STATE COMMISSION ASSESSMENT PANEL
A COMMITTEE OF THE STATE PLANNING COMMISSION

APPLICATION ON NOTIFICATION – PUBLIC INFRASTRUCTURE

Type of development:	SECTION 49 - PUBLIC INFRASTRUCTURE
Development Number:	313/V010/19
Applicant:	RES Australia Pty Ltd
Nature of Development:	Construction of battery energy storage system and associated development
Subject Land:	Lot 47 Templers Road, Templers SA 5371
Development Plan:	Light Regional Council Development Plan
Zone / Policy Area:	Primary Production Zone & General Farming Policy Area
Contact Officer:	Janine Philbey
Phone Number:	7109 7062
Consultation Start Date:	7 August 2019
Consultation Close Date:	6 September 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 St, Adelaide, during normal business hours. Application documentation may also be viewed during normal business hours at the local Council office (if identified on the public notice).	

Written representations must be received by the close date (indicated above) and can either be posted, hand-delivered, or emailed to the State Commission Assessment Panel (SCAP). A representation form is provided as part of this 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:
Planning and Land Use Services
Department of Planning, Transport and Infrastructure
Level 5, 50 Flinders Street
ADELAIDE

Email Address: scapreps@sa.gov.au

DEVELOPMENT ACT, 1993
S49 – PUBLIC INFRASTRUCTURE
REPRESENTATION ON APPLICATION

Applicant:	RES Australia Pty Ltd
Development Number:	313/V010/19
Nature of Development:	Construction of battery energy storage system and associated development
Zone / Policy Area:	Primary Production Zone/General Farming Policy Area
Subject Land:	Lot 47 Templers Road, Templers SA
Contact Officer:	Janine Philbey
Phone Number:	7109 7062
Close Date:	6 September 2019

My Name: _____ My phone number: _____

Primary method(s) of contact: Email: _____

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 by the State Commission Assessment Panel in support of your submission.

My interests are:
(please tick one)

- ☐ 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 _____

My interests are:
(please tick one)

- ☐ I support the development
- ☐ I support the development with some concerns
- ☐ I oppose the development

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

_____

_____

_____

_____

I: *(please tick one)*

- ☐ wish to be heard in support of my submission
- ☐ do not wish to be heard in support of my submission *(Please tick one)*

By: *(please tick one)*

- ☐ appearing personally
- ☐ being represented by the following person *(Please tick one)*

Signature: _____

Date: _____

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

SECTION 49 & 49A – CROWN DEVELOPMENT
DEVELOPMENT APPLICATION FORM

PLEASE USE BLOCK LETTERS

COUNCIL: LIGHT REGIONAL COUNCIL

APPLICANT: RES AUSTRALIA PTY LTD

ADDRESS: LEVEL 1, SUITE 4, 760 PACIFIC HIGHWAY CHATSWOOD NSW 2067

CROWN AGENCY: DEPARTMENT OF ENERGY AND MINING

FOR OFFICE USE

DEVELOPMENT No: _____

PREVIOUS DEVELOPMENT No: _____

DATE RECEIVED: / /

CONTACT PERSON FOR FURTHER INFORMATION

Name: MR STEVEN REID

Telephone: +61 2 8440 7419 [work] +61 431 191 017 [Ah]

Fax: _____ [work] _____ [Ah]

Email: steven.reid@res-group.com

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.

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

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

EXISTING USE: Primary Production/Agriculture

DESCRIPTION OF PROPOSED DEVELOPMENT: 30MW/30MWh Battery Energy Storage system incorporating: containerised batteries, hardstand area, inverters, drainage works, construction laydown area, fencing, CCTV, fire suppression system, carparking. The Project will connect to the adjacent SAPN substation.

LOCATION OF PROPOSED DEVELOPMENT:

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

Section No [full/part] 43 Hundred: Light Volume: 6182 Folio: 859

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

LAND DIVISION:

Site Area [m^2] 15,000 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]**:** $ 44,000,000

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: 09 / 07 / 2019

DEVELOPMENT REGULATIONS 1993
Form of Declaration
(Schedule 5 clause 2A)

To: State Commission Assessment Panel

From: RES Australia

Date of Application: 09/ 07 / 2019

Location of Proposed Development: ..Templers, 3.5km west of Freeling……

House No: …… Lot No: …. Street: ……Town/Suburb..Templers.. ….

Section No (full/part): ..43……Hundred: ..Light..

Volume: ..6182…… Folio: ..859…….

Nature of Proposed Development:
Battery Energy Storage System (BESS) Project located on agricultural land adjacent to the SAPN and Templers substations. The Project will deliver 30MW/30MWh of energy storage capacity. The Project will incorporate containerised batteries, drainage works, fencing, construction laydown area, car parking. The BESS will connect to the SAPN substation.

I ……..Steven Reid……..
a person acting on behalf of the applicant (delete the inapplicable statement) for the development described above declare that the proposed development will involve the construction of a building which would, if constructed in accordance with the plans submitted, not be contrary to the regulations prescribed for the purposes of section 86 of the *Electricity Act 1996*. I make this declaration under clause 2A(1) of Schedule 5 of the *Development Regulations 1993*.

Date: 09 / 07 / 2019

Signed: ……  ……..

Note 1
This declaration is only relevant to those development applications seeking authorisation for a form of development that involves the construction of a building (there is a definition of 'building' contained in section 4(1) of the *Development Act 1993*), other than where the development is limited to –

a) an internal alteration of a building; or
b) an alteration to the walls of a building but not so as to alter the shape of the building.

Note 2
The requirements of section 86 of the *Electricity Act 1996* do not apply in relation to:

a) a fence that is less than 2.0 m in height; or
b) a service line installed specifically to supply electricity to the building or structure by the operator of the transmission or distribution network from which the electricity is being supplied.

Note 3
Section 86 of the *Electricity Act 1996* refers to the erection of buildings in proximity to powerlines. The regulations under this Act prescribe minimum safe clearance distances that must be complied with.

Note 4
The majority of applications will not have any powerline issues, as normal residential setbacks often cause the building to comply with the prescribed powerline clearance distances. Buildings/renovations located far away from powerlines, for example towards the back of properties, will usually also comply.

Particular care needs to be taken where high voltage powerlines exist; where the development:

- is on a major road;
- commercial/industrial in nature; or
- built to the property boundary.

Note 5
Information brochures 'Powerline Clearance Declaration Guide' and 'Building Safely Near Powerlines' have been prepared by the Technical Regulator to assist applicants and other interested persons. Copies of these brochures are available from council and the Office of the Technical Regulator. The brochures and other relevant information can also be found at www.technicalregulator.sa.gov.au

Note 6
In cases where applicants have obtained a written approval from the Technical Regulator to build the development specified above in its current form within the prescribed clearance distances, the applicant is able to sign the form.

PLN/06/0024

TEMPLERS BATTERY ENERGY STORAGE SYSTEM

DEVELOPMENT APPLICATION

JULY 2019

JBS&G

www.jbsg.com.au

FAST CAPABLE EXPERTS

Version	Author	Reviewer
Draft for internal review	Agnès Cantin, 23 April 2019	Laura Johnston, JBS&G
Draft for RES review	Agnès Cantin, 29 April 2019	Steven Reid and Chris Gosling, RES
Final Draft	Agnès Cantin, 23 May 2019	Steven Reid and Chris Gosling, RES
Final	Agnès Cantin, 01 July 2019	Steven Reid and Chris Gosling, RES

Prepared by:

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Executive Summary

RES Australia Pty Ltd (RES) proposes to develop a battery energy storage system (BESS) project, north of Adelaide at Templers. The BESS Project (Project) is located approximately 3.5 km west of Freeling and 54 km north of Adelaide within the Light Regional Council. The proposed Project will utilise lithium-ion battery technology in a containerised solution. The Project will deliver 30 MW/30 MWh of energy storage capacity which equates to a maximum output of 30 MW for one hour and will connect directly to the Templers substation, located on the adjoining land to the west. The proposed facility will comprise of a series of containers which will store the batteries, converters, transformers, switch room, carparks, and temporary construction laydown area.

The Project will be able to strengthen the State's electrical system and increase power supply during peak periods. These benefits to system reliability and affordability will endure over the long-term given an asset life of at least 15+ years.

The total development footprint is approximately 1.5 ha within a single parcel of freehold land. The property is currently used for cropping and livestock grazing and is relatively degraded with small areas of native vegetation to the west of the Project site and some trees along the roadside verges. Access to the site is planned to be from Power Road.

Plate 0-1: Project site with adjacent substations (Source: RES)

The development of electricity infrastructure is essential to meeting the current and future electricity requirements of South Australia and achieving socio-economic sustainability of communities. The site proposed is considered a desirable location for the Project due to its proximity to existing grid infrastructure, the availability of cleared land and its positioning away from townships. The Project will be a significant opportunity for local employment and suppliers and will support approximately 40 direct positions during construction.

RES has undertaken a range of stakeholder engagement activities and has received positive and supportive feedback for the Project. RES has gained sponsorship for this Development Application from the Department for Energy and Mining (DEM). RES will continue its stakeholder engagement through ongoing meaningful consultation with the landowners, the regional community and other key stakeholders. An ongoing program of engagement in close consultation with the Council throughout construction and operation of the Project will be maintained, should the Project receive approval.

The proposed development constitutes a public infrastructure facility within the Primary Production Zone of the Light Regional Council Development Plan (Light Regional Council, 2016). It is considered that the Project exhibits substantial planning merit and is consistent with the intention for the locality outlined in the Development Plan.

The Project represents establishment of an energy facility, as supported and envisaged by National and State strategic policy, as well as the Light Regional Council Development Plan.

In particular:

- The location of the Project is ideally sited next to existing grid infrastructure and on cleared land;
- No significant flora or fauna species or communities have been identified on site or nearby surrounding areas;
- Construction and operation of the Project will not result in significant air or noise emissions and there will be no discernible impact on receptors (which are approximately 350 m from the site);
- Impacts associated with visual amenity are not expected to be significant due to the existing electrical infrastructure located adjacent to the Project, proposed landscaping and the site's separation distance from receptors;
- Traffic volumes will be within the capacity of heavy vehicle routes. A Traffic Management Plan will be developed to address and manage potential impacts in close consultation with the appropriate authorities and local community; and
- Based on the environmental risk assessment, no potential impacts have been identified that would preclude development of the Project.

The Project aligns with the State's strategic priorities including the development of electricity infrastructure to meet the current and future electricity requirements of South Australia. The Project will allow for increased grid security during periods of high demand or during unforeseen network events with additional energy storage of up to 30 MWh. The Project provides an important opportunity to improve the security of the State's power system, provide direct economic benefits to the regional economy and provide South Australia with more electricity generation to increase competition as well as additional infrastructure capable of fast frequency response.

Consequently, the proposed development is not at significant variance with the overall intent of the Light Regional Council Development Plan and merits Development Approval.

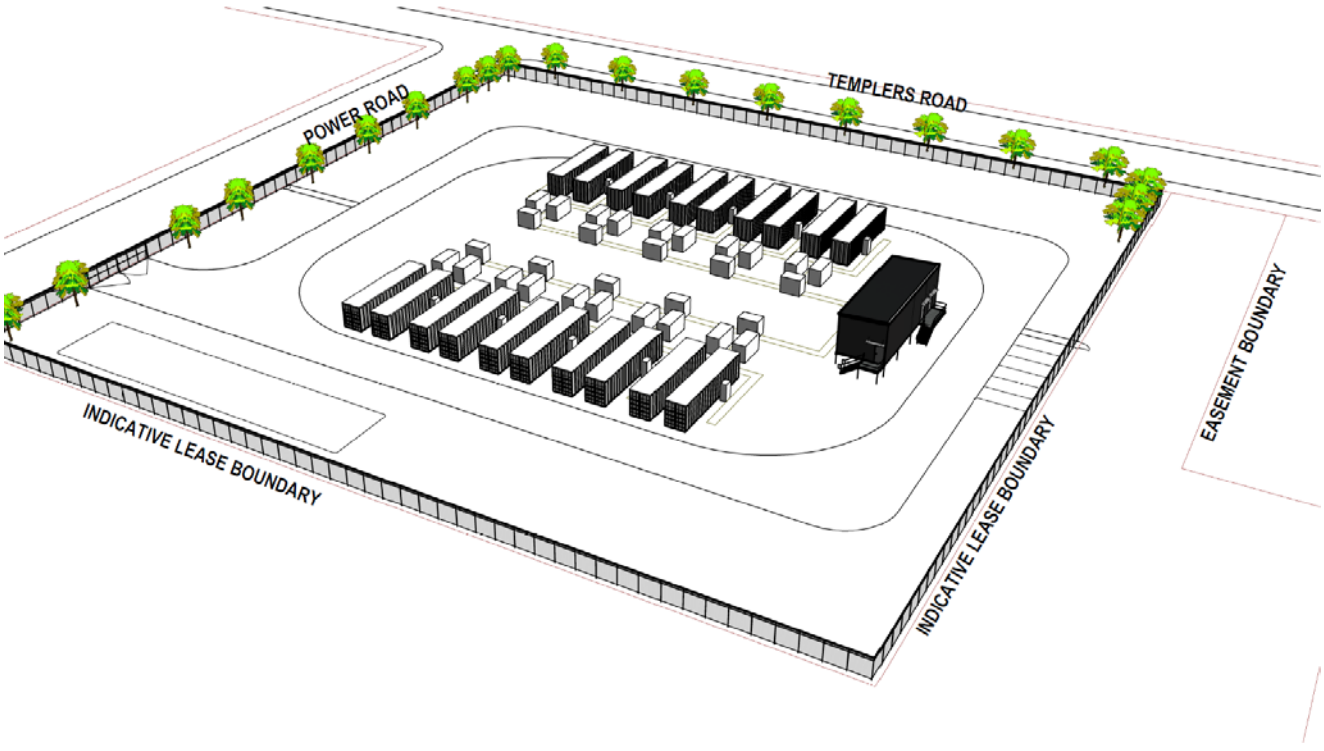

Plate 0-2: Indicative Project layout (Source: RES)

1 Introduction

1.1 Background to the Templers Battery Energy Storage System Project

RES Australia Pty Ltd (RES) proposes to develop a battery energy storage system (BESS) project (Project) within the Light Regional Council (Council) area of South Australia, at a site located approximately 3.5 km west of Freeling and approximately 54 km north of Adelaide (Figure 1-1 and Figure 1-2).

The Project comprises 30 MW/30 MWh of battery storage located in the General Farming Policy Area of the Council's Primary Production Zone (Light Regional Council, 2016). BESS' allow for increased grid security during periods of high demand or oversupply. The BESS can act as either a generator or load to help stabilise the grid frequency and interconnector flows during unforeseen events. The Templers BESS will provide South Australia with more electricity generation to increase competition and put downward pressure on prices, as well as additional infrastructure capable of fast frequency response, increasing system security.

1.2 The Development Application Process

This Development Application Report has been prepared for submission to the State Commission Assessment Panel (SCAP), and relevant referral bodies. The application has been prepared in accordance with the public infrastructure provisions of Section 49 of the *Development Act 1993* (SA) (Development Act) for the approval of the construction and operation of the proposed Project and ancillary infrastructure, together with the guidance provided in the *Guide to the Assessment of Crown Development and Public Infrastructure* (Planning SA 2002).

1.3 Details of the Application

The details of the proponent for this Development Application are summarised in Table 1-1.

Table 1-1: Applicant's details

Applicant:	RES Australia Pty Ltd
Contact:	Steven Reid
Address:	Suite 4, Level 1, 760 Pacific Highway Chatswood NSW 2067
Phone:	02 8440 7400
Email:	steven.reid@res-group.com
ABN:	55 106 637 754

1.3.1 About RES Australia

RES is the world's largest independent renewable energy company, with the expertise to develop, engineer, construct, finance, and operate projects around the globe. It has deployed over 16 GW of utility-scale renewable energy projects across 250 projects in 12 countries over 35 years, involving wind, solar and energy storage technologies.

RES has been developing renewable energy projects in Australia since 2004. Recent Australian projects include: the Emerald Solar Farm (72 MW) in Queensland, which has recently completed construction; the operational Ararat Wind Farm (75 turbines, 235 MW) in Victoria; the Murra Warra Wind Farm (116 turbines, 418 MW), currently under construction in Victoria; and the Taralga Wind Farm (51 turbines, 107 MW) in New South Wales.

RES has also submitted development applications to the South Australian State Planning Commission seeking approval to develop the Twin Creek Wind Farm and Energy Storage project and the recently approved 176 MW Pallamanna Solar Farm and Energy Storage project.

RES' contracted energy storage portfolio exceeds 240 MW (275 MWh), with approximately 200 MW of standalone energy storage projects in development in Australia. Across the operational energy storage portfolio, RES has partnered with over nine utilities and is recognised by Navigant Research as one of the top global integrators of energy storage.

1.4 Purpose of this Report

The purpose of this report is to present all relevant information on the Project for the SCAP to assess the Development Application under Section 49 of the Development Act and for the assessment manager, referral agencies and other stakeholders to assess potential impacts of the development and their management.

The assessment contained in this report covers the construction, operation and decommissioning phases of the Project. It also addresses direct and indirect impacts on the environment and community.

1.5 Structure of this Report

The structure and content of this Development Application is shown in Table 1-2.

Table 1-2: Report structure

Chapter	Contents
Development Application Report	
Chapter 1: Introduction	Contextual chapters that provide background to the Project and outline stakeholder engagement.
Chapter 2: Project Description	
Chapter 3: Project Rationale and Benefits	
Chapter 4: Legislative Framework	
Chapter 5: Stakeholder Engagement	
Chapter 6: Physical Environment Assessment	Describes the characteristics of the Project area and presents the predicted impacts from the Project and proposed mitigations.
Chapter 7: Biological Environment Assessment	
Chapter 8: Socio-Economic Environment Assessment	
Chapter 9: Environment, Health and Safety Management	
Chapter 10: References	Lists the sources of information used.
Chapter 11: Glossary	Lists the definitions of terms and abbreviations
Development Application Report	
Appendix A: Certificate of Title	Presents the certificate of title for the land secured for the proposed Project.
Appendix B: Project Plans	Presents technical drawings of various Project elements and drawings of typical infrastructure components.
Appendix C: Surface Water Assessment	Presents the technical details of assessments carried out by the specialists for the proposed Project.
Appendix D: Ecology	
Appendix E: Traffic	
Appendix F: Development Plan Assessment	Presents an assessment of the Project against the objectives and principles set out in the Light Regional Council Development Plan.
Appendix G: Section 49 Endorsement	Provides a copy of the letter of support and endorsement by the Department of the Premier and Cabinet under Section 49 of the Development Act.
Appendix H: Certificate from the Technical Regulator	Provides a copy of the certification that the development complies with the Technical Regulator's requirements in relation to the security and stability of the State's power system.

