APPLICATION ON RE-NOTIFICATION – CROWN DEVELOPMENT

Applicant:	ElectraNet Pty Ltd
Development Number:	660/V004/19
Nature of Development:	Construction of a 33 km long overhead high voltage electricity transmission line from the Davenport Substation to Carriewerloo, via Yorkeys Crossing.
Type of development:	Crown sponsored development
Zone / Policy Area:	The majority of the route is within the Primary Industry Zone of the Port Augusta (City) Development Plan, with a small section located in the Pastoral Zone of the Land Not Within a Council Area (Flinders) Development Plan.
Subject Land:	Various land parcels along a route alignment starting from the Davenport Substation (7km SE of Pt Augusta) and heading north to Yorkeys Crossing (8km north of Pt Augusta), then heading NW to the Carriewerloo Substation site (27km NW of Pt Augusta). The majority of the route would follow an existing easement
Contact Officer:	Lee Webb
Phone Number:	7109 7066
Start Date:	3 July 2019
Close Date:	**Friday 25 July 2019**

During the notification period, hard copies of the application documentation can be viewed at the Department of Planning, Transport and Infrastructure, Level 5, 50 Flinders Street, Adelaide during normal business hours. Application documentation may also be viewed during normal business hours at the Port Augusta City Council (4 Mackay Street, Port Augusta).

Written representations must be received by the close date (indicated above) and can either be posted, hand-delivered, faxed or emailed to the State Commission Assessment Panel (SCAP). A representation form is provided as part of this pdf document.

Any representations received after the close date will not be considered.

Postal Address:
The Secretary
State Commission Assessment Panel
GPO Box 1815
ADELAIDE SA 5001

Street Address:
Development Division
Department of Planning, Transport and Infrastructure
Level 5, 50 Flinders Street ADELAIDE

Email Address: scapreps@sa.gov.au
Fax Number: (08) 8303 0753

DEVELOPMENT ACT, 1993, S49/S49A – CROWN SPONSORED DEVELOPMENT
REPRESENTATION ON APPLICATION

Applicant:	ElectraNet Pty Ltd
Development Number:	660/V004/19
Nature of Development:	Construction of a 33 km long overhead high voltage electricity transmission line from the Davenport Substation to Carriewerloo, via Yorkeys Crossing.
Zone / Policy Area:	The majority of the route is within the Primary Industry Zone of the Port Augusta (City) Development Plan, with a small section located in the Pastoral Zone of the Land Not Within a Council Area (Flinders) Development Plan.
Subject Land:	Various land parcels along a route alignment starting from the Davenport Substation (7km SE of Pt Augusta) and heading north to Yorkeys Crossing (8km north of Pt Augusta), then heading NW to the Carriewerloo Substation site (27km NW of Pt Augusta). The majority of the route would follow an existing easement
Contact Officer:	Lee Webb
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My name:_____

My phone number: _____

PRIMARY METHOD(S) OF CONTACT: Email address: _____

Postal address:_____

_____Postcode_____

You may be contacted via your nominated PRIMARY METHOD(S) OF CONTACT if you indicate below that you wish to be heard in support of your submission.

My interests are:
- [ ] owner of local property
- [ ] occupier of local property
- [ ] a representative of a company/other organisation affected by the proposal
- [ ] a private citizen

The address of the property affected is .....Postcode.....

The specific aspects of the application to which I make comment on are: .....

.....

.....

.....

.....

I
- [ ] wish to be heard in support of my submission
- [ ] do not wish to be heard in support of my submission

(Please tick one)

by
- [ ] appearing personally
- [ ] being represented by the following person : .....

(Cross out whichever does not apply)

Date: ..... Signature: .....

Return Address: The Secretary, State Commission Assessment Panel, GPO Box 1815, Adelaide, SA 5001 or scapreps@sa.gov.au

Government of South Australia

Department of Planning, Transport and Infrastructure

DEVELOPMENT ACT 1993

SECTION 49 – PUBLIC INFRASTRUCTURE

NOTICE OF APPLICATION FOR CONSENT TO DEVELOPMENT

Notice is hereby given that an application has been made by **ElectraNet** (as part of the Oz Minerals Port Augusta – Olympic Dam electricity transmission line development sponsored by the Department of Energy and Mining for the purposes of public infrastructure under Section 49 of the *Development Act 1993*) to construct a 33 km long overhead high voltage electricity transmission line from the Davenport Substation to Carriewerloo, via Yorkeys Crossing. **Development Application: 660/V004/19**

The existing 132 kV transmission line from Davenport Substation to Yorkeys Crossing would be replaced by a 275 kV line - a length of 19km. The current 30m wide easement would be widened to 50m. A new 275 kV transmission line would be constructed from Yorkeys Crossing to the Carriewerloo Substation site - a length of 14km. A 50m wide easement, including an access track, would be established. Steel lattice tower or monopole structures, 50-60m high and 300m apart, would support the line.

The proposed site covers various land parcels along a route alignment starting from the Davenport Substation (7km SE of Pt Augusta) and heading north to Yorkeys Crossing (8km north of Pt Augusta), then heading NW to the Carriewerloo Substation site (27km NW of Pt Augusta). The majority of the route would follow an existing easement.

The majority of the route is located within the Primary Industry Zone of the Port Augusta (City) Development Plan (Consolidated 7 July 2016). Sections of the route also traverse the Industry, Rural Living, Residential, Residential (Davenport), Commercial (Bulky Goods) and Conservation Zones. A small section of the route is located in the Pastoral Zone of the Land Not Within a Council Area (Flinders) Development Plan (Consolidated 29 November 2012).

The application may be examined during normal office hours at the office of the State Commission Assessment Panel (Level 5, 50 Flinders Street, Adelaide) and at the office of the Port Augusta City Council (4 Mackay Street, Port Augusta). Application documentation may also be viewed on the SCAP website at: http://www.saplanningcommission.sa.gov.au/scap/public_notices.

Any person or body who desires to do so may make representations concerning the application by notice in writing delivered to the Secretary, State Commission Assessment Panel (GPO Box 1815, Adelaide SA 5001), **NOT LATER THAN THURSDAY 25 JULY 2019.** Submissions may also be made via email to scapreps@sa.gov.au

Each person or body making a representation should state the reason for the representation and whether that person or body wishes to be given the opportunity to appear before the Panel to further explain the representation.

Representations may be made available for public inspection.

Should you wish to discuss the application and the public notification procedure please contact **Lee Webb** on **(08) 7109 7066** or lee.webb@sa.gov.au

Alison Gill
SECRETARY
STATE COMMISSION ASSESSMENT PANEL

PN3943

www.sa.gov.au

PN3943
28x2 (63mm)
Transcontinental, Adelaide Advertiser
Wednesday 3 July 2019
APPROVAL REQUIRED BY 3PM FRIDAY 28 JUNE 2019

Government of South Australia

Department for Energy and Mining

Our Ref: DEMC19/00690

Mr Daniel Leinfelder
Approvals Manager
OZ Minerals
2 Hamra Drive
ADELAIDE AIRPORT SA 5950

Dear Mr Leinfelder

RE: Crown Sponsorship - OZ Minerals Electricity Transmission Line Development (Carriewerloo to Davenport)

Thank you for your letter of 13 June 2019, providing an update on the change required to your electricity transmission line development.

I acknowledge the change does not materially alter the original intent of the project and confirm the sponsorship under section 49 of the *Development Act 1993.* The original endorsement letter (attached) reflected the project contemplated the provision of critical infrastructure between Port Augusta and Olympic Dam.

I am aware the development assessment for this last section is still to be undertaken, and so the possible environmental and community issues will need to be addressed through this process. As per the original sponsorship, it is the responsibility of OZ Minerals to prepare all documentation as required by section 49 of the Act. All costs in the preparation of the development application, lodgement of the application and any other subsequent action in relation to this application are the responsibility of OZ Minerals. I encourage OZ Minerals to continue to engage all stakeholders in the preparation of the development application.

Note that under section 49 of the Act, any additional documents or information requested by the State Commission Assessment Panel, for the purpose of considering the application for approval, must be provided.

I remind you that the requirements set out in the original sponsorship letter remain in place, including your responsibility to ensure that you obtain all

Chief Executive

Address Level 12, 11 Waymouth Street, Adelaide 5000 | GPO Box 320 Adelaide SA 5001 | DX452
Tel (+61) 08 8429 3216 | Email DEM.OCE@sa.gov.au | www.energymining.sa.gov.au | ABN 83 768 683 934

SOUTH AUSTRALIA

Government of South Australia

Department for Energy and Mining

appropriate approvals, licence and connection agreements with the relevant authorities for your project.

If you have any questions regarding the preparation of the material to support this section 49 application, please contact Mr Michael Smith on 8429 2473.

Yours sincerely

Paul Heithersay
CHIEF EXECUTIVE

21 / 6 / 2019

Attachment: 20180117 – Letter – S49 Sponsorship OZ Minerals Electricity Transmission Line

SOUTH AUSTRALIA

Government of South Australia
Department of the Premier and Cabinet

B134060

GPO Box 2343
Adelaide SA 5001
DX 56201
Tel 08 8226 3500
Fax 08 8226 3535
www.dpc.sa.gov.au

17 January 2018

Ms Katie Hulmes
Group Manager, Technical Services
OZ Minerals Prominent Hill Operations Pty Ltd
162 Greenhill Rd
PARKSIDE SA 5063

Dear Ms Hulmes

CROWN SPONSORSHIP FOR OZ MINERALS ELECTRICITY TRANSMISSION LINE DEVELOPMENT

Thank you for your letter of 4 January 2018 requesting Crown sponsorship under section 49 of the *Development Act 1993* to assist with the OZ Minerals Port Augusta to Olympic Dam electricity transmission line development.

This project has been considered within the Department of the Premier and Cabinet (DPC) and the Department of Planning, Transport and Infrastructure. In principle, the proposal is supported, recognising the possible environmental and community issues will need to be addressed through the development assessment process.

On balance, the development of the Port Augusta to Olympic Dam electricity transmission line has the potential to benefit South Australia and can be considered public infrastructure. Accordingly, I, as the Chief Executive of DPC, will support the development and specifically endorse the development application to construct the 275 / 132 kVa electricity transmission line project as a development of public infrastructure as required by section 49 of the *Development Act 1993* (the Act).

It is the responsibility of OZ Minerals to prepare all documentation as required by section 49 of the Act. Lodgement of the development application should be through my office to the Development Assessment Commission. All costs in the preparation of the development application, lodgement of the application and any other subsequent action in relation to this application are the responsibility of OZ Minerals.

Note that under section 49 of the Act, any additional documents or information requested by the Development Assessment Commission for the purpose of considering the application for approval must be provided through my office.

In addition the following must be understood:

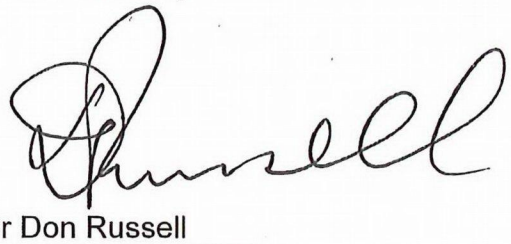
- I make no representations and give no warranties as to the outcome of the application nor the time taken to secure the outcome;
- I will undertake my obligations as set out in section 49 of the Act at your expense;
- I will pass on to you any approval or refusal to approve the proposed development as may be determined pursuant to section 49 of the Act; and
- I make no commitment that the state will provide any funding to the project or assist in the augmentation of the distribution and transmission network.

In addition, it will be your responsibility to ensure that you obtain all appropriate approvals, licence and connection agreements with the relevant authorities for your project.

A development application must be lodged with the Development Assessment Commission on or prior to 30 June 2019.

If you have any questions regarding the preparation of the material to support this section 49 application, please contact Mr Michael Smith on (08) 8463 3082.

Yours sincerely



Dr Don Russell
CHIEF EXECUTIVE

SECTION 49 & 49A – CROWN DEVELOPMENT
DEVELOPMENT APPLICATION FORM

PLEASE USE BLOCK LETTERS

FOR OFFICE USE

COUNCIL: **PORT AUGUSTA COUNCIL / OUT OF COUNCILS**

APPLICANT: ELECTRANET

ADDRESS: 55 / 52 East Terrace Adelaide SA 5000_____

DEVELOPMENT No: _____

PREVIOUS DEVELOPMENT No:_____

DATE RECEIVED: / /

CROWN AGENCY: ElectraNet (Crown Sponsorship from Dept Premier and Cabinet)

CONTACT PERSON FOR FURTHER INFORMATION

Name: Alecia Wright

Telephone: 0439 758 888

Fax: _____ [work] _____ [Ah]

Email: wright.alecia@electranet.com.au

❒ Complying	Decision: _____
❒ Merit	Type: _____
❒ Public Notification	Finalised: / /
❒ Referrals	

NOTE TO APPLICANTS:

(1) All sections of this form must be completed. The site of the development must be accurately identified and the nature of the proposal adequately described. If the expected development cost of this Section 49 or Section 49A application exceeds $100,000 (excl. fit-out) or the development involves the division of land (with the creation of additional allotments) it will be subject to those fees as outlined in Item 1 of Schedule 6 of the *Development Regulations 2008.* Proposals over $4 million (excl. fit-out) will be subject to public notification and advertising fees.
(2) Three copies of the application should also be provided.

	Decision required	**Fees**	**Receipt No**	**Date**
Planning:	_____	_____	_____	_____
Land Division:	_____	_____	_____	_____
Additional:	_____	_____	_____	_____
Minister's Approval				

EXISTING USE: Primary Industry, residential, recreational, commercial, reserves and vacant land.

DESCRIPTION OF PROPOSED DEVELOPMENT: Construction of a 275kV electricity transmission line.

LOCATION OF PROPOSED DEVELOPMENT: SEE ATTACHED

House No: _____ Lot No: ____ Street: _____ Town/Suburb: _____

Section No [full/part] _____ Hundred: _____ Volume: _____ Folio: _____

Section No [full/part] _____ Hundred: _____ Volume: _____ Folio: _____

LAND DIVISION:

Site Area [m^2] _____ Reserve Area [m^2] _____ No of existing allotments _____

Number of additional allotments [excluding road and reserve]: _____ Lease: ❒ **YES** ❒ **NO**

DEVELOPMENT COST [do not include any fit-out costs]**:** $ 30,000,000

POWERLINE SETBACKS: Pursuant to Schedule 5 (2a)(1) of the *Development Regulations 2008,* if this application is for a building it will be forwarded to the Office of the Technical Regulator for comment unless the applicant provides a declaration to confirm that the building meets the required setback distances from existing powerlines. The declaration form and further information on electricity infrastructure and clearance distances can be downloaded from the DPLG website (www.dac.sa.gov.au).

I acknowledge that copies of this application and supporting documentation may be provided to interested persons in accordance with the *Development Act 1993.*

SIGNATURE: _____ Dated: 8 / 4 / 2019

Title Reference	Property	Owner
CL6181/119	Carriewerloo Station	Buckleboo Nominees
CL6180/595	Mount Arden	Kootaberra Pty Ltd
CR5619/687	Yorkeys Crossing	Minister for Environment, Sustainability and Conservation
CR5619/686	Yorkeys Crossing	Minister for Environment, Sustainability and Conservation
CR5476/602	Yorkeys Crossing	Minister for Environment, Sustainability and Conservation
CR5476/604	Yorkeys Crossing	Minister for Environment, Sustainability and Conservation
CR5476/603	Yorkeys Crossing	Minister for Environment, Sustainability and Conservation
CR5476/605	Yorkeys Crossing	Minister for Environment, Sustainability and Conservation
CR5476/601	Yorkeys Crossing	Minister for Environment, Sustainability and Conservation
CT6012/458 CT6016/434		Tardieu
CT5735/326		Spencer Gulf Fire Pistal
CT6097/115		Minister for Transport and Infrastructure
CT5868/540		Aboriginal Lands Trust
CT5635/352		Whiting
CT5999/197 CT5999/198		Footner
CT5990/39		Turner
CT5514/855 CT5602/231		Port Augusta Council
CT5448/172 CT6016/75		Gaghan
CT5369/474		Rutherford
CR5870/651		Min. Sustainability
CT5211/224		Oakes
CT5211/225		Kohler
CT5833/222		Bonetti
CT5370/180		Pt Augusta Gun Club
CR5749/624		Min. Sustainability
CT6100/44		Port Augusta Council
CR5749/622		Min. Sustainability
CT5834/23		Tomalin
CT6048/143		ARTC
CT5313/342 CT5569/828		BP Aust

CT5313/353 CT5313/349 CT5313/350 CT5313/351 CT5313/352		BIHRENBRODT & ORS
CT5308/495		Duregon
CT6177/205		HGKR ENTERPRISES PTY. LTD.
CT5140/782		Baxendale
CT6180/724		Flinders Power
CT6202/318		TLC / ElectraNet (Davenport Substation property)

Carriewerloo to Davenport Transmission Line Upgrade

S49A Development Application

April 2019

FINAL

Security Classification: Public

ElectraNet Corporate Headquarters
52-55 East Terrace, Adelaide, South Australia 5000 • PO Box 7096, Hutt Street Post Office, Adelaide, South Australia 5000
Tel: (08) 8404 7966 • Fax: (08) 8404 7956 • Toll Free: 1800 243 853

Copyright and Disclaimer

Revision Record

Date	Version	Description	Author	Checked By	Approved By
	0	DA Report	Madhvi Betigeri	Lachlan Wilkinson	

Contents

Figures (in text)

Tables

Figures (attached)

1. Executive Summary

ElectraNet proposes to develop an electricity transmission line to secure power from Davenport to the proposed Carriewerloo Substation and Aurora Solar Energy Project located in South Australia (the Project).

ElectraNet's transmission network is one of the most extensive regional transmission systems in Australia, extending across some 200,000 km^2 of the State. This network consists of transmission lines operating at 132kV and 275kV, which are supported by both lattice towers and large stobie poles.

The existing infrastructure in this region is dated and does not meet the current or future requirements of the operations in surrounding mines and to other major infrastructure sites in South Australia. As such, in order to remain connected to the South Australian grid, OZ Minerals, with the support of ElectraNet is in the process of developing an electricity transmission line from Davenport in Port Augusta to the proposed Carriewerloo Substation and Aurora Solar Energy Project (Aurora Project).

Construction will occur along two alignments. One will replace the alignment of a current 132 kV transmission line with a double circuit 275 kV transmission line from Davenport to north of Yorkeys Crossing. At this point new structures will be constructed, and the line will split allowing the 275 kV transmission line to extend towards the proposed Carriewerloo Substation and Aurora Project.

As part of this Development Application, the following key environmental aspects were considered, and impact significance assessment was undertaken:

- Ecology
- Cultural heritage
- Surface water
- Groundwater
- Air quality
- Noise
- Visual amenity
- Traffic

Of the assessed key environmental aspects, the most significant impacts are likely to be related to ecology, cultural heritage, visual and surface water. All impacts can be mitigated to acceptable levels as detailed further within the Construction Environmental Management Plan (CEMP) or the Supplement to the CEMP (developed specifically for the Davenport to Carriewerloo alignment). By implementing the mitigation measures and management actions as identified in the CEMP and the Supplementary Carriewerloo to Davenport CEMP, these impacts are expected to reduce to low/ negligible.

2. Introduction

ElectraNet are proposing the construction of a new 132kV transmission line from Davenport Substation to the proposed Carriewerloo Substation (at the Aurora Project site) which extends over a distance of approximately 33 km (herein referred to as the Project). This work will involve the augmentation of the existing ElectraNet 132 kV transmission line between the Davenport

Substation and Tower 1812-0057 (a distance of approximately 19 km). This will be done by installing a new 275 kV transmission line and towers adjacent to the existing line, re-stringing from the 132 kV line and then removing the existing 132 kV towers to this point. The remaining distance will comprise a new 275 kV line and towers to the proposed Carriewerloo Substation.

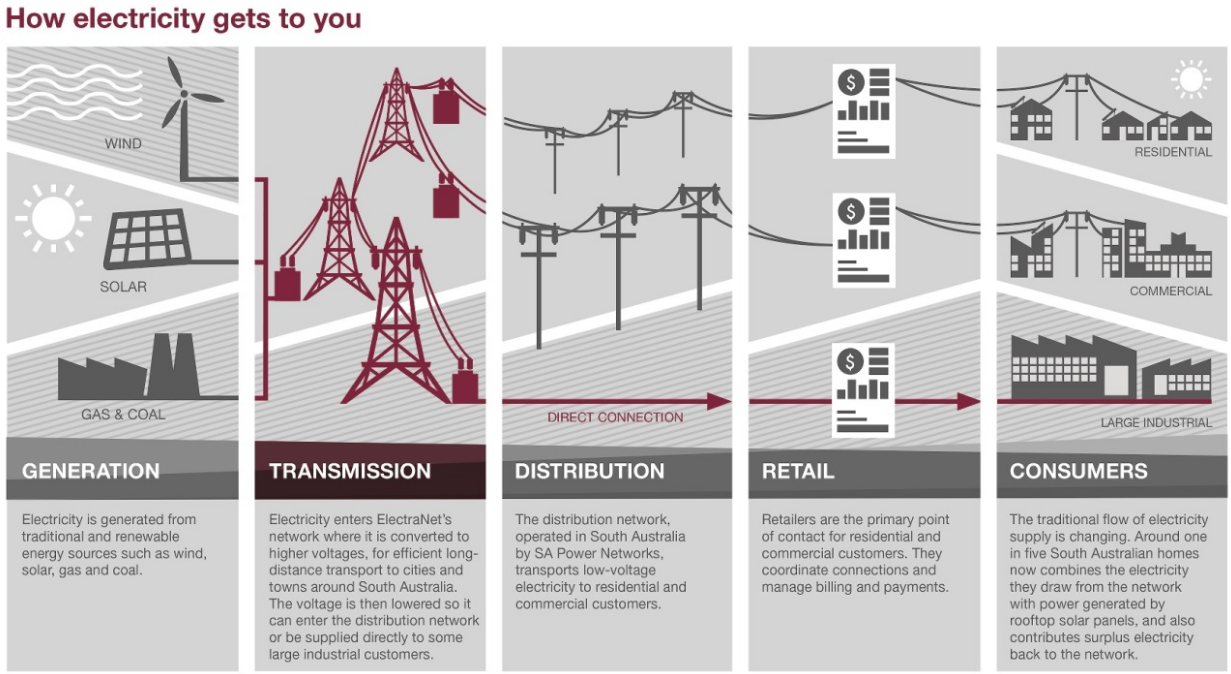
The new extent of the transmission line will require the construction of a 50 m wide easement and access tracks. Where new structures are replacing existing structures, this work will occur on the existing easement, which will be widened to 50 m (currently a 30 m wide easement) and no new access tracks will be required.

3. Proponent Details

ElectraNet Pty Ltd (ElectraNet) is the principal electricity Transmission Network Service Provider (TNSP) in South Australia, operating as part of the National Electricity Market under National Electricity Rules. The company's revenue is set by the Australian Energy Regulator (AER).

ElectraNet's role is to own and manage the high-voltage transmission lines and substations that connect South Australia's electricity generation system to multiple customer connection points, including SA Power Network's lower-voltage distribution network. The role of ElectraNet in the electricity supply chain is shown in **Figure 3-1** (below).

Figure 3-1: Role of ElectraNet in the electricity supply chain



ElectraNet's transmission network is one of the most extensive regional transmission systems in Australia, extending across some 200,000 km^2 of the State. This network consists of transmission lines operating at 132kV and 275kV, which are supported by both lattice towers and large stobie poles.

4. Locality

The Project is located approximately 300 km north west of Adelaide, with a portion of the Project located in Port Augusta. The Project Area is defined by a 25 m buffer either side of the proposed 33 km transmission line for the entire route from Davenport to Carriewerloo. **Figure 1** (attached) indicates the Project Area, in particular, with respect to the location of Port Augusta and other major landmarks.

The Project easement runs from the eastern portion of Port Augusta, in a north westerly direction within, and adjacent to the existing 132 kV line over a distance of approximately 19 km, to a point approximately 12 km north west of Port Augusta, referred to as Yorkeys Crossing.

At this point the easement deviates westerly from the existing 132 kV line, towards the Carriewerloo Substation over a distance of approximately 14 km. The total distance of the new 275kV powerline is anticipated to be approximately 33 km. Further description of the Project is provided in **Section 6** below. **Figure 2** (attached) indicates the proposed transmission line alignment.

The Project Area as described in this document includes the extent of the proposed transmission line between Davenport and the proposed Carriewerloo substation, the easements either side of the transmission line and the associated access tracks.

The Project Area is within the Gawler bioregion[1] within a depositional plain landscape characterised by vast tablelands and dune fields with low topographical relief. The climate is semi-arid with low but highly variable annual rainfall and is subject to hot summers and cool-to-mild winters.

The Project Area contains low lying arid-tolerant floral species mostly comprising of shrubland and scrub species as well as open acacia woodland. The landscape is characterised by the orange to brown highly permeable sandy soils which host alluvial plains, salt lakes and ephemeral lagoons. Due to the harsh climatic conditions, the broader area excluding Port Augusta is sparsely populated.

5. Land Use

Based on the Location SA Map Viewer[2] and NatureMaps[3] it has been identified that Primary Industry (PIn) is the most dominant land use in and surrounding the Project Area. There is also a significant amount of land zoned to residential, recreational, commercial, reserves and vacant land.

As identified in **Figure 3** (attached) the following land zones have also been identified in and directly adjacent to the Project Area:

- Industry (In)
- Rural Living (RuL)
- Residential (Davenport) R(D)
- Conservation (Con)
- Highway Services (HS)
- Recreation (Rec)
- Bulky Goods (BG)

[1] As defined by the Interim Biogeographic Regionalisation for Australia version 7 map.
[2] http://location.sa.gov.au/viewer/ last accessed 29 March 2019
[3] https://data.environment.sa.gov.au/NatureMaps/Pages/default.aspx last accessed 29 March 2019

The main area of potential interference between the current land use and the Project Area (including the construction area) is where the Project alignment intersects residential and conservation/ reserve zones. The majority of the land where the current transmission line exists is vacant land (no data available) and pasture land (Primary Industry) however, there are areas of rural residential land use intersected by the Project alignment. This is not anticipated to have a significant impact on land use as there is already existing transmission infrastructure in these areas.

6. Project Description

ElectraNet proposes to construct a new transmission line from Davenport Substation to the proposed Carriewerloo Substation (located on Parcel H540100SE2 Title CL6181/119). It is noted that the current design is still conceptual. Detailed design is underway and will be finalised prior to works beginning.

It is also noted that where the term 'structures' is used in this document it refers to poles, monopoles, steel or lattice towers or any infrastructure that carries and extends the overhead transmission lines as discussed below. It is expected that both poles and monopoles, as well as steel and lattice towers will be, at a minimum, utilised as part of the Project. Where detail is known about which structures will be used, those terms have been used.

Currently, there is an existing transmission line in place, the F1812 line (referred to colloquially as the Davenport to Pimba and/or the Davenport to Mount Gunson line). This is a 132 kV single circuit transmission line, that extends further to the north and the north west, in the direction of Mount Gunson and Pimba. Within this document this line is herein referred to as the F1812 transmission line.

Located adjacent to the F1812 line is the F1813 line (referred to colloquially as the Davenport to Leigh Creek and/or the Davenoport to Neuroodla line). This is a 132 kV single circuit transmission line that extends further to the north and the north east, in the direction of Neuroodla and Leigh Creek. Within this document this line is herein referred to as the F1813 transmission line.

The Project will comprise two components of works. The first is that a portion of the current F1812 transmission line will be removed and new double circuit structures will be constructed. The new line will be labelled F1973. This will occur from Towers F1973-0001 up to F1973-0056 inclusive. The double circuit line will allow a 132 kV line and a 275 kV line to be established using the same, new structures. The structures, up to Tower F1973-0057, will be removed and replaced in this way. This portion of works is herein referred to as the Section A Alignment, from the Davenport Substation to just north of Yorkeys Crossing.

At Tower F1973-0057, which is north of Yorkeys Crossing, the double circuit line will split. One will be the north-north west bound continuation of the F1812 transmission line with 132 kV line. The other will be the new 275 kV transmission line which will split off towards the Aurora Project site and the proposed Carriewerloo Substation.

The second component of works will be the construction of new single circuit 275 kV structures that will lead from the current F1812 transmission line (as described above) off to the north west towards the proposed Carriewerloo Substation and the Aurora Project site. This portion of works is herein referred to as the Section B Alignment.

The alignments of the current infrastructure and the proposed infrastructure is indicated on **Figure 2** (attached). For clarity, the BHP 275 kV #1909 line (referred to colloquially as the Davenport to Olympic Dam line) is also indicated on the attached figures, given its close proximity to the F1812 and F1813 transmission lines. The #1909 line will not be utilised in any part of this Project, however it is discussed within the Visual Amenity section of this document, **Section 10.9**, below.

Further detail on the proposed works on the structures is described in **Table 6-1** (attached) below.

Table 6-1: Tower location and Proposed works

Tower Location	Proposed Works
Towers F1973-0001 – F1973-0030	• Decommission and remove existing structures along the F1812 transmission line • Replace lattice towers with monopoles • Monopoles to be re-spaced in a different position to the original lattice towers
Tower F1973-0030	• Temporary tie-in with F1813 transmission line (to allow for continuation of service while construction is underway)
Towers F1973-0031 – F1973-0048	• Monopoles will be placed 20m west of the existing centreline along the F1812 transmission line alignment
Towers F1973-0049 – F1973-0056	• Monopoles will be placed 10m to the west of the existing centreline
Towers F1973-0057 – Carriewerloo	• Steel lattice towers will be used (similar to the Carriewerloo to MGS section) • New 50m corridor/ easement

Currently, the design identifies two options for the span over Yorkeys Crossing. One option includes a direct replacement of existing poles F1973-0049, F1973-0050 and F1973-0051. The second option includes replacing monopoles F1973-0049, F1973-0050 and F1973-0051 with two larger steel lattice structures either side of Yorkeys Crossing. That is, monopoles F1973-0049 and F1973-0051 would be replaced by larger steel lattice towers that would span the entire marshy area, and tower F1973-0050 would no longer be required.

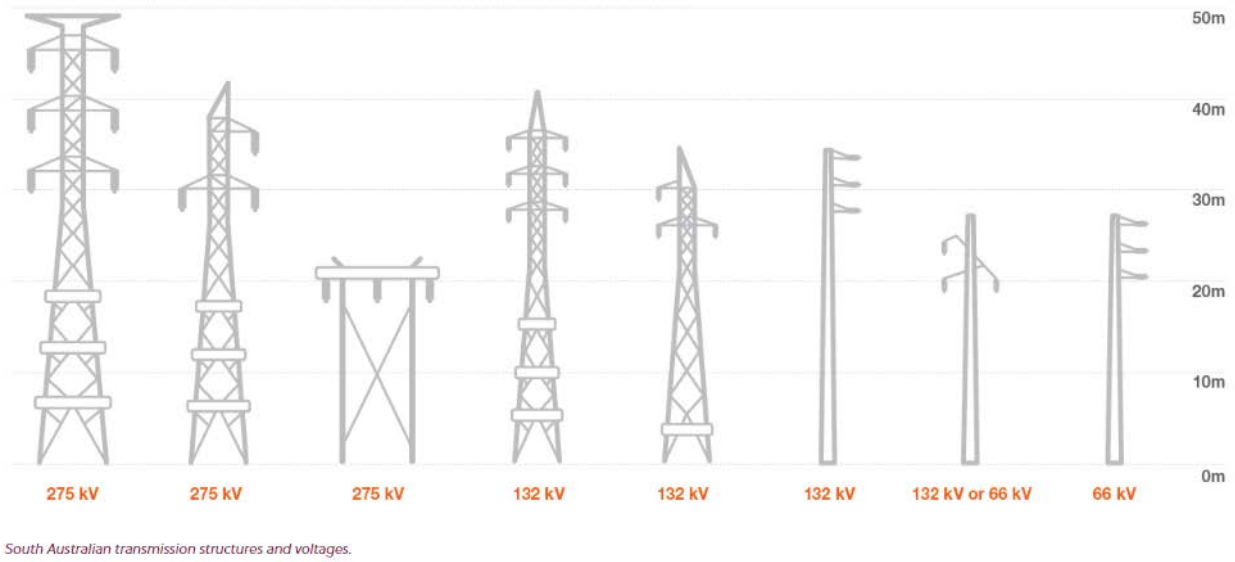
In employing this option, a financial assessment and quote would be required in order to proceed. Additionally, further discussion with the Barngarla Determination Aboriginal Corporation (BDAC) and DEW (landowner) is necessary prior to a decision being made on the use of this option.

The Project works will also include early works along this alignment, comprising flora and fauna survey, preliminary tower location pegging, easement boundary / cadastre survey.

As mentioned earlier, the design discussed here is the concept design and a final detailed design for the Project is currently being confirmed. Until finalisation of this design is complete, alternative Project options are being investigated.

Figure 6-1 below indicates structure types that may be used (with some lower voltage structures included for a comparison).

Figure 6-1: Voltages and Structure Types



Source: https://www.electranet.com.au/our-approach/safety/transmission-lines/

It is noted that the proposed substation at Carriewerloo is covered under a separate Development Approval.

6.1 Easement Requirements

The Section A Alignment will require widening of the existing easement from 30 m up to 50 m, an additional 20 m. Existing access tracks will be used wherever practical for the easement along the Section A Alignment. Some additional 5m wide tracks may be required.

A new 50 m easement will be established for the Section B Alignment. The new 275 kV towers will be installed adjacent to the existing 132 kV towers, north of Yorkeys Crossing, prior to the turn to the north west at tower F1973-0056. New 5m wide access tracks for the Section B Alignment will need to be established as part of these works.

The Section A Alignment follows existing infrastructure for the entirety of the route, with only the Section B Alignment (a 14 km section of the route) not following an existing transmission line.

A range of key environmental aspects have been considered to ensure environmental impacts are avoided or effectively mitigated. Key issues considered included environmental features, land ownership, heritage, existing infrastructure, design criteria and regulations (Electricity General Regulations, 2012). Further description of the key environmental aspects is discussed in **Section 10** below.

6.2 Construction

The following sections outline the typical construction activities for a transmission line. Construction typically proceeds in a linear fashion along the easement. It is likely that construction activities will proceed on several concurrent fronts.

Construction of the 275 kV towers will be undertaken to replace the existing 132 kV structures along the Section A Alignment. Once the existing 132 kV conductors have been relocated and restrung on the new structures, the redundant 132 kV structures will be removed.

For portions of the route that are relatively straight and do not have large bends, spans between structures will be roughly 300 m, with a lattice design (refer to **Figure 6-1** above) and will be between 50 m and 60 m high.

For turn points, strain towers will be utilised. In general, footings will be 5 m deep, and depending on soil type, may be required to extend up to 10 m below ground level.

The existing easement and access tracks will be utilised for the laydown areas for the new towers. For the new section of easement along the Section B Alignment, laydown areas will be located within a 400 – 1,000 m^2 area close to, or within the easement.

Access tracks will be required for the new Section B Alignment of the route. These access tracks will be constructed to be approximately 5m wide except where passing areas or turning points are required. Sensitive areas will be avoided so as to reduce erosion, sensitive vegetation, or areas of heritage significance. Minor grading may be required for access tracks with limited requirement for importation of capping material.

6.2.1 Access Preparation

Access tracks will be established using bulldozers and graders to clear any vegetation present and provide a trafficable surface. Light grading is often a suitable preparation; however some areas may need capping with imported material. In areas of stony 'gibber' soils, the surface stone cover may be left in place where feasible, with light grading or use of rollers implemented to remove larger rocks and create a trafficable surface. In sandy areas, bulldozers may be used to pull equipment and plant along the easement.

6.2.2 Clearance of Work Areas

Vegetation at the structure locations will be cleared or rolled to allow structure installation and cleared vegetation stockpiled for use in rehabilitation where required. Large lattice towers generally require a cleared construction working area of approximately 50 m x 50 m. In more sensitive areas this can potentially be reduced to approximately 40 m x 30 m. Monopoles would typically require a construction working area approximately 40 m x 40 m, however this can also potentially be reduced in specific identified cases to approximately 30 m x 30 m.

Additional cleared areas will be required at winch sites for restringing works. Two areas of approximately 50 m x 50 m will be required at strain structure locations, indicatively every 3 km to 5 km but dependent upon terrain and number of direction changes.

During cable stringing, there will be a need to clear or roll a narrow path between structures to enable pulling of the draw wire. Portions of this track may (depending up terrain) become the long-term maintenance access track. Wherever possible, vegetation clearance will be avoided for the stringing easement.

Vegetation assessments, including canopy height measurement, will be used to design the line profile. Where possible, structure heights will be set to avoid or minimise vegetation clearance both during construction and ongoing operation and maintenance of the transmission lines.

Where vegetation clearance is unavoidable and to minimise the risk of power outages, damage to transmission lines or fire starts, vegetation management works are undertaken to make sure that clearance distances between vegetation and transmission lines are established and maintained in accordance with the Electricity (Principles of Vegetation Clearance) Regulations 2010 (SA).

As much of the open woodland and scrubland vegetation (where present on the alignment) is relatively low, slow growing and at mature height, it is possible that it can be spanned across with

minimal clearance required. If this is not possible, some clearance or lopping of trees may be required under the conductors in some areas.

6.2.3 Stockpiles

The temporary stockpiling of topsoils and subsoils may be required during the construction phase of the Project, specifically for the establishment of the structure pads and for laydown areas along the linear corridor. Structure stringing sites would nominally require approximately 50 m x 50 m of clearance. Assuming the average depth of the clearance is approximately 100 mm, each tower would require a temporary stockpile of approximately 250 m^3, with stockpiles limited to 2 m in height, and approximately 15 m x 15 m in area.

The exact dimensions of the stockpile will vary to fit within the available cleared area (i.e. no further land disturbance is required for the stockpiles). Stockpiles will be located outside of defined watercourses to reduce the potential for surface water erosion impacts to creek lines and may be temporarily covered with cleared vegetation to reduce the potential for wind erosion.

Following the completion of construction activities, the stockpiled topsoil and subsoil will be respread over the cleared area with the cleared vegetation, and the sites left to naturally revegetate.

6.2.4 Foundations

Excavations for the structure foundations are typically dug using equipment such as excavators or borers. Blasting or pile driving may be used in areas where it is dictated by the geology, however these are not expected to be extensively required. Soil from excavations for foundations is typically spread at the tower site if suitable, or it may be used off site (e.g. for capping or used by the landowner).

Concrete for the foundations is likely to be supplied by a batching truck travelling between movable concrete batching plants, however this has not been confirmed and will be determined as part of the detail design. The location of such plant along the route is not yet known and will be determined once the construction contractor is engaged.

6.2.5 Tower Assembly and Installation

Lattice towers are expected to be partially fabricated off site and transported to the tower locations in sections for final assembly and erection. Monopoles will be delivered to the Project Area in sections. Mobile cranes will be used to lift tower sections into place for final assembly. Insulators and fittings will be attached to the tower and sheaves attached to the crossarms for stringing.

6.2.6 Cable Stringing

Conductors will be installed using land-based techniques. Land-based tension stringing using a drum and winch involves running steel draw wires out on the ground from a moving vehicle and lifting them into running blocks on the towers. Conductors are pulled well clear of the ground and vegetation under tension using a winch. Tension is maintained by braking apparatus located with the conductor drums. The conductors are held in tension in the sheaves for up to two weeks for the wires to bed in before final adjustment, cutting and dead-ending at tension positions on suspension towers.

Figure 6-2 (below) provide a visual indication of pole construction and line stringing

Figure 6-2: Indicative Pole Construction and Line Stringing

6.2.7 Commissioning

The commissioning phase involves a series of inspections to check aspects such as phases, line clearances, connections, joints, towers/poles, earthing, line sags and communications prior to energisation of the line.

6.2.8 Clean-up and Rehabilitation

Areas of temporary disturbance such as laydowns will be cleaned up and rehabilitated. Rehabilitation will involve the removal of construction material and waste, surface contouring and scarifying where required, as well as respreading of topsoil and cleared vegetation to encourage natural recruitment of vegetation.

Rehabilitated sites will be monitored during operations for soil stability, presence of weeds and vegetation recruitment success and remedial measures undertaken where required, including active reseeding should this be required.

6.2.9 Laydown Areas

Several temporary laydown and storage areas, each of approximately 1 ha, will be required along the transmission line corridor. These areas would be used for temporary storage of materials and equipment. They may also form a mobile construction depot and include temporary offices and ablution facilities and moveable concrete batching plants. At this stage, it has not been determined where these laydown areas will be located, although it is likely one of the main laydown areas will be in close proximity to the Davenport Substation. This will be confirmed as part of the detailed design phase.

Several larger temporary yards / “facilities areas” are also likely to be used during construction. These areas would typically house a construction camp, offices, water storage (e.g. tanks or turkeys nests), laydown areas, fuel storage, machinery and equipment storage and maintenance areas, tower fabrication areas and a concrete batching plant, where required. The final size and location of these larger temporary yards would be determined during detailed construction planning and landholder negotiations.

Temporary laydown and storage yards are typically in areas with limited native vegetation and would be prepared by lightly grading to form a level surface. Imported material may be used to cap the surface if the natural soil does not provide a suitable substrate.

Following construction, these areas would be rehabilitated by removing construction material and waste, surface contouring where required and respreading topsoil and cleared vegetation.

6.2.10 Water Supply During Construction

Potable water will be needed for use in concrete manufacture and workforce ablutions and drinking water and lower quality water will be needed to assist in compaction of the foundations at tower sites and for dust suppression of cleared areas along the easement.

The water is likely to be obtained from a range of sources, including existing and new groundwater wells and the South Australian potable water network. Water may be stored in large, temporary aboveground storages (e.g. water tanks or turkeys nests), which would be removed after use or ownership transferred to the landowner.

Specific details on this will be confirmed as part of the detailed design.

6.2.11 Borrow Material

Borrow material and crushed rock (e.g. for concrete manufacture) would be obtained from a range of sources including commercial suppliers, existing approved borrow pits or new borrow pits with appropriate approvals in place (e.g. Extractive Minerals Leases) where required.

6.2.12 Transport

Infrastructure would be transported from a port (most likely Port Adelaide) and unloaded at laydown/assembly areas or transported directly to the easement. Standard trucks would generally be used, with most of the materials for the Project expected to be transported in semi-trailers, with no or very few oversize loads required. Following engagement of the construction contractor, Traffic Management Plan(s) will be prepared detailing aspects such as approximate numbers of loads, sizes of trucks, routes, timing and traffic management requirements.

6.2.13 Construction Workforce, Accommodation and Hours

Depending on construction staging, it is likely that a peak workforce of approximately 150 people would be required for the construction of the line. Temporary facilities such as crib rooms and sanitary facilities would be provided at mobile construction depots and at some tower construction sites.

The workforce may either be accommodated at temporary accommodation camps or within existing accommodation within the township of Port Augusta.

If temporary camps are used, they will be located at the temporary yards, and would include accommodation and office buildings, sewage treatment systems and possibly mobile reverse osmosis plants for water treatment.

Construction hours are typically 12-hour shifts, from 6am to 6pm seven days per week. Depending on construction scheduling, some work may need to occasionally be undertaken outside these hours.

6.2.14 Operation / Maintenance

Very little ongoing maintenance is likely to be required for the transmission line. Access tracks to the transmission line towers would be retained for inspection and maintenance activities, predominantly by light 4WD vehicles. Maintenance programs would typically involve two visual inspections per year for signs of unusual wear, corrosion or damage. Bird nest removal is undertaken where required, in accordance with permits obtained under the *National Parks and Wildlife Act 1972* (SA). Helicopter-based inspections would be undertaken annually. A more detailed inspection by vehicle would occur about every four years. Insulators would typically be replaced every 25 years.

Extensive vegetation maintenance on the easement during operations is not expected to be required as vegetation present is generally slow growing and at mature height.

6.2.15 Decommissioning

The design life of a transmission line, with appropriate maintenance, is approximately 40 to 50 years after which time options for its future use will be evaluated by ElectraNet in consultation with the State Government and other parties.

7. Legislative Framework

7.1 *Development Act 1993*

The *Development Act 1993* (SA) provides the framework establishing South Australia's planning and development system and its statutory procedures. It is the key legislation for Project approval.

ElectraNet anticipated that the proposed upgrade will require the preparation of a Development Application (DA) for the Project under the *Development Act 1993*. We expect the proposal will be assessed by the State Commission Assessment Panel (SCAP) under the Crown Development and Public Infrastructure process in Section 49 of the Act.

This Project is a small portion of a much larger project, being undertaken by OZ Minerals for the construction of a 270 kV transmission line between Corraberra Hill to Prominent Hill. The OZ Minerals project mirrors the majority of the alignment of this Project (along the F1812 transmission line) and further north.

This being the case, it was discussed with DPTI on 29th March 2019 that the Crown Sponsorship under Section 49 of the Act, that has been issued to Oz Minerals by the Department of Premier and Cabinet (DPC) and the Department of Planning, Transport and Infrastructure (DPTI) on 17th January 2018, will also be applicable for this portion of the works.

7.2 Other Key Legislation

Commonwealth Legislation

- *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*
- *Environmental Protection and Biodiversity Conservation Act 1999*
- *Native Title Act 1993*

South Australian Legislation

- *Aboriginal Heritage Act 1988*
- *Electricity Act 1996*
- *Environment Protection Act 1993*
- *Fire and Emergency Services Act 2005*
- *Heritage Places Act 1993*
- *Local Government Act 1999*
- *National Parks and Wildlife Act 1972*
- *Native Title (South Australia) Act 1994*
- *Native Vegetation Act 1991*
- *Natural Resource Management Act 2004*
- *Road Traffic Act 1961 (SA)*
- *Rail Safety National Law (SA) Act 2012*
- *Roads (Opening and Closing) Act 1991*

- *South Australian Public Health Act 2011* and South Australian Public Health (Wastewater) Regulations 2013

Key legislation relevant to Project approvals is discussed further in the following sections.

7.2.1 Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) (Cth)

Matters of national environmental significance are important to all Australians, as well as internationally, given the interaction of the global biosphere. The *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (*EPBC Act*) aims to balance the protection of the environmental and cultural values with our society's economic and social needs by creating a legal framework and decision-making process based on the guiding principles of ecologically sustainable development. Specifically, the EPBC Act aims to:

- Provide for the protection of the environment, especially matters of national environmental significance
- Conserve Australia's biodiversity
- Protect biodiversity internationally by controlling the international movement of wildlife
- Provide a streamlined environmental assessment and approvals process where matters of national environmental significance are involved
- Protect our world and national heritage
- Promote ecologically sustainable development.

A person must not take an action that has, will have, or is likely to have a significant impact on any matter of national environmental significance (MNES) or other protected matters without approval from the Australian Government Minister for the Environment (the Minister). If a person believes that a project may result in a significant impact to a MNES, they must refer the project to the Department of the Environment and Energy (DEE). This referral is then released to the public, as well as to relevant State, Territory and Commonwealth Ministers, for comment on whether the project is likely to have a significant impact on a MNES. Alternatively, if, following a self-assessment, the person believes it is unlikely that the project will result in a significant impact to a MNES, the person may decide to not refer the project.

The purpose of the referral process is to determine whether a proposed action or proposed works will require formal assessment and approval under the *EPBC Act*. The referral document is the principal basis for informing the Minister's decision as to whether approval is necessary and, if so, the type and level of assessment that will be taken.

An EPBC Protected Matters Search was undertaken (refer to **Section 10.2**) along the 33 km route which identified one listed threatened ecological community, 27 threatened species and 31 listed migratory species occurring within or in close proximity to the Project Area. It is noted that all marine species that were identified in this search have not been included as this Project is not undertaking any construction or operational works near or under water that are likely to impact on marine species or ecosystems.

Three EPBC listed plant species were listed as being likely to occur within the Project Area, though none were known to occur in the area.

7.2.2 *Native Title Act 1993* (Cth) and *Native Title Act 1994* (SA)

The *Commonwealth Native Title Act 1993* (Cth) and the *Native Title Act 1994* (SA) provide for the recognition and protection of native title. Native title can be claimed on some areas of land or water (e.g. on vacant or unallocated Crown land) but is extinguished by freehold land tenure and certain other forms of land title.

The Commonwealth Act also regulates Indigenous Land Use Agreements (ILUAs), which are voluntary agreements made with native title parties about the use and management of land and waters.

ElectraNet engaged the Barngarla Determination Aboriginal Corporation (BDAC) to act as an agent for the Barngarla People in relation to their native title rights and interests.

A cultural heritage survey has been undertaken by anthropologist Dr Dee Gorring accompanied by Barngarla Determination Aboriginal Corporation (BDAC) representatives. Some impact has been identified and will be managed through the ongoing consultation with BDAC in the case of any of the conditions outlined in **Section 10.4**.

7.2.3 *Aboriginal Heritage Act 1988* (SA)

The *Aboriginal Heritage Act 1988* (SA) provides protection for any Aboriginal sites, objects or remains (whether previously recorded or not). Under Section 23 of the Act, damage, disturbance or interference with Aboriginal sites; damage to Aboriginal objects; or disturbance, interference and removal of objects or remains must not be undertaken without approval from the Minister for Aboriginal Affairs and Reconciliation.

A cultural heritage clearance survey has been undertaken in late 2018 and further surveys are planned for early 2019. Results from this survey are further discussed in **Section 10.4**.

7.2.4 *Electricity Act 1996* (SA)

The *Electricity Act* 1996 (SA) and the Electricity (Principles of Vegetation Clearance) Regulations 2010 (SA) regulate the electricity supply industry, make provisions for safety and technical standards and specify the requirements for vegetation clearance around transmission lines.

7.2.5 *Environment Protection Act 1993* (SA)

The *Environment Protection Act 1993* (SA) provides a regulatory framework for protection of South Australia's environment, including land, air and water. It imposes a general environmental duty to not undertake any activity that pollutes or might pollute the environment, unless all reasonable and practicable measures have been implemented. These measures focus on the prevention or minimisation of any resulting environmental harm. It also imposes an obligation to report incidents causing or threatening serious or material harm to the Environment Protection Authority (EPA), where applicable.

The Act also defines prescribed activities of environmental significance, which require authorisation and licensing under the Act. The Project may involve prescribed activities of environmental significance, including concrete batching and operation of mobile reverse osmosis plants. An EPA licence will be obtained for these activities, if required.

A number of Environmental Protection Policies operate under the Act that are relevant to the Project, including the Environment Protection (Air Quality) Policy 2016, Environment Protection (Water Quality) Policy 2015.

7.2.6 *Heritage Places Act 1993* (SA)

The *Heritage Places Act 1993* (SA) provides for the identification and conservation of places and related objects of heritage significance to South Australia. The Act provides protection for archaeological artefacts of heritage significance and under the Act it is an offence to damage a Heritage Place.

7.2.7 *National Parks and Wildlife Act 1972* (SA)

The *National Parks and Wildlife Act 1972* (SA) (*NPW Act)* establishes the system of conservation reserves in South Australia and provides protection for native plants and animals. The Project is located approximately 50 km from southern-most point of Lake Torrens National Park.

7.2.8 *Native Vegetation Act 1991* (SA)

The *Native Vegetation Act 1991* (SA) and Native Vegetation Regulations 2017 (SA) apply to the management and clearance of native vegetation on private and public land in South Australia.

An ecology assessment was undertaken by, EBS Ecology for the Aurora Project in 2015 through to 2017 in the Carriewerloo Substation area. Although only considering a portion of the Project alignment, this assessment allows us some understanding of the likely ecology within the northern extent of the Project Area.

7.2.9 *Natural Resources Management Act 2004* (SA)

The *Natural Resources Management Act 2004* (SA) applies to a range of aspects of natural resources management. Of relevance to the Project are provisions in the Act addressing activities that affect surface water and groundwater resources, as well as management of pest plants and animals.

The Act and the South Australian Arid Lands Natural Resources Management Plan set out a number of 'water affecting activities' that must not be undertaken without a permit, including construction of buildings or structures in a watercourse, lake or floodplain and depositing solid material in a watercourse or lake.

The Project potentially triggers the need for a permit for some construction activities (e.g. access track construction across watercourses). However, in accordance with Section 129(e) of the *Natural Resources Management Act 2004* (SA) and Schedule 8, Item 12 of the Development Regulations, a separate water affecting activity permit will not be required as it is covered by the development approval process.

Drilling of new water wells requires a permit under the Act.

8. Development Plan Assessment

The Project Area falls predominantly within two Development Plan areas (refer to **Figure 4**, attached) where the northern portion of the easement falls within Land Not Within a Council Area (Flinders) Development Plan and the southern area is located within the Port Augusta Council Development Plan area.

As this Development Application has been prepared under Section 49 it will be assessed by the SCAP to determine if it is consistent with the objectives of the relevant Development Plans as listed above.

An assessment against the relevant Development Plans is summarised is **Table 8-1** below.

Table 8-1 Development Plan and Assessment Requirements

Development Plan	Assessment
Land Not Within a Council Area (Flinders) Development Plan	The Project is consistent with the Flinders region and Council-wide Objectives and Principles of Development Control outlined in the Development Plan. Pastoral Zone The Project aligns with objectives of the zone. The development will have a limited visual impact, similar to other existing transmission lines in the Pastoral Zone. Otherwise, these works are not expected to significantly impact or detract from the natural environment and character of the zone. The land beneath the proposed transmission line will not be fenced, thereby allowing livestock to continue grazing under this infrastructure with minimal impact on stock movements.
Port Augusta Council Development Plan	The Project is consistent with the regional and Council-wide Objectives and Principles of Development Control outlined in the Development Plan. Residential Zone A key objective of the residential zone is, not just to maintain an area for a range of dwellings types, but also to maintain 'development that contributes to the desired character of the zone. Development in this zone is only to be undertaken when it is consistent with the desired character for the zone. The desired character for the zone is to maintain the local municipality including establishment or maintenance of connections to facilities and services. The Project is expected to comply with the zone objectives and principles. Residential (Davenport) Zone The objective of this zone is to maintain residential development and associated community facilities. The Project is expected to comply with the zone objectives and principles. Rural Living Zone A key objective to the rural living zone is, not just to maintain a zone consisting of large allotments, detached dwellings and rural activities, but also to maintain development that contributes to the desired character of the zone. Directly relevant to the Project is that any development to the north and east of the Port Augusta Racecourse are to maintain appropriate buffers/ separation distances to the high voltage transmission corridors (existing and proposed) that run north-south through the area. Similarly, development to the south of the racecourse must accommodate (with buffers/ separation distances) the railway line. The Project is expected to comply with the zone objectives and principles. Industrial Zone A key objective in this zone are to accommodate a wide range of industrial, warehouse, storage and transport land uses. These areas are intensively developed and landscaped areas. The Project is expected to comply with the zone objectives and principles. Primary Industry Zone Some of the key objectives of this zone include maintaining an economically productive, efficient and environmentally sustainable area for primary production, and the protection of primary production from encroachment by incompatible land uses and protection of scenic qualities of rural landscapes. While the Project is not specifically envisaged in this zone, the proposed works will have minimal impact on the zone as it will be located directly adjacent to the existing transmission lines and will remain unfenced to allow for unobstructed access to livestock movements. The Project is expected to comply with the zone objectives and principles. Conservation Zone A key objective of this zone is the conservation of the natural systems including native vegetation, reserves, the coast, mangroves, wetlands and rivers, and to maintain a zone comprising land which has significant landscape qualities and is to continue in use as natural open space to retain the qualities and amenity of the zone It is also stated that the land must be kept free of development that is not a necessary part of pastoral activity.

Development Plan	Assessment
	The principles of development control in this zone include that natural drainage channels should not be altered, and that any development should not result in the introduction or spread of noxious weeds of scheduled pest plants. Additionally, no new roads or tracks are to be constructed within the zone. Although the Project is not specifically listed as a Non-Complying Development, the principles of development control do state that the Conservation Zone should be conserved in its natural state and should not impair the natural and scenic features of the zone. This zone is located adjacent to water body north of the Thomas Playford Power Station, adjacent to Racecourse Road. The alignment of the existing transmission line intersects with the Conservation Zone. It is therefore unlikely that there will be significant concern with the placement of the Project Area intersecting this zone. A Construction Environmental Management Plan (CEMP) has been developed for the extended Project[4] which will consider the potential for impact in this region. Where necessary, some controls may be implemented to mitigate that potential impact. <u>Commercial (Bulky Goods) Zone</u> The key objective of this zone is to accommodate a range of buildings used for bulky goods outlets and service trade premises. With the assumption that the Project does not interfere with access to and from the outlets and trade premises then it is expected that the Project will comply with the zone objectives and principles. <u>Commercial Zone</u> A key objective of this zone is to accommodate a range of commercial and business land uses and to minimise any adverse impacts upon the amenity of the locality within the zone. The Project is not listed under the non-complying development activities. The Project is expected to comply with the zone objectives and principles. <u>Mining</u> The key objective of mining areas within the Port Augusta Council area, is to protect the landscape from undue damage from prospecting, mining, quarrying and similar extractive and associated manufacturing industries. The Project is expected to comply with the objectives and principles of mining in the Port Augusta Council area.

