to and from site.

Construction vehicle activity would utilise Cobbora Road to access the site. The Wellington North Solar Farm proposes to use Goolma Road, therefore it is anticipated that there will be no cumulative impacts on the local road network associated with these two sites.

However, it is noted that the construction activity for Maryvale Solar Farm and the proposed Wellington North Solar Farm both utilise the Mitchell Highway as a common route to access each proposed development. The Mitchell Highway is a state-designated road which has the capacity to cater for regional and state traffic flow. It is considered that the cumulative impact from both proposed development's construction activity will have a minimal adverse impact on the network efficiency of the state road network. This assumption is supported by DPIE's Maryvale Solar Farm State Significant Development (SSD 8777) Assessment Report, dated December 2019, which outlines:

"Other than the Wellington North Solar Farm, no other approved or proposed Project in the Wellington area shares a common haulage route, except for sections of Mitchell Highway, which is part of the State road network and has sufficient capacity to absorb the associated construction traffic. For this reason, the Department considers that there would be negligible cumulative traffic impacts on the State road network and no road upgrades would be required in relation to cumulative traffic volumes."

Uungula Wind Farm

- Access routes within the vicinity of the Wellington North Solar Farm site include:
  - From Golden Highway along Saxa Road (also known as Cobbora Road to Michell Highway.
  - Mitchell Highway to Goolma Road.
  - Goolma Road to Twelve Mile Road.
  - Twelve Mile Road to the Uungula Wind Farm site.
- Period of construction: 24 to 30 months.
- Staff numbers: Up to 250 personnel.
- Estimated typical vehicle movements (Goolma Road):
  - Light vehicles: 240 vehicle movements per day (120 vehicles during peak hour).
  - Heavy vehicles: 90 vehicle movements per day (16 vehicles during peak hour).
  - Oversize/Overmass (OSOM) vehicles: Low volume and only on demand at specific times when required.
  - Possible use of a shuttle bus for workers to travel to and from site.

Construction activity for Uungula Wind Farm and the proposed Wellington North Solar Farm would both utilise Goolma Road for a section between the Mitchell Highway and Twelve Mile Road.

A summary of the cumulative traffic impact on Goolma Road between the Mitchell Highway and Twelve Mile Road is outlined in Table 3-12 and is also compared to the mid-block level of service as defined in the updated TIA (Appendix E).

Table 3-12 Goolma Road cumulative peak hour mid-block level of service (GHD, 2020)[1]

Location	Base (2018) vehicles (each-way) *	Additional vehicles (each-way) WNSF	Additional vehicles (each-way) Uungula Wind Farm ^	Total Vehicles (each-way)	Level of Service
AM peak hour					
Goolma Road					
- **Northbound**	157	85	136	378	B
- **Southbound**	44	19	0	63	A
Total	***201***	***104***	***136***	***441***	
PM peak					
Goolma Road					
- **Northbound**	66	19	0	85	A
- **Southbound**	135	85	136	356	B
Total	***201***	***104***	***136***	***441***	

Based upon the mid-block assessment of the road network and of the Project traffic generation and the Wellington North Solar Farm and cumulative impacts associated with Uungula Wind Farm, the major road network (Goolma Road) has additional capacity to cater for additional traffic flow.

With reference to the intersection of Goolma Road and Twelve Mile Road, the Uungula Wind Farm Transport Assessment prepared by Samsa Consulting outlined that:

"Under current traffic volumes, the current Goolma Road / Twelve Mile Road intersection layout (BAR: basic right-turn / BAL: basic left-turn) is considered to be adequate. Sight distance is more than satisfactory in all directions and the T-junction is quite wide with separate turn areas for east and west movements.

During Project construction, the increased traffic generation and in particular, the higher turning movements at the subject intersection may warrant auxiliary and/or protected

[1] [1] *(*) The 2018 traffic survey data which is located north of Twelve Mile Road. It is noted that Twelve Mile Road is a low volume road, it is therefore considered that the 2018 survey pdata can be representative of potential traffic volumes on Goolma Road south of Twelve Mile Road.*

(^) Assumes all the Uungula Wind Farm peak hour traffic volumes from the Samsa Consulting Transport Assessment are inbound from Wellington in the AM peak and outbound to Wellington the PM peak.

(channelised) turn lane intersection treatments, eg. AUR: auxiliary right-turn / AUL: auxiliary left-turn or CHR: channelised right-turn / CHL: channelised left-turn"

It should be noted that the Wellington North Solar Farm does not contribute to the higher turn movements within the intersection, with vehicles associated with Wellington North Solar Farm travelling along the major road (Goolma Road) straight through the intersection.

Further investigation was undertaken for the cumulative impacts at the intersection of the Mitchell Highway and Goolma Road as requested by TfNSW in December 2020. The intersection turn count was surveyed in peak periods on weekdays (AM and PM) and Saturday (AM) peak. The intersection performance results showed the intersection operates within an acceptable Level of Service (GHD 2021).

The cumulative impacts associated with the construction vehicle movements for Wellington North Solar Farm and Uungula Wind Farm for these peak periods is summarised below. There is sufficient lane storage available to accommodate cumulative construction traffic at this intersection (GHD 2021).

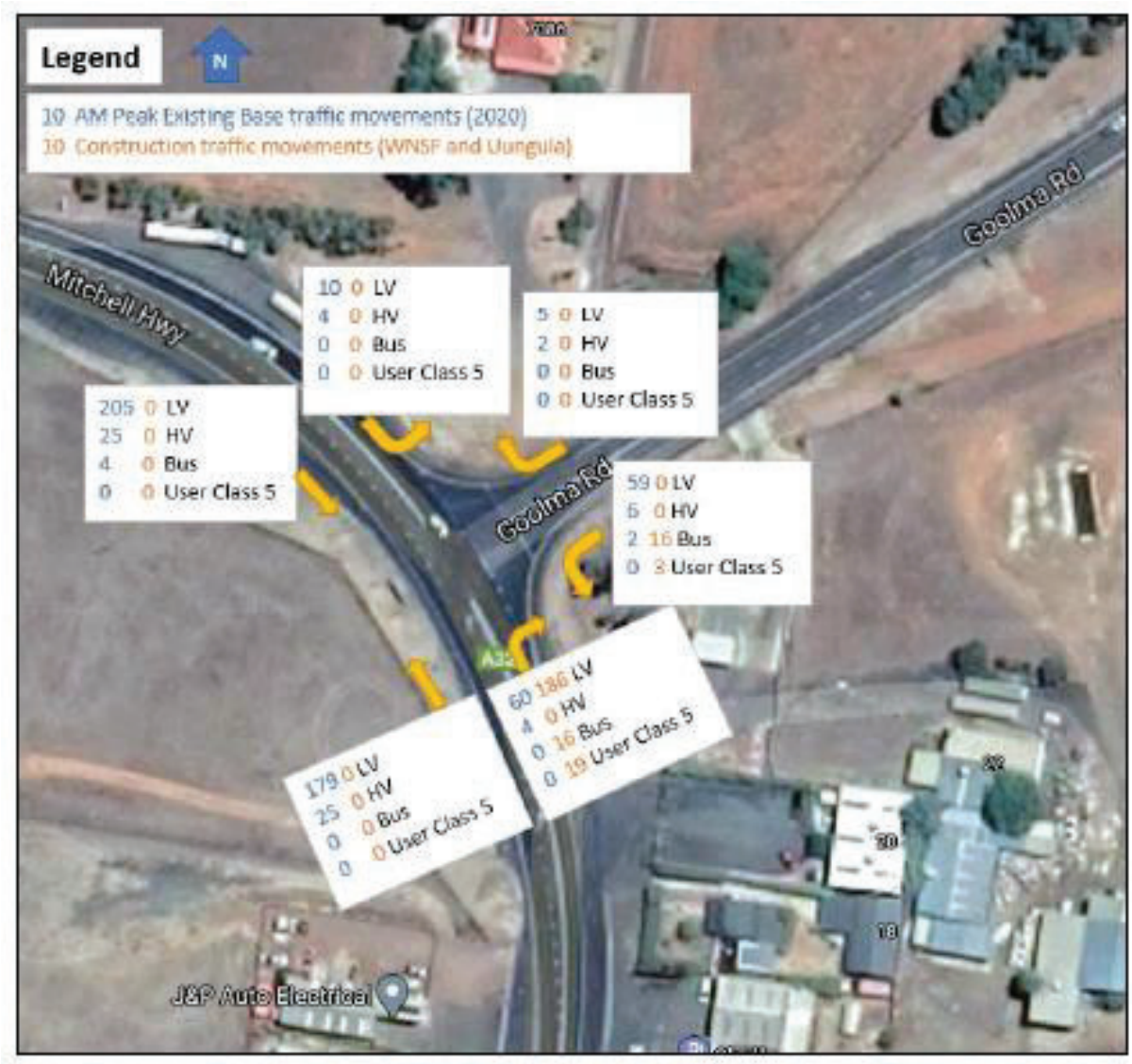

Figure 3-10 AM Peak cumulative construction traffic movement.

Table 3-13 Existing intersection performance AM Peak cumulative construction traffic movement.