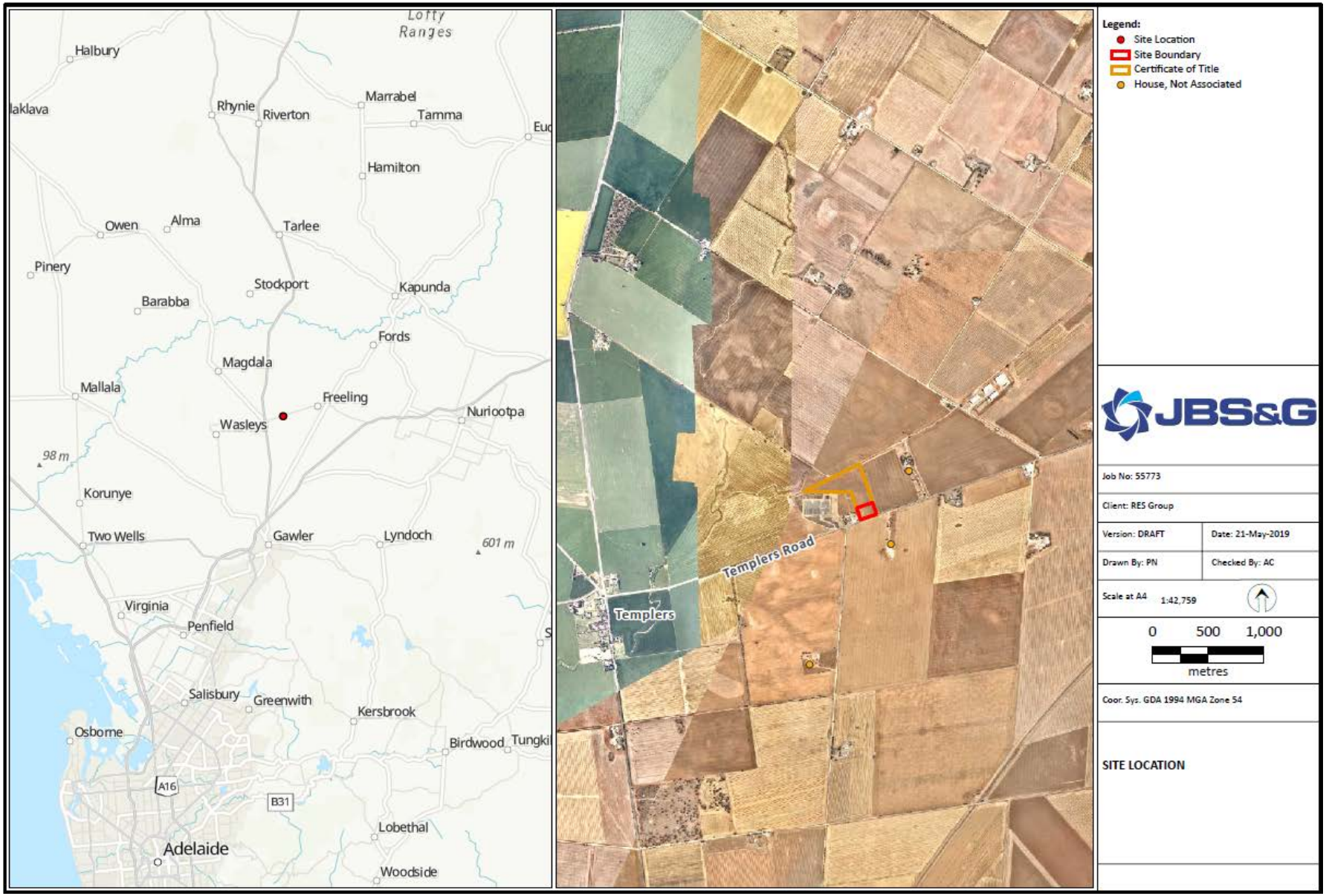

Figure 1-1: Regional map showing the location of the Project site

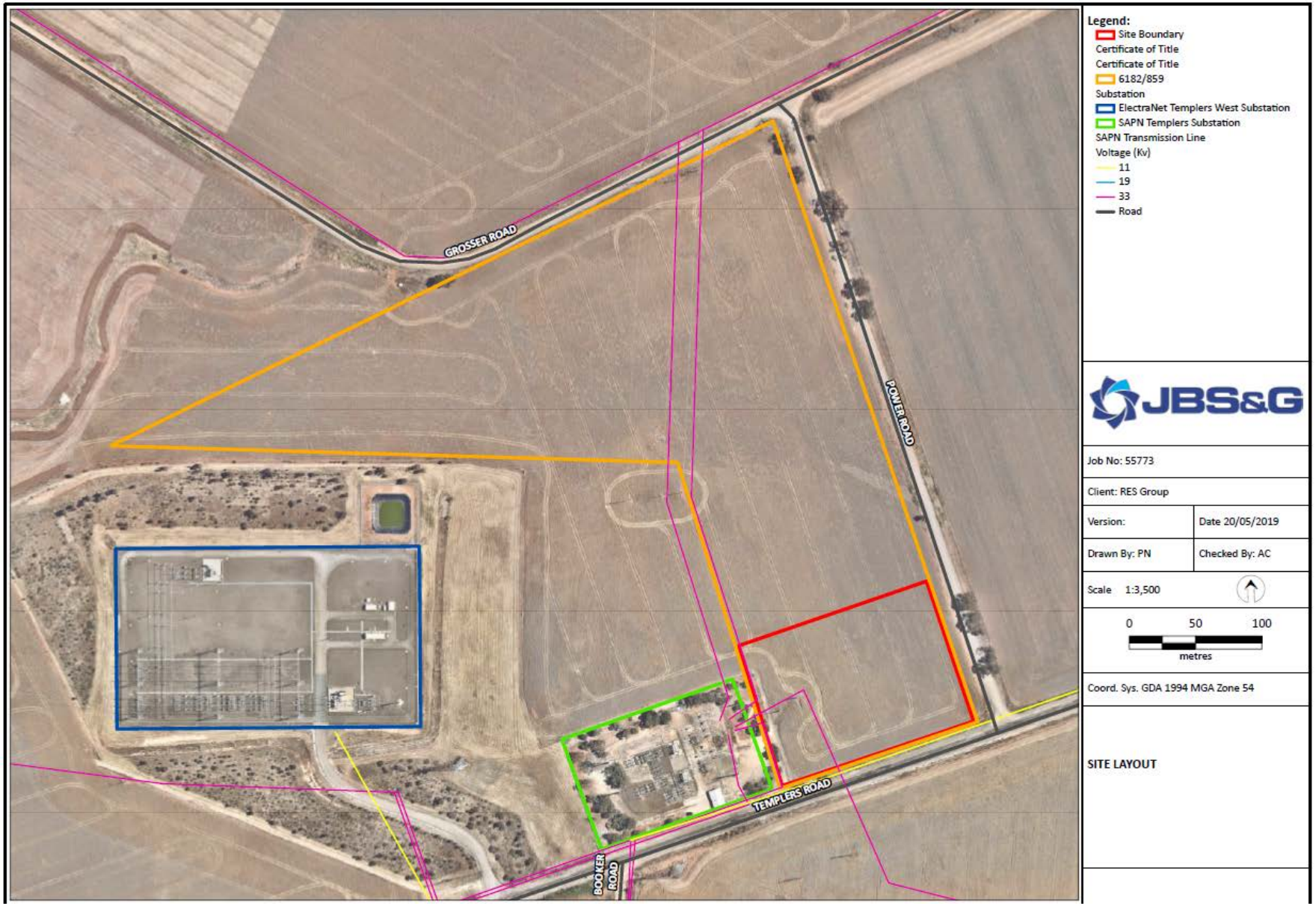

Figure 1-2: Location of the proposed Templers BESS Project

2 Project Description

2.1 Introduction

This section provides a description of the Project, associated phases and activities, and ancillary infrastructure. The information provided in this chapter is based on preliminary Project designs which will be refined during the detailed design phase.

2.2 Project Site

The Project is located on freehold land owned by a single landowner who has entered into a Option to lease agreement with RES to support the Project. A summary of the property details is provided in Table 2-1.

Table 2-1: Templers BESS Project site property details

Property Description	Certificate of Title	Ownership Details	Zoning
Section 43, Hundred of Light	Volume 6182 Folio 859	Ms Shelly Schuster	Primary Production Zone, Policy Area 3 of the Light Regional Council Development Plan (Light Regional Council, 2016)

The total area of the land parcel is approximately 11.3 ha. The BESS infrastructure will be located towards the southern section of the land parcel at the corner of Power and Templers Roads. The total development footprint is expected to be approximately 1.5 ha, depending on the final detailed design.

The property is currently used for cropping and livestock grazing and is relatively degraded with small patches of native vegetation cover to the west of the Project site and solitary trees along the roadside verges. Access to the site is planned to be from Power Road.

To the west of the site are two substations, a 275/132 kV substation known as Templers West and the 132/63 kV Templers substation (Figure 1-2).

Plate 2-1 and Plate 2-2 show typical views of the site.

Plate 2-1: View across the Project site, showing Templers substation in the foreground and Templers West substation in the background (Source: RES Australia)

Plate 2-2: View from the eastern boundary of the Project site looking North-West (Source: RES Australia)

2.3 Site Suitability

The site proposed is considered a desirable location for the Project due to its proximity to existing grid infrastructure, the availability of cleared land and its positioning away from townships.

The connection between the proposed BESS and the Templers substation will be achieved with an overhead 33 kV connection. Minor alterations within the Templers substation may also be required, subject to detailed design. RES understands that any works required within the existing Templers substation are exempt from development approval pursuant to Schedule 14 of the *Development Regulations 2008* (SA).

The Project infrastructure will be located adjacent to the current substation. The proposed facility is consistent with existing land uses and will have minimal impact on the visual amenity of the region.

2.4 Project Overview

The proposed Project will utilise lithium-ion battery technology in a containerised solution. The battery provider for the Project is subject to procurement and has not yet been selected. The Project will deliver 30 MW/30 MWh of energy storage capacity which equates to a maximum output of 30 MW for one hour and which will connect directly to the Templers substation, located on the adjoining land to the west (refer Figure 1-2). The proposed facility will comprise a series of containers to store the batteries.

Subject to detailed design, the installation of approximately 20 battery / inverter blocks will be required which are likely to be comprised of:

- 20 battery containers (i.e. battery racks, which are made up of approximately 13 individual battery modules)
- 20 inverters (Bi-directional Power Conversion System)
- Direct current (DC) wiring and communication cable harnesses
- 10 medium-voltage transformer (likely two inverter blocks per transformer)
- Associated wiring and electrical components required to interconnect the inverter blocks to each transformer and all necessary electrical protection equipment

or any other possible configuration of batteries and inverters to achieve the energy storage and power output capabilities required.

The Project will consist of the following components:

- Hardstand area of 6,400 m^2 incorporating site access, car parking, vehicle manoeuvring areas and laydown areas
- Concrete slab or pier foundations with mounting bolts for the battery containers, transformers, switch room and inverter components
- Overhead 33kV line connection to the Templers substation
- A temporary construction and laydown compound
- Drainage works, including detention basin and stormwater management system
- Control area to include high voltage (HV) switchgear building, carpark for employees and contractors
- Security fencing of the site (2 metre cyclone fencing), incorporating CCTV with a gate for maintenance vehicle access
- Low-level night time lighting for safety and security purposes
- Fire suppression and monitoring systems within the battery containers
- Internal site access roads surrounding the hard stand and a connection road from the proposed facility to the main site access road (Power Road)
- Vegetative screening at the Templers Road and Power Road frontages.

Figure 2-1 shows a preliminary site layout of the proposed container system which will store the batteries. Refinement of the layout and other project details will be ongoing throughout the planning and detailed design phases. Typical photographs of a BESS are shown in Plate 2-3 to Plate 2-6 inclusive.

The total development footprint of the Project and associated infrastructure is expected to be up to 1.5 ha. This will be refined in detailed design when the final location of the Project, site infrastructure and access tracks will be determined. The final design will be balanced to minimise environmental impact and ensure optimum design efficiency.

Plans of the proposed development are included in Appendix B.

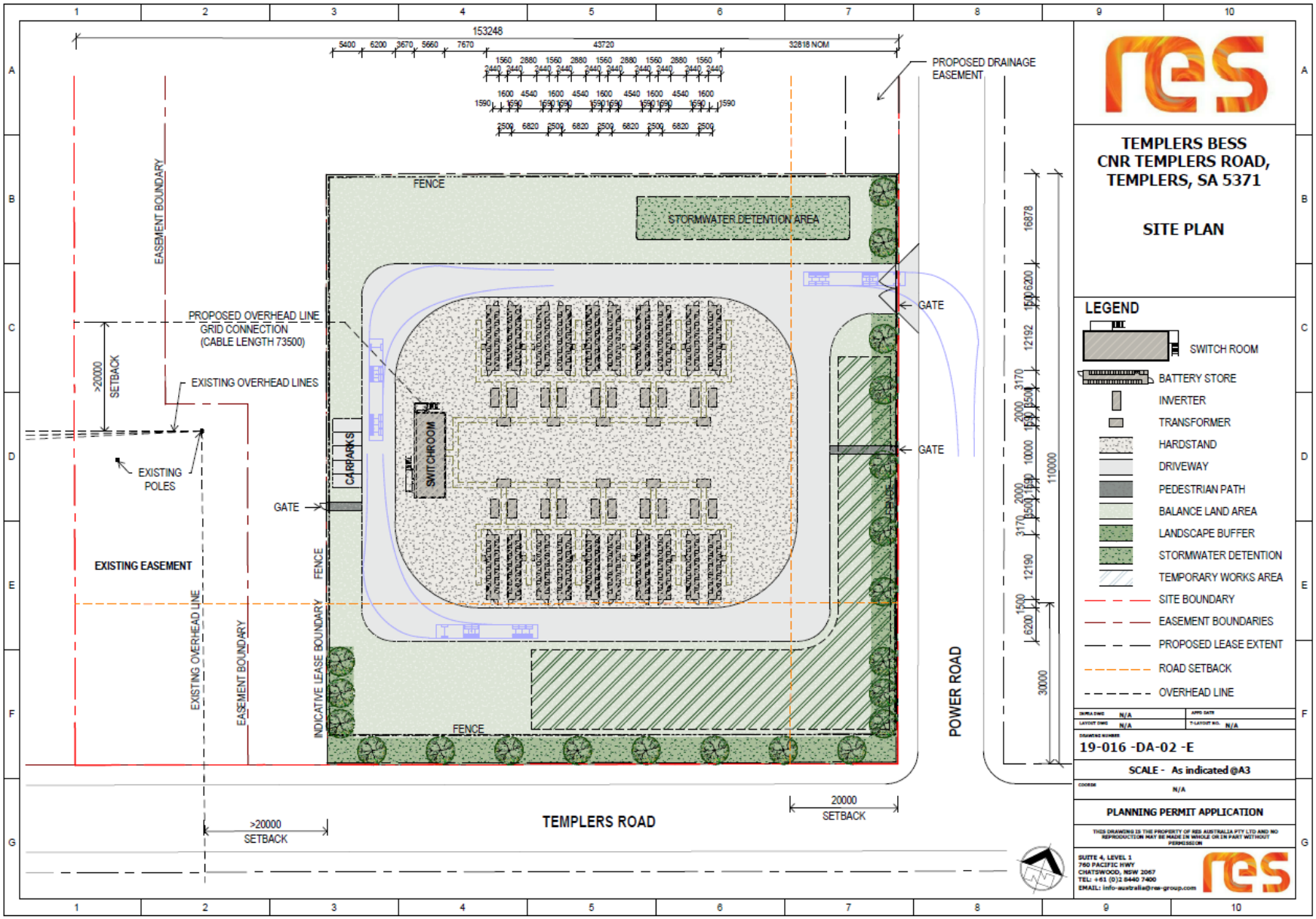

Figure 2-1: Preliminary Templers BESS site layout

Plate 2-3: Typical view of containerised system

Plate 2-4: Typical containerised system for BESS projects

Plate 2-5: Typical construction of BESS

Plate 2-6: Typical layout of containerised system

2.5 Construction Phase

The construction phase will incorporate the following elements:

- Construction traffic for transportation of all component parts to the site;
- Semi-trailers and other smaller commercial vehicles for the movement of component parts;
- A newly created access point from Power Road for the delivery of the components;
- Infrastructure materials such as concrete, reinforcement, pavement and surfacing material to be sourced locally from quarries and suppliers (where available);
- Earthworks to prepare the site of the temporary construction compound and internal roads and surfaces;
- Storage and use of all excavated material on-site; removal of material off site is not anticipated;
- Preparation of concrete pads for foundations for plant, equipment and site buildings, followed by installation of these structures;
- Installation of the batteries and connection of all electrical infrastructure; and
- Upgrade to part of Power Road as an all-weather surface road in accordance with Council requirements.

Construction is anticipated to take approximately 6 – 7 months and will occur between the hours of 7am and 7pm Monday to Saturday. No work will be conducted on Sundays or Public Holidays. Should any work be required outside of these hours written permission from the Environment Protection Authority (EPA) and/or council will be sought.

It is anticipated that approximately 40 people will be directly employed during the construction phase of the Project with approximately a further 104 people indirectly employed.

All battery components will be delivered to site prefabricated, which greatly reduces the amount of construction work and time required on site, and any potential disturbance to residents. The most significant construction works will be the site preparation and any concrete hardstand. Connection to the adjacent Templers substation will require the construction of an overhead line over a short distance (approximately 130 m).