Overall, the Project is consistent with objectives and associated principles in the Development Plans, including those relevant to supporting mining development and the need for strategic infrastructure assets, conservation of scenic values, prevention of conflict between land uses, preservation of heritage values, and protection of natural resources.

A Construction Environmental Management Plan (CEMP) incorporating the objectives and principles of the Conservation Zone as per the Port Augusta Council Development Plan has been included as a supplement to the UGL Hill to Hill Connection Project CEMP. This Project specific CEMP will identify potential impacts and mitigation or control measures specific to the works described in **Section 6** above. The Carriewerloo Substation to Davenport Substation CEMP (herein referred to as the Supplementary Carriewerloo to Davenport CEMP) and the UGL Hill to Hill Connection Project CEMP (referred to as the UGL Hill to Hill Connection Project CEMP) are both attached as **Appendix A**.

The Port Augusta Council have confirmed their support of the proposed work with the condition that all applicable development, cultural heritage and native vegetation approvals are complied with and provided to Council not less than seven days prior to the commencement of work, see letter attached as **Appendix B**.

[4] UGL, Hill to Hill Connection Project, January 2019. Refer to **Appendix A**

The Project is not at variance with the zone objectives or desired character. The infrastructure development promotes the sustained growth in the municipality with the proposed substation in an area that is not environmentally or culturally significant or sensitive.

9. Project Justification

OZ Minerals Prominent Hill mine shares BHP's 275 kV electricity transmission line from Davenport to Olympic Dam West, which then connects to the OZ Minerals owned 132 kV electricity transmission line supplying Prominent Hill.

In accordance with its power supply agreement with OZ Minerals, BHP formally gave notice to OZ Minerals that it will need to find an alternate electricity supply by August 2020 due to its own expansion plans and requirements for grid power.

In order to maintain energy supply, OZ Minerals is developing a new 275kV transmission line from Olympic Dam West (the terminus of the existing Prominent Hill to Olympic Dam West transmission line) to Davenport substation. The section of the project from Olympic Dam West to the proposed Carriewerloo substation (and Aurora Project site) has already gained Development Approval.

In addition, the existing infrastructure in this region is dated and does not meet the current or future requirements of OZ Minerals's Prominent Hill and Carrapateena operations.

The new electricity transmission line will also connect to the 132 kV Carrapateena electricity transmission line at Mount Gunson South, which was recently developed by ElectraNet. The Project location is shown in **Figure 1** (attached).

Due to design changes, the final section of the project (from the proposed Carriewerloo substation to Davenport substation) was separated and made the subject of a separate Development Application (this document).

The Carriewerloo to Davenport Upgrade Project is a key infrastructure project, as it will not only upgrade dated infrastructure, but will also provide additional capacity for the provision of electricity to the upper northern of South Australia and ensure ongoing cost competitiveness of OZ Minerals's two major South Australian mines.

9.1 Development Application Process

This Development Application Report has been prepared by ElectraNet and submitted under the sponsorship of the Department of the Premier and Cabinet (DPC, now Department for Energy and Mining, DEM), for lodgement with the State Commission Assessment Panel (SCAP). The application was lodged under the public infrastructure provisions of Section 49 of the *Development Act 1993* (SA).

This Project is a small portion of a much larger project, being undertaken by OZ Minerals for the construction of a 275 kV transmission line between Olympic Dam West and Port Augusta (Davenport substation). This application has been supported by the DPC and DPTI on the 17th January 2018.

The Crown Sponsorship under Section 49 of the Act issued to Oz Minerals by the Department of Premier and Cabinet (DPC) and the Department of Planning, Transport and Infrastructure (DPTI) on 17th January 2018 is also applicable for this portion of the works.

10. Key Environmental Aspects

10.1 Regional Context

The Project is located within the Stuart Shelf geological province, a relatively thin sequence of sedimentary rocks that lie above the Gawler Craton. The Gawler Craton is geologically stable, having not been substantially deformed or remobilised since Proterozoic times[5].

The Project is situated within the Gawler Interim Biogeographic Regionalisation for Australia (IBRA) Bioregion[6], (see **Table 10-1,** below, and **Figure 5a and 5b**, attached). The Gawler Bioregion comprises one quarter of South Australia's Pastoral Rangelands, encompassing an area of 123,070 km^2 and is characterised by flat-topped to broadly rounded hills of the Gawler Range Volcanics and Proterozoic sediments, low plateaux on sandstone and quartzite with an undulating surface of aeolian sand or gibbers and rocky quartzite hills with colluvial foot slopes, erosional and depositional plains and salt encrusted lake beds. Spinifex grasslands, open woodlands and chenopod shrubs occur on shallow loams, calcareous earths and hard red duplex soils.

Table 10-1: IBRA Subregions Traversed by the Transmission Line

IBRA Subregion	Description
Arcoona Plateau	A dissected sandstone plateau with bold eastern escarpment. Surface undulating to hilly and often gibber-covered, particularly in east. Dissected sandstone plateau with bold eastern escarpment. Surface undulating to hilly and often gibber-covered, particularly in east. Crusty red duplex soils, Red calcareous loams covered with chenopod shrublands
Gawler Lakes	An undulating upland plain underlain by quartzite and sandstone, with shallow loamy soils. Encompasses the Woomera plateau, which is characterised by the absence of trees and tall shrubs, except on floodplains, where mulga (*Acacia aneura*), bullock bush (*Alectryon oleifolius ssp. canescens*), occasional red gums (*Eucalyptus camaldulensis*) and other species may be found. The gibber-covered areas are either bare or carry a scattered growth of samphire (*Tecticornia* sp.) and bindyi (*Sclerolaena* sp.). The depositional plains to the south and southwest of the plateau are covered with deep calcareous earths characteristically carrying an open myall (*Acacia papyrocarpa*) woodland with a bluebush (*Maireana sedifolia*) understorey, or red aeolian sand sheets and dunes with open mulga shrubland or a low woodland of *Casuarina pauper* or *Callitris glaucophylla*. Approximately 62% (1,271,089 ha) of the subregion is mapped as remnant native vegetation, of which 2% (30,615 ha) is formally conserved. Undulating plains are overlain with sand sheets and dunes, with occasional silcrete-capped rises with brown calcareous earths, crusty loamy soils with red clayey subsoils, Sand soils, brown and red, shallow dense loams.

10.1.1 Climate

The Project lies in an arid to semi-arid region, subject to hot summers and cool to mild winters. Temperatures are consistently higher in the north, with average monthly summer maximums reaching 34°C at Port Augusta[7].

Rainfall in the Project Area is low, with no clear seasonal pattern. Rainfall is unpredictable and sporadic throughout the year, often occurring in intense short bursts. Average annual rainfall at Port Augusta is 220 mm. The average number of rain days per year is 35 (Port Augusta), though this

[5] Parker, A.J. 1993. Geological framework. In: Drexel, J.F., Preiss, W.V., and Parker, A.J. (Eds). The Geology of South Australia. Vol. 1 The Precambrian. South Australian Geological Survey. Bulletin 54
[6] Bioregions and subregions are defined by the Interim Biogeographic Regionalisation for Australia (IBRA) Version 7.0. Bioregions are broad landscape units based on major geomorphic features
[7] BoM (Bureau of Meteorology). 2019. Climate statistics for Australian locations. Site last accessed on 27 March 2019 at www.bom.gov.au/climate/data/

can vary considerably from year-to-year. **Table 10-2** below indicates the mean temperatures and rainfall over the years when data has been collected by the Bureau of Meteorology.

Table 10-2: Climate Records for Weather Stations in Proximity to the Proposed Transmission Line

	J	F	M	A	M	J	J	A	S	O	N	D
Port Augusta (Aerodrome) Station #018201 (2001-2018)												
Mean Daily Max (°C)	34.4	33.3	30.6	26.8	21.6	18.0	17.9	20.1	23.9	27.2	30.3	26.4
Mean Daily Min (°C)	19.6	18.8	16.6	13.1	8.8	5.9	4.5	5.3	8.3	11.8	15.5	17.3
Mean monthly rainfall (mm)	12.8	15.5	14.6	21.2	17.0	24.7	16.2	15.5	17.6	15.8	20.1	24.5
Port Augusta (Carriewerloo Station) #016005 (1882-2018) (no temperature data available from this location)												
Mean monthly rainfall (mm)	15.6	18.8	13.8	16.5	21.0	21.6	17.2	19.7	19.3	20.4	17.1	16.4

10.1.2 Land Systems

The proposed transmission line traverses several land systems (refer to **Table 10-3** below). Land systems are an area, or group of areas, throughout which there is a recurring pattern of geology, topography, soils and vegetation, based on the SA Land Systems data that was developed by the SA Department for Environment and Water (DEW) as part of land system mapping of the pastoral areas of South Australia (NatureMaps, 2018). They provide a finer level of detail of environmental description than IBRA Subregions.

These land systems typically comprise dunefields and plains as well as undulating tablelands. The area north of Port Augusta is predominantly made up of sand sheets and plains with low topographic relief.

Table 10-3: Land Systems Present Across the Project Area

Land System	Description
Tent Hill	Strongly dissected stony tablelands complex. Plains of bladder saltbush and glasswort shrubland with bluebushes; footslopes and plains of low bluebush and bladder saltbush with some blackoak; tablelands of bladder saltbush and slender glasswort; watercourses of blackoak and bladder saltbush
Hesso	Extensive sand sheets with calcareous soils. Plains of myall, sugarwood woodland over pearl bluebush +/- bladder saltbush; and plains and rises of mulga and myall woodland with pin bush wattle, pearl bluebush and spiny fan flower
Yorkey	Saline sand plain. Dunes of mulga, myall or northern native pine over narrow-leaf hopbush and blackbush; swales of blackbush, slender glasswort and bladder saltbush; sandy flats of myall open woodland over blackbush, bladder and bitter saltbushes; and salt pans and fringing samphire flats

10.1.3 Topography

The Project Area has very low topographical variability with a total ascent of 63 m across the entirety of the alignment, approximately 33 km. The southern portion of the Project Area adjacent to Flinders Channel is low lying with ground levels between 5 and 21m AHD.

The lowest point along the transmission line occurs at the ephemeral marsh of Yorkeys Crossing adjacent to Mystery Island. There is an increase in elevation on the northern side of Yorkeys Crossing, with a total elevation gain of approximately 63 m over 5 km.

From the peak elevation of 68 mAHD, the topography declines gradually to a continuous elevation of approximately 45 mAHD for the northern most portion of the easement towards the Carriewerloo Substation.

10.1.4 Potential Project Impact

Due to the flat terrain of the Project Area, the transmission towers and associated transmission lines will be the dominant feature of the landscape. The structure of the soil and underlying geology will also influence the installation method and depth of the footings for the transmission structures. Geotechnical investigations will be undertaken to inform the detailed design.

Construction activities such as vegetation clearance, excavation and earthworks have the potential to lead to the erosion of soils if exposed to wind or water flows. Clearance, excavation and earthworks will be required for the construction of tower footings, lay down areas, temporary stringing easements, new access tracks, and temporary site facilities (including construction camp).

Transmission towers, poles, laydown areas and tracks will be located and constructed to minimise erosion potential. Salt lakes and steeper slopes will be avoided and interdune corridors preferentially used for access as far as practicable. Sediment and erosion control measures will be installed prior to construction where appropriate (e.g. where earthworks are being undertaken in areas of high erosion risk or near watercourses or ephemeral lakes).

Drainage features or structures will be installed on the access track where appropriate to prevent erosion during operations and remedial action will be implemented where required. With controls in place, the likelihood for erosion to occur will be significantly reduced.

10.2 Ecology

It is noted that various sources of information have been utilised to understand the ecology located in the vicinity of the Project Area. This includes a desktop assessment of the entire alignment, an on-site assessment of the Section A Alignment and an ecological assessment that was undertaken as part of the Aurora Solar Energy Project EIS. This assessment is publicly available and, although not specific to the works being undertaken as part of this Project, the area corresponds to the north-west portion of the Project alignment.

A full ecological assessment is almost complete. When it is made available, the relevant information will be added to this document and a re-assessment of the potential ecological impacts undertaken.

Desktop Assessment of the Entire Alignment (34km)

Review of the Biological Survey of South Australia Floristic Vegetation Study Areas Far West Coastal Map[8] shows there are a number of vegetation groups present within the entire Project Area. The main vegetation community is Chenopod shrubland which is associated with depositional plains with clay loam. Callitris forest and woodland associated with hill slopes and gullies. Hummock grassland, associated with sand dunes and plains, are the next most prominent vegetation types.

There are smaller areas of Acacia shrubland associated with dune foot slopes and hillslopes and Samphire shrubland associated with tidal zones. These ecological communities are not listed as threatened under the *EPBC Act*.

A Protected Matters Search for the entire 33 km route identified one listed threatened ecological community, 27 listed threatened species and 31 listed migratory species occurring within or in close proximity to the Project Area. The threatened ecological community (TEC) identified – Subtropical

[8] Retrieved from NatureMaps on 5/03/19

and Temperate Coastal Saltmarsh – was also identified within a search undertaken by an external ecology consultant, EBS Ecology, on a portion of the alignment. Further description of this is provided below.

The Protected Matters Search is useful to identify the potential species that may occur within an area. However, potential presence does not guarantee a species will be found in this area. Of the three EPBC listed plant species listed as being likely to occur within the Project Area, none are known to occur in the area. Further onsite investigation is required to confirm this is the case. These species include *Caladenia tensa* (Greencomb Spider-orchid; Endangered), *Frankenia plicata* (Endangered) and *Senecio megaglossus* (Vulnerable).

Of the 27 listed threatened species identified in proximity to the Project Area, a total of three species are known to occur in the area. These are the *Calidris canutus* (Red Knot; Endangered), *Calidris ferruginea* (Curlew Sandpiper; Critically Endangered) and *Numenius madagascariensis* (Eastern Curlew; Critically Endangered).

Nine of the listed thirty-one migratory species are known to occur in the Project Area proximity, the remainder are classified as likely to occur. The nine migratory species are all wetland species and include; *Actitis hypoleucos* (Common Sandpiper), *Calidris acuminate* (Sharp-tailed Sandpiper), *Calidris canutus* (Red Knot; Endangered) *Calidris ferruginea* (Curlew Sandpiper; Critically Endangered), *Calidris ruficollis* (Red-necked Stint), *Limosa limosa (*Black-tailed Godwit), *Numenius madagascariensis* (Eastern Curlew; Critically Endangered), *Tringa nebularia* (Common Greenshank) and *Tringa stagnatilis* (Marsh Sandpiper). Several of the listed wetland species are also listed as birds.

It is noted that any marine species identified in the Protected Matters Search were not included in this assessment as there are no works proposed that have the potential to impact on marine life.

There is a total of two critically endangered fauna species known to occur in proximity to the Project Area, these are the Curlew Sandpiper and Eastern Curlew.

A search of available data from the Biological Survey of South Australia accessed from NatureMaps, identified the biodiversity value of the Project Area further. Firstly, the substation at Davenport is located adjacent to the Port Augusta Saltworks which is a known Coastal Wader Bird site. In addition, there are a number of State and National Rated Flora sites within the Project Area, the identified state significant flora includes the *Citrus glauca* (Desert Lime; Vulnerable) and *Senecio megaglossus* (Large-flower Groundsel) which is listed in SA as Endangered and listed as vulnerable under the *EPBC Act*.

The most ecologically sensitive area is anticipated to be the portion of the line that intersects with the wetlands surrounding Yorkeys Crossing. This area is characterised by a range of coastal saltmarsh and mangrove environments including; Stranded Tidal Flat Samphire, Intertidal Samphire, Supratidal Samphire, Intertidal Mangrove, Intertidal Cyanobacterial Mat and Supratidal Cyanobacterial Mat. These environments are known and are likely to host several of the threatened and migratory species identified in the protected matter search. Lastly, this area has a moderate risk of the presence of acid sulfate soils under the top 20 cm of soil.

Due to the location, there is limited flora and fauna data available for the Section B Alignment.

EBS Ecology Assessment (draft) of 19km of Alignment – Davenport Substation to Yorkeys Crossing

EBS Ecology were engaged to undertake an assessment of flora and fauna for a portion the Section A Alignment, from Davenport Substation up to Yorkeys Crossing, approximately 19 km.

The assessment done to date has included a desktop review and search as well as a brief onsite ecological survey. Further ecological studies are expected to be undertaken as required.

To date, a desktop search of protected matters under the *EPBC Act* and a search of the Biological Database of South Australia (BDBSA) has been completed. Furthermore, a field survey was undertaken between 16 and 19 October 2018 to assess the potential project impact on flora and fauna and determine what offsets are required. The report providing the results of these investigations is currently in draft format and has been attached for reference as **Appendix C**.

The field assessment undertaken by EBS Ecology did not record any threatened flora and fauna species. The assessment did, however, find that a number of survey areas were a suitable habitat for a few threatened species including the Elegant Parrot, Blue-winged Parrot, Slender-billed Thornbill and Slender Soft-horns.

In addition, it was found that two study areas may qualify as a TEC under the *EPBC Act*. The potentially occurring community is Subtropical and Temperate Coastal Saltmarsh which is listed as vulnerable under the *EPBC Act*.

The assessment assumed that a corridor 50 m wide and 18 km long would be entirely cleared as part of the Project. Based on this, the assumed clearing is defined as High Risk (Level 4) under the *Native Vegetation Act 1991*.

The current easement along this portion of the alignment is 30 m in width. The Project requires a buffer of 50 m, therefore the area requiring clearing would only be 20 m width along the Section A Alignment (which is actually 19 km rather than 18 km as considered within the EBS Ecology assessment).

In order to undertake the proposed clearing, a Significant Environmental Benefit (SEB) is required under Division 5 of the Regulations. The value calculated for the SEB will have to account for the actual width of clearing along the Section A Alignment (20 m x 19 km) and the Section B Alignment (50 m x 14 km). This calculation will be made following completion of the detailed design of the Project.

The anticipated degree of actual clearing and the associated offset calculations along with the offset strategy will be provided to the Native Vegetation Management Branch of the NSW Department for Environment and Water prior to any clearing of native vegetation as part of this Project.

Further ecological information: EBS Ecology – Aurora Solar Energy Project EIS

Due to the lack of flora and fauna data for the Section B Alignment, a review of the ecology report appended to the Aurora Solar Energy Project Environmental Impact Statement (EIS) was undertaken.

The Aurora Project area and the Section B Alignment are characterised by similar landscape features and both are within the Gawler bioregion and Gawler Lakes sub-bioregion. The Aurora Project is located adjacent to the Project Area at the proposed Carriewerloo Substation end of the alignment. Due to the proximity of the investigation area undertaken on the Aurora Project to the Project Area, it is likely the findings of the Aurora Project ecology assessment similarly apply to the Section B Alignment of this Project. A summary of the Aurora Project ecology report (EBS 2017) is, for this reason, provided below.

As part of the assessment, two field surveys were undertaken, one in spring conditions in October 2015 and the other in winter conditions in August 2017. All encountered flora and fauna species in the project area were recorded, mapped and compared against the *EPBC Act* and *NPW Act*. No flora species listed under the *EPBC Act* were recorded during the surveys despite the protected

matter search tool identifying that three species may occur within the project area. The species identified during the desktop assessment but were not identified in the field survey included: Braided Sea-heath (*Frankenia plicata*; EPBC: Endangered), Bead Purslane (*Calandrinia sphaerophylla*; SA: Rare) and Desert Lime (*Citrus glauca*; SA: Vulnerable).

The fauna survey recorded 48 bird species in spring 2015 and 42 bird species in winter 2017. No bird species recorded during the field assessment were EPBC listed. However, there was one species of conservation significance recorded, the Blue-winged Parrot *(Neophema chrysostoma)*, which is listed under the *NPW Act* as vulnerable. In addition, seven mammal species and four reptile species were recorded during the field surveys. None of the mammals and reptiles recorded during the field survey or identified during the desktop assessment were listed under the *EPBC Act* or the *NPW Act*.

The native fauna recorded during the survey include; the Western Grey Kangaroo (*Macropus fuliginosus*) and Red Kangaroo (*Macropus rufus*), Wallaroo (*Macropus robustus*). Introduced species recorded included; domestic sheep (*Ovis aries*), feral goats (*Capra hircus*), European rabbits (*Oryctolagus cuniculus*) and Red Fox (*Vulpes vulpes*). The recorded reptiles were the: Sleepy Lizard (*Tiliqua rugosa*), Central Bearded Dragon (*Pogona vitticeps*), Crested Dragon (*Ctenophorus cristatus*) and Gould's Goanna (*Varanus gouldii*).

The condition of the vegetation varied from 4:1 (poor) to 8:1 (good) over the Project area which led to a subsequent land value for offsets set as $20 per hectare. At a total of 812.93 ha of native vegetation that was to be cleared, the calculated offset under the SEB was 5,743.5 ha, which totalled $765,215.64.

10.2.1 Potential Project Impact

Based on the EBS Vegetation Assessment, at least half of the Project Area is anticipated to be of low significance due to low levels of regeneration and species-poor areas. In addition, the Protected Matters Search for the whole route identified only three flora species with the potential to occur in the area. However, due to the occurrence of a listed ecological community as well as the potential for the presence of three endangered and vulnerable plant species, the Project may have some impact on flora values.

Due to the known presence of two critically engendered fauna species and several species with the potential to occur within the Project Area, it is possible that the Project may impact on sensitive species within the Project Area. The potential ecological impact of the Project may result from the removal of vegetation and habitat, disturbance of species from vibration and noise and bird mortality due to powerline strikes[9].

It is noted however, that in general the habitats present along the full alignment are well represented across the broader landscape, and do not provide critical habitat for any of the rare or threatened species identified as potentially present. The footprint for the project will impact a very small proportion of the available habitat for rare or threatened species.

Any potential impacts will be limited with implementation of the UGL Hill to Hill Connection Project CEMP[10] vegetation and fauna mitigation measures.

There is potential for the liberation of acid sulfate soils during intrusive ground works within the wetland area of Yorkeys Crossing. The release of potential acid sulfate soils (PASS) could have

[9] G R Martin and J Shaw (2010). Bird collisions with power lines: Failing to see the way ahead? *Biological Conservation,* Volume **143**, pp 2695-2702.
[10] UGL, Hill to Hill Connection Project, January 2019. Refer to **Appendix A**

numerous impacts on surrounding flora and fauna due to the generation of sulfuric acid. The production of sulfuric acid could have detrimental impacts on individual or various fauna species.

In order to mitigate or prevent impacts related to PASS, the Supplementary Carriewerloo to Davenport CEMP will include the potential impact of exposing acid sulfate soils and ensure all relevant regulation and legislation regarding acid sulfate soils are considered. This includes *EPA Publication 638/07 Site Contamination – Acid Sulfate Soil Materials* and the *Environment Protection Act 1993*.

The area of vegetation to be cleared for the footing pads of each tower, access tracks and laydown areas across the entirety of the Project Area between Carriewerloo and Davenport will be confirmed as part of the final design.

The final proposed clearing to be determined will likely be classed as Level 4 High Risk under the *Native Vegetation Act 1991*, due to the presence of a threatened ecological community, critically endangered species, other listed species and association with the wetland environment. With the development and implementation of the Supplementary Carriewerloo to Davenport CEMP and the Acid Sulfate Soil Management Plan these potential impacts are likely to be limited appropriately.

10.3 Non-Cultural Heritage

The SA Heritage Register was consulted to determine whether there are any heritage areas, places or related objects in the Project Area. No results were obtained at the completion of this search. It is not expected that there will be any heritage impacts associated with this Project.

10.4 Cultural Heritage

The land traversed by the transmission line is subject to two Native Title Claim Areas and one Native Title Determination; the Barngarla Native Title Determination Area [SCD2016/001] and [SI2018/003], the Barngarla Native Title Claim Area [SC1996/004], and the Nukunu Native Title Claim [SC1996/005]. **Figure 6** (attached) visually represents the location of the Native Title Determination and Claim Areas against the location of the Project alignment.

The Barngarla Determination Aboriginal Corporation (BDAC) was engaged by ElectraNet to act as an agent for the Barngarla People in relation to their native title rights and interests. BDAC commissioned anthropologist Dr Dee Gorring to undertake a heritage clearance survey of the broader Project Area of the Prominent Hill Project, accompanied by BDAC representatives.

Nukunu representatives have been approached and initial discussions on the Project scope have begun. Further collaboration with, both, the BDAC and with Nukunu representatives is expected to be ongoing.

A cultural heritage clearance survey was conducted with representatives from the Barngarla Determination Aboriginal Corporation between 17 and 19 December 2018.

Due to strict confidentiality clauses, ElectraNet is unable to provide specific details or maps indicating exclusions zones or areas of cultural significance as part of this document. The BDAC representatives retain all copyright to all work that they produce and do not provide authority for it to be provided to any third party. On this basis, only the general conditions and exclusions have been listed below, with respect to conditions for works on the Project.

Based on the consultation to date with the BDAC representatives, ground disturbance within the Project Area will be able to proceed with the condition that the following recommendations of the BDAC be complied with:

- That the heritage recommendations and clearance exclusions be adhered to during any activities carried out by ElectraNet employees and subcontractors;
- That road or track use is restricted to existing alignments wherever possible;
- That no development activities occur within 10 m of any water courses without contacting BDAC Directors;
- That no development activities occur within 10 m of the base of any stone outcrops without contacting BDAC Directors;
- That no development activities occur within 10 m of the base of any sandridges or sandhills without contacting BDAC Directors;
- That no development activities occur within 10 m of any salt pans or clay pans without contacting BDAC Director;
- That there is minimal impact on mature vegetation, particularly Black Oak (Casuarina pauper), Mallee (various Eucalypt species), Mulga (*Acacia aneura*), Sandalwood (*Santalum spicatum*), Wild Peach (or Quandong, *Santalum acuminatum*), Myall (*Acacia papyrocarpa*), and Bush Medicine (*Eremophila alternifolia*);
- That any proposed development activities outside the survey area are to be surveyed and cleared by male and female BDAC representatives following similar methodologies to those presented in this report; and
- That any development activities other than those described in this report be surveyed and cleared by male and female BDAC representatives.

10.4.1 Potential Project Impact

A number of sites have been identified by the BDAC as being culturally significant within the Project Area of this DA. All sites directly intersect with the proposed transmission line. ElectraNet is working to design around cultural heritage sites wherever possible, however it may not be possible to avoid them all. Therefore, the Project will impact on local cultural heritage.

This impact will be managed through the ongoing consultation with BDAC in the case of any of the conditions outlined above. As per the conditions of the BDAC above, ElectraNet will contact BDAC Directors prior to any works that that are in the vicinity or intersect with the identified site locations as well as other water courses, sand ridges or sandhills, salt pans or clay pans.

It may be noted that cultural heritage elements may be identified following further consultation with the Nukunu representatives. If this does occur, further consultation will be undertaken with the Nukunu representatives to identify the most appropriate management actions.

10.5 Surface Water

There are no major permanent freshwater lakes in the South Australian Gulf region. Due to the low levels of highly variable rainfall mentioned above, surface water is highly ephemeral with short periods of water flow following significant rainfall events. As a result of the highly permeable sandy soils and flat topography, several large salt lakes and ephemeral lagoons exist.

Within the portion of the Project Area adjacent the Spencer Gulf, there are a number of surface water bodies along the banks of Flinders Channel and several ephemeral salt lakes in the vicinity of the proposed transmission line.

10.5.1 Potential Project Impact

Existing surface water features are not anticipated to be impacted by the project, except where the alignment intersects Yorkeys Crossing.

At this point, the alignment will intersect two non-perennial salt lakes. Due to the scarce occurrence of water, it is not anticipated that the Project will interfere with surface water flows. However, there is potential that the marshy nature of the northern section of Flinders Channel will result in stability and access difficulties relating to project construction and commissioning.

In addition, there is a low risk of the occurrence of flood, as these events are rare. Surface water could be impacted by erosion of soils and runoff from stockpiles and disturbed surfaces leading to increased sedimentation of surface water. Erosion related mitigations measures are addressed within the UGL Hill to Hill Connection Project CEMP.

10.6 Groundwater

The Project Area is within the Gawler Craton province which is characterised by Palaeoproterozoic metasediments and volcanics intruded by granites and gneisses within fractured rocks. The Project Area lies within a surficial saline sediment aquifer with unconsolidated porous media. Regional groundwater flow systems occur in Cainozoic sediments and local flow systems occur in Precambrian rocks. Throughout the Project Area, Quaternary aquifers are characterised by the overlaying dunes, sandplains and numerous interdune clay pans.

Where alluvial sediments occur, along the northern continuation of Flinders Channel, aquifers occur in channel and flood plain alluvium comprising of locally calcreted gravel, sand, silt and clay. The depth to water is anticipated to be approximately 0 to 5 meters below ground level (mbgl) for the southern section of the transmission line running parallel to Flinders Channel. The western directional change north of Yorkeys Crossing is expected to encounter groundwater at deeper depths of approximately 10 to 20 mbgl.

Groundwater flow direction is anticipated to be in a southerly directly towards Spencer Gulf.

There are approximately 70 bores within close proximity to the transmission line, these have recorded Standing Water Levels (SWL) that range from 0.5 to 13.6 mgbl. Most of the bores with SWL readings of less than 1m are along the southernmost section of the transmission line in close proximity to Flinders Channel.

10.6.1 Potential Project Impact

Due to the shallow watertable along the southern portion of the transmission line, there is potential for groundwater interception during the installation of transmission tower footing and any other intrusive activities. Footings for the transmission lines are likely to range from between 6-10m below ground surface and approximately 2m diameter.

In addition, there is a risk of groundwater interception during ground intrusion occurring on or in close proximity to waterbodies. In addition, there is a risk that disturbed acid sulfate soils may migrate into the groundwater column and compromise the groundwater quality. This is further considered in the UGL Hill to Hill Connection Project CEMP[11].

There is also the potential for accidental spills of hydrocarbons associated with transport and other chemicals used during construction activities, to penetrate areas with a shallow watertable. This

[11] UGL, Hill to Hill Connection Project, January 2019. Refer to **Appendix A**

risk of this impact occurring is considered low due to the comprehensive management measures to be utilised from the UGL Hill to Hill Connection Project CEMP.

10.7 Air Quality

There is one EPA air pollutant monitoring site within the Project Area. The monitoring site is located in Port Augusta near where the transmission line intersects the Augusta Highway and actively monitors PM_{10}, $PM_{2.5}$ and Total Suspended Particulates (TSP).

The most recent air quality data dated 7 March 2019 recorded very low levels of PM_{10} and TSP (both under 100 µg/m^3), as well as a spike of 20 µg/m^3 in $PM_{2.5}$ from 6am to 9am. From ongoing air monitoring data, Port Augusta has been classed as having good overall air quality based on pollutant concentrations and the relevant NEPM standards used by the SA EPA.

Due to the dry nature of the region, the area is susceptible to dust storms that blanket vast areas with aeolian dust. In addition, there are several potential sources that contribute to air emissions including; vehicle emissions, dust generated by traffic on unsealed roads and pastoral activities.

10.7.1 Potential Project Impact

The primary potential impact of the project on air quality results from the disturbance of the ground surface due to intrusive activities including installation of towers and their footings. An increase of vehicles travelling on unsealed surfaces has the potential to diminish air quality. However, it is not anticipated that significant quantities of dust will be generated as result of the project due to limited disturbance footprint and the short temporal disturbance of the surface.

The southernmost portion of the transmission line is located approximately 1 km east of residents of Port Augusta. Due to the relatively close proximity of receptors to the potential source of air emissions in this area, there is a medium risk that that surrounding residents will be impacted by dust generation resulting from project activities.

The northern portion of the transmission line will be surrounded by sparsely populated land. The risk of diminished air quality impacting surrounding sensitive receptors is considered low due to the low spatial density of receptors, and the short duration of dust generation from construction activities. Further, due to the south easterly prevailing wind conditions at Port Augusta[12], it is anticipated that migration of liberated dust and emissions will be diverted away from populated areas and further north, thus decreasing the risk of a negative impact on air quality even further.

There is also a very low risk of air emissions resulting from corona discharge associated with the ionisation of air surrounding the wires of the transmission line. The chemicals of potential concern associated with this phenomenon are ozone (O_3), nitric oxide (NO), nitrogen dioxide (NO_2), and thus nitric acid (HNO_3) if water vapor is present.

These particulates are a human health risk when inhaled. The health effects of corona discharge have been extensively studied, and it has been found that the receptors must be in very close proximity to the transmission wires for any potential health impacts as it has been found that charged particle concentrations decrease to background levels at a distance of 200 m from the transmission wires. However, the probability of this is very low due to the corona preventative design measures incorporated to the transmission line[13].

[12] Based on the Bureau of Meteorology wind rose for Port Augusta
[13] Based on information from the Energy Networks Association: Comments on the Corona–Ion Hypothesis available at: https://www.energynetworks.com.au/sites/default/files/comments-on-the-corona-ion-hypothesis-updated-november-2009.pdf

The UGL Hill to Hill Connection Project CEMP includes numerous control measures which may be implemented in order to reduce the impact on air quality.

10.8 Noise

The southern-most 8 km of the Section A Alignment occurs approximately 1 km east of Port Augusta township. The population centre of Port Augusta is anticipated to have moderate background noise levels.

Based on the indicative noise factors identified in the Environment Protection (Noise) Policy 2007, residential areas experience noise levels of approximately 47 dB(A) during the day and 40 dB(A) at night. Similarly, in the light industrial areas, noise levels are estimated at 57dB(A) during the day and 50 dB(A) at night based on the Environment Protection (Noise) Policy 2007[14]. It may be noted that no background data has been obtained from this area, and therefore it is possible that these noise levels may be lower than that identified in the Environment Protection (Noise) Policy 2007. Additional primary sources of noise are likely to also consist of aircraft traveling to and from the Port Augusta airport and traffic movement along the Princes Highway.

The northern portion of the Section A Alignment and the entirety of the Section B Alignment are located in sparsely populated areas with some industrial activities. As per the indicative noise levels set out in the Environment Protection (Noise) Policy 2007, it is anticipated that existing noise levels would not exceed (47 dB(A) during the day and 40 dB(A) at night) equating to rural living noise levels. The other primary noise source is traffic along the Stuart Highway.

The northern portion of the alignment is within an area of no residential occupancy (with the exception of one residence south of the proposed Carriewerloo Substation), therefore there are no sensitive receptors to any noise generated within this portion.

10.8.1 Potential Project Impact

There are few sensitive receptors in close proximity to the transmission line for the majority of the Project Area and so the impact of noise is anticipated to be low for human receptors and low for fauna. As mentioned above, due to the transient nature of the minimised disturbance footprint, any noise emissions will be locally confined and temporary.

There are some residences within 100 m of the transmission line along Racecourse Road. While these residences may be impacted temporarily by construction activities, there is potential for an ongoing noise impacts due to the interaction with the transmission wires and the receiving environment resulting in aeolian noise (wind passing through the lines) and corona noise from the transmission lines.

10.9 Visual Amenity

The Project Area is characterised by vast tablelands with low topographical relief. The landscape consists of low-lying vegetation with occasional medium to large mature trees. The existing landscape values comprise the relatively undisturbed plains and large salt lakes. There is 19 km of existing 132 kV transmission line and other scattered infrastructure along the proposed route.

A visual impact assessment was undertaken for the proposed development. The methodology outlined is based on the Guidelines for Landscape and Visual Impact Assessment 3rd edition (LI and IEMA 2001) co-authored by the UK Landscape Institute and the Institute of Environmental

[14] As per the Indicative noise factor (dB(A)) in the Environment Protection (Noise) Policy 2007—31.3.2008

Management and Assessment (IEMA) and other widely used Visual Impact Assessment (VIA) techniques.

The area that has the potential to be visually affected by a development is called the Theoretical Zone of Visual Influence (TZVI). To calculate the TZVI, the physical nature of the development is considered (surrounding topography/development dimensions) in combination with the fields of view of human vision.

The central field of view in human vision is approximately 10^{o} (while standing, 15^{o} while sitting) (Panero et al, 1979)[15].

An object which occupies less than 5% of this central field may still be visible, but for the purpose of this visual impact assessment is considered insignificant. The TZVI and impact levels for this development are based on the distance at which a 50 m transmission tower would occupy just 0.5° of the vertical field of view at a distance of 5.7 km which is taken as the outer limit of the TZVI. To ensure a high level of conservatism for the analysis, a TZVI with a maximum range of 10km was modelled, considering over 4km beyond the calculated significant area.

After calculation of the maximum possible extent of the TZVI, the following steps were followed:

- The preferred alignment was loaded into global mapper as a georeferenced polyline shapefile, then point features (representing the towers) were created at 350 m spaces along the line
- STRM Plus V3 worldwide elevation data was loaded to the workspace, then run with the points to create all the viewsheds along the line. The viewsheds were calculated for tower heights of 50m and receptor heights of 2 m, within a 10 km radius
- These viewsheds were then combined to produce a polygon representing the TZVI for the proposed development

This polygon was then divided into areas of differing visual impact based on distance from the proposed development, and the associated decrease in visual dominance (refer to **Table 10-4** below).

Table 10-4 Impact levels within the Theoretical Zone of Visual Influence

Visual Impact Level	Distance from Development	Description
Very High	0 – 400m	The maximum visual impact. Developments dominate the visual field and dramatically alter the landscape.
High	401 – 1,200m	Decreasing visual impact. Developments are very obvious in the visual field and alter the landscape.
Moderate	1,201-2,800m	Moderate visual impact. Developments can be seen in the visual field and alter the landscape to a degree.
Low	2,801 – 6,000m	Low visual impact. Developments are becoming less distinct, and are not obvious in the visual field.
Very Low	6,001-10,000m	Limited/no visual effect on the landscape, visible as a very minor feature in some locations.

[15] Panero, Julius and Zellnik, Martin, 1979, *Human Dimension and Interior Space*, Witney Library of Design

10.10 Limitations of the Software

The following limitations and assumptions are considered as part of the GIS visual impact assessment:

- It is noted that the DEM (STRM Plus V3) has a spatial resolution of approximately 30 meters and an absolute vertical height accuracy of less than 16 meters;
- Rapid changes in the DEM terrain (STRM Plus V3) are smaller than scale (e.g. some rises) and will likely be smoothed over as an average elevation;
- Detailed final construction and the construction process of the Project's infrastructure has not been considered during the viewshed analysis; and
- Weather effects such as sunlight, dust, lighting and rain have not been considered.

The visual impact model is then produced from **Table 10-4**, providing a graphic representation of the visual impact. The VIM is shown in **Figure 8a** and **8b** (attached).

The desktop assessment was conducted using a range of data sources, programs, topographic maps and aerial satellite photography. Existing literature and reports were additional sources of information on which the desktop assessment was based.

A desktop search of potential receptors was undertaken and marked on **Figure 8b** (attached). The potential receptor locations were overlaid on the TZVI and visual impact zones to assist in the determination of the level of visual impact at each receptor location.

10.10.1 Potential Project Impact

The visual impact areas within the TZVI indicate that a number of receptor locations would potentially be impacted by the proposed 275kV lines. The potential impact, and the mitigating factors of potential visual impact are explored in **Table 10-5** below.

Table 10-5 Viewpoint Analysis

Viewpoint	Visual Impact Level	Mitigating Factor(s)	Visual Impact Level Including Mitigating Factor(s)
Yorkeys Crossing (Rail Crossing)	High	• Existing transmission lines (132kV and 275kv) present in zone of visual influence • Within 1,200m from new proposed transmission line • Viewpoint located at the intersection of an unsealed road and railway line • Few/ transient receptors	Low
Wami Kata	Moderate	• Existing transmission lines (132kV and 275kv) present in zone of visual influence • Within 2,8000m from new proposed transmission line • Viewpoint located north of Port Augusta West township on unsealed road • Few/ transient receptors	Low

Viewpoint	Visual Impact Level	Mitigating Factor(s)	Visual Impact Level Including Mitigating Factor(s)
Davenport Aboriginal Reserve	Very High	• Existing transmission lines (132kV and 275kv) present in zone of visual influence • Within 400m from new proposed transmission line • Viewpoint located on the north eastern outskirts of Port Augusta township • Moderate receptors	Low
Matthew Flinders Red Cliff Lookout	Low	• Existing transmission lines (132kV and 275kv) present in zone of visual influence • Greater than 2,800m from new proposed transmission line • Viewpoint located on the northern outskirts of Port Augusta West township • Moderate/ transient receptors	Very Low
Australian Arid Lands Botanic Garden	Low	• Existing transmission lines (132kV and 275kv) present in zone of visual influence • Greater than 2,800m from new proposed transmission line • Viewpoint located on the northern outskirts of Port Augusta West township • Moderate/ transient receptors	Very Low
Shoreline Top Tourist Park	Low	• Existing transmission lines (132kV and 275kv) present in zone of visual influence • Greater than 2,800m from new proposed transmission line • Viewpoint located within Port Augusta West township • Moderate/ transient receptors	Very Low
Sid A Welk Recreation Park	Low	• Existing transmission lines (132kV and 275kv) present in zone of visual influence • Greater than 2,800m from new proposed transmission line • Viewpoint located within Port Augusta West township • Moderate/ transient receptors	Very Low
Chinnery Park	Low	• Existing transmission lines (132kV and 275kv) present in zone of visual influence	Very Low

Viewpoint	Visual Impact Level	Mitigating Factor(s)	Visual Impact Level Including Mitigating Factor(s)
		• Greater than 2,800m from new proposed transmission line • Viewpoint located within Port Augusta West township • Moderate/ transient receptors	
Water Tower Lookout	Low	• Existing transmission lines (132kV and 275kv) present in zone of visual influence • Greater than 2,800m from new proposed transmission line • Viewpoint located within Port Augusta West township • Moderate/ transient receptors	Very Low
Stuart Highway	Moderate	• Very few/ transient receptors	Very Low
Port Augusta Airport	Very Low	• Existing transmission lines (132kV and 275kv) present in zone of visual influence • Greater than 6,000m from new proposed transmission line • Viewpoint located on the southwestern outskirts of Port Augusta West township • Few/ transient receptors	Very Low

The southern extent of the transmission line has a higher absorptive capacity compared to the northern extent of the transmission line away from the urbanised areas of Port Augusta. In addition, roughly 60% of the new transmission alignment is located adjacent to the existing 132kV line extent will mitigate the visual impact of the new transmission line infrastructure which will be similar in appearance to the existing infrastructure. The Section B Alignment traverses largely undeveloped, and uninhabited areas with very few, or no receptors.

The visual impact of the transmission line is therefore expected to be low, primarily due to the presence of existing infrastructure in the southern portion near Port Augusta, and a paucity of receptors in the northern portion of the alignment.

10.11 Traffic

Port Augusta is the central node of the National Land Transport Network, which provides road and rail transport links across Australia. The primary road in the Project Area is the Stuart Highway which runs between Port Augusta and Alice Springs.

The Project alignment intersects the continuation of the Stuart Highway (Princes Highway) at the approximate intersection of Princes Highway and Zerna Road. In addition, there are numerous sealed secondary roads and unsealed minor roads that intersect the transmission line area, with the majority situated in proximity to Port Augusta.

10.11.1 Potential Project Impact

A Traffic Management Plan is part of the UGL Hill to Hill Connection Project CEMP (attached as **Appendix A**) and will appropriately address any potential impacts related to traffic resulting from Project works.

11. Community Consultation

Community consultation has been initiated and is expected to be ongoing throughout the planning and construction stages of the Project. ElectraNet has engaged with the following entities to date:

- Indigenous representatives (BDAC and Nukunu people)
- Local and State Government (City of Port Augusta, DPTI, DEW)
- Affected Landowners

Appendix D (attached) provides further detail on the community consultation undertaken to date. It may be noted that this list represents a portion of the meetings and discussion that have occurred, in order to provide an indication of the consultation undertaken, however it is not intended to indicate a comprehensive list of all discussions or meetings that have occurred.

It is expected that as works progress, consultation will continue in the same manner that has occurred to date. There is not considered a specific requirement to develop a comprehensive Community and Stakeholder Engagement Plan for this Project given the low and manageable risk of impact on sensitive receptors.

12. Construction Management

12.1 Construction Environmental Management Plan

The UGL Hill to Hill Connection Project CEMP has been developed for the extended alignment of the transmission line between Carriewerloo and Saltbush Hill, a distance of approximately 270 km (attached as **Appendix A**). A Supplementary Carriewerloo to Davenport CEMP has been developed (also attached as **Appendix A**) which will detail any specific mitigation measures or control actions that are specific to the Carriewerloo to Davenport transmission line alignment.

Given the similarity of the surrounding environment, the potential impacts that may arise from the construction and operation of this Project are essentially the same on both alignments.

There are some differences, however, that will need to be included within the Supplementary Carriewerloo to Davenport CEMP. These include:

- Further consideration and specific conditions to mitigate or prevent any potential pollution, impact or interference, particularly during construction, regarding Yorkeys Crossing
    - The detailed design that is currently being finalised will specify the construction method that is expected to be utilised in the area immediately surrounding Yorkeys Crossing. The Supplementary Carriewerloo to Davenport CEMP will be updated in due course to reflect these details.
- Development and inclusion of an Acid Sulfate Soil Management Plan

Inclusion of these details will align with the details specific to this Project Description and alignment, and the relevant results from the ecological and heritage studies, should they be found to differ from the UGL Hill to Hill Connection Project CEMP at their completion.

12.2 Timeframe

Detailed design is now underway and expected to be completed by mid-2019. Construction is expected to follow in late 2019, with energisation expected in mid- late 2020.

13. Conclusions

Based on the identified key environmental aspects, impact significance assessment was undertaken for the following pathways:

- Ecology
- Cultural heritage
- Surface water
- Groundwater
- Air quality
- Noise
- Visual amenity
- Traffic

Of the assessed key environmental aspects, the greatest impacts are related to ecology, cultural heritage, visual and surface water. All impacts are addressed further within the UGL Hill to Hill Connection Project CEMP or the Supplementary Carriewerloo to Davenport CEMP. By implementing the mitigation measures and management actions as identified in both the UGL Hill to Hill Connection Project CEMP and the Supplementary Carriewerloo to Davenport CEMP, these impacts are expected to reduce to low/ negligible.

ElectraNet will adhere to the Significant Environmental Benefit (SEB) as required under Division 5 of the Native Vegetation Regulations 2017 to ensure that any clearing is appropriately offset.

The remaining key environmental aspects were assessed to not be significant, representing a negligible-to-low level of impact, prior to the implementation of relevant mitigation measures or management actions.

Carriewerloo to Davenport Transmission Line Upgrade

Figures

April 2019

Security Classification: Public

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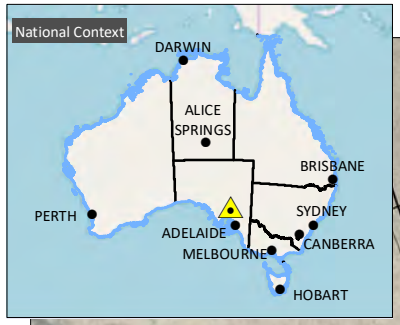

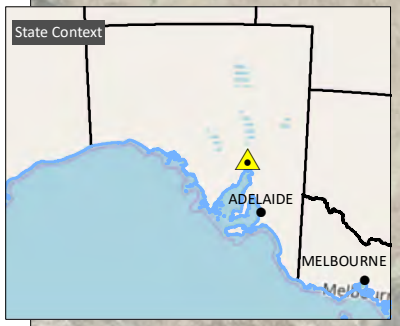

STUART HIGHWAY
Yorkeys Crossing
Wami Kata
Port Augusta West
Port Augusta
Saltia
BYRE HIGHWAY
Stirling North
PRINCES HIGHWAY
MAIN NORTH ROAD

Legend:

- Project Study Area
- Town/ Locality
- Major Road
- Railway

Existing Infrastructure - ElectraNet

- Existing F1812 (Davenport to Mt Gunson) 132kV Transmission Line
- Existing F1813 (Davenport to Neuroodla) 132kV Transmission Line
- Substation

Existing Infrastructure - Other

- Existing F1909 (Davenport to Olympic Dam) 275kV Transmission Line

JBS&G

Job No: 55288

Client: ElectraNet Pty Ltd

Version: FINAL	Date: 01-Apr-2019
Drawn By: TB	Checked By: MB/ DB

Scale at A4 1:250,000

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metres

Coor. Sys. GDA 1994 MGA Zone 53

Project Site
Davenport to Carriewerloo, South Australia

SITE LOCALITY

FIGURE 1

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Image Reference: Service Layer Credits: © OpenStreetMap (and) contributors, CC-BY-SA
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Australian Government, Geoscience Australia 250k Topo 3 Series & AREMI

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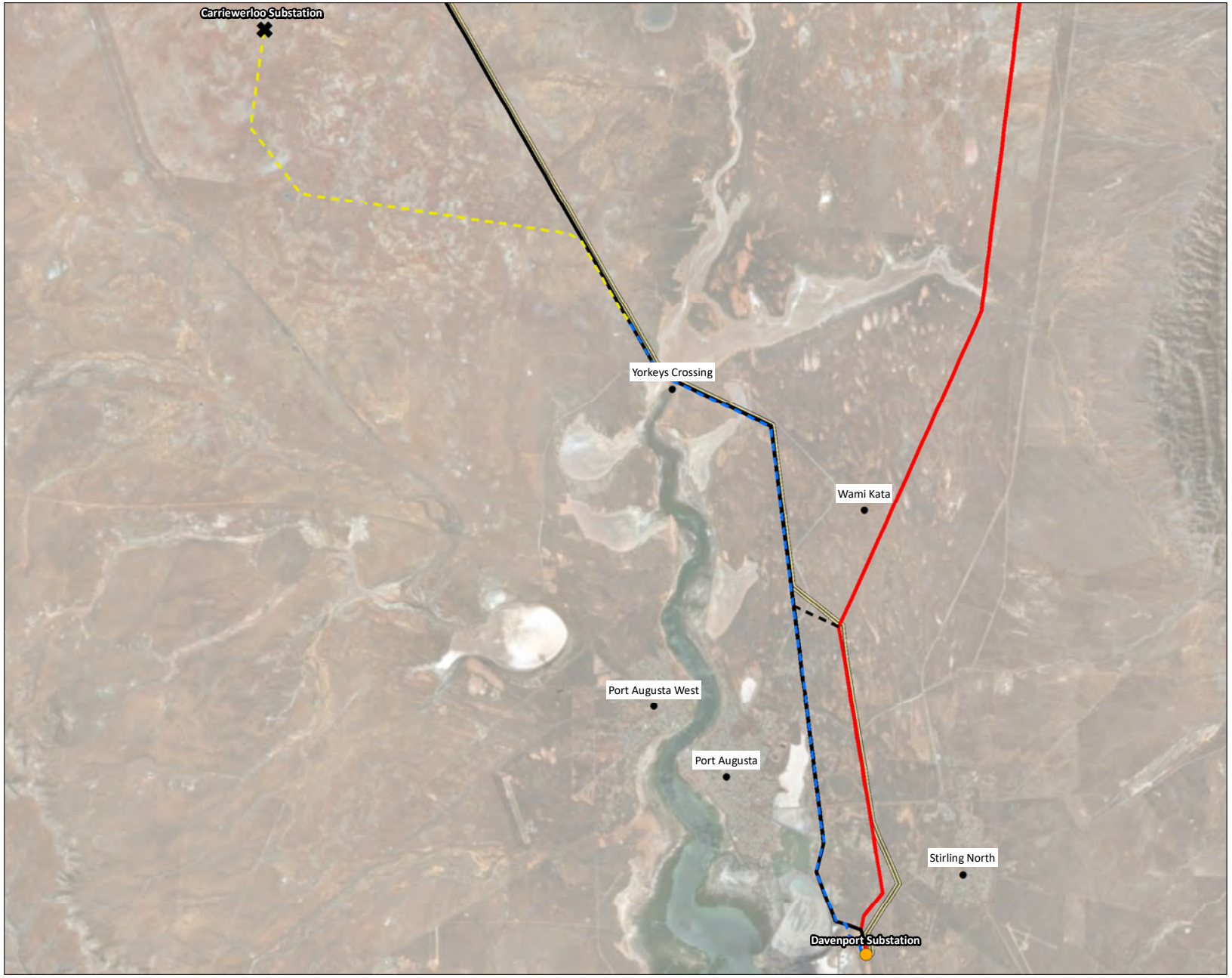

Legend:

- Town/ Locality
- Major Road
- Railway

Existing Infrastructure - ElectraNet

- Existing F1812 (Davenport to Mt Gunson) 132kV Transmission Line
- Existing F1813 (Davenport to Neuroodla) 132kV Transmission Line
- Substation

Existing Infrastructure - Other

- Existing F1909 (Davenport to Olympic Dam) 275kV Transmission Line

Proposed Infrastructure

- New Transmission Line Extent (275kV)
- New Double Circuit Alignment Along Existing Easement (275 and 132 kV)
- Tower 30 Temporary Tie In
- Potential Substation Location

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Scale at A4 1:150,000

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Project Site
Davenport to Carriewerloo, South Australia

PROPOSED AND CURRENT TRANSMISSION LINE ALIGNMENT

FIGURE 2

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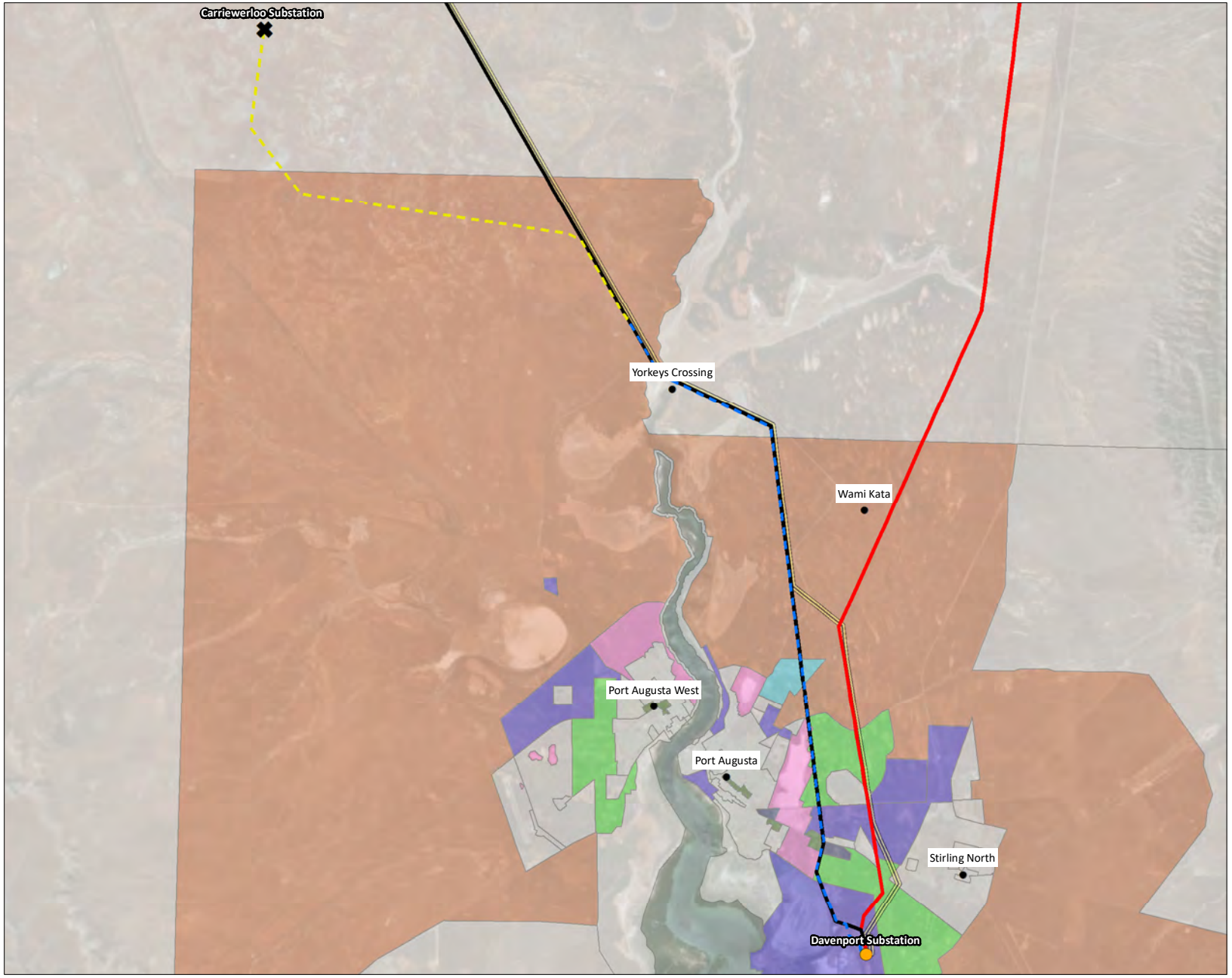