Location	Construction scenario			
	Deg. of Sat v/c	**Average Delay sec**	**Level of Service**	**95% Back of Queue (metres)**
South: Mitchell Highway				
Right Turn	0.254	6.6	A	11
East Goolma Road				
Left turn	0.103	7.6	A	4
Right Turn	0.012	14.2	A	1
North: Mitchell Highway				
Left Turn	0.145	5.9	A	0

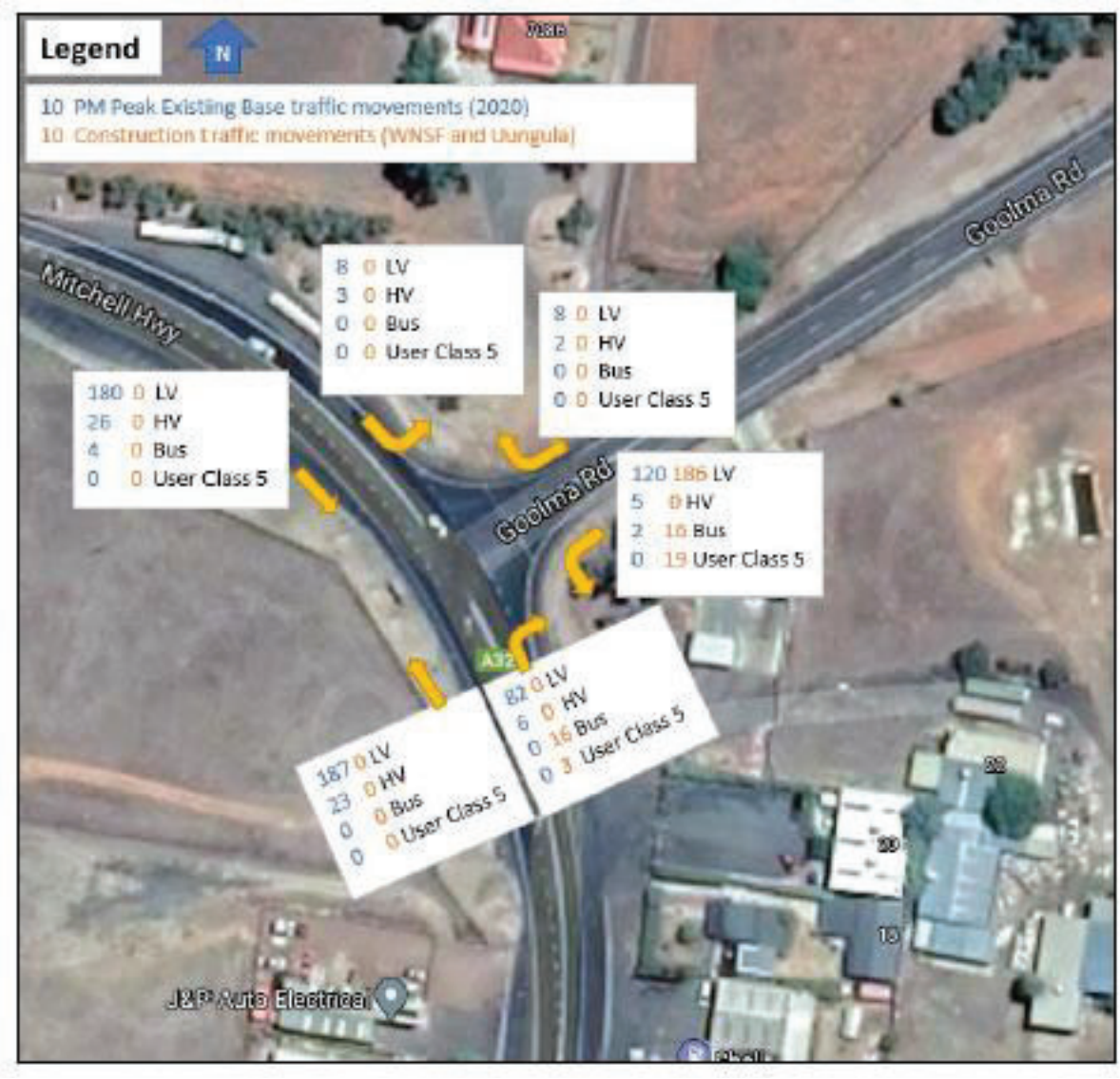

Figure 3-11 PM Peak cumulative construction traffic movement

Table 3-14 Existing intersection performance PM Peak cumulative construction traffic movement

Location	Construction scenario			
	Deg. of Sat v/c	Average Delay sec	Level of Service	95% Back of Queue (metres)
South: Mitchell Highway				
Right Turn	0.093	6.2	A	4

East Goolma Road				
Left turn	0.369	7.6	A	16
Right Turn	0.016	12.5	A	1
North: Mitchell Highway				
Left Turn	0.131	5.9	A	0

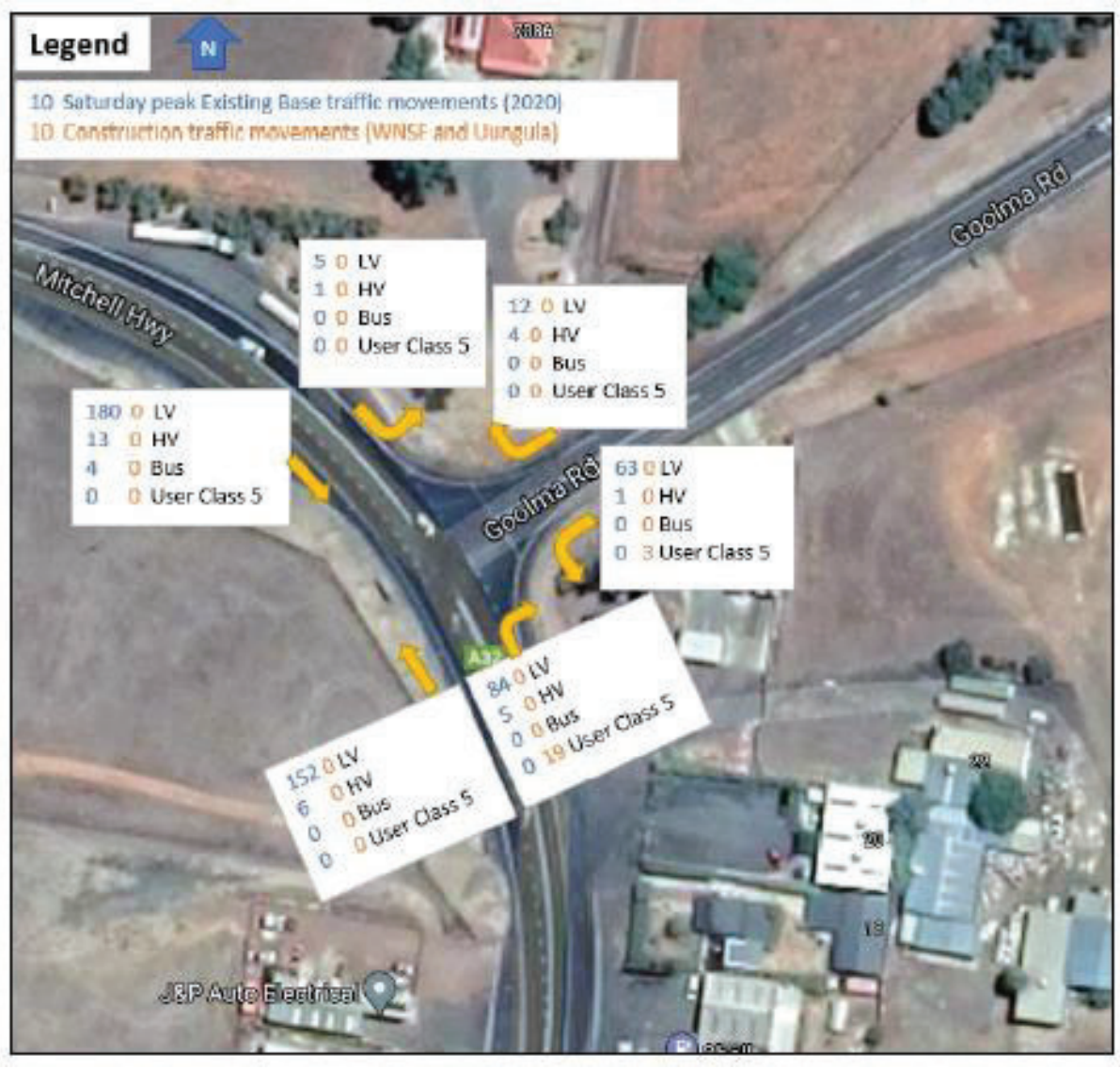

Figure 3-12 Saturday Peak cumulative construction traffic movement

Table 3-15 Existing intersection performance Saturday Peak cumulative construction traffic movement

Location	Construction scenario			
	Deg. of Sat v/c	Average Delay sec	Level of Service	95% Back of Queue (metres)
South: Mitchell Highway				
Right Turn	0.106	6.4	A	5
East Goolma Road				
Left turn	0.066	6.7	A	2
Right Turn	0.02	11.9	A	1
North: Mitchell Highway				
Left Turn	0.116	5.7	A	0

Operational impacts

It is considered that the traffic generated during operation will consist of minor traffic movements in association with the maintenance of the Wellington North Solar Farm. It is anticipated that traffic movement required during maintenance and monitoring of the Wellington North Solar Farm would be much less than construction traffic, with five heavy vehicle movements and 10 light vehicle movements a day during operation. Therefore, the road network would continue to operate satisfactorily post-construction, subject to the recommendations outlined in the construction traffic generation assessment being carried out.

Decommissioning impacts

If the Wellington North Solar Farm is decommissioned in the future, it is considered that the traffic generated during decommissioning will consist of less daily vehicular movements than the construction of the Wellington North Solar Farm. Therefore, the road network would continue to operate satisfactorily during the demolition phase, subject to a future review of demolition impacts and implementation of a suitable construction traffic management plan.

3.4.4. Safeguards and mitigation measures

After reviewing the updated Traffic Impact Assessment, an additional mitigation measure has been included to account for the intersection treatment required at the construction and operational site access point on Goolma Road. Given that site access is no longer proposed at Cobbora Road, the mitigation measure relating to the intersection treatment at that access point has been removed.