2.6 Operational Phase

The ongoing operation of the Project will involve monitoring and maintenance of the batteries, associated infrastructure and site, including charging and dispatch of the electricity generated into the national electricity market. It is anticipated that approximately five direct full-time equivalent (FTE) staff would be required for the Project during its operation. Operational activities are expected to include remote operation and monitoring of equipment and an ongoing preventative maintenance plan which will include annual, 5-year and 10-year maintenance schedules. There would be employment (potentially at RES' head office) to carry out remote monitoring of the battery system and administrative tasks associated with supplying the electricity generated by the Project to the national grid.

2.7 Buildings and structures

In addition to the BESS, the following ancillary buildings and structures will be required for the Project and located on site.

- **Control Building** – this building is transportable and will have an area of approximately 88 square metres (16 m x 5.5 m). It will comprise amenities and storage components and also accommodate telecommunications, operations and security system infrastructure and equipment required for the Project.
- **Inverters and transformers** – inverters convert the DC electricity that is generated from the BESS into alternating current (AC). Within or adjacent to these containers will be transformers stepping up the

voltage to an internal reticulation voltage within BESS typically to 11, 22 or 33 kV. Depending on the final inverter selected, in the vicinity of up to 20 inverters are proposed to be installed on the site. The inverters are typically installed on a concrete pad footing or raised steel frames.

- **Transformer** – a grid connection transformer is proposed to be located within the BESS switchyard, so that a direct connection can occur via an overhead transmission line to the existing Templers substation. The transformer will be installed on a bunded concrete pad and will step up the voltage from the internal reticulation voltage to 33 kV.
- **Underground Cabling** – underground cabling will be utilised for all internal reticulation to the BESS switchyard.
- **Security Fencing** – permanent security fencing in the form of approximately 2.0 m high chain mesh will be constructed around the perimeter of the BESS.
- **Temporary Construction Area** – during the construction phase of the Project it is proposed to develop a area for the delivery and storage of materials (laydown area). A site office in the form of a transportable building would be located within this area. The temporary construction compound will be located within the fenced Project site for security purposes and will be removed upon completion of construction.
- **Site Access** – access to the site will be from a new access point on Power Road, including upgrade of Power Road from the new access point to Templers Road as an all-weather surface in accordance with reasonable Council requirements.
- **Internal vehicle tracks** – post construction internal vehicle access driveways will be retained throughout the site for access to key equipment. These internal access tracks will be gravel (unsealed) and generally up to 5.0 m in width.
- **Earthworks** – the site will require some reprofiling to achieve a level platform(s) upon which the construction compound, control building, containers and inverters/transformers will be placed. These earthworks will have a positive outcome to nearby residents as this will reduce the visual impact.

2.8 Decommissioning

At the end of life of the proposed facility, if it is not to be upgraded or expanded, the BESS and site will be decommissioned. During decommissioning, all infrastructure will be removed with key elements including:

- Removal of all above-ground BESS site infrastructure, including the perimeter fencing and site office;
- Removal of concrete foundations with rehabilitation of the land suitable for resumption of agricultural use, or other use as agreed with the landowner; and
- Internal cabling and connection to the adjacent substation will be removed, although some infrastructure below ground may be left in place subject to agreement with the landowner.

The majority of infrastructure removed during decommissioning is expected to be able to be recycled or repurposed, to be determined at the time of decommissioning and in accordance with statutory requirements at that time. The level of traffic required for decommissioning would be similar in type but of shorter duration than that required for the construction phase.

2.9 Water Management

2.9.1 Construction

Water is expected to be trucked to site for use in construction, dust suppression, equipment washing, worker facilities and potable use. Water tanks are likely to be installed in the temporary construction area. If additional water is needed to meet Project requirements, it is expected that it would be trucked to site. Concrete will be brought to site pre-mixed in trucks.

A detention basin will be constructed to limit peak flows to 'a reasonable rate' prior to discharge to the watercourse to the north of the site (Figure 2-1). All runoff from the site will be directed to a detention basin via a combination of open swales, stormwater inlet pits and an underground pipe network. Details of the drainage infrastructure will need to be refined as the design of the BESS progresses to detailed design.

2.9.2 Operations

Water will be required for worker facilities and potable use during operations; however, quantities required will be relatively low due to the small number of employees likely to be on-site.

Run-off from the site, during operation of the BESS, will be managed through the detention basin.

2.9.3 Wastewater

Wastewater generated during construction and operations will be captured in septic tanks and removed from site by a licensed waste contractor.

2.10 Waste Management

A range of general waste products will be generated during the construction phase and, to a lesser extent, the operational phase. These will include wooden pallets, plastic wrapping, cans, bottles, and metal offcuts. A dedicated waste storage and handling area will be provided during construction and operation.

Waste will be managed in accordance with the waste management hierarchy shown in Figure 2-2 and the requirements of the *Environment Protection Act 1993* (SA).

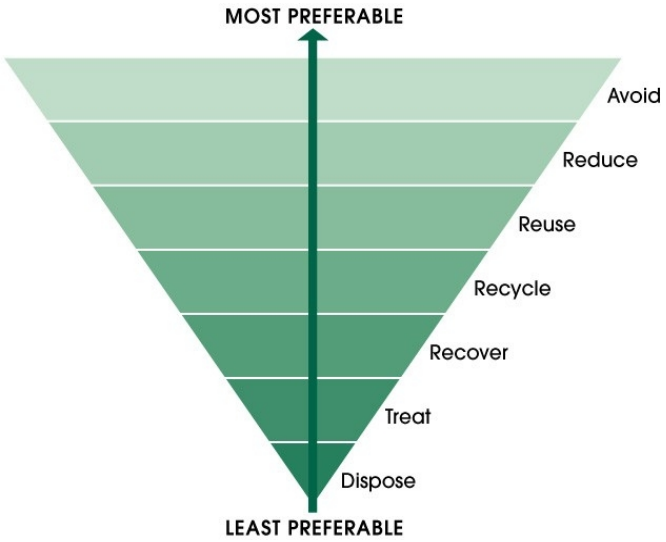

Figure 2-2: Waste management hierarchy (SA EPA 2017)

A Construction Environmental Management Plan (CEMP) will be implemented which will incorporate specific measures for construction waste management. Specific measures to be incorporated will include, but not be limited to:

- Construction waste will be separated into different streams to facilitate recycling with waste removed from the site by a licensed contractor as appropriate.
- Liquid waste (including hydrocarbons, paints and solvents) will be stored in sealed drums or containers in a bunded area before removal from the site by an Environment Protection Authority (EPA) licensed contractor for recycling, where possible, or disposal to a licensed facility.

During construction, temporary ablution facilities will be serviced by pump-out tanker trucks with offsite disposal by a licensed contractor. On completion, permanent facilities will be located adjacent to the switchroom.

2.11 Project Schedule

An indicative schedule for the Project is outlined in Table 2-2.

Table 2-2: Indicative Project schedule

Phase	Approximate number of months to completion
Pre-construction, project planning and development approval	12 months
Construction and commissioning	6 – 7 months
Operation	15+ years
Maintenance	Periodic and replacement of batteries as required
Decommissioning, removal of temporary construction facilities/rehabilitation of disturbed areas	3 months

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3 Project Rationale and Benefits

The Project aligns with South Australia's strategic priorities, will improve the security of the State's power system and provide direct economic benefits. The Project is a development of economic and environmental significance and represents an important contribution to energy generation in South Australia.

The battery storage will provide electricity for use by electricity customers within the National Electricity Market (NEM).

3.1 Alignment with South Australian Government Priorities

South Australia's mix of electricity supply sources continues to change with an increasing share of renewable generation. Since the closure of coal fired power generation in South Australia and the increase in electricity generated from wind or solar resources, there has been a need for higher levels of dispatchable generation (AEMO, 2017). The Project will be a timely addition of 'on demand' dispatchable power that will significantly assist in balancing supply and demand.

As a key energy project, the Project will deliver additional capacity of 30 MW energy that is fully dispatchable on demand to the South Australian electrical system. The Project will assist with overcoming network issues, such as peak demand management, and can potentially offset upgrading network components.

The Project is aligned with, and will assist in, achieving State Government priorities including the following:

- Development of additional energy storage infrastructure in the South Australian network;
- Dispatch electricity into the South Australian grid during periods of peak demand and in doing so, address the intermittency of supply in South Australia;
- Strengthen the South Australian network; and
- Contribute to demonstrating the improved economics and benefits of storage technology.

3.2 Economic Benefits

RES intends to seek approximately $44 million to fund the capital expenditure of the Project. Approximately half of that investment is forecast to occur locally delivering significant immediate and long-term economic and employment benefits.

RES anticipates that approximately 40 direct and 104 indirect personnel will be required for the Project during the construction phases, with approximately five FTE ongoing roles during the operational phase. A significant proportion of the construction phase workforce is expected be sourced locally.

Indirect economic spinoffs would benefit local businesses in the area throughout the construction and operational phases due to the sourcing of local products, materials and services (such as accommodation, food, fuel, and construction supplies and materials).

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4 Legislative Framework

This section provides a summary of the legislative framework and approval process for the Project and provides an overview of other planning and environmental approvals that are likely to be required.

4.1 Development Act 1993

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

The construction and operation of the BESS project requires development approval as it not located on a site identified by notice in the gazette in accordance *with Schedule 14 clause 1 (2a)* of the *Development Regulations 2008*.

RES understands however that the division of land for the grant of the lease over part of an allotment for a period of more than six years, being for the construction and operation of the BESS project ,does not require development approval, in accordance *with Schedule 3 of* the *Development Regulations 2008*.

4.1.1 Development Approval

The Project has been sponsored by the Department for Energy and Mining (DEM) as a public infrastructure project (Appendix G) and will be assessed under the provisions of Section 49 of the *Development Act 1993*.

The Development Application will be provided to DEM for lodgement with the SCAP. The process undertaken by SCAP involves notification via a public advertisement with an invitation for any person to make written comment on the Development Application within the prescribed timeframe (15 business days). The Development Application is also provided to Council and other government agencies for comment (e.g. Department of the Premier and Cabinet; Department of Environment and Water (DEW); EPA and Department of Planning, Transport and Infrastructure). The SCAP assesses the application, considers any comments made by the public, Council and other referral bodies and prepares a report to the Minister for Planning (Minister) who may approve or refuse the application. The process is outlined in Figure 4-1.

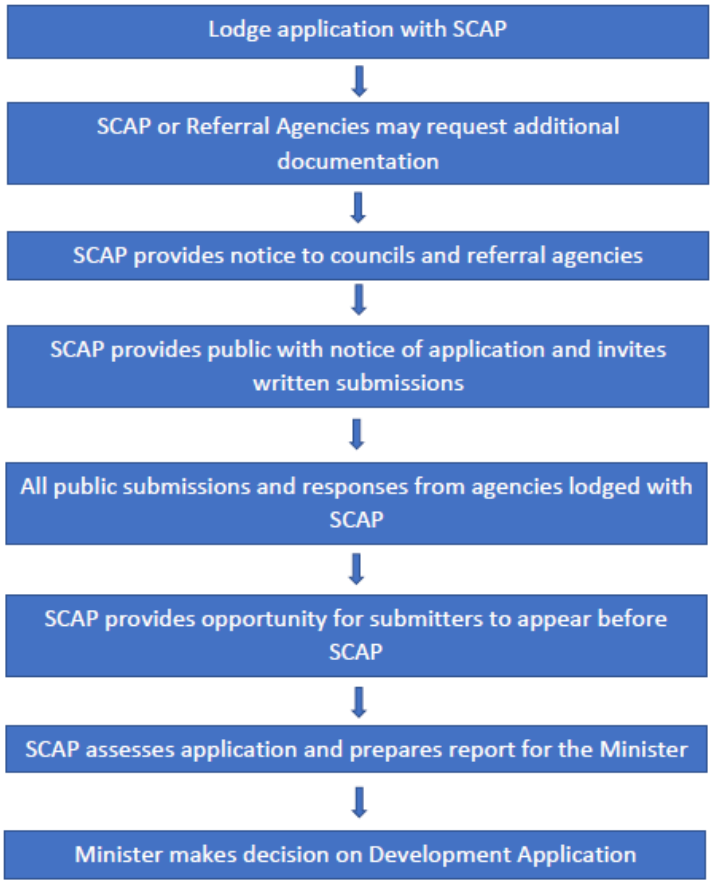

Figure 4-1: Section 49 public infrastructure approval process

This Development Application has been prepared in accordance with the guidance provided in the *Guide to the Assessment of Crown Development and Public Infrastructure* (Planning SA, 2002). The *Development Regulations 2008* also require that prescribed particulars be contained in an application under Section 49, including:

(a) a description of the nature of the proposed development;

(b) details of the location, siting, layout and appearance of the proposed development; and

(c) a certificate from the Technical Regulator certifying that the proposed development complies with the requirements of the Technical Regulator (if the proposed development is electricity generation over 5 MW that is to be connected to the State's power system).

This report provides information on (a) and (b). A certificate from the Technical Regulator is attached to this report (Appendix H).

4.1.2 Building Rules Certification

The Development Act requires public infrastructure projects involving building work to be assessed and certified as complying with the Building Rules (to the extent that is appropriate in the circumstances) by a private certifier or by a person determined for this purpose by the Minister. The Building Rules include the Building Code of Australia and cover issues such as structural adequacy, fire safety, health and amenity, equitable access for people with disabilities and energy efficiency.

The assessment and certification against the Building Rules will be undertaken by a private certifier.

4.1.3 Development Plan Considerations

The Light Regional Council Development Plan (Light Regional Council, 2016) (Development Plan), established under the Development Act, sets out the policies against which development applications are to be assessed, as well as a number of objectives and principles relating to economic, environmental and social matters against which proposed developments are considered. The Project is within the Primary Production Zone of the Development Plan and as a whole has been assessed against the objectives and principles set out in the Development Plan (see Appendix F). That assessment indicates that the development of a BESS project is not at variance with the Development Plan.

4.2 Other Key Legislation

A range of other legislation is potentially relevant for Project approvals, including:

- Commonwealth:
  - *Environmental Protection and Biodiversity Conservation Act 1999*
  - *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*
  - *Native Title Act 1993*
- South Australian:
  - *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*
  - *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 below.

4.2.1 *Environment Protection and Biodiversity Conservation Act 1999* (Cth)

Approval under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is required for activities that will, or are likely to, significantly impact matters of national environmental significance (MNES). These matters include World Heritage properties, National Heritage places, Ramsar wetlands of international importance, listed threatened species and ecological communities, listed migratory species and, in relation to coal seam gas development and large coal mining development, a water resource.

When a person proposes to take an action that will, or is likely to, significantly impact a MNES, they must refer the proposal to the Minister for Environment and Energy for a decision about whether the proposed action is a 'controlled action' and needs approval under the EPBC Act.

At the request of RES, JBS&G has undertaken an assessment of likely impact by the Project on EPBC Act matters and concluded that there are no MNES that are either present or likely to be significantly impacted. There are no World Heritage properties, National Heritage Places, Wetlands of International Importance or Commonwealth Marine Areas in the vicinity. As indicated in Section 7 and Appendix D, there are no threatened ecological communities or threatened species likely to be present or impacted, and there are no likely impacts to migratory species.

Consequently, it is considered that an assessment under the EPBC Act would not be triggered and a referral under this Act is therefore not proposed.

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

The *Native Title Act 1993* and the *Native Title (South Australia) Act 1994* provide for the recognition and protection of native title. These rights may include: living on the area, access to the area for traditional purposes, to visit and protect important places and sites, to hunt, fish and gather food or traditional resources, and to teach law and custom on country. 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 Traditional Owners of the immediate area (Ngaduri Nation #2) have a registered native claim (Federal Court file number SAD 304/2011) over land covered by the Project. The claim was registered by the National Native Title Tribunal on the Register of Native Title Claims on 21 November 2011. The date for a decision of the claim is unknown.

As the Project is located entirely within freehold land which has extinguished native title rights and interests, RES is not required to enter into any form of native title agreement under State or Commonwealth law.

4.2.3 *Aboriginal Heritage Act 1988* (SA)

The *Aboriginal Heritage Act 1988* is administered by the Minister for Aboriginal Affairs and Reconciliation and provides protection for Aboriginal sites, objects or remains (whether previously recorded or not). It is an offence to damage, disturb or interfere with an Aboriginal site, object or remains without prior authorisation

A search of the Central Archive, which includes the Register of Aboriginal Sites and Objects, did not identify any registered or recorded entries for Aboriginal sites within the Project footprint. Regardless, RES recognises that there may be sites of significance to the Traditional Owners that have not been registered or recorded on the Central Archive.

RES will develop appropriate management strategies to ensure that, in the unlikely event that any sites, objects or remains are found during construction of the Project, appropriate measures are in place to avoid damaging, disturbing or interfering with those sites, objects or remains.

4.2.4 *Heritage Places Act 1993* (SA)

The *Heritage Places Act 1993* provides for the identification and conservation of places and related objects of State heritage significance and also provides protection for archaeological artefacts of heritage significance. It is an offence to damage a Heritage Place.

A desktop assessment of all State and Commonwealth databases has revealed that there are no known Heritage Places or objects within the Project area.

Accordingly, the application does not require referral under Schedule 8 of the *Development Regulations 2008* to the Minister administering the *Heritage Places Act 1993*.

4.2.5 *Environment Protection Act 1993* (SA)

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

The EP Act also defines prescribed activities of environmental significance, which require authorisation and licensing under this Act. The Project may require an EPA licence for concrete batching which is a prescribed activity.

A number of Environmental Protection Policies operate under the EP Act which are relevant to the Project, including the *Environment Protection (Noise) Policy 2007* and the *Environment Protection (Water Quality) Policy 2015*, all of which will be complied with. Battery storage is not a prescribed activity.

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

The *National Parks and Wildlife Act 1972* (NPW Act) establishes the system of conservation reserves in South Australia and provides protection for native plants and animals. Under the NPW Act, it is an offence to take protected plants or animals without approval.

Part 5 of the NPW Act provides for the conservation of native animals and Schedule 9 lists protected species and their protection status. The NPW Act applies to the Project site for the purposes of determining protected species of plant or animals, which influences offset requirements under the *Native Vegetation Act 1991*.

4.2.7 *Native Vegetation Act 1991* (SA)

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

The Project will fall under Regulations 12 and 16 of the Native Vegetation Regulations, under the Infrastructure provisions of Schedule 1, Part 6 (clause 34).

The Regulations permit clearance for infrastructure approved under the Development Act where the Minister has declared that the clearance is in the public interest or if it is required in connection with the provision of infrastructure to a building or proposed building, or to any place.