Legend:

- Town/ Locality
- Major Road
- Railway

Existing Infrastructure - ElectraNet

- Existing F1812 (Davenport to Mt Gunson) 132kV Transmission Line
- Existing F1813 (Davenport to Neuroodla) 132kV Transmission Line
- Substation

Existing Infrastructure - Other

- Existing F1909 (Davenport to Olympic Dam) 275kV Transmission Line

Proposed Infrastructure

- New Transmission Line Extent (275kV)
- New Double Circuit Alignment Along Existing Easement (275 and 132 kV)
- Potential Substation Location

Land Development Categories

- Primary Industry
- Industry
- Rural Living
- Residential (Davenport)
- Conservation
- Highway Services
- Bulky Goods
- Other

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Project Site
Davenport to Carriewerloo, South Australia

LAND DEVELOPMENT ZONES

FIGURE 3

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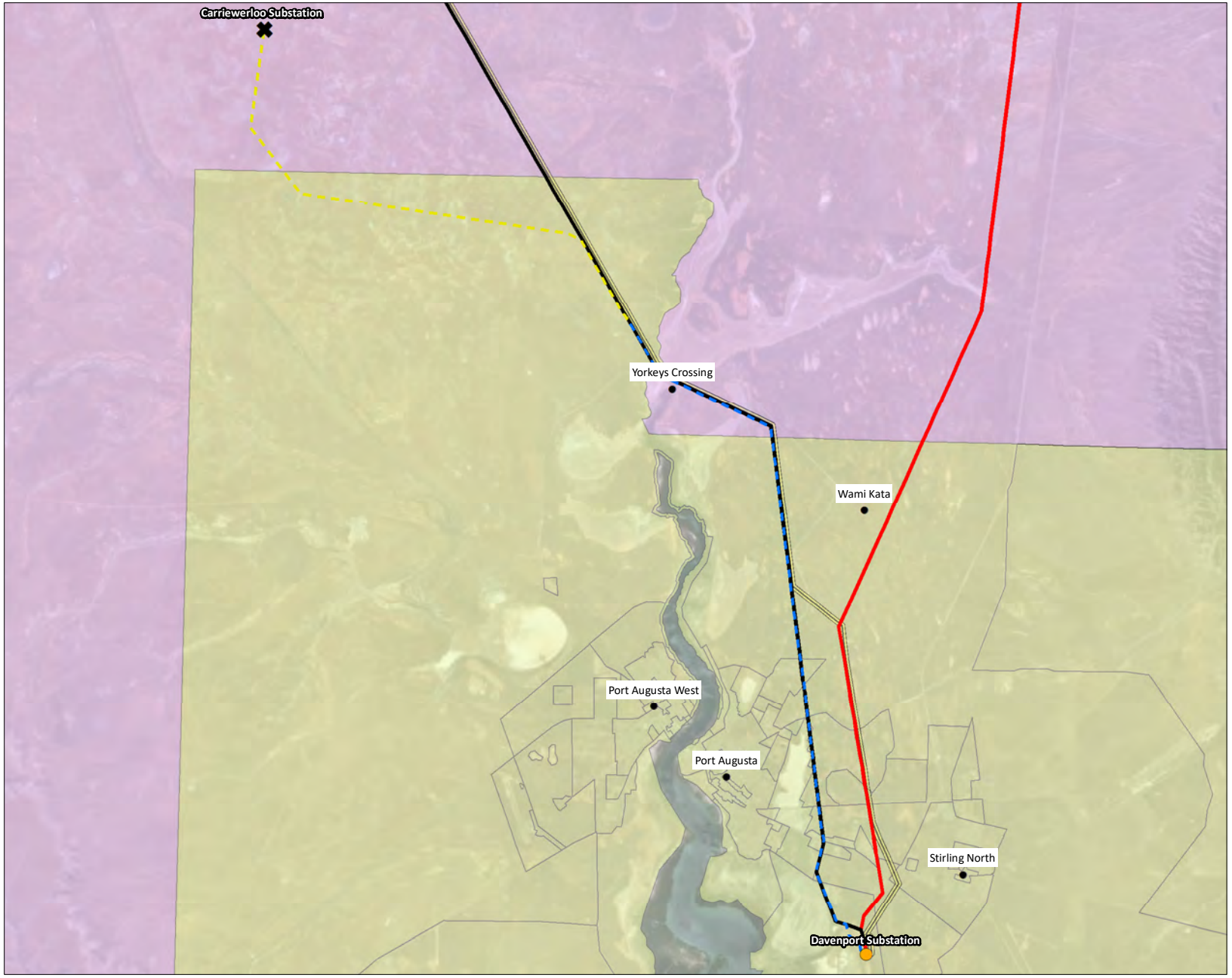

Legend:

- Town/ Locality
- Major Road
- Railway

Existing Infrastructure - ElectraNet

- Existing F1812 (Davenport to Mt Gunson) 132kV Transmission Line
- Existing F1813 (Davenport to Neuroodla) 132kV Transmission Line
- Substation

Existing Infrastructure - Other

- Existing F1909 (Davenport to Olympic Dam) 275kV Transmission Line

Proposed Infrastructure

- New Transmission Line Extent (275kV)
- New Double Circuit Alignment Along Existing Easement (275 and 132 kV)
- Potential Substation Location

Development Plan Area

- Port Augusta Council Development Plan Area
- Land Not Within A Council Area

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Scale at A4 1:150,000

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metres

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Project Site
Davenport to Carriewerloo, South Australia

DEVELOPMENT PLAN AREA

FIGURE 4

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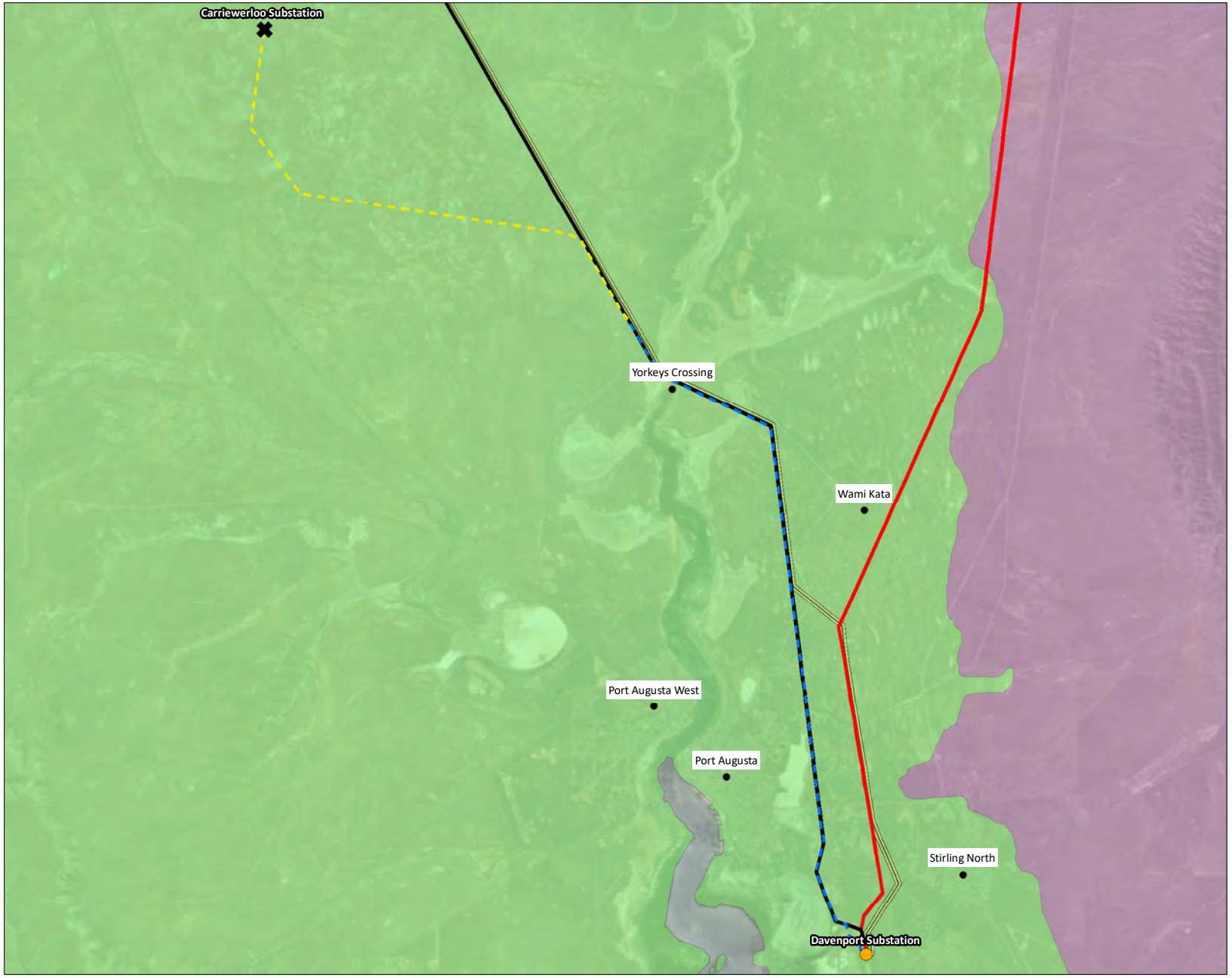

Legend:

- Town/ Locality
- Major Road
- Railway

Existing Infrastructure - ElectraNet

- Existing F1812 (Davenport to Mt Gunson) 132kV Transmission Line
- Existing F1813 (Davenport to Neuroodla) 132kV Transmission Line
- Substation

Existing Infrastructure - Other

- Existing F1909 (Davenport to Olympic Dam) 275kV Transmission Line

Proposed Infrastructure

- New Transmission Line Extent (275kV)
- New Double Circuit Alignment Along Existing Easement (275 and 132 kV)
- Potential Substation Location

IBRA Regions

- Flinders Lofty Block
- Gawler

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Client: ElectraNet Pty Ltd	
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metres

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Project Site
Davenport to Carriewerloo, South Australia

IBRA - REGIONS

FIGURE 5A

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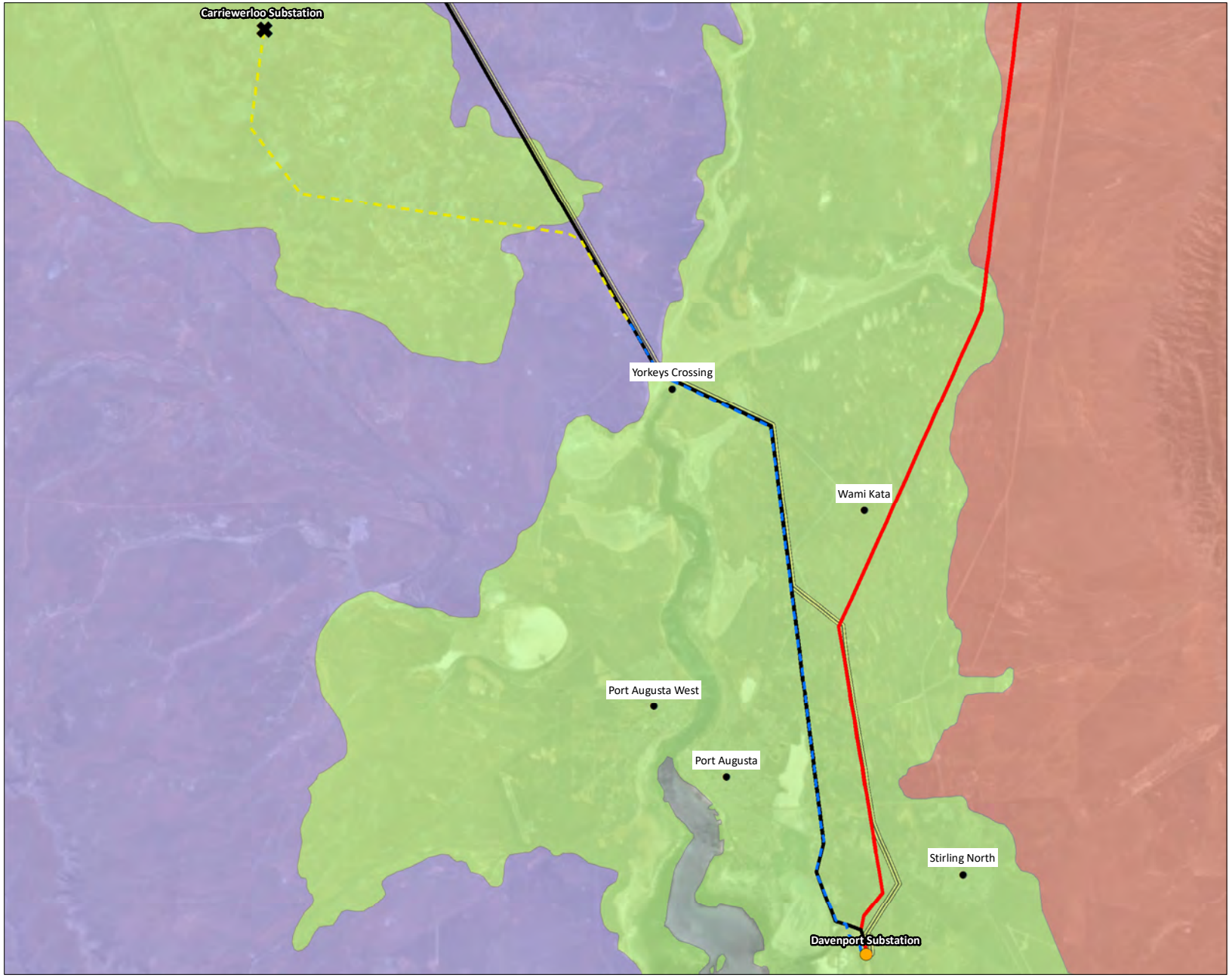

Legend:

- Town/ Locality
- Major Road
- Railway

Existing Infrastructure - ElectraNet

- Existing F1812 (Davenport to Mt Gunson) 132kV Transmission Line
- Existing F1813 (Davenport to Neuroodla) 132kV Transmission Line
- Substation

Existing Infrastructure - Other

- Existing F1909 (Davenport to Olympic Dam) 275kV Transmission Line

Proposed Infrastructure

- New Transmission Line Extent (275kV)
- New Double Circuit Alignment Along Existing Easement (275 and 132 kV)
- Potential Substation Location

IBRA Subregions

- Arcoona Plateau
- Gawler Lakes
- Southern Flinders

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Job No: 55288

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Version: FINAL	Date: 01-Apr-2019
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Scale at A4 1:150,000

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metres

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Project Site
Davenport to Carriewerloo, South Australia

IBRA - SUBREGIONS

FIGURE 5B

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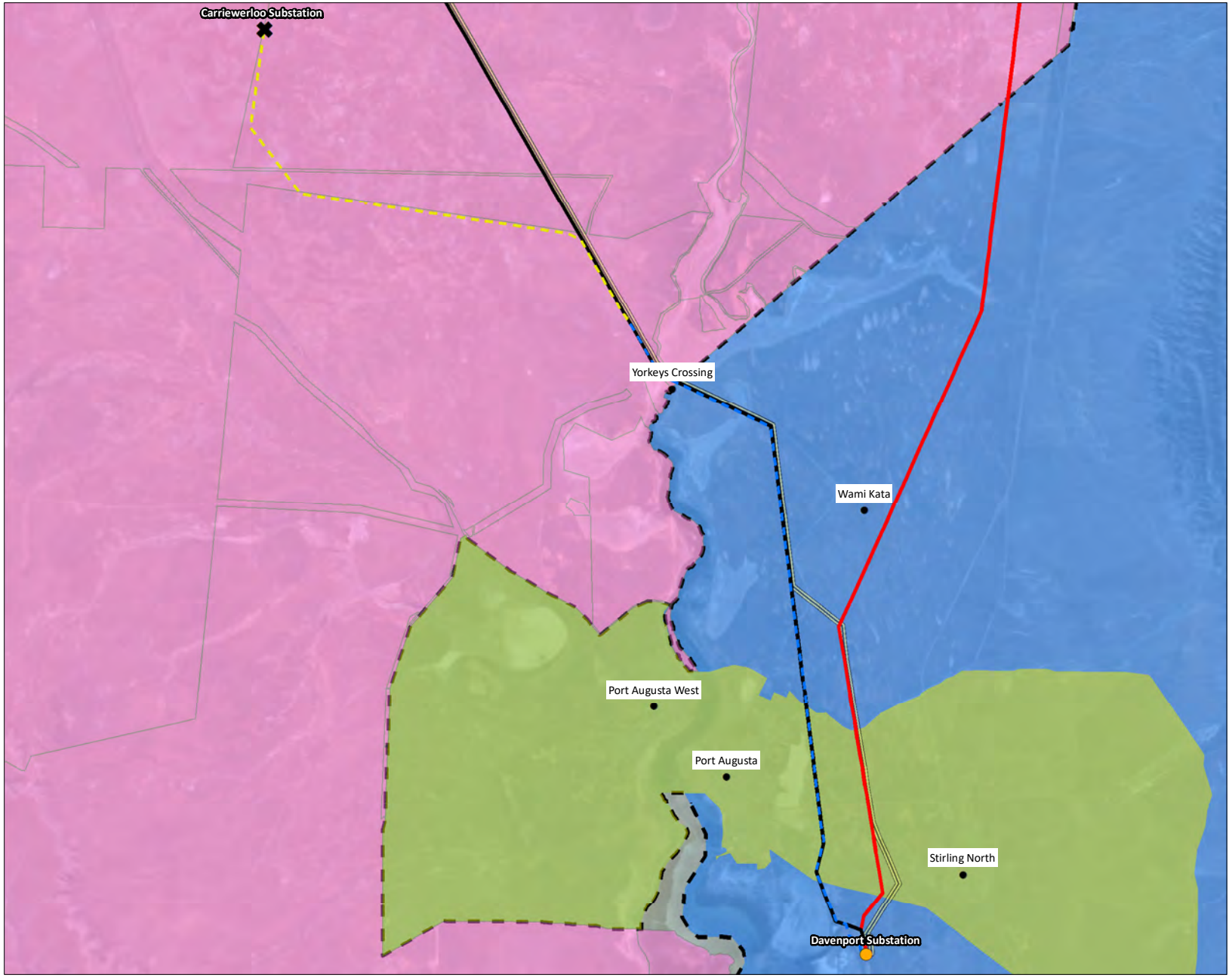

Legend:

- Town/ Locality
- Major Road
- Railway

Existing Infrastructure - ElectraNet

- Existing F1812 (Davenport to Mt Gunson) 132kV Transmission Line
- Existing F1813 (Davenport to Neuroodla) 132kV Transmission Line
- Substation

Existing Infrastructure - Other

- Existing F1909 (Davenport to Olympic Dam) 275kV Transmission Line

Proposed Infrastructure

- New Transmission Line Extent (275kV)
- New Double Circuit Alignment Along Existing Easement (275 and 132 kV)
- Potential Substation Location

Native Title

- Barngarla Native Title Claim (SC1996/004)
- Nukunu Native Title Claim (SC1996/005)

Determination

- Barngarla Native Title Claim (SCD2016/001)

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Version: FINAL	Date: 01-Apr-2019
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Scale at A4 1:150,000

0 2,500 5,000

metres

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Project Site
Davenport to Carriewerloo, South Australia

NATIONAL NATIVE TITLE TRIBUNAL

FIGURE 6

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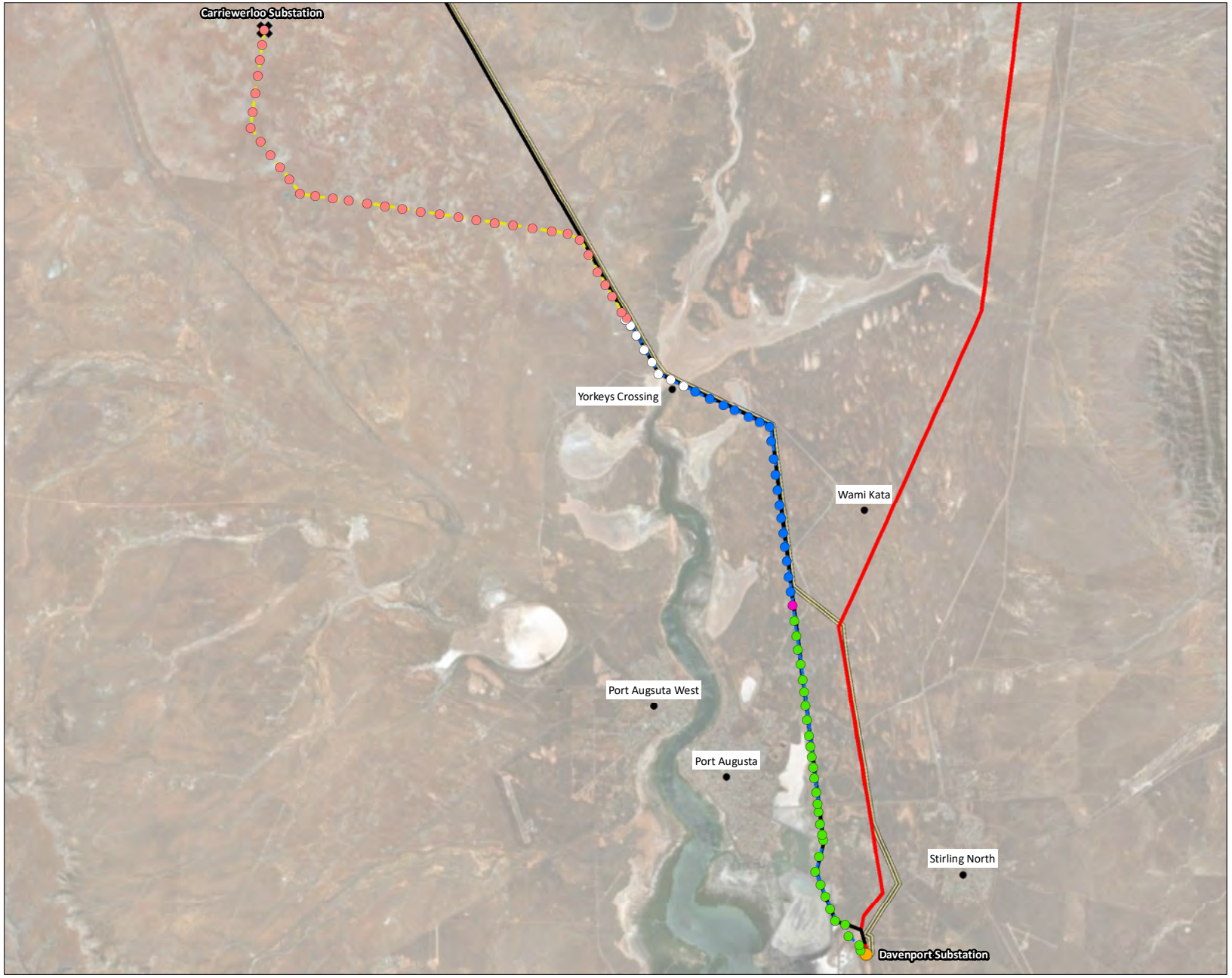

Legend:

- Town/ Locality
- Major Road
- Railway

Existing Infrastructure - ElectraNet

- Existing F1812 (Davenport to Mt Gunson) 132kV Transmission Line
- Existing F1813 (Davenport to Neuroodla) 132kV Transmission Line
- Substation

Existing Infrastructure - Other

- Existing F1909 (Davenport to Olympic Dam) 275kV Transmission Line

Proposed Infrastructure

- New Transmission Line Extent (275kV)
- New Double Circuit Alignment Along Existing Easement (275 and 132 kV)
- Potential Substation Location

Tower Location

- Towers F1973-0001 - F1973-0029
- Tower F1973-0030
- Towers F1973-0031 - F1973-0048
- Towers F1973-0049 - F1973-0056
- Towers F1973-0057 - Carriewerloo Substation

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Job No: 55288

Client: ElectraNet Pty Ltd

Version: FINAL	Date: 01-Apr-2019
Drawn By: TB	Checked By: MB/ DB

Scale at A4 1:150,000

0 2,500 5,000

metres

Coor. Sys. GDA 1994 MGA Zone 53

Project Site
Davenport to Carriewerloo, South Australia

TOWER LOCATION

FIGURE 7

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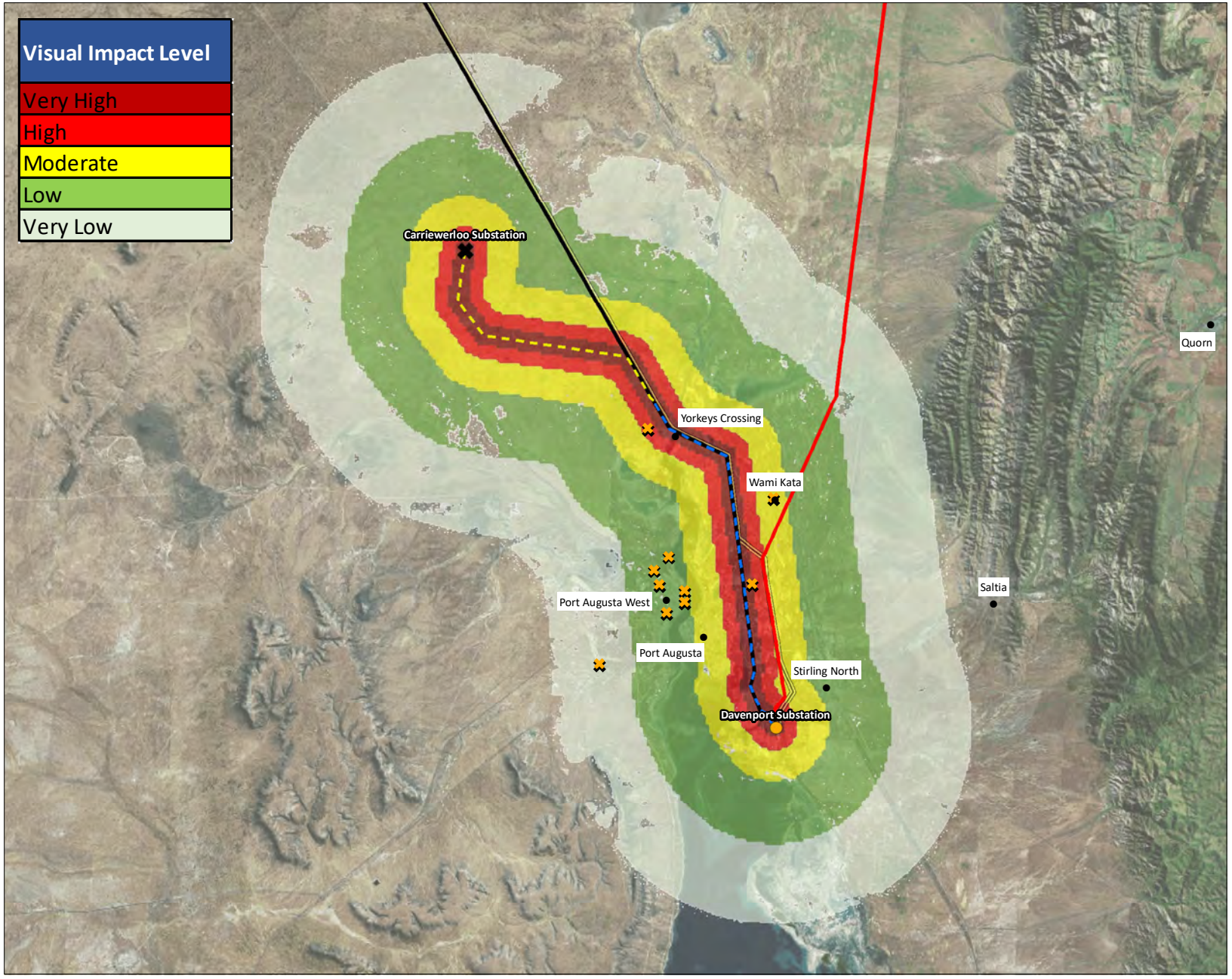

Legend:

- Town/ Locality
- Identified Viewpoint
- Major Road
- Railway

Existing Infrastructure - ElectraNet

- Existing F1812 (Davenport to Mt Gunson) 132kV Transmission Line
- Existing F1813 (Davenport to Neuroodla) 132kV Transmission Line
- Substation

Existing Infrastructure - Other

- Existing F1909 (Davenport to Olympic Dam) 275kV Transmission Line

Proposed Infrastructure

- New Transmission Line Extent
- New Double Circuit Alignment Along Existing Easement (275 and 132 kV)
- Potential Substation Location

JBS&G

Job No: 55288

Client: ElectraNet Pty Ltd

Version: FINAL | Date: 05-Apr-2019

Drawn By: JC | Checked By: MB/ DB

Scale at A4 1:290,000

0 5,000 10,000

metres

Coor. Sys. GDA 1994 MGA Zone 53

Project Site
Davenport to Carriewerloo, South Australia

VISUAL IMPACT MODEL - WHOLE PROJECT ALIGNMENT

FIGURE 8A

Document Path: V:\05 Projects\ElectraNet\55288-ElectraNet Davenport-Carriewerloo ETL\ArcGIS\Maps\02_VIA\08A 55288_VIM_RevB.mxd
Image Reference: Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community & Australian Government, Geoscience Australia 250k Topo 3 Series & ElectraNet

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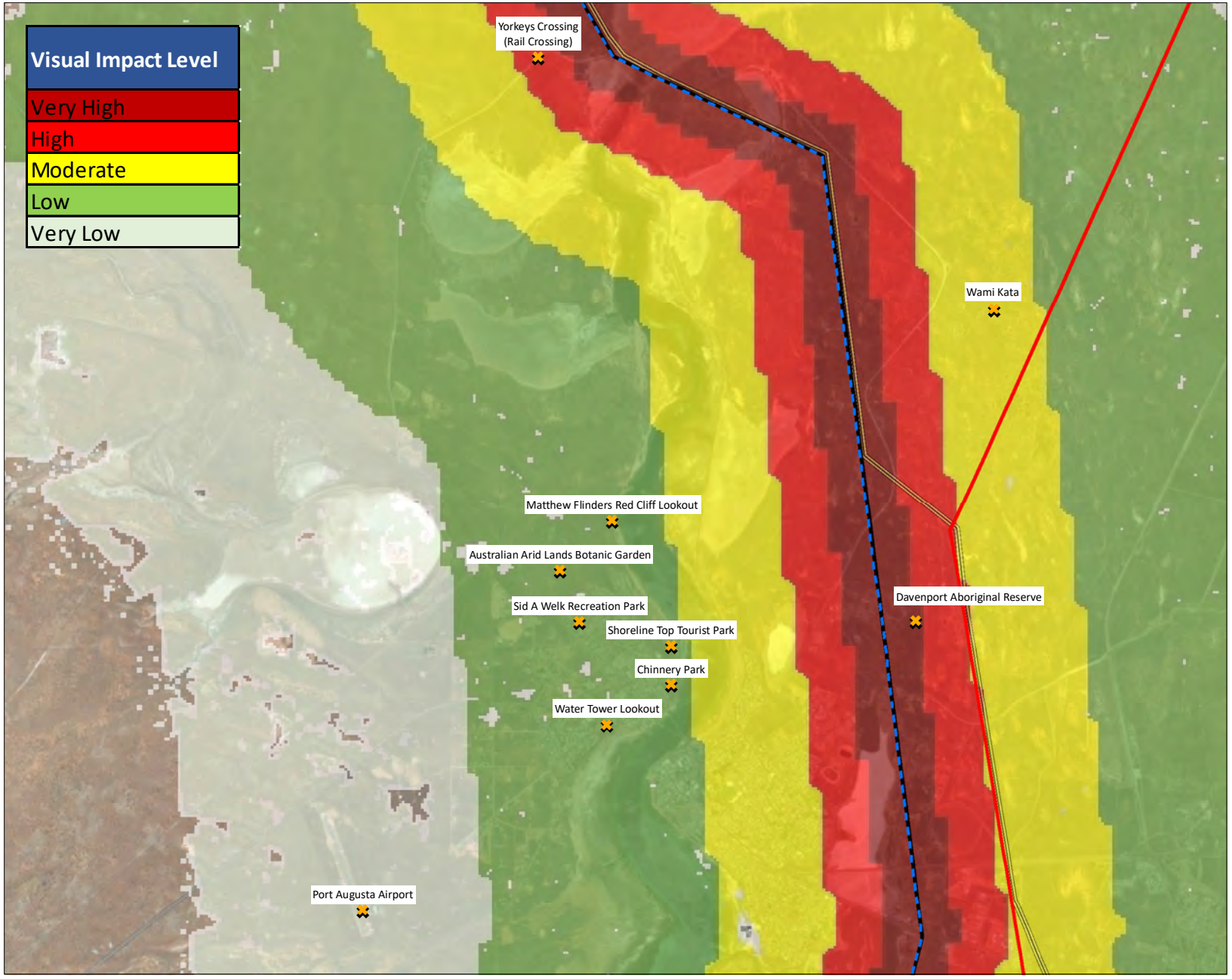

Legend:

- Identified Viewpoint
- Major Road
- Railway

Existing Infrastructure - ElectraNet

- Existing F1812 (Davenport to Mt Gunson) 132kV Transmission Line
- Existing F1813 (Davenport to Neuroodla) 132kV Transmission Line
- Substation

Existing Infrastructure - Other

- Existing F1909 (Davenport to Olympic Dam) 275kV Transmission Line

Proposed Infrastructure

- New Transmission Line Extent
- New Double Circuit Alignment Along Existing Easement (275 and 132 kV)
- Potential Substation Location

JBS&G

Job No: 55288

Client: ElectraNet Pty Ltd

Version: FINAL	Date: 05-Apr-2019
Drawn By: JC	Checked By: MB/ DB

Scale at A4 1:80,000

0 1,000 2,000

metres

Coor. Sys. GDA 1994 MGA Zone 53

Project Site
Davenport to Carriewerloo, South Australia

VISUAL IMPACT MODEL - RELEVANT RECEPTOR LOCATIONS

FIGURE 8B

Document Path: V:\05 Projects\ElectraNet\55288-ElectraNet Davenport-Carriewerloo ETL\ArcGIS\Maps\02_VIA\08B_55288_VIM_RevA.mxd
Image Reference: Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community & Australian Government, Geoscience Australia 250k Topo 3 Series & ElectraNet

Carriewerloo to Davenport Transmission Line Upgrade

Appendices

April 2019

Security Classification: Public

Appendix A Construction Environmental Management Plan

Carriewerloo to Davenport Transmission Line Upgrade

Supplementary Carriewerloo to Davenport Construction Environmental Management Plan

April 2019

FINAL

Security Classification: Public

ElectraNet Corporate Headquarters
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Revision Record

Date	Version	Description	Author	Checked By	Approved By
	0	DA Report	Madhvi Betigeri	Lachlan Wilkinson	

Contents

Figures (attached)

1. Introduction

The Project involves construction of a new transmission line from the Davenport Substation to the proposed Carriewerloo substation (at the Solar Reserve Project Site) – a distance of approximately 33 km.

All environmental activities that are required under this contract will be undertaken in accordance with the ElectraNet Environmental Management System (EMS).

The aim of this CEMP is to further minimise and manage potential adverse environmental impacts from the project activities. It provides the environmental controls that will be implemented for the activities and sets out conditions under which the project will proceed.

The environmental aspects for the project have been identified and assessed from ElectraNet Environmental Operating Requirements, ElectraNet documents, Development Applications, site visits, legislation, and ElectraNet's knowledge and experience in managing environmental aspects associated with a project of this scope.

All employees directed subcontractors and visitors including ElectraNet personnel will meet the requirements of this document as applicable to the contract scope of works. The effective implementation of this CEMP is the responsibility of each member of the entire project team, which includes nominated personnel from ElectraNet project team.

It is noted that this document supplements the UGL Hill to Hill Connection Project CEMP. The UGL document satisfactorily applies in almost all instances to the works expected to be undertaken as part of this Project. Some minor revisions are required given the slight divergence and encountering some different conditions to those expected in the Hill to Hill Connection Project.

2. Locality

The Project is located approximately 300 km north west of Adelaide, with a portion of the Project located in Port Augusta. The Project Area is defined by a 25 m buffer either side of the proposed 34 km transmission line for the entire route from Davenport to Carriewerloo. **Figure 1** (attached) indicates the Project Area, in particular, with respect to the location of Port Augusta and other major landmarks.

The Project easement runs from the eastern portion of Port Augusta, in a north westerly direction within, and adjacent to the existing 132 kV line over a distance of approximately 19km, to a point approximately 12 km north west of Port Augusta, referred to as Yorkeys Crossing.

At this point the easement deviates westerly from the existing 132 kV line, towards the Carriewerloo substation over a distance of approximately 14 km. The total distance of the new 275kV powerline is anticipated to be approximately 33 km. Further description of the Project is provided in **Section 3** below. **Figure 2** (attached) indicates the proposed transmission line alignment.

The Project area is within the Gawler bioregion[1] and is nestled in a depositional plain landscape characterised by vast tablelands and dune fields with low topographical relief. The climate is semi-arid with comparably low but highly variable annual rainfall and is subject to hot summers and cool-to-mild winters.

[1] As defined by the Interim Biogeographic Regionalisation for Australia version 7 map.

The Project Area contains low lying arid-tolerant species mostly comprising of shrubland and scrub species as well as open acacia woodland. The landscape is characterised by the orange to brown highly permeable sandy soils which host alluvial plains, salt lakes and ephemeral lagoons. Due to the harsh climatic conditions, the broader area excluding Port Augusta is sparsely populated.

3. Project Description

ElectraNet proposes the construction of a new transmission line from Davenport Substation to the proposed Carriewerloo Substation (located on Parcel H540100SE2 Title CL6181/119).

The existing F1812 transmission line (referred to colloquially as the Davenport to Pimba) will be replaced with a double circuit transmission line carrying both a 132kV line and a 275 kV line. This will occur up to a point north of Yorkeys Crossing (a shallow crossing with good footing allowing for easy crossing by wading or crossing in a vehicle). At this point new transmission line will be constructed to establish a 275 kV line extending to the proposed Carriewerloo substation.

The alignments of the current infrastructure and the proposed infrastructure is indicated on **Figure 1** (attached).

3.1 Easement Requirements

The alignment from Davenport to the point north of Yorkeys Crossing is referred to here as the Section A Alignment. This alignment will require widening of the existing easement from 30 m up to 50 m, an additional 20 m. The existing access tracks will be utilised for the easement along the Section A Alignment, and no additional tracks will be required.

The remaining portion of the alignment is herein referred to as the Section B Alignment. A new 50 m easement will be established for the Section B Alignment. Access tracks for the Section B Alignment will need to be established as part of these works.

The Section A Alignment follows existing infrastructure for the entirety of the route, with only the Section B Alignment (a 12 km section of the route) not following an existing transmission line.

A range of key environmental aspects have been considered to ensure environmental impacts are avoided or effectively mitigated. Key issues considered included environmental features, heritage, existing infrastructure, design criteria and regulations (Electricity General Regulations, 2012). Further description of the key environmental aspects is discussed in **Section 5** below.

3.2 Construction

The following sections outline the typical construction activities for a transmission line. Construction typically proceeds in a linear fashion along the easement. It is likely that construction activities will proceed on several concurrent fronts.

Construction of the 275 kV towers will be undertaken adjacent to the existing 132 kV structures along the Section A Alignment. Once the existing 132 kV conductors have been relocated and restrung on the new structures, the redundant 132 kV structures will be removed.

For portions of the route that are relatively straight and do not have large bends, spans between structures will be roughly 300 m, with a lattice design and will be between 50 m and 60 m high.

For turn points, strain towers will be utilised. In general, footings will be 5 m deep, and depending on soil type, may be required to extend up to 10 m below ground level.

The existing easement and access tracks will be utilised for the laydown areas for the new towers. For the new section of easement along the Section B Alignment, laydown areas will be located within a 400 – 1,000 m^2 area close to, or within the easement.

Access tracks will be required to access the alignment. These access tracks will be constructed to be approximately 5m wide except where passing areas or turning points are required. Sensitive areas will be avoided so as to reduce erosion, sensitive vegetation, or areas of heritage significance. Minor grading may be required for access tracks with limited requirement for importation of capping material.

4. Hill to Hill CEMP

A Construction Environment Management Plan (CEMP) has been developed for the larger and more extensive project referred to as the Hill to Hill project. This proposed project involves the construction of a transmission line from Roxby Downs to Carriewerloo Pastoral Station.

This CEMP will be updated to include this final section of this project. The same construction methods and environmental requirements will be implemented for the entire project extent.

For this reason, this Supplement to the UGL CEMP only refers to any environmental aspects identified that differ from those expected in the Hill to Hill Project.

5. Key Environmental Aspects and Mitigation Measures

5.1 Potential Acid Sulfate Soils (PASS)

There is potential for the liberation of acid sulfate soils during intrusive ground works within the wetland area of Yorkeys Crossing or into the groundwater where groundwater quality would be impacted. The release of potential acid sulfate soils (PASS) could have numerous impacts on surrounding flora and fauna due to the generation of sulfuric acid. The production of sulfuric acid could have detrimental impacts on individual or various fauna species.

5.1.1 Proposed Mitigation Measures

Development of an Acid Sulfate Soil Management Plan will be required in order to manage potential or actual acid sulfate soil material.

SA EPA Publication 638/07 provides guidelines on assessing the risk and managing the impacts of the release of sulfuric acid from acid sulfate soils. This publication also provides information on recognising acid sulfate soil materials and assessing and managing them appropriately.

With reference to the SA EPA Publication 638/07, an Environmental Management Plan must be written in accordance with the *EPA Guideline: Environmental management of on-site remediation*[2].

Other relevant sources of information that may be used to inform the Acid Sulfate Soil Management Plan include:

[2] SA EPA, 2018, *EPA Guidelines for Environmental Management of On-Site Remediation,* https://www.epa.sa.gov.au/files/13544_sc_groundwater_assessment.pdf

- Sullivan, LA, Clay, C, Ward, NJ, Baker, AKM, and Shand, P 2018, *National Acid sulfate soils guidance: a synthesis*, Department of Agriculture and Water Resources, Canberra, ACT

  http://www.waterquality.gov.au/SiteCollectionDocuments/national-acid-sulfate-soils-guidance-synthesis.pdf

- Department of Environmental Regulation, June 2015, *Treatment and management of soil and water in acid sulfate soil landscapes,* Government of Western Australia

  https://www.der.wa.gov.au/images/documents/your-environment/acid-sulfate-soils/guidelines/Treatment_and_management_of_soil_and_water_in_acid_ss_landscapes.pdf

5.2 Yorkeys Crossing

Yorkeys Crossing is a shallow water crossing where a river or stream may be crossed by wading or using a vehicle. It is located at the head of the Spencer Gulf and, with the exception of a crossing further south on the Augusta Highway in the Port Augusta township, there are very few locations where this crossing can be made safely. During periods of heavy rain, this crossing is known to flood making crossing difficult or cause a closure of the crossing until the waters have receded. It

Any impacts that occur in the vicinity of surface water will go directly into the Spencer Gulf.

The detailed design of the construction works that will be undertaken in order to complete the Project is currently being finalised. Following completion of the detailed design, specific mitigation measures may be developed to ameliorate any identified impacts.

5.2.1 Proposed Mitigation Measures

Development of a Surface Water Management Plan will be required to mitigate any potential impacts that could affect Yorkeys Crossing. Should any amendments be required, this plan can be updated when the detailed design has been finalised.

Some documents that may be helpful in the development of the Surface Water Management Plan include, though is not limited to, the following items:

- South Australia EPA publication, Environmental Protection (Water Quality) Policy 2015

  https://www.legislation.sa.gov.au/LZ/C/POL/Environment%20Protection%20(Water%20Quality)%20Policy%202015.aspx

- Australia and New Zealand Guidelines for Fresh and Marine Water Quality, Developing a water quality management plan, 2019

  http://www.waterquality.gov.au/anz-guidelines/framework/wqmp

6. Roles and Responsibilities

The development of all management plans is to be completed by the contractors engaged to undertake the construction works and approved by ElectraNet. All work is to be consistent with that undertaken under the UGL Hill to Hill Connection Project CEMP.

7. Monitoring and Review

During the project works, environmental monitoring is to be conducted to ensure compliance to legislation, as well as the objectives and targets stipulated in this CEMP. All work is to be consistent with that undertaken under the UGL Hill to Hill Connection Project CEMP.

Carriewerloo to Davenport Transmission Line Upgrade

Figures

April 2019

Security Classification: Public

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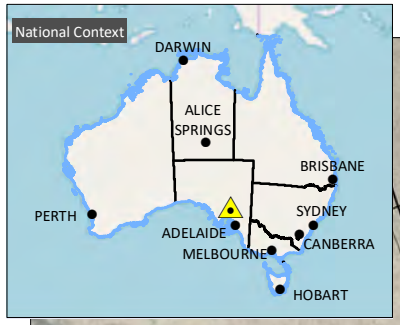

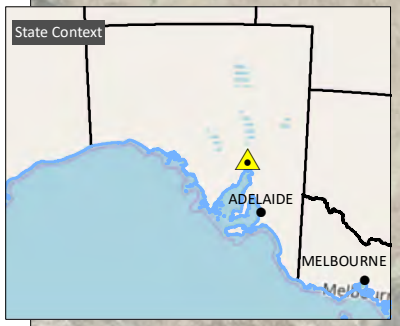

STUART HIGHWAY
Yorkeys Crossing
Wami Kata
Port Augusta West
Port Augusta
Saltia
BYRE HIGHWAY
Stirling North
PRINCES HIGHWAY
MAIN NORTH ROAD

Legend:

- Project Study Area
- Town/ Locality
- Major Road
- Railway

Existing Infrastructure - ElectraNet

- Existing F1812 (Davenport to Mt Gunson) 132kV Transmission Line
- Existing F1813 (Davenport to Neuroodla) 132kV Transmission Line
- Substation

Existing Infrastructure - Other

- Existing F1909 (Davenport to Olympic Dam) 275kV Transmission Line

JBS&G

Job No: 55288

Client: ElectraNet Pty Ltd

Version: FINAL	Date: 01-Apr-2019
Drawn By: TB	Checked By: MB/ DB

Scale at A4 1:250,000

0 5,000 10,000

metres

Coor. Sys. GDA 1994 MGA Zone 53

Project Site
Davenport to Carriewerloo, South Australia

SITE LOCALITY

FIGURE 1

Document Path: V:\05 Projects\ElectraNet\55288-ElectraNet Davenport-Carriewerloo ETL\ArcGIS\Maps\01_DA\RevA\01_55288_Site_Locality_RevA.mxd
Image Reference: Service Layer Credits: © OpenStreetMap (and) contributors, CC-BY-SA
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Australian Government, Geoscience Australia 250k Topo 3 Series & AREMI

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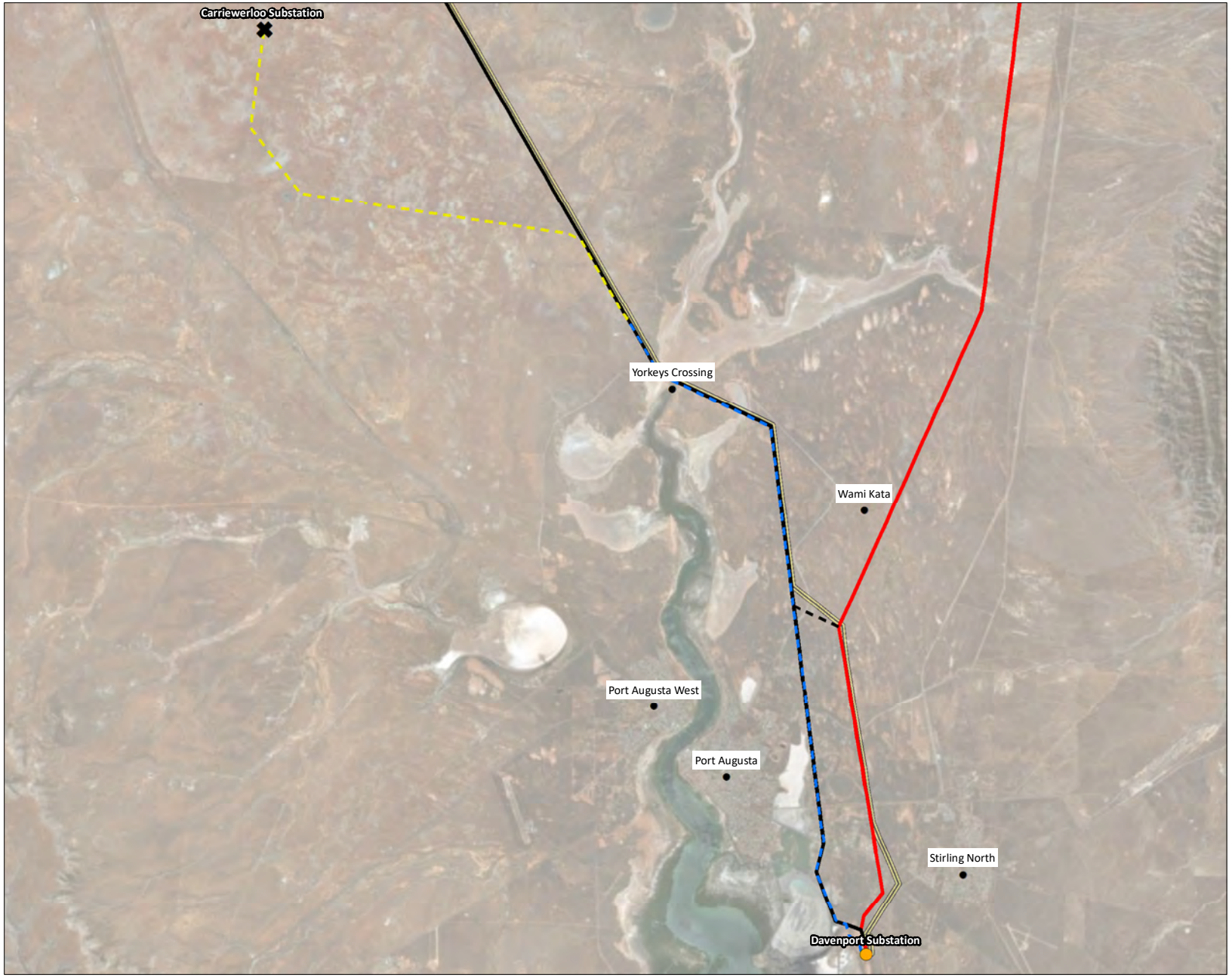

Legend:

- Town/ Locality
- Major Road
- Railway

Existing Infrastructure - ElectraNet

- Existing F1812 (Davenport to Mt Gunson) 132kV Transmission Line
- Existing F1813 (Davenport to Neuroodla) 132kV Transmission Line
- Substation

Existing Infrastructure - Other

- Existing F1909 (Davenport to Olympic Dam) 275kV Transmission Line

Proposed Infrastructure

- New Transmission Line Extent (275kV)
- New Double Circuit Alignment Along Existing Easement (275 and 132 kV)
- Tower 30 Temporary Tie In
- Potential Substation Location

JBS&G

Job No: 55288

Client: ElectraNet Pty Ltd

Version: FINAL	Date: 01-Apr-2019
Drawn By: TB	Checked By: MB/ DB

Scale at A4 1:150,000

0 2,500 5,000

metres

Coor. Sys. GDA 1994 MGA Zone 53

Project Site
Davenport to Carriewerloo, South Australia

PROPOSED AND CURRENT TRANSMISSION LINE ALIGNMENT

FIGURE 2

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Image Reference: Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Australian Government, Geoscience Australia 250k Topo 3 Series, AREMI & ElectraNet

Construction Environmental Management Plan – CEMP

Hill to Hill Connection Project

Project Number	3200-0575
UGL Limited ABN	96 096 365 972
Document No.	3200-0575-PLN-010
ElectraNet No.	40903-UGL-ENV-PLN-0009_3-Construction Environmental Management Plan
Revision	3

1. REVISION DESCRIPTION

Rev	Description	Page/s	Approvals					Date
			UGL (EA)	UGL (EM)	UGL GM HSSEQ	UGL (PM)	Customer (if required)	
A.0	Draft for Review	95	Niv R	Stefan N	Tim Ellis	Matthew Gorman	For comment	12/11/18
1	1st revisions – comments incorporated from ElectraNet	99	Niv R	Stefan N	Tim Ellis	Matthew Gorman	For comment	15/12/18
2	2ndrevisions – comments incorporated from ElectraNet	99	Niv R	Stefan N	Tim Ellis	Matthew Gorman	For comment	06/01/19
3	3rd revisions – comments incorporated from DPTI meeting	99	Niv R	Stefan N	Tim Ellis	Matthew Gorman	For comment	11/01/19

This plan and any subsequent revisions are controlled documents and shall be controlled by the Environmental Manager (EM), Quality Manager (QM) and approved by the Project Manager (PM) before re-issue. The PM shall define distribution requirements for this plan and referenced documents. Any minor alterations to this document shall be maintained in the project file. Electronic version of the Plan is maintained in the project file.

1.1. DISTRIBUTION OF CONTROLLED COPIES

Distribution of this document will be controlled in the Document Database. As a minimum the following must be provided with an authorised copy.

Environmental Manager (EM) – Stefan Nightingale
Quality and Compliance Manager (QM) – Ali Safdartourei
Document Controller (DC) – Meenu Wallia
Project Manager (PM) - Matthew Gorman
ElectraNet - TBC
Site Copy – Site X folder

Contents

Definitions and Abbreviations

CEMP	Construction Environmental Management Plan
CH	Cultural Heritage
CM	Construction Manager
CMP	Contamination Management Plan
DA	Development Application
DC	Document Controller
DCT	Design Construct and Test
EM	Environmental Manager
EIMS	Enterprise Integrated Management System
EPBC	Environment Protection and Biodiversity Council
ESCP	Erosion and Sediment Control Plan
EMS	Environmental Management System
EPA	Environment Protection Authority
ERP	Emergency Response Plan
IECA	International Erosion Control Association
HSSE	Health, Safety, Security and Environment
HV	High Voltage
NCR	Non-Conformance Request
NGER	National Greenhouse Energy Reporting
PI	Process Improvement
PM	Project Manager
QM	Quality Manager
RI	Recommended Improvement
SA	South Australia
SDS	Safety Data Sheet
SMP	Safety Management Plan
SWMS	Safe Work Method Statement
TBC	To Be Confirmed
TMP	Traffic Management Plan
UGL	United Group Ltd
U&R	Utilities and Resources
WEIC	Weekly Environmental Inspection Checklist
WHS	Work Health and Safety
WMP	Waste Management Plan
WRAPP	Waste Reduction and Purchasing Policy

2. INTRODUCTION

2.1. GENERAL

UGL – Utilities and Resources (U&R) has been awarded the contract for the Hill to Hill Connection Project for ElectraNet. UGL is to Engineer, Procure and Construct Steel Lattice Towers, Steel Poles, Olive Conductors, OPGW and all associated line hardware and materials required for the construction of the following transmission line project inclusive of 2 Substations location at Saltbush Hill and Carrieweloo.

All environmental activities that are required under this contract will be undertaken in accordance with the UGL Environmental Management System (EMS). This Construction Environmental Management Plan (CEMP) has been developed in accordance with the requirements stated in the contract and the relevant planning documentation. The aim of this CEMP is to further minimise and manage potential adverse environmental impacts from the project activities. It provides the environmental controls that will be implemented for the activities and sets out conditions under which the project will proceed.

The environmental aspects for the project have been identified and assessed from ElectraNet Environmental Operating Requirements, ElectraNet documents, Development Applications, site visits, legislation, and UGL's knowledge and experience in managing environmental aspects associated with a project of this scope. Activities which pose a significant risk to the environment are identified in the aspects and impacts' section of the HSSE Risk Register (refer to Appendix 3), with the specific control measures for environmental management documented in section 6 of this document.

All the UGL employees, directed subcontractors and visitors including ElectraNet personnel will meet the requirements of this document as applicable to the contract scope of works. The effective implementation of this CEMP is the responsibility of each member of the entire project team, which includes nominated personnel from ElectraNet and UGL project team. Specific roles and responsibilities are discussed in detail in Section 8 of this document.

2.2. REFERENCES

This CEMP has been prepared to comply with the following Decision Notification Forms:

- Development Number 010/V061/17 (limited to construction of the Carriewerloo substation and 275kV transmission line from Carriewerloo substation to Yorkey's crossing)
- Development Number 010/V055/18 (Prominent Hill Transmission Line – Prominent Hill to Carriewerloo substation)

This document will be updated when further Decision Notifications are received for the remainder of the project (south of Carriewerloo substation).

2.3. PROJECT DESCRIPTION

The key characteristics of the project are detailed in Table 1.