The complete set of updated mitigation measures are presented below. New measures from this Amendment Report are in **Bold,** removed measures are ~~**striked out**~~**.**

PC: Pre-construction, C: Construction, PO: Pre-operation, O: Operation, D: Decommissioning

ID.	Mitigation measure	C	O	D
Traffic, transport and safety				
1	The following intersections treatments would be undertaken in consultation with Dubbo Regional Council: • ~~**The intersection of Cobbora Road / Campbells Lane would be upgraded to provide a BAR/BAL turn type treatment including shoulder widening on Cobbora Road (major road);**~~ • ~~**The proposed site access on Campbells Lane would be designed to provide BAR/BAL turn type treatment; and**~~ • Intersection treatments would be designed to accommodate articulated vehicles of 19 m in length. • All gates will be setback a minimum of 26 metres from the property boundary to permit a B Double vehicle to fully stand within the property boundary and not overhang onto the road reserve while any access gates are being opened or closed.	Design stage		
2	A Haulage Plan would be developed with input from the roads authority, including but not limited to: • Assessment of road routes to minimise impacts on transport infrastructure. • Scheduling of deliveries of major components to minimise safety risks (on other local traffic). • Consideration of cumulative traffic loads due to other local developments. • Traffic controls (signage and speed restrictions etc.).	PC		D
3	Upon determining the haulage route(s) for construction vehicles associated with the Project, and prior to construction, undertake a Road Dilapidation Report. The report would: • Assess the current condition of the road(s)	PC		

ID.	Mitigation measure	C	O	D
	• Describe mechanisms to restore any damage that may result due to traffic and transport related to the construction of the Project. • Be submitted to the relevant road authority for review prior to the commencement of haulage.			
4	~~**A pavement review would be undertaken and bituminous surface be applied to Campbells Lane between Cobbora Road and the site access to reduce pavement degradation and improve driver safety. The bitumen surface would be in accordance with Dubbo Regional Council's rural road standard including being a minimum of 7.5 metre wide bitumen sealed two-way carriageway.**~~	~~**C**~~		
5	A Traffic Management Plan would be developed as part of the CEMP and DEMP, in consultation with the Dubbo Regional Council and Roads and Maritime Services (RMS). The plan would include, but not be limited to: • The designated routes of construction traffic to the site. • Carpooling/shuttle bus arrangements to minimise vehicle numbers during construction and ensure that warrants provided in the Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections that apply to major road turn treatments are maintained within the limits of the proposed **AUL(S) / BAR turn** treatments. • Identify specific road hazards associated with the area including not limited to fog, wet weather, frost and wildlife. • Pedestrian management - Site access is to be restricted to authorised personnel only and existing employees on site. Pedestrian access to and around the site is to be maintained at all times. Within the site pedestrian travel paths are to be maintained to key areas such as building entrances and be free from trip hazards. • Scheduling of deliveries. • Community consultation regarding traffic impacts for nearby residents and school bus operators. • Consideration of impacts to the railway. • Traffic control plans (speed limits, signage, etc.). • Procedure to monitor traffic impacts and adapt controls (where required) to reduce the impacts. • Providing a contact phone number to enable any issues or concerns to be rapidly identified	**PC**		**D**

ID.	Mitigation measure	C	O	D
	and addressed through appropriate procedures.			
6	**The following intersections treatments must be undertaken prior to construction:** • **The intersection of Goolma Road and site access be upgraded to provide a short Auxiliary Left turn lane AUL(S) northbound and a Basic Right turn lane (BAR) southbound.** • **Intersection treatment should be designed to accommodate articulated vehicles of 19 m in length. Note: larger vehicles will require permits and traffic management.**	**PC**		

3.5. Other environmental aspects

The following aspects were assessed by desktop assessment, with targeted specialist input as required (historic heritage, hydrology, noise and vibration). No additional site work or modelling is considered to be required for these matters.

Table 3-16 Assessment of the proposed amendments

Environmental factor	Existing environment of areas of proposed amendments	Potential impacts	Updated mitigation measures
Noise	The proposal is located in a regional setting, approximately 7km north east of Wellington. The surrounding land uses to the proposed solar farm are generally agriculture, including cropping and cattle and sheep grazing. Noise sources in the locality include traffic along Goolma Road, Twelve Mile Road and agricultural activities such as the operation of large harvesters, tractors, haulage trucks, irrigation pumps, quad bikes and 4WD vehicles. The nearest non-involved residential dwelling is approximately 110m north of the Project site (R4). There are seven residential receivers within the vicinity of the proposed new transmission line route (R14, R17-R22).	A Construction and Operational Noise and Vibration Assessment for the Wellington North Solar Farm EIS (NGH, 2018) was undertaken by Renzo Tonin and Associates. It included consideration of noise and vibration impacts from the construction and operation phases of the proposal. The assessment was updated for the first Amendment Report (NGH, 2019) to consider the proposed amendments to the transmission line route. In consultation with Renzo Tonin and Associates, the Construction and Operational Noise and Vibration Assessment (Renzo Tonin, 2019), has been reviewed to consider impacts of the proposed amendments. The changes to the transmission line, site access and transport route, the number of construction personnel and the relocation of the site access construction compound do not change the conclusions of the Construction and Operational Noise Assessment Report as the impacts would be less or the same.	No additional mitigation measures are required.

<table>
<tr><th>Environmental factor</th><th>Existing environment of areas of proposed amendments</th><th>Potential impacts</th><th>Updated mitigation measures</th></tr>
<tr>
<td>Soils and agricultural land capability</td>
<td>The Land and Soil Capability Mapping in NSW shows that the Project site area (including the new eastern transmission line) is Class 3 and Class 6. The following table provides the percentage of classes within the site.
<table>
<tr><th></th><th>Area (Ha)</th><th>% Coverage</th></tr>
<tr><td>Development footprint</td><td>819</td><td>100</td></tr>
<tr><td>Class 3</td><td>807</td><td>99</td></tr>
<tr><td>Class 6</td><td>12</td><td>1</td></tr>
</table>
The topography of the site access location and transmission line corridor is flat to undulating.

The site access point intersection at Goolma Road , the northern part of the transmission line adjacent to the Wellington Correctional Centre and the southern part of the transmission line at TransGrid’s Wellington Substation include the soil</td>
<td>Construction

The construction of the transmission line and intersection upgrades would disturb soils through excavation and vegetation clearing.

It is identified that the soils onsite have a moderate to high erosion risk. Soils have been previously disturbed by agriculture activities.

The disturbance of soils has the potential to result in the following impacts:
• Erosion and sedimentation could result in loss of top soils and impact waterways.
• Compaction of soils in hardstand areas and access tracks.
• Machinery and vehicles have potential to track sediments onto public roads.
• Expose buried contaminants (pesticides and hydrocarbons).

The construction soil impacts are considered minor as they would be restricted to pole footings and minor compaction due to access.

During the construction of the transmission line there would be a temporary removal of agricultural production along the route. This would be restricted to during construction.</td>
<td>The following additional mitigation measure is proposed to manage the low potential naturally occurring asbestos:

Prior to intrusive works (construction), a preliminary sample and analysis report is to be completed by an independent NSW Safework Licensed Asbestos Assessor (LAA) to determine the presence/absence of naturally</td>
</tr>
</table>

Environmental factor	Existing environment of areas of proposed amendments	Potential impacts	Updated mitigation measures
	landscape Bodangora ('bz'). This soil landscape has the following limitations (Lawrie and Murphy, 1998): • High erosion hazard under cultivation and low cover levels. • Moderate fertility. • Friable surface soils. • Moderate to high shrink-swell potential in subsoils. • Aggregated clays may leak in earthworks. The section of the transmission line east of the Wellington Correctional Centre and south of Twelve Mile Road includes the soil landscape Namina ('na'). This soil landscape has the following limitations (Lawrie and Murphy, 1998): • High erosion hazard under cultivation and low cover levels. • Moderate fertility. • Friable surface soils. • Moderate to high shrink-swell potential in subsoils.	**Operation** All areas disturbed during construction would require rehabilitation, where groundcover would be established, monitored and maintained as part of existing commitments. During operation, cropping and grazing would be able to still occur along the transmission line route. The transmission lines would be similar to other transmission lines in the area. Equipment would be able to access underneath the transmission line, in the case it was constructed overhead. There would be no permanent access track underneath the transmission line, however access would be required intermittently for maintenance. No land use conflicts are anticipated for existing adjacent agricultural land uses or future agricultural land uses on the Development Site or adjacent lands during construction. The construction and operational potential impacts of the proposed changes do not vary substantively from what was presented within the publicly exhibited EIS.	occurring asbestos fibres within the Development Footprint.

Environmental factor	Existing environment of areas of proposed amendments	Potential impacts	Updated mitigation measures
	• Steep slopes often with rock outcrop. • Aggregated clays may leak in earthworks. A search of the Environmental Protection Authority (EPA) *Contaminated Lands Record of Notices* for the Dubbo LGA as of 04/11/2020, did not reveal any sites within close proximity to the site. A review of EPA *List of NSW Contaminated Sites Notified to EPA as of* 22/10/2020 did not reveal any sites notified to the EPA related to the Development Site.		

	Two sections of the transmission line corridor are mapped as Biophysical Strategic Agricultural Land (BSAL). The first section is from Goolma Road and along the northern boundary of the Wellington Correctional Centre. The other section is along Twelve Mile Road to TransGrid's Wellington Substation. The intersection upgrade at the Goolma Road site access is mapped as BSAL. A search of the Statewide asbestos potential dataset (Department of Regional NSW, 2015) was undertaken on the 16th December 2020. The search identified an area of 530ha within the Development Site, and 444ha within the Development Footprint as having a low potential for naturally occurring asbestos to occur within 10m of the surface. There is no potential for naturally occurring asbestos to occur within the transmission line corridor. The current land management along the transmission line corridor is dominated by grazing. Lucerne and kale have been planted along the southern section of the route. The site is unlikely to have sustained cropping.		