The clearance requires written approval from the Native Vegetation Council (NVC) and under Regulation 16 will be subject to a condition that:

- Clearance is undertaken in accordance with an approved management plan that results in a Significant Environmental Benefit (SEB), or
- A payment is made into the Native Vegetation Fund of an amount considered by the Native Vegetation Council as being sufficient to achieve a SEB.

An application to the NVC for approval to clear vegetation is not expected for the Project. As outline in Chapter 7, very small areas of native vegetation are located along the western boundary of the site and some trees along Power Road. The layout of the Project does not require clearing of these areas. Should this be otherwise (for any activity relating to the Project), an application may be submitted prior to the commencement of construction and an environmental offset in the form of a SEB will be achieved (e.g. in the form of a Credit SEB area established by a third party, an on-ground SEB or a payment into the Native Vegetation Fund) as required under the *Native Vegetation Act 1991*.

4.2.8 *Natural Resources Management Act 2004* (SA)

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

Both the NRM Act and the Adelaide and Mount Lofty Ranges Natural Regional Resources Management Plan (AMLRNRM, 2016) 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. However, previous advice from DEW is that a separate water affecting activity permit will not be required as this matter is covered by the development approval process[1].A surface water assessment for the Project site identifying water resources in the immediate area has been undertaken (Section 6.2 Water).

4.2.9 Other Approvals

In addition to a CEMP for the Project, there may be other approvals required prior to any construction activities commencing, such as authorisation to place infrastructure and access tracks across road reserves under the *Local Government Act 1999* and possibly *the Roads (Opening and Closing) Act 1991*. If required, approval may be sought under the *South Australian Public Health (wastewater) Regulations 2013* (SA) for a wastewater control system.

Electricity generation licensing under the *Electricity Act 1996* and registration with the Australian Energy Market Operator are being undertaken outside this development application.

[1] Under Section 129(1)(e) of the Act, a water affecting activity permit is not required for activities that have been authorised by a development authorisation under the *Development Act 1993.*

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5 Stakeholder Engagement

This section provides an overview of RES' stakeholder engagement undertaken for the Project.

The Project provides significant employment and economic opportunities for nearby communities, particularly during the 6–7 month construction period. RES will engage with relevant suppliers to utilise, as far as practicable, local resources.

5.1 Approach

In accordance with Section 49(7)(d) of the Development Act, this Development Application will undertake a public exhibition of at least 15 business days. SCAP will publish a notice in an appropriate newspaper advising the type of development and its location and inviting public submissions to be made. In addition, SCAP will provide copies of the documentation for public access to the Light Regional Council, State Government offices and on the SA Planning Portal.

RES has implemented a fit for purpose consultation program which has focused on local community engagement to ensure all relevant stakeholders are informed and have opportunity to provide comment on the Project.

Feedback received from stakeholders has been addressed in this document and, where practicable, will be incorporated into Project management plans.

RES has identified an initial list of stakeholders for engagement (Table 5-1) and this will be updated as the Project progresses.

Table 5-1: Key stakeholders

Group	Stakeholders
Landowners (Directly Impacted)	The Project is located on freehold land owned by a single person
Local Community	Communities of Freeling, Templers and adjoining areas
Local Government	Light Regional Council (Lisa Sapio – Manager-Development Services)
Native Title / Cultural Heritage Groups	Ngadjuri Nation #2, as Traditional Owners and native title claimants of the immediate area (as required)
Industry	ElectraNet SA Power Networks (SAPN) AEMO
State Government	Department of the Premier and Cabinet Department for Energy and Mining (Office of the Technical Regulator) (OTR) Department of Environment and Water Environment Protection Authority Native Vegetation Council Department of Planning, Transport and Infrastructure State Planning Commission and State Commission Assessment Panel Country Fire Service (CFS) Adelaide and Mount Lofty Natural Resources Management Board

5.2 Engagement Program

From the initial Project stages, RES has focused on building local connections through stakeholder meetings and presentations, including with Council and adjoining landowners (Table 5-2).

One-on-one meetings have been undertaken with key stakeholders with subsequent communications as required. These meetings have introduced the Project and provided an opportunity for stakeholders to express potential concerns and support for the Project. The overall feedback received through engagement has been

positive. Key issues that have been raised during community consultation was potential visual impact as a result RES have made the following modifications to Project plans:

- Landscaping to be extended along road frontages
- Increase setback from road frontages
- Containerised solution to decrease height
- Minimised earthworks cut/fill (benching.

RES' engagement approach has included a particular focus on stakeholders who have a direct interest in the Project. RES has engaged with SAPN, ElectraNet, landowners (directly impacted and adjoining) and the Council.

Table 5-2: Overview of communication methods

Method	Brief Description
Personal communication	RES and its consultant team has held numerous meetings (face to face) and telephone conversations with the directly impacted landowner; adjoining landowners and interest groups/stakeholders. RES has visited all residences adjacent to the Project.
Meetings and briefings	RES and its consultant team have conducted briefings with Council staff and Elected Members; SA Government agencies; CFS; SAPN.
Website	RES will provide ongoing Project updates on their company website: www.templers-energyproject.com . The website has contact details for further information.

Meetings have been undertaken with the South Australian Government and targeted technical meetings held to secure feedback from entities within government agencies including the OTR. In addition, meetings have been held with SAPN and the CFS. All feedback received at these meetings has been considered and incorporated into relevant sections of this Development Application.

Discussions will continue to be held with other stakeholders, including licensing authorities that may have a regulatory interest in the Project such as the EPA.

5.2.1 Community Engagement

RES held a drop-in Community and Stakeholder Information Session on Wednesday, May 1st at the Freeling Agriculture Recreation Multi-Purpose Centre to provide information on this development application. This provided an opportunity for RES to inform the community of the development assessment process, address any concerns, incorporate potential design changes (based on feedback/concerns), employment and business opportunities that may become available and to provide clear next steps information in relation to the progress of the Project. The community session was publicised by RES using the following methods:

- Newspaper advertisement –Barossa and Light Herald;
- Letterbox drop of newsletter to targeted landowners; and
- Targeted – emails to key stakeholders.

A number of attendees from Freeling and nearby properties attended the session. Overall feedback and conversations were generally positive and community members expressed interest in:

- Employment opportunities;
- Economic benefits for Freeling and the region;
- Supplier/services opportunities;
- Construction timeline; and
- Technical aspects of the Project.

Representations made about the Project during the statutory notification period will be formally addressed by RES within ten business days of receipt as part of the standard development application assessment process.

Relevant feedback captured through that process, including from Council and government agencies, may be considered by RES during detailed design and when preparing management plans.

5.3 Ongoing Engagement

RES will undertake an ongoing program of engagement during construction and operation of the Project. RES will engage with the Traditional Owners of the immediate area including to establish a Cultural Heritage Management Plan, if required. Liaison with Council regarding the progress of the Project will be ongoing.

Should the Minister approve the development, RES will review stakeholder engagement activities and develop a program appropriate for engagement during construction and operation.

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6 Physical Environment Assessment

6.1 Geology and Soil

6.1.1 Existing Environment

The site lies across two Land Systems; Templers and Freeling. The boundary of the land systems runs from northwest to south east across the site (DEW, 2009).

The Templers Land System is categorised by undulating rises, comprising of clayey Tertiary sediments and calcareous aeolian depositions overlain on Burra Group geological formations, specifically the Stradbrooke Siltstone Member (DEW, 2009; GSA, 2012). Underlying basement rock and minor deposits of alluvium material may be present close to the surface where Tertiary sediments have been dissected by water courses (DEW, 2009). Soils within the Templers Land System are primarily deep with loamy to clay loam surfaces with calcareous soils occurring roughly half the time, some with significant rubble (DEW, 2009). Remaining soils are loamy texture contrast soils, with small amounts of sand (DEW, 2009). The land system appears to be a westward extension of the Freeling Land System, which has undergone a greater degree of dissection.

The Freeling Land System is categorised by undulating clayey rises, comprising of clayey Tertiary sediments with sandy areas along the eastern extent overlain at depth on Burra Group geological formations, specifically the Woolshed Flat and Saddleworth members (DEW, 2009; GSA, 2012). Underlying basement rocks outcrop sporadically on some dissection slopes alongside more recent clayey alluvium where the Tertiary cover has been eroded (DEW, 2009). Soils within the Freeling Land System are characteristically red gradational loams, hard loamy to sandy red texture contrast soils and cracking clays with limited calcareous loams (DEW, 2009).

The topography of the site is generally flat, with a long gentle slope to the north towards Templers Creek (Plate 6-1). The elevation of the site is in the order of 155 to 160 mAHD. The site generally has low erosion potential and no areas of erosion have been noted during site inspections. Water erosion potential is mapped as moderately low across the site (indicating 'modified surface management needed', DEWNR 2009a,) and wind erosion potential mapped as low across the site (indicating 'no special management needed', DEWNR, 2009b). The ephemeral watercourse to the north of the Project site is mapped as moderately low water erosion potential (DEWNR, 2009a).

The predominant past land use across the site (grazing and cropping) is not likely to have resulted in widespread site contamination. While there is always potential for small-scale localised contamination if fuel or chemicals have been spilled on the site, this is not considered likely.

Plate 6-1: Overview of elevation across the Project region.

6.1.2 Potential Impacts and Proposed Mitigation Measures

6.1.2.1.1 Construction and Decommissioning

Construction and decommissioning activities may result in impacts to soil, including erosion and sedimentation, soil compaction, soil inversion and soil contamination. These are discussed in the following paragraphs. Construction activities can also result in dust generation, which is discussed further in Section 6.3.

Erosion and Sedimentation

Excavation and earthworks carried out during construction will disturb the ground surface at the site and have the potential to cause soil erosion and subsequent sedimentation of surface water. Excavation and earthworks will be required for the construction of new access tracks, the construction area, battery containers, site offices, lay down and parking areas; however, large-scale bulk earthworks will not generally be required due to the relatively flat terrain. Excavation of trenches for underground cabling, which involves removal of vegetation cover and disturbance of soils, can also increase the potential for erosion.

The relatively flat terrain, limited drainage network and low susceptibility of the soil to erosion indicate that any impacts are likely to be relatively minor and localised. Measures such as installation of berms or drainage controls, stockpile management and maintenance of sediment/erosion controls will be implemented for excavations such as cable trenches.

Soil Compaction and Inversion

Compaction of soil in areas of temporary disturbance (such as equipment and machinery laydown areas or areas of heavy vehicle traffic) can change local drainage patterns and prevent effective plant growth following completion of construction. Soil compaction impacts will generally be limited to defined areas. Heavy vehicle traffic will be restricted to constructed access tracks on the site. Activities causing excessive rutting or soil compaction will be restricted in wet or boggy conditions. Areas of temporary disturbance (e.g. laydown areas) will be ripped or scarified where appropriate to alleviate compaction. Areas of temporary disturbance will be contained within the Project site.

The mixing of different soil layers during excavation (soil inversion) can adversely affect plant growth after backfilling of the excavation. In locations where the natural surface cover will be reinstated following excavation (e.g. trenches for cables), topsoil will be stockpiled separately for use in reinstatement to minimise this impact.

Soil Contamination

The storage and use of chemicals on site has the potential to result in localised soil contamination if a spill occurs and could result in off-site contamination if the spill is not appropriately managed. Chemicals on site would include fuel, lubricants and herbicides in relatively limited quantities. The risk of contamination will be minimised by storage and handling of fuel and chemicals in accordance with relevant standards and guidelines and the implementation of procedures to contain and clean up spills should they occur.

Transport and handling of batteries during the construction phase will take place in accordance with the manufacturer's requirements. Batteries will come packed in purpose-built packaging as required for transport and shipment. Batteries are 'dry-cell' batteries (with the liquid component making up only 10-20% of the volume of the cell) and leaks or spills are very unlikely to occur, particularly under normal use and transportation.

Contaminated soils can potentially be encountered during excavation activities. Although relatively unlikely at this site, measures to respond to this situation would be included in the CEMP.

<u>Operation</u>

The potential impacts to soil during operation are likely to be very limited. Maintenance activities and vehicle movements would generally be confined to the access tracks.

Erosion and runoff

The potential for wind erosion will be low, given the nature of the soils and the stabilisation provided by vegetation that will be allowed to remain (or regenerate) across the site. Areas that are temporarily disturbed (e.g. laydown areas) will be rehabilitated following the completion of construction. To minimise potential for erosion or transport of sediment off the site, runoff from the site will be directed to a detention basin via a

combination of open swales, stormwater inlet pit and an underground pipe network. Details of the infrastructure required to manage off-site runoff and the detention basin will be finalised in the detailed design.

Soil Contamination

Soil contamination could potentially occur as a result of a spill of fuel or chemicals (e.g. lubricants or herbicides) however the volumes used will generally be low. The risk of contamination will be minimised by storage and handling of fuel and chemicals in accordance with relevant standards and guidelines and the implementation of procedures to contain and clean up spills should they occur.

Handling and storing of batteries during the operation of the Project will take place in accordance with the manufacturer's requirements. Leaks or spills are not expected from the batteries during operation. Leak detection and spill management procedures will be in place as a contingency and the batteries will be contained in the battery building. Batteries are planned to be returned for recycling at the end of their operational life. If any batteries need to be disposed, this will take place in accordance with the manufacturer's specifications and legislative requirements. The risk of contamination from the batteries in the operational phase will be low.

6.1.2.1.2 Summary of Key Mitigation Measures

Key mitigation and management measures are summarised in Table 6-1. These measures will be captured in the CEMP or Operational Environmental Management Plan (OEMP) as appropriate.

Table 6-1: Soil – key mitigation and management measures

Mitigation Measure	Construction Phase	Operational Phase	Decommissioning Phase
Minimise disturbance to soil surface and retain ground cover as much as possible, prior to and during construction, to minimise areas exposed to erosion.	✓		
Stockpile topsoil separately from subsoil, particularly in areas where the natural surface will be reinstated.	✓		
Minimise the area of soil disturbance (e.g. excavation) where possible.	✓		
Locate areas of temporary disturbance within the final/permanent disturbance footprint where possible.	✓		
Rehabilitate areas of disturbed soil promptly and progressively during construction.	✓		
Implement appropriate sediment and erosion controls during construction such as installation of berms or drainage controls, stockpile management and maintenance of sediment/erosion controls.	✓		
Change in surface water drainage pathways causing erosion to be included in the CEMP and mitigated during construction.	✓		
Design to consider surface water drainage and possible erosion and install appropriate permanent soil erosion and drainage management measures.		✓	
Backfill and compact trenches to a level consistent with surrounding soils or in line with final facility design to minimise the potential for subsidence and erosion.	✓		
Design any drainage features or structures associated with permanent access tracks, hardstand areas, buildings and other site infrastructure to minimise potential for erosion or transport of sediment off-site.	✓	✓	
Rip or scarify areas of temporary disturbance (e.g. laydown areas) where appropriate to promote revegetation.	✓		
Restrict activities causing excessive rutting or soil compaction in wet or boggy conditions.	✓	✓	✓

Mitigation Measure	Construction Phase	Operational Phase	Decommissioning Phase
Undertake storage and handling of fuel and chemicals in accordance with relevant standards and guidelines (e.g. EPA bunding guidelines and AS 1940).	✓	✓	✓
Undertake refuelling and maintenance of plant and machinery with appropriate spill containment measures in place (e.g. use of drip trays or in lined, bunded areas).	✓	✓	✓
Regularly inspect machinery for leaks and maintain in good working order.	✓	✓	✓
Locate transformers in the substation on self-bunded pads to contain potential leaks and spills.		✓	
Maintain incident procedures to contain and clean up spills should they occur.	✓	✓	✓
Develop protocol for dealing with potential contaminants (e.g. pesticide containers) if discovered during construction.	✓		

6.2 Water

A surface water assessment has been undertaken for the Project by Tonkin (2019). This assessment is provided in **Error! Reference source not found.** and forms the basis of the information in this section.

6.2.1 Existing Environment

The Project is not located within a prescribed water resources area or prescribed surface water area. An ephemeral, ungauged 1st order stream runs to the north of the Project site (Figure 6-1). These types of streams are robust with limited erosion risk due to disturbance; have low environmental values due to lack of aquatic habitat values; and are common stream types within the region.

An external flow assessment identified two main flow paths– flows in the watercourse to the north of the Project site and flows that would originate in catchments to the south of the site and which currently flow through the site towards the watercourse in the form of shallow sheet flow. There is a relatively small catchment (approximately 0.3 ha) on the southern side of Templers Road which may generate flows that flow through the site towards the watercourse during large rainfall events. The land on the southern side of Templers Road falls towards the road. Flows arriving at the road will be in the form of shallow sheet flows. Templers Road grades towards the east, and flows arriving at the road will either flow along the road reserve towards the intersection or cross the road. Power Road falls in a northerly direction towards the watercourse. The land of the proposed Project is built up relative to the levels in Power Road and there is no risk of flows from Power Road entering the site.