Table 1: Project Details

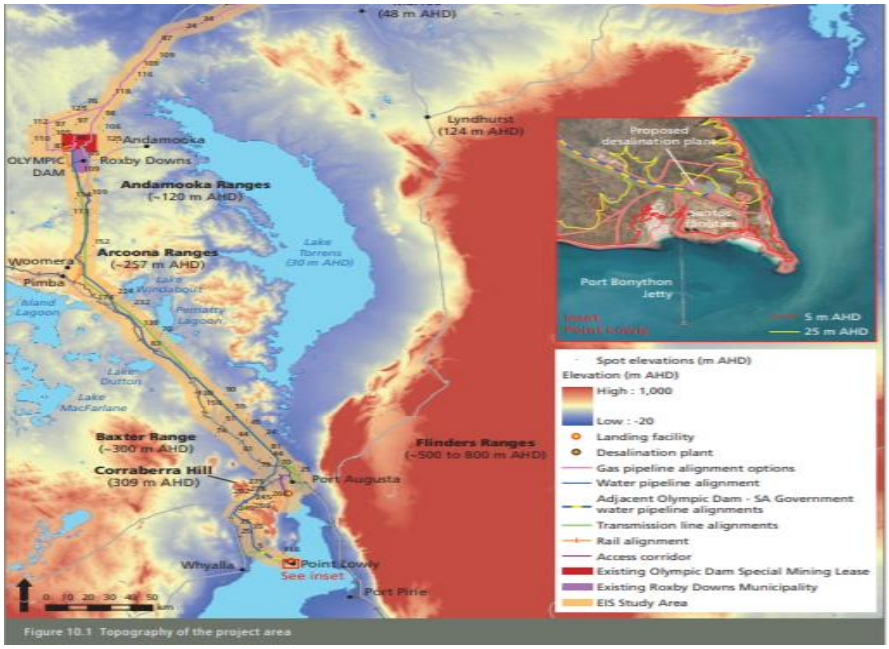
Project Component	Description
Customer	ElectraNet
Project Type	Substation and Transmission Line design, Construction
Location	Approximately 20 km SW of Port Augusta to Olympic in South Australia

Land Tenure	Leased by ElectraNet
Historical	Grazing and Mining
Zoned	Rural
Project Working hours	Mon to Sunday 6am – 6pm.
Project Duration	593 days with PC 22nd June 2020, followed by 2 years defects liability period
Project Commencement	29 October 2018

2.4. ENVIRONMENTAL SETTINGS

The project spans 270km from 20km South West (SW) of Port Augusta to Prominent Hill. Details of the environmental setting and issues that may influence or impede the project are detailed in Table 2.

Table 2: Environmental Attributes

Project Component	Description
Site Description	Land easement spanning 270km adjacent to the existing BHP transmission line
Topography & Landform	The Project is dominated by a landform of low and undulating dunes, swales and clay pans. To the north the land is generally flat to undulating and compromised mainly of gibber plains and rises, plains and dune fields. To the south are various tablelands, dune fields and alluvial plains, occasionally separated by plateaus and steep escarpments. Surface materials range from stones through sands, silts and clays. Topography and spot heights illustrate generally flat terrain in the project area. Dunes trending east west and up to around 8m in height, swales and claypans. The northern topography elevation is about 100m AHD.  Figure 10.1 Topography of the project area
Local Creeks and Water Bodies	Watercourses flowing and ephemeral, salt lakes and other low-lying areas – Gullies run through sites Map separate for full watercourse areas
Climatic Conditions	Wettest Month – July (mean 29mm) Driest Month – February (mean 7.5mm)

	Hottest Month – January (mean maximum 29.5^{0}C) Coolest Month – July (mean minimum 7.6^{0}C) The route alignment lies in an arid to semi-arid region, subject to hot summers and cool mild winters. Rainfall is unpredictable and sporadic throughout the year, occurring in intense short bursts. Average annual rainfall at Roxby Downs, Woomera and Port Augusta is 150 mm, mm and 220 mm respectively.
Cultural Heritage	The project will operate under Duty of Care guidelines – Do not enter areas outside the approved Construction Activity Zone without approval. Do not enter Exclusion Zones un authorised by ElectraNet or described on Land Disturbance Permit requirements.
Surrounding Land Use	Rural – Vacant Livestock Farming
Proximity to Sensitive Areas	Major areas of Cultural Heritage within vicinity. Refer to maps and Cultural places • Greencomb Spider-orchid *(Caladenia tensa)* – Occurrence is unlikely • Southern Sea-heath *(Frankenia plicata)* – Occurrence is possible • Large-flower Groundsel *(Senecio megaglossus)* – Occurrence is possible
Key Environmental Factors	Native vegetation removal and rehabilitation Cultural Heritage Erosion and sediment control (Stockpile area, substation drainage, transmission towers) including the disposal of sediment impacted construction water following rainfall events Weed control Hazardous chemicals Housekeeping and Waste disposal (Cigarette butts, rubbish) Dust management Noise Management Vibration Management Fauna – Snakes, kangaroos, sheep, goats, cattle and emus Protected vegetation • Greencomb Spider-orchid *(Caladenia tensa)* – Occurrence is unlikely • Southern Sea-heath *(Frankenia plicata)* – Occurrence is possible • Large-flower Groundsel *(Senecio megaglossus)* – Occurrence is possible

Figure 1: General Location and Site Arrangement of Project

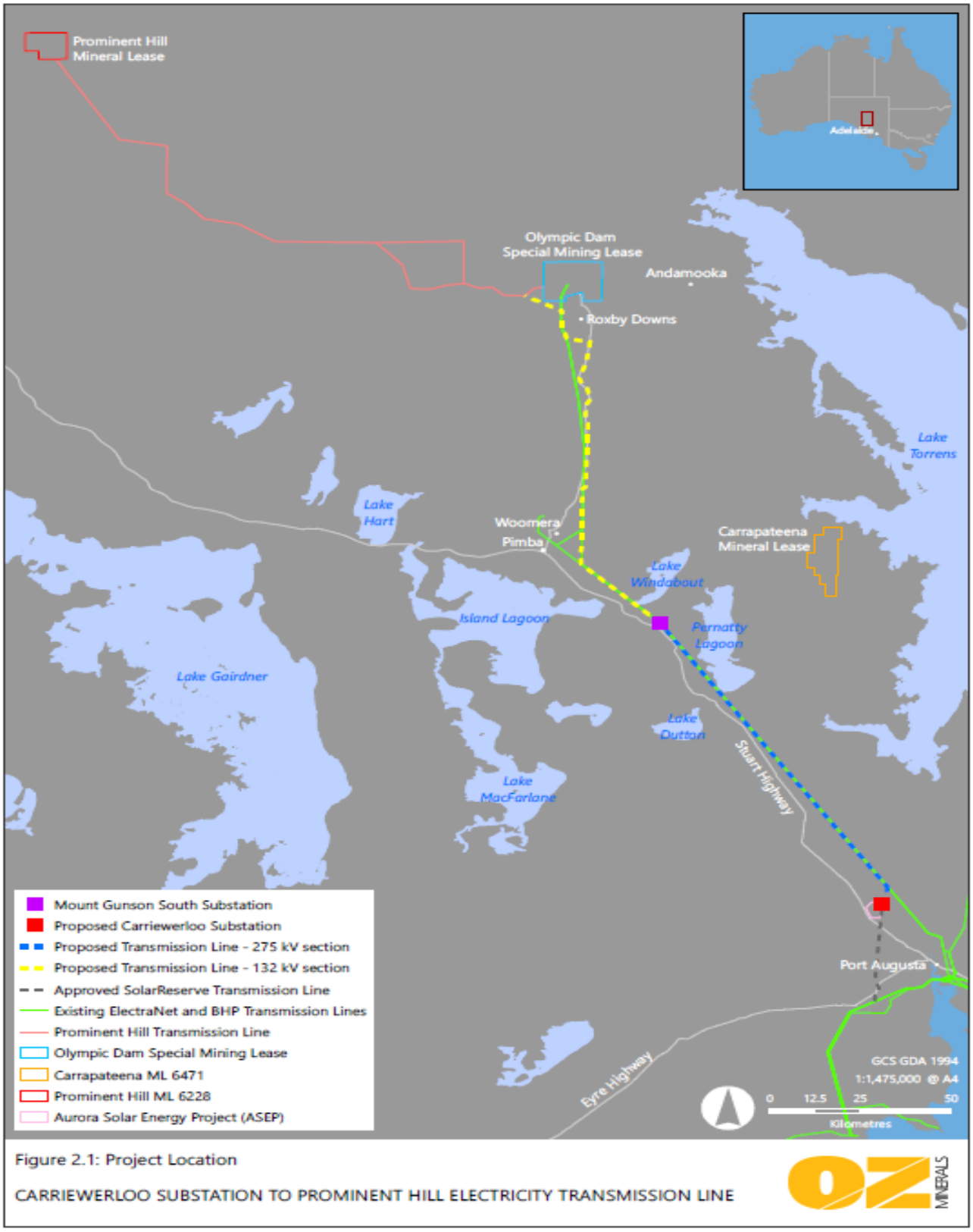


Figure 2: Project Location Northern Area 1

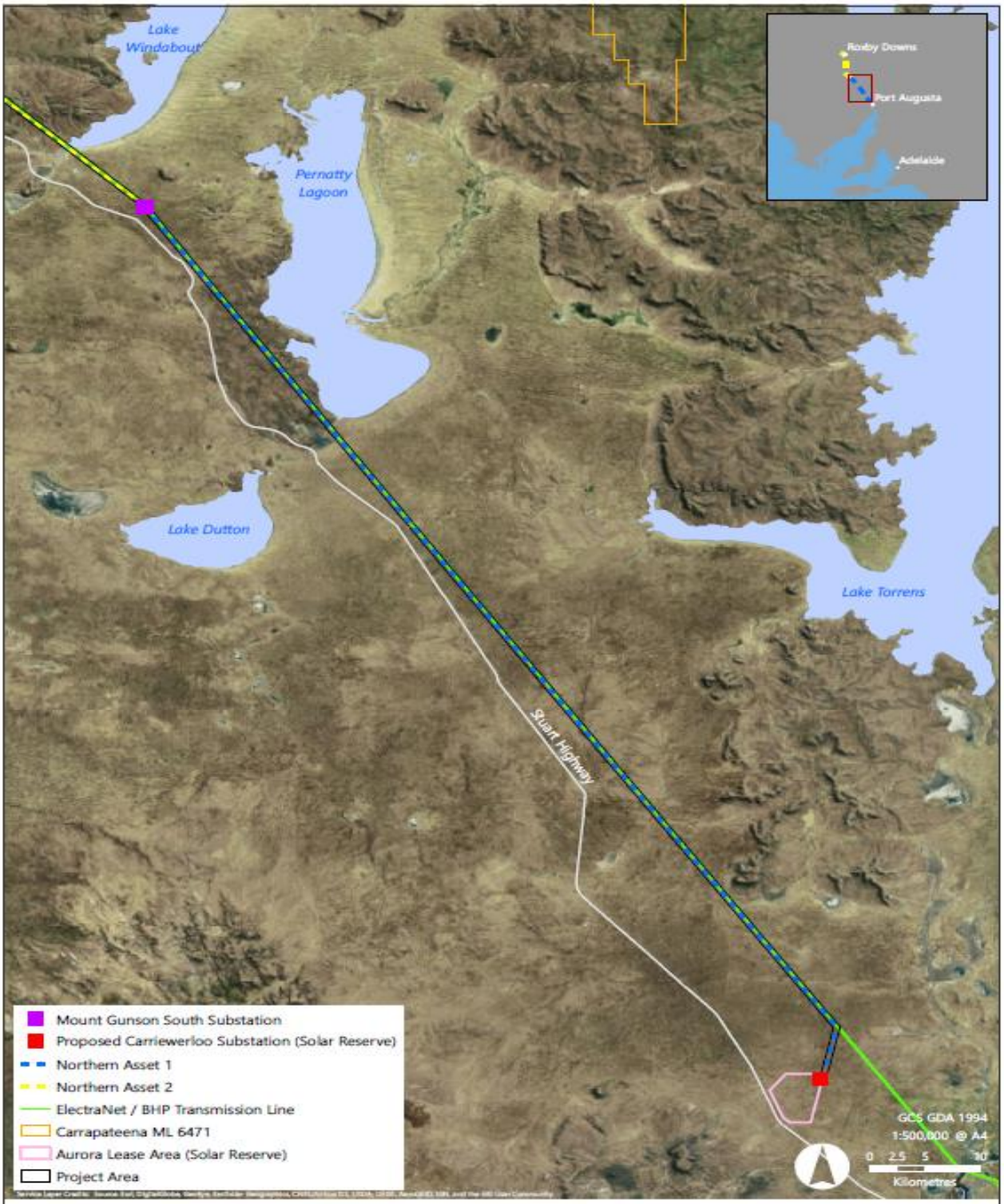


Figure 1.2: Project Area - Northern Asset 1

CARRIEWERLOO SUBSTATION TO PROMINENT HILL ELECTRICITY TRANSMISSION LINE EPBC

2.5. SCOPE OF WORKS

The proposed transmission line run south from Prominent Hill. The current executed contract indicates a connection from Carriewerloo substation into a new substation at Saltbush Hill, approximately 20km south west of Port August. This scope is subject to change, with the latest proposal including a transmission line from Carriewerloo substation heading southeast over Yorkey's Crossing and running parallel with the existing Davenport to Pimpa transmission line. A separate Development Application will be submitted by ElectraNet for this portion of the works.

This CEMP has been produced for the portion of works from Prominent Hill to Carriewerloo substation and will be subject to change and or updates once the final scope of work for the transmission line south of Carriewerloo substation is finalised.

The scope of works is split into four separable portions consisting of:

Separable Portion 1:

Design and Supply of Steel Lattice Towers, Steel Poles, Olive Conductors, OPGW and all associated line hardware and materials required for the construction of the following transmission line project;

- *Saltbush Hill Substation*
- *Carriewerloo Substation*
- *Saltbush Hill Substation to Carriewerloo Substation 275kV T/L*
- *Carriewerloo Substation to Mt. Gunson South Substation 275kV T/L*
- *Mt. Gunson South Substation to Prominent Hill Substation 132kV T/L*

Separable Portion 2:

Feeder F1973 (Saltbush Hill to Carriewerloo) will connect the Saltbush Hill Substation to the proposed Carriewerloo Substation. This feeder is approximately 35 km long and heads north-east from Saltbush Hill Substation. Saltbush Hill Substation will be connected to Principal's existing network via a diversion of one feeder of the existing Davenport to Cultana 275 kV line (presently feeder F1935). Carriewerloo Substation will be adjacent to the proposed 220 MVA Solar Reserve solar farm.

a) Construction works for Saltbush Hill and Carriewerloo Substations including

a. civil construction

b. installation and earthing of primary plant within the substation, assembly and site erection of substation gantry

c. transport the control building from Adelaide to site and install on control room footing

d. pull control and power cables between primary plant and control building.

e. terminates cables at primary plant and control building end, and conduct end to end testing

f. Site acceptance testing.

b) manufacture, supply and construction of the transmission line system, including OPGW components to connect with the Principal's telecommunication system.

c) Lattice steel towers, including footing with earthing shall be installed along the nominated alignment;

d) The line shall be strung with phase conductors 54/7/3.5 Aluminium Clad Steel Reinforced (ACSR) (Olive);

e) The line shall be strung with one Optical Ground Wire (OPGW).

Other works

a) Attachment to the gantry structure at each substation (Saltbush Hill and Carriewerloo Subs);

b) Diversion of one circuit of the Davenport to Cultana 275 kV line (Feeder 1935) into Saltbush Hill Substation, using a double circuit tower and a double circuit pole between structure 2116-STR-2047 and 2116-STR2046;

c) To allow diversion of the Davenport to Cultana line into Saltbush Hill Substation, the existing 132 kV feeder (F1808) may need to be modified. The modification may include lowering one span onto structures to provide sufficient clearance for the diverted 275 kV line to cross over it.

d) Double circuit terminal tower at Carriewerloo Substation. This tower will be used for the terminal spans of both F1973 and F1974 onto Carriewerloo Substation gantry (one feeder on each side of the tower).

e) Earthing study and supplementary earthing for existing structures for 2.5 km from Saltbush Hill substation back towards Davenport and Cultana (which will be Corraberra Hill after energisation of Corraberra Hill Substation) from the new cut in location along existing F1935 (which will be F1965 after energisation of Corraberra Hill Substation); and

f) 9 kV SWER line Construction.

Separable Portion 3:

Feeder F1974 (Carriewerloo to Mount Gunson South) runs 111 km north-east from Carriewerloo Substation to the proposed Mount Gunson Substation. It is located close to Stuart Highway.

SP3 Scope of Works includes:

a) manufacture, supply and construction of the transmission line system, including OPGW components to connect with the Principal's telecommunication system.

b) Lattice steel towers, including footing with earthing shall be installed along the nominated alignment;

c) The line shall be strung with phase conductors 54/7/3.5 Aluminium Clad Steel Reinforced (ACSR) (Olive);

d) The line shall be strung with one Optical Ground Wire (OPGW). e) Attachment to the gantry structure at each substation (Carriewerloo & Mt Gunson Subs)

Separable Portion 4:

Feeder F1881 (Mt Gunson South to Prominent Hill) Approximately 130 km long, will connect Mount Gunson South Substation to the existing Olympic Dam to Prominent Hill transmission line. The line will be single circuit 132 kV with one Optical Ground Wire (OPGW) earthwire mounted on tubular steel monopoles.

See Appendix 11 - figures 1,2 and 3 Location Construction Activity Zones

SP4 Scope of Works includes:

a) manufacture, supply and construction of the transmission line system, including OPGW components to connect with the Principal's telecommunication system.

b) Tubular steel monopoles, including footing with earthing shall be installed along the nominated alignment;

c) The line shall be strung with single phase conductors 54/7/3.5 Aluminium Clad Steel Reinforced (ACSR) (Olive); and

d) The line shall be strung with one OPGW.

Access tracks

Access tracks will be constructed to gain entry to construction zones. Where no existing easement track exists, new easement tracks will be created. To gain access to the easement the preference will be to utilise existing tracks. Creation of new tracks will be kept to a minimum where possible and will be a maximum of 5m wide. UGL has utilised existing GIS layers for cultural heritage and sensitive vegetation areas and designed to avoid these areas.

UGL will provide to ElectraNet the locations of intended new access tracks to allow ElectraNet to gain necessary approvals. Once approved a final route plan will be drafted and communicated to all relevant staff via toolboxes and contained as part of work packs.

Construction zones

Two main designated construction zone types will occur on this project that include tower/pole pads and line stringing areas. Tower and pole constructions zones comprising of 50m x 50m cleared areas will be spaced every 300m-400m with a total of approximately 800 pole/tower locations along the alignment required. These will include the tower pads (within the easement). The second construction zone will be

the line stringing areas which will largely remain uncleared during construction work. Formal approval from ElectraNet will be sought if work is to be conducted outside the easement.

Camp/Accommodation

Camp locations at Roxby Downs (approximately 40 rooms to be utilised initially and potentially increasing dependent on project requirements) which is an existing motel with all required facilities therefore no additional permitting is required. There is a proposed camp to be constructed at the Mount Gunson Copper Mine (accommodating up to 150 people). The size of this camps footprint is 200m x 150m and it is likely that there will be some permitting requirements prior to establishing this camp.

The project's Environmental team will liaise with the Department of Planning, Transport and Infrastructure regarding DA approval under *the Development Act 1993 (SA) for this second camp*. The project will also liaise concurrently with the Department for Energy and Mining regarding requirements or modification to Miscellaneous Purposes License over the camp area under the *Mining Act 1971*. An additional permit will also be required from Department of Health (SA) over construction of waste treatment facility.

Office Facilities

Two office facilities for the project with locations at Roxby Downs and at Mount Gunston to administer and manage the project. The Roxby Downs office will accommodate up to 30 people and is an existing facility therefore no additional permitting is required. The second office at Mount Gunston camp will also accommodate up to 30 people and comprise of an area approximately 100m x 80m. The permitting requirement for this office will be included within the proposed camp permits.

Concrete Batch Plants

Mobile, concrete batching plants will be near the project at a location yet to be determined.

Subcontractor will be engaged to utilise their mobile concrete batching plant to undertake the work. UGL will ensure that the subcontractor is appropriately licensed and that any additional permitting requirements for the batch plant are obtained prior to mobilisation. UGL acknowledges that under the *Environment Protection Act 1993 (SA)* this could take 12 weeks to acquire.

Laydowns

UGL are currently sourcing laydown yards. These will be at permanent fixed locations and if these are unavailable additional areas will be sourced. For all laydown areas approval is required by the Senior Environmental Advisor to ensure all permits and approvals are attained. Inclusive of this defined laydown will be assessed for ESCP control measures. each laydown will have a site plan and traffic management and a Waste Management Plan (WMP) to ensure that all waste is either recycled or disposed of correctly.

The Works shall be carried out in accordance with the following:

- Compliance with relevant consent conditions;
- Compliance with obligations;
- Compliance with all applicable Laws, regulations, standards and industry codes of practice.

3. ENVIRONMENTAL MANAGEMENT

3.1. UGL ENVIRONMENTAL MANAGEMENT SYSTEM

The EMS aims to meet the needs of UGL, ensure legislative and contractual compliance, provide for continuous improvement and minimise adverse impact on the environment. The EMS has been developed in accordance with the AS/NZS/ISO 14001:2015 and externally certified by Bureau Veritas. The EMS details

the actions necessary to implement the UGL's Environment Policy and achieve the agreed environmental objectives across UGL businesses. The UGL EMS provides minimum requirements in the areas of:

- Planning & Review;
- Implementation;
- Monitoring and Evaluation;
- Review and Improvement.

The CEMP is supported by the UGL EMS which includes environmental procedures, environmental control standards and other supporting documents. The CEMP is the key environmental management document that Project Managers rely on to ensure appropriate environmental management practices are flowed during the project activities.

3.2. POLICY

The UGL's EMS is governed by the Environment Policy attached in Appendix 1.

3.3. SUBCONTRACTOR MANAGEMENT

All subcontractors utilised by UGL throughout the course of the project will be made aware of their environmental obligations and requirements of this CEMP. All subcontractors will work under the requirements of this CEMP prepared by UGL. The environmental performance of our potential subcontractors is assessed prior to their award and environmental conditions are incorporated into our subcontracts. All subcontractors will be subject to the site induction, daily pre-start meetings, weekly tool box talks, monthly committee meetings and assessment process. If a subcontractor fails to carry out their environmental responsibilities under the contract, they will be issued with a non-conformance and managed in accordance with the subcontractor management procedure EIMS-4-2176.

4. STATUTORY REQUIREMENTS

4.1. PLANNING

This CEMP directs the planning considerations of the management team to initiate identification of any potential environmental impacts or risks associated with the project activities. The process details the project specific key environmental issues, objectives, management activities, compliance criteria and reporting aspects to ensure that all environmental issues are identified and managed.

The process of obtaining legislative approvals and planning documentation is the responsibility of ElectraNet throughout the project. Operational permits are the responsibility of UGL. The project team will ensure that all activities undertaken as part of the contract are done so in accordance with the planning documentation provided by ElectraNet. The table below outlines all the permits required for the project and responsibility.

Permit Requirements				
Permit	**Requirement**	**Status**	**Responsibility**	**Comment**
DA	Solar Reserve Development Application 010/V061/17	DA Acquired	ElectraNet	UGL received

	(Carriewerloo substation and Transmission Line from Carriewerloo substation to Yorkey's Crossing)			
DA	DA for Mount Gunson South Substation expansion	DA acquired	ElectraNet	UGL received
DA	DA transmission line Prom Hill to Carriewerloo Sub	DA acquired	ElectraNet	UGL Received 3/1/19
Land Agreements	Being reviewed by ElectraNet	Pending	ElectraNet	Still awaiting
Cultural Heritage	Entire Kokatha section of the transmission line easement has now been surveyed	Completed	ElectraNet	
	Barngarla section has yet to be surveyed	Pending	ElectraNet	
	Nukunu section has yet to be surveyed	Pending	ElectraNet	
Vegetation Clearance Approvals	CL 6204 / 748 (Kootaberra) Geo Tech only	Acquired	ElectraNet	
	Cl 1330/26 (Pernatty) Geo Tech only	Acquired	ElectraNet	
	CL 6176/268 (Aroona) Geo Tech only	Acquired	ElectraNet	
	CL 6178/725 (Oakden Hills) Geo tech only	Acquired	ElectraNet	
	CR 5345/7554 Geo Tech only	Acquired	ElectraNet	
Native vegetation Council Permit	File number: 2018/3166/010 Prominent Hill to Carriewerloo	Acquired	ElectraNet	
	File number: 2017/3123/010 Aurora Solar Energy Project	Acquired	ElectraNet	

	(Carriewerloo substation)			
Permits required:				
Native Vegetation Council Permit	Transmission line from Carriewerloo substation to Davenport substation	Pending	ElectraNet	
Development Approval	Transmission line from Yorkey's Crossing to Davenport substation	Pending	ElectraNet	
Permit for batch Plant	Concrete Batch Plant SA EPA ACT 1993 SA	Scope dependant	UGL	
Permit for well construction	Well Construction Permit Dept of Environment and Water	Scope dependant	UGL	
Snake catchers Permit	Snake catchers permit National Parks and Wildlife Act 1972 SA	Required	UGL	
Permit to Treat Waste water	Wastewater Treatment Plant - Approvals required for mobile Public and Environmental Health Act 1987 (SA)	Scope dependant	UGL	

4.2. LEGAL AND OTHER REQUIREMENTS

As part of the review process, legislative and other requirements applicable to the project scope have been identified in the Legal Register located in Appendix 2. The UGL Project Manager will ensure that all applicable approvals, permits and licences are held for the Project.

All relevant environmental legal requirements are identified at a corporate level and recorded on an Environmental Legal Obligation Register. A review of legislative changes and their impact on UGL's operations is conducted monthly at a site level and will be communicated to the Hill to Hill project through the HSSE team via HSE Alerts. Subsequent changes to Appendix 2 and other areas of the CEMP will follow to ensure legal compliance.

4.3. COMMUNITY AND REGULATORY MANAGEMENT

Communication with internal and external stakeholders regarding this project's potential environmental impacts, environmental activities and events will be in accordance with the details provided in Table 3. This

information will be communicated to all project personnel through many means, including induction, contracts, training, toolbox meetings, posters and other mediums.

Table 3: Communication with regulatory authorities, community and stakeholders

Subject	Action	Recipients	Frequency
Environmental Impact - Event causing or threatening to cause material harm to the environment	Project Manager to notify ElectraNet. HSSE Management and EA/HSSE **IMMEDIATELY.** Incident to be recorded on Synergy within 24 hours	PM > HSSE Management, ElectraNet. Regulatory Authorities (if required after consultation with ElectraNet)	Per Incident Immediately
Near Miss	PM/CM to notify HSSE Management. PM to notify ElectraNet within 24hrs. Near Miss to be recorded on Synergy within 24hrs	PM, HSSE Manager, ElectraNet	Per event
Non-Conformance	PM notifies ElectraNet that a NC has occurred and recorded in Synergy	PM, HSSE Manager, ElectraNet	Per Non-Conformance event
Environmental Actions Request/ Instructions	Verbal communication prior to recording in Synergy, meeting minutes or Issues register.	Project personnel responsible to complete the action or task.	As required
Public Complaints or Comments	Record communication in Synergy, notify ElectraNet IMMEDIATELY. Complaint to be recorded in Synergy within 24 hours	PM, ElectraNet	Per complaint
Media Enquiry	Indicate. Record communication in Synergy and notify PM who will notify ElectraNet IMMEDIATELY	PM, ElectraNet	Immediately
Permit Conditions	Compliance and reporting (if required)	PM, Regulatory Body	As indicated by permit
Environmental Performance	SEA/HSSE to report	PM, ElectraNet and SEA	Monthly (or as indicated otherwise)

5. ASPECTS AND IMPACTS

An Aspects and Impacts Register has been developed in line with the project activities, environmental approval documents and site conditions using the Aspects and Impacts' section of the HSSE Risk Register as per Hazard and Risk Assessment Procedure. The completed Aspects and Impacts register is in Appendix 3.

The register identifies perceived risks associated with each environmental aspect, mitigation and control measures to manage the identified risk. If the risk rating of the environmental impact is significant, risk rating greater than "A, B or C", then the aspect associated with that impact is a significant environmental aspect. If the residual risk continues to be rated as significant, then additional controls measures are to be identified and implemented for the activity.

During the review of the Impacts and aspects the following (risk rating greater than "A, B or C) have been identified:

- Correct permitting and or no permits
- Installation of erosion and sediment controls
- Weed proliferation
- Carriage of spoil
- Generation of Dust
- Accidental spills and leaks
- Release of fuel during refuelling
- Generation and storage of waste
- Inadequate site restoration

The Impacts and Aspects Register is contained within the HSSE Risk Register and is managed through the use of the environmental control's tables (Section 7) and in conjunction with the UGL environmental guidelines. All mitigation measures identified in the approval process and during the project planning are listed in the environmental control tables along with the objectives, targets, key legislation and guidelines.

The environmental hazards and risks identified in the register will be considered when developing the Safe Work Method Statements (SWMS), Work Packs and Work instructions for the project. The register is a working document and has been developed with the most current understanding of the environmental conditions, potential impacts, design and work practices. As the project progresses the aspect and impacts register will require revision to remove aspects that are no longer present and add new or future aspects. Revision will be in conjunction with the project team during the HSSE Risk Review meetings.

6. OBJECTIVES AND TARGETS

UGL has a series of key environmental objectives and targets which have been set at the corporate level, based on the UGL Policy and EMS. during the risk Table 4 lists these objectives and corresponding targets.

Table 4: UGL Key Environmental Objectives and Targets

Environmental Objective	Target
Environmental compliance All site activities conducted in accordance with CEMP and UGL EMS	90% compliance in audits
Environmental compliance No environmental impacts outside those allowed for in the EPL or planning documents	Ensure no impact on receiving waters or surrounding environment. 0 environmental events which result in regulatory action
Waste Minimisation and Recycling	Maximise reuse of appropriate spoil on Site and appropriate management and disposal of all soils requiring disposal off Site.
	Waste and recycling data to be captured and reported monthly

The project also has established specific objectives and targets for each significant activity (risk rating greater than "A, B or C) based on the Contract. The specific objectives and targets for each environmental element are listed in the environmental control tables, found in Appendix 4 of this plan.

7. ENVIRONMENTAL MITIGATION MEASURES

This chapter describes the environmental mitigation measures that are necessary to meet the requirements stipulated by the contract. It comprises a series of control tables that have been developed to address each of the Project's environmental hazards and risks identified in the Aspects and Impacts' section of the HSSE Risk Register (refer to Appendix 3). Each control table contains the following key information:

- What is to be achieved (objectives and targets);
- What actions are to be undertaken to achieve these objectives and targets (safeguards and management actions);
- Who and when are actions to be undertaken (responsibility and timing); and
- What documented evidence, records or sign-offs are to be maintained throughout the Project (audit trail).

The following is a complete list of the management plans and relevant sections that have been included in this CEMP:

Soil and Water Management	Section 7.1
Vegetation Management	Section 7.2
Fauna Management	Section 7.3
Weed and Pest Management	Section 7.4
Noise and Vibration Management	Section 7.5
Air Quality (Dust) Management	Section 7.6
Cultural Heritage Management	Section 7.7
Hazardous Material Management	Section 7.8
Bushfire Risk	Section 7.9
Waste Management	Section 7.10
Landscape and Rehabilitation Management	Section 7.11
Traffic and Access Management	Section 7.12

The following is a complete list of the work instructions that will be utilised:

Line Access and Clearing	40903-UGL-QAC-INS-0019_43439
Tower and Pole Foundation Construction	40903-UGL-QAC-INS-0020_43439
Tower and Pole Assembly and Erection	40903-UGL-QAC-INS-0021_43439
Erection of Line Materials (Stringing Works)	40903-UGL-QAC-INS-0022_43439

7.1. SOIL AND WATER MANAGEMENT

Environmental Objectives

- Comply with the environmental operating requirements
- Prevent potential for flooding via effective surface water management
- Excavated spoil, imported fill and contaminated soil to be disposed of or reused in accordance with legal requirements
- Safe handling of any potentially contaminated soil and material

Target

- No spills over 5 litres or runoff of contaminants/sediments onto land
- No land or soil contamination as a result of project activities
- No impact of soil erosion or disturbance from project activities
- No impact on local waterways (including soil erosion and disturbance arising from the project activities)

Legislation

- *Environmental Protection and Biodiversity Conservation Act 1999*
- *Water Industry Regulations 2012*
- *Environment Protection Act 1993 (SA) and Regulations 2009*
- *Environment Protection (Water Quality) Policy 2015*
- *Natural Resources Management Act 2004 (SA) (NRM Act)*
- *Water Act 2000*

Guidelines, Standards and Other References

- Australian Standard 1940 "The storage and handling of flammable and combustible liquids"
- Development Application 010/V061/1 Condition 9,13,14 and 17a
- SA Water Trade Waste policy no. 44: General

Action		Responsibility	Supporting Documents
7.1.1	All dewatering will be done in a controlled manner. All water leaving site will be clean and free of contaminants, all dewatering off site to be completed with a permit.	CM	Dewatering procedure. Dewatering permit
7.1.2	Existing ground conditions and weather forecasts will be taken into consideration prior to conducting all works. Clearing/Civil and Excavation works will not be conducted if ground conditions are unsuitable or pose environmental risk.	CM	Daily prestart, BOM

7.1.3	Concrete washout to be conducted in designated areas only, with concrete drivers advised of its location. Concrete Batch Plants to be installed as per requirements, permits obtained by contractor.	CM/SEA	Site Layout
7.1.4	Install erosion and sediment controls as per ESCP. Install devices, where possible, prior to soil disturbance from construction activities. Maintain the devices throughout the duration of the project. Review ESCP weekly and update as required.	CM/SEA/HSSE	ESCP
7.1.5	Additional stockpiles are to be located in areas that are already cleared and are to have appropriate erosion controls in place. No permanent stockpiles will remain on site.	CM	ESCP Drawings
7.1.6	Machinery and vehicles with internal combustion engines will be maintained in good condition to minimise the chance of leaks or drips of lubricants, fuels or other fluids.	PM/CM	WEIC
7.1.7	The area of disturbed land will be kept to a minimum. Existing vegetated areas will be kept intact for as long as possible prior to clearing. If clearing of native vegetation is required, vegetation will be grubbed and stockpiled within the disturbance footprint. Topsoil will be stripped to approximately 100mm and stockpiled (to a maximum height of 2 metres) within the approved disturbance footprint.	PM/CM	Drawings, ESCP
7.1.8	Any soil or and spoil materials will not be stockpiled within 50 metres of any gullies or waterways or steep slopes.	PM/CM	ESCP
7.1.9	UGL and Subcontractors personnel and vehicles to use designated roads/access areas and routes only.	All	TMP
7.1.10	No parking of plant and equipment near waterways and where appropriate equipment to be fitted with drip trays under engines; all waterways close to construction areas and roads to be marked with tape on site preventing vehicles driving through watercourse.	PM/CM	WEIC
7.1.11	Detailed drawings of Stormwater Management and Erosion and sediment controls are still under revision.	UGL Design team	Drawings
7.1.12	Ensure proposed earthworks do not result in increase in ponding or runoff of stormwater onto existing electricity infrastructure.	UGL design team	Drawings
7.1.13	Temporary site camp areas and laydowns have been marked up on the site drawings. Erosion controls can be found in ESCP Plan. Area will be pushed of topsoil and stored for rehabilitation at end of project. Walkways will use crushed rock to reduce dust.	CM/SEA	Drawings

7.2. VEGETATION MANAGEMENT

Environmental Objectives Target	• Minimise disturbance to native flora • No impact to protected flora beyond the designated project area • Cleared areas not housing permanent infrastructure will be allowed to regenerate naturally, restoring landscape function over time.
Legislation	• *Protection and Biodiversity Conservation Act 1999* • *Electricity (Principles of Vegetation Clearance) Regulations 2010* • *National Parks and Wildlife Act 1972 (SA) Schedules 7,8 and 9 of the Act (SA)* • *Native Vegetation Management Act 1991 (SA) and Regulations 2017* • *Natural Resource Management Act 2004* (SA)
Guidelines, Standards and Other References	• Native vegetation Council Clearing permit 2018/3166/010 Conditions 1-10 • Development Application 010/V061/17 Condition 17a,22 and 23 • ElectraNet procedures and site rules
EPBC Listed Threatened Flora Species Potentially Occurring on Site	• Greencomb Spider-orchid *(Caladenia tensa)* – Occurrence is unlikely • Southern Sea-heath *(Frankenia plicata)* – Occurrence is possible • Large-flower Groundsel *(Senecio megaglossus) – Occurrence is possible*

Action	Mitigation Measure	Responsibility	Supporting Documents
7.2.1	Where possible, avoid clearance of trees with trunk diameters >30cm within construction areas. Where trees can be avoided, they will be demarcated with flagging. Clearing/keeping of trees as per Native vegetation Council Clearing permit 2018/3166/010.	PM	Site layout and 2017/03
7.2.2	All machinery and vehicles shall be cleaned down of all soil and vegetation material prior to entering the project. This will be completed when vehicles arrive on site and are inspected by Construction Manager or delegate. All UGL personnel who inspect and approve will have the qualification AHCB10201.	CM/SEA	Weed Washdown Declarations, Plant pre-start. UGL checklist
7.2.3	Direct disturbance to areas of native vegetation will be restricted to those areas for which approval has been obtained under the native vegetation council clearing permit.	PM/CM	WEIC/Permits

7.2.4	Work areas will be delineated as in accordance with plans and access and clearing work instruction each site of 50m x 50m inclusive of a buffer zone will be a designated area and pegged at each corner. It is the intention to minimise disturbance by only clearing 30m x 30m at pole pads and 40m x 40m at tower pads.	PM/CM	WEIC/drawings/ site maps
7.2.5	Vegetation will only be preferentially trimmed or rolled per Native Vegetation Council Clearing permit. Where clearing is required vegetation will be stockpiled and stored separately to topsoil. These two stockpiles will remain within the allocated disturbance footprint during construction. During rehabilitation topsoil will be respread over the disturbed areas and the vegetation will be redistributed over the topsoil.	PM/CM	WEIC/ Permit
7.2.6	When accessing Construction sites, UGL and Subcontractors will use only approved access tracks/roads.	PM/CM	TMP
7.2.7	Ancillary works, such as laydown areas, concrete batching plants and office facilities not vital for construction will be positioned as far as practicable to minimise impact on remnant vegetation, actual threatened species. Preference is to utilise previous disturbed areas or existing areas devoid of significant vegetation.	UGL and Subcontractors	Site Plan/WEIC
7.2.8	A pre-construction desktop survey utilising vegetation survey GIS data will be undertaken. Identified sensitive areas to be surveyed and micro-sited in the field. Pegging of designated work locations and GPS will be used to ensure no over clearing; avoid clearing outside of construction boundary.	PM/CM	Site Plan/ Drawings
7.2.9	All potential sensitive habitats identified in Oz Minerals EPBC Assessment have been micro sited, such that pole locations and access tracks will be moved where possible to avoid sensitive areas.	PM/CM	Site Plan/ Drawings
7.2.10	Utilise GIS shape Files provided by ElectraNet identifying sensitive areas and exclusion zones. Do not enter exclusion zones.	PM/CM	Site Plan/ Drawings
7.2.11	Rehabilitation and Weed Management sub plans will be developed and include into work planning activities via the Work Packs.	PM/CM	CWP/Sub Plan
7.2.12	All disturbance and rehabilitated areas to be monitored through the use of GIS to determine the amount of area (Hectares) disturbed and rehabilitated. Rehabilitation of areas disturbed and rehabilitated against approved amounts will be undertaken on a regular basis.	PM/CM	Site Plan/ Drawings

7.2.13	Micro-siting of tower locations undertaken review as well of EPBS Assessment from Oz Minerals. Habitats designed around where practicable.

7.3. FAUNA MANAGEMENT

Environmental Objectives	• Minimise the temporary and permanent reduction of fragmentation of existing Fauna colonies • Reduce the impact on Fauna during the construction period from vehicle collision, entrapment within construction works and exposure to both extreme weather conditions and other predators • Ensure the safe capture and release of fauna around the project
Target	• No impacts to priority fauna habitats • No mortality of listed fauna conservation significance where works are directly under UGL control
Legislation	• *National Parks and Wildlife Act 1972 (SA) (Schedules 7, 8 and 9 of the Act)* • *Environmental Protection and Biodiversity Conversation Act 1999* • *Natural Resources Management Act 2004*
Guidelines, Standards and Other References	• Development Application 010/V061/17 Condition 17a • ElectraNet procedures and site rules • UGL EIMS -7-6196 Flora and Fauna Management Guide
EPBC Listed Threatened Fauna Species Potentially Occurring on Site	• Eastern Thick-billed Grasswren *(Amytornis modestus)* – Occurrence is possible • Western Grasswren *(Gawler Ranges)* – Occurrence is possible • Red Knot *(Calidris canutus)* – Occurrence is unlikely • Curlew Sandpiper *(Calidris ferruginea)* – Occurrence is possible • Malleefowl *(Leipoa ocellata)* – Occurrence is unlikely • Eastern Curlew *(Numenius madagascariensis)* – Occurrence is unlikely • Night Parrot *(Pezoporus occidentalis)* – Occurrence is possible • Australian Painted Snipe *(Rostratula australis)* – Occurrence is unlikely • Plains Rat / Mouse (*Pseudomys australis)* – Occurrence is possible • Fork-tailed Swift *(Apus pacificus)* – Occurrence is possible • Common Sandpiper (*Actitis hypoleucos)* – Occurrence is possible • Sharp-tailed Sandpiper *(Calidris acuminata)* – Occurrence is possible • Pectoral Sandpiper (*Calidris melanotos)* – Occurrence is possible • Oriental Plover (*Charadrius veredus)* – Occurrence is unlikely • Latham's Snipe (*Gallinago hardwickii)* – Occurrence is likely

EPBC Listed Migratory Species Potentially Occurring on Site	• Grey Wagtail *(Motacilla cinerea)* – Occurrence is unlikely • Yellow Wagtail *(Motacilla flava)* – Occurrence is unlikely • Osprey *(Pandion haliaetus)* – Occurrence is unlikely • Common Greenshank *(Tringa nebularia)* – Occurrence is likely • Great Egret *(Ardea alba)* – Occurrence is likely • Cattle Egret (*Ardea ibis)* – Occurrence is unlikely • Rainbow Bee-eater (*Merops ornatus)* – Occurrence is likely

Action	Mitigation Measure	Responsibility	Supporting Documents
7.3.1	Any dead fauna will be removed immediately from trenches/excavations or access tracks and roadways to reduce the impact of scavenging species being entrapped or injured by construction works. Any dead fauna will be reported in Synergy.	PM/CM/SEA	WEIC
7.3.2	All significant fauna habitats shall be avoided. These are provided on land disturbance permits and from ElectraNet micro-siting.	PM/CM/SEA	WEIC
7.3.3	All access track and roadway speed limits will be restricted to reduce the residual risk of traffic incidents	PM/CM/SEA	WEIC/ Site maps
7.3.4	No domestic pets are allowed on site	PM/CM/SEA	WEIC
7.3.5	All sick and injured fauna found on site, shall be reported to the SEA prior to touching or removing fauna. No fauna is to be rescued, treated or moved unless the person handling the fauna is suitably qualified.	PM/CM/SEA	WEIC
7.3.6	Visual Inspections of excavations will be undertaken.	PM/CM/SEA	WEIC
7.3.7	A suitable barrier/cover will be used while drilling pole holes to prevent fauna falling down the hole. Once the drilling is completed the barrier will be also used as a cover when measuring or inspecting the holes and it will remain on the hole prior to concreting. If the work activity can't be completed on the same day.	PM/CM/SEA	WEIC
7.3.8	Where there is an environmental incident it will recorded in Synergy and reported to ElectraNet for capture in their IMS.	PM/CM/SEA	WEIC
7.3.9	All potential sensitive habitats identified in Oz Minerals EPBC Assessment have been micro sited such that pole locations and access tracks will be moved where possible to avoid sensitive areas;	PM/CM/SEA	Site Plan/ Drawings/GD Permit
7.3.10	Utilise shape Files provided by ElectraNet that identify sensitive areas. Areas to considered during design and location of powerlines.	PM/CM/SEA	Site Plan/ Drawings
7.3.11	The potential to utilise bird diverters will be explored for higher risk areas e.g. salt pans and lakes.	PM/CM/SEA	Site Plan/ Drawings

7.4. WEEDS AND PEST MANAGEMENT

Environmental Objectives	• Avoid impacts to priority fauna habitats • All noxious weeds which are cleared as part of the project will be disposed of appropriately
Target	• No net increase in weeds found on site • No introduction of new weeds species
Legislation	• *National Parks and Wildlife Act 1972 (SA) (Schedules 7, 8 and 9 of the Act)* • *Environmental Protection and Biodiversity Conversation Act 1999* • *Natural Resources Management Act 2004*
Guidelines, Standards and Other References	• Development Application 010/V061/17 Condition 26 • ElectraNet procedures and site rules • UGL EIMS-7-6201 Weed Management User Guide • UGL EIMS-7-6200 Pest Management

Action	Mitigation Measure	Responsibility	Supporting Documents
7.4.1	UGL and Subcontractors employees will be advised of the potential impacts of noxious weed and pest management during inductions and toolbox talks; UGL will provide identification guides and educational material within the camp and offices, to help promote understanding of weed species and relevant control measures;	CM	Induction and Toolbox
7.4.2	Any new weed species identified on site will be reported immediately and logged into Synergy. SEA notified, and action plan identified on how to treat/remove/remediate area.	PM/CM/SEA	WEIC
7.4.3	All machinery and vehicles shall be cleaned down of all soil and vegetation material prior to entering	PM/CM	WEIC/Weed and seed
7.4.4	Waste Management Plan; implement protocols for management of waste during construction to avoid attracting pest animals.	PM/CM/SEA	WMP/ site layout maps
7.4.5	Any pest species found on site, shall be reported to the CM/SEA prior to touching or removing. No fauna is to be rescued, treated or moved unless the person handling the fauna is suitably qualified.	PM/CM/SEA	WEIC-
7.4.6	All deliveries form overseas will be set aside in the laydown areas and inspected by a qualified quarantine advisor. if suspected of quarantine breach the goods will be returned using the UGL Inwards goods reject notice and logged into Synergy	CM/PM	Inwards Goods reject notice

7.5. NOISE AND VIBRATION MANAGEMENT

Environmental Objectives

- Effectively manage construction activities to ensure noise and vibration impacts are minimised and comply with the requirements set out in the EPA Guidelines
- Comply with the requirements of the contract for project and traffic noise and vibration
- Ensure project equipment has adequate noise prevention safeguards and is maintained in good working order
- No effect on adjoining properties as a result of noise or vibration from project activities

Target

- No breach of the noise and vibration limits (EPA)
- No complaints relating to noise or vibration arising from project activities

Legislation

- *Environmental Protection and Biodiversity Conservation Act 1999*
- *Environment Protection Act 1993 (SA)*
- *Environmental Protection (Noise) Policy 2007*

Guidelines, Standards and Other References

- AS2436 – 1981 Guide to Noise Control on Construction, Maintenance and Demolition Sites
- UGL EIMS-6197 Noise and Vibration Management
- Development Application 010/V061/17 Condition 17a and b
- ElectraNet procedures and site rules

Action	Mitigation Measure	Responsibility	Supporting Documents
7.5.1	The standard hours for construction work hours will be: 6:30am to 5:30pm Monday to Sunday	UGL and Subcontractors	Permit
7.5.2	All machinery and vehicles with internal combustion engines will be maintained to comply with relevant noise emissions standards and exhaust standards and maintained to manufacturers specifications.	CM/SEA/HSE Manager/HSSE staff	WEIC, Plant pre-starts

7.6. AIR QUALITY (DUST) MANAGEMENT

Environmental Objectives

- Minimal impact on air quality
- Dust and atmospheric emissions comply with regulatory requirements
- Avoid using ozone depleting substances
- Maintain plant and equipment to ensure exhaust emissions minimised

Target

- No dust complaints
- No sustained exhaust or toxic emissions

Legislation

- *Environmental Protection and Biodiversity Conservation Act 1999*
- *National Parks and Wildlife Act 1972 (SA)*
- *National Environment Protection (National Pollutant Inventory) Measure (Commonwealth),*
- *Ozone Protection and Synthetic Greenhouse Gas Management Act 1989*
- *Environment Protection Act 1993* (SA)
- *Environment Protection (Noise) Policy 2007*

Guidelines, Standards and Other References

- National Environment Protection (National Pollutant Inventory) Measure 1998 - NPI NEPM
- Development Application 010/V061/17 Condition 17b
- ElectraNet procedures and site rules

Action	Mitigation Measure	Responsibility	Supporting Documents
7.6.1	The area of disturbed land will be kept to a minimum. Existing vegetated areas will be kept intact for as long as possible prior to clearing.	PM/CM	Site maps/Drawings
7.6.2	Permanent and long-term stockpiles will be revegetated as soon as Possible after formation	PM/CM	ESCP
7.6.3	As required, active exposed areas, materials and stock pile areas will be watered, treated or rehabilitated to minimise dust creation.	PM/CM	ESCP
7.6.4	Suppress dust using water sprays within main compound areas and areas as required	PM/CM	
7.6.5	Construction activities will be reprogrammed or relocated, if necessary, during periods of strong winds if they produce excessive wind-blown dust.	PM/CM	Program
7.6.6	Speed limits will be imposed on all vehicles and maintain relevant main road limits.	PM/CM	TMP
7.6.7	All vehicles on site to comply with State Road Transport requirements as applicable.	PM/CM	TMP

7.6.8	Ensuring medium to heavy vehicles are not utilised as a primary means of transporting employees to and from site.	PM/CM	
7.6.9	Vehicles transporting material to and from the site will be covered.	PM/CM	
7.6.10	No burning of materials or vegetation will occur.	PM/CM	
7.6.11	Refer to ESCP regarding controls of stockpile dust and other ESC controls.	Design Team/CM	ESCP/Drawings
7.6.12	Existing tracks will be incorporated into the design where possible to avoid construction of new access tracks and reduce clearance footprint.	Design Team/CM	ESCP/Drawings

7.7. CULTURAL HERITAGE MANAGEMENT

Environmental Objectives	• Cultural Heritage management measures fully implemented • Consultation with all relevant stakeholders if any heritage/cultural items is located
Target	• No impact on areas outside the project areas • No damage to Cultural Heritage or Archaeological areas identified as exclusions zones see Appendix 13
Legislation	• *Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Commonwealth)* • *Aboriginal Heritage Act 1988 SA* • *Development Act 1993 (SA)* • *Environment Protection Act 1993 (SA)*
Guidelines, Standards and Other References	• Development Application 010/V061/17 Condition 17d • CH clearances

Action	Mitigation Measure	Responsibility	Supporting Documents
7.7.1	All employees and subcontractors will be made aware of the areas of potential cultural heritage during the site induction. Signage and demarcation will be used to restrict all workers from accessing these areas. These will be pre-pegged and barricaded with green flagging. All workers will be advised on the identification and management of archaeological and heritage issues in site induction.	PM/CM	Induction and Toolboxes
7.7.2	Any area identified as an avoidance area that is required to be disturbed as part of the works, including disturbance of vegetation for the energisation will be notified to ElectraNet.	PM/CM	Site Maps
7.7.3	If human remains are uncovered; all work in the immediate area of the remains will stop immediately. The incident will be immediately reported to ElectraNet who will report to relevant authorities and the State Police. Work will not proceed in the immediate area until clearance is provided by the relevant authority.	PM/CM	Refer Appendix 10
7.7.4	If any indigenous artefacts or materials are found, work will cease immediately in the affected areas and the area protected from further disturbance. A detailed report of any artefacts located during construction will be provided to the traditional owners if requested. The UGL PM will immediately notify ElectraNet.	PM/CM	Refer Appendix 10
7.7.5	The site will operate under Duty of Care rules and regulations.	PM/CM	
7.7.6	All exclusion zones to be fenced with green tape to prevent access into cultural heritage exclusion zones See figure 1 in appendix 10.	PM/CM	Refer Appendix 10
7.7.7	GIS system to record/identify clearance areas and status. Avoidance of sites of cultural heritage significance as determined in Oz Minerals consultation with the Barngarla and Kokatha People.	PM/CM	Site map

7.7.8	Where access has been granted into an Exclusion zone this will be done under the supervision of cultural monitors. Work will be limited to existing tracks with signage and demarcation to be used.	PM/CM	Site map
7.7.9	Where any breaches into cultural heritage areas occurs intentionally or intentionally, work to stop and ElectraNet to be notified and UGL to manage incident in accordance with internal incident management processes.	PM/CM	

7.8. HAZARDOUS MATERIAL MANAGEMENT

Environmental Objectives

- Avoid/minimise potential human health and environmental effects from exposure to fuels and hazardous chemicals
- Establish control measures to prevent and manage accidents, spills and other discharges of environmental hazardous chemicals and dangerous goods to the environment (e.g. water course, groundwater and soils)
- Avoid using ozone depleting substances
- Minimise potential for workplace accidents related to the works

Target

- No spills, leakages and/or explosion events
- Quick response time if there is a spill, leakage and/or explosion event
- Storage and spillage control measures installed appropriately

Legislation

- *Environment Protection (Industrial Waste Resource) Regulations 2009*
- *Dangerous Goods (Storage and Handling) Regulations 2012*
- *Environment Protection and Biodiversity Conservation Act 1999*
- *Hazardous Waste (Regulation of Exports and Imports) Act 1989 (Commonwealth)*
- *Dangerous Substances Act 1979 and Regulations 2002*
- *Environment Protection Act 1993 (SA)*
- *Environment Protection (Water Quality) Policy 2015*
- *Natural Resources Management Act 2004 (SA)*

Guidelines, Standards and Other References

- AS 1940 (2004) – The storage and handling of flammable and combustible liquids;
- AS 4452 (1997) – The storage and handling of toxic substances;
- SDS
- Development Application 010/V061/17 Condition 16 and 17h
- ElectraNet procedures and site rules

Action	Mitigation Measure	Responsibility	Supporting Documents
7.8.1	All cigarette butts will be placed in bins provided to reduce pollution and the risk of fire. Smoking is allowed on site only in designated areas, however, if fires and rubbish becomes an issue PM can implement control measures such as banning of smoking if required.	CM/ PM	A&I Register
7.8.2	Rubbish burning is not permitted. There are to be no fires.	CM	A&I Register

7.8.3	All dangerous goods, as defined in the Australian Dangerous Goods Code, shall be stored strictly in accordance with all relevant Australian Standards and for liquids, a minimum bund volume requirement of 110% of the volume of the largest single stored volume within the bund. No fuels or chemicals to be stored on the site except in existing or temporary bunded storage areas. Sufficiently sized spill kits will be accessible on site at all times & placed close to storage and work areas.	UGL CM	Site Layout AS 1940
7.8.4	Designated refuelling area to be marked on site maps. Minor vehicle / equipment servicing, and refuelling will be undertaken on site in this area. The area will be fitted with but should not be limited to appropriate controls such as bunding, oil spill kits and drip trays. For each laydown, site offices, site workshops and camps the location of the refuelling area will be marked as part of the site Map and all personnel will use to refuel.	UGL CM	Site Layout//A&I Register
7.8.5	All spills will be reported to ElectraNet. Hazardous material shall not be stored or drained onto the ground, into watercourses or floodplains. Spills of any kind that are not reported or managed will be treated as a non-conformance. Remedial action must be taken.	UGL CM	A&I Register
7.8.6	All chemicals MUST have current SDS and recorded in the SDS register.	UGL CM	SDS sheets

7.9. BUSHFIRE RISK

Environmental Objectives	• Minimise the risk on neighbours and local community • Safety of public and employees in the event of a fire
Target	• Ensure the safety of all workers and people in and around the project • Zero fire incidents within the project limits
Legislation	• *Environmental Protection and Biodiversity Conservation Act 1999* • *Fire and Emergency Services Act 2005 (SA)*
Guidelines, Standards and Other References	• Development Application 010/V061/17 Condition 17k and 18 • ElectraNet procedures and site rules • Australian Standard 1940-2004 the Storage and handling of flammable and combustible liquids • Bushfire and Survival for business and Organisations (CFS, no date) • Ecological Fire Management Guidelines for Native Vegetation in SA (DEWNR, 2013)

Action	Mitigation Measure	Responsibility	Supporting Documents
7.9.1	All facilities, containers, storage sheds, vehicles and plant equipment will be fitted with a serviced fire extinguisher (relevant to works or area), which will be inspected and tagged every 6 months by a suitability qualified person.	PM/CM	Site layout
7.9.2	Smoking will only be permitted in designated areas. These shall be clearly marked and communicated to site personnel.	PM/CM	Site layout
7.9.3	Ensure construction laydown areas and construction sites are maintained in a tidy and neat condition to reduce the risk of fire hazards.	PM/CM	WEIC
7.9.4	Vehicular access to the Project will be via designated road access points only, to reduce the risk of exhausts causing grassfires.	PM/CM	TMP
7.9.5	All flammable materials will be kept in a segregated area and stored in accordance with AS1940 and any licence (if applicable) and appropriate storage/separation guidelines.	PM/CM	SDS register/AS1940
7.9.6	Hot works will only be performed on a Total Fire Ban day with an approved exception from Local Fire Service, with a hot work permit in place and to the UGL Work Standard for Hot Works; However, work considered high risk hot works will not be undertaken on a Total Fire Ban day. No hot work will be undertaken on a day rated Catastrophic.	PM/CM	UGL Permit

7.9.7	An adequate number of personnel on site will be trained in the use of fire-fighting equipment. This is identified in the Training Needs Analysis	PM/CM	Training records
7.9.8	Implement Fire Control and Emergency Systems in accordance local authority requirements.	PM/CM	ERP
7.9.9	No open fires shall be permitted on site at any time.	PM/CM	
7.9.10	Contact Rural Fire Service on 000.	UGL PM/CM	
7.9.11	Formally report all fire incidents to ElectraNet	UGL PM/CM/ ElectraNet	Synergy

7.10. WASTE MANAGEMENT

Environmental Objectives

- To minimise waste generation
- Wastes to be disposed of in a lawful manner which does not harm the environment

Target

- Re-use and recycle waste whenever practical and dispose of appropriately
- Records of all waste transported and received at licensed landfill
- Use materials produced with a recycled content where possible

Legislation

- *Environment Protection and Biodiversity Conservation Act 1999*
- *Environment Protection (Waste to Resources) Policy 2010*
- *Environment Protection Act 1993* (SA)
- *South Australian Public Health Act 2011(SA)*
- *Development Act 1993 (SA)*
- *South Australian Public Health (Wastewater) Regulations 2013* (SA).