Environmental factor	Existing environment of areas of proposed amendments	Potential impacts	Updated mitigation measures
Compatibility within existing land uses	The proposed new transmission line route and intersection upgrades are located within land zoned RU1 Primary Production, SP2 Classified Road and Electricity supply. The current land use along the transmission line is grazing. Lucerne and Kale have also been planted along the southern section of the route. Adjacent land uses include: • Agricultural production (cropping and grazing, poultry farming). • Residential (large rural holdings as well as smaller lot subdivisions). • Industry and commercial including the Wellington Correctional Centre and Wellington Substation. One exploration licence (EL) applies to the transmission line, EL 8505 owned by Drummond West Pty Ltd. Consultation with has been undertaken with Drummond West Pty Ltd as part of the Project. One exploration licence (EL) applies to the intersection upgrade for site access, EL 6178 owned by Modelling Resources Pty	**Construction and decommissioning:** During the construction and decommissioning of the transmission line and intersection upgrades, potential impacts to surrounding land uses may include: • Residences located near to the site may experience noise, dust and traffic during construction. These are considered to be temporary and manageable impacts. No impacts on the use of any recreational areas would occur. • There would not be able to be any extraction of minerals onsite during the construction period, affecting mineral lease holders (nor during operation). Due to the proposal being highly reversible however, mineral exploration would not continue to be sterilised in the long term, post decommissioning. The relevant leaseholders have been notified of these restrictions • There is unlikely to be any impacts on aviation or aerial spraying during construction of the transmission line. The proposed changes to the site access during construction would reduce the potential cumulative impact with other proposed developments in the area.	No additional mitigation measures are required.

Environmental factor	Existing environment of areas of proposed amendments	Potential impacts	Updated mitigation measures
	Ltd. Consultation with has been undertaken with Modelling Resources Pty Ltd as part of the solar farm Project. The transmission line would intersect a small portion of Crown Land (paper road) at the north eastern corner of the Wellington Correctional Centre, this is not changed with this amendment.	The use of only Goolma Road to access the site during solar farm construction would reduce the number of vehicles on Cobbora Road which is used by other developments in the region. **Operation** The installation of transmission line infrastructure would not impact on any flight paths or present a hazard to aircraft. Steel transmission line poles may cause glint or glare depending on the sun angle. This is unlikely to impact nearby receivers due to the passing nature of the potential glint and glare. The intersection upgrades would result in improved traffic flow on Goolma Road in the long term. The amended transport route would no longer impact Campbells Lane and Cobbora Road. The potential construction and operational impacts of the proposed changes do not vary substantively from what was presented within the publicly exhibited EIS. This proposed development is considered to not be inconsistent with the Rural Lands and Primary Production SEPP aims specifically to reduce land use conflict and sterilisation of rural land by balancing primary production, residential development and the	

Environmental factor	Existing environment of areas of proposed amendments	Potential impacts	Updated mitigation measures
		protection of native vegetation, biodiversity and water resources.	

Historic Heritage	Heritage database searches including the Australian Heritage Database, NSW State Heritage Inventory and the *Wellington Local Environmental Plan 2012* showed one historic heritage site located within the Development Site, Noonee Nyrang Homestead, listed on the Wellington Local Environmental Plan 2012 (NSW). The local listing for the property has identified that it has historical and aesthetic heritage signific ance at a local level. A European survey marker tree was identified in the EIS as having potential for historic heritage significance within the Development Site. Consultation with Dubbo Council's Planning Services Team Leader and Heritage Advisor (22 June 2018), which included a site inspection, determined that these features have no special significance and that Council would not object to their removal. No historic heritage items are within the areas affected by the proposed amendments. There is no evidence of any permanent or significant structures of features being constructed within the amended proposal area. There is no evidence to suggest the	There are no items of historic heritage and no historic archaeological potential within the areas affected by the proposed amendments. An unexpected finds protocol would be followed at all stages of development to ensure that any unexpected historical finds, features or subsurface deposits are correctly managed and assessed (NGH, 2019c).	No additional mitigation measures are required.

Environmental factor	Existing environment of areas of proposed amendments	Potential impacts	Updated mitigation measures
	existence of subsurface archaeological deposits (NGH, 2019c). The closest listed heritage item outside of the Development Site is the Narrawa Homestead located 754m south of the Wellington North Solar farm boundary. The homestead is listed in the Wellington LEP (2012) and is shown in Figure 2-2.		
Flooding	The proposed amended eastern transmission line route is not mapped as a flood risk or flood planning area (Geoscience Australia, 2019; DPE; 2019). The proposed amendments to the transmission line route does not affect the previously described intersection of the line with Wuuluman Creek and four of its tributaries along the eastern section between the Wellington Correctional Centre and Twelve Mile Road. The relocated site access and construction compound are outside of the flooding area extent identified in the Hydraulic and Hydrological Analysis prepared for the EIS.	The potential impacts of the proposed changes do not vary substantively from what was presented within the publicly exhibited EIS and previous amendment (NGH, 2019).	No additional mitigation measures are required.

Environmental factor	Existing environment of areas of proposed amendments	Potential impacts	Updated mitigation measures
Water quality and water use	The proposed amendments to the transmission line route does not affect the previously described intersection of the line with Wuuluman Creek and four of its tributaries along the eastern section between the Wellington Correctional Centre and Twelve Mile Road. Groundwater depth ranges between approximately 12.2 to 17.4 meters across the Project site locality. There are no bores within proximity of the proposed amendments to the transmission line or site access (DPI, 2019). The *Wellington Local Environmental Plan 2012* identifies the transmission line route as groundwater vulnerable, suggesting groundwater has potential to be intercepted. There are a number of low and moderate potential terrestrial groundwater dependent ecosystems (GDEs) mapped along the proposed transmission line route (BOM, 2019) site, including: • *E. conica, E. melliodora, E. macrocarpa.*	**Construction** The proposed amendments to the transmission line and site access point would not alter any existing water drainage patterns due to the minimal disturbance. Impacts to groundwater during construction and decommissioning are unlikely to occur due to the depth of groundwater. Water use during construction is expected to be consistent with the EIS. Up to 55ML per annum during construction. **Operation** The operation of the transmission line is unlikely to impact on water quality. Water is unlikely required during the operation of the transmission line. The potential construction and operation impacts of the proposed amendments do not vary substantively from what was presented within the publicly exhibited EIS.	No additional mitigation measures are required.

Environmental factor	Existing environment of areas of proposed amendments	Potential impacts	Updated mitigation measures
	• *E. microcarpa/Dodonaea viscosa subsp. Cuneate, Acacia buxifolia.* • *E. blakelyi, E. melliodora, E. bridgesiana/Acacia dealbata.* • *Maireana microphylla, Pimela neo-anglica, Sclerolaena birchii/Dichanthium.* • *E. albens/Acacia decora, Acacia implexa, Acacia deanei.*		
Social and economic impacts	The proposal site lies within Dubbo Regional Council LGA. Within a 10km radii are the town centres of Bodangora at 3.4km north east and Wellington at 7km south. Although previously dominated by the agriculture industry, between 2011-2016 there was a huge decline in jobs within this sector. The visual impact of solar farms has been notably an issue amongst community attitudes in agriculturally dominant areas such as these. Public concern also encompasses construction noise (refer Section 3.5), traffic issues (refer Section 3.4), surrounding property values and the decrease in agricultural land available (refer	**Construction** The proposed transmission line is part of the Wellington North Solar Farm proposal. The proposal would assist in providing direct economic stimulus to the Orana region, utilising up to 400 staff during peak construction. Many of these would be drawn from the local area, hence increasing employment opportunities. Previously included commitments and the additional measures to prepare an Accommodation and Employment Strategy (A&ES) prior to the commencement of construction would alleviate potential influx impacts to accommodation. The proposed transmission line and road upgrades associated with site access would be visible during construction for receivers along Goolma Road and Twelve Mile Road and within the R5 large lot subdivision located on Cadonia Drive and Cadia Place.	No additional mitigation measures are required.

Environmental factor	Existing environment of areas of proposed amendments	Potential impacts	Updated mitigation measures
	Section 3.5). These are addressed in other sections. Bordering the proposed alignment of the transmission line is the Wellington Correctional Centre. Goolma Road provides a connection between Wellington to the south and Gulgong to the north. The peak hour average surveyed traffic volume on Goolma Road is 201 vehicles per hour.	The construction would also result in potential noise, dust and traffic impacts for nearby receivers. (These matters are discussed in Section 3.3 and within this table). During construction of the intersection upgrades, there would be temporary disruptions to traffic. **Operation** The proposed amended transmission line visual impacts are discussed at Section 3.4 of this report. The proposal has potential to increase economic security to rural economies through the following means: • Diversification of employment opportunities and income streams. • They provide a substitute for carbon emission producing electricity production that is stable and renewable, and consistent with State and National greenhouse emission reduction objectives. The proposed intersection upgrades at Goolma Road would result in long term improvements to traffic flow and safety along Goolma Road.	

Environmental factor	Existing environment of areas of proposed amendments	Potential impacts	Updated mitigation measures
		The potential construction and operation impacts of the proposed changes do not vary substantively from what was presented within the publicly exhibited EIS.	
Bushfire	The proposal site is predominantly grassland with small patches of remnant vegetation. Sites of remnant vegetation are generally prone to bushfire risk. The area of proposed amendments are not identified as bushfire prone land.	**Construction** The construction of the transmission line has the potential to increase the risk of bushfire largely due to the increase in potential ignition sources associated with construction. These sources include; the use of power tools, hot work activities, sparks and contact ignition from vehicles, smoking onsite and electrical faults. With the implementation of mitigation measures the identified risks can be managed. **Operation** Operational risks for this transmission line include powerline failure and contact between vegetation and the powerlines. With the implementation of mitigation measures the identified risks can be managed. The potential construction and operation impacts of the proposed changes do not vary substantively from what was presented within the publicly exhibited EIS.	No additional mitigation measures are required.
Electric and magnetic fields	Electric and magnetic fields (EMF) are produced through the use of electricity when both magnetic and electric fields are produced. While short-term exposure to	**Construction** There is low potential for EMF impacts during the construction of the transmission line. The maximum	No additional mitigation

Environmental factor	Existing environment of areas of proposed amendments	Potential impacts	Updated mitigation measures
	high levels can be harmful no major public health concerns have emerged during the decades of research. The International Commission on Non-Ionizing Radiation Protection have implemented exposure limits. In regard to this proposal, while the 132 kV to 330 kV transmission line would produce EMF, it would be well within the exposure limits.	magnetic field of the proposed transmission line is well under the 200μT and 1000μT limits respectively recommended for public and occupational exposure. Exposure to EMFs during the construction of the transmission line would be short term, therefore the effects are likely to be negligible. **Operation** During the operational phase the magnetic fields are expected to be well within the public and occupational exposure levels and the electric fields would be minimal using the Principle of Prudent Avoidance to design. The potential construction and operation impacts of the proposed changes are substantially the same as what was presented within the publicly exhibited EIS as follows: Although the line configuration has been amended from the original EIS, the Project is compliant with the *International Commission on Non-Ionizing Radiation Protection (ICNIRP) guidelines for electric, magnetic and electromagnetic fields.* The statements made in section 8.4 ELECTROMAGNETIC FIELDS of the EIS remain true and correct, specifically, the following statement is relevant for the new eastern transmission line '*The existing and proposed overhead powerlines*	measures are required.