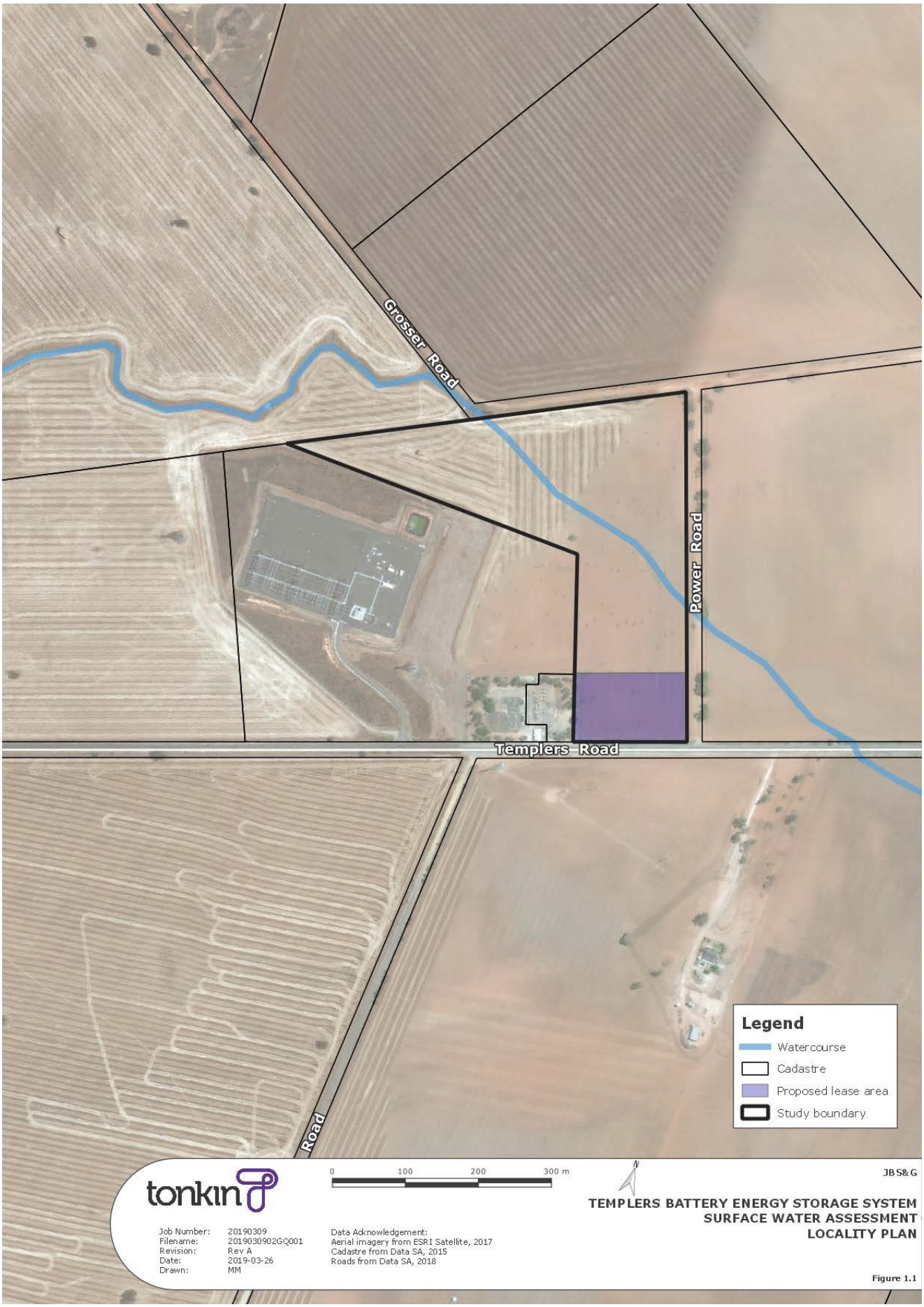

Figure 6-1: Surface water features within the Project site region.

6.2.2 Potential Impacts and Proposed Mitigation Measures

All Project components will be designed and constructed in accordance with the Code of Practice for the Building and Construction Industry (EPA, 1999). A Soil Erosion and Drainage Management Plan (SEDMP) will be prepared for the construction phase of the Project to specify erosion and sediment management controls. The SEDMP will include soil and erosion control best practice as detailed in the IECA (2008) guidelines "Best Practice Erosion and Sediment Control".

6.2.2.1.1 Construction and Decommissioning

Sedimentation

Excavation and earthworks carried out during construction have the potential to cause soil erosion and subsequent sedimentation of surface water. The main areas where earthworks and excavation are required include new access tracks and the BESS hardstand areas. Large scale bulk earthworks will not generally be required across the site. Installation of support posts for the battery containers involves limited disturbance at locations with a small and discrete footprint.

The relatively flat terrain, limited drainage network and low susceptibility of the soil to erosion indicate that any impacts are likely to be relatively minor and localised. The nearby surface water features are highly degraded and have limited ecological value.

Measures will be implemented to minimise the sedimentation risks from excavations such as cable trenches. These measures may include installation of berms or drainage controls, careful placement and management of soil stockpiles out of potential flow paths and maintenance of sediment/erosion controls.

Alteration to Water Flows

The Project will introduce a number of new impervious areas to the site and which may increase site runoff. The increase in runoff will be greatest during frequent rainfall events when the existing site, in its undeveloped state, would be unlikely to generate any runoff.

Runoff from the site will be directed to a detention basin to limit the peak flows to 'a reasonable rate' prior to discharge to the watercourse north of the Project site. This approach will be consistent with the management strategy for stormwater from the substation to the west of the Project site. An outlet pipe will direct flows from the basin to a shallow depression which will convey the flows towards the watercourse. (see Appendix C)

The basin will be located in a position where all flows from the site can be directed into the basin under gravity. Possible locations for the basin is a linear basin immediately to the north of the access road or at the eastern extent of the site (Appendix C). Survey of the site will be undertaken to inform the location and detailed design of the basin.

Contamination

The storage and use of chemicals on site has the potential to result in off-site contamination or contamination of shallow groundwater if spills occur and are not appropriately managed. The risk of contamination will be minimised by storage and handling of fuel and chemicals in accordance with relevant standards and guidelines and the implementation of procedures to contain and clean up spills should they occur. Refuelling would not be undertaken near watercourses.

Transport and handling of batteries during the construction phase will take place in accordance with the manufacturer's requirements. Batteries will come packed in purpose-built packaging as required for transport and shipment. As such, it is very unlikely that any leaks or spills would occur.

6.2.2.1.2 Operation

Sedimentation

The potential for sedimentation of watercourses or other surface water features during operation is low, given the nature of the soils, the relatively flat terrain and the limited off-site drainage of much of the site. As discussed under Geology and Soil in Section 6.1.2, monitoring will be undertaken to identify whether any areas of increased erosion develop (e.g. cabling trenches or access roads) and further mitigation measures would be implemented where required.

Alteration to Water Flows

All runoff from the site will be directed to the detention basin via a combination of open swales, stormwater inlet pits and an underground pipe network. Details of the drainage infrastructure will be refined as the design of the Project progresses to detailed design. Indicative requirements for the internal stormwater infrastructure are discussed and are shown on the stormwater management plan in Appendix C.

Runoff from the developed portion of the site, specifically in the vicinity of the proposed batteries, is expected to follow the natural topography of the land which falls towards the north. The site will be graded to direct flows towards formalised flow paths which will then convey flows in an easterly direction towards grated inlet pits.

Contamination

The risk of off-site contamination or shallow groundwater contamination will be minimised by storage and handling of fuel and chemicals in accordance with relevant standards and guidelines and the implementation of procedures to contain and clean up spills should they occur. The volumes of fuel or chemicals used will generally be low.

As discussed under Geology and Soil in Section 6.1, the risk of contamination from the batteries and the battery building is very low given the nature of the batteries, the storage and handling measures and the design and location of the battery building. This infrastructure is also planned to be located in a part of the site where drainage terminates internally and there is no off-site runoff.

Herbicide use will be minimised during operation and if vegetation control is required, other control methods (e.g. slashing) would preferentially be used. Herbicide use near watercourses would be avoided or strictly controlled.

If an on-site wastewater treatment system is installed, it would be designed and operated in accordance with the *On-site Wastewater Systems Code and the South Australian Public Health (Wastewater) Regulations 2013* to ensure that potential impacts are appropriately managed.

6.2.2.1.3 Summary of Key Mitigation Measures

Key mitigation and management measures are summarised in Table 6-2. These measures will be captured in the CEMP or OEMP as appropriate.

Table 6-2: Water – key mitigation and management measures

Mitigation Measure	Construction Phase	Operational Phase	Decommissioning Phase
Design and construct all project components with regard to the Code of Practice for the Building and Construction Industry (EPA, 1999).	✓		
Prepare and implement a Soil Erosion and Drainage Management Plan (SEDMP) and include soil and erosion control with regard to measures as detailed in the IECA (2008) guidelines "Best Practice Erosion and Sediment Control".	✓		
Avoid placement of infrastructure within drainage lines and above 1 in 100-year ARI flood level or provision of flood protection to at least 1 in 100-year ARI flood level.	✓		
Direct runoff from the site to a detention basin via a combination of open swales, stormwater inlet pits and underground pipe network.	✓	✓	
Design tracks and track crossings in accordance with the Guide to Road Design (Austroads, 2009)	✓		
Implement measures to minimise erosion and sedimentation outlined under *Soil* (Table 6-1).	✓	✓	✓
Complete and reinstate trenches or other earthworks (e.g. access tracks and drainage paths) in the shortest time practicable. Avoid impeding water flows in the watercourses.	✓		

Mitigation Measure	Construction Phase	Operational Phase	Decommissioning Phase
Implement measures for storage and handling of fuel and chemicals, and spill management outlined under *Geology and Soil* (Table 6-1).	✓	✓	✓
Implement strict controls on herbicide use (if required) near watercourses (e.g. restrictions on type, application, timing and proximity).		✓	
Ensure that sewage treatment and disposal is in accordance with *South Australian Public Health (Wastewater) Regulations 2013*.	✓	✓	✓

6.3 Climate and Air Quality

6.3.1 Existing Environment

The region's climate is characterised by warm to hot, dry summers with cool wet winters. Climate information has been sourced from the Bureau of Meteorology (BoM) from the Freeling Recording Station (rainfall) and Rosedale-Turretfield Research Centre (temperature) (BoM, 2019). Details of these stations are shown in Table 6-3 and the data are summarised in Table 6-4.

Table 6-3: Weather station details

Station Details	Freeling	Rosedale-(Turretfield Research Centre)
Station No:	23325	23343
Status:	Open (1963)	Open (1963)
Latitude:	34.46° S	34.55° S
Longitude:	138.81° E	138.83° E
Elevation (m):	182	116
Approx. distance from project site:	~ 3.4 km	~ 11.4 km

The hottest months are between December and March and the coolest are from June to August. Mean daily maximum temperatures range from 14.8°C in July to 30.7°C in January. The dominant winds are from the south and north.

Average annual rainfall recorded at Freeling is 487.7 mm, with the highest recorded monthly rainfall of 156.6 mm occurring in October 2005.

Table 6-4: Climate records for the Project area

	J	F	M	A	M	J	J	A	S	O	N	D
Mean Daily Max (°C)	30.7	30.5	27.4	23.2	18.7	15.6	14.8	15.9	18.4	22.1	25.9	28.3
Mean Daily Min (°C)	15.2	15.5	13.3	10.7	8.3	6.1	5.6	5.6	6.6	8.3	11.2	13.5
Mean Monthly Rainfall (mm)	20.5	21.5	23.9	35.0	49.4	56.4	61.2	59.8	58.0	42.4	31.9	27.4

The air quality in the Project area and surrounds is generally expected to be good and typical of that found in a rural setting in South Australia, due to low population numbers and limited industrial activities immediately adjacent the Project area. The nearest long-term ambient air quality monitoring site is the Northern Adelaide-Elizabeth Downs station which is on average classified as good (EPA, 2018). Existing sources of air pollution within the broader Project area are expected to include vehicle emissions and dust generated by traffic on unsealed roads and agricultural activities.

The closest residence to the proposed Project site is approximately 350 m south of the land parcel.

6.3.2 Potential Impacts and Proposed Mitigation Measures

The construction of the Project is not expected to have a significant impact on air quality. There is a risk of dust generation during the construction phase which can be effectively managed by standard measures. There are no significant sources of emissions during operations.

6.3.2.1.1 Construction and Decommissioning

The potential exists for the creation of dust through construction of the Project including vegetation clearance, earthworks (where required), concrete slab foundations, trenching for cabling and the movement of vehicles along unpaved roads and access tracks. Earthworks associated with construction would be relatively minor and mostly involve foundations for buildings (battery units, inverter stations, laydown areas), trenching for cables and new access tracks.

Vehicles accessing the site would include the construction labour force, and haulage components which is expected to occur over 6 – 7 months.

Dust control measures will be implemented during construction where required. The unsealed Power Road will be upgraded and may likely require a spray seal for ongoing dust control during Project construction where that road is used for access.

Construction of the Project is thus expected to have a negligible impact on air quality and is unlikely to impact any sensitive receptors. No air quality impacts in addition to those mentioned for construction are anticipated during the decommissioning phase. Traffic requirements would be similar in type but of shorter duration than that required for the construction phase.

Mitigation strategies include a community complaints mechanism, whereby the sources of complaints are promptly identified and addressed, and appropriate application of a suite of dust and emission reduction measures as outlined below. These measures will be captured in the CEMP.

6.3.2.1.2 Operation

Operation of the Project will have negligible impact on air quality with minimal emissions.

Maintenance activities during operation would result in some minor, localised vehicle emissions and potentially some generation of dust from vehicles travelling on the unsealed access roads and tracks. The impacts on local and regional air quality are expected to be negligible during normal operation. Operational phase mitigation measures for air quality are outlined below. These measures will be captured in the CEMP and OEMP as relevant.

6.3.2.1.3 Summary of Key Mitigation Measures

Key mitigation and management measures are summarised in Table 6-5. These measures will be captured in the CEMP or OEMP as appropriate.

Table 6-5: Air quality – key mitigation and management measures

Mitigation Measure	Construction Phase	Operational Phase	Decommissioning Phase
Air quality management to be included in the CEMP.	✓		
Measures to reduce greenhouse gas emissions as much as practicable will be included in the CEMP.	✓		
Limit stockpiling of soil and stabilise, if required.	✓		
Undertake progressive rehabilitation of disturbed areas during the construction phase.	✓		

Mitigation Measure	Construction Phase	Operational Phase	Decommissioning Phase
Implement dust control (e.g. spray seal) on access roads and exposed dusty surfaces in response to visual cues, as required. Where possible, stabilising techniques and/or environmentally acceptable dust treatments will be utilised in lieu of wetting controls.	✓		✓
Avoid undertaking earthworks during high wind conditions.	✓		✓
Maintain suitable surfacing (e.g. gravel) of high traffic areas.	✓	✓	✓
Visually monitor dust control measures regularly for effectiveness.	✓	✓	✓
Develop a procedure to promptly identify and respond to issues generating complaints.	✓	✓	✓

6.4 Fire

6.4.1 Existing Environment

The surrounds of the Light Regional district exhibit predominantly low relief with undulating plains. The Project site is in the Mid North Fire Ban District where fire danger season occurs between 1 November and 15 April each year. The Project site falls within the Bushfire Protection Area in the Development Plan's Bushfire Protection Area mapping with a general bushfire risk rating (DPTI, 2016). RES has begun preliminary discussions with the CFS to discuss the Project and ensure all appropriate levels of fire protection are incorporated into the Project design. The General Bushfire Risk area is subject to several objectives and principles related to bushfire protection, including that:

- Development in a Bushfire Protection Area should be in accordance with those provisions of the *Minister's Code: Undertaking development in Bushfire Protection Areas* that are designated as mandatory for Development Plan Consent purposes;
- Buildings and structures should be located away from areas that pose an unacceptable bushfire risk as a result of one or more of the following: vegetation cover comprising trees and/or shrubs; poor access; rugged terrain; inability to provide an adequate building protection zone; and inability to provide an adequate supply of water for firefighting purposes;
- Buildings and structures should be designed and configured to reduce the impact of bushfire through using simple designs that reduce the potential for trapping burning debris against the building or structure, or between the ground and building floor level in the case of transportable buildings; and
- Vehicle access and driveways to properties and public roads created by land division should be designed and constructed to facilitate safe and effective operational use for firefighting and other emergency vehicles and residents.

As noted in more detail in Section 8.1, the site is characterised by cleared agricultural land with small patches of vegetation along Templers and Power Roads.

6.4.2 Potential Impacts and Proposed Mitigation Measures

6.4.2.1.1 Construction and Decommissioning

Construction and decommissioning involve activities that have the potential to increase the risk of bushfire, including hot works such as welding, cutting or soldering (although design minimises these processes), activities such as mowing or slashing and operation of vehicles and equipment.

Activities with a risk of fire ignition will be strictly controlled, particularly during the fire danger season and any permits required (e.g. for hot work on days of total fire ban) would be obtained where necessary. Measures for fire prevention, fire-fighting, site access and emergency response procedures will be developed in consultation with the CFS and incorporated into the CEMP. It is expected that fire-fighting equipment would be maintained on-site during the fire danger season. Fuel reduction around the site boundary or in other areas would also be undertaken where necessary.

Given the nature of the vegetation at the site and the measures that will be in place, the bushfire hazard associated with construction is manageable. Potential impacts from decommissioning activities would be similar to those for construction and any bushfire risk would also be highly manageable.

6.4.2.1.2 Operation

Standard operations including activities such as mowing or slashing could increase bushfire risk. Activities with a risk of fire ignition will be strictly controlled, particularly during the fire danger season, with procedures in place to minimise the risk of fire.

Uncontrolled fires from adjacent off-site areas also pose a risk to workers and infrastructure on the site during operations. RES will continue to engage and work with the CFS and Council to ensure that the Project incorporates appropriate levels of fire protection, which would likely include:

- Maintenance of perimeter firebreaks around the Project site, with fuel reduction carried out where required;
- Establishment of asset protection zones around buildings and facilities and maintenance of these areas to prevent fuel build up;
- Provision of water tanks within the Project site;
- Control of fuel loads where necessary;
- Appropriate design and construction of buildings to reduce the impact of bushfire, in accordance with the provisions of the Minister's Code: Undertaking development in Bushfire Protection Areas, the Building Code of Australia and relevant Australian Standards; and
- Provision of appropriate fire suppression systems and fire-fighting equipment.

Fire risks during operation of the Project are considered highly manageable.

6.4.2.1.3 Summary of Key Mitigation Measures

Key mitigation and management measures are summarised in Table 6-6. These measures will be captured in the CEMP and OEMP as appropriate.

Table 6-6:Fire – key mitigation and management measures

Mitigation Measure	Construction Phase	Operational Phase	Decommissioning Phase
Develop and implement procedures for control of activities with a risk of fire ignition.	✓	✓	✓
Develop measures for fire prevention, fire-fighting, site access and emergency response in consultation with the CFS.	✓	✓	✓
Obtain any permits required (e.g. for hot work on days of total fire ban) where necessary.	✓	✓	✓
Diesel powered heavy machinery only to be used on-site, not petrol.	✓	✓	✓
Undertake fuel reduction (vegetation) around the site boundary or in other areas where necessary.	✓	✓	✓

Mitigation Measure	Construction Phase	Operational Phase	Decommissioning Phase
Work with the CFS and Council to ensure that the Project incorporates appropriate levels of fire protection including: • establishment of asset protection zones and firebreaks. • appropriate design and construction of buildings to reduce the impact of bushfire, in accordance with the provisions of the Minister's Code: Undertaking development in Bushfire Protection Areas, the Building Code of Australia and relevant Australian Standards. • provision of supplies of water for fire-fighting on-site. • provision of appropriate fire suppression systems and fire-fighting equipment.	✓	✓	
Consult with SafeWork SA to ensure that any design, notification and documentation requirements relevant to fire response and fire suppression are met.	✓	✓	✓
Liaise with the CFS to ensure that fire hazards, fire-fighting resources and fire response plans are clearly understood by both parties.	✓	✓	✓
Consult with CFS prior to decommissioning to ensure access to the site is appropriate, a water source is available and appropriate controls are in place.			✓

7 Biological Environment Assessment

This section summarises the vegetation and habitat values of the Project site, identifies potential impacts and mitigation measures.