Guidelines, Standards and Other References

- Development Application 010/V061/17 Condition 17g
- ElectraNet procedures and site rules
- AS 1940-2004: The Storage and Handling of flammable and combustible liquids
- Bunding and Spill Management Guideline (EPA, 2016b) (SA)

Action	Mitigation Measure	Responsibility	Supporting Documents
7.10.1	Consider assessment of minimising packaging during procurement.	PM	WMP
7.10.2	Waste streams and expected quantities prior to commencement of works have been identified and are contained in the Waste Management Plan. UGL have engaged subcontractors who are identified in the WMP.	PM/EM/SEA	WMP
7.10.3	Provide adequate waste separation facilities including waste disposal containers at appropriate locations to ensure segregation of wastes as far as practicable and adequately labelled.	PM/CM/SEA	Site Layout
7.10.4	Maintain a tidy site and ensure bins are accessible for collection.	PM/CM	WMP
7.10.5			
7.10.6	Engage licensed contractor(s) for collection and recycling/disposal of specific materials (if required).	PM/CM	WMP

7.10.7	Maintain records of waste recycling and disposal including mass/volumes of material, transport and location receipts.	PM/CM	WMP
7.10.8	Strategically place signage around the site to inform contractors of the materials separation procedure.	PM/CM	WMP
7.10.9	No vegetation cleared during construction will be removed from site. It will be stockpiled and used for rehabilitation.	PM/CM	WMP
7.10.10	Waste metal materials will be separated on site and collected by scrap steel recycling Contractor or transported to appropriate waste management facility.	PM/CM	WMP
7.10.11	Sewerage for temporary construction facilities will be pumped out and removed by a licensed Contractor for off-site treatment/disposal. The system will have alarms fitted to ensure notice is given when tank approaches full.	PM/CM	WMP
7.10.12	General wastes from construction crews (food etc.) will be disposed of at an appropriate licensed waste management facility general waste bins to be emptied regularly and all will have lids to control access.	PM/CM	WMP
7.10.13	If not suitable for reuse, general building wastes (carpentry, plasterboard, carpet) will be disposed of at an appropriate waste management facility.	PM/CM	WMP

7.11. LANDSCAPE AND REHABILITATION MANAGEMENT

Environmental Objectives
- Minimal impact on current existing visual or landscape management
- Rehabilitation of site to existing conditions or better

Target
- No complaints regarding visual impacts of construction works

Legislation
- *Native Vegetation Act 1991*
- *Development Act 1993*
- *National Parks & Wildlife Act 1972*
- *Environment Protection and Biodiversity Conservation Act 1999*

Guidelines, Standards and Other References
- Development Application 010/V061/17 Condition 17,18,22 and 23
- ElectraNet procedures and site rules

Action	Mitigation Measure	Responsibility	Supporting Documents
7.11.1	Progressive revegetation of completed earthworks; This will commence at earliest possible point in the construction program. This depends on each individual site and will be monitored by the UGL CM/SEA.	PM/CM	ESCP/WEIC
7.11.2	All stockpiles shall be monitored on a regular and as needs basis for dust/ erosion issues throughout works and recorded.	PM/CM	ESCP/WEIC
7.11.3	Erosion and sediment control measures for topsoil stockpiles will implemented on a risk basis.	PM/CM	WEIC/ Rehabilitation plan/ Work instructions
7.11.4	Any rehabilitation areas shall be consistent with surrounding landforms and environmental. Areas will allow nature flow of water across the surface during any rain event and will prevent pooling not consistent with the area. These areas shall also ensure erosion risk during the rehab period is minimal	PM/CM	ESCP/ rehabilitation plan
7.11.5	Vegetation/landscaping in strategic locations to mitigate public view sheds of construction and project infrastructure such as lay down areas and construction compounds	PM/CM	ESCP/design drawings/site maps
7.11.6	Removal of infrastructure, paving and hardstand materials, for access tracks and hard stand areas, such as for materials potentially stockpiled at various project laydowns and construction compounds, post construction using endemic plant species for the area	PM/CM	ESCP/ WEIC/ Rehabilitation plan
7.11.7	Rehabilitated areas shall be sign posted if required until rehabilitation is considered complete and area is self-sustaining. The signature will read “Rehabilitation area – Do Not Enter	PM/CM	Rehabilitation plan

7.12. TRAFFIC ACCESS AND MANAGEMENT

Environmental Objectives

- Minimal impact to existing infrastructure from construction traffic
- Minimise impacts on existing road conditions due to traffic movements
- Ensure construction activities provide safe and convenient access to local roads
- Minimise impact on neighbours and local community

Target

- No incidents of damage of existing roads above daily wear and tear
- No incidents of tracking soils onto public roads - adjacent roads to be kept clean and where required, restored to pre-construction condition in a timely manner

Legislation

- *National Parks and Wildlife Act 1972*
- *Development Act 1993*

Guidelines, Standards and Other References

- Development Application 010/V061/17 Condition 3,45,6,7,8,9
- ElectraNet procedures and site rules

Action	Mitigation Measure	Responsibility	Supporting Documents
7.12.1	All traffic movements will adhere to designated roads and speed limits (As signed on public roads) to minimise the risk of accidents, dust generation and injury to fauna.	PM, CM	Site maps and TMP
7.12.2	Any damage caused by construction activities to the site access roads and internal plant roads following completion of construction works will be repaired	PM	
7.12.3	UGL has created site access maps to assist in traffic movements around the sites. These maps detail all the employee, delivery, haulage and heavy vehicle movements within the construction site	CM	Site maps and TMP
7.12.4	Restricting public access during construction activities. This can be inclusive of temporary fencing around site laydown, camps and major construction areas. UGL has signage on these areas.	CM	Fencing /signage
7.12.6	All traffic movements will adhere to designated roads and speed limits (As signed on public roads) to minimise the risk of accidents, dust generation and injury to fauna	PM, CM	TMP
7.12.7	Any damage to cattle or landowners' animals to be reported Immediately to CM Incident management procedures to be followed for further notifications	CM/PM/SEA	Incident management procedure

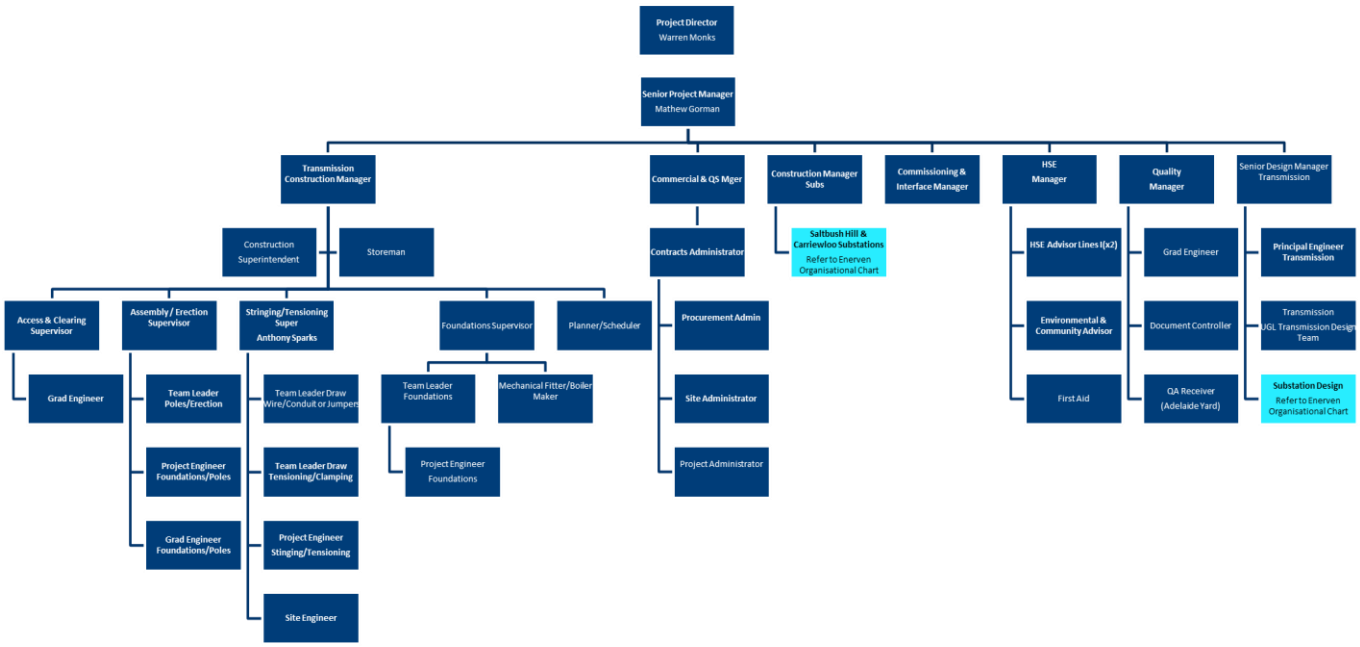
8. ROLES AND RESPONSIBILITIES

All UGL key team members shall ensure that the environmental objectives of the Project are implemented. The responsibilities of the key UGL team members and other key project personnel are shown in Figure 2 and summarised in Table 5 below.

8.1. ORGANISATIONAL STRUCTURE

Key elements of the Project organisational structure are outlined in the Project Quality Plan.

Figure 2: Organisational Chart



**NOTE: The organisational chart shown above reflects the most updated information available and is subject to change.*

8.2. ENVIRONMENTAL RESPONSIBILITIES OF PROJECT PERSONNEL

The general environmental responsibilities for the key project personnel are described in Table 5.

Table 5: General Environmental Responsibilities

Role	Responsibility
Project Manager (PM)	Approve the CEMP and subsequent revisions.
	Ensure all project personnel receive environmental inductions and training.
	Ensure that all site personnel and subcontractors are aware of their responsibilities.
	Ensure personnel assigned to perform environmental tasks are competent to do so or are under the direct control of a competent person.
	Ensure designated EA/HSSE attends to environmental matters in accordance with ElectraNet schedules / requirements.
	Immediately notify ElectraNet Management of any significant environmental incident.
	Ensure all non-conformance events are investigated and corrected.
	Ensure that all design plans produced for the project are mindful of CEMP requirements, permanent measures for erosion and sediment control.
	Monitor overall environmental management performance.
	Ensure effective environmental communication occurs in accordance with the CEMP.
	Ensure all staff and subcontractors comply with the CEMP.
	Stop work or otherwise mitigate the effects of an activity that is causing significant, uncontrolled or unexpected environmental harm.
	Review and acknowledge periodic environmental inspection reports.
	Initiate project meetings as required or directed, in which environmental items are discussed as appropriate.
	Ensure relevant environmental expectations expressed by the customer or authorities are communicated to the UGL's project personnel.
Construction Manager (CM)	Ensure that any changes to the schedule of works are communicated to the EA/HSSE in a timely manner, if environmental aspects are likely to become affected.
	Report all environmental incidents to the EA/HSSE or Project Manager.
	Action an appropriate response in accordance with company procedure in the event of an environmental incident.
	Monitor environmental compliance daily if delegated by role.
	Ensure all site personnel receive environmental inductions.
	Ensure works proceed with all necessary environmental approvals / permits
	Ensure that all site personnel and subcontractors are aware of their responsibilities.
	Ensure personnel assigned to perform environmental tasks are competent to do so or are under the direct control of a competent person.
	Ensure all site staff and subcontractors comply with the CEMP.
	Manage installation of appropriate environmental controls.
	Stop work or otherwise mitigate the effects of an activity that is causing significant, uncontrolled or unexpected environmental harm.

	Assist the EA/HSSE in promoting environmental awareness if requested.
Senior Environment Advisor (SEA/HSSE)	Motivate CEMP compliance.
	Ensure the UGL commitment to the environmental management of works under contract is realised.
	Confirm that all necessary environmental controls are implemented and maintained for the duration of the contract.
	Provide regular environmental progress reports to the Project Manager or delegated other.
	Attend site on a periodic basis, monitor environmental compliance and supervise high-risk environmental activities when appropriate.
	Can be contacted when required or if unavailable has delegated authority.
	Participate in project meetings if requested.
	Facilitate the environmental induction and training of employees and subcontractors.
	Promote environmental awareness throughout the course of the project.
	Complete and maintain all necessary environmental documentation for the contract, if appropriate.
	Undertake communication in accordance with Table 3 with a contact register to be maintained during project works.
	Prepare site induction package and training package as required
	Assist with investigation of all non-conformance events are investigated and corrected.
	Review the suitability of ongoing environmental controls on site during inspections and advise of any improvements.
	Review the implementation of plans and permits on site during inspections and advise of any improvements.
	Ensure any outstanding environmental issues are resolved prior to project completion.
Employees and Subcontractors	Adhere to the directives of this CEMP and the UGL's EIMS
	Act in an environmentally responsible manner.
	Report incidents to their supervisors as soon as practicable.
	Satisfactorily perform all environmental works as specified by contractual arrangement or recognised authority.
	Participate in subsequent investigations and implementation or preventive action(s) as required.
	Attend all required environmental awareness, induction and training sessions.
	Recognise the authority of the EA/HSSE particularly in the event of an actual or perceived environmental non-conformance, or when remedial action is indicated.

9. ENVIRONMENTAL TRAINING AND AWARENESS

To ensure the project team understand their responsibilities and expectations in relation to environmental management, training and awareness will need to occur throughout the course of the project (as indicated in Table 6 below). The training requirements for this CEMP have been broken down into the following categories:

- Induction Training
- Task Specific Training
- Awareness Training

Table 6: Environmental Training Matrix

Category	Recipients	Frequency	Items
Induction Training	Project team / customer / visitors	Start of work, return from extended leave, or site access	Site specific induction
Task-Specific Training	Project team	As required	Selected modules
Awareness	Project team	Periodic	Toolbox meetings / posters / memos

9.1. INDUCTION TRAINING

All project personnel and visitors seeking to attend site will first be subject to a UGL environmental site induction and induction assessment. The UGL environmental induction training will include the following:

- Our commitment to the UGL Environment Policy and objectives;
- Overview of the CEMP;
- ElectraNet, statutory and individual obligations;
- Community expectations & liaison protocols;
- Project specific environmental risks and potential impacts;
- Emergency Response and incident notification;
- Specific environmental mitigation measures and work standards, including;
- Storage and handling of chemicals and fuel, including spill response procedures;
- Erosion and sedimentation controls;
- Traffic management and site access protocols;
- Water management;
- Air Quality management;
- Noise and vibration management;
- Communications and stakeholder liaison;
- Emergency Response;
- Weeds and Pest control management;
- Flora & fauna management (both native and pest species);
- Cultural Heritage (CH) obligations; and
- Waste management, including litter control and recycling.

9.2. TASK SPECIFIC ENVIRONMENTAL TRAINING

Task specific environmental training (e.g., spill response training) for a group or individual employees will be conducted where risk assessment analysis identifies duties that have the potential to adversely impact on the environment. All such training will be included in the Training Needs Analysis (TNA) for the project. This includes all staff and relevant environmental training required. The TNA is maintained by the HSSE Manager.

9.3. ENVIRONMENTAL AWARENESS TRAINING

An environmental awareness program will be implemented during the life of the project to assist in maintaining effective environmental management. Toolboxes are designed to reiterate the environmental objectives and specific environmental controls for the project. Topics include:

- New controls or work instructions;
- Reinforcement of induction content;
- Results of inspections and audits; and
- Awareness of environmental events.

These are in the project X drive.

9.4. QUALIFICATIONS

All personnel directly involved in environmental management shall be qualified to undertake the tasks of the position to which they are appointed. This will be identified on the TNA.

All personnel involved in the construction works (including contractors and subcontractors) must complete the project induction program that will advise them of the requirements of the CEMP and specific site requirements, including site induction. A training needs analysis will be conducted, and the suitable training course sourced both internally and externally.

10. ENVIRONMENTAL INCIDENT AND RESPONSE

A site-specific Emergency Response Plan (ERP) has been developed in accordance with the Safety Management Plan and will be followed in the case of an environmental emergency.

An environmental incident is defined as an event that has resulted in, or could have adverse environmental impact, such as a major chemical spill. If such an incident is deemed to have occurred, UGL shall implement the ERP, and report all incidents to HSSE Management and ElectraNet immediately. Any such events will be reported in accordance with the site's procedures and the project manager is to report the incident as required under legislation.

During the personnel training and induction program, UGL emphasises to all personnel working on the site that all events must be immediately reported, documented and investigated accordingly.

The incident investigation shall include the following basic elements:

- Identify the cause of the incident;
- Identify the necessary corrective action(s);
- Identify personnel responsible for carrying out corrective action(s);
- Implement or modifying controls necessary to avoid repetition;
- Record any changes in written procedures required; and
- Notify ElectraNet of all significant environmental issues immediately.

11. MONITORING AND REVIEW

11.1. ENVIRONMENTAL MONITORING, INSPECTIONS & AUDITS

During the project works, environmental monitoring will be conducted to ensure compliance to legislation, as well as the objectives and targets stipulated in this CEMP. These monitoring requirements are detailed in Appendix 4.

All regular environmental monitoring activities such as vehicle checks, inspections and audits will be detailed on the sites Check-It Planner, which is reported against monthly. The frequency and specific monitoring criteria will be assessed periodically throughout the project to ensure that they are consistent with the aspects and impacts' section of the HSSE Risk Register, as well as the current level of risk to the environment.

All items on site will be recorded on the site issues register. This includes all Synergy actions, daily and weekly inspection items and items arising from monthly inspections. A discussed and achievable close out timeframe should be discussed with all involved in the item to ensure it has sufficient time to be actioned and is therefore actioned by that date.

11.2. ENVIRONMNETAL MANAGEMENT PLAN AND LEGAL COMPLIANCE AUDITS

Environmental audits are carried out as planned in accordance with UGL Procedure EIMS-4-8721. UGL Corporate HSEQ Managers will conduct a series of internal audits in addition to other inspections, to verify compliance with the CEMP, EMS and Legal Compliance. The first audits will be undertaken within the first 3 months of the commencement of the project and then yearly as a minimum (or as required).

The audit schedule will be incorporated into the site Check-it planner and will be conducted in accordance with UGL Procedure EIMS-4-8721. The audits conducted on this project will address the following areas:

- Compliance with EMS;
- Compliance with legal and other requirements (e.g. licence and project approval conditions;
- All monitoring and operational reports required by any Licences are adequate;
- Environmental mitigation measures specified in CEMP are being implemented and are effective;
- Environmental training records are in order;
- Environmental reports are being completed and acted on;
- Environmental events are being recorded and acted on; and
- Environmental targets are being achieved.

The CEMP and Legal Compliance audits are to be documented and recorded by UGL in the Process Improvement Database (PI Database).

11.3. NON-CONFORMANCE MANAGEMENT

Environmental non-conformances are situations or events that do not comply with the safeguards and procedures stipulated by this CEMP. Any such finding is to be documented and kept up-to-date by UGL in Synergy which tracks and documents recommended improvement (RI) and non-conformances request (NCR).

Any corrective and preventative action plans identified are to be implemented by UGL to the satisfaction of the SEA/HSSE and/ or ElectraNet.

Records of all non-conformances and corrective action plans shall be held onsite for inspection by relevant authorities (if required).

11.4. CONTINUOUS IMPROVEMENT

An evaluation of environmental management performance will be conducted against environmental policies, objectives and targets for identifying opportunities for improvement. The continual improvement process for the project is designed to:

- Identify areas of opportunity for improvement of environmental management which leads to improved environmental performance;
- Determine the root cause or causes of non-conformance or deficiencies;
- Develop and implement a plan of corrective and preventative action to address root causes;
- Verify the effectiveness of the corrective and preventative actions;
- Document any changes in procedures resulting from process improvement; and
- Review performance against objectives and targets.

Implementation of strategies/ techniques to improve the environmental performance of the project is the responsibility of the Project Manager and EA/HSSE Project activities will also be reviewed and improved by the following means:

- Review of environmental events (outcomes, significance and implementation of corrective actions);
- Regular environmental review meetings (toolbox meetings) to be included as part of safety reviews; and
- Review of the CEMP, aspects and impacts register and monitoring and measurement findings.

11.5. COMPLAINTS MANAGEMENT

All customer complaints regardless of the source of the complaint will be recorded on Synergy within 24 hours. UGL staff to use “No comment" and forward the enquiry to ElectraNet Project Manager within 1 hour of any complaints received. The following details are to be recorded: (in Synergy)

- Date;
- Time;
- Type of communication (telephone, letter, meeting etc.);
- Name, address, contact number of complainants;
- Nature of complaint;
- Details; and
- Action taken in response including who the complaint was referred to (if not resolved immediately).

Synergy is to be maintained by the HSSE Manage/SEA to assist with the management of contacts and complaints and is to be included in the monthly reporting process to ElectraNet.

Third party complaints which are received by the ElectraNet will be referred to UGL for investigation and / or resolution with the Complainant. The ElectraNet 24-hour community line number is 1800 243 853. These complaints will be investigated accordingly with relevant actions and investigations and close actions reported in relevant reports and meetings

11.6. ENVIRONMENTAL MANAGEMENT REVIEW

This CEMP is a 'live' document with the ability to change as the project situation changes. These changes can be in the form of recommendations from the SEA, Project Manager, ElectraNet or site employees. An environmental management review can be called by UGL or ElectraNet at any time to assess the performance of the CEMP and to suggest changes.

At the least, a six (6) monthly review is to be conducted in accordance with the requirements specified in the Quality Management Plan.

12. DOCUMENTS AND RECORDS MANAGEMENT

All documentation received, generated or stored pertaining to environmental matters of this project will be managed in accordance with the Quality Management System, document approval, identification, storage, protection, retention, distribution, revision, retrieval and when appropriate disposal.

Environmental records, which will be collated and held on site by the UGL Project Manager and EA/HSSE during the construction phase of the Project, shall include the following:

- Training and induction records;
- Environmental event/incident and investigation reports;
- CEMP distribution records;
- Environmental complaint records;
- Non-conformances and corrective and preventative action reports;
- Environmental monitoring data and reports; and
- Environmental site inspection and audit reports.

A monthly report will be prepared by the UGL Project Manager and passed onto ElectraNet and HSSE/SEA and Manager (as required). Included in this report will be a summary of the weekly site inspections, any incidents which may have occurred, environmental complaints and environmental monitoring information. The report will ensure that ElectraNet and UGL can highlight possible issues before they occur and provide the best environmental outcomes.

APPENDIX 1 – POLICIES & CERTIFICATES

Environmental Policy

UGL

ENVIRONMENT POLICY

UGL recognises the importance of environmental conservation and sustainability. We understand the importance of conducting our operations and delivering products and services with the highest standard of environmental care and social responsibility. We commit to minimising pollution and contributing towards a sustainable future by achieving a balance between environmental, technological, economic and social objectives.

UGL seeks the combined efforts of all employees, subcontractors and suppliers to ensure the effectiveness and success of our approach to environmental sustainability.

UGL is committed to:

- Complying with the requirements of the CIMIC Group Environment Policy
- Undertaking our operations and delivering products and services in accordance with the international standard for Environment Systems, ISO 14001
- Setting objectives and targets to reduce environmental risk and improve sustainability
- Ensuring our operations, products and services comply with applicable legal and other requirements
- Taking steps to prevent pollution, conserve natural resources, protect cultural heritage, minimise waste and drive energy efficiency
- Providing appropriate environmental training to assist in meeting our objectives and reducing any adverse impacts on the environment
- Making continual improvements in environmental performance and protecting the environment
- Communicating with our employees, clients, suppliers, contractors and community on our environmental performance
- Promoting sustainable practices within our supply chain and reduce our broader environmental impacts

Our management will also:

- Establish environmental systems and processes to minimise environmental impacts, comply with legal and other obligations and improve the environmental outcomes of our clients and the community
- Conduct monitoring evaluation to ensure environmental compliance and obligations are achieved
- Require suppliers and subcontractors to operate in an environmentally responsible manner and adhere to relevant environmental requirements
- Regularly review performance, identify and implement corrective and preventive actions that contribute to continually improving the environmental performance of our operations, products and services

Managing Director UGL Date 10/10/17

Title: UGL Environment Policy-PO-64-89
ID: DOCS-64-89 Version: 2.0
Management System – Uncontrolled Document when Printed

A MEMBER OF THE CIMIC GROUP CIMIC

Sustainability Policy

CIMIC

SUSTAINABILITY POLICY

This Policy sets out requirements for sustainability across CIMIC Group Limited and entities it controls (**the Group**). Sustainability is the integration of environmental, social and governance factors into decision making to maximize short and long term shareholder value, seek competitive advantage, and contribute to safe and healthy employees, communities and ecosystems.

This Policy should be read in conjunction with the *Group Code of Conduct*, the *Procurement*, *Environment*, *Health and Safety*, and *Diversity and Inclusion* policies, and the *NGER Annual Compliance Report* template.

This Policy applies to all employees of the Group, and third parties engaged by the Group, including alliances and joint ventures in all jurisdictions.

Any employee of the Group found to have breached this Policy may be subject to disciplinary action.

The **objectives** of this Sustainability Policy are to:

- Focus the Group's efforts on managing sustainability risks and opportunities, enhancing business performance and supporting the long-term interests of the Group;
- Promote a culture of accountability for sustainability outcomes and improve the sustainability knowledge and skills of employees;
- Integrate consideration of environmentally and socially responsible sourcing and governance factors into the Group's operating and procurement processes, and seek opportunities to collaborate with the supply chain to drive innovation and create mutual value;
- Drive the efficient use of resources and continual innovation in the delivery of projects;
- Support the adoption and delivery of appropriate industry rating schemes and standards that drive sustainability outcomes for clients;
- Encourage initiatives and successfully deliver projects that meet client expectations, provide value for money, and leave net positive legacies for the CIMIC Group, our clients, users, the environment and communities; and
- Enhance the Group's resilience to climate change.

1. Governance

The Group will abide by the principles of the UN Global Compact and acknowledges its role in contributing to the UN Sustainable Development Goals.

The Ethics Compliance and Sustainability Committee (ECSC) assists the Board in fulfilling its governance and oversight responsibilities in the area of sustainability.

CIMIC will coordinate and support the Operating Companies to develop tailored sustainability strategies and implement initiatives that help to achieve the Group's commitments and objectives.

CIMIC will facilitate sustainability knowledge sharing across the Group so as to encourage innovation, mitigate risk, drive competitive advantage and create shareholder value.

Operating Companies are responsible for meeting their contractual and compliance obligations regarding the operational aspects of sustainability such as project delivery, health, safety, people development, environment, community relations, procurement, risk, governance and ethical behaviour, within the Group's governance framework.

2. Reporting

CIMIC will coordinate the annual publication of a Global Reporting Initiative (GRI) based Group Sustainability Report. The ECSC approves the Sustainability Report and any sustainability disclosures in the Annual Report.

CIMIC will participate in recognised sustainability surveys including the Dow Jones Sustainability Index and CDP so as to promote the Group's reputation as an industry leader in the sustainable delivery of projects.

The Operating Companies are responsible for:

- Internal reporting of operational health, safety, environment and community related initiatives and performance information to CIMIC management and the ECSC;
- The provision of sustainability data and information to CIMIC to inform corporate sustainability reporting requirements, and to support the submission of sustainability surveys as required by CIMIC; and
- Direct external reporting to meet legislative obligations (such as the National Greenhouse and Energy Reporting Act, including the completion of an annual compliance report) where appropriate.

CIMIC will regularly review Operating Company strategies, reporting and performance to ensure they demonstrate compliance with all legislative requirements and support continuous improvement in sustainability and business performance.

Policy Information

Owner:	Executive General Manager, Sustainability, CIMIC
Approved by:	Chief Executive Officer, CIMIC
Effective date:	June 2017

Note: CIMIC Group policies may be amended from time to time.

ISO 14001:2015 Certificate

BUREAU VERITAS
Certification

Certification

Awarded to

UGL PTY LIMITED

40 MILLER STREET, NORTH SYDNEY, NSW, 2060
AUSTRALIA

Bureau Veritas certify that the Management System of the above organisation has been audited and found to be in accordance with the requirements of the management system standards indicated below

STANDARD

ISO 14001:2015

SCOPE OF SUPPLY

PLEASE REFER TO THE ATTACHED APPENDIX

Original Approval Date: **5 November 2004**

Subject to the continued satisfactory operation of the organisation's Management System, this certificate is valid until: **3 April 2020**

To check the validity of this certificate please call tel. **1800 855 190**

Further clarification regarding the scope of this certificate and the applicability of the Management System requirements may be obtained by consulting the organisation.

Certificate Number: **AU002923-1** *Date:* **13 July 2018**

Andrew Mortimore
Vice President – I&F Pacific Region

Managing office: Bureau Veritas Pty Ltd, 3/435 Williamstown Road, Port Melbourne, Victoria, 3207

Issuing office: Bureau Veritas Pty Ltd, 3/435 Williamstown Road, Port Melbourne, Victoria, 3207

JAS-ANZ

APPENDIX 2 – PROJECT ENVIRONMENTAL LEGAL AND OTHER REQUIREMENTS REGISTER

Instrument	Title	Obligation	Environmental Aspect/Activity	Applicable to Project/Site (Y/N)	Evaluation Method	Evaluation Outcome
Permits Acquired or Required	*Development Act 1993 (SA) Mining Act 1971 (SA*) Camp construction	DA or modification to existing Miscellaneous Purposes Licence (MPL)could be required to contract camp.	Construction Mt Gunson camp	Y		
	Development Act 1993 (SA)	DA Acquired Solar Reserve Development Application 010/V061/17	Construction of solar plant and transmission powerlines Lines	Y		
		DA Acquired from Oz Minerals	Construction of Transmission power lines and substations	Y		
	Native Vegetation Council Clearing permit	Native Vegetation Clearing permit acquired file number: 2018/3166/010. Clearing for construction to occur upon receipt of Oz Minerals DA	Civil works	Y		
	Environmental Protection Act (1993) EPA license concrete batching plant	License required to construct concrete batching plant No license required if mobile batching plant utilised (contractor obligation)	Civil works	Y		
	National Parks and Wildlife Act 1972 (SA) Snake catcher s permit	Snake catchers permit required to handle snakes	All aspects/activities	Y		

	Crown Land Management Act 2009	Permit Acquired Land Disturbance Permit 14/0633 Permit Acquired Land Disturbance Permit CL 6204/748 (Kootabeera); CL 6178/725 (Oakden Hills); CL 6176/268 (Arcoona); CL 1330/353 (Pernatty)	Civil works	Y		
Commonwealth Legislation	*Aboriginal Heritage Act 1988*	Do not (without consent) do any act which is likely to endanger, cause damage to, deface or interfere with an Aboriginal object or place.	Civil works	Y		
		Ensure that objects and areas with significance to Aboriginals are treated in accordance with Aboriginal tradition and are preserved and protected from injury and desecration.	All aspects/activities	Y		
	Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth); s 199, 214, 232, 256, r7.08	Ensure that the Secretary of the Department of the Environment and Heritage (DEH) is notified within 7 days if an action results in the death, injury, taking, trading, keeping or moving of a member of a listed threatened species, ecological community, migratory species, listed marine species or cetacean (whale, dolphin, porpoises, narwhale)	Civil works	N		
	National Greenhouse and Energy Reporting Act 2007	Registration and reporting is mandatory for constitutional corporations with energy production, energy use or greenhouse gas emissions that meet specific thresholds.	All aspects/activities	Y		
	National Environment Protection (National Pollutant Inventory) Measure (Commonwealth), cl 3, 4, 9-13, sched A, Table1	Submit annual National Pollutant Inventory (NPI) returns if any of the specified reporting thresholds are exceeded (unless exemptions apply).	All project activities	Y		

	Ozone Protection and Synthetic Greenhouse Gas Management Act 1989; s45B and Regulations 1995 (Commonwealth), r 216, 305, 400, 500	If importing or producing substances prescribed in the Act, ensure appropriate licences are obtained and complied with.		Y		
	Aboriginal Heritage Act 1988, s 20, 21, 23, 28, 29, 35; *Coroners Act 2003, s 28*	Notify the minister upon discovery of any Aboriginal sites, objects or remains on land, giving the of the nature and location of the discovery. Do not, without the authority of the minister: - damage, disturb, sell or dispose of any Aboriginal site, object or remains - remove the object or remains - excavate land for the purpose of uncovering any Aboriginal site, object or remains - except as required to notify the minister, do not, in contravention of Aboriginal tradition, divulge information relating to an Aboriginal site, object, remains or tradition.	Project works	Y		
	Environment Protection Act 1993, s 5, 25(1)(2), 79, 80, 82 *Public and Environmental Health Act 1987, s 3(2), 16;*	Ensure that offensive materials or odours are not emitted from premises (as this renders the premises unsanitary).	All aspects/activities	Y		
	Environment Protection Act 1993, s 3(1), 25(1)(2)	Do not undertake an activity that has potential to pollute the environment without taking all reasonable and practicable measures to prevent or minimise environmental harm.	All aspects/activities	Y		

	Environment Protection Act 1993, s 35(1), sched 1	Do not undertake an activity that has potential to pollute the environment without taking all reasonable and practicable measures to prevent or minimise environmental harm.	All aspects/activities	Y		
	Environment Protection Act 1993, s 36, 37, sched 1	Do not cause environmental harm or an environmental nuisance either intentionally or recklessly by polluting the environment.	All aspects/activities	Y		
	Environment Protection Act 1993, s 5, 79, 80, 82	Obtain an EPA licence before undertaking a prescribed activity of environmental significance, unless an exemption is granted.	Project works	Y		
	Environment Protection Act 1993, s 3, 5, 5B, 83A	Use, store and dispose of waste tyres in accordance with the general provisions of the Environment Protection Act 1993 - Environmental Authorisations and Environmental Harm.	Project works	Y		

	Heritage Places Act 1993, s 3, 16, 25, 26, 27(1), 28, 29(5), 36	Without a permit, do not: - excavate or disturb any State Heritage Place designated as a place of geological, palaeontological, archaeological or speleological significance - remove geological, palaeontological or speleological specimens or archaeological artefact from such a place - excavate or disturb any land (not designated as a place of archaeological significance) . for searching for or recovering archaeological artefacts of heritage significance . if it is reasonably likely that the excavation or disturbance will result in an archaeological artefact of heritage significance being discovered, exposed, moved, damaged or destroyed - damage, destroy or dispose of a geological, palaeontological or speleological specimen, or an archaeological artefact, removed from a State Heritage Place designated as a place of geological, palaeontological, speleological or archaeological significance - damage, destroy, dispose of, or alter (in a way that would affect its heritage significance) an object entered in the South Australian Heritage Register. Ensure that permit conditions are complied with.	Civil works	Y		
	Environment Protection Act 1993 (SA)	Classification of Waste Derived Fill (and conditions of disposal of excess/waste spoil/soil)	Project works	Y		

	Development Act 1993 (SA)	Ensure all development is be approved under the Act. 'Development' includes building work, a change in land use, land division, demolition, earthworks, removal of significant trees and a number of prescribed activities listed in the Development Regulations		Y		
	State Environment Protection Policy (Air Quality Management), cl 16(4)	If requested by EPA or required in an EPA licence application, conduct a risk assessment on the environmental impact of emissions from the premises.	All aspects/activities	Y		
	State Environment Protection Water Quality Policy), 2015, s 1	Ensure that works within or adjacent to surface waters are managed so that unnatural erosion, sediment re-suspension and other environmental risks to aquatic habitats are minimised.	All aspects/activities	Y		
	State Environment Protection Water Quality Policy), 2015, s 7a, b	Waste generated at the premises is not discharged into any waters or onto land in a place from which it is reasonably likely to enter any waters, premises incorporate a wastewater management system	All aspects/activities	Y		
	State Environment Protection Water Quality Policy), 2015, s 14	Manage discharges of waste and wastewater to surface water (from licensed and unlicensed premises and activities) in accordance with the waste hierarchy. Give priority to avoiding the generation of wastewater.	All aspects/activities	Y		
	National Parks and Wildlife Act 1972, s 47	Do not, without authority, take a native plant from: - crown land or forest reserve - any reserve, wilderness protection area or wilderness protection zone - any land reserved for or dedicated to public purposes - private land (if the native plant of a prescribed species).	Civil works Vegetation clearance	Y		

	National Parks and Wildlife Act 1972, s 51(1), 53(1), 68 (1)	Do not (without a permit) interfere with or harass a protected animal or undertake an activity that will be detrimental to their welfare after being directed by a warden not to do so. Do not (without a permit) remove a protected animal or the eggs of a protected animal.	Project works	Y		
	Native Vegetation Act 1991, s 27, sched 1 (s 1); Native Vegetation Regulations 2003, or 3A, 5, 5A, 6	Do not clear native vegetation (including certain dead trees) unless with the consent of the Native Vegetation Council or in accordance with Section 27 of the Native Vegetation Act 1991 (including the exemptions and restrictions listed under Regulations 5, 5A, 6).	Civil works Vegetation clearance	Y		
	Environment Protection Act 1993, s 83	If environmental harm from pollution is caused or threatened, notify the Authority of the nature, circumstances and any action taken to deal with the situation, as soon as is reasonably practical	Use of company vehicle Project works	Y		
	State Environment Protection Policy	If sewerage is provided, premises must be connected to the sewerage system unless wastewater is reused in accordance with EPA guidelines and is retained on-site.	All aspects/activities	Y		
	Environment Protection (Noise) Policy 2007, cl 3, 5, 10-16, 18(1)	If your premises are a source of noise ensure that, at noise-affected premises: - the source noise level (continuous) does not exceed the background noise level plus 5 dB(A), or - the source noise level (continuous) does not exceed the indicative noise level for the noise source.	Project works	Y		
	Aboriginal Heritage Act 1988 (SA)	Permission to damage, disturb or interfere with an Aboriginal Site, Object or Remain	Project works	Y		

	Environment Protection (Noise) Policy 2007, cl 3, 5, 10-16, 18(1)	"If your premises are a source of noise ensure that, at noise-affected premises: - the source noise level (continuous) does not exceed the background noise level plus 5 dB(A), or - the source noise level (continuous) does not exceed the indicative noise level for the noise source. "	Project works	Y		
	Development Act 1993, s 4, 32, 54A, s 54B;	Do not undertake a tree-damaging activity to a regulated tree unless an approval is obtained or as a matter of urgency. An approval is required even if the activity is permitted under the Native Vegetation Act 1991. Exceptions apply.	"Civil works Vegetation clearance"	Y		
	Fire and Emergency Services Act 2005, s 80(3-4); *Fire and Emergency Services Regulations 2005, r 34(2), 36"*	During a total fire ban, do not light or maintain a fire in the open-air contrary to the terms of a warning broadcast unless permitted by regulation or a permit.	Project works	Y		
	Water Act 2000, s 206, 237, 808-812; s 816	Do not take water from a waterway, water bore (or other defined sources) without a licence or permit issued under the Water Act 2000. Use a licensed driller to construct or alter a water bore of more than six metres depth.	All aspects/activities	Y		
	Water Act 2000, s 968A	For the holder of an allocation, comply with a notice about the way quarry material is removed, unless you have a reasonable excuse.	Civil works	Y		
	Electricity (Principles of Vegetation Clearance) Regulations 2010	Defines the legal requirements for vegetation clearance around powerlines. This includes requirements for clearing vegetation around high-voltage transmission lines and lower-voltage distribution lines as well as legal and safety limitation for planting trees near powerlines.	All aspects/activities	Y		

	Water Industry Act 2012, s 92; Water Industry Regulations 2012, r 26, sched 4 *Natural Resources Management Act 2004, s 169*	Comply with any water conservation measures made under the Natural Resources Management Act 2004. Comply with long term water conservation measures outlined in Schedule 4, unless holding a relevant permit.	All aspects/activities	Y		
	Dangerous Substances Act 1979, s 14; *Dangerous Substances Regulations 2002, r 58, 59, 60, 61*	Do not keep on any premises a quantity of class 6 or 8 substances greater than that prescribed in Regulation 58 of the Dangerous Substances Regulations 2002 without a licence	All aspects/activities	Y		
	Dangerous Substances Act 1979, s 14; *Dangerous Substances Regulations 2002, r 41, 42;* *AS 1940-2004: The storage and handling of flammable and combustible liquids*	Do not keep a flammable liquid on the premises above the quantities specified in the regulations without a licence.	All aspects/activities	Y		
	Environment Protection (Waste to Resources) Policy 2010, cl 3, 12, sched 4; *National Environment Protection (Movement of Controlled Waste between States and Territories) Measure (Commonwealth), sched A;*	Do not dispose of waste: - at a landfill depot if the waste was produced in an area for which the waste is prohibited landfill waste - in an area for which the waste is prohibited landfill waste by depositing it in a receptacle for collection or transport for disposal at a landfill depot.	Project works	Y		

	Environment Protection (Waste to Resources) Policy 2010, cl 3, 15	If you are producing, storing, handling, treating or disposing of listed waste, but are not required to hold a licence for that activity ensure that: - if the listed waste is removed by a waste transporter, the transporter is a licensed to transport waste of that kind - in disposing of the listed waste, reasonable steps are taken to ensure that the waste is transported to an appropriate licensed or approved depot.	Projected works	Y		
Australian Guidelines	Guidelines	International Erosion Control Association (IECA) Australasia Best Practice Erosion and Sediment Control.	Yes, Erosion and sediment control	N		
	Guidelines	EPA Publication: Waste Management Strategy	Yes, Waste management	Y		
Australian Standards	Standards	AS 1940 (2004) - The storage and handling of flammable and combustible liquids	Yes, Hazardous materials - use and storage	Y		
	Standards	AS 4452 (1997) - The storage and handling of toxic substances.	Yes, Hazardous materials -use and storage	Y		
UGL Procedures	Corporate Environmental Procedures	UGL Environmental Policy Statement	Project Environmental Management	Y		
UGL procedures	Corporate Environmental Procedures	UGL Procedures – Refer Appendix 11		Y		

APPENDIX 3 – ASPECTS AND IMPACTS REGISTER

	Location Work Area:	Hill to Hill Project
	Revision:	A
	Date of last Revision:	12/11/2018

ENVIRONMENTAL ASPECTS AND IMPACTS REGISTER

Environmental Risk Assessment for Hill to Hill Commencing January 2018

Document No: 3200-0575

IDENTIFICATION							LEGAL REQUIREMENT	ASSESSMENT OF CONTROLS			
No	ACTIVITY	ENVIRONMENTAL ASPECTS	ENVIRONMENTAL IMPACTS	RISK RATING			Is this aspect or potential	CONTROLS	RESIDUAL RISK		
				RISK Assessment (current)				Refer to section E of CEMP for full list of mitigation measures	FINAL RISK Assessment (current)		
				Consequence	Likelihood	Risk Score			Consequence	Likelihood	Risk Rank
By activity											
1	Permitting/ legal requirements	Development Application 010/V061/17	Stop the project	C4-Major	L5	A	Acquired	CEMP, Legal register and conditions of permits			
		Development Application transmission line Prom hill to Carriewerloo s/s		C4-Major	L5	A	Not Acquired- Time frame to acquire unknown				
		land agreements		C4-Major	L5	A	acquired				
		Cultural heritage		C4-Major	L5	A	Not acquired- south of Tower F1974-0060 - Do not enter area				
		Vegetation Clearance Permits		C4-Major	l5	A	Elctranet to provide				
		Native vegetation council permit		C4-Major	L5	A	Acquired - Carriewerloo and Saltbush S/s and line routes				
		Batching plant permit required (To construction)		C4-Major	L5	A	UGL to acquire Electranet to facilitate				
		Well construction Permit		C4-Major	L5	A					
		Snake catchers Permit		C4-Major	L5	A					
		Waste water treatment Plant		C4-Major	L5	A					
		Electranet Environmental Operating requirements		C4-Major	L5	A	Include in CEMP				

2	Site establishment	Installation of site sheds and amenities	Sheds and amenities installed in environmentally sensitive area	C2-Moderate	L2-Unlikely	E	No	Install shed in approved area away from existing vegetation	C2-Moderate	L1-Rare	E
			Movement of construction traffic in/out of the project site	C1-Minor	L3-Possible	E	No	Traffic Management Plan (TMP)	C1-Minor		E
			Dust and noise/Annoyance to workers and nearby residents	C1-Minor	L2-Unlikely	E	Yes	Suppress dust with water or dust suppressant Speed limits	C1-Minor	L1-Rare	E
		Installation of erosion and sediment controls	Erosion and sediment controls not installed to relevant standards	C3-Serious	L3-Possible	C	Yes	Erosion and Sediment Control Plan (ESCP)	C3-Serious	L2-Unlikely	D
3	Vegetation removal	Weed proliferation	Loss of biodiversity	C3-Serious	L3-Possible	C	Yes	Local Council Weed Management Documentation	C3-Serious	L2-Unlikely	D
		Fauna	Injury/death of fauna	C3-Serious	L2-Unlikely	D	Yes	Stop work if injured animal found on site Report all incidents	C3-Serious	L1-Rare	E
		Uncovering of heritage items or sites	Damage to unidentified heritage items	C3-Serious	L2-Unlikely	D	Yes	Stop work if unknown heritage found on site and report location of potential heritage should be marked	C3-Serious	L1-Rare	E
4	Drilling of pile foundations	Uncovering of heritage items or sites	Damage to unidentified heritage items	C3-Serious	L2-Unlikely	D	Yes	Stop work if unknown heritage found on site and report location of potential heritage should be marked	C3-Serious	L1-Rare	E
		Generation of dust	Air pollution Annoyance to workers and nearby residents Visible dust emissions leaving site	C2-Moderate	L3-Possible	D	Yes	Suppress dust with dust suppressant	C2-Moderate	L2-Unlikely	E
		Generation of noise	Excessive noise impacting nearby residents may result in complaints	C2-Moderate	L2-Unlikely	E	Yes	Keep equipment well maintained Work within permitted hours	C2-Moderate	L2-Unlikely	E
		Consumption of fuel	Depletion of natural resources Greenhouse gas emissions Smoky exhaust emissions from plant and machinery causing air pollution and complaints	C1-Minor	L4-Likely	E	Yes	Machine and equipment well maintained Machinery not left idling if not in use	C1-Minor	L4-Likely	D
		Accidental spills/leaks	Water/groundwater pollution Land pollution	C2-Moderate	L3-Possible	D	Yes	Spill kits on site Equipment well maintained	C2-Moderate	L2-Unlikely	E
5	Dewatering	Inappropriate disposal of accumulated water	Land/ surface water/ groundwater pollution Breach of legislation	C3-Serious	L2-Unlikely	D	Yes	Discharge in approved area via use of sediment and erosion controls	C3-Serious	L1-Rare	E
6	Truck movement including transport of soil	Consumption of fuel by construction vehicles and plant	Depletion of natural resources Greenhouse gas emissions Smoky exhaust emissions from plant and machinery causing air pollution and complaints	C1-Minor	L4-Likely	D	Yes	Machine and equipment well maintained Machinery not left idling if not in use	C1-Minor	L3-Possible	E
		Weed proliferation	Spread of noxious weeds Loss of biodiversity	C3-Serious	L3-Possible	C	Yes	Ensure vehicle clean on arrival and when leaving site	C3-Serious	L2-Unlikely	D
		Carriage of spoil	Dust/loss of spoil on road	C3-Serious	L3-Possible	C	Yes	All truck loads to be covered	C3-Serious	L2-Unlikely	D
		Uncovering of heritage items or sites	Damage to unidentified heritage items	C3-Serious	L2-Unlikely	D	Yes	Stop work if unknown heritage found on site and report location of potential heritage should be marked	C3-Serious	L1-Rare	E
		Mud tracking on roads	Water/groundwater pollution Sedimentation of waterways	C2-Moderate	L3-Possible	D	Yes	Clean up road as required Stabilise access	C2-Moderate	L2-Unlikely	E
7	Stockpiling	Generation of dust	Air pollution Annoyance to workers and nearby residents Visible dust emissions leaving site	C2-Moderate	L4-Likely		Yes	Stockpiles to be covered, watered or vegetated	C2-Moderate	L2-Unlikely	E
		Inappropriate erosion and sediment controls	Soil erosion and sediment transport. Water/groundwater pollution	C4-Major	L3-Possible	C	Yes	Sediment fence downslope of stockpiles as per ESCP	C4-Major	L2-Unlikely	D
		Mismanagement of potentially contaminated soil	Land/water/groundwater pollution. Breach of legislation	C3-Serious	L2-Unlikely	D	Yes	If potentially contaminated soils are encountered, segregate them from other materials.	C3-Serious	L2-Unlikely	D

8	Concrete works	Consumption of fuel by construction vehicles and plant	Depletion of natural resources Greenhouse gas emissions Smoky exhaust emissions from plant and machinery causing air pollution and complaints	C1-Minor	L4-Likely	D	Yes	Machine and equipment well maintained Machinery not left idling if not in use	C1-Minor	L4-Likely	D
		Accidental spills or leaks e.g.: Fuels, Oil and chemicals	Water/groundwater pollution Land pollution Breach of legislation	C2-Moderate	L3-Possible	D	Yes	Spill kits on site Equipment well maintained Drip Trays	C2-Moderate	L2-Unlikely	E
		Spillage of concrete	Concrete not disposed of appropriately (i.e. washed out onto ground) may pollute nearby waters/groundwater	C2-Moderate	L3-Possible	D	Yes	Concrete wash out pit (bunded and lined) as per ESCP	C2-Moderate	L2-Unlikely	E
9	Cranage	Consumption of fuel by construction vehicles and plant	Depletion of natural resources Greenhouse gas emissions Smoky exhaust emissions from plant and machinery causing air pollution and complaints	C1-Minor	L4-Likely	D	Yes	Machine and equipment well maintained Machinery not left idling if not in use	C1-Minor	L4-Likely	D
		Accidental spills or leaks e.g.: Fuels, Oil and chemicals	Water/groundwater pollution Land pollution	C3-Serious	L2-Unlikely	D	Yes	Spill kits on site Equipment well maintained	C3-Serious	L1-Rare	E
		Potential Handling of Contaminated Material	Contamination Land pollution	C3-Serious	L2-Unlikely	D	Yes	Contamination Management Plan Proper identification, removal and disposal	C3-Serious	L1-Rare	E
10		Demolition of transformer bunds for modifications works	Potential for Contamination Land pollution, if transformer fails during proposed works	C3-Serious	L2-Unlikely	D	Yes	Proposed precast structures to reduce construction time, with the inclusion of precast flame traps Contamination Management Plan Proper identification, removal and disposal	C3-Serious	L1-Rare	E
11	Maintenance of equipment	Accidental spills or leaks e.g.: Fuels, Oil and chemicals	Water/groundwater pollution Land pollution	C3-Serious	L3-Possible	C	Yes	Spills kits on site Refuelling in designated area and away from drainage lines	C3-Serious	L2-Unlikely	D
12	Refuelling	Release of fuel during refuelling activities	Water/groundwater pollution Land pollution	C3-Serious	L3-Possible	C	Yes	Spills kits on site Refuelling in designated area and away from drainage lines	C3-Serious	L2-Unlikely	D
		Fire	Loss of biodiversity Air pollution	C4-Major	L2-Unlikely	D	Yes	Fire extinguishers Emergency procedures	C4-Major	L1-Rare	E
13	Storage, transport and use of chemicals	Accidental spills or leaks e.g.: Fuels, Oil and chemicals	Water/groundwater pollution Land pollution	C3-Serious	L3-Possible	C	Yes	Spill kits on site Chemicals stored on bunds (E30% of largest chemical container)	C3-Serious	L2-Unlikely	D
		Fire	Loss of biodiversity Air pollution	C4-Major	L2-Unlikely	D	Yes	Fire extinguishers Emergency procedures	C4-Major	L1-Rare	E
14	Waste management	Generation and storage of waste (incl. potentially contaminated waste)	Depletion of natural resources Greenhouse gas emission Land pollution Non-compliance with waste guidelines Land/ ground and/or surface water pollution	C4-Major	L3-Possible	C	Yes	Manage all waste appropriately Provide enough bins and segregate wastes Recycle waste if feasible Maintain waste register WMP	C4-Major	L2-Unlikely	D
		Transport and disposal of waste	Non-compliance with waste guidelines Impact to landfill Land/ ground and/or surface water pollution Greenhouse gas emissions	C4-Major	L2-Unlikely	D	Yes	Licenced contractors for removal and disposal of waste Waste dockets WMP Machinery not left idling if not in use	C4-Major	L1-Rare	D

15	Restoration Works	Inadequate/ inappropriate site restoration	Erosion of exposed surfaces leading to sedimentation of nearby waterways Introduction of weeds or other exotic species	C3-Serious	L3-Possible	C	Yes	Rehabilitate all disturbed areas as soon as practicable to reduce the potential for erosion. Use native species	C3-Serious	L2-Unlikely	D
		Uncovering of heritage items or sites	Damage to unidentified heritage items	C3-Serious	L2-Unlikely	D	Yes	Stop work if unknown heritage found on site and report location of potential heritage should be marked	C3-Serious	L1-Rare	E
16	Demobilisation	Removal of equipment, amenities and vehicles	Visual impact if construction material not removed appropriately	C2-Moderate	L3-Possible	D	No	Remove all construction materials	C2-Moderate	L2-Unlikely	E
			Truck movement impacting traffic	C2-Moderate	L3-Possible	D	No	TMP	C2-Moderate	L2-Unlikely	E
17	Line Stringing	Generation of dust	Air pollution Annoyance to workers and nearby residents Visible dust emissions leaving site	C2-Moderate	L3-Possible	D	Yes	Suppress dust with water or dust suppressant	C2-Moderate	L2-Unlikely	E
		Uncovering heritage items or sites	Damage to unidentified heritage items	C3-Serious	L2-Unlikely	D	Yes	Stop work if unknown heritage item found on site and report to APA Barricade all known heritage areas with green tape preventing access	C3-Serious	L1-Rare	E
		Disturbing known heritage areas	Damage to known heritage areas								
		Generation of noise and vibration	Excessive noise and vibration impacting nearby works may result in complaints	C2-Moderate	L3-Possible	D	Yes	Keep equipment well maintained Noise monitoring if required	C2-Moderate	L2-Unlikely	E
		Fauna	Injury/death of fauna	C2-Moderate	L3-Possible		Yes	Pre-inspection prior to commencing work Report all incidents	C3-Serious	L1-Rare	E
		Consumption of fuel by construction vehicles and plant	Green house gas emissions	C1-Minor	L4-Likely	D	Yes	Machine and equipment well maintained	C1-Minor	L4-Likely	D
			Smokey exhaust emissions from plant machinery causing air pollution and complaints				Yes	Machinery not left idling if not in use. Refer to Section E in CEMP			
		Accidental spills or leaks e.g.: Fuels, Oil and chemicals	Water/groundwater Land pollution	C2-Moderate	L3-Possible	D	Yes	Spill kits on site	C3-Serious	L2-Unlikely	D

HSE Risk Matrix

(For use with the Health, Safety & Environment Risk Management Procedure, EIMS-4-9623)

Table 1: Risk Rating Determination

		CONSEQUENCE LEVEL				
		1	2	3	4	5
LIKELIHOOD	ALMOST CERTAIN (≥90%; less than "monthly")	D	C	B	A	A
	LIKELY (50% TO < 90%; "monthly" to "yearly")	E	D	C	B	A
	POSSIBLE (20% TO < 50%; between 2 and 5 years)	E	D	C	C	B
	UNLIKELY (2 TO < 20%; between 5 and 50 years)	E	E	D	C	C
	RARE (<2%; once in more than 50 years)	E	E	E	D	D

Table 2: Incident Consequence Table

Level	1	2	3	4	5
Workplace Health and Safety	**Class 3 incident:** First aid treatment and/ or minor safe working breach unlikely to impact operational activities.	**Class 2 incident:** Medical treatment and/ or moderate safe working breach likely to impact operational activities.	**Class 2 incident:** Serious medical/ hospital treatment resulting in need alternate working or resulting in lost time injury. Significant safe working breach with actual impact on an operation	**Class 2 incident:** Major, reversible injury, requires long term ongoing treatment and rehabilitation. Significant safe work immediate impact on operations at one or more worksites.	**Class 1 incident:** - Single fatality, any type of irreversible disability, Major injury to < 10 people, unable to return to work.
Physical Environment	Low severity environmental impact(s) that are promptly reversible, and affected area is within the site boundary.	Nuisance or low severity environmental impact(s) that are promptly reversible and affected area is outside the site boundary.	Moderate severity environmental impact(s) where the affected area is within the site boundary.	Moderate severity environmental impact(s) where the affected area is outside the site boundary. Terrorist threats.	High severity environmental impact(s) of local scale significance. Terrorist actions with limited impact.
Governance/ Legal/ Regulatory	Very minor technical breach of regulation or policy or code of ethics. No fine/ penalty.	Minor legal issues, non-compliances and breaches of regulation, policy or code of ethics. No criminal prosecution	Moderate breach of regulation, policy or code with investigation or report to authority. Moderate legal proceedings initiated.	Significant breach of regulation, policy or code with fine or other regulatory action. Significant litigation/ legal action. Criminal prosecution.	Major breach of regulation, policy or code with fine. Major litigation. Major investigation by regulatory body.