Environmental factor	Existing environment of areas of proposed amendments	Potential impacts	Updated mitigation measures
		are less than the recommended 5kV/m and 10kV/m limits' (pg 245. NGH, 2018 v2.2).	
Air quality and climate	The air quality within the Dubbo Regional LGA is considered to be of the general high quality that consists across the rural setting of NSW. Although typically impacted by vehicle emissions, dust, mining, agricultural activities and emissions from house fires and bush fires, the site remains of a high air quality. A search of the National Pollutant Inventory (Australian Government, 2020) identified 12 facilities within the Dubbo Regional Council LGA that are required to record emissions, none of which are in close proximity to the Project site. The Project site is located within the South Western Slopes Bioregion consisting of a sub-humid climate with an annual mean maximum temperature of 24.4 °C . As the effects of climate change increase it is expected there would be an increase in hot days and fewer cold days coupled with rainfall decline. There is also expected to be an increase in extreme events including	**Construction** The largest potential impact in regard to the air quality is the dust created from earthworks and vehicle movement on unpaved surfaces. The construction of the proposed transmission line would have minor ground disturbance. Emissions would also be generated through the use of vehicles and machinery. The emissions are considered negligible due to the minimal equipment required for the transmission line. Climate would not be impacted by this aspect of the proposal. **Operation** The operation of the transmission line is unlikely to impact on air quality or climate. The transmission line would require minimal maintenance. The potential construction and operation impacts of the proposed changes do not vary substantively from what was presented within the publicly exhibited EIS.	No additional mitigation measures are required.

Environmental factor	Existing environment of areas of proposed amendments	Potential impacts	Updated mitigation measures
	flood, drought and bushfires. As such, many of the agricultural farms come under risk.		
Resource use and waste generation	The resource use for this proposal site are the same as those outlined in the EIS in Table 8-12. The policy for waste management and generation is also detailed in the EIS and has not changed. The main EPA licensed landfill of relevance to the Project is in Dubbo; the Whylamdra Waste and Recycling Facility in Dubbo.	**Construction** The proposed amendments would require minimal resources and none that are currently limited or restricted. There are a number of possible sources of solid waste that would be produced during the construction phase. This may include packaging materials, excess building materials, scrap material and excavation of topsoils and vegetation clearing. However, the waste generated is expected to be minimal. **Operation** During the operational phase there is not expected to be any waste produced. Furthermore there are no resources used during the operational phase, except in the instance that the transmission line requires maintenance. The potential construction and operation impacts of the proposed amendments do not vary substantively from what was presented within the publicly exhibited EIS.	No additional mitigation measures are required.

Environmental factor	Existing environment of areas of proposed amendments	Potential impacts	Updated mitigation measures
Cumulative	Proposed developments within the locality or region which may contribute to the cumulative impacts of the Project include: • The Wellington Solar Farm, proposed by First Solar, is located directly south of the proposal and is currently under construction. • The Maryvale Solar Farm, proposed by Photon Energy, would be 2km north west of the proposal site. The proposal has been approved and construction is expected to begin in Q4 2021. • The Uungula Wind Farm, proposed by CWP Renewables, would be 40km east of the proposal site. The proponent is currently responding to submissions.	Potential cumulative impacts are primarily associated with the following issues: • Biodiversity impacts. • Noise impacts. • Visual and landscape character impacts. • Traffic impacts. • Pressures on local facilities, goods and services. These have been discussed above. The proposed changes to the site access during construction, would reduce the potential cumulative traffic impacts with Maryvale Solar Farm. Access during construction would now only be via Goolma Road, with access via Cobbora Road no longer proposed. Goolma Road is proposed to be used by Uungula Wind Farm; however, the updated traffic impact assessment has determined that there is sufficient capacity for concurrent construction. The potential cumulative impacts of the proposed amendments do not vary substantively from what was presented within the publicly exhibited EIS.	No additional mitigation measures are required.

4. ENVIRONMENTAL MANAGEMENT CHANGES

4.1. Summary of Amendments

Table 4-1 Summary of amendments and associated changes to impacts and mitigation measures.

Amendment	Proposed amendment	Impact change?	Additional mitigation measures?
Transmission line route	The portion of the proposed transmission line located between Twelve Mile Road and TransGrid's Wellington Substation now include two options for the 330kV transmission line (refer to Option A and Option B in Figure 2-1). These may be overhead and/or underground.	Yes. This change results in an increase to the biodiversity ecosystem credits and species credits (refer Table 3-6).	No.
Site access and transport route	All construction and operational access would be from the south via the Mitchell Highway and Goolma Road at the existing landowners driveway.	Yes. This change results in a change to the intersection treatments required at the site access on Goolma Road and potentially the intersection of Goolma Road and Mitchell Highway.	Yes. Refer Table 4-2.
Relocation of site access construction compound	The site access construction compound location has been moved to the proposed construction and operational site access off of Goolma Road.	No. The relocation occurs within the previous development footprint.	No.
Construction personnel	The construction personnel has been increased from 250 to 400 during the peak construction period.	Yes. This change results in an increase in traffic volumes and socio-economic impacts.	No.

In consideration of the additional assessment for the proposed amendments described in this report, the following additional/updated mitigation strategies are now proposed.

Table 4-2 New/updated mitigation measures, that now form a commitment of the proposal.

PC: Pre-Construction, C: Construction, PO: Pre-operation, O: Operation, D: Decommissioning

Safeguards and mitigation measures	C	O	D
Traffic, Transport and Safety			
A Traffic Management Plan would be developed as part of the Construction Environmental Management Plan (CEMP) and Decommissioning Environmental Management Plan (DEMP), in consultation with the Dubbo Regional Council and Transport for NSW (TfNSW). The plan would include, but not be limited to: • The designated routes of construction traffic to the site. • Carpooling/shuttle bus arrangements to minimise vehicle numbers during construction and ensure that warrants provided in the Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections that apply to major road turn treatments are maintained within the limits of the proposed **AUL(S) / BAR turn** treatments. • Identify specific road hazards associated with the area including not limited to fog, wet weather, frost and wildlife. • Pedestrian management - Site access is to be restricted to authorised personnel only and existing employees on site. Pedestrian access to and around the site is to be maintained at all times. Within the site pedestrian travel paths are to be maintained to key areas such as building entrances and be free from trip hazards. • Scheduling of deliveries. • Community consultation regarding traffic impacts for nearby residents and school bus operators. • Consideration of impacts to the railway. • Traffic control plans (speed limits, signage, etc.). • Procedure to monitor traffic impacts and adapt controls (where required) to reduce the impacts. Providing a contact phone number to enable any issues or concerns to be rapidly identified and addressed through appropriate procedures.	**PC**		**D**
The following intersections treatments must be undertaken prior to construction: • **The intersection of Goolma Road and site access be upgraded to provide a short**	**PC**		

Safeguards and mitigation measures	C	O	D
Auxiliary Left turn lane AUL(S) northbound and a Basic Right turn lane (BAR) southbound. **Intersection treatment should be designed to accommodate articulated vehicles of 19 m in length. Note: larger vehicles will require permits and traffic management.**			
Soils, Agriculture and Land Capability			
Prior to intrusive works (construction), a preliminary sample and analysis report is to be completed by an independent NSW Safework Licensed Asbestos Assessor (LAA) to determine the presence/absence of naturally occurring asbestos fibres within the Development Footprint.	**PC**		

5. CONCLUSION

This amendment report has considered the amendments to the proposed Wellington North Solar Farm proposal. The proposed changes are to the transmission line route and site access (requiring updated specialist assessments), relocation of the construction compound and increase in construction personnel.

The investigation of potential environmental impacts of the proposed amendments has shown there are no substantive additional impacts to those proposed in the EIS. The amendments result in some changes to the mitigation strategies for the Project, however this is limited to management of traffic impacts. No other mitigation strategies are considered to need amending. It was determined to be more appropriate that all construction site access for the solar farm would be via Goolma Road. This amendment would result in a reduction in impact as no construction traffic would access the site off Cobbora Road for the construction of the solar farm.

The benefits of the proposed Wellington North Solar Plan would remain generally the same, with some additional positive socio-economic benefits. The proposal would result in a number of benefits including:

- Support Commonwealth and NSW climate change commitments.
- Generation of enough clean, renewable energy for about 114,000 average NSW homes.
- Displacement of approximately 581,000 metric tonnes of carbon dioxide – the equivalent of taking about 125,000 cars off the road.
- Enhance electricity reliability and security.
- Increased creation of local job opportunities due to the proposed construction personnel increasing from 250 to 400.
- Increased injection of expenditure in the local area due to the proposed construction personnel increasing from 250 to 400.
- Spread of benefits through a local community energy offer and a local community investment program.
- Development of a new land use thereby diversifying the regional economy.

The Project has been assessed in accordance with the *Environmental Planning and Assessment Act 1979* and has taken into consideration the *Environment Protection and Biodiversity Conservation Act 1999*, along with other Federal, State and Local Government legislation, policy and guidelines. The scope of the assessment covered the Secretary's Environmental Assessment Requirements, the requirements of other State and Federal agencies, and consideration of the wellbeing of community stakeholders. Specialists were also engaged to provide impact assessment expertise in key environmental areas including traffic, biodiversity, noise and Aboriginal heritage.