The assessment is based on a desktop review of flora and fauna species of significance (within a 5 km buffer of the site) and a field assessment undertaken by T&M Ecologists in March 2019. The field assessment investigated the likely footprint for the Project and surrounding roadsides.

The ecological assessment report is provided in Appendix D.

7.1 Existing Environment

7.1.1 Project site

No native vegetation is currently present in the site (which is a cropped paddock) aside from a strip (0.5 m–1 m wide) of Rigid Panic Grass (*Walwhalleya proluta*) on the western boundary of the Project area, immediately adjacent to the electricity substation (Figure 7-1). This strip of native grass is approximately 0.0174 ha in area. A single Tall Spear Grass tussock (*Austrostipa nodosa*) was detected in this patch, as well as two seedling eucalypts (*Eucalyptus* sp.). One of these eucalypts is approximately 30 cm tall and the other was <10cm tall.

This patch of native grass is heavily weed-infested. Notable weeds include Couch (*Cynodon dactylon*), Golden Palensis (*Asteriscus spinosus*), Brome Grass (*Bromus diandrus*), Wild Oat (*Avena barbata*), Rice Millet (*Piptatherum miliaceum*), Scabious (*Scabiosa atropurpurea*) and Stinkweed (*Dittrichia graveolens*).

The habitat value across the Project site is poor, which is heavily disturbed providing limited or no habitat for fauna. No signs of fauna and/or fauna activity were observed across the site.

7.1.2 Surrounding roadsides

Templers Road

The roadside verge adjacent to the site on Templers Road is heavily weed infested. Notable weeds include Couch (*Cynodon dactylon*), Golden Palensis (*Asteriscus spinosus*), Rice Millet (*Piptatherum miliaceum*), Scabious (*Scabiosa atropurpurea*) and Stinkweed (*Dittrichia graveolens*).

The only native vegetation noted is one solitary 5 m tall Inland South Australian Blue Gum (*Eucalyptus leucoxylon* ssp*. pruinosa*).

Power Road

Power Road is a gravel road which runs north-south along the eastern boundary of the site. The roadside verge immediately adjacent the site (western side of road) is largely bare ground with a few very sparsely scattered individual Rigid Panic Grass (*Walwhalleya proluta*) (Figure 7-1). These plants occur immediately adjacent to the carriageway, probably because this is a zone of increased water runoff.

The roadside verge on the eastern side of Power Road (opposite the site) supports a few scattered mature Inland South Australian Blue Gum (*Eucalyptus leucoxylon* ssp*. pruinosa*). Understorey comprises a mix of native and weed species. Native species include:

- Ruby Saltbush (*Enchylaena tomentosa var. tomentosa*)
- Notable Wattle (*Acacia notabilis*)
- Mealy Saltbush (*Rhagodia parabolica*)
- Black-anther Flax-lily (*Dianella revoluta*)
- Wingless Fissure-plant (*Maireana enchylaenoides*)
- Wallaby Grass (*Rytidosperma* sp.)
- Spear Grass (*Austrostipa* sp.)
- Native Wheat Grass (*Anthosachne scabra*)

See Figure 7-1 for the location of this vegetation.

7.1.3 Rare or threatened species

Based on the relatively degraded nature of the site, it is considered unlikely that there are any species of National conservation status present. It is also considered unlikely that there are any additional species of State conservation significance present. A significant impact assessment for flora and fauna of conservation significance within the Project identified that it is unlikely any of the potential flora and fauna species would be found at the site (Table 7-1).

Figure 7-1: Native vegetation present within the proposed site of the Project.

Table 7-1: Likelihood of occurrence of flora of conservation significance in vegetation present within a 5km radius of the Project

*Conservation Status: R=Rare, V=Vulnerable, E=Endangered, CE=Critically Endangered, MW=Migratory wetland
N/A-Species does not have EPBC Status

Scientific Name	Common Name	EPBC Status	NPWS Status	Present	Likely	Possible	Likelihood Justification	EPBC Significant Impact Assessments
Ecological community								
Iron Grass Natural Temperate Grassland of South Australia		CE	E				Unlikely due to current agricultural use of the site.	No significant impact
Peppermint Box (*Eucalyptus odorata*) Grassy Woodland of South Australia		CE	E				Unlikely due to current agricultural use of the site.	No significant impact
Flora								
Austrostipa gibbosa	Swollen Spear-grass		R				Unlikely due to current agricultural use of the site.	N/A
Bothriochloa macra	Red-leg Grass		R				Unlikely due to current agricultural use of the site.	N/A
Caladenia argocalla	White Beauty Spider-orchid	E	E				Unlikely due to current agricultural use of the site.	No significant impact
Caladenia stellate	Star Spider-orchid		R				Unlikely due to current agricultural use of the site.	N/A
Caladenia tensa	Inland Greencomb Spider-orchid	E					Unlikely due to current agricultural use of the site.	No significant impact
Caladenia xantholeuca	Flinders Ranges White Caladenia	E	E				Unlikely due to current agricultural use of the site.	No significant impact
Eucalyptus behriana	Broad-leaved Box		R				Unlikely due to current agricultural use of the site.	N/A
Olearia pannosa ssp. Pannosa		V					Unlikely due to current agricultural use of the site.	No significant impact
Podolepis jaceoides	Showy Copper-wire Daisy		R				Unlikely due to current agricultural use of the site.	N/A
Prasophyllum pallidum	Pale Leek-orchid	V	R				Unlikely due to current agricultural use of the site.	No significant impact
Prasophyllum validum	Mt Remarkable Leek-orchid	V	R				Unlikely due to current agricultural use of the site.	No significant impact
Pycnosurus globosus	Drumsticks		V				Unlikely due to current agricultural use of the site.	N/A
Mammals								
Phascogale tapoatafa	Brush-tailed Phascogale						Suitable habitat not present within the site	N/A
Pteropus poliocephalus	Grey-headed Flying-fox	V	V				Suitable habitat not present within the site	No significant impact

Scientific Name	Common Name	EPBC Status	NPWS Status	Present	Likely	Possible	Likelihood Justification	EPBC Significant Impact Assessments
Reptiles								
Aprasia pseudopulchella	Flinders Ranges Worm-lizard	V					Suitable habitat not present within the site	No significant impact
Birds								
Actites hypoleucos	Common Sandpiper	MW	R				Suitable habitat not present within the site	No significant impact
Botaurus poiciloptilus	Australasian Bittern	E	V				Suitable habitat not present within the site	No significant impact
Calidris acuminata	Sharp-tailed Sandpiper	MW					Suitable habitat not present within the site	No significant impact
Calidris ferruginea	Curlew Sandpiper	CE					Suitable habitat not present within the site	No significant impact
Calidris melanotos	Pectoral Sandpiper	MW	R				Suitable habitat not present within the site	No significant impact
Gallinago hardwickii	Latham's Snipe	MW	R				Suitable habitat not present within the site	No significant impact
Grantiella picta	Painted Honeyeater	V	R				Suitable habitat not present within the site	No significant impact
Leipoa ocellata	Malleefowl	V	V				Suitable habitat not present within the site	No significant impact
Numenius madagascariensis	Eastern Curlew	CE	V				Suitable habitat not present within the site	No significant impact
Pandion haliaetus	Osprey	MW	E				Suitable habitat not present within the site	No significant impact
Pedionomus torquatus	Plains-wanderer	CE	E				Suitable habitat not present within the site	No significant impact
Rostratula australis	Australian Painted-snipe	E	V				Suitable habitat not present within the site	No significant impact
Tringa nebularia	Common Greenshank	ME					Suitable habitat not present within the site	No significant impact

7.1.4 Potential Impacts and Proposed Mitigation Measures

The habitat value of the Project is poor and is heavily disturbed from agricultural practices. No significant areas of native vegetation are present and as such the site is unlikely to provide critical habitat for any fauna species of State or National conservation significance.

7.1.4.1.1 Summary of Key Mitigation Measures

Key mitigation and management measures are summarised in Table 7-2. These measures will be captured in the CEMP and / or OEMP as appropriate.

Table 7-2: Flora and fauna – key mitigation and management measures

Mitigation Measure	Construction Phase	Operational Phase	Decommissioning Phase
Locate areas of temporary disturbance within the final/permanent disturbance footprint where possible.	✓		
Restrict vegetation clearance to the area approved for clearance.	✓		
Avoid works beyond the boundaries of the approved area including vehicle entry, personnel entry, storage of goods and materials and stockpiling of topsoil or cleared vegetation.	✓	✓	✓
Clean earthmoving/construction equipment of soil and vegetation prior to entering the site and before moving off-site.	✓	✓	✓
Avoid importing weed affected soil, mulch, fill or other material to the site.	✓	✓	
Dust suppression to minimise dust settling on adjacent vegetation.	✓	✓	
Rehabilitate areas of temporary disturbance (e.g. laydown areas) where appropriate.	✓		✓
Avoid vegetation clearing in new areas once construction is completed unless necessary approvals are in place.		✓	✓
Undertake ongoing weed management where required, in consultation with the landowner and Natural Resources Management Board where relevant.		✓	
Achieve an appropriate SEB to offset vegetation clearance (if required) in accordance with the requirements of *the Native Vegetation Act 1991*.	✓		

8 Socio-Economic Environment Assessment

This chapter presents an overview of the social receiving environment within the Project.

8.1 Land Use

8.1.1 Existing Environment

Most of the land in the broader area is used for dryland agriculture and plantations for cereals, cropping and livestock grazing. Areas of residual native vegetation cover are scattered throughout the region.

The closest township is Freeling 3.5 km east of the Project site. The closest residence to the Project is located approximately 350 m south.

There are no protected areas within close proximity to the Project.

The Project is located on freehold land currently used for cropping. An ephemeral creek line traverses to the north of the site. The Project site is bordered to the south by Templers Road and to the east by Power Road. Land adjacent to the Project is utilised for cropping purposes. Two substations are adjacent to the Project to the west.

8.1.2 Potential Impacts and Proposed Mitigation Measures

8.1.2.1 Construction

Inadvertent damage to the transmission lines that may cross the Project site could impact power supplies and stability of the grid in the region or possibly the State. Standard measures for working safely near transmission lines will be implemented to avoid any damage, including buffer zones, temporary fencing and defined crossing points. With the exception of the connection infrastructure, Project infrastructure will not be located in close proximity to the transmission lines.

Traffic management strategies will be implemented to minimise potential impacts to local landowners along Templers and Power Roads. Traffic is discussed further in Section 8.5.

Any construction impacts to off-site land use would be temporary and standard mitigation strategies will reduce the level of risk to surrounding landowners.

The Project site will be progressively rehabilitated as soon as practicable after an area is no longer required for construction activities. Roads and hardstand areas that are no longer required will be deep-ripped to ensure water infiltration and facilitate successful plant establishment. Rehabilitation will be undertaken in accordance with good practice and applicable guidelines, including the use of local native species, protection from livestock grazing and actively managed against weeds.

During construction, grazing and/or cropping activities that are currently taking place on the property will cease on the Project site and may be restricted on immediately adjacent parts of the property until fencing is modified. No significant land use conflicts are foreseen with surrounding land uses during construction and the impact is considered to be negligible. Signage will be installed near the access gate and site boundaries to warn of site activities and access restrictions to minimise the risk of impact to third parties

8.1.2.2 Operation

During operation, the land use of the site will change from agricultural to power generation. Grazing and/or cropping will not continue during the operational phase of the Project. Grazing and/or cropping, on land outside of the area leased for the Project, will continue unchanged.

There are extensive tracts of similar grazing land in the region and the loss of this amount of grazing land for the life of the Project is not considered significant. Further, the change in land use is reversible as at the end of the Project all above ground infrastructure will be removed and current agricultural activities could resume, or other land uses could be considered.

The installation of infrastructure such as buried cables, tracks or fences across the site will not impact any users. Any necessary authorisations (e.g. under the Local Government Act and other relevant legislation) will be obtained.

The overall impact to land use during the operational phase is considered to be negligible.

Potential land use impacts will be addressed via the mitigation and management measures summarised in Table 8-1.

8.1.2.2.1 Summary of Key Mitigation Measures

Key mitigation and management measures are summarised in Table 8-1. These measures will be captured in the CEMP and/or OEMP as appropriate.

Table 8-1: Land Use – key mitigation and management measures

Mitigation Measure	Construction Phase	Operational Phase	Decommissioning Phase
Consult with landholders, surrounding landholders and local community members to identify and manage any potential impacts to land use.	✓		✓
Install signage near the access gate and site boundaries to warn of site activities and access restrictions to minimise the risk of impact to third parties.	✓	✓	
Implement measures for working safely near transmission lines to avoid any damage, including buffer zones, temporary fencing and defined crossing points.	✓	✓	✓
Obtain any necessary authorisations (e.g. under the Local Government Act) for infrastructure installation in the undeveloped road reserves.	✓		
Site to be rehabilitated with appropriate vegetation as soon as practicable where infrastructure is removed.			✓
Rehabilitate the site at the end of its operational life to allow a return to agricultural or alternate use.			✓

8.2 Aboriginal and non-Aboriginal Heritage

The following section outlines the Aboriginal and non-Aboriginal heritage values that exist at the Project site and surrounding area. It does this within the context and requirements of Commonwealth, State and Local regulatory frameworks.

8.2.1 Existing Environment

The Project area is within the Ngadjuri Nation #2 Native Title Claim area, registered on 20 January 2012.

A robust regulatory framework is applicable to the protection of Aboriginal and non-Aboriginal heritage at the Project site and surrounding area. The primary State legislation concerning Aboriginal heritage is the *Aboriginal Heritage Act 1988*, while the *Heritage Places Act 1993* is primary legislation concerning the protection of non-Aboriginal historic heritage. The Commonwealth Government also has a role in the protection of nationally significant cultural heritage through the EPBC Act and the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*, which is generally only applied in exceptional circumstances.

No sites of significance to Aboriginal archaeology, anthropology, history or tradition were identified within the area of the currently proposed Project, based on the results of a search of the Central Archive which includes the Register of Aboriginal Sites and Objects.

The SA Heritage Register, and Light Regional Council Development Plan do not list any Cultural Heritage Places (European) on the parcel of land for the Project site or parcels surrounding the site. The closest non-Aboriginal heritage places are within the township of Freeling and Templers.

8.2.2 Potential Impacts and Proposed Mitigation Measures

As noted above, no registered or recorded sites of significance to Aboriginal archaeology, anthropology, history or tradition were identified within the area of the currently proposed development, based on the results of the background research.

In the unlikely event that any Aboriginal sites, objects or remains are uncovered during excavation works, work would cease immediately and advice sought from Aboriginal Affairs and Reconciliation (AAR). Guidelines have been developed by AAR for managing the discovery of Aboriginal skeletal remains. RES will comply with all laws, regulations and commitments in relation to Aboriginal heritage during construction, operation and decommissioning of the Project.

The proposed Project is on freehold land which has been heavily disturbed by cropping and other agricultural activities and therefore there is minimal risk of cultural heritage disturbance (Figure 1-2, Plate 2-2).

Should any archaeological occurrences be located during the course of the works the contractor and RES must cease work and notify the Council.

8.2.2.1.1 Summary of Key Mitigation Measures

Key mitigation and management measures are summarised in Table 8-2. These measures will be captured in the CEMP and/or OEMP as appropriate.

Table 8-2: Cultural heritage – key mitigation and management measures

Mitigation Measure	Construction Phase	Operational Phase	Decommissioning Phase
Key personnel involved in on-site works should undertake a cultural heritage induction (i.e. site workers, contractors, sub-contractors).	✓	✓	✓
Develop and implement procedures for accidental discovery/disturbance of cultural heritage sites, objects or remains located within the Project site, which will include ceasing work and immediately seeking advice from AAR.	✓		
If items of non-Aboriginal heritage significance are identified during Project activities, works directly affecting will be immediately stopped. All legal and cultural requirements will be followed.	✓	✓	✓

8.3 Noise

8.3.1 Existing Environment

The proposed Project is located in a regional setting. Given the rural nature of the site, noise levels are generally low, with the main identified noise sources close to the Project site coming from traffic along Templers Road and the use of farming equipment. The traffic volumes[2] along Templers Road are estimated at 700 vehicle movements per day (Location SA, 2019). The Project site is directly adjacent to a 275 kV and 132 kV substation to the west and associated infrastructure.

The closest permanent noise-sensitive receptors are residences approximately 350 m to the south and 600 m to the east.

8.3.2 Potential Impacts and Proposed Management Measures

8.3.2.1 Construction and Decommissioning

Noise would be generated by a range of equipment used during construction, including earth-moving equipment for civil works, diesel generators, trucks and cranes. These would have similar noise outputs to farm machinery such as tractors.

The majority of noise-generating construction activities will predominantly be undertaken during the daytime, with key activities including:

- Vegetation clearance, earthworks and removal of excess materials;
- Road traffic associated with the delivery of construction materials; and

[2] Traffic volume is the sum of traffic travelling in both directions on a two-way road passing a roadside observation point over the period of a full year divided by the number of days in the year.

- Construction of battery storage and site infrastructure.

Through the utilisation of standard environmental management controls, construction noise impacts at sensitive receivers are expected to be negligible. The *Environment Protection (Noise) Policy 2007* generally restricts construction activities resulting in noise with an adverse impact on amenity to between 7am and 7pm, Monday to Saturday. Although this restriction does not apply to public infrastructure, noise-generating activities will generally be scheduled within these times but may be on a 7 day per week basis.

Given the distances of nearby residences from the site and current noise generating activities, construction noise is unlikely to adversely impact amenity.