Table 3: Likelihood Levels

	PROBABAILTY OR CHANCE	QUALITATIVE ASSESSMENT	RECURRENCE TIMEFRAME
ALMOST CERTAIN	≥ 90%	Almost certain to occur during the project/ contract life/ business plan horizion	Less than "Monthly"
LIKELY	50% to 90%	Considered likely to occur during the project/ contract life/ business plan horizion	"Monthly" to "Yearly"
POSSIBLE	20% to 50%	Considered a possible occurrence during the project/ contract life/ business plan horizion	Between 2 and 5 years
UNLIKELY	2% to 20%	Considered unlikely to occur during the project/ contract life/ business plan horizion	Between 5 and 50 years
RARE	< 2%	Considered a rare occurrence during the project/ contract life/ business plan horizion	Greater than every 50 years

Table 4: Management Response to Residual Risk Ratings

MANAGEMENT RESPONSE TO RESIDUAL RISK RATINGS	
Risk Rating	**Actions to Be Taken**
A- Extreme or B- Very High	**Stop-** Task or activity must not be performed. An alternative solution must be found.
C- High	**Stop-** Re-evaluate controls to determine whether additonal controls can be applied. Work activities with High residual risk must be approved by the Project/Site/Operations Manager. Note: Critical Risk Control Exemptions require approval from Divisional EGM.
D- Moderate	Risk is recorded and assessed in the Project/ Site HSSE Risk register, and controls implemented to reduce risk so far as is reasonably practicable.
E- Low	Risk is recorded and assessed in the Project/ Site HSSE Risk register, and controls implemented to reduce risk so far as is reasonably practicable.

APPENDIX 4 – ENVIRONMENTAL MONITORING PROGRAM

Issue	Location	Monitoring Parameter	Frequency	Performance Criteria	Achieved Y/N
Water Quality	Open drainage lines and existing water courses	Visual inspection for indications of silt-laden waters, waste waters or pollution (e.g. grease/oil, effluent) as a result of construction.	Weekly and after each rainfall event	No visible pollution	
Noise, Vibration, Odours, Traffic	All areas of upgrade work	Complaints based monitoring only	As and when complaint arises	No complaints from community, stakeholders or authorities	
Noise	All project areas	Adherence to approved work hours and noise levels	Daily	Daily site observations by Supervisors based on pre-start records.	
	All project areas	Sound pressure levels from mobile and fixed plant items including construction vehicles	As needed to		
Erosion and Sedimentation	Entire Construction Site	Any visible signs of erosion	Weekly	No erosion	
		Visual inspection of settled water for contaminants or sedimentation will be made before water is discharged to drains.	Weekly and after each rainfall event	No visible pollution	
		Drainage and erosion & sediment controls are in place and in good working order	Weekly	All structures sound and working correctly	
		Soil stockpiles and excavations are being protected	Weekly	Sediment fences/berms erected	
		Silt has been removed following large storm events and controls maintained	Weekly and after storm events	No silt in sediment fences	
Air Quality	Site boundaries at selected locations	Visible dust in air.	Daily	No dust impacting communities/stakeholders	
Landscaping and Rehabilitation	Entire Construction Site	Effectiveness of landscaping and rehabilitation	Weekly	ElectraNet approval and sign off	
		Inspection for signs of weed infestation.	Monthly	Weeds suppressed	
Waste	Entire Construction Site	Effectiveness and appropriateness of waste management and disposal. Effectiveness of chemical bunds. Waste amount, type and proposed disposal locations	Weekly	No loose waste visible refer to weekly check list Monthly waste reporting completed 2 recycling streams No major spills <200L	

Issue	Location	Monitoring Parameter	Frequency	Performance Criteria	Achieved Y/N
Flora	Entire Construction Site	Adherence to areas of site clearance and disturbance, extent of vegetation disturbance/damage around works site.	Weekly	Clearance/disturbance restricted to approved areas	
Hazard / Risk	All construction sites and work compounds	Appropriate storage and use of hazardous materials (appropriate housekeeping)	Weekly	All chemicals correctly bunded	
		Hazards identified during inspections by the ElectraNet to be communicated to UGL immediately.	As needs basis	Zero accidents / incidents, procedures followed	
Traffic / Access	Entering/leaving construction sites	Effectiveness of temporary traffic control measures.	Weekly	Correct traffic movements	
	Access roads and pavements	Inspections of road for signs of spoil or oil spillage. Existing pavement conditions.	Weekly	Baseline pavement condition survey.	
	Entering/leaving construction sites	Adherence to approved transport hours and routes	Weekly	No external complaints	
Cultural Heritage	Construction site	No work continuing if CH is found	As required	0 CH fines	
Training	All Project personnel	Number of personnel trained, inducted, and demonstrated understanding of environmental requirements and incident reports.	Monthly	All trained prior to commencing works. New staff completed within 2 months of commencing on site	
General Site Environment	Project works	Visual inspection and audits of site conditions, practices and records (environmental inspection checklist)	Weekly	Zero non-conformances with CEMP	
Environmental Audits	Project Works	Environmental audits as required under the auditing procedure to ensure compliance with the environmental management system, the CEMP and Legal and other requirements	Within the first 3 months there after 6 monthly (or as required)	Compliance to the EMS, CEMP and Legal and other requirements	

APPENDIX 5 – EROSION & SEDIMENT CONTROL (ESCP) PLAN

Introduction

As part of the development requirements this plan serves to satisfy the Stormwater Quality, Erosion and Sediment Control issues as applicable to the Principal Contractor contractual scope of works. Refer to IECA guidelines for any further information required

Aims

The ESC Plan aims to:

- Prevent local land degradation through soil erosion or sedimentation;
- Minimise localised flooding events caused by stormwater runoff; and
- Protect local waterways and ecosystems from unsatisfactory sediment loads and turbidity.

Scope

The scope of the ESC Plan covers all UGL construction activities, including subcontractor works as defined by the CEMP.

Documents

- Refer to attached drawings.

Key Issues

The following aspects have been identified as key issues requiring consideration;

- Permanent vs. interim erosion controls;
- Possible staging of works
- Retention and protection of vegetated strips, including free drainage (i.e. Parking in designated areas only);
- Sediment traps and filters;
- Minimising concentrated runoff;
- ESC maintenance issues;
- Quality of waters exiting site;
- Timely stabilisation of disturbed areas;
- Removal of interim measures;
- Concrete wash out pit; and
- Vehicular sediment tracking.

Compliance Criteria

This CEMP nominates the following compliance criteria:

- All soils and sediment laden runoff must be sufficiently contained on site (see Figure 1);
- No waterways or drainage lines are to be unlawfully altered because of UGL construction activities;
- Any potential for accelerated erosion events and/or sedimentation events are to be mitigated.

General requirements

- All disturbed areas will be stabilised as soon as practicably possible following works. This is likely to include a variety of temporary and permanent erosion control and rehabilitation measures such as ground cover establishment;
- Ground covers will be retained wherever possible;
- Sediment will not be tracked onto public roads;
- Sediment will not be allowed to enter stormwater systems; and
- Temporary sediment controls will be removed when no longer required and then only with minimal disturbance.

Responsibilities

As indicated by Section 6.1 of the CEMP, the responsibility for all stormwater, erosion and sediment issues arising from UGL operations rests with the Project Manager. Authority for the completion of individual ESC items has been delegated as follows.

Project Manager:

- Ensure authority or stakeholder approval of the ESC Plan has been granted prior to the initiation of on-site works;
- To initiate the ESC Plan at the start of on-site works; and
- To ensure the ESC Plan is reviewed and approved should deficiencies be encountered.

Environmental/HSSE Advisor:

- To action, facilitate and monitor the implementation of the controls/directives of the ESC Plan as defined by contractual and regulatory arrangement;
- To promptly communicate any issues arising to the Project Manager for rectification; and
- To ensure all interim controls are removed at the completion of project works unless otherwise directed.

Surface Water, Erosion and Sediment Control

Erosion, sedimentation and surface water control measures, use of hay bales (See figure 2) that may be utilised during the construction of the project include:

- Thoughtful placement of site amenities, concrete washout pit, stockpiles and temporary work areas – site secured with temporary fencing;
- Restricting, limiting or diverting vehicle movements around excessively wet or boggy areas;
- Site watering to limit dust generation as required (wind erosion);
- Compacting of backfilled trenches;
- Limiting the time unprotected areas are exposed to rain and wind;
- Protecting drains and stormwater inlets with sediment traps until exposed areas are either sealed or rehabilitated; and
- Utilisation of targeted ESC if high risk areas are encountered.

Existing Erosion

Wherever possible, existing areas of erosion will not be disturbed. If, however project activities cause disturbance in such areas, the sites will need to be left in a stable condition.

Creek Crossings

Existing creek crossings should be used if required however if new crossings are required they will abide with the following criteria:

- Kept at right angles to the creek
- Locate crossings on stable stream bed or stabilise with rock
- Ensure entry and exit points are gradual and stable
- Stream flow will not be significantly impeded
- Minimal disruption to existing flora and fauna; and
- Erosion control contour banks ('whoa boys') or similar, will be used to minimise track runoff from flowing directly into the creek.

All new creek crossings must be approved by the ElectraNet, prior to any works being carried out. Where necessary, drawings will be submitted for approval.

Access Tracks

Existing access tracks will be used wherever possible. If, however new access tracks are required they will abide with the following:

- All erosion control specifications relevant to the contract;
- Maintained to an acceptable standard;
- Existing grass cover to be retained if possible;
- All access tracks on slopes will have drainage controls applied. Controls utilised may include but not be limited to:
- Erosion control contour banks (whoa boys);
- Turn-out drains;
- Rock 'checks';
- Drainage devices;
- Sediment fencing;
- Cambered track surfaces; and
- Adjacent table drains.
- All drainage discharge points will be stabilised, as appropriate;
- Track works exposing highly dispersive soils will require stabilisation which may include sheeting with road base;
- All fill batters will be left properly compacted and stable; and
- As a minimum, must meet any design requirements of the ElectraNet.

Earthworks

Plans will be submitted for all intended earthworks if directed by the ElectraNet. Works planned will be mindful of the works footprint, volumes of materials generated and the requirement not to impact surrounding areas. The following will be observed when performing earthworks:

- All restrictions and conditions indicated by the ElectraNet or regulatory authorities;
- Watercourses may not be altered without regulatory approval;
- No stockpiles will be placed in drainage lines;
- Cut and fill batters will not be steeper than 1 in 2 or in locations which may affect drainage, unless otherwise engineered;
- Batters and work pads will be left structurally sound and stable;
- Batters and exposed areas will be stabilised as soon as practicably possible;
- Topsoil salvage will be pursued wherever possible;
- Stormwater runoff will be diverted around the worksite; and
- Runoff to be directed to cut areas, rather than filled areas where ever possible.

Sediment Fencing

All sediment fencing utilised on the project will abide with the following:

- Trenching >100mm wide and >100mm deep;
- Posts spaced <2m apart;
- Fabric between 400mm and 700mm above ground;
- Turned up at ends to pond water;
- All posts with caps;
- Fencing geotextile is a woven polypropylene yarn;
- Last row placed between 1m and 10m from foot of batter / stockpile; and
- Follow the contour except for the last panels which will be turned up slope.

In addition, sediment fencing will be inspected regularly to observe sediment build-up. When the sediment is built up, the sediment will be removed. Removed sediment will remain within the catchment of the sediment fence and generally be placed back onto the works pad.

Mulch Berms

Where excess mulch is available, mulch berms rather than sediment fences may be used. The importation of mulch to provide sediment control will be discouraged due to the potential to spread weeds and pests.
Mulch berms will generally be twice as wide at the base as they are high, with a height no less than 400mm. Where volumes of water are likely to breech the top of the mulch berm discharge points may require reinforcing with light weight jute matting (pinned). Overflow points may also require armouring.

Stockpile Management

Temporary sediment fence/earthberm (See figure 3) will be installed on the downhill side of any temporary stockpile sites. Any areas compacted during construction must be remediated by ripping the compacted layer of soil as part of preparation for site rehabilitation. The permanent stockpile will push the existing soil to form an earth bund for temporary containment.

Once completed the earthbund will be pulled over the stockpile to enable regrowth. A possible seed mix will be looked at as required. During completion of the rehabilitation a site assessment will be undertaken to see if additional sediment fences are required on any areas of concern.

Monitoring and Reporting

Inspections of tower/pole sites and access tracks will be undertaken on a regular basis and will be recorded on Environmental Line Inspection Report. Visual monitoring of water quality near tower/pole sites will occur when surface water is present and monitored regularly. Any concerns will require that qualitative sampling occurs.

The integrity and correct functioning of drains and sediment traps will be inspected regularly within a few days of a significant rainfall event. Any deficiency encountered will be promptly rectified. Inspections will be documented. Reports will be provided to the Environmental Protection Agency and ElectraNet of any incidents at a scale of material environmental harm (>$5,000 damage) or serious environmental harm (> $50,000 damage).

Minor environmental incidents (< $5,000 damage) will be verbally reported as soon as possible to the Project Environmental Advisor and ElectraNet. All minor events will be recorded on the Minor Incident Register and the Project Environmental Issues Register.
Incident investigations of significant incidents will be provided to ElectraNet as soon as possible following the event.

Management of Incidents

In the event of an ESC incident, appropriate response measures will be applied. An Incident Immediate Notification must be issued by the HSSE Manager, when the incident has exceeded regulatory criteria. In any case, an ESC related incident will require an Incident Investigation Report to be completed. This will include a detailed assessment of the cause(s) and contributing factors and what additional mitigation measures will need to be deployed to safe guard against such an event from reoccurring. Where additional measures have been identified as being required, a site memo or Corrective Action Request will be issued to the Project Manager for consideration.

Site Rehabilitation

Site rehabilitation of areas disturbed as part of the UGL Scope of Works will be rehabilitated as per IECA Guidelines. For events external to the agreed Scope of Works the accountability for restoration will rest with person(s) or party(s) responsible for the event.

The contractor is required to prepare and implement a site rehabilitation plan (as part of the ESCP) to achieve a beneficial revegetation outcome by undertaking topsoil and vegetation respread prior to demobilisation.

In areas / seasons with unreliable rainfall, site rehabilitation is to be undertaken by spreading existing topsoil without relying on grass growth and supplementary watering.

Figure 1: Hay Bale Installation method

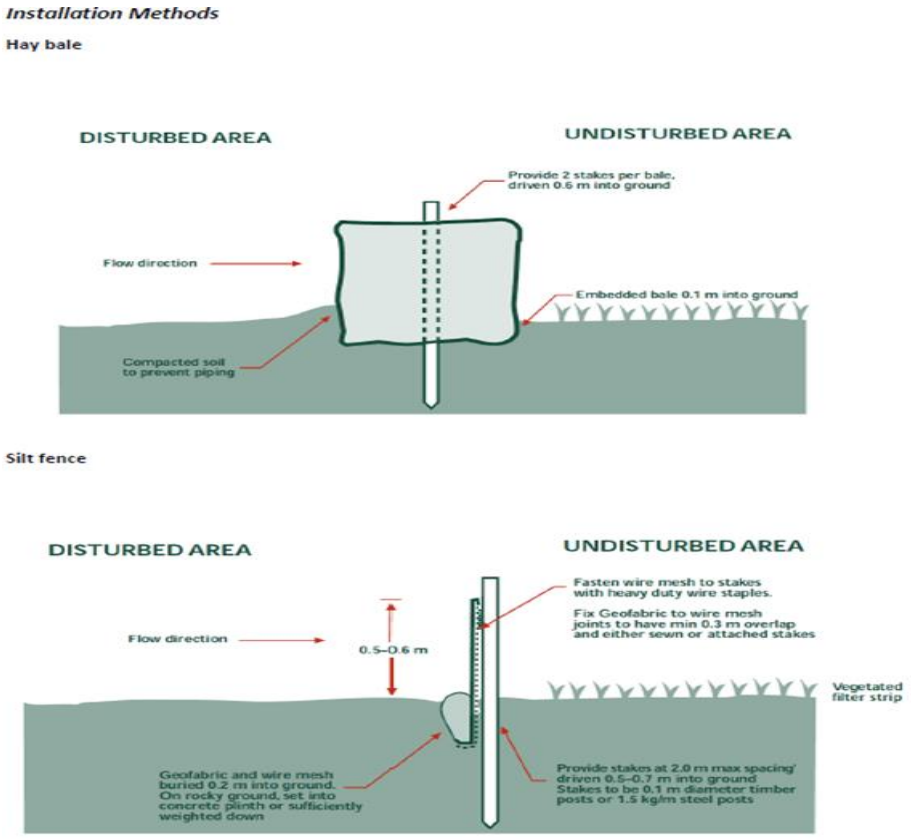
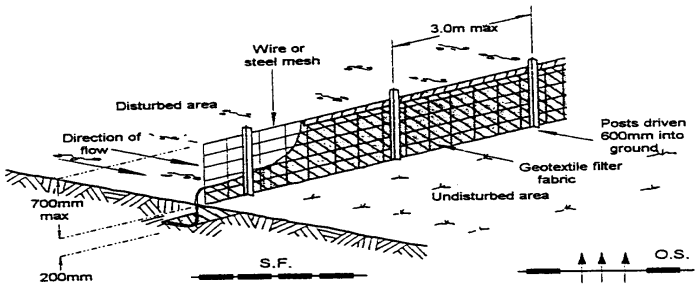


Figure 2: Installation of Sediment fencing

SEDIMENT FENCES

SEDIMENT CONTROL



STANDARD SYMBOL S.F. O.S.

Application/Function
- Temporarily reduce the velocity of contaminated sheet flow to induce gravitational settlement of the entrained sediment.
- Control of sediment runoff from exposed land, unsealed roads and stockpiles.
- Sediment Fences may also be used at regular spacings down a disturbed grade to limit the rutting caused by concentration of sheet flow.

Description
- Filter fabric attached to a wire and post fence at a maximum height of 700 mm with an additional 200 mm (min.) buried and compacted into an upstream trench.
- The filter cloth may also be backed by well-anchored *Straw Bales*.
- Sediment Fences should be installed along the contour.

Limitations
- Often called 'silt fences', these structures have little impact on fine silts (< 0.02 mm).
- Design flows limited to around 40 litres per second in areas of concentrated flow.
- Drainage area limited to 0.6 hectares per 100 metres of fence, or a max. slope length of 60 m.
- Service life of around 6 months.

Variations/Alternatives
- Geotextile filters are manufactured from either woven fabric or non-woven, needle punched fabric. Woven fabrics are preferred on large sites when the service life exceeds 1 month during the wet season. Non-woven, needle punched fabrics are preferred on small disturbances such a building sites.
- Alternatives include *Straw Bales, Buffer Zones, Catch Drains* and *Brushwood Banks.*

Advantages
- Easy to install.
- Controls sediment runoff close to the source of the erosion.
- Highly visible sediment control measure.
- Cannot introduce weeds/seeds - a problem experienced with hay bales.
- Generally more efficient than *Straw Bales.*

Disadvantages
- Easily damaged by construction equipment and stock piles.
- Can cause concentration of sheet flow if poorly located, installed or maintained.
- Limited service life of around 6 months or less during the wet season.
- Often incorrectly installed and maintained.

Special Requirements
- When used to control rutting, regular turn-backs and a firm wire mesh backing are required to prevent the further concentration of flow.
- If the Sediment Fence must be installed across the contour, then the fence should be segmented into a series of L-shaped fences to avoid the concentration of flow along the fence.
- Where possible, avoid installing Sediment Fences along property boundaries in new subdivisions unless the property boundary aligns closely with the contour, otherwise regular turn-backs are required.

Maintenance
- Long-term maintenance requirements and sediment retention are generally inversely proportional the quality of the fence installation.
- Regular inspections and maintenance are required to repair damage caused by on-site vehicles or the movement of stockpile material.
- Inspect after each storm event that results in runoff.
- Remove excessive sediment deposits.
- Investigate the source of excessive sediment.
- If the fence is regularly damaged, install a second fence at least 1 metre downslope of the existing fence.

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Figure 3 Sediment Fencing continued

SEDIMENT FENCES

DESIGN INFORMATION

Location:

- Allow at least: 4.5 metres between the fence and single-story buildings;
  7.5 metres between the fence and multiple-story buildings;
  2.0 metres between the fence and a fill slope or stockpile.
- Sediment Fences should be aligned with the contour wherever possible.
- The fence may need to be constructed in sections to avoid the concentration of sheet flow. Small upslope returns placed at about 30 metres spacing, should be used to isolate sections of the fence and prevent the concentration of sheet flow.
- As a general guide, the maximum recommended spacing of parallel fences down a long exposed slope is given by the following formula:

Maximum spacing ≈ 48 [log(**H**)] - 6 metres

≡ 90 - 48 [log(**% slope**)] metres

Where: **H** is the horizontal slope component defined by **H**(H):1(V) and (**% slope**) = (100/**H**)

- **Sediment Fences should not be located across streams, ditches, channels or gullies.**

Hydraulic conditions:

- Maximum concentrated flow of around 40 L/s.
- Maximum drainage area of around 0.6 hectares per 100 metres of fence.
- Sufficient area must exist upslope of the fence to allow the temporary ponding.
- The ends of the fence should be turned upslope to prevent flow bypassing the fence.
- On long fences, spill-through weirs should be installed at 20 – 30 metres spacing.

Fences adjacent to fill slopes and stockpiles:

- Locate at least 2 metres from the base of the fill slope or stockpile to avoid being damaged by falling rocks or shifting soil. Otherwise, parallel fences should be installed with the second fence at least 1 metre downslope of the first fence.

Installation:

- Filter fabric should be anchored into a 150 to 200 mm deep trench.
- Excavated spoil should be deposited upslope of the fence.
- In locations where a trench cannot be excavated, a continuous layer of gravel may be placed over a minimum 200 mm length of the fabric laid upslope of the fence.
- Minimum 300 mm sewn overlap at joints, or securely attached to twin posts.
- The fence may be backed with securely anchored Straw Bales or gabions.
- Maximum post spacing: 3 metres with wire mesh (200 mm opening) backing;
  2 metres without wire mesh backing;
  0.5 metres when installed in a U-shape across minor drains.

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Figure 4 Stock Pile Management

Figure 5 Whoa- Boy Erosion Control Measure – Roads

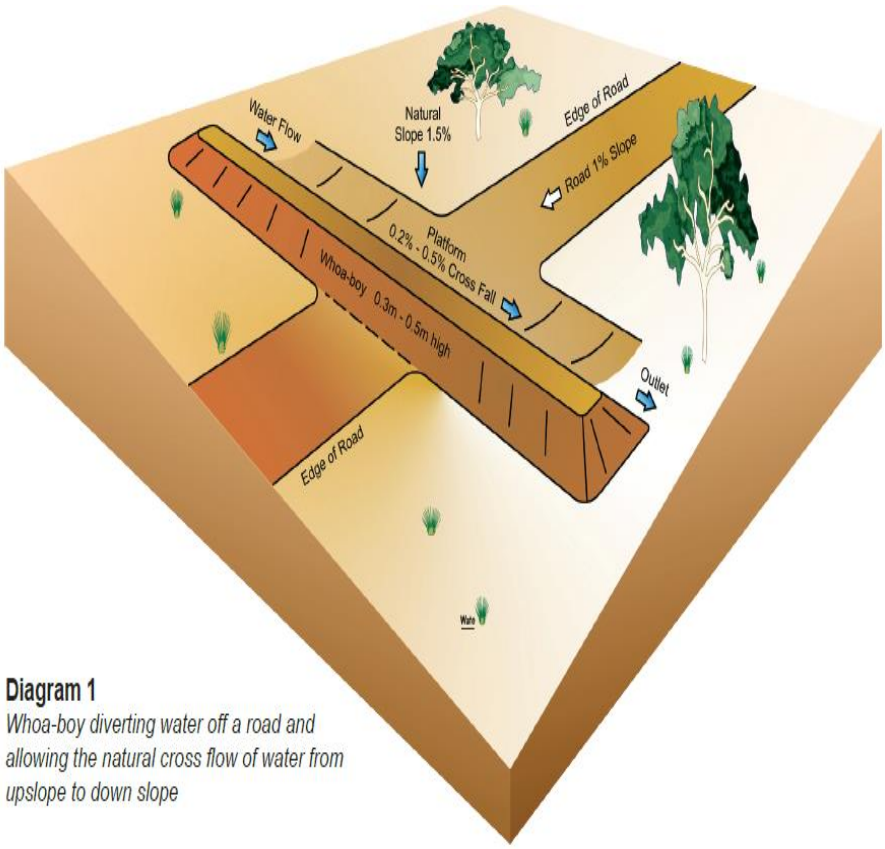


Diagram 1
Whoa-boy diverting water off a road and allowing the natural cross flow of water from upslope to down slope

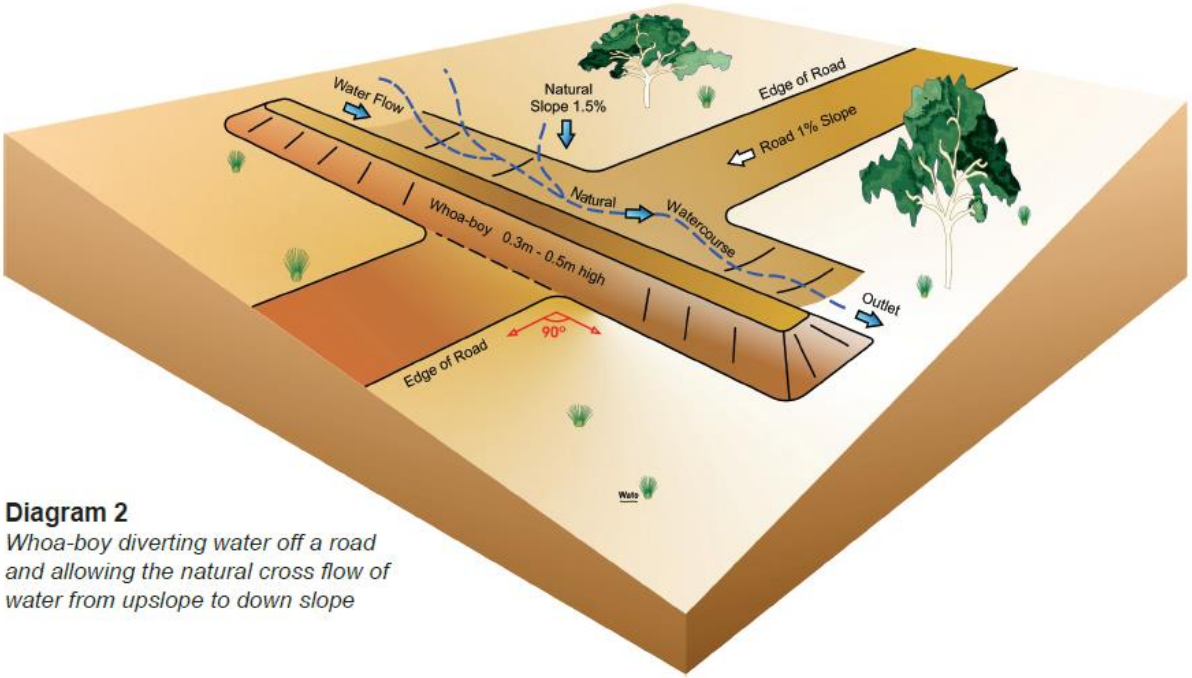
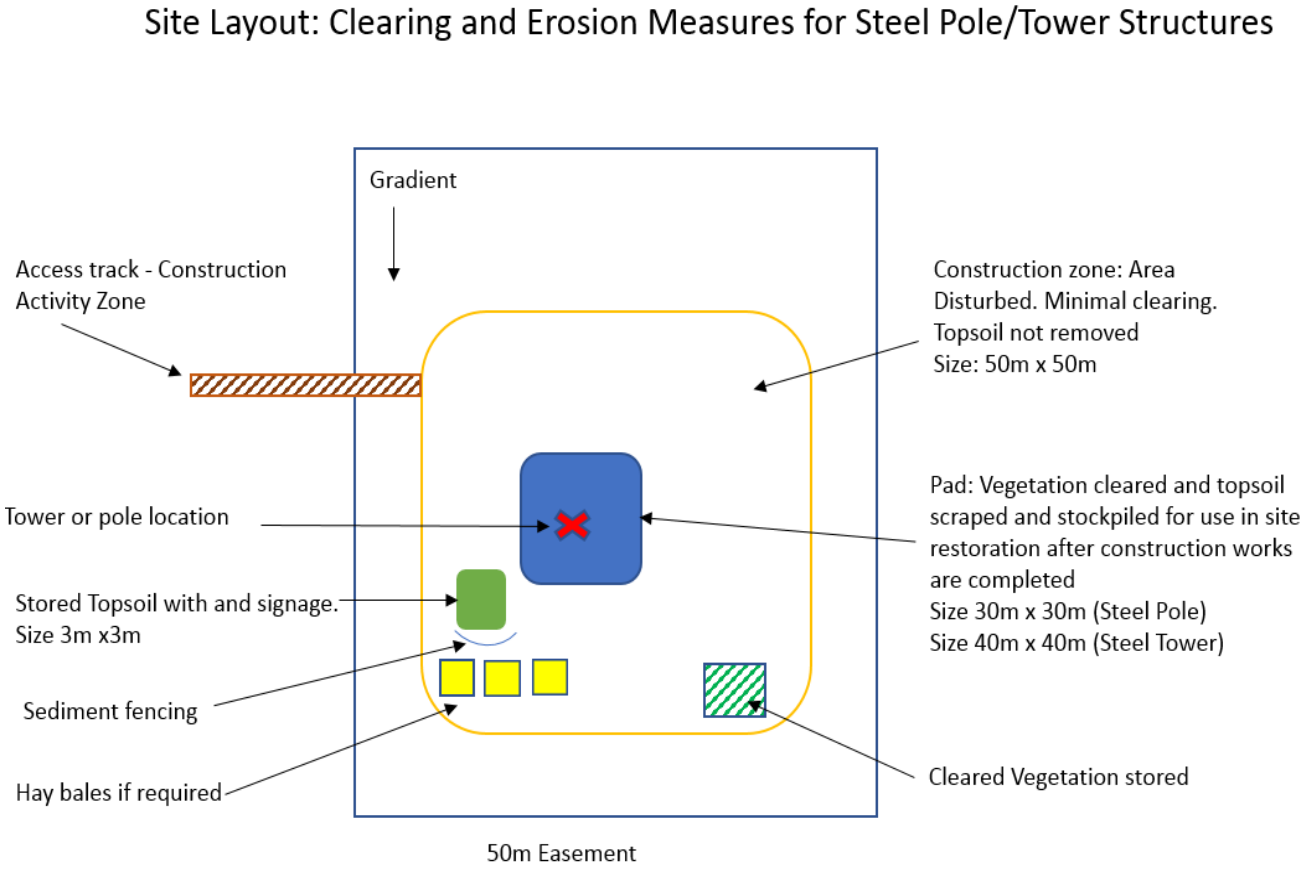


Diagram 2
Whoa-boy diverting water off a road and allowing the natural cross flow of water from upslope to down slope

Figure 6 Site layout for Clearing and Erosion Control



APPENDIX 6 – DEWATERING PROCEDURE

Purpose

The purpose of this document is to describe the procedure for dewatering activities conducted on all UGL Sites and to highlight the need to update the relevant SWMS (Safe Work Method Statement) for the work task prior to undertaking any dewatering activity.

Scope

In the context of this procedure, dewatering refers to the removal and treatment of collected water from foundations, pits, and trenches as part of project related construction activities directed by UGL and its subcontractors.

These waters, if of suitable quality, will generally be discharged into the environment. As such they must be treated to an appropriate level prior to release. At no time, will discharged waters be allowed to adversely impact the environment or be released directly to a water course or drain. The purpose of this procedure is to protect:

- Water quality of local, creeks, rivers or dams;
- Groundwater systems;
- Aquatic ecosystems including riparian zones and wetlands; and
- Terrestrial ecosystems including bare ground, pastures, grasslands, and woodlands.

Responsibility

The Construction Manager will be responsible for ensuring that this procedure is understood and adhered to by all project personnel. The SWMS for the associated work activity must be updated prior to dewatering. Ensure that the following points are considered:

- Weather (if there has been recent rain there is a greater risk of sediment transportation and erosion);
- The suitability of the receiving environment to accept the water (ensure that any discharge does not adversely impact the receiving environment);
- The potential impact of contaminants / pollutants on the receiving environment;
- Slope and erodibility of the site;
- The quality and quantity of water to be removed; and
- The type of treatment potentially required prior to its release.

It is the responsibility to the Site Supervisor to ensure that a competent person is in attendance during dewatering. The SEA/HSSE Team will be present if available or consulted prior to commencing dewatering if using the Flocculation Method (below).

Dewatering

Dewatering activities involve removing water from foundations, pits or trenches. Several different methods are available for dewatering. These include use of water for irrigation of re-vegetated areas or dust suppression, vacuum trucks, or filtration and treatment (flocculation).

Project location, proximity to sensitive areas, budget and time constraints will determine the likely method used for dewatering. The most likely methods used will be the Filtration or Flocculation methods.

Water to be released must be free of hydrocarbon odours, scums or slicks, sediment, waste materials or other visible contaminants. In acid sulphate soil areas, pH of water must also be checked to ensure that the pH of the water is within target levels.

Selection of Dewatering Method – Field Test
To determine if you can discharge water without treatment an infield quantitative test needs to be performed. This will be conducted by using a portable, hand held device which will test the discharged waters for TSS and ph. Any testing results are recorded on the Dewatering Permit.

Note - Clean surface water can be discharged to a suitable area without the need for filtration. Energy dissipation such as a section of rock, sediment fence or geofabric may be required at the discharge point to avoid scouring.

Filtration Method
This method should be used when levels of suspended sediment are minimal (i.e. you can see through the soft drink bottle).

Process
1. Update SWMS - if unacceptable hazards are encountered during this process DO NOT dewater until the hazards are sufficiently controlled.

2. Install sediment fencing, geofabric sock, or another sediment filtration device below and away from the site to be dewatered. The discharge area should be stable and well vegetated and away from work areas. Ensure the inlet is suspended about the mud/silt in the bottom of the water column.

3. Begin pumping water with the discharge point contained by the sediment fencing or geofabric sock. If the water begins to carry suspended sediment (look for changes in colour, turbidity and viscosity) dewatering should cease immediately. Consider dewatering using the Flocculation Method (below).

4. When dewatering has been completed, remove the filtration device when sufficiently dry. Only slight ground staining should be evident.

Flocculation Method
This method should be used when levels of suspended sediments are high (i.e. you can't see through the soft drink bottle) or when working next to sensitive areas. The SEA /HSSE Advisor must be consulted prior to use of this method. Potential downstream impacts must be assessed as part of the SWMS and an MSDS for the selected flocculent filed on site.

Process
1. Update SWMS - if unacceptable hazards are encountered during this process DO NOT dewater until the hazards are sufficiently controlled.

2. Excavate a settling pit below and away from the work area with enough capacity to hold the expected quantity of water to be discharged. It is possible to use an existing excavation for this purpose if it is of sufficient depth.

3. Ensure the inlet is suspended about the mud/silt in the bottom of the water column. Anchor the discharge hose with a star picket to ensure that water is pumped continuously into the settling pit and monitor the incoming water level. If close to overflowing cease dewatering. All pits must be sufficiently barricaded to prevent injury.

4. Mix in the flocculent. The most suitable flocculent is likely to be gypsum (sold as Gypsum Clay Breaker from hardware stores). Gypsum must be thoroughly mixed through the water column and should be added to the water while the pit is filling to assist with mixing. Leave the water for at least 3 days to ensure

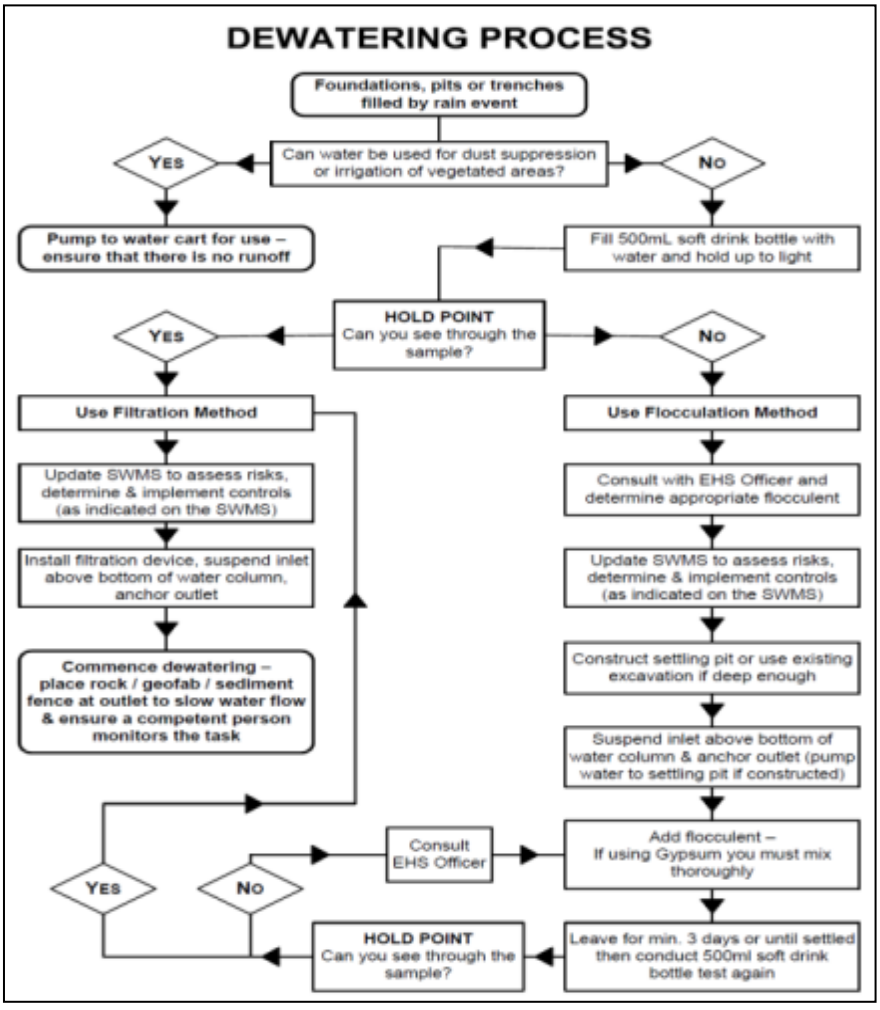
that all sediment settles out prior to dewatering. Application rates will vary depending on the soil type but will range from 3kg per 10,000 litres of water to 10kg per 10,000 litres.

5. Once dewatering is complete backfill pits when sufficiently dry. Remove any sediment fencing or containment devices that are no longer required.

Work Instructions

In addition to the above requirements the following instructions relating to the dewatering of foundations, pits, and trenches have been defined. All UGL employees and subcontractors are required to observe the following;

- DO NOT discharge waters known to carry harmful pollutants. Where reasonable concern exists, carry out sampling first to determine the nature and concentration of contaminant;
- DO NOT dewater directly into a drain, culvert, gutter, creek, stream or river;
- DO NOT discharge water near a building, service or structure;
- DO NOT discharge waters such that scouring may occur (avoid dispersive soils, disturbed areas, fill batters and steep slopes);
- DO NOT discharge water without adequate controls in place; and
- DO NOT discharge waters accumulated in Acid Sulphate Soils / Potential Acid Sulphate Soils without first testing and treating the water as appropriate. See relevant Acid Sulphate Soils Management Plan if relevant to the site.



Note: Using the drink bottle is a guide.

APPENDIX 7 – CONCRETE WASHOUT PROCEDURE

Introduction
During construction works will require Concrete pours on site. This procedure has been developed to ensure a standard design is available, so all sites have a uniform approach to the design, construction, maintenance and decommissioning of a concrete washout pit.

Scope
The scope of the Concrete washout procedure covers all UGL Sites and construction activities, including subcontractor works as defined by the CEMP.

References
The following references have been identified;

- CEMP;
- Weekly Environmental Checklist; and
- Monthly Environmental Checklist.

Design Standard Requirements
The following standards will apply to all concrete washout pits. The size of the pit will depend on the amount of concrete anticipated to be poured.

- The pit should be at least 300mm deep with a liner either geofabric or plastic;
- The excavated material should be used to construct a bund around the pit and the liner should cover the bunds;
- The pit should be fenced/barricaded; and
- A sign shall be installed adjacent to each temporary concrete washout facility to inform concrete equipment operators to utilise the proper facilities.

Location: The location is to be agreed upon with the SEA/HSSE Advisor/Construction Manager prior to works commencing. It MUST be marked up on the site map. Ensure that the Concrete Washout Pit has easy access for Concrete trucks to enter and exit safely and be located away from overhead services so Concrete trucks do not enter exclusion zones. All concrete truck drivers are to be made aware of the location of the pit.

Responsibilities
Site Supervisor/Construction Manager:

- Ensure all contractors are aware that all concrete washout waste must be washed out in the designated washout area;
- Ensure the concrete pit does not overflow; and
- Ensure the concrete washout pit is fully functional always.

SEA/HSSE Advisor:

- To ensure pit is correctly constructed and well maintained; and
- To promptly communicate any issues arising to the Site Supervisor for rectification.

Monitoring and Reporting
Monitoring of the concrete washout pit will be performed weekly by the Site Supervisor or delegated person whilst monthly (or as otherwise directed) monitoring will be assigned to the UGL SEA/HSSE or his designate. On conformances, will be issued for the following:

- Overflowing;

- Concrete waste not contained in pit;
- Not lined with either geofabric or plastic; and
- Insufficiently rehabilitated.

**Note: hard concrete waste may be removed next to pit whilst emptying but should not be permanently kept next to the pit.*

Site Rehabilitation

Once all the works are completed the concrete washout pit must be decommissioned and returned to the original state of the location. This can easily be achieved by pushing the bunds back into the pit. The Concrete Washout Pit will need to be seeded if it was on a previously located grassed area.

Examples of well contained, bunding requirements – fenced, signed, liners & easy access:

APPENDIX 8 - WASTE MANAGEMENT PLAN

INTRODUCTION

Purpose

The purpose of this plan is to set out the waste management practices and procedures to be implemented by the site/project.

Objective

The environmental objectives with regard to waste and energy management during the construction phase are:

- Minimise and manage the generation of waste from construction activities of the Project by reducing waste streams and recycling material where possible;
- Dispose of waste in an environmentally acceptable manner and consistent with the requirements of the relevant regulatory authority;
- All waste contractors are to be certified; and
- Reduce energy consumption.

Potential Environmental Impacts

Waste streams anticipated to be generated from construction activities can be:

- Waste soils;
- Contaminated soils;
- Wastewater;
- Stormwater;
- Sewerage waste;
- Industrial wastes such as scrap metals;
- Controlled wastes such as hydrocarbon waste and paint residues; and
- Domestic wastes.

The potential impacts of the Project associated with poor waste and energy management during the construction phase are:

- Potential soil, groundwater/surface contamination through waste or leachate spills or leakage as a result of inappropriate storage and disposal;
- Attraction of non-indigenous fauna and/or native animals through putrescible wastes;
- Fire risk in waste storage areas;
- The visual amenity impacted by litters;
- Offensive odours from waste storage areas;
- Excessive waste generation/inefficient use of resources;
- Resource depletion; and
- Air emissions.

Management and Contingency Mitigation Measures

The following Waste Management measures will be implemented:

- This WMP will be implemented, revised and updated as required;
- All forms of waste from the construction of the Project will be minimised;

- All wastes to be characterised and separated into categories and recycled / reused where possible;
- Continuous improvement of waste avoidance, reduction and recovery throughout the Project;
- Subcontractors will sort recycling and rubbish at their contractor area and place in the designated waste bins provided;
- Report immediately to relevant authorities any incident where harmful waste material is released to the environment;
- Formalisation of a work procedure for all excavation works across the construction area of the site, detailing the safety procedures inclusive of personal protective equipment (PPE) to be worn, followed and adhered to by all site personnel;
- Provision of waste laydown and transfer facility to sort and manage wastes generated onsite;
- Hazardous wastes to be stored within secured bounded containers, wastes to be segregated into labelled bins and disposed offsite;
- Formalisation of a work procedure for any offsite disposal of uncontrolled fill to a suitably licensed landfill facility;
- Regular inspection of the works to ensure procedures and precautions are in place to minimise risk to human health and the environment;
- The development of a contingency response if monitoring indicates a risk to sensitive receptors or human health;
- Reporting of Greenhouse emissions and energy consumption; and
- Implementation of Energy reduction programs.

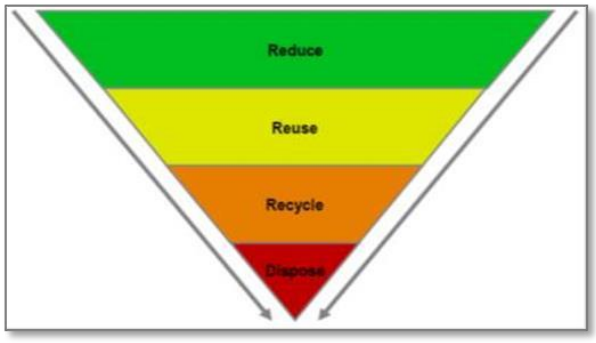
The success of management strategies will be reviewed on a regular basis to confirm its continued suitability for the site. Should the risk to the environment or to human health change during the construction period, management options will be reviewed.

IDENTIFY AND ASSESS

Waste Management Hierarchy (WMH)

The Waste Management Hierarchy (WMH) describes the approach to waste management, to ensure the most efficient use of resources to reduce environmental harm, and to provide for the continual reduction in waste generation in line with the principles of ecologically sustainable development. For the duration of the Project, UGL will identify and implement strategies to reduce, reuse, recycle and dispose of material onsite.

The WMH, from most desirable to least desirable, is presented below:



- **Reduce:** Avoid waste by reducing the quantity of waste being generated. This is the simplest and most cost-effective way to minimise waste. It is the most preferred option in the WMH.
- **Reuse:** Reuse is when a product is used again for the same or similar use, without reprocessing. Reusing a product more than once in its original form reduces the waste generation and energy consumption associated with recycling.

- **Recycle:** Recycling involves processing waste into a similar non-waste product, which consumes less energy than production from raw materials. Recycling prevents further environmental degradation and saves landfill space and resources.
- **Dispose:** Removing waste from worksites, compounds and offices, and discarding the material in a licensed landfill site, or other appropriately licensed facility.

Waste Classification

Where waste cannot be avoided, reused or recycled it will be classified in accordance with the DECCW Guidelines "Waste Classification Guidelines" (DECC, 2009). These guidelines outline how to assess and classify waste and set out management options for the disposal of classified waste. A brief outline of the waste classification steps, as summarised in the Waste Classification Guidelines, is as follows:

- Establish if the waste should be classified as special waste;
- If not special waste, establish whether the waste should be classified as liquid waste.;
- If not special waste or liquid waste, establish whether the waste is of a type that has already been classified. To simplify this classification process, DECCW has 'pre-classified' a number of commonly generated wastes;
- If the waste is not special waste, liquid waste or pre-classified, establish if it has certain hazardous characteristics and can therefore be classified as hazardous waste;
- If the waste does not possess hazardous characteristics, it needs to be chemically assessed to determine what class of waste it is. If the waste is not chemically assessed, it should be treated as hazardous waste; and
- If the waste is chemically assessed as general solid waste, a further test is available to determine whether the waste is putrescible or non-putrescible. This test determines whether the waste is capable of significant biological transformation. If the waste is not tested, it should be managed as general solid waste (putrescible).

Potential Sources of Waste

Avoiding the generation of waste remains of highest importance to (project) when considering waste minimisation and management measures.

Waste management and reuse strategies will be considered and implemented where practical and cost-effective as outlined in Table 1 (below). On-site reuse opportunities will be maximised, with efforts made to implement reuse and recycling initiatives.

The below table lists the waste generating aspects and identifies the range of solid, hazardous, special and liquid wastes that are likely to be generated by construction. It also outlines the proposed reuse, recycling or disposal method.

Table 1 - Potential Waste Streams

Activity/Waste	Types	Classification	Proposed Reuse / Recycling / Disposal Method
Demolition/Site clearing	Vegetation (logs, mulched timber, weeds)	General Solid (non-putrescible)	Native Vegetation –Reuse as biodiversity measures such as habitat enhancement, compost for topsoil or soil conditioner, or modify mulching equipment to create woodchip. Weeds – Off-site disposal
	Concrete, brick asphalt and gravel	General Solid (non-putrescible)	Crushed and used as backfill or as road base

	Scrap metal	General Solid (non-	Off-site recycling
Excavation	VENM (Virgin Excavated Natural	Classification based on soil tests carried out pre-construction and in accordance with the DECCW document Waste Classification Guidelines: Parts 1 and 2 (DECC 2009)	Beneficial reuse onsite (such as noise mounds) Balance cut and fill earthworks, where possible, to optimise reuse on the Project Relocate VENM or ENM to another (ElectraNet) Project
	Potentially contaminated soils		Off-site disposal at an approved facility
Building/construction waste	Steel reinforcing	General Solid (non-	Off-site recycling
	Conduits and pipes	General Solid (non-	Off-site recycling
	Concrete (solids and washouts) and asphalt	General Solid (non-putrescible)	Crushed and used as backfill or as road base
	Timber formwork	General Solid (non-putrescible)	Reuse onsite where possible or Off-site recycling
	Packaging materials, including wood, plastic, cardboard and	General Solid (non-putrescible)	Off-site disposal at an approved facility
	Empty oil and other drums	General Solid (non-putrescible)	Off-site recycling
	Pesticides, herbicides, spill clean ups, paints and other chemicals	Hazardous waste	Off-site disposal at an approved facility
	Metals and bulk electrical	General Solid (non-putrescible)	Off-site recycling
General waste from compounds	Tyres	Special waste	Off-site disposal at an approved facility
	Waste generated by the maintenance of equipment including air and oil filters,	General Solid (non-putrescible)	Off-site disposal at an approved facility
	Oil, grease, fuel, chemicals and other	Liquid	Off-site disposal at an approved facility
	Batteries	Hazardous waste	Off-site disposal at an approved facility

	Domestic waste generated by workers	General solid (putrescible)	Off-site disposal at an approved facility
	Sewage	General solid (putrescible)	Off-site disposal at an approved facility
	Waste water / recycled	Liquid	Off-site disposal at an approved facility, or use of onsite sewer system
Office Waste	Paper, cardboard and plastic	General Solid (non-putrescible)	Off-site recycling
	Glass bottles and aluminium	General Solid (non-putrescible)	Off-site recycling
	Ink cartridges	General Solid (non-putrescible)	Off-site recycling
	Domestic waste generated by workers	General Solid (putrescible)	Off-site disposal at an approved facility
Camp waste			
Laydown waste			
Concrete Batch plants			

Potential Waste and Reuse Impacts

The potential adverse impacts that could be caused during construction include:

- Excessive waste to landfill;
- Not meeting (ElectraNet) environmental objectives;
- Additional risks associated with inadequately controlling the process of classifying, storing and finally disposing of wastes, causing pollution and possibly exposing (ElectraNet) to future action to recover deposited materials, repatriate to an appropriate receiving location and remediate land; and
- Life Cycle impacts associated with prematurely losing a recyclable resource to landfill.

Waste Disposal Subcontractors and Waste Receiving Facilities

The following table outlines the potential waste subcontractors, licensed waste management facilities that may be used by the project - amend to suit local waste service providers details.

Table 2 - List of Potential Waste Contractors and Waste Facilities

Name	Service Details	Contact Details	Waste Accepted	Waste Recycled
TBC	Waste disposal and reduction services	TBC	General, construction, industrial	Timber, oil
TBC	Waste disposal and reduction services	TBC	General, construction, industrial	N/A
TBC	Waste and recycling services	TBC	Grease, oil, effluent, septic, general, construction, industrial	Glass, plastic, steel and aluminium cans, paper and cardboard
TBC	Waste disposal and reduction services	TBC	Domestic, building, commercial, industrial waste	N/A

Water Conservation and Reuse

During the construction of the Project, UGL will actively promote and ensure the responsible use of water and water efficient work practices, whilst achieving its other related environmental obligations (i.e. dust suppression).

The construction of the Project may require the use of substantial volumes of water, with the key water usage activities being the construction of roads and structures (i.e. for concrete and dust suppression).

The key mitigation strategy will include the collection and reuse of surface runoff (e.g. sedimentation basins) for dust suppression, wash down, and use in amenities or revegetation.

Energy Usage

Energy will be consumed for the duration of the Project primarily in the form of fuel (petrol and diesel) and electricity. This energy usage will result in the emission of greenhouse gases.

The different aspects of the Project which will consume energy and emit greenhouse gases include:

- Combustion of fuel in vehicles, plant and equipment operation - direct emissions;
- Electricity used at site compounds - indirect emissions; and
- Use of construction materials, including concrete, hot mix, asphalt, aggregates and steel – indirect emissions (embodied energy).

National Greenhouse and Energy Reporting Act, 2007 (NGER Act)

The NGER Act 2007 introduces a single national reporting framework for the reporting and dissemination of information related to greenhouse gas emissions, greenhouse gas projects, energy consumption and energy production of corporations. The NGER Act requires that larger energy users and Greenhouse Gas (GHG) emitters that trigger a certain level of direct GHG emissions, or total energy produced or consumed must report on GHG emissions to the DECCW.

The NGER Act 2007 also requires reporting on the energy emissions resulting from various construction activities. There are three different scopes of emissions. The Project is required to report on Scope 1 and Scope 2 emissions under the NGER Act. Whilst reporting of Scope 3 emissions is voluntary it is anticipated that it will become a requirement in the future.

IMPLEMENT CONTROLS

Waste and Energy Management Control Measures

Project mitigation and management measures for waste and energy impacts during construction are outlined in the table below:

Control Measure	Responsible	Implementation Time
A Waste Register for disposal and/or recycling; including amounts, date and time and details, and location of disposal.	SEA	Whole of Project Life
Identification of opportunities to avoid, reuse and recycle, in accordance with the waste hierarchy.	SEA	Whole of Project Life
Provision for recycling management onsite.	SEA	Whole of Project Life
Complete the Environmental report monthly or as required (energy and waste reporting).	SEA	Whole of Project Life
Bins or skips will be used as temporary storage for waste generated and collection of these wastes will be periodic and dependent on levels of waste generation.	SEA	Whole of Project Life
Waste storage areas will be approved by the HSE Advisor department, sign posted, adequately bunded and located away from sensitive receptors/areas, drainage lines and	SEA	Whole of Project Life
Waste streams will be appropriately segregated and stored as either General waste, Recyclables waste or Regulated wastes within appropriate vessels; dependent on disposal, treatment and recycling options.	SEA	Whole of Project Life
Cement or concrete water in solution, slurry or liquid form will be contained in an impervious concrete washout pit or receptacle whereby it cannot be released to waters.	SEA	Whole of Project Life
All temporary toilets shall be cleaned, maintained/serviced daily and be kept in a constant sanitary condition in accordance with all applicable health regulations. All portable toilets shall have an audible and visual alarm system installed to indicate when the septic/sewerage tanks are at full capacity.	SEA	Whole of Project Life
All waste streams will be collected and transported by a licensed waste contractor for recycling, reuse, treatment or disposal at approved licensed waste facilities. Only licensed regulated waste contractors will transport waste streams classified as	SEA	Whole of Project Life
All waste hauled from site shall be covered.	SEA	Whole of Project Life

INSPECTIONS AND MONITORING

Monitoring, Inspection and Reporting

Daily visual inspections of the construction site will be undertaken by the HSE Advisor and construction personnel to identify any potential waste management issues. Any actions to be undertaken as a result of site inspections will be recorded in the site issues register.