The specialist's reports found that impacts would be generally managed consistent with the measures set out in the initial EIS. The only minor amendments made to the wording of the existing mitigation measures are required for:

1. Biodiversity – the credit requirement for the Project has been updated.
2. Traffic, transport and safety – to upgrade the site access intersection to provide a short Auxiliary Left turn lane AUL(S) northbound and a Basic Right turn lane (BAR) southbound at the Goolma Road site access point.

In consideration of the assessment of the impacts from the proposal contained in the EIS, and the proposed mitigation measures committed to in the revised mitigation measures (included in Appendix A of this report), it is believed that all relevant matters have been addressed and that the Project should now proceed for approval by the Minister.

6. REFERENCES

Australian Government, 2019, *National Pollutant Inventory*, accessed December 2020 from http://www.npi.gov.au/npi-data/search-npi-data

BOM, 2019, *Groundwater Dependent Ecosystems Atlas*, accessed January 2019 from http://www.bom.gov.au/water/groundwater/gde/map.shtml

DPE, 2019, *NSW Planning Portal*, accessed November 2020 from https://www.planningportal.nsw.gov.au/.

DPI, 2019, *Groundwater data*, accessed December 2020 from http://allwaterdata.water.nsw.gov.au/water.stm

EPA, 2017 *NSW Policy for Industry*, Sydney: EPA.

Geoscience Australia, 2019, *Australian Flood Risk Portal*, accessed December 2020 from: http://www.ga.gov.au/flood-study-web/#/search.

GHD, 2020, *Traffic Impact Assessment Report,* Prepared for Lightsource bp.

Lawrie, J.W. and Murphy, B.W. 1998, S*oil Landscapes of the Dubbo 1:250 000 Sheet Report*, Dept of Land & Water Conservation, Sydney

Moir, 2019, *Visual Impact Assessment, Proposed Solar Plant, Wellington North Solar Plant at Goolma Road Wuuluman, NSW*. Moir Landscape Architects, June 2018.

NGH Environmental, 2018, *Wellington North Solar Farm Environmental Impact Statement*, report prepared for AGL.

NGH 2018, *Aboriginal Cultural Heritage Assessment Wellington North Solar Farm*. Unpublished report for Wellington North Solar Farm Pty Limited.

NGH 2019, *Amendment Report*, NGH, Bega NSW.

NGH Environmental, 2019a, *Addendum to the Aboriginal Cultural Heritage Assessment Wellington North Solar Farm,* prepared for AGL.

NGH Environmental, 2019b, *Biodiversity Development Assessment Report,* prepared for AGL.

NGH Environmental, 2019c, *Historical Archaeological Assessment,* prepared for AGL.

NGH Environmental, 2019d, *Wellington North Solar Farm Submissions Report,* prepared for AGL.

NSW Government, 2019, *NSW OEH contaminated site register*, accessed January 2019, from http://www.epa.nsw.gov.au/prclmapp/searchregister.aspx

Renzo Tonin and Associates, 2019, *Wellington North Solar Farm Construction and Operation Noise and Vibration Assessment*. Report prepared for AGL, January 2019.

APPENDIX A REVISED MITIGATION MEASURES

The complete set of updated mitigation measures are presented below. New measures from this additional assessment are in **Bold.** New and modified measures based on the Submissions Report (NGH, 2019d) are in *italics*.

PC: Pre-construction, C: Construction, PO: Pre-operation, O: Operation, D: Decommissioning

ID.	Mitigation measure	C	O	D
Biodiversity				
1	Time works to avoid critical life cycle events: • Hollow-bearing trees would not be removed during breeding season or hibernation period (Winter to early summer) to mitigate impacts on Southern Myotis. • If clearing outside of this period cannot be achieved, pre-clearing surveys would be undertaken to ensure no impacts to fauna would occur.	C		
2	Implement clearing protocols during tree clearing works, including pre-clearing surveys, daily surveys and staged clearing, the presence of a trained ecological or wildlife handler: • Pre-clearing checklist. • Tree clearing procedure.	C		
3	Relocate habitat features (fallen timber, hollow logs) from within the Project site: • Tree-clearing procedure including relocation of habitat features to adjacent area for habitat enhancement.	C		
4	Clearing protocols that identify vegetation to be retained, prevent inadvertent damage and reduce soil disturbance; for example, removal of native vegetation by chainsaw, rather than heavy machinery, is preferable in situations where partial clearing is proposed: • Approved clearing limits to be clearly delineated with temporary fencing or similar prior to construction commencing.	C		

ID.	Mitigation measure	C	O	D
	• No stockpiling or storage within dripline of any native vegetation. • In areas to clear adjacent to areas to be retained, chainsaws would be used rather than heavy machinery to minimise risk of unauthorised disturbance.			
5	Light shields or daily/seasonal timing of construction and operational activities to reduce impacts of light spill: • Avoid Night Works. • Direct lights away from vegetation.	C	O	
6	Temporary fencing to protect significant environmental features such as riparian zones: • Prior to construction commencing, exclusion fencing and signage would be installed around habitat to be retained.	C		
7	Hygiene protocols to prevent the spread of weeds or pathogens between infected areas and uninfected areas: • A Weed Management Procedure would be developed for the Project to prevent and minimise the spread of weeds. This would include: • Management protocol for declared priority weeds under the Biosecurity Act 2015 during and after construction • Weed hygiene protocol in relation to plant, machinery, and fill • Any occurrences of pathogens such as Myrtle Rust and Phytophthora would be monitored, treated, and reported. • The weed management procedure would be incorporated into the Biodiversity Management Plan.	C	O	
8	• Staff training and site briefing to communicate environmental features to be protected and measures to be implemented: • Site induction. • Toolbox talks.	C		

ID.	Mitigation measure	C	O	D

9	Preparation of a vegetation management plan to regulate activity in vegetation and habitat adjacent to the proposed development:
	• Preparation of a Biodiversity Management Plan that would include protocols for:
	  ○ Protection of native vegetation to be retained.
	  ○ Best practice removal and disposal of vegetation.
	  ○ Staged removal of hollow-bearing trees and other habitat features such as fallen logs with attendance by an ecologist.
	  ○ Weed management.
	  ○ Unexpected threatened species finds.
	  ○ Rehabilitation of disturbed areas.
		C		

10	Making provision for the ecological restoration, rehabilitation and/or ongoing maintenance of retained native vegetation habitat on or adjacent to the Project site: • Retained native vegetation would be considered as an offset site.		O	
11	Staff training and site briefing to communicate impacts of traffic strikes on native fauna: • Awareness training during site inductions regarding enforcing site speed limits. • Site speed limits to be enforced.	C	O	
Aboriginal heritage				
1	The development must avoid the two possible Scarred Tree (Wellington Nth ST1 and Wellington Nth ST2) as per the proposed development footprint in this report. A minimum 10m buffer around the trees should be in place to protect the tree canopy and root system.		Design	
2	If complete avoidance of the nine artefacts scatters and 30 isolated find sites recorded within the Project site is not practicable, the artefacts within the development footprint must be salvaged prior to the proposed work commencing and moved to a safe area within the property that would not be subject to any ground disturbance.	C		
3	The collection and relocation of the artefacts should be undertaken by an archaeologist with representatives of the registered Aboriginal parties and be consistent with Requirement 26 of the Code of practice for Archaeological Investigation of Aboriginal	C		

ID.	Mitigation measure	C	O	D
	Objects in New South Wales. A new site card/s would need to be completed once the artefacts are moved to record their new location on the AHIMS database. The Aboriginal community requests that a Cultural Smoking Ceremony take place to cleanse any artefacts salvaged and the reburial location.			
4	A minimum 5m buffer should be observed around all artefact scatters and isolated find sites including those outside the development footprint.	C	O	D
5	Wellington North Solar Farm Pty Limited should prepare a Cultural Heritage Management Plan (CHMP) to address the potential for finding additional Aboriginal artefacts during the construction of the Solar Farm and management of known sites and artefacts. The Plan should include the unexpected finds procedure to deal with construction activity. Preparation of the CHMP should be undertaken in consultation with the registered Aboriginal parties.	C		
6	In the unlikely event that human remains are discovered during the construction, all work must cease in the immediate vicinity. OEH, the local police and the registered Aboriginal parties should be notified. Further assessment would be undertaken to determine if the remains were Aboriginal or non-Aboriginal.	C		
7	Further archaeological assessment would be required if the Project activity extends beyond the area of the current investigation as detailed in this report and in the initial ACHA. This would include consultation with the registered Aboriginal parties and may include further field survey.	C	O	D
Noise and vibration				
1	Implement noise control measures such as those suggested in Australian Standard 2436-2010 “Guide to Noise Control on Construction, Demolition and Maintenance Sites”, to reduce predicted construction noise levels.	C		
2	A Noise Management Plan would be developed as part of the CEMP and would specifically target R1, R2, R4 and R6 in order to achieve compliance. The plan would include, but not be limited to: • Use less noisy plant and equipment where feasible and reasonable. • Plant and equipment to be properly maintained.	C		

ID.	Mitigation measure	C	O	D
	• Provide special attention to the use and maintenance of 'noise control' or 'silencing' kits fitted to machines to ensure they perform as intended. • Strategically position Plant on site to reduce the emission of noise to the surrounding neighbourhood and to site personnel. • Avoid any unnecessary noise when carrying out manual operations and when operating Plant. • Any equipment not in use for extended periods during construction work should be switched off. • Complaints procedure deal with noise complaints that may arise from construction activities. Each complaint would need to be investigated and appropriate noise amelioration measures put in place to mitigate future occurrences, where the noise in question is in excess of allowable limits. • Establish good relations with people living in the vicinity of the site at the beginning of proposal and maintain. Keep people informed, take complaints seriously, deal with complaints expeditiously. The community liaison member of staff should be adequately experienced.			
Visual amenity and landscape character				