Ongoing consultation will be carried out with the community (particularly the closest neighbours) regarding timing of construction noise to identify any issues and, where possible, identify measures to minimise disruption.

8.3.2.2 Operation

The Project comprises no moving parts or significant sources of noise once operational. As such, no noise impacts to sensitive receivers are anticipated during the operation phase of the Project.

8.3.2.2.1 Summary of Key Mitigation Measures

The predicted noise levels at the closest sensitive receptors (during operation) achieved the assessment criteria. It was therefore considered that the Project satisfies all relevant provisions of the Development Plan.

Key mitigation and management measures are summarised in Table 8-3. These measures will be captured in the CEMP and/or OEMP as appropriate.

Table 8-3: Noise – key mitigation management measures

Mitigation Measure	Construction Phase	Operational Phase	Decommissioning Phase
Ensure that plant and equipment are properly maintained.	✓	✓	✓
Avoid unnecessary noise when carrying out manual operations and when operating plant.	✓	✓	✓
Switch off any equipment not in use for extended periods.	✓		✓
Review equipment specifications and locations during detailed design to ensure that operational noise requirements continue to be met.	✓	✓	
Schedule noisier activities where this could impact receptors to coincide with business hours wherever possible.	✓	✓	✓
Undertake ongoing consultation with the community to identify any construction noise issues and where possible identify measures to minimise disruption.	✓		

8.4 Visual

8.4.1 Existing Environment

The area surrounding the Project is predominantly rural in nature and sparsely populated. The broader region is primarily used for dryland agriculture and plantations. The site is bordered to the south by Templers Road and to the east by Powers Road. To the north of the site are wide expanses of agricultural land. Immediately west of the site are two ElectraNet substations. The Project site is relatively flat, apart from localised rises and depressions and is predominantly open agricultural land.

The site has a long history of agricultural practices which has led to degradation of vegetation and very small patches of native vegetation present on site. The road verges along Templers and Power Roads have minimal vegetation and consists primarily of bare ground and weeds. The current views from these roads include open agricultural land and existing infrastructure, including the ElectraNet and SA Power Netwoks substations, high voltage powerlines and farm buildings (Figure 8-1). The closest residential dwellings are approximately 350 m to the south and 600 m to the east of the site which have current views of the substations. The existing scenic quality along this section of road is generally low.

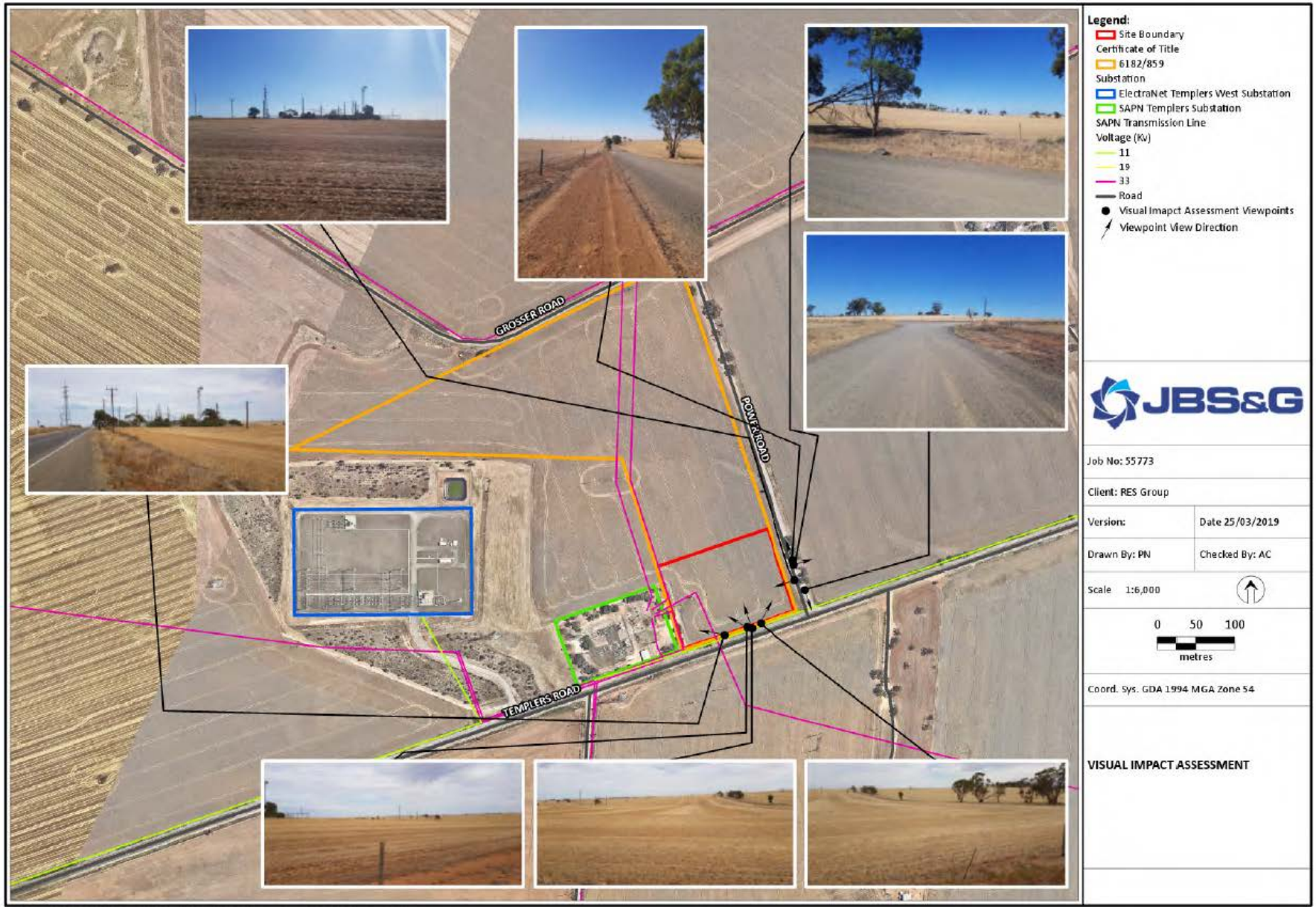

Figure 8-1: Project site and existing visual amenity

8.4.2 Potential Impacts and Proposed Mitigation Measures

There is potential for landscape and visual amenity impacts from the Project during the construction phase, which is expected to last 6-7 months. These impacts will primarily be due to various activities including:

- Clearing of existing vegetation;
- Dust generation;
- Stockpiling of infrastructure components and machinery in laydown areas;
- Temporary construction workshops and offices;
- The construction of perimeter fencing and the installation of the battery containers

The changing visual environment of activities during construction will be temporary.

During the operational phase, potential impacts will be associated with a change in the visual landscape due to the battery containers, Project offices, security lighting and fencing.

The following mitigation measures are identified for this potentially low impact during the construction and operational phases, where practicable:

- Construction of the Project will only occur on land previously cleared of vegetation and/or disturbed;
- Utility buildings will be away from residences and constructed of materials that are muted in colour;
- Structures will be set back at least 30 m from Templers Road and 20 m from Power Road;
- Landscaping will be incorporated as part of the Project, providing visual relief to the Templers and Power Road frontages and will be selected and designed so it is sensitive to the landscape and visual receptors;
- Any signage will be designed and located so it is sensitive to the landscape and visual receptors;
- Fencing will be sited and designed appropriately to blend with the facility as much as possible; and
- Construction equipment and waste will be removed from the site in a timely manner.

Overall, the Project is not anticipated to be a significant visual element in the study area. Current views of the area are typically restricted to passing motorists and nearby rural residential dwellings. The implementation of the identified management measures will further reduce the degree of visual change associated with the Project.

8.4.2.1.1 Summary of Key Mitigation Measures

Overall, the Project is not anticipated to be a significant visual element in the region. Current views of the area are typically restricted to passing motorists and nearby rural residential dwellings. The implementation of the identified management measures will further reduce the degree of visual change associated with the Project.

RES will, however, implement appropriate mitigation measures as presented in Table 8-4. These measures will be captured in the CEMP and/or OEMP as appropriate.

Table 8-4: Visual impact – key mitigation and management measures

Mitigation Measure	Construction Phase	Operational Phase	Decommissioning Phase
Materials and colour of on-site infrastructure (including the offices, workshops etc) will, where practicable, be non-reflective and of a colour that will blend with the landscape.	✓	✓	
Consult the Council regarding colour schemes for significant Project infrastructure.	✓	✓	
Incorporate appropriate landscaping, as far as practicable, to provide some natural screening along the adjoining roads and break up views of the Project from the roads.	✓		
If possible, position construction equipment laydown areas away from roads and other visible areas.	✓	✓	
Arrange lighting to avoid direct light spill and unnecessary sky glow over the Project area, as far as practicable.	✓	✓	✓
Implement dust suppression measures including water sprays during construction and decommissioning to limit potential visual impacts of dust.	✓		✓

8.5 Traffic

A road impact assessment has been undertaken for the Project by Tonkin (2019). This assessment is provided in Appendix E and forms the basis of the information in this section.

8.5.1 Existing Environment

8.5.1.1 Road Network

The road network in the vicinity of the Project consists of Templers Road and Power Road.

Templers Road is under the care, control and maintenance of the Department of Planning, Transport and Infrastructure (DPTI). It consists of a single carriageway with two lanes (one lane in each direction) and a speed limit of 100 km/h. The road consists of sealed and unsealed shoulders, with a total carriageway width of approximately 12.5 m and a sealed width of 6.7 m.

Templers Road is gazetted for a Performance Based Standard (PBS) Level of 2A, which corresponds to a maximum vehicle size of a 26 m B- double.

Power Road is a two-way unsealed road which services the local farming areas. This road is a dry weather only road, with a carriageway width of approximately 9 m. Power Road is under care and control of Light Regional Council.

8.5.1.2 Traffic Volumes

Based on 2015 traffic data, Templers Road has a traffic volume of 700 vehicles per day (vpd) with a commercial vehicle (CV) percentage of 14.5%.

No traffic data is available for Power Road; however, there are no significant developments in the area which suggests that the average daily traffic volume will be relatively small.

Crash data shows that there have been no crashes in the vicinity of the site in the 5-year period between January 2013 and December 2017.

8.5.2 Potential Impacts and Proposed Mitigation Measures

8.5.2.1 Construction and Decommissioning

8.5.2.1.1 Vehicle Types

Project-related traffic will include a range of vehicle types which are expected to include:

- Light vehicles – staff and small deliveries; and
- Heavy vehicles – including, but not limited to, low loaders, mixer trucks, semi-trailers, flatbed lorry, tanker and skip lorry.

8.5.2.1.2 Traffic Generation

The construction phase will generate a large volume of vehicles compared to the operations phase and will consist of both light and heavy vehicles.

Based on a construction period of 6 months, Table 8-5 shows the breakdown of expected average vehicle movements per day.

Table 8-5: Average vehicle movements per day

Vehicle Class	Return Trips Per Day	Percentage of Traffic Volume
Heavy vehicle	3	30
Light vehicle	7	70

8.5.2.1.3 Site Access

Access is proposed from a single point along Power Road located at the northern extent of the site, approximately 85 m from Templers Road. This access point allows the turning movement of the design vehicle into the site with enough space for a vehicle to simultaneously queue at the exit while the movement is undertaken.

Based on Australian Standards (AS) *AS2890.1: Off-Street Car Parking*, an access driveway width of 3m to 5.5 m is required, which combines the entry and exit lane to the site (this is based on frontage to a local road with less than 25 parking spaces provided). The access point provided has a width of approximately 9.3m which well exceeds the minimum requirement and provides access for a 19 m semi-trailer.

Due to the estimated low traffic volumes on Power Road, it is considered acceptable for the design vehicle to use the full width of Power Road when turning into and out of Templers Road. It is highly unlikely that a conflict will occur with a design vehicle turning into Power Road at the same time that a vehicle is turning onto Templers Road.

Temporary traffic control may need to be implemented when there is a concentration of construction traffic – e.g. when pavement materials are being delivered to site by multiple trucks. This will be a localised, short term impact and can be considered on a case by case basis.

8.5.2.1.4 Internal Road Network

The internal road network consists of a circulating road way. Turning path modelling shows that the 19 m semitrailer design vehicle can complete all required turns in one continuous movement. The vehicle needs to use the majority of the sealed width; however, given that the roadway is to be used by staff and with the low traffic volumes, this is considered to be acceptable.

AS2890.1 requires a minimum width of 5.5 m for straight two-way roadways and 6.3 m for curved two-way roadways with a turn radius of 20-50 m, which will be satisfied based on the radii shown on the Project plans. Further, 6.2 m roadways will be provided on the straight sections, which widen to a maximum of 13 m on the curves. Overall, the minimum requirements as stated in AS2890.1 will be satisfied.

8.5.2.1.5 Power Road Pavement

Currently Power Road is unsealed and only provides access during dry weather. To allow egress from the site during a wet weather event and to prevent vehicles from being stranded on site, Power Road will be upgraded in accordance with Council reasonable requirements to provide all weather access to the site. Power Road will be upgraded past the site access point, far enough to protect the upgraded section of the Road from traffic entering or exiting the site. In total this measures an estimated minimum length of 100 m between Templers Road and the site access/egress. An analysis for the design vehicle turning movements suggests that road widening is not required to facilitate entry/exit movements. This will be confirmed in the final design.

8.5.2.1.6 Sight Distance

A site inspection was undertaken to assess the sight lines at the Power Road/Templers Road Intersection. These have been assessed in accordance with Austroads *Guide to Traffic Engineering Practice (Part 4A – Unsignalised Intersections at Grade)* (Austroads Guide). This publication represents accepted Australian road design guidelines that address minimum sight distances associated with the geometry of the intersection and permanent infrastructure. The Approach Sight Distance (ASD) and the Safe Intersection Sight Distance (SISD) were assessed and more information may be found in Appendix E.

A summary of sight distances is shown in Table 8-6. The distances provided are for drivers on Templers Road (as the primary road at this intersection) to observe vehicles entering from Power Road and stop if needed. This assessment is based on an assumed travel speed of 100 km/h which is equivalent to the posted speed.

Table 8-6: Power Road/Templers Road Sight Distances

Direction from Power Road	Available Sight Distance (m)	Compliance with ASD/SSD	Compliance with SSD
East	>270	Yes	Yes
West	~220	Yes	No (14-28m short)

Although the SISD is not achieved for the western approach to Power Road, the ASD/SSD is well exceeded. In addition to this, the SISD is almost achieved for a reaction time of 1.5 seconds. Given that the SSD is what is required to safely stop prior to an observed hazard, and that the SISD is often difficult to achieve, the sight distance is considered to be adequate. Sight distances are shown in Plate 8-1 to Plate 8-3 inclusive.

Sight distances from the site access point are not considered to be of concern given the low volume of vehicles and the low prevailing speeds due to the close proximity to Templers Road. A vehicle turning onto Power Road will be travelling at a low speed and so will have time to observe, react and stop before impacting a vehicle turning into/out of the site access point. Further mitigation measures will be established in the Traffic Management Plan, and may include temporary speed controls on Templers Road to allow for safe stopping distance.

Overall, sight distances are considered adequate.

8.5.2.1.7 Mitigation

A Traffic Management Plan will be prepared during the detailed design phase and implemented during construction. RES will work in close contact with DPTI and the Council in the preparation of the Traffic Management Plan and development of mitigation and management measures. The *Manual of Legal Responsibilities and Technical Requirements for Traffic Control Devices* (DPTI, 2018) will be used as a basis for developing relevant aspects of the Traffic Management Plan.

The Traffic Management Plan will consider the following aspects:

- Routes to be used by Project construction traffic;
- Assessment of road condition prior to construction;
- Traffic controls (e.g. speed limits, signage) where appropriate;
- Procedures to monitor traffic impacts and adapt controls (where required) to reduce impacts;
- Community consultation regarding traffic impacts for nearby residents;

- Maintenance of road pavement conditions during construction, e.g. removal of gravel/dirt from the sealed road surface at the main site access; and
- A program to monitor road condition and to repair damage exacerbated by construction traffic.

Plate 8-1: Sight lines from Power Road to eastern approach of Templers Road

Plate 8-2: Sight lines from Power Road to the western approach of Templers Road

Plate 8-3: Sight lines from western approach of Templers Road to Power Road

8.5.2.2 Operation

The facility will not be staffed during operations. As such, when required, the operational traffic will be very low and is expected to be under 5 return trips per day. This number of trips is considered to be negligible (1 vehicle every 48 minutes on average) and will not have any significant impact on the road network.

8.5.2.2.1 Summary of Key Mitigation Measures

Key mitigation and management measures are summarised in Table 8-7. These measures will be captured in the CEMP and/or the OEMP as appropriate.

Table 8-7: Traffic – key mitigation and management measures

Mitigation Measure	Construction Phase	Operational Phase	Decommissioning Phase
Erect signage at the Templers Road / Power Road intersection.	✓	✓	
Use traffic control / signage / management to ensure safe site access during the peak construction phase.	✓		
Upgrade Power Road to just past the Project site access (approximately 100m) to provide all-weather access to the site.	✓		
Determine the responsibility (negotiated with the Council) and frequency of maintenance to existing gravel road (Power Road).	✓		
Develop and implement site protocols for on-site traffic management, which may include speed restrictions and access restrictions.	✓		
Develop a Traffic Management Plan prior to the commencement of construction, with input from DPTI and Council.	✓		

8.6 Socio-Economic

8.6.1 Existing Environment

The Project is located within the Light Regional Council which covers an area of approximately 1,278 km^2. The key industry for the region includes primary production which is focussed on viticulture.

The nearest residential townships to the Project are Templers (approximately 2.5 km west), Freeling (approximately 3.4 km east) and Gawler Belt (approximately 12 km south).

8.6.1.1 Population

The population for the Council area is estimated at 14,736 people with the median age of persons residing in the region being 39 (ABS, 2016). Approximately 1.0% of the region's population identified as being of Aboriginal and/or Torres Strait Islander people descent (ABS, 2016).

Freeling has a population of approximately 2,214 people, Gawler Belt approximately 942 people and Templers approximately 125 people, which equates to 15.0%, 6.4% and 5.6% of the region's population respectively (ABS, 2016).