Waste Register

A Waste Register will be maintained by the SEA and Subcontractors to record the management of wastes from the Project Dockets / receipts / manifests (maintain records). Waste tracking will be undertaken by recording the date of waste removal, identifying the waste transport contractor and destination of the

wastes from the worksite. Details of wastes removed from site will be included in monthly reports to ElectraNet.

Waste Tracking

The following wastes are subject to special monitoring and reporting requirements by DECCW under the waste tracking system:

- Hazardous non-liquid waste (e.g. batteries);
- industrial non-liquid waste; and
- liquid wastes including non-recyclable oils, fuels, chemicals and paint.

The Project has two options in order to comply with its waste tracking requirements, as follows:

- To deal directly with a licensed waste facility; and
- To enter into an agreement with an authorised contractor who can make the arrangements on behalf of the project.

Table 3: Construction & Demolition waste and recycling definitions

Material category	Definition of material category
Vegetation Waste	Vegetation such as leaves, grass clippings, branches and logs. Includes materials that have been processed e.g. sawn, chipped, mulched or composted. Does not include putrescible waste such as food scraps.
Concrete	Mixture of cement, sand and aggregates. May include additives or substitutes such as fly ash.
Fill	Excavated material such as clay, gravel, sand, soil and rock that has been mixed with another waste or excavated from areas that are contaminated with manufactured chemicals, as the result of industrial, commercial, mining or agricultural activities.
Asphalt	Any materials containing bisemous hydrocarbons. May contain additives such as concrete. Includes recycled asphalt pavement.
Timber	Wood materials used for formwork or other construction purposes.
Virgin excavated natural material	Virgin excavated natural material such as clay, gravel, sand, soil and rock that is **not** mixed with any other waste and has been excavated from areas that are **not** contaminated with manufactured chemicals, as the result of industrial, commercial, mining or agricultural activities.
Bricks and roof tiles	Clay bricks and roof tiles which may be mixed together. This can include small amounts of concrete or plaster render.
Glass	Sheet glass used for doors, windows, partitioning etc.
Plasterboard	Composite material of gypsum and cardboard used for interior panels for buildings.
Steel	Metal building products and materials e.g. reinforcing steel, sheet roofing, structural columns and beams etc.
Non-ferrous metal	Metal building materials other than steel e.g. aluminium, brass, copper etc.
Mixed Waste	Mixed demolition waste of which no one material comprises 50% or more of the load.
Other categories	Agencies can report on other categories of waste they are generating or recycling, please specify.
Total quantity generated	The combination of the amount of waste disposed to landfill and the amount recycled. For example, 800 tonnes recycled and 200 tonnes to landfill equals 1,000 tonnes generated.

APPENDIX 9 – ENVIRONMENTAL RECORDS FOLDER STRUCTURE

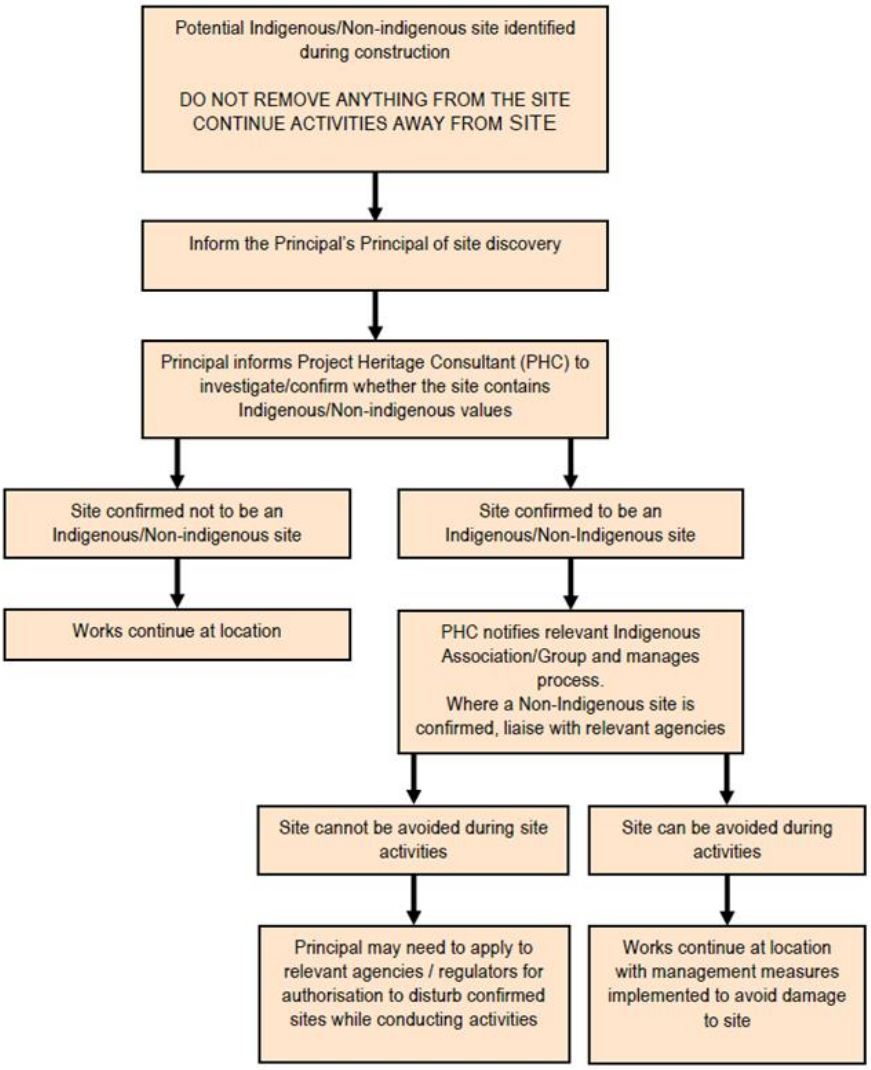
Folder	Prepopulated Yes/No	Notes
X01 ElectraNet Documents		
1.1 Environmental Specification	Yes	If ElectraNet issues
1.2 ElectraNet CEMP	Yes	If ElectraNet issues
1.3 ElectraNet Licences, Approvals, Permits, EA	Yes	DA, Cultural heritage plans, permits, approvals
1.4 Geotechnical Report	Yes	
1.5 EIS-EIA-REF	Yes	
2 UGL Documentation – CEMP		
2.1 UGL CEMP	Yes	
2.2 Environmental Legislation	No	
2.3 IECA Guidelines	No	
2.4 E/S - The Field Guide for Supervisors	Yes	A good guideline book to see how to put in additional controls
2.5 Environmental Procedures	Yes	
3 Site Inspection Checklists & Audits		
3.1 Monthly Inspection Checklist	Yes	Template only
3.2 Weekly Inspection Checklist	Yes	Template only
3.3 ElectraNet Monthly Report	No	Add in if ElectraNet does inspections
3.4 Environmental Legal Compliance	No	Ongoing with legal updates included. Save all enviro alerts in this folder.
3.5 ElectraNet Environmental Inspections	No	Add in as required
3.6 Post Rainfall Event Inspections	No	Add in as required
4 Environmental Drawings	Yes	Site stormwater and erosion and sediment control drawings
5 Environmental Photos	No	Any site photos in here date folders if you can
6 Issue Register & Incident Investigation		
6.1 Issuers Register	No	If required by ElectraNet
6.2 Incident Investigation Sand Report	No	Only if incidents reports are prepared
7 Subcontractor Documents	As required	Subcontractor CEMP, ESWMS
8 Registers		
8.1 Weed Hygiene Declarations	Yes	UGL Form has specific forms
8.2 Waste Disposal Certificates	No	All waste disposal certificates
8.3 RIFA Inspection Log	Yes	Only for some areas of QLD
8.4 Spoil Test Results	No	Add in per site soil tests
9 NGER Reporting	Yes	Monthly reports to be completed, waste register. Master sheet in folder. Save each month as a new month
10 Training		
10.1 Training Packages	Yes	
10.2 Toolboxes	Yes	These are coming and will be added to
10.3 Posters	Yes	Added in, snakes, fire, dust, more being developed
11 Miscellaneous	No	This will be the best place to add new folders or site information. At project set up I will add other documentation in here e.g. org charts, programmes etc
12 Sustainability	No	Used for ISCA ratings – Not required for this project

APPENDIX 10 - CULTURAL HERITAGE CONTRAINTS

Figure 1 Green Flagging utilised for Cultural Heritage areas

When CH reports received from Oz Minerals, conditions will be added into his section

Flowchart for Accidental Find - ElectraNet Process: Identification Potential Cultural Heritage Site



APPENDIX 11 – CONSTRUCTION ACTIVITY ZONES

Construction Activity Zones diagrams are being prepared and will be submitted separately

**NOTE: The scope of works below reflects the most updated information available and is subject to change.*

Figure 1 Location of SP4 in relation to project

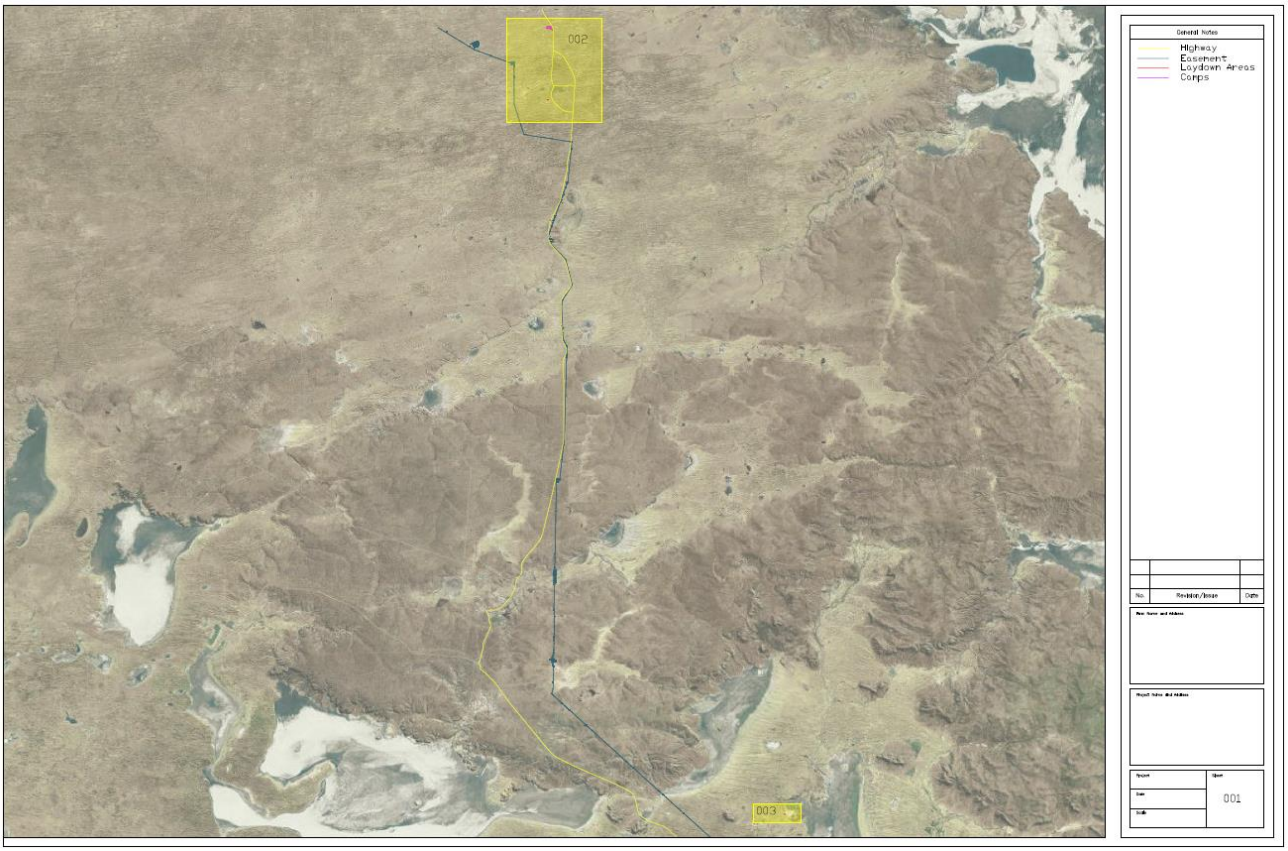


Figure 2 Camp and Laydown Olympic Dam

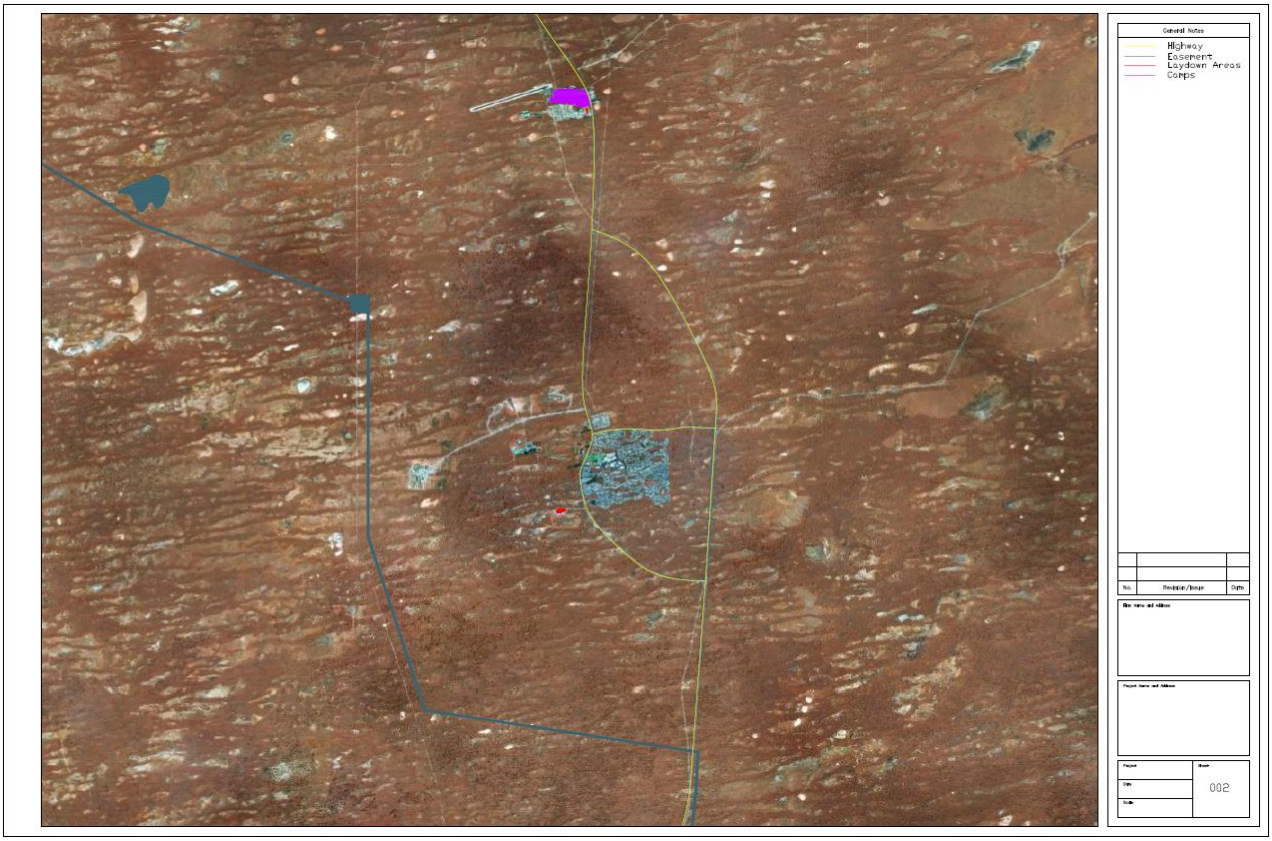


Figure 3 Camp and Laydown Mount Gunson Copper Mine

APPENDIX 12 - UGL ENVIRONMENTAL PROCEDURES

UGL Documents Associated with Environmental Mitigation Measures	
The Hazardous Chemicals User Guide sets the minimum acceptable procedures to follow regarding the introduction and use of hazardous substances or dangerous goods, which are referred to as Hazardous Chemicals.	EIMS-7-6030 Hazardous Chemicals User Guide
The purpose of this procedure is to detail the minimum requirements for responding to spillage or loss of containment chemical or other pollutants and remediation of any related environmental impacts.	EIMS-4-9950 Spill Response and Remediation
The purpose of this procedure is to outline UGL guidelines for the management of Air Quality.	EIMS-7-6064 Air Quality Management User Guide
To outline UGL's commitment to preserving the harmony and establishing relationships with impacted communities throughout our operations and project lifecycle.	EIMS-7-6110 Community Management Guide
To prevent impact on native plants and animals and maintain health of natural areas.	EIMS-7-6196 Flora and Fauna Management
To outline guidelines for the minimisation and control of noise emissions and vibrations associated with UGL operations or projects.	EIMS-7-6197 Noise and Vibration Management
To ensure that the waste streams generated by UGL operational activities are identified with appropriate storage and disposal controls implemented to prevent contamination of the environment or personnel.	EIMS-7-6198 Waste Management
To detail the minimum requirements for eliminating or, as far as is reasonably practicable, minimising the risk of impacts on tangible cultural heritage.	EIMS-7-6199 Heritage Management
To outline UGL guidelines for the effective prevention and control of pest infestation.	EIMS-7-6200 Pest Management
To outline UGL guidelines for the effective prevention and control of weed outbreak or infestation.	EIMS-7-6201 Weed Management
Controls for the management of sedimentation and erosion need to take place well before site establishment or the risk is present. Planning must occur during the planning phase of construction to ensure measures are costed and installed as soon as possible.	EIMS-7-6204 Erosion and Sediment Control
This guideline details the minimum requirements for any asbestos presence or asbestos remediation required on any UGL sites.	EIMS-4-9905 Asbestos Management
This procedure provides guidance on minimum requirements to be implemented for managing hazards associated with asbestos and synthetic mineral fibres.	EIMS-4-9851 Asbestos and Synthetic Mineral Fibres
A complete understanding of the water quality risks posed at the site is required and appropriate controls implemented.	EIMS-7-6205 Water Quality Management
A complete understanding of the water quality risks posed at the site is required and appropriate controls implemented.	EIMS-7-6205 Water Quality Management

APPENDIX 13 – CEMP SIGN OFF SHEET

THE FOLLOWING EMPLOYEES HAVE COMPLETED TRAINING			
Course / Training Title:			
Course Number:			
Course Provider's Name:	UGL		
External Course Provider:			
Location of Course:		State:	
Duration (day/s):		Date/s:	
Employee Name	**Employee Signature**	**Employee Position**	**Employee's Site**
Course Provider's Signature:		Date:	
Original to remain on site	**Copy to Human Resources**		

Appendix B Port Augusta Council Letter

RECEIVED 28 DEC 2018

Civic Centre: 4 Mackay Street
Port Augusta South Australia 5700

Postal Address: PO Box 1704
Port Augusta South Australia 5700

Telephone (08) 8641 9100
Facsimile (08) 8641 0357

admin@portaugusta.sa.gov.au
www.portaugusta.sa.gov.au

Port Augusta
CITY COUNCIL

File Name: F15/729
Record No: AR18/52046

21 December 2018

Michael Bails
ElectraNet Pty Ltd (ElectraNet)
PO Box 7096
HUTT STREET SA 5000

Dear Michael,

Re: ElectraNet 132kV Line Replacement Project – Port Augusta

The Port Augusta City Council (PACC) acknowledges receipt of the notice of intention to carry out line replacement work (Work) on the land identified in the table below in January 2019 pursuant to Section 47(3) of the Electricity Act 1996 (SA) (Act) issued by ElectraNet on 24 October 2018.

Council at its meeting on 11 December 2018 agreed to the widening of the current easement, on the condition that Electranet provide appropriate compensation for the additional land captured by the easement, as outlined in your correspondence dated 30 August 2018.

The Council confirms its agreement for the line replacement work to proceed conditional upon ElectraNet's compliance with all applicable development, cultural heritage and native vegetation approvals for the Work and ElectraNet is required to provide the Council with copies of those approvals not less than 7 days prior to the commencement of Work.

As provided by Section 47 (13) of the Act ElectraNet will be required to make good any damage caused by the exercise of powers under Section 47 as soon as practicable or pay reasonable compensation for the damage.

Table of affected parcels held by Corporation of the City of Port Augusta (Land)

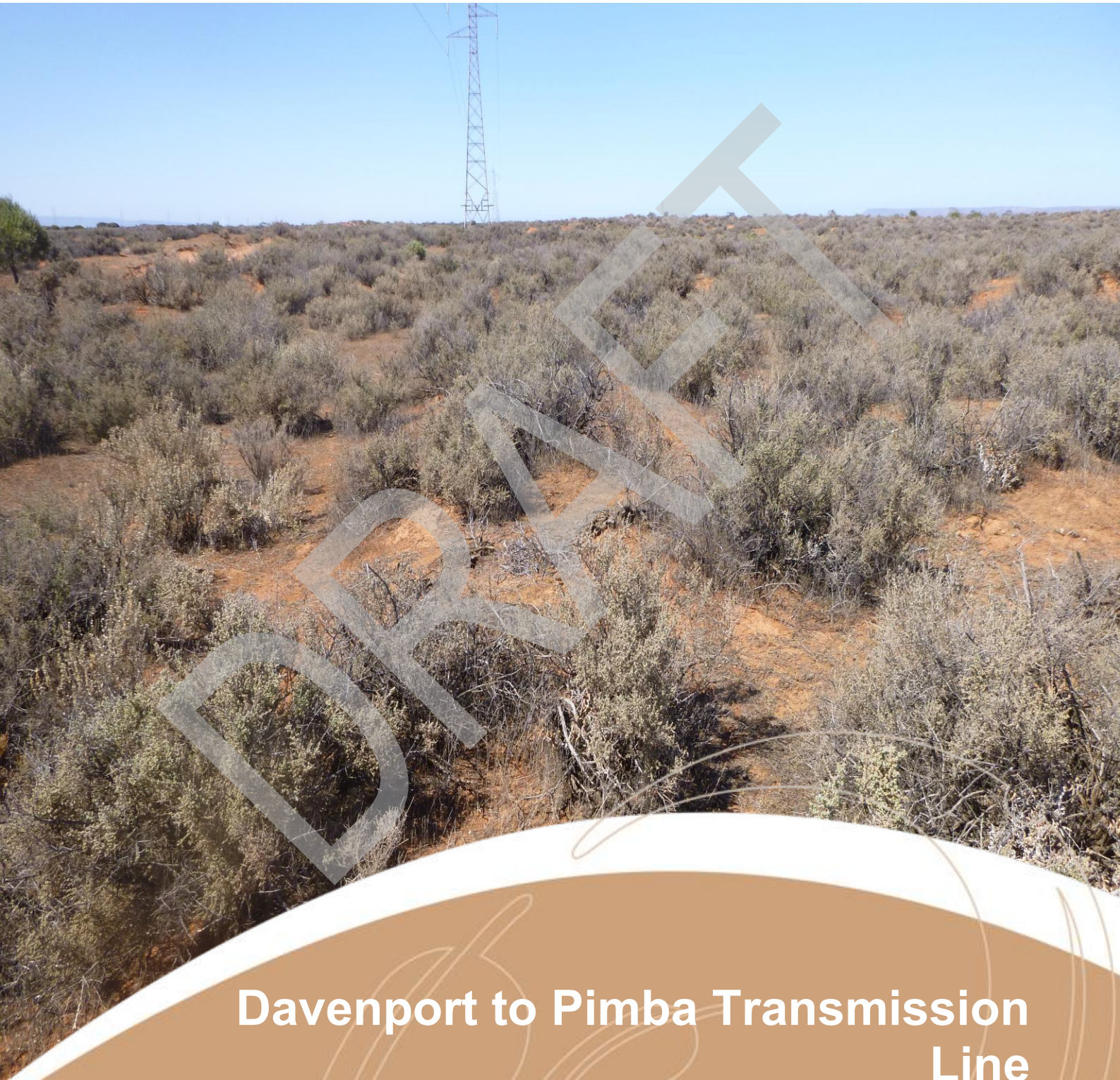
Lot Plan	CT/CR	Licenced	Easement reference
R6437ACA	CT6100/44		Statutory Easement*
H330600SE348	CT5514/855		AQ2559249**
H330600SE439	CT5514/855		AQ2559249**
H330600SE445	CT5602/231		
D50346AL1	CR5870/651	SAPN OL010771 City of Port Augusta OL018001	AQ2559249**

If you require any further information in relation to this matter, please do not hesitate to contact Melissa Kretschmer, Director City Services on 8641 9115.

Yours sincerely

John Banks
CHIEF EXECUTIVE OFFICER

Appendix C Ecology Report



Davenport to Pimba Transmission Line

Native Vegetation Assessment

Davenport to Pimba Transmission Line Native Vegetation Assessment

23 October 2018

Version 1

Prepared by EBS Ecology for ElectraNet

Document Control					
Revision No.	Date issued	Authors	Reviewed by	Date Reviewed	Revision type
1	30/10/2018	EBS	JB	30/10/2018	Draft

Distribution of Copies			
Revision No.	Date issued	Media	Issued to
1	30/10/2018	Electronic	Michelle McMahon, ElectraNet

EBS Ecology Project Number: E80915

CITATION: EBS Ecology (2018) Davenport to Pimba Transmission Line Native Vegetation Assessment. Report to ElectraNet. EBS Ecology, Adelaide.

Cover photograph: Chenopod shrubland in the project area.

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GLOSSARY AND ABBREVIATION OF TERMS

EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
NRM	Natural Resources Management
NRM Act	*Natural Resources Management Act 2004*
RAM	Rangeland Assessment Method
SEB	Significant Environmental Benefit

EXECUTIVE SUMMARY

EBS Ecology was commissioned by ElectraNet to undertake a vegetation survey to determine native vegetation clearance requirements for a proposed transmission line from Davenport (Port Augusta) to Pimba, in northern South Australia. The survey results and native vegetation clearance calculations are based on the existing 30 m easement plus an additional 20 m buffer.

Native vegetation was present throughout most of the Project area. Details are provided on the attached Rangeland Assessment Scoresheets.

No threatened flora species were recorded during the survey. One state-threatened flora species is considered as possibly occurring in samphire (*Tecticornia* spp.) dominated areas: *Malacocera gracilis* (Slender Soft-horns), which is listed as 'Vulnerable' on the *National Parks and Wildlife Act 1972 (*NPW Act). There are records for two species of state-threatened fauna in close proximity to the site: Elegant Parrot (*Neophema elegans*) and Blue-winged parrot (*Neophema chrysostoma*), both of which are considered as possibly occurring in the Project area.

One nationally threatened ecological community (TEC) is considered likely to be present within the Project area: *Subtropical and Temperate Coastal Saltmarsh.* This habitat is listed as 'Vulnerable' under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). An EPBC referral would not be required, however, as referrals are only required for TECs listed as 'Critically Endangered' or 'Endangered'.

Clearance of native vegetation is considered to fall under the *Native Vegetation Regulations 2017*; Regulation 12(34) – Infrastructure.

The SEB calculations have been based on a worst case clearance of 50 m width along the length of the transmission line route. If the clearance is less than this, the payment would be less than provided in this report. Due to the potentially large offset payment required, it may be appropriate to consider an on-ground SEB offset, rather than a payment into the Native Vegetation Fund.

The offset payment would be reduced further if the site is subject to ecological restoration activities subsequent to the clearance. The rehabilitation must commence within a given time frame over the whole of the area for which the reduction is being sought, as stated in *Guide for Calculating a Significant Environmental Benefit* (NVC 2017c). This would apply if the soil surface was reinstated and planting of vegetation or direct seeding was implemented.

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1 APPLICATION INFORMATION

Applicant:	ElectraNet		
Key contact:	ElectraNet contact: Michelle McMahon Email: McMahon.Michelle@electranet.com.au Mobile: M: +61 421 809 457 EBS contact: Ilona Weir (Ecologist) Email: Ilona.weir@ebsecology.com.au		
Landowner: *(if the applicant is not the landowner, you must attach written permission)*	There are several different landowners as the transmission line/Project area is 18 km in length. ElectraNet to supply further information if required.		
Site Address:	Davenport (Port Augusta) to Yorkeys Crossing, South Australia.		
Local Government Area:	Port Augusta City Council	Hundred:	Davenport
Certificate of Title:	CT *ElectraNet to supply information*	Section Allotment:	DP FP *ElectraNet to supply information*
Summary of Application			
Proposed clearance area:	ElectraNet is working with Solar Reserve and OZ Minerals to develop an alternate route option for the transmission line from Port Augusta to Prominent Hill. EBS Ecology was engaged by ElectraNet (the proponent) to undertake a vegetation assessment along the existing F1812 Davenport to Pimba 132 kV transmission line (the 'Project area'). To make the easement suitable for the new proposed 275kV transmission line, ElectraNet is looking to widen the existing easement by another 20 metres. ElectraNet have requested EBS to apply for clearance of the entire route (approximately 18 km x 50 m wide). However, actual clearance will be less than this. The amount of actual clearance required is not currently known.		
Applicable regulation and purpose of the clearance	Regulation 12(34) – Infrastructure is expected to be applicable to the Project.		
Level of risk	Level 4, based on clearance of the entire route and a width of 50 m. Clearance would be less than this and the Level of Risk would need to be reassessed once the amount of actual clearance is known.		
Proposed SEB offset:	The proposed offset is not yet known. Due to the potentially large offset payment required, it may be appropriate to consider an on-ground SEB offset, rather than a payment into the Native Vegetation Fund.		

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1.1 Objectives

Key objectives of the project include:

- Classification of vegetation into communities and condition classes (sites);
- Calculation of the required SEB (on ground offsets or payment costs) for clearance of native vegetation associated with the transmission line;
- Identification of any threatened flora and fauna species and ecological communities listed under legislation and policy including the *Environment Protection and Biodiversity Conversation Act 1999* and the *National Parks and Wildlife Act 1972.*

2 BACKGROUND

ElectraNet is seeking to extend an existing easement (out from the western side) of the existing F1812 Davenport to Pimba 132kV Transmission Line. It is uncertain as to what vegetation assessment and/or clearance application was done in the past for the existing easement, as the line was built in the 1960's prior to the *Native Vegetation Act 1991* being established. As such, the entire width (the existing 30 m easement, plus a 20 m buffer) is to be assessed, and approval sought to clear the whole area (as the line design is yet to be completed).

The three main landforms along the route are dunefields, level plains and claypans/saltlakes. ElectraNet proposes to avoid impacting claypans/salt lakes either by spanning across them or by using pre-disturbed areas within the existing line easement.

2.1 Project area

The Project area spans from the southern end of Port Augusta (Davenport substation) north to the tip of Spencer Gulf (Figure 1) and intersects a range of land tenures.

The majority of the site (approximately 14.8 km) falls within the Northern and Yorke Natural Resource Management (N&Y NRM) Region, with a small area (3.5 km) falling within the South Australian Arid Lands (SAAL) NRM Region.

ElectraNet have consulted with NVC regarding the correct assessment methodology given that the project spans agricultural and arid lands regions. EBS understands that the Rangelands Assessment Method (RAM, described below in "Methodology" section) may be used for the proposed assessment area, because the area could be considered a semi-arid zone, due to the vegetation communities present and the annual rainfall level of approximately 250 mm.

2.2 Environmental setting

The Interim Biogeographical Regionalisation of Australia (IBRA) identifies geographically distinct bioregions based on common climate, geology, landform, native vegetation and species information. The bioregions are further refined into subregions and environmental associations. The Transmission Line is completely located within the Gawler IBRA bioregion and the Gawler Lakes subregion.

Figure 1. Site Location.

2.3 Pastoral Land System

Land Systems (based upon groupings of Soil Landscape Map Units) are broad and readily recognisable landscape areas defined by particular and distinctive patterns of land use, geology, topography, soils and vegetation within a limited climatic range (Data SA 2018). The project area is located within the Yorkey Pastoral Land System.

The Yorkey Land System is described as: saline sand plain; dunes of mulga, myall or northern native pine over narrow-leaf hopbush and blackbush; swales of blackbush, slender glasswort and bladder saltbush; sandy flats of myall open woodland over blackbush, bladder and bitter saltbushes; salt pans and fringing samphire flats (NatureMaps 2018).

2.4 Remnant Vegetation

Remnant vegetation has been mapped by the Department for Environment and Water (DEW) as part of the Native Vegetation Information System (NVIS) floristic analysis and mapping project. The NVIS mapping is based on interpretation of aerial photography or Landsat imagery and floristic data derived from Biological Survey of SA vegetation sites or field trips. Given the NVIS mapping is largely derived from remote assessment, it can be inaccurate and hence flora survey has been undertaken to map the vegetation within the project area. The following native vegetation communities previously mapped by DEW intersect with the line route (dominant vegetation species as listed in NatureMaps 2018):

- Hummock grassland (*Zygochloa paradoxa* mixed grassland) – approximately 20%
- Chenopod shrubland (*Atriplex vesicaria* ssp. mixed) – approximately 50%
- Acacia shrubland (*Acacia ligulata* >1m mixed forest) – approximately 10%
- Callitris forest and woodland (*Callitris glaucophylla* mixed forest) – approximately 20 %

Approvals <u>required</u> *or* <u>obtained</u> under other legislation

ElectraNet to supply information, e.g. demonstrate compliance with the following (if relevant)

Native Vegetation Act 1991
Development Act 1993
Fire and Emergency Services Act 2005
Water Resources Act 1997
Environment Protection and Biodiversity Conservation Act 1999
Coast Protection Act 1972
Pastoral Land Management and Conservation Act 1989
Environment Protection Act 1993
River Murray Act 2003
National Parks and Wildlife Act 1972
Natural Resources Management Act 2004
Aboriginal Heritage Act 1988

3 COMPLIANCE AND LEGISLATIVE SUMMARY

3.1 Environment Protection and Biodiversity Conservation Act 1999

The Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) provides protection for matters of national environmental significance. The matters of national environmental significance protected under the EPBC Act are:

- World heritage properties;
- National heritage places;
- Wetlands of international importance (listed under the Ramsar Convention);
- Listed threatened species and ecological communities;
- Migratory species protected under international agreements;
- Commonwealth marine areas;
- The Great Barrier Reef Marine Park;
- Nuclear actions (including uranium mines); and
- a water resource, in relation to coal seam gas development and large coal mining development.

Under the EPBC Act, any actions that have, or are likely to have, a significant impact on a matter of national environmental significance require approval from the Australian Government Minister for the Environment and Energy. The minister will decide whether assessment and approval is required under the EPBC Act.

3.2 Native Vegetation Act 1991

Native vegetation within the Project area is protected under the *Native Vegetation Act 1991* and *Native Vegetation Regulations 2017*. Native vegetation is defined as all naturally-occurring local native plants, ranging from small ground covers and native grasses to large trees.

Being related to power transmission (infrastructure in the public interest), this proposal is considered to fall under Regulation 12(34) – Infrastructure.

3.3 National Parks and Wildlife Act 1972

Native plants and animals in South Australia are protected under the *National Parks and Wildlife Act 1972*. (NPW Act). Under this Act, it is an offence to take a native plant or protected animal without approval. Conservation significant flora and fauna species listed in Schedules 7, 8, or 9 of the NPW Act may occur within the Project area.

3.4 Natural Resources Management Act 2004

The Project area falls within the Northern and Yorke Natural Resource Management Region, with a small area falling within the South Australian Arid Lands NRM Region. Under the *Natural Resources Management Act 2004* (NRM Act), landholders have a legal responsibility to manage declared pest plants and animals and prevent land and water degradation.

This Act will have relevance in relation to the ongoing control of pest plant and animal species during construction and site remediation.

4 METHODS

4.1 Desktop Assessment

A desktop assessment was conducted to assess the potential for any threatened species (both nationally and state listed) to occur within the Project area. This was achieved by undertaking database searches within a 50 km buffer of the Project area (as per the Rangeland Assessment Manual (RAM), sections 5.3.2 and 5.3.3 (NVC 2017e)).

An assessment of the likelihood of threatened flora and fauna species occurring within or utilising habitat within the proposed Transmission Line Upgrade footprint was undertaken. A likelihood of occurrence rating (Highly Likely, Likely, Possible, Unlikely) was assigned to each threatened species identified in the database searches. This information was used to inform the RAM data sheets.

4.1.1 Protected Matters Search Tool (PMST) – EPBC Act

A Protected Matters Search Tool (PMST) report was generated on 24th October 2018 to identify matters of national environmental significance under the EPBC Act (DotEE 2018), that may occur or may have suitable habitat within the Project area (50km buffer applied). The PMST is maintained by the Department of the Environment and Energy (DotEE) and was used to identify flora and fauna species and ecological communities of national environmental significance.

4.1.2 Biological Database of South Australia (BDBSA) and NatureMaps SA

The BDBSA is comprised of an integrated collection of corporate databases which meet DEW standards for data quality, integrity and maintenance. In addition to DEW biological data, the BDBSA also includes data from partner organisations (Birds Australia, Birds SA, Australasian Wader Study Group, SA Museum, and other State Government Agencies). NatureMaps is an initiative of the DEW (DEW 2018) that provides a common access point to maps and geographic information about SA's natural resources in an interactive online mapping format.

BDBSA data was reviewed and NatureMaps searches were undertaken to identify species/ecological communities/areas or conservation significance that may occur within the project area.

4.2 Field Survey

The field assessment was undertaken by Native Vegetation Council (NVC) accredited consultants Ilona Weir and Sue Kenny over four days, between 16 and 19 October 2018.

4.2.1 Flora Assessment

The flora assessment was conducted in accordance with the Rangelands Assessment Method (RAM) devised by the Native Vegetation Council (NVC 2017e). The RAM aligns the assessment of vegetation (and land) condition with the method developed by Natural Resources South Australian Arid Lands (NR SAAL) for the rapid assessment of pastoral properties in sheep and cattle country, but is adapted for native vegetation assessments in arid rangelands throughout South Australia (NVC 2017e). The RAM uses a

range of indicators to score each area and calculate a score per hectare. Condition indicators in arid systems vary from agricultural areas to some degree. The RAM survey captures information including species palatability to livestock, grazing impact (utilisation), juvenile recruitment, diversity of land form and disturbance to provide a Unit Biodiversity Score (UBS) per hectare

When using the RAM, each area to be assessed (i.e. each application area) is termed a 'Block', which is divided into stratified 'Sites'. Each Site relates to a vegetation association found within the Block. Vegetation associations are based on landform types, paddocks and at increasing distances from watering points (i.e. grazing gradient). In each Site, a number of 'Sample Points' are established by the accredited ecologist undertaking the assessment.

Three components of the biodiversity value of the Site are measured and scored:

- Landscape context
- Vegetation condition (including a measure of land condition); and
- Conservation value.

The three component scores are combined to provide a 'Unit Biodiversity Score' (per hectare) and then multiplied by the size (hectares) of the Site to provide a 'Total Biodiversity Score' for each Site, and then the overall Block.

All flora species recorded during the flora assessment are provided on the attached scoresheets.

4.2.2 Fauna Assessment

During the survey, any observations of fauna (or tracks, scats, burrows, sound) were recorded, and an assessment made of the habitat suitability for fauna. Targeted surveys for threatened fauna species were not undertaken.

4.3 Assessment methodology and SEB calculations

The RAM is generally suitable for assessing vegetation systems within the SA Arid Lands and Alinytjara Wilurara Natural Resources Management (NRM) regions. However, the RAM may also be considered appropriate in other NRM regions, particularly near NRM boundaries where landform and vegetation is often more similar to arid vegetation than Agricultural Land vegetation where the Bushland Assessment Methodology is used (BAM) (NVC 2017a). It is noted that using the Rangelands Assessment Method (RAM) in agricultural Natural Resources Management (NRM) regions requires approval from the Native Vegetation Assessment Panel (NVAP). Based on consultation with the Native Vegetation Management Unit (NVMU), the proponent has been advised to submit the application using the RAM as follows:

'Submit the application using the Rangeland assessment method and provide the reasons (as outlined below) for why it was used. NVAP can then make a determination on the use of the RAM at the same time as they are considering the clearance application. Should they decide not to accept the RAM, then it is reasonable easy to transfer the outcomes across to the bushland method without the need for any further assessments (Adam Schutz pers comm. (NVMU))'

The project area is predominantly located in the Northern and Yorke Region (73.5 ha), whilst a smaller area is located in the SAAL area (16.68 ha). However, based on desktop (and field) assessments the three

main landforms on site are dunefields, level plains and claypans/salt lakes comprising arid type vegetation (refer Section 2.4).

ElectraNet believes the Rangelands Assessment Method is appropriate for the proposed assessment area because it could be considered a semi-arid zone, due to the vegetation communities present and the low annual rainfall level of approximately 250 mm (Michelle McMahon, ElectraNet, pers. comm. 7/09/18).

4.4 Limitations

The findings and conclusions expressed by EBS are based solely upon information in existence at the time of the assessment. The combination of field data, database records and background research have provided a solid foundation for determining the flora and fauna that are likely to, or are known to, occur within the Project area.

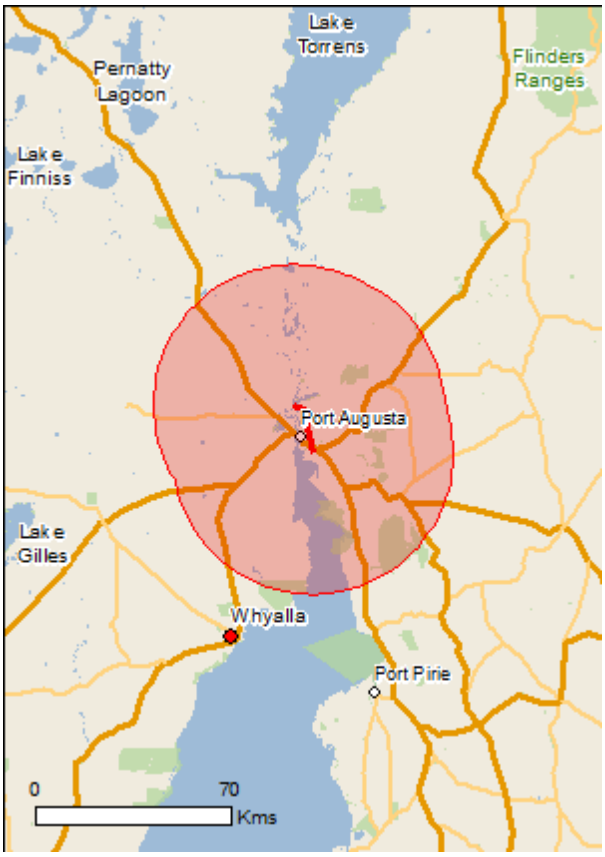
The field survey was undertaken in spring which is considered an optimal time of the year for recording both flora and fauna species across the region. However, a number of flora species recorded could only be identified to genus level due to a lack of distinguishing identification features such as flowers or fruits.

5 ASSESSMENT OUTCOMES

5.1 Desktop Assessment

The results of the EPBC Protected Matters Search Tool (PMST) report are summarised in Table 1 and the relevant matters of national and state environmental significance further discussed below.

Table 1. Summary of the results of the EPBC Act Protected Matters Search Tool report (DotEE 2018).

Search area (50 km buffer)	Matters of National Environmental Significance	Number
	World Heritage Properties	0
	National Heritage Places	0
	Wetlands of International Importance	0
	Great Barrier Reef Marine Park	0
	Commonwealth Marine Areas	0
	Listed Threatened Ecological Communities	3
	Listed Threatened Species	51
	Listed Migratory Species	54
	Other Matters Protected by the EPBC Act	
	Commonwealth Land	7
	Commonwealth Heritage Places	0
	Listed Marine Species	79
	Whales and Other Cetaceans	8
	Critical Habitats	0
	Commonwealth Reserves Terrestrial	0
	Commonwealth Reserves Marine	0
	Extra Information	
	State and Territory Reserves	9
	Regional Forest Agreements	0
	Invasive Species	32
	Nationally Important Wetlands	1
	Key Ecological Features (Marine)	0

5.1.1 Threatened Ecological Communities

Three Threatened Ecological Communities (TECs) were identified by the PMST as potentially occurring within the Project area (Table 2). Samphire-dominated habitats on the site are considered likely to qualify as Subtropical and Temperate Coastal Saltmarsh, which is a nationally (EPBC) listed Vulnerable TEC. No other TECs were recorded or are likely to be present in the Project area.

Table 2. Threatened Ecological Communities identified by the Protected Matters Search Tool as potentially occurring within the Project area (50 km buffer; DotEE 2017).

Threatened Ecological Community	Status
Grey Box (*Eucalyptus macrocarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Unlikely
Peppermint Box (*Eucalyptus odorata*) Grassy Woodland of South Australia	Unlikely
Subtropical and Temperate Coastal Saltmarsh	Likely

5.1.2 Threatened Flora

Results of database searches for threatened flora are provided below (Table 3) with an assessment of threatened species' likelihood of occurring within the Project area. The PMST, Naturemaps and BDBSA searches identified a total of 13 nationally threatened flora species as potentially occurring within 50 km of the Project area. Figure 2 shows the results for the BDBSA threatened flora searches, within 20 km of the Project area. Only one species is considered likely to be present: *Malacocera gracilis* (Slender Soft-horns) and this species has been included in the attached Scoresheets (although was not recorded during the field survey). *Tecticornia lepidosperma* is considered as possibly occurring within the Project area. This species was not recorded during the field survey and has not been included in the attached Scoresheets. All other species listed by the database searches are considered unlikely to occur within the Project area (refer Table 3).

5.1.3 Threatened Fauna

Results of database searches for threatened fauna are provided below (Table 4 and Figure 3). A buffer of 50 km was used for the database searches, however, the map shows a buffer of 20 km.

Three bird species are considered as possibly or likely to occur at the site: Slender-billed Thornbill (*Acanthiza iredalei iredalei*), Blue-winged Parrot *(Neophema chrysostoma*) and Elegant Parrot (*Neophema elegans*), due to suitability of habitat within the Project area. No other species are considered likely to occur.

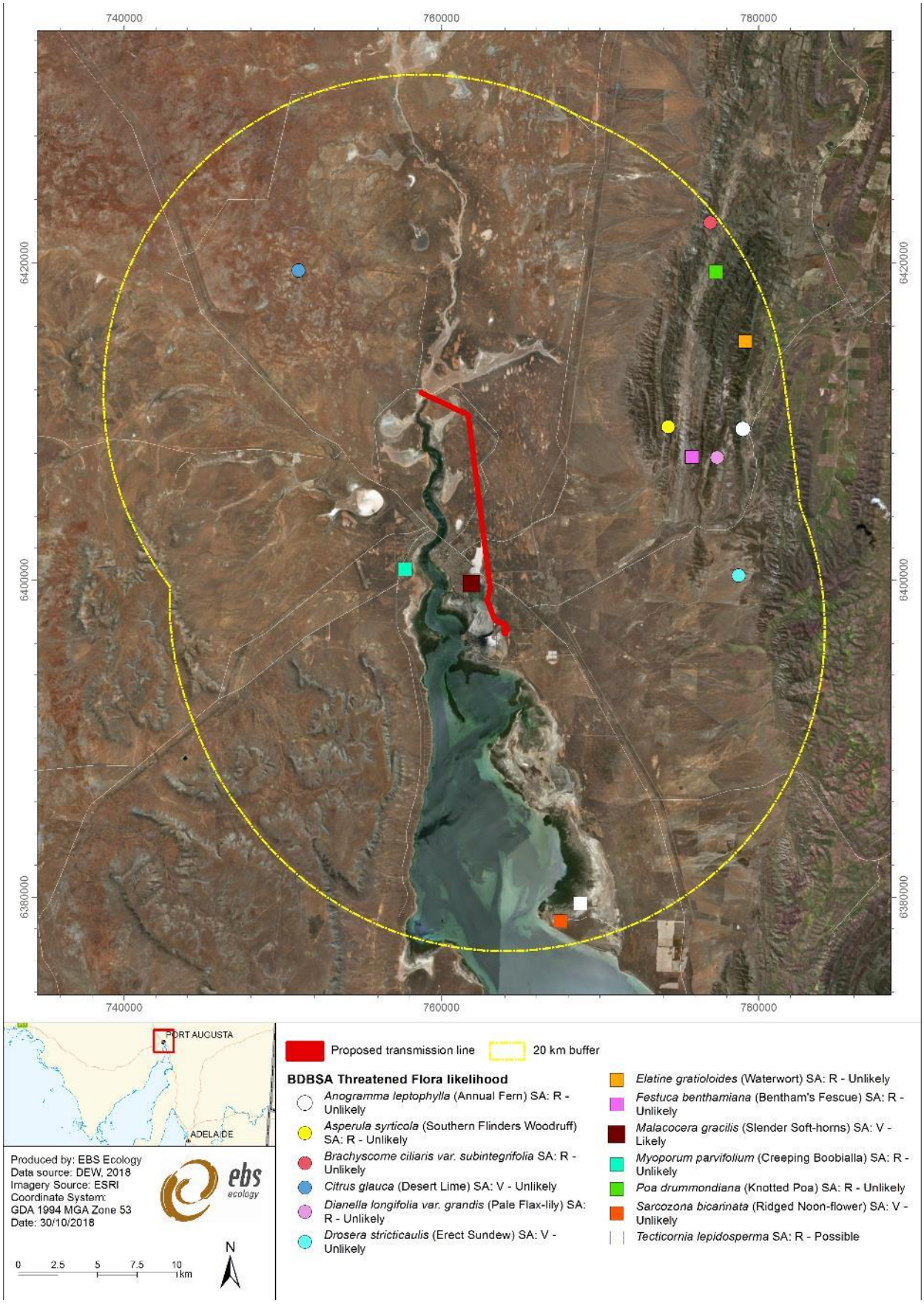


Figure 2. Database search results and likelihood of occurrence for threatened flora within 20 km of the Project area.

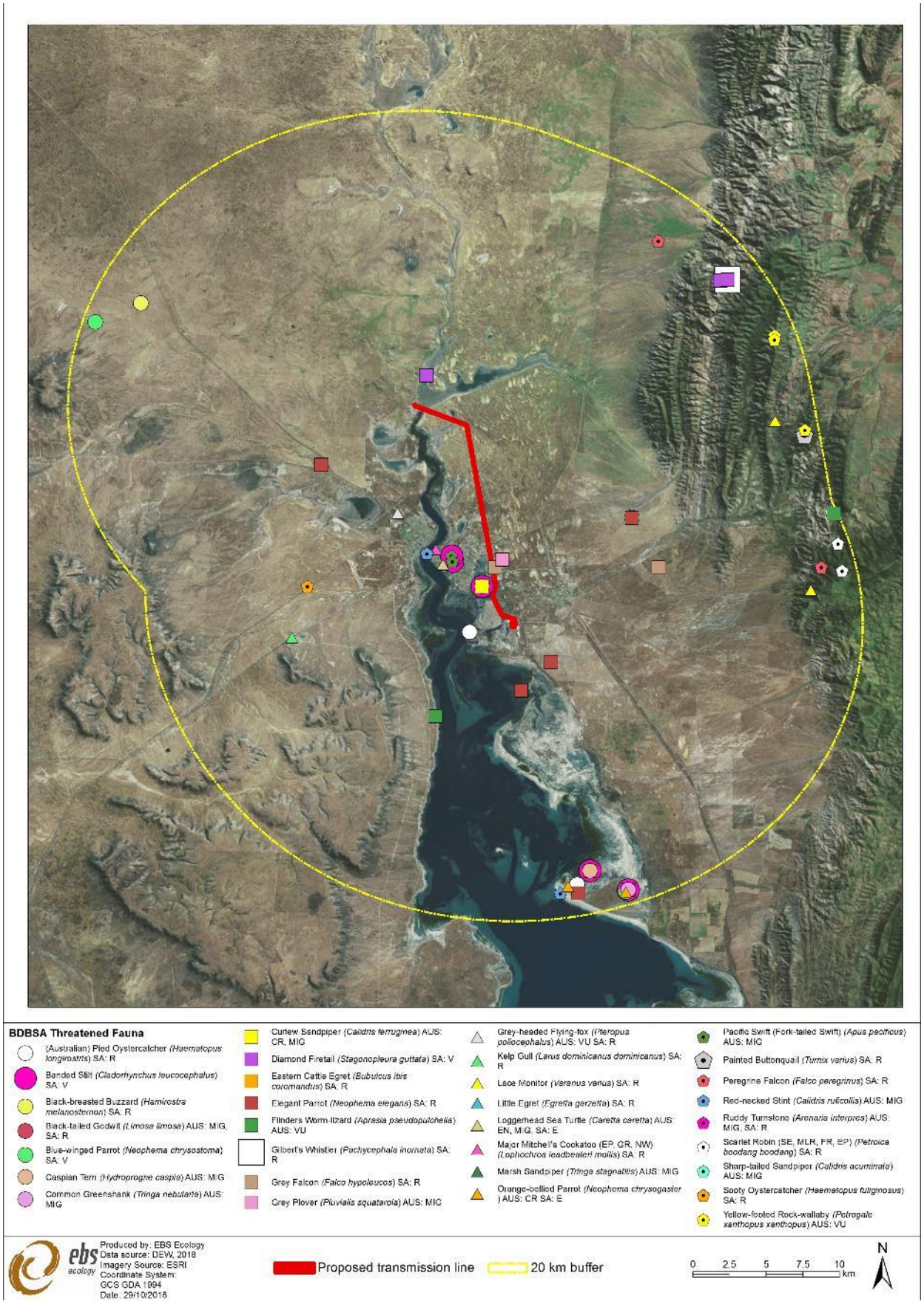


Figure 3. Results of database searches for threatened fauna within 20 km of the site.

Table 3. National and State listed threatened flora species identified by the PMST and NatureMaps as potentially occurring within the project area.