1	Regarding landscaping to fragment / soften the view of infrastructure:
	• An intermittent band of screen Planting would be located:
	  ○ Between the property boundary and the solar arrays, in locations along Goolma Road and Cobbora Road where there is no existing vegetation and where the arrays are immediately adjacent to the boundary.
	  ○ Along the Campbells Lane boundary to mitigate impacts on properties on the northern side of Campbells Lane (identified in Appendix H).
	  ○ Within or directly alongside the transmission line easement directly adjacent to the rear of the R5 zoned lots where dwellings are located closer than 200m from the proposed new eastern transmission line easement.
	• To ensure that the screen Planting integrates into the existing landscape character:
	  ○ Bands of Planting would be a mix of locally native tree and shrub species to ensure a naturalistic effect whilst also providing habitat and movement corridors for native fauna.
		Pre-construction		

ID.	Mitigation measure	C	O	D
	○ Planting would not form a consistent hedge between the road and the solar farm but rather form a row of intermittent copse Plantings that reflect the existing character of roadside vegetation in the area • Screen Planting should be considered for locations surrounding buildings associated with the proposal where appropriate. • Strategies to ensure the effective screening is maximised early in the Project life and maintained would be implemented, for example: ○ Planting would aim to be undertaken as soon as practical in the construction process depending on the season, as it would take time for the Plants to establish and become effective as a screen. Seasonal requirements for Planting should also be considered. ○ Successional Planting may be undertaken (quick growing species replaced by longer living species). The screen would be maintained for the operational life of the solar farm. Dead Plants would be replaced. Pruning and weeding would be undertaken as required to maintain the screen's visual amenity and effectiveness in breaking up views.			
2	• Where feasible, co-location of powerlines would be undertaken to minimise the look of additional power poles. If additional poles are required, these would match existing pole design as much as practicable. • Materials and colours utilised in the construction of site sheds, battery storage and associated infrastructure would be considered to ensure that Visual Impacts are minimised. In general materials should be non-reflective and should be painted in neutral colours that are sensitive to the surrounding landscape.	Design stage		
3	• Night lighting would be minimised to the maximum extent practicable (i.e. manually operated safety lighting at main component locations).	C	O	
Soils, Agriculture and land capability				
1	As part of the CEMP, a Soil and Water Management Plan (SWMP) (with erosion and sediment control plans) would be prepared, implemented and monitored during the Project, in accordance with Landcom (2004), to minimise soil (and water) impacts. These plans would include provisions to: • Prepare SWMP in consultation with DoI – Lands and Water.	C	O	D

ID.	Mitigation measure	C	O	D
	• Implement management responses outlined in the Soil Survey Report (McMahon, 2018). • Install, monitor and maintain erosion controls. • Ensure that machinery leaves the site in a clean condition to avoid tracking of sediment onto public roads which may cause risks to other road users through reduced road stability. • Manage topsoil in all excavation activities, separate subsoils and topsoils and ensure that they are replaced in their natural configuration to assist revegetation. Stockpile topsoil appropriately so as to minimise weed infestation, maintain soil organic matter, maintain soil structure and microbial activity. • Minimise the area of disturbance from excavation and compaction; rationalise vehicle movements and restrict the location of activities that compact and erode the soils as much as practical. Any compaction caused during construction would be treated such that revegetation would not be impaired. • Manage works in consideration of heavy rainfall events; if a heavy rainfall event is predicted, the site should be stabilised, and work ceased until the wet period had passed.			
2	A Groundcover Management Plan would be developed in consultation with an agronomist and taking account of soil survey results to ensure perennial grass cover is established across the site as soon as practicable after construction and maintained throughout the operation phase. The plan would cover: • Soil restoration and preparation requirements. • Species election. • Soil preparation. • Establishment techniques. • Maintenance requirements. • Perennial groundcover targets, indicators, condition monitoring, reporting and evaluation arrangements – i.e. Live grass cover would be maintained at or above 70% at all times to protect soils, landscape function and water quality. Any grazing stock would be removed from the site when cover falls below this level. Grass cover would be monitored on a fortnightly basis using an accepted methodology. • Contingency measures to respond to declining soil or groundcover condition.	C	O	

ID.	Mitigation measure	C	O	D
	• Identification of baseline conditions for rehabilitation following decommissioning.			
3	The array would be designed to allow sufficient space between panels to establish and maintain ground cover beneath the panels and facilitate weed control.	Design		
4	A Spill and Contamination Response Plan would be developed as part of the overall Emergency Response Plan to prevent contaminants affecting adjacent surrounding environments. The plan would include measures to: • Respond to the discovery of existing contaminants at the site (e.g. pesticide containers or asbestos), including stop work protocols and remediation and disposal requirements. • Requirement to notify the EPA for incidents that cause material harm to the environment (refer s147-153 of the POEO Act). • Manage the storage of any potential contaminants onsite. • Mitigate the effects of soil contamination by fuels or other chemicals (including emergency response and the EPA notification procedures and remediation. • Ensure that machinery arrives on site in a clean, washed condition, free of fluid leaks. • Prevent contaminants affecting adjacent pastures, dams, water courses and native vegetation. • Monitor and maintain spill equipment. • Induct and train all site staff.	C	O	D
5	A protocol would be developed in relation to discovering buried contaminants within the Project site (e.g. pesticide containers). It would include stop work, remediation and disposal requirements.	C	O	D
6	A Rehabilitation Plan would be prepared to ensure the array site is returned to its pre-solar Farm land capability. The plan would be developed with reference to the base line soil testing, baseline agricultural productivity (i.e crop yields and stocking rates over the last 3 years) and with input from an agronomist to ensure the site is left stabilised, under a cover crop or other suitable ground cover. The plan would reference: • Australian Soil and Land Survey Handbook (CSIRO, 2009). • Guidelines for Surveying Soil and Land Resources (CSIRO, 2008).			D

ID.	Mitigation measure	C	O	D
	• The land and soil capability assessment scheme: second approximation (OEH, 2012).			
7	Manage pests and weeds during construction and operation. Where practicable integrate weed and pest management with adjoining land owners.	C	O	
8	Consultation with local community, to minimise impact of the Project on adjacent agricultural activities and access.	C	O	D
9	**Prior to intrusive works (construction), a preliminary sample and analysis report is to be completed by an independent NSW Safework Licensed Asbestos Assessor (LAA) to determine the presence/absence of naturally occurring asbestos fibres within the Development Footprint.**	**PC**		
Land use				
1	Consultation would be undertaken with TransGrid regarding connection to the substation and design of electricity transmission infrastructure.	C	O	D
2	Consultation with Project site mineral titleholders regarding the Project and potential impacts.	C	O	D
Historic heritage				
1	Should an item of historic heritage be identified, the Heritage Division (OEH) would be contacted prior to further work being carried out in the vicinity.	C	O	D
2	The Noonee Nyrang Homestead would not be altered whilst in use as an Office and Maintenance building for the solar farm.	C	O	D
3	The existing outbuildings and stone shed around the Noonee Nyrang Homestead would be maintained and not altered.	C	O	D
Flooding				
1	The design of buildings, equipment foundations and footings for electrical componentry and panel mounts would be designed to avoid the 1% AEP flood level to minimise impacts from potential flooding including: • The solar array mounting piers are designed to withstand the forces of floodwater (including any potential debris loading) up to the 1% AEP flood event, giving regard to the depth and velocity of floodwaters;	Design		

ID.	Mitigation measure	C	O	D
	• The mounting height of the solar module frames would be designed such that the lower edge of the module is clear of the predicted 1% AEP flood level. • All electrical infrastructure, including inverters, would be located above the 1% AEP flood level. • Where electrical cabling is required to be constructed below the 1% AEP flood level it would be capable of continuous submergence in water. • The proposed perimeter security fencing would be constructed in a manner which does not adversely affect the flow of floodwater and should be designed to withstand the forces of floodwater, or collapse in a controlled manner to prevent impediment to floodwater.			
2	An Emergency Response Plan incorporating a Flood Response Plan would be prepared prior to construction covering all phases of the Project. The plan would: • Detail who would be responsible for monitoring the flood threat and how this is to be done. • Detail specific response measures to ensure site safety and environmental protection. • Outline a process for removing any necessary equipment and materials offsite and out of flood risk areas (i.e. rotate array modules to provide maximum clearance of the predicted flood level). • Consider site access in the event that some tracks become flooded. • Establish an evacuation point. • Define communications protocols with emergency services agencies.	C	O	D
Traffic, transport and safety				
1	The following intersections treatments would be undertaken in consultation with Dubbo Regional Council: • ~~The intersection of Cobbora Road / Campbells Lane would be upgraded to provide a BAR/BAL turn type treatment including shoulder widening on Cobbora Road (major road);~~ • ~~The proposed site access on Campbells Lane would be designed to provide BAR/BAL turn type treatment; and~~	Design stage		

ID.	Mitigation measure	C	O	D
	• Intersection treatments would be designed to accommodate articulated vehicles of 19 m in length. • All gates would be setback a minimum of 26 metres from the property boundary to permit a B- Double vehicle to fully stand within the property boundary and not overhang onto the road reserve while any access gates are being opened or closed.			
2	A Haulage Plan would be developed with input from the roads authority, including but not limited to: • Assessment of road routes to minimise impacts on transport infrastructure. • Scheduling of deliveries of major components to minimise safety risks (on other local traffic). • Consideration of cumulative traffic loads due to other local developments. • Traffic controls (signage and speed restrictions etc.).	PC		D
3	Upon determining the haulage route(s) for construction vehicles associated with the Project, and prior to construction, undertake a Road Dilapidation Report. The report would: • Assess the current condition of the road(s) • Describe mechanisms to restore any damage that may result due to traffic and transport related to the construction of the Project. • Be submitted to the relevant road authority for review prior to the commencement of haulage.	PC		
4	A pavement review would be undertaken and bituminous surface be applied to Campbells Lane between Cobbora Road and the site access to reduce pavement degradation and improve driver safety. The bitumen surface would be in accordance with Dubbo Regional Council's rural road standard including being a minimum of 7.5 metre wide bitumen sealed two-way carriageway.	C		
5	A Traffic Management Plan would be developed as part of the CEMP and DEMP, in consultation with the Dubbo Regional Council and Roads and Maritime Services (RMS). The plan would include, but not be limited to: • The designated routes of construction traffic to the site.	PC		D

ID.	Mitigation measure	C	O	D
	• Carpooling/shuttle bus arrangements to minimise vehicle numbers during construction and ensure that warrants provided in the Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections that apply to major road turn treatments are maintained within the limits of the proposed **AUL(S) / BAR** turn treatments. • Identify specific road hazards associated with the area including not limited to fog, wet weather, frost and wildlife. • Pedestrian management - Site access is to be restricted to authorised personnel only and existing employees on site. Pedestrian access to and around the site is to be maintained at all times. Within the site pedestrian travel paths are to be maintained to key areas such as building entrances and be free from trip hazards. • Scheduling of deliveries. • Community consultation regarding traffic impacts for nearby residents and school bus operators. • Consideration of impacts to the railway. • Traffic control plans (speed limits, signage, etc.). • Procedure to monitor traffic impacts and adapt controls (where required) to reduce the impacts. • Providing a contact phone number to enable any issues or concerns to be rapidly identified and addressed through appropriate procedures. • The traffic management plan would reference the Accommodation and Employment Strategy (A&ES) for the proposal.			
6	**The following intersections treatments must be undertaken prior to construction:** • **The intersection of Goolma Road and site access be upgraded to provide a short Auxiliary Left turn lane AUL(S) northbound and a Basic Right turn lane (BAR) southbound.** • **Intersection treatment should be designed to accommodate articulated vehicles of 19 m in length. Note: larger vehicles will require permits and traffic management.**	**PC**		
Water quality and water use				

ID.	Mitigation measure	C	O	D
1	Design waterway crossings and services crossing in accordance with the publications: • Why do fish need to cross the road? Fish Passage Requirements for Waterway Crossings (Fairfull & Witheridge, 2003). • Policy and Guidelines for Fish Friendly Waterway Crossings (NSW DPI, 2003). • Guidelines for Watercourse Crossings on Waterfront Land (NSW DPI, 2012). • Guidelines for Laying Pipes and Cable in Watercourses on Waterfront Land (NSW DPI, 2012).	C	O	D
2	All fuels, chemicals, and liquids would be stored at least 40m from any waterways or drainage lines, not on sloping land and would be stored in an impervious bunded area.	C	O	D
3	The refuelling of plant and maintenance would be undertaken in impervious bunded areas on hardstand areas only.	C	O	D
4	All potential pollutants stored on-site would be stored in accordance with HAZMAT requirements and bunded.	C	O	D
5	Roads and other maintenance access tracks would incorporate appropriate water quality treatment measures such as vegetated swales to minimise the opportunity of dirty water leaving the site or entering the waterways.	C		D
6	A WAL would be obtained, should onsite ground water sources be used.	C		
Social and economic				
1	Liaison with local industry representatives to maximise the use of local contractors, manufacturing facilities, materials.	C		
2	Liaison with local representatives regarding accommodation options for staff, to minimise adverse impacts on local services.	C		D
3	Liaison with local tourism industry representatives to manage potential timing conflicts with local events.	C		D
4	The Community Consultation Plan would be implemented to manage impacts to community stakeholders, including but not limited to: • Protocols to keep the community updated about the progress of the Project and proposal benefits.	C		D

ID.	Mitigation measure	C	O	D
	• Protocols to inform relevant stakeholders of potential impacts (haulage, noise, air quality etc.). • Protocols to respond to any complaints received.			
Bushfire				
1	Dangerous or hazardous materials would be stored and handled in accordance with AS1940-2004: The storage and handling of flammable and combustible liquids.	C	O	D
2	Develop a Bush Fire Management Plan (BFMP) in consultation with NSW RFS District Fire Control Centre. The BFMP will include but not be limited to: • Specific management of activities with a risk of fire ignition (hot works, vehicle use, smoking, use of flammable materials, blasting) • Document the location of hazards (Physical, Chemical and Electrical) that will impact on firefighting operations and procedures to manage identified hazards during firefighting operations. • Describe the construction of asset protection zones and their continued maintenance. • Incorporation of fire safety and response in staff and contractor induction, training, OHS procedures and Work Method Statements. • Designation of a staff safety officer tasked with ensuring implementation of the plan and regular liaison with firefighting agencies. • Document all firefighting resources maintained at the site with an inspection and maintenance schedule. • Monitoring and management of vegetation fuel loads. • 24/7 contact details including alternative telephone contact. • A communications strategy incorporating use of mobile phones, radio use (type, channels and call-signs), Fire Danger Warning signs located at the entrance to the site compounds, emergency services agency contacts. • Specific plans outlining: • Site infrastructure. • Firefighting water supplies. • Site access and internal roads.	C	O	D

ID.	Mitigation measure	C	O	D
	• Any additional matters as required by the NSW RFS District Office (Plan review and update). In developing the Bush Fire Management Plan, NSW RFS would be consulted on the volume and location of water supplies, fire-fighting equipment maintained on-site, fire truck connectivity requirements, proposed APZ and access arrangements, communications, vegetation fuel levels and hazard reduction measures.			
3	An APZ of minimum 10 metres would be maintained between remnant or planted woody vegetation and solar farm infrastructure. The APZ around the perimeter of the site would incorporate a 4 metre wide gravel access track. The APZs will be in accordance with section 4.1.3 and Appendix 5 of 'Planning for Bush Fire Protection 2006' and the NSW Rural Fire Service's document 'Standards for asset protection zones'. Average grass height within the APZ would be maintained at or below 5 centimetres on average throughout the October-March fire season. Average grass height outside the APZ, including beneath the solar array, would be maintained at or below 15 centimetres throughout the fire season.	C	O	
4	The overhead powerlines at the site would be managed by maintaining appropriate vegetation clearance limits to minimise potential ignition risks, in accordance with the ISSC 3 Guideline for Managing Vegetation Near Power Lines.		O	
5	Appropriate fire-fighting equipment would be held on site to respond to any fires that may occur at the site during construction. This equipment would include fire extinguishers, a 1000 litre water cart retained on site on a precautionary basis, particularly during any blasting and welding operations. Equipment lists would be detailed in Work Method Statements.	C		
6	The NSW RFS and Fire and Rescue would be provided with a contact point for the solar farm, during construction and operation.	C	O	
7	Following commissioning of the solar farm, the local RFS and Fire and Rescue brigades would be invited to an information and orientation day covering access, infrastructure, firefighting resources on-site, fire control strategies and risks/hazards at the site.		O	
8	The perimeter access track would comply with the requirements for Fire Trails in accordance with Section 4.1.3(3) of Planning for Bush Fire Protection 2006. All access and egress tracks on the site would be maintained and kept free of parked vehicles to	C	O	D

ID.	Mitigation measure	C	O	D
	enable rapid response for firefighting crews and to avoid entrapment of staff in the case of bush fire emergencies. Access tracks would be constructed as through roads as far as practicable. Dead end tracks would be signposted and include provision for turning fire trucks.			
9	A Hot Works Permit system would be applied to ensure that adequate safety measures are in place. Fire extinguishers would be present during all hot works. Where practicable hot works would be carried out in specific safe areas (such as the Construction Compound temporary workshop areas).	C	O	D
10	Machinery capable of causing an ignition would not be used during bushfire danger weather, including Total Fire Ban days.	C	O	D
11	Prior to operation of the solar farm, an Emergency Response Plan (ERP) must be prepared in consultation with the RFS and Fire & Rescue NSW. This plan must include but not be limited to: • Specifically addresses foreseeable on site and off site fire events and other emergency incidents. • Risk control measures would include the level of personal protective clothing required to be worn, the minimum level of respiratory protection required, decontamination procedures, minimum evacuation zone distances and a safe method of shutting down and isolating the PV system (either in its entirety or partially, as determined by risk assessment). • Outline other risk control measures that may need to be implemented in a fire emergency due to any unique hazards specific to the site. • Two copies of the ERP are stored in a prominent 'Emergency Information Cabinet' which is located in a position directly adjacent to the site's main entry point/s. Once constructed and prior to operation, the operator of the facility would contact the relevant local emergency management committee (LEMC). The ERP will be submitted to Dubbo Regional Council for approval.		O	
12	A 20,000 litre water supply (tank) fitted with a 65mm storz fitting shall be suitably located along a property access road to the development within the APZ.	C	O	

ID.	Mitigation measure	C	O	D
Electromagnetic fields				
1	All electrical equipment would be designed in accordance with relevant codes and industry best practice standards in Australia.	C		
2	All design and engineering would be undertaken by qualified and competent person/s with the support of specialists as required.	C		
3	Design of electrical infrastructure would minimise EMFs.	C		
Air quality and climate				
1	Dust generation by vehicles accessing the site and earthworks at the site would be suppressed using water applications or other means as required.	C		D
2	Vehicle loads of material which may create dust would be covered while using the public road system.	C		D
3	All vehicles and machinery used at the site would be in good condition, fitted with appropriate emission controls and comply with the requirements of the POEO Act, relevant Australian standards and manufacturer's operating recommendations. Plant would be operated efficiently and turned off when not in use.	C	O	D
4	Fires and material burning is prohibited on the Project site.	C	O	D
Resources use and waste generation				
1	A Waste Management Plan (WMP) would be developed to minimise wastes. It would include but not be limited to: • Identification of opportunities to avoid, reuse and recycle, in accordance with the waste hierarchy. • Quantification and classification of all waste streams. • Provision for recycling management onsite. • Provision of toilet facilities for onsite workers and identify that sullage would be disposed of (i.e., pump out to local sewage treatment plant). • Tracking of all waste leaving the site. • Disposal of waste at facilities permitted to accept the waste. • Requirements for hauling waste (such as covered loads).	C	O	D

ID.	Mitigation measure	C	O	D
2	Septic system is installed and operated according to the Dubbo Regional Council regulations.	C	O	