Scientific name	Common name	Conservation status		Last sighting (year)	Likelihood of occurrence	Rationale
		Aus	SA			
Acacia gracilifolia	Graceful Wattle		R		Unlikely	Record from Flinders Ranges.
Acacia quornensis	Quorn Wattle		R		Unlikely	
Acanthocladium dockeri	Spiny Everlasting	CR	E	21/08/2012	Unlikely	
Anogramma leptophylla	Annual Fern		R	29/08/1999	Unlikely	
Asperula syrticola	Southern Flinders Woodruff		R	28/08/1999	Unlikely	Record from Flinders Ranges.
Austrostipa breviglumis	Cane Spear-grass		R	15/07/2003	Unlikely	
Austrostipa densiflora	Fox-tail Spear-grass		R	4/06/2015	Unlikely	
Austrostipa petraea	Flinders Range Spear-grass		R		Unlikely	Record from Flinders Ranges.
Brachyscome ciliaris var. subintegrifolia			R	5/12/2005	Unlikely	
Caladenia gladiolata	Bayonet Spider-orchid	EN	E	10/08/2008	Unlikely	Habitat unsuitable: This species is endemic to South Australia and only known from three or four localities (Flora census SA, 2018). Habitat is also unsuitable as C. gladiolata grows in *Eucalyptus leucoxylon* (South Australian Blue Gum) woodland, often with *E. cladocalyx* (Sugar Gum) or *E. fasciculosa* (Pink Gum) (DEH Factsheet).
Caladenia saxatilis	Star Spider-orchid		R	3/09/2016	Unlikely	
Caladenia tensa	Greencomb Spider-orchid	VU	E		Unlikely	
Caladenia woolcockiorum	Woolcock's Spider-orchid	VU	E	12/09/2008	Unlikely	Record from Fliners Ranges (BDBSA). Outside potential range (DoTEE 2018)
Caladenia xantholeuca	Flinders Ranges White Caladenia	EN	E	31/08/2002	Unlikely	
Carex gunniana	Mountain Sedge		R	1/01/2005	Unlikely	Record from Flinders Ranges.
Choretrum chrysanthum	Yellow Sour-bush		R	18/10/2014	Unlikely	
Christella dentata	Soft Shield-fern		R	1/10/2002	Unlikely	
Citrus glauca					Unlikely	The species could potentially occur in this habitat type, but it would have been observed therefore downgraded to unlikely.
Cladium procerum	Leafy Twig-rush		R	13/12/2007	Unlikely	Desert Lime occurs in scattered disjunct, localities over a wide area in South Australia
Cryptandra campanulata	Long-flower Cryptandra		R	22/11/1999	Unlikely	
Dianella longifolia var. grandis	Pale Flax-lily		R	26/09/1999	Unlikely	

Scientific name	Common name	Conservation status		Last sighting (year)	Likelihood of occurrence	Rationale
		Aus	SA			
Diuris behrii	Behr's Cowslip Orchid		V		Unlikely	Habitat unsuitable
Drosera stricticaulis	Erect Sundew		V	1/08/1999	Unlikely	
Echinopogon ovatus	Rough-beard Grass		R	1/11/2003	Unlikely	
Elatine gratioloides	Waterwort		R	26/09/1999	Unlikely	
Eremophila subfloccosa ssp. glandulosa	Green-flower Emubush		R	1/09/2004	Unlikely	
Eucalyptus albens	White Box		R	9/10/2006	Unlikely	Record from Flinders Ranges.
Eucalyptus cajuputea	Green Mallee		R*		Unlikely	Record from Flinders Ranges.
Eucalyptus percostata	Ribbed White Mallee		R	5/07/2006	Unlikely	Record from Flinders Ranges.
Eucalyptus polybractea	Flinders Ranges Box		R	31/07/2009	Unlikely	Record from Flinders Ranges.
Eucalyptus viridis ssp. viridis (NC)	Green Mallee		R	17/11/2009	Unlikely	Record from Flinders Ranges.
Festuca benthamiana	Bentham's Fescue		R		Unlikely	
Gratwickia monochaeta			R	31/03/2007	Unlikely	
Haeckeria cassiniiformis	Dogwood Haeckeria		R	6/07/2006	Unlikely	
Hovea purpurea	Tall Hovea		R	30/10/2008	Unlikely	
Logania saxatilis	Rock Logania		R	22/11/2016	Unlikely	
Malacocera gracilis	Slender Soft-horns		V	27/10/2016	Possible	There are several records for this species in close proximity to the Project site. The species may occur in saltmarsh (Samphire) or in chenopod shrubland habitats.
Myoporum parvifolium	Creeping Boobialla		R	21/09/2009	Unlikely	
Olearia pannosa ssp. cardiophylla	Velvet Daisy-bush		R	7/12/2017	Unlikely	
Orobanche cernua var. australiana	Australian Broomrape		R	6/09/2011	Unlikely	
Ottelia ovalifolia ssp. ovalifolia	Swamp Lily		R	27/11/2003	Unlikely	
Ozothamnus scaber	Rough Bush-everlasting		V	17/12/2008	Unlikely	
Poa drummondiana	Knotted Poa		R	1/01/2000	Unlikely	
Prasophyllum pallidum	Pale Leek-orchid	VU	R	14/09/2009	Unlikely	
Prasophyllum validum	Mount Remarkable Leek-orchid	VU	V		Unlikely	
Pterostylis curta	Blunt Greenhood		R	1/10/2003	Unlikely	
Pycnosorus globosus	Drumsticks		V	1/09/2001	Unlikely	
Santalum spicatum	Sandalwood		V	6/09/2017	Unlikely	

Scientific name	Common name	Conservation status		Last sighting (year)	Likelihood of occurrence	Rationale
		Aus	SA			
Gratwickia monochaeta			R	31/03/2007	Unlikely	
Sarcozona bicarinata	Ridged Noon-flower		V	5/11/2008	Unlikely	
Scutellaria humilis	Dwarf Skullcap		R	24/11/1999	Unlikely	
Swainsona behriana	Behr's Swainson-pea		V	12/09/1999	Unlikely	Habitat not suitable
Thelymitra batesii			R	9/10/2005	Unlikely	
Thelymitra grandiflora	Great Sun-orchid		R		Unlikely	Habitat unsuitable
Thelymitra peniculata	Blue Star Sun-orchid		V	6/10/2003	Unlikely	Habitat unsuitable
Thysanotus tenellus	Grassy Fringe-lily		R	1/10/2005	Unlikely	
Veronica decorosa	Showy Speedwell		R	22/11/2016	Unlikely	
Veronica parnkalliana	Port Lincoln Speedwell	EN	E	15/10/2008	Unlikely	

Information source

Information sourced from EPBC Act Protected Matters Report (DotEE 2018) – 50 km buffer applied to project area; and Naturemaps (DEW 2018) - 20km buffer applied to project area, records filtered to previous 20 years only).

Conservation status

Aus: Australia (*Environment Protection and Biodiversity Conservation Act 1999*). SA: South Australia (*National Parks and Wildlife Act 1972*). Conservation Codes: CE: Critically Endangered. EN/E: Endangered. VU/V: Vulnerable. R: Rare. ssp.: the conservation status applies at the sub-species level. An asterisk denotes ratings that need to be qualified for a variety of reasons, such as changes to taxonomy or nomenclature since listing or because a species assessed as 'presumed extinct' had to be listed under the Endangered category. Further details are available from the Vascular Plant Metadata document on the DEW website.

Table 4. National and State listed threatened fauna species identified by the PMST and NatureMaps as potentially occurring within the project area.

Scientific name	Common name	Conservation status		Source	Last sighting (year)	Likelihood	Rationale
		Aus	SA				
Acanthiza iredalei iredalei	Slender-billed Thornbill (western)		R	2	2006	Likely	The Slender-billed Thornbill (Western) (*Acanthiza iredalei iredalei*) inhabits chenopod shrublands dominated by *Maireana* and *Atriplex* associations. As such vegetation associations are widespread within the region, suitable habitat is available for this species.
Amytornis merrotsyi merrostyi	Short-tailed Grasswren (Flinders Range)	VU		1,2	2001	Unlikely	The distribution of the Short-tailed Grasswren (*Amytornis merrotsyi merrostyi*) does not overlap with the Project area. Furthermore, the *Triodia* covered hillslopes that this species inhabits also do not occur within the Project area.
Amytornis textilis myall	Western Grasswren (Gawler Ranges)	VU		2		Unlikely	The Western Grasswren (Gawler Ranges) (*Amytornis textilis myall*) inhabits Blackbush (Maireana pyramidata) and Australian Boxthorn (Lycium australe) shrublands as well as Western Myall (Acacia papyrocarpa) woodlands where the aforementioned chenopod species are prevalent. While, the occurrence of their preferred plant species occurs in the Project area, the distribution of the Western Grasswren (Gawler Ranges) does not overlap within the Project area.
Aprasia pseudopulchella	Flinders Worm-lizard	VU		1,2	2017	Unlikely	The Flinders Worm-lizard (*Aprasia pseudopulchella*) is a subterranean lizard species that has reduced limbs, from which its worm-lizard name is derived. The species lives underneath rocks, logs and leaf-litter within open woodland, native grassland, riparian habitats and rocky isolates in the Mount Lofty Ranges and Flinders Ranges. Regional records of this species area restricted to the Mt Remarkable NP and Mt Brown CP. As the Project area does not occur within the ranges, this species is not expected to occur.
Apus pacificus	Fork-tailed Swift	Mig		1, 2	2000	Possible	The Fork-tailed Swift (Pacific Swift) (*Apus pacificus*) is a species of migratory swift that spends its non-breeding season in Australia (October to April). In Australia, this species is almost exclusively aerial and has been recorded flying-over a broad range of habitats including cities, woodlands, forests and deserts. Records of this Fork-tailed Swifts are also common within coastal and sub-coastal areas. Therefore, as suitable habitat for the Fork-tailed Swift occurs in the Project area, it is possible that this species would occur.
Ardenna carneipes	Flesh-footed Shearwater	Mig	R	1		Unlikely	The Flesh-footed Shearwater (*Ardenna carneipes*) is a pelagic seabird and therefore suitable habitat does not occur in the Project area.
Ardeotis australis	Australian Bustard		V	2	2016	Possible	The Australian Bustard may be an irregular visitor to the Project area. Suitable habitat in *Atriplex vesicaria* (Bladder saltbush), *Tecticornia medullosa* (Samphire), *Sclerolaena sp.* Shrubland, is widespread over the Project area.
Calidris acuminata	Sharp-tailed Sandpiper	Mig		1,2	2006	Possible	The Sharp-tailed Sandpiper (*Calidris acuminata*) is a species of migratory shorebird that forages on the muddy fringes of marine and freshwater habitats. Following substantial rainfall, suitable shallow wetland habitats may be present near Yorkeys Crossing.
Calidris alba	Sanderling	Mig	R	1,2		Unlikely	The Sanderling (*Calidris alba*) is a species of migratory shorebird that forages upon the margins of sandy marine habitats. Therefore, no suitable habitat occurs within the Project area.
Calidris ferruginea	Curlew Sandpiper	CR, Mig		1,2	2000	Possible	The Curlew Sandpiper (*Calidris ferruginea*) is a species of migratory shorebird that forages on the muddy fringes of marine and freshwater habitats. Following substantial rainfall, suitable shallow wetland habitats may be present near Yorkeys Crossing.
Calidris melanotos	Pectoral Sandpiper	Mig	R	1		Possible	The Pectoral Sandpiper Sandpiper (*Calidris melanotos*) is a species of migratory shorebird that forages on the muddy fringes of marine and freshwater habitats. Following substantial rainfall, suitable shallow wetland habitats may be present near Yorkeys Crossing.
Calidris ruficollis	Red-necked Stint	Mig		1,2	2005	Possible	The Red-necked Stint (*Calidris ruficollis*) is a species of migratory shorebird that forages on the muddy fringes of marine and freshwater habitats. Following substantial rainfall, suitable shallow wetland habitats may be present near Yorkeys Crossing.
Cladorhynchus leucocephalus	Banded Stilt		V	2	2000	Possible	The Banded Stilt (*Cladorhynchus leucocephalus*) is a species of shorebird that inhabits salt lakes, salt marshes, tidal mudflats and freshwater wetlands. Following substantial rainfall, suitable shallow wetland habitats may be present near Yorkey Crossing.

Scientific name	Common name	Conservation status		Source	Last sighting (year)	Likelihood	Rationale
		Aus	SA				
Corcorax melanorhamphos	White-winged Chough		R	2	2016	Unlikely	The White-winged Chough (*Corcorax melanorhamphos*) inhabits the edges of eucalypt woodlands and mallee associations. Given the absence of these vegetation associations from the Project area, the White-winged Chough is considered unlikely to occur.
Diomedea antipodensis	Antipodean Albatross	VU, Mig	V	2		Unlikely	The Antipodean Albatross (*Diomedea antipodensis*) is a pelagic seabird and therefore suitable habitat does not occur in the Project area.
Diomedea epomophora	Southern Royal Albatross	Mig	V	2		Unlikely	The Southern Royal Albatross (*Diomedea epomophora*) is a pelagic seabird and therefore suitable habitat does not occur in the Project area.
Diomedea exulans	Wandering Albatross	VU, Mig	V	2		Unlikely	The Wandering Albatross (*Diomedea exulans*) is a pelagic seabird and therefore suitable habitat does not occur in the Project area.
Diomedea sanfordi	Northern Royal Albatross	EN, Mig	E	2		Unlikely	The Northern Royal Albatross (*Diomedea sanfordi*) is a pelagic seabird and therefore suitable habitat does not occur in the Project area.
Egretta garzetta	Little Egret		R	2	1999	Possible	The Little Egret (*Egretta garzetta*) is a species of wading bird that forages within relatively shallow water within saltmarsh, estuaries and tidal mudflats. Following substantial rainfall, suitable shallow wetland habitats may be present near Yorkey Crossing.
Falco hypoleucos	Grey Falcon		R	2	2006	Possible	The Grey Falcon (*Falco hypoleucos*) may be a rare visitor to the Project area. The species inhabits lightly treed inland plains, gibber seserts, pastoral lands and along timbered water courses. As such, the habitats within the Project area are suitable for the presence of the Grey Falcon.
Falco peregrinus	Peregrine Falcon		R	2	2003	Possible	The Peregrine Falcon (*Falco peregrinus*) may be an uncommon visitor to the Project area. The species inhabits plains and open woodlands. As such, the habitats present within the Project area are suitable for the presence of Peregrine Falcons.
Gallinago hardwickii	Latham's Snipe	Mig	R	1		Unlikely	The Latham's Snipe (*Gallinago hardwickii*) is a species of migratory shorebird that inhabits well vegetated freshwater wetlands and saltmarsh. Given the absence of these habitats from the Project area, the Latham's Snipe is considered unlikely to occur.
Gallinago stenura	Pin-tailed Snipe	Mig		1		Unlikely	The Pin-tailed Snipe Snipe (*Gallinago stenura*) is a species of migratory shorebird that inhabits well vegetated freshwater wetlands and saltmarsh. Given the absence of these habitats from the Project area, the Pin-tailed Snipe is considered unlikely to occur.
Grantiella picta	Painted Honeyeater	VU	V	1		Unlikely	The Painted Honeyeater (*Grantiella picta*) that primarily inhabits euclaypt forests and woodlands. As such, there is no suitable habitat for this species within the Project area. Furthermore, the distribution of this species in South Australia is restricted to the far east of the state within the Murray Mallee region.
Haematopus fuliginosus	Sooty Oystercatcher		R	2	2016	Possible	The Sooty Oystercatcher (*Haematopus fuliginosus*) is a shorebird that typically inhabits rocky reefs, however, can only occur at sandpsits and tidal mudflats. Therefore, following substantial rainfall, suitable shallow wetland habitats may be present near Yorkey Crossing.
Haematopus longirostris	(Australian) Pied Oystercatcher		R	2	2017	Possible	The Australian Pied Oystercatcher (*Haematopus longirostris*) is a shorebird that inhabits sandy shores, tidal mudflats and estuaries. Therefore, following substantial rainfall, suitable shallow wetland habitats may be present near Yorkey Crossing.
Hydroprogne caspia	Caspian Tern	Mig		2	2016	Possible	The Caspian Tern (*Hydroprogne caspia*) is a coastal bird species that feeds upon small fish within protected waters such as bays, wetlands, lakes and estuaries. Caspian Terns, however, will roost upon mudflats, sandspits and other open areas adjacent to water. Therefore, following substantial rainfall, suitable habitat may be present near Yorkey Crossing.
Leipoa ocellata	Malleefowl	VU	V	1		Unlikely	The Malleefowl (*Leipoa ocellata*) inhabits mallee associations. Fire age is a key parameter of habitat suitability with the species preferring areas that have not been burnt within the past 30 years. As no mallee assocaitions are present within the Project area, the Malleefowl is unlikely to occur.

Scientific name	Common name	Conservation status		Source	Last sighting (year)	Likelihood	Rationale
		Aus	SA				
Limosa lapponica menzberi	Bar-tailed Godwit (menzberi)	CE, Mig	R	1		Unlikely	The Bar-tailed Godwit (menzberi) (*Limosa lapponica menzberi*) is the less frequently recorded subspecies of the Bar-tailed Godwit in South Australia. Given its rarity, it is unlikely that it would occur within the Project area.
Lophochroa leadbeateri mollis	Major Mitchell's Cockatoo		R	2	2013	Unlikely	The Major Mitchell's Cockatoo (*Lophochroa leadbeateri mollis*) primarily inhabits mallee associations, however, also uses timbered water courses, acacia shrublands and chenopod shrublands. Whilst chenopod shrublands are present within the Project area, the Major Mitchell Cockatoo has not been recorded on the eastern side of the Spencer Gulf. Therefore, the species is unlikely to occur within the Project area.
Macronectes giganteus	Southern Giant Petrel	EN, Mig	V	1		Unlikely	The Southern Giant Petrel (*Macronectes giganteus*) is a pelagic seabird and therefore suitable habitat does not occur in the Project area.
Macronectes halli	Northern Giant Petrel	VU, Mig		1		Unlikely	The Northern Giant Petrel (*Macronectes halli*) is a pelagic seabird and therefore suitable habitat does not occur in the Project area.
Morelia spilota	Carpet Python		R	2	2015	Unlikely	The Carpet Python (*Morelia spilota*) has only been recorded within the region at Mt Remarkable NP and Mt Brown CP. As the Project area does not occur within the ranges, this species is not expected to occur.
Motacilla cinerea	Grey Wagtail	Mig		1		Unlikely	The Grey Wagtail (*Motacilla cinerea*) is a vagrant to South Australia and therefore there are very few records of this species in the state. As such, it is unlikely that this species will occur within the Project area.
Motacilla flava	Yellow Wagtail	Mig		1		Unlikely	The Yellow Wagtail (*Motacilla flava*) is a vagrant to South Australia and therefore there are very few records of this species in the state. As such, it is unlikely that this species will occur within the Project area.
Neophema chrysostoma	Blue-winged Parrot		V	1	2006	Likely	The Blue-winged Parrot (*Neophema chrysostoma*) occurs within acacia woodland, chenopod shrublands and samphire shrublands. Therefore, suitable habitat is widespread within the Project area.
Neophema elegans	Elegant Parrot		R	1	2017	Likely	The Elegant Parrot (*Neophema elegans*) occurs within acacia woodland, chenopod shrublands and samphire shrublands. Therefore, suitable habitat is widespread within the Project area.
Neophoca cinerea	Australian Sea Lion	VU		2		Unlikely	The extent of aquatic marine habitats associated with the Spencer Gulf do not extend to the Project area.
Notechis scutatus ater	Krefft's Tiger Snake (Flinders Ranges)	VU		1,2	2005	Unlikely	The Carpet Python (*Morelia spilota*) has only been recorded within the region at Mt Remarkable NP. As the Project area does not occur within the ranges, this species is not expected to occur.
Pachycephala inornata	Gilbert's Whistler		R	2	2015	Unlikely	The Gilbert's Whistler (*Pachycephala inornata*) inhabits tall drier scrubs, woodland with dense understorey and mallee. As such, there is an absence of suitable habitat for this species within the Project area, due to the presence of low and open shrublands.
Pachyptila turtuer subantarctica	Fairy Prion	VU		1		Unlikely	The Fairy Prion (*Pachyptila turtuer subantarctica*) is a pelagic seabird and therefore suitable habitat does not occur in the Project area.
Pandion haliaetus	Osprey	Mig	E	1		Possible	The Osprey (*Pandion haliaetus*) has no occupied territories in the upper Spencer Gulf, however, wandering individuals may on occasion pass through the Project area as a fly-over.
Petrogale xanthopus xanthopus	Yellow-footed Rock-wallaby	VU		1, 2	2017	Unlikely	The Yellow-footed Rock-wallaby (*Petrogale xanthopus xanthopus*) is restricted to steep and rocky habtiats within the Flinders Ranges. As the Project area, occurs on the plains, there is no suitable habitat for Yellow-footed Rock Wallabies available.
Petroica boodang boodang	Scarlet Robin		R	2	2016	Unlikely	The Scarlet Robin (*Petroica boodang boodang*) inhabits euclaypt forests and woodlands. Therefore, there is no suitable habitat for this species within the Project area.
Pezoporus occidentalis	Night Parrot	EN	E	1		Unlikely	The Night Parrot (*Pezoporus occidentalis*) inhabits Triodia grassland, chenopod and samphire shrublands. This species is considered extinct regionally, and high grazing pressure would have rendered any historically used habitat unsuitable.

Scientific name	Common name	Conservation status		Source	Last sighting (year)	Likelihood	Rationale
		Aus	SA				
Phaps histrionica	Flock Bronzewing		R	2	2013	Unlikely	The Flock Bronzewing (*Phaps histrionica*) has not been recorded south of Port Augusta. Therefore, their distribution does not overlap with the Project area. Given this, it is unlikely that the Flock Bronzewing would occur within the Project area.
Philomachus pugnax	Ruff (Reeve)	Mig	R	1		Unlikely	The Ruff (Reeve) (*Philomachus pugnax*) is a migratory shorebird that is very rare in Australia. The species inhabits fresh and brackish waterbirds, tidal mudflats and saltfields. Due to its rarity, it is considered unlikely that this species would occur within the Project area.
Phoebetria fusca	Sooty Albatross	VU, Mig	E	1		Unlikely	The Sooty Albatross (*Phoebetria fusca*) is a pelagic seabird and therefore suitable habitat does not occur in the Project area.
Pluvialis squatarola	Grey Plover	Mig		2	2016	Possible	The Grey Plover (*Pluvialis squatarola*) is a species of migratory shorebird that forages on the muddy fringes of marine and freshwater habitats. Following substantial rainfall, suitable shallow wetland habitats may be present near Yorkey Crossing.
Pomatostomus temporalis	Grey-crowned Babbler		R	2	2014	Unlikely	The Grey-crowned Babbler (*Pomatostomus temporalis*) is located in the far north of South Australia. As such, the record within NatureMaps is considered to be a result of incorrect identification.
Pseudophryne bibronii	Brown Toadlet		R	2	2009	Unlikely	The Brown Toadlet (*Pseudophryne bibronii*)
Pteropus poliocephalus	Grey-headed Flying-fox	VU	R	2	2018	Unlikely	The Grey-headed Flying-fox (*Pteropus poliocephalus*) has not established a roost further west that Adelaide. Therefore, any individuals present within the vicinity of Port Augusta are those dispersing from this community. Due to the heat, it is unlikely that any roost would establish at Port Augusta. The Project area does not support suitable habitat for the Grey-headed Flying-fox which requires tree species rich in nectar and/or fruits for food.
Rostratula australis	Australian Painted Snipe	EN	V	1		Unlikely	The Australian Painted Snipe (*Rostratula australis*) inhabits well vegetated wetlands. Due to the absence of such habitat in the Project area, this species is unlikely to occur.
Stagonopleura guttata	Diamond Firetail		V	2	2016	Unlikely	The Diamond Firetail (*Stagonopleura guttata*) inhabits dry woodlands with a grassy understorey. Therefore, there is no suitable habitat for the Diamond Firetail in the Project area.
Sternula nereis nereis	Fairy Tern	VU	E	1		Possible	The Fairy Tern (*Sternula nereis nereis*) is a coastal bird species that feeds upon small fish within protected waters such as bays, wetlands, lakes and estuaries. Fairy Terns, however, will roost upon mudflats, sandspits and other open areas adjacent to water. Therefore, following substantial rainfall, suitable habitat may be present near Yorkey Crossing.
Stictonetta naevosa	Freckled Duck		V	2	2001	Unlikely	The Freckled Duck (*Stictonetta naevosa*) is a species of waterfowl that inhabits freshwater and brackish wetlands. Any flooding of the clay pans near Yorkey Crossing is unlikely to support suitable habitat for this species.
Thalassarche cauta cauta	Tasmanian Shy Albatross	VU, Mig	V	1		Unlikely	The Tasmanian Shy Albatross (*Thalassarche cauta cauta*) is a pelagic seabird and therefore suitable habitat does not occur in the Project area.
Thalassarche cauta steadi	White-capped Albatross	VU, Mig	V	1		Unlikely	The White-capped Albatross (*Thalassarche cauta steadi*) is a pelagic seabird and therefore suitable habitat does not occur in the Project area.
Thalassarche impavida	Campbell Albatross	VU, Mig	V	1		Unlikely	The Campbell Albatross (*Thalassarche impavida*) is a pelagic seabird and therefore suitable habitat does not occur in the Project area.
Thalassarche melanophris	Black-browed Albatross	VU, Mig	V	1		Unlikely	The Black-browed Albatross (*Thalassarche melanophris*) is a pelagic seabird and therefore suitable habitat does not occur in the Project area.
Thalassarche steadi	White-capped Albatross	Mig		1		Unlikely	The White-capped Albatross (*Thalassarche steadi*) is a pelagic seabird and therefore suitable habitat does not occur in the Project area.

Scientific name	Common name	Conservation status		Source	Last sighting (year)	Likelihood	Rationale
		Aus	SA				
Tringa nebularia	Common Greenshank	Mig		1,2	2006	Possible	The Common Greenshank (*Tringa nebularia*) is a species of migratory shorebird that forages on the muddy fringes of marine and freshwater habitats. Following substantial rainfall, suitable shallow wetland habitats may be present near Yorkey Crossing.
Turnix varius	Painted Buttonquail		R	2	2016	Unlikely	The Painted Buttonquail (*Turnix varius*) inhabit dry forests with deep leaf litter and a closed canopy. As such, there is no suitable habitat for this species within the Project area.
Varanus varius	Lace Monitor		R	2	2017	Unlikely	The Lace Monitor (*Varanus varius*) is restricted to habitats in the southern Flinders Ranges, where large eucalypts are present. This species is arboreal and will often forage and take refuge within trees. There is no suitable habitat for this species within the Project area.
Vermicella annulata	Common Bandy Bandy		R	2	2008	Unlikely	The Common Bandy Bandy (*Vermicella annulata*) inhabits a range of habitats including wet coastal forest, savannah woodland, mallee, mulga, acacia scrubs and spinifex cover sandhillls. This species only regionally been recorded at Mt Remarkable NP, and therefore, is not expected to occur within the Project area.

Conservation status

Aus: Australia (*Environment Protection and Biodiversity Conservation Act 1999*). SA: South Australia (*National Parks and Wildlife Act 1972*). Conservation Codes: CE: Critically Endangered. EN/E: Endangered. VU/V: Vulnerable. Mi: Listed Migratory (under the EPBC Act). R: Rare. ssp.: the conservation status applies at the sub-species level. An asterisk denotes ratings that need to be qualified for a variety of reasons, such as changes to taxonomy or nomenclature since listing or because a species assessed as 'presumed extinct' had to be listed under the Endangered category. Further details are available from the Vascular Plant Metadata document on the DEW website.

Source of Information

1. **EPBC Act Protected Matters Report – 50 km buffer applied to project area.**
2. **NatureMaps data extract - 50 km buffer applied to project area.**

5.1.4 Flora Assessment

The project area was grouped into one Block “A” based on the linear and predominantly connected nature of the project area (other than roads) and within the same LGA. It comprised either patchy vegetation in the south or large stretches of contiguous vegetation. Block A was divided into seven vegetation associations as listed below (**Table 5**).

Table 5. Overall summary of vegetation associations.

Vegetation association	Land form	Sites
Acacia ligulata +/- emergent Myoporum platycarpum over Maireana pyramidata +/- Atriplex vesicaria shrubland	DF	1a
Atriplex vesicaria / Tecticornia halocnemoides over Tecticornia tenuis / Disphyma crassifolium low open shrubland	DF	2a, 2b
Tecticornia spp. (Tecticornia) low open shrubland (Samphire)	DL/FO	3a
Atriplex vesicaria / Sclerolaena patenticuspis low open shrubland	DF	4a
Maireana turbinata / Maireana georgei +/- Atriplex vesicaria low shrubland	P - L	5a, 5b
Maireana pyramidata / Maireana sedifolia +/- Atriplex vesicaria low open shrubland	P - L	6a
Myoporum platycarpum / Acacia ligulata	DF	7a

DF: Dunefield FO: Floodout P-L: Level Plain

The location of the vegetation associations recorded on the site are illustrated below (Figure 4 to Figure 8) and each vegetation association described further below (below (Table 6 to Table 14).

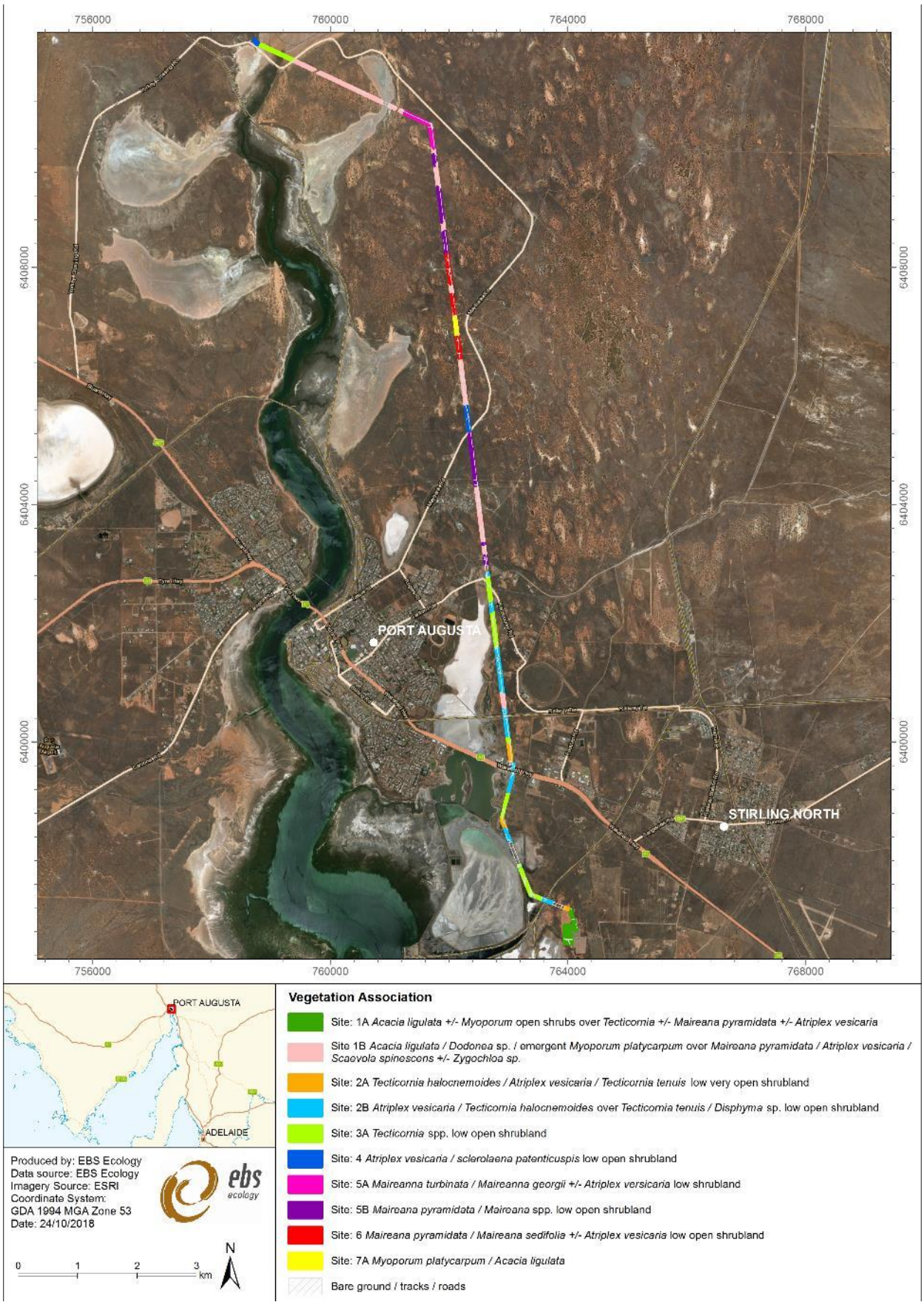


Figure 4. Overview of vegetation associations at the Project site.

Figure 5. Location of vegetation associations (1).

Figure 6. Location of vegetation associations (2).

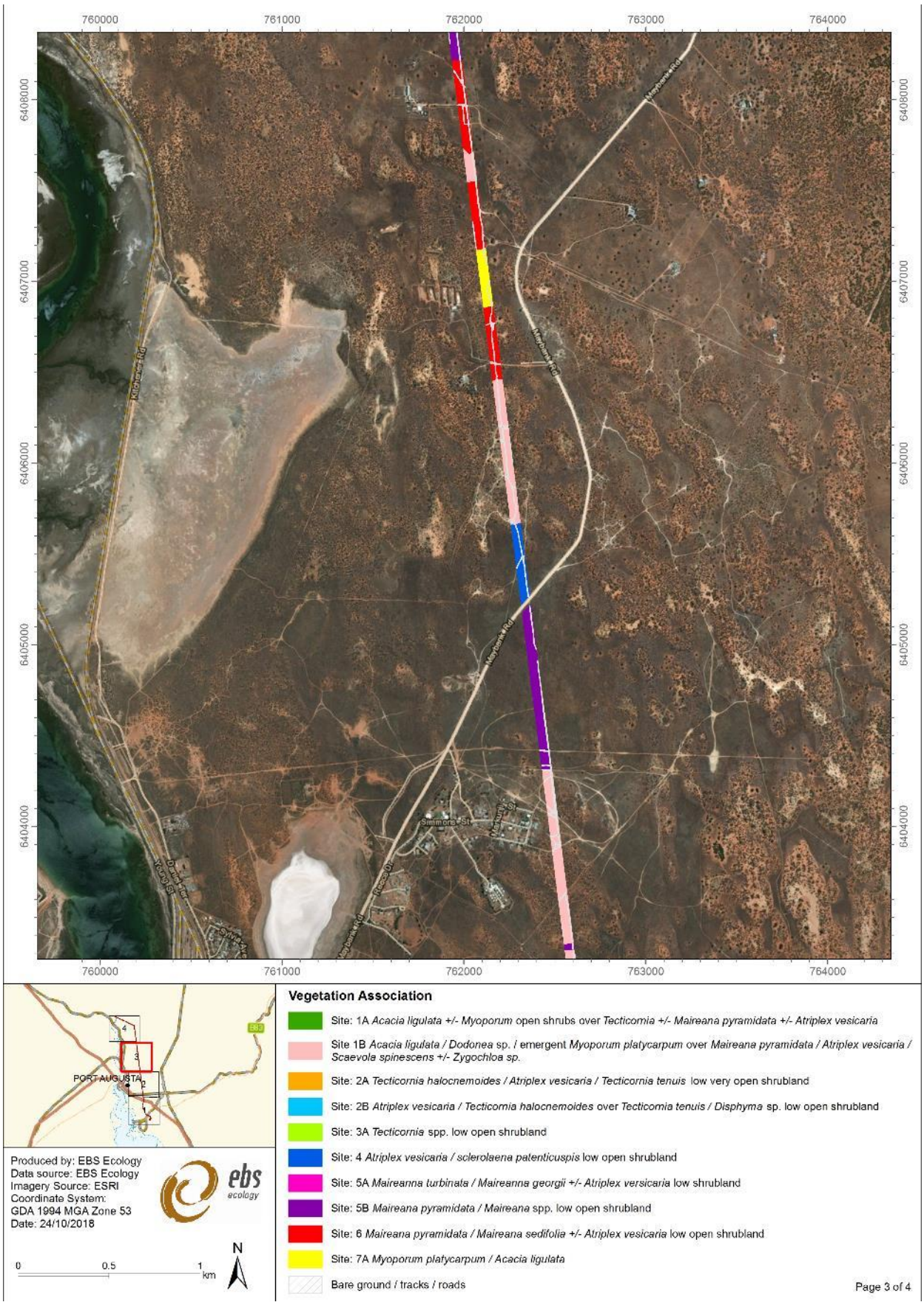


Figure 7. Location of vegetation associations (3).

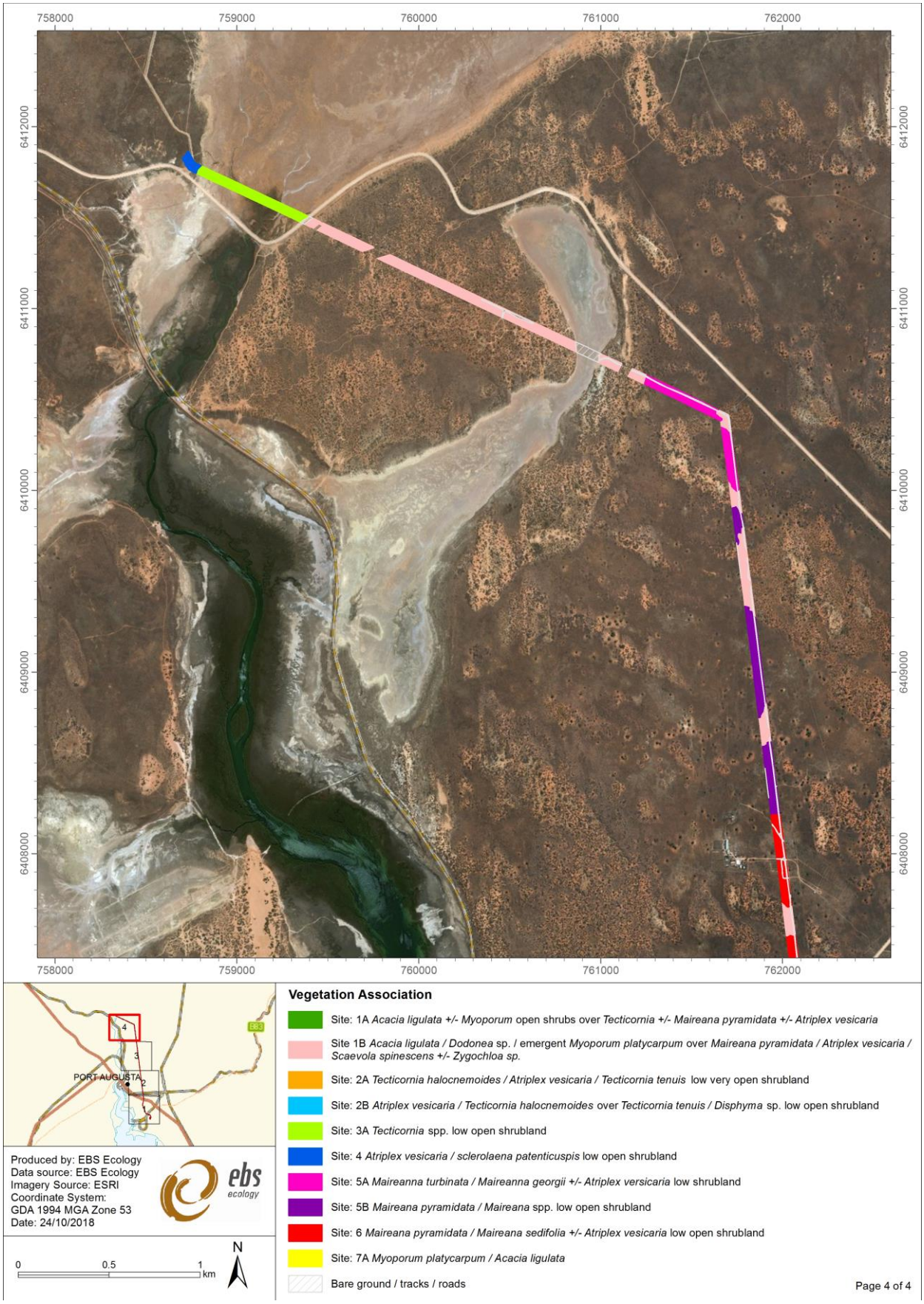


Figure 8. Location of vegetation associations (4).

Table 6. Block A - Site 1A.

	Acacia ligulata* +/- *Myoporum montanum* Open Shrubland over *Tecticornia* sp. +/- *Maireana pyramidata* +/- *Atriplex vesicaria
Area (ha)	6.61
Landscape type	Dunefield
Description	Area is located in Davenport substation. No stock grazing is present, but there was grazing from rabbits and kangaroos. The vegetation was in moderate condition but there is disturbance throughout from infrastructure, clearance and tracks. Regeneration of most native species was noted. Most shrubs had sub-shrubs under the canopy.
Weeds/pests	Rabbits, occasional Pepper trees (*Schinus molle*) and *Galenia pubescens* (*Galenia*).
Threatened flora Score	0
Threatened fauna score	0.04. No threatened fauna recorded, but habitat suitable for Elegant Parrot and Blue-winged Parrot.
Conservation significance score	1.04
Unit biodiversity score	61.18
Total biodiversity score	**404.37**

Table 7. Block A – Site 2A

	***Acacia ligulata* +/- *Myoporum platycarpum* over *Maireana pyramidata* +/- *Atriplex vesicaria* shrubland**
Area (ha)	23.5
Landscape type	Dunefield
Description	These sites comprise areas of moderate to high value vegetation with little disturbance other than in areas closer to houses/settlements. Very few weeds were recorded other than an invasion of *Opuntia* sp. in land to the north of Depot Creek Road. No stock was present, but areas were grazed by kangaroos and rabbits.
Weeds/pests	Rabbits, *Opuntia* sp.
Threatened flora Score	0
Threatened fauna score	0.04. No threatened fauna recorded, but habitat suitable for Slender-billed Thornbill, Elegant Parrot and Blue-winged Parrot.
Conservation significance score	1.04
Unit biodiversity score	82.96
Total biodiversity score	**1949.51**

Table 8. Block A – Site 2B

	***Atriplex vesicaria* / *Tecticornia halocnemoides* over *Tecticornia tenuis* / *Disphyma crassifolium* Low Open Shrubland**
Area (ha)	10.69
Landscape type	Dunefield and claypans
Description	Disturbed areas are present and some areas have been partially cleared in the past. Tracks are present for the overhead powerline. Light grazing from kangaroos is present but there is no stock grazing.
Weeds/pests	Rabbits. Very few weeds recorded.
Threatened flora Score	0.04 – there are records for *Malacocera gracilis* (Slender Soft-horns) within 20 km and habitat is suitable – however the species was not recorded during the survey.
Threatened fauna score	0.04. No threatened fauna recorded, but habitat suitable for Slender-billed Thornbill, Elegant Parrot and Blue-winged Parrot.
Threatened Ecological Community Score	1.2 - This habitat may qualify as a Nationally (EPBC Act) Vulnerable community (Subtropical and Temperate Coastal Saltmarsh)
Conservation significance score	1.28
Unit biodiversity score	85.28
Total biodiversity score	**911.64**

Table 9. Block A – Site 3A.

	Tecticornia spp. Low Open Shrubland
Area (ha)	11.74
Landscape type	Drainage Lines / Floodouts
Description	Saline areas with salt crust on the soil surface. No weeds recorded. No understorey present. Kangaroo tracks present.
Weeds/pests	Disturbance from kangaroos. Cat tracks recorded. Very few weeds.
Threatened flora Score	0.04 – there are records for *Malacocera gracilis* (Slender Soft-horns) within 20 km and habitat is suitable – however the species was not recorded during the survey.
Threatened fauna score	0.04. No threatened fauna recorded, but habitat suitable for Slender-billed Thornbill, Elegant Parrot and Blue-winged Parrot.
Threatened Ecological Community Score	1.2 - This habitat may qualify as a Nationally (EPBC Act) Vulnerable community (Subtropical and Temperate Coastal Saltmarsh)
Conservation significance score	1.28
Unit biodiversity score	63.60
Total biodiversity score	**746.66**

Table 10. Block A – Site 4.

	Atriplex vesicaria / Sclerolaena patenticuspis Low Open Shrubland
Area (ha)	2.51
Landscape type	Dunefield
Description	Dry area with dry/dead vegetation raised on sand dune. Crust present on sand. There is disturbance from rubbish/tipping nearby. Kangaroo tracks and scats are present. No evidence of stock grazing.
Weeds/pests	Disturbance from kangaroos.
Threatened flora Score	0
Threatened fauna score	0.04. No threatened fauna recorded, but habitat suitable for Slender-billed Thornbill, Elegant Parrot and Blue-winged Parrot.
Threatened Ecological Community Score	N/A
Conservation significance score	1.04
Unit biodiversity score	57.04
Total biodiversity score	**143.16**

Table 11. Block A – Site 5A.

	Maireana turbinate / Maireana georgii +/- Atriplex vesicaria Low Shrubland
Area (ha)	3.55
Landscape type	Level Plain
Description	No evidence of current stock grazing, but the area may have been historically grazed. Currently grazed by kangaroos - large number of kangaroo tracks and scats present. Track present under powerline.
Weeds/pests	Disturbance from kangaroos. Few weeds other than *Medicago* sp. (Medic).
Threatened flora Score	0.04 – there are records for *Malacocera gracilis* (Slender Soft-horns) within 20 km and habitat is suitable – however the species was not recorded during the survey.
Threatened fauna score	0.04. No threatened fauna recorded, but habitat suitable for Slender-billed Thornbill, Elegant Parrot and Blue-winged Parrot.
Threatened Ecological Community Score	N/A
Conservation significance score	1.08
Unit biodiversity score	57.45
Total biodiversity score	**203.94**

Table 12. Site 5B.

	Maireana pyramidata / Maireana sp. Low Open Shrubland
Area (ha)	10.11
Landscape type	Level Plain
Description	Species-poor area, with limited regeneration. Most plants recorded were adults. No evidence of current stock grazing, but the area may have been historically grazed. Currently grazed by kangaroos - large number of kangaroo tracks and scats present. Several dead plants were noted.
Weeds/pests	Disturbance from kangaroos. *Carrichtera annua* (Wards weed) and *Medicago* sp. present.
Threatened flora Score	0
Threatened fauna score	0.04. No threatened fauna recorded, but habitat suitable for Slender-billed Thornbill, Elegant Parrot and Blue-winged Parrot.
Threatened Ecological Community Score	N/A
Conservation significance score	1.04
Unit biodiversity score	46.38
Total biodiversity score	**468.88**

Table 13. Block A – Site 6.

	Maireana pyramidata / Maireana sedifolia / +/- Atriplex vesicaria Low Open Shrubland
Area (ha)	5.86
Landscape type	Level Plain
Description	Species-poor area, with limited regeneration. Most plants recorded were adults. No evidence of current stock grazing, but the area may have been historically grazed. Fences are present. Currently grazed by kangaroos - large number of kangaroo tracks and scats present. Several dead plants were noted.
Weeds/pests	Disturbance from kangaroos. *Carrichtera annua* (Wards weed) and *Medicago* sp. present.
Threatened flora Score	0
Threatened fauna score	0.04. No threatened fauna recorded, but habitat suitable for Slender-billed Thornbill, Elegant Parrot and Blue-winged Parrot.
Threatened Ecological Community Score	N/A
Conservation significance score	1.08
Unit biodiversity score	57.78
Total biodiversity score	**338.59**

Table 14. Block A – Site 7.

	Myoporum platycarpum / Acacia ligulata Tall Shrubland over Maireana Pyramidata
Area (ha)	1.52
Landscape type	Dunefield
Description	No stock are present but there is light to moderate grazing from kangaroos. Frequent kangaroo tracks and scats present and disturbance from vehicle tracks. Very sandy area.
Weeds/pests	Disturbance from kangaroos. *Carrichtera annua* (Wards weed) recorded.
Threatened flora Score	0
Threatened fauna score	0.04. No threatened fauna recorded, but habitat suitable for Slender-billed Thornbill, Elegant Parrot and Blue-winged Parrot.
Threatened Ecological Community Score	N/A
Conservation significance score	1.04
Unit biodiversity score	74.33
Total biodiversity score	**112.98**

6 MITIGATION HIERARCHY

6.1 Avoidance

It is not possible to avoid clearance of native vegetation for the Project, as vegetation will need to be cleared for the purposes of constructing the proposed transmission line.

6.2 Minimisation

A detailed design is not yet available. However, it is recommended that all efforts are made to minimise clearance of native vegetation. Minimising the area of clearance will reduce the required SEB payment / offset.

ElectraNet proposes to avoid impacting claypans/salt lakes either by spanning across them or by using pre-disturbed areas with the existing line easement.

6.3 Rehabilitation

Details of any rehabilitation are not yet known. However, the offset payment would be reduced if the site is subject to ecological restoration activities subsequent to the clearance. The rehabilitation must commence within a given time frame over the whole of the area for which the reduction is being sought, as stated in *Guide for Calculating a Significant Environmental Benefit* (NVC 2017c). This would apply if the soil surface was reinstated and planting of vegetation or direct seeding was implemented.

6.4 Offset

It is recommended that options for an on-ground offset are explored by ElectraNet, due to the potentially large offset payment which is likely to be required. Should payment into the Native Vegetation Fund be the preferred option, the total payment would be **up to $440,744.58**. This figure is based on clearance of the entire site, which is unlikely to be required. The SEB payment is therefore likely to be less than this.

7 REQUIREMENTS OF THE REGULATION

Regulation 12(34) – Infrastructure is expected to be applicable to the Project.

Native vegetation within the Project area is protected under the *Native Vegetation Act 1991* and *Native Vegetation Regulations 2017*.

Being related to power transmission (infrastructure in the public interest), this proposal is considered applicable to Division 5 of the *Native Vegetation Regulations 2017* which allows for the clearance of native vegetation in relation to specific activities as set out in Schedule 1, Parts 4, 5 or 6. This project fits within Part 6, section 34 (1) (b) whereby;

(1) Clearance of vegetation—

> *(a) incidental to the construction or expansion of a building or infrastructure where the Minister has, by instrument in writing, declared that the Minister is satisfied that the clearance is in the public interest; or*
>
> *(b) required in connection with the provision of infrastructure or services to a building or proposed building, or to any place, provided that any development authorisation required by or under the Development Act 1993 has been obtained.*

Regulation 34 (1) (b) requires that projects meet criteria including that infrastructure is located in areas of least impact where practical (Mitigation Hierarchy) and a net environmental gain is established to offset the clearance.

7.1 Risk Assessment

It is not possible to undertake an accurate risk assessment until the design and amount of clearance required for construction is known.

Based on clearance of the entire site, which is a corridor some 18 km in length and 50 m wide, the risk would be classed as High Risk (Level 4) as it has a Total Biodiversity Score of 5279.73. A Total Biodiversity Score of over 2500 is classed as Level 4 risk.

An accurate assessment against the Principle b, c and d of the Native Vegetation Act cannot be made accurately until the amount of clearance required is known.

8 5. SIGNIFICANT ENVIRONMENTAL BENEFIT

A Significant Environmental Benefit (SEB) is required for approval to clear under Division 5 of the *Native Vegetation Regulations 2017*. The NVC must be satisfied that as a result of the loss of vegetation from the clearance that an SEB will result in a positive impact on the environment that is over and above the negative impact of the clearance.

The required SEB points, hectares required and payments are provided below (Table 15). The size of the area, Unit Biodiversity Scores and Total Biodiversity Scores for each site are provided above (Table 6 to Table 14). Further details are provided in the attached Scoresheets. Rainfall factors are based on 257.6 mm to 261 mm (NatureMaps 2018).

It is recommended that options for an on-ground offset are explored by ElectraNet, due to the potentially large offset payment which would be required. Should payment into the Native Vegetation Fund be the preferred option, the total payment would be **up to $440,744.58** (Table 15). However, this figure is based on clearance of the entire site, which is unlikely to be required and SEB payment would therefore be less than this. The required clearance would need to be re-calculated once the design and clearance required for construction is known.

Table 15. Summary of SEB requirement / payment for each site.

Site	SEB Points Required	Hectares Required	Payment	Administration Fee	Total
Site 1A	254.75	31.84	$20, 507.74	$1,127.93	$21,635.67
Site 1B	2046.99	255.87	$164,782.70	$9,063.05	$173,845.75
Site 2A	169.05	21.13	$13,788.06	$758.34	$14,546.40
Site 2B	957.23	119.65	$77,056.64	$4,238.12	$81,294.76
Site 3A	784	98	$63,111.77	$3,471.15	$66,582.92
Site 4	150.32	18.79	$12,100.95	$665.55	$12,766.50
Site 5A	214.14	26.77	$17,237.87	$948.08	$18,185.95
Site 5B	492.32	61.54	$39,631.79	$2,179.75	$41,811.54
Site 6	355.52	44.44	$28,619.39	$1,574.07	$30, 193.46
Site 7	118.63	14.83	$9,549.85	$525.24	$10,075.09
		TOTALS	**$425,879.02**	**$24,551.28**	**$440,744.58**

9 REFERENCES

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Native Vegetation Council (2017c). *Guide for Calculating a Significant Environmental Benefit*. Available online.

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Appendix D Community Consultation

ElectraNet (and OZ Minerals) has undertaken the following stakeholder engagement on the project:

Aboriginal Engagement

Traditional Owner	Details of Engagement
Barngarla Determination Aboriginal Corporation	• Discussions on project scope • Native Title Agreement • Initial cultural heritage survey • Ongoing cultural heritage surveys • Ongoing engagement through detailed design and construction
Nukunu People	• Discussions on project scope • Initial cultural heritage survey planned for April 2019 • Ongoing engagement through detailed design and construction

Local and State Government Engagement

Council	Details of Engagement
City of Port Augusta	Approval for the easement variation was resolved by Council at its meeting on 11 December 2018.
Department for Planning, Transport and Infrastructure	Notices under s.47 of the Electricity Act 1996 advising of the intention to undertake construction on Crown Lands
Department of Environment and Water	Notices under s.47 of the Electricity Act 1996 advising of the intention to undertake construction on Crown Lands

Affected Landowner Engagement

Title Reference	Property Description	Owner	Details of Engagement
CL6181/119	Carriewerloo Pastoral Station	Buckleboo Nominees	Ongoing negotiations to acquire and easement and undertake construction activities on property
CL6180/595	Mount Arden Pastoral Station	Kootaberra Pty Ltd	Ongoing negotiations to acquire and easement and undertake construction activities on property
CR5619/687	Yorkeys Crossing	Minister for Environment, Sustainability and Conservation	Ongoing negotiations to acquire and easement and undertake construction activities on property
CR5619/686	Yorkeys Crossing	Minister for Environment, Sustainability and Conservation	Ongoing negotiations to acquire and easement and undertake construction activities on property
CR5476/602	Yorkeys Crossing	Minister for Environment, Sustainability and Conservation	Ongoing negotiations to acquire and easement and undertake construction activities on property
CR5476/604	Yorkeys Crossing	Minister for Environment, Sustainability and Conservation	Ongoing negotiations to acquire and easement and undertake construction activities on property
CR5476/603	Yorkeys Crossing	Minister for Environment, Sustainability and Conservation	Ongoing negotiations to acquire and easement and undertake construction activities on property

Title Reference	Property Description	Owner	Details of Engagement
CR5476/605	Yorkeys Crossing	Minister for Environment, Sustainability and Conservation	Ongoing negotiations to acquire and easement and undertake construction activities on property
CR5476/601	Yorkeys Crossing	Minister for Environment, Sustainability and Conservation	Ongoing negotiations to acquire and easement and undertake construction activities on property
CT6012/458 CT6016/434		Tardieu	Ongoing negotiations to acquire and easement and undertake construction activities on property
CT5735/326		Spencer Gulf Fire Pistal	Ongoing negotiations to acquire and easement and undertake construction activities on property
CT6097/115		Minister for Transport and Infrastructure	Ongoing negotiations to acquire and easement and undertake construction activities on property
CT5868/540		Aboriginal Lands Trust	Ongoing negotiations to acquire and easement and undertake construction activities on property
CT5635/352		Whiting	Ongoing negotiations to acquire and easement and undertake construction activities on property
CT5999/197 CT5999/198		Footner	Ongoing negotiations to acquire and easement and undertake construction activities on property
CT5990/39		Turner	Ongoing negotiations to acquire and easement and undertake construction activities on property
CT5514/855 CT5602/231		Port Augusta Council	Ongoing negotiations to acquire and easement and undertake construction activities on property
CT5448/172 CT6016/75		Gaghan	Ongoing negotiations to acquire and easement and undertake construction activities on property
CT5369/474		Rutherford	Ongoing negotiations to acquire and easement and undertake construction activities on property
CR5870/651		Min. Sustainability	Ongoing negotiations to acquire and easement and undertake construction activities on property
CT5211/224		Oakes	Ongoing negotiations to acquire and easement and undertake construction activities on property
CT5211/225		Kohler	Ongoing negotiations to acquire and easement and undertake construction activities on property
CT5833/222		Bonetti	Ongoing negotiations to acquire and easement and undertake construction activities on property

Title Reference	Property Description	Owner	Details of Engagement
CT5370/180		Pt Augusta Gun Club	Ongoing negotiations to acquire and easement and undertake construction activities on property
CR5749/624		Min. Sustainability	Ongoing negotiations to acquire and easement and undertake construction activities on property
CT6100/44		Port Augusta Council	Ongoing negotiations to acquire and easement and undertake construction activities on property
CR5749/622		Min. Sustainability	Ongoing negotiations to acquire and easement and undertake construction activities on property
CT5834/23		Tomalin	Ongoing negotiations to acquire and easement and undertake construction activities on property
CT6048/143		ARTC	Ongoing negotiations to acquire and easement and undertake construction activities on property
CT5313/342 CT5569/828		BP Aust	Ongoing negotiations to acquire and easement and undertake construction activities on property
CT5313/353 CT5313/349 CT5313/350 CT5313/351 CT5313/352		BIHRENBRODT & ORS	Ongoing negotiations to acquire and easement and undertake construction activities on property
CT5308/495		Duregon	Ongoing negotiations to acquire and easement and undertake construction activities on property
CT6177/205		HGKR ENTERPRISES PTY. LTD.	Ongoing negotiations to acquire and easement and undertake construction activities on property
CT5140/782		Baxendale	Ongoing negotiations to acquire and easement and undertake construction activities on property
CT6180/724		Flinders Power	Ongoing negotiations to acquire and easement and undertake construction activities on property
CT6202/318		TLC / ElectraNet (Davenport Substation property)	Ongoing negotiations to acquire and easement and undertake construction activities on property