8.6.1.2 Employment and Industry

The Project has already engaged and employed South Australian suppliers and contractors to undertake preliminary surface water, traffic and ecology assessments. RES will continue, where possible, to engage local and/or regional services and suppliers where possible, with local and/or regional services.

The labour force in the Council area has been estimated to be 7,718 people with an approximate labour force of 1,044 in Freeling, 481 in Gawler Belt and 74 in Templers. The level of unemployment in the Council area was

5.3% (ABS,2016). The unemployment rate for Freeling is estimated to be 4.6%, Gawler Belt 5.1% and for Templers 3.2%.

Major employment in the region is linked to wine and other alcoholic beverage manufacturing, primary education, aged care residential services, road freight transport and supermarket/grocery stores.

8.6.1.3 Income

In 2016, the median total personal income in the Council area (applicable to persons aged 15 years and over) was estimated at $669 per week, with the median total family income at $1,715 a week and the median total household income at $1,471 a week (ABS, 2016). This compares with a median total personal income of $617 per week in Adelaide and $600 for all of South Australia.

8.6.2 Potential Impacts and Proposed Mitigation Measures

8.6.2.1 Construction and Decommissioning

8.6.2.1.1 Employment and Suppliers

It is expected that approximately 40 direct and 104 indirect personnel would be required during periods of peak construction activity. The construction labour force will be sourced locally as far as practicable; however, there will be a requirement to source workers externally (e.g. where specific skills are not available locally).

The Project will result in the direct creation of jobs, as well as flow-on effects related to provision of services such as accommodation, food, fuel and transport during the construction phase. This will benefit the local economy and provide opportunities for members of the local community to build experience in a new industry.

Local suppliers will be used where possible and the Project team will continue to engage with Council and other organisations where appropriate (e.g. the Industry Capability Network) to ensure that opportunities created by the Project are able to be accessed by local, regional and South Australian businesses.

8.6.2.1.2 Accommodation

The demand for accommodation for non-local workers during construction would benefit the local economy but could also place pressure on local accommodation services.

It is anticipated that most non-local workers would be accommodated at existing accommodation within the local area (e.g. towns within an hour's drive of the site), with bus transport provided to minimise traffic volumes and transit risks during construction.

The Project team will work with the Council and local community to identify and finalise areas where workers will be accommodated. This will ensure accommodation requirements are spread out in the broader region with the aim of minimising potential impact on available accommodation for tourism or other seasonal events upon which the region relies economically.

8.6.2.2 Operation

During operation, approximately five direct FTE jobs are expected to be created for the life of the Project. Additional personnel may also be required for scheduled maintenance or refurbishment operations. This would directly benefit the local economy and regional employment.

8.6.2.2.1 Summary of Key Mitigation Measures

Key mitigation and management measures are summarised in Table 8-8. These measures will be captured in the CEMP and/or OEMP as appropriate.

Table 8-8: Socio-economic – key mitigation and management measures

Management / Mitigation Measure	Construction Phase	Operational Phase	Decommissioning Phase
Actively work with local and regional employment services and businesses to maximise opportunities for suitably qualified local and regional workers.	✓	✓	

Management / Mitigation Measure	Construction Phase	Operational Phase	Decommissioning Phase
Engage with the Council and other organisations where appropriate (e.g. the Industry Capability Network) to maximise local access to supply opportunities.	✓	✓	
Address accommodation requirements in consultation with local businesses, the Council and other bodies where appropriate (e.g. local tourism industry representatives).	✓		
Liaise with local health and emergency service providers during development of emergency response procedures.	✓	✓	✓
Work closely with local authorities and the community to identify and manage impacts of increased workforce on community safety, amenity and wellbeing.	✓		
Develop induction procedures and information for staff and contractors that include an orientation into the values and expectations of the local community.	✓		
Require contractors to implement industry standard drug and alcohol testing of workers to monitor alcohol and drug use and ensure workplace safety.	✓	✓	✓
Ensure strict compliance with, and monitoring against, Zero Harm Policy requirements.	✓	✓	✓
Implement a community complaints mechanism to ensure that any issues and ideas are promptly identified and addressed.	✓	✓	✓

9 Environment, Health and Safety Management

Environment, Health and Safety Management Plans will be developed for the Project as discussed below. These plans will form part of the overall Project management framework.

9.1 Health and Safety Management

The *Work Health and Safety Act 2012* governs health and safety management requirements. The Project will be constructed and operated under a work health and safety framework which meets the requirements of the Work Health and Safety Act. The framework will be aligned with the requirements of AS/NZS 4801:2001 *Occupational Health and Safety Management Systems* and other relevant Australian Standards.

A Project-specific Safety Management Plan will be developed for construction which will comply with legislative requirements and contractor systems and processes.

RES will ensure that the contractors engaged for the construction period for the Project have objectives and targets to ensure that all identified, as well as potential, health and safety risks that could reasonably be expected to occur throughout the execution of the Project, are managed so far as is reasonably practicable.

9.2 Environmental Management

The environmental management measures that will be implemented for the Project will be documented in Project-specific environmental management plans for the construction and operational phases. These plans are discussed further below.

9.2.1 Construction Environmental Management Plan

A CEMP will be developed prior to construction. This plan will capture the mitigation and management measures summarised in Section 6, 7 and 8 of this document and any relevant conditions of approval. The CEMP will also cover:

- Environmental policy;
- Environmental objectives;
- Environmental management measures and procedures;
- Roles and responsibilities;
- Induction and training;
- Monitoring and auditing; and
- Reporting.

A number of other plans will operate in parallel to the CEMP as part of the Project's overall management framework. These will provide detailed guidance on specific aspects such as traffic management, stakeholder communication and emergency response.

All personnel and contractors will be required to comply with the requirements of the CEMP. Periodic audits and inspections will be undertaken during construction to assess compliance with the CEMP and approval requirements.

9.2.2 Operational Environmental Management Plan

Operational management measures summarised in Sections 6, 7 and 8 will be captured in an OEMP together with relevant procedures. The principal focus is to ensure that the management measures are being implemented and are effective. They will include adaptive management mechanisms to encourage continuous improvement.

The OEMP, management plans and operational procedures will cover the elements identified for the CEMP.

9.2.3 Decommissioning Environmental Management Plan

Prior to decommissioning, an environmental management plan will be developed to address the environmental management measures summarised in Sections 6, 7 and 8 and the relevant legislative requirements at the time.

9.2.4 Roles and Responsibilities

All personnel involved in the Project, including RES employees, contractors and sub-contractors, will be required to undertake works in accordance with the CEMP, OEMP, management plans and procedures. Key roles and responsibilities are outlined in Table 9-1.

Table 9-1: Indicative Project roles and responsibilities

Position	Responsibilities
Senior Project Manager / Site Manager	• Ensuring that employees and contractors understand their obligations under the relevant environmental management plans • Ensuring that all the on-site safeguards and controls are in place • Compliance monitoring • Maintenance and inspections • Reporting
Environmental Representative	• Compliance monitoring • Environmental internal reporting and incident investigation • Reporting to authorities (if required)
Engineering Representative	• Understanding and complying with the requirements of the environmental management plans when providing design advice
Staff and Contractors	• Understanding and complying with the requirements of the environmental management plans • Undertaking inductions where necessary • Understanding and complying with emergency procedures and responses (if required)

9.2.5 Training and Induction

All personnel directly involved in site activities will undergo site inductions covering the key environmental issues and controls. Other communication methods will also be used to ensure personnel remain informed of environmental requirements including:

- Sub-contractor's kick-off meeting;
- Contractor and client site kick-off meeting;
- Risk workshops and Project and steering meetings;
- Site inductions;
- Daily pre-start meetings and / or toolbox meetings; and
- Incident bulletins.

9.2.6 Monitoring

Ongoing monitoring and auditing will be undertaken to determine whether environmental protection measures are being implemented and performing effectively. Monitoring programs will be designed to assess aspects including:

- Compliance with environmental commitments and approval conditions;
- Appropriate storage and bunding of fuel and chemicals;
- Specific issues including traffic and dust generation, particularly during construction;
- Site reinstatement following construction; and
- Presence of weeds or pest animals.

Regular inspections carried out by site personnel will be the principal form of monitoring of site activities.

9.2.7 Records and Reporting

During all phases of the Project, an appropriate and auditable record system will be maintained. Environmental records will include:

- Non-conformance reports;
- Remedial actions taken following incident reports;
- Inspection reports and monitoring results;
- Training and induction attendance;
- Consultation records and complaints register; and
- Audit reports.

Environmental reporting will be conducted in accordance with commitments contained in this document and relevant approval conditions.

9.3 Emergency Response Plan

Emergency response plans (ERPs) will be developed for each Project phase (i.e. construction, operation and decommissioning) to guide actions to be taken to minimise the impacts of accidents and incidents. ERPs will be reviewed and updated on a regular basis to incorporate new information arising from any incidents, near misses and hazards and emergency response simulation training sessions. These plans will also include the facilitation of fire danger season restrictions and requirements.

Emergency response drills will also be undertaken at regular intervals to ensure that personnel are familiar with the plans and the types of emergencies to which it applies, and that there will be a rapid and effective response in the event of a real emergency occurring.

The ERPs will address all potential risks associated with the Project and will outline:

- Identification of appropriate emergency services;
- Measures to undertake consultation with local emergency services;
- Protocol for notification of appropriate authorities; and
- Detailed incident and emergency procedures.

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10 References

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11 Glossary

Term	Description
AAR	Aboriginal Affairs and Reconciliation
ABS	Australian Bureau of Statistics
AC	Alternating Current
AEMO	Australian Energy Market Operator
AHD	Australian Height Datum
AMLRNRM	Adelaide and Mount Lofty Ranges Natural Regional Resources Management
ARI	Average Recurrence Interval
AS	Australian Standards
ASD	Approach Sight Distance
AS/NZS	Australian Standards/New Zealand Standards
BESS	Battery energy storage system
BoM	Bureau of Meteorology
°C	Degrees Celsius
CCTV	Closed circuit television
CEMP	Construction Environmental Management Plan
CFS	Country Fire Service
Council	Light Regional Council
Cth	Commonwealth
CV	Commercial vehicle
DC	Direct Current
DEM	Department for Energy and Mining
Development Act	*Development Act 1993* (SA)
Development Plan	Light Regional Council Development Plan (consolidated 8 December 2016)
DEW	Department of Environment and Water (formally Department of Environment, Water and Natural Resources (DEWNR))
DPC	Department of the Premier and Cabinet
DPTI	Department of Planning, Transport and Infrastructure
EPA	Environment Protection Authority
EP Act	*Environmental Protection Act 1993* (SA)
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Cth)
ERP	Emergency Response Plan
FTE	Full time equivalent
GW	Giga Watt
ha	Hectare
Heavy vehicle	Vehicle with a gross vehicle mass (GVM) greater than 4.5 tonnes
HV	High voltage

Term	Description
km	Kilometre
km²	Square kilometre
kV	Kilovolt
m	metre
m²	Square metre
mAHD	Metres Australian Height Datum
Minister	Minister for Planning
mm	Millimetres
MNES	Matters of national environmental significance under the *EPBC Act 1999*
MW	Mega Watt
MWh	Mega Watt per hour
NEM	National Electricity Market
NPW Act	*National Parks and Wildlife Act 1972* (SA)
NPWSA	National Parks and Wildlife South Australia
NRM	Natural Resource Management
NRM Act	*Natural Resources Management Act 2004* (SA)
NVC	Native Vegetation Council
NPW	National Parks and Wildlife
OEMP	Operational Environmental Management Plan
OSDS	Oscillatory Stability Damping System
OTR	Office of the Technical Regulator
PBS	Performance Based Standard
RES	RES Australia Pty Ltd
SA	South Australia
SAPN	South Australian Power Networks
SCAP	State Commission Assessment Panel (a Committee of the State Planning Commission)
SEB	Significant Environmental Benefit
SEDMP	Soil Erosion and Drainage Management Plan
SISD	Safe Intersection Sight Distance
SSD	Safe Sight Distance
VPD	Vehicles per day

Appendix A Certificate of Title

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Product	Register Search (CT 6182/859)
Date/Time	12/12/2018 10:43PM
Customer Reference	54695877:85370077
Order ID	20181212011539
Cost	$28.75

REAL PROPERTY ACT, 1886
South Australia

The Registrar-General certifies that this Title Register Search displays the records maintained in the Register Book and other notations at the time of searching.

Certificate of Title - Volume 6182 Folio 859

Parent Title(s) CT 6112/602

Creating Dealing(s) T:N 12433373

Title Issued 03/11/2016 **Edition** 1 **Edition Issued** 03/11/2016

Estate Type

LIFE ESTATE

Registered Proprietor

SHELLEY ANN SCHUSTER
OF 97 NELDNER ROAD TEMPLERS SA 5371

OF AN ESTATE OF FREEHOLD FOR LIFE

Description of Land

ALLOTMENT COMPRISING PIECES 43 AND 44 DEPOSITED PLAN 90124
IN THE AREA NAMED TEMPLERS
HUNDRED OF LIGHT

Conditions

THE WITHIN LIFE ESTATE OF THE SAID SHELLEY ANN SCHUSTER IS CONDITIONAL ON REMAINING A WIDOW

Easements

SUBJECT TO EASEMENT(S) OVER THE LAND MARKED A TO TRANSMISSION LESSOR CORPORATION OF 1 UNDIVIDED 2ND PART (SUBJECT TO LEASE 9061500) AND ELECTRANET PTY. LTD. OF 1 UNDIVIDED 2ND PART (T 2211989)

SUBJECT TO EASEMENT(S) OVER THE LAND MARKED E TO DISTRIBUTION LESSOR CORPORATION (SUBJECT TO LEASE 8890000) (RTC 9652837)

SUBJECT TO EASEMENT(S) OVER THE LAND MARKED F TO TRANSMISSION LESSOR CORPORATION OF 1 UNDIVIDED 2ND PART (SUBJECT TO LEASE 9061500) AND ELECTRANET PTY. LTD. OF 1 UNDIVIDED 2ND PART (RTC 9652837)

SUBJECT TO EASEMENT(S) OVER THE LAND MARKED H TO TRANSMISSION LESSOR CORPORATION OF 1 UNDIVIDED 2ND PART (SUBJECT TO LEASE 9061500) AND ELECTRANET PTY. LTD. OF 1 UNDIVIDED 2ND PART (TG 11945225)

TOGETHER WITH FREE AND UNRESTRICTED RIGHT(S) OF WAY OVER THE LAND MARKED D (TG 11945226)

Schedule of Dealings

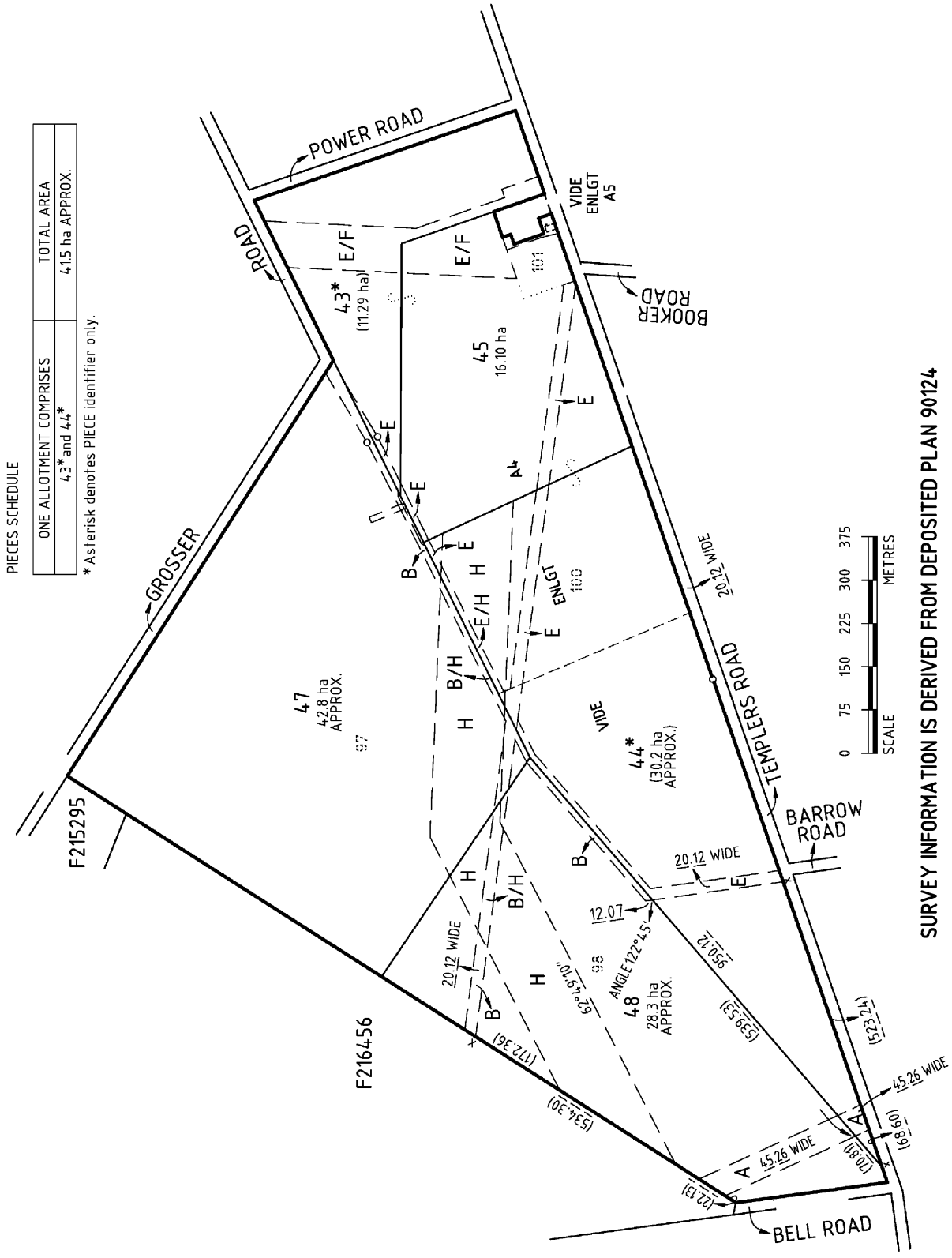
NIL

Notations

Dealings Affecting Title NIL

Priority Notices NIL

Notations on Plan	NIL
Registrar-General's Notes	NIL
Administrative Interests	NIL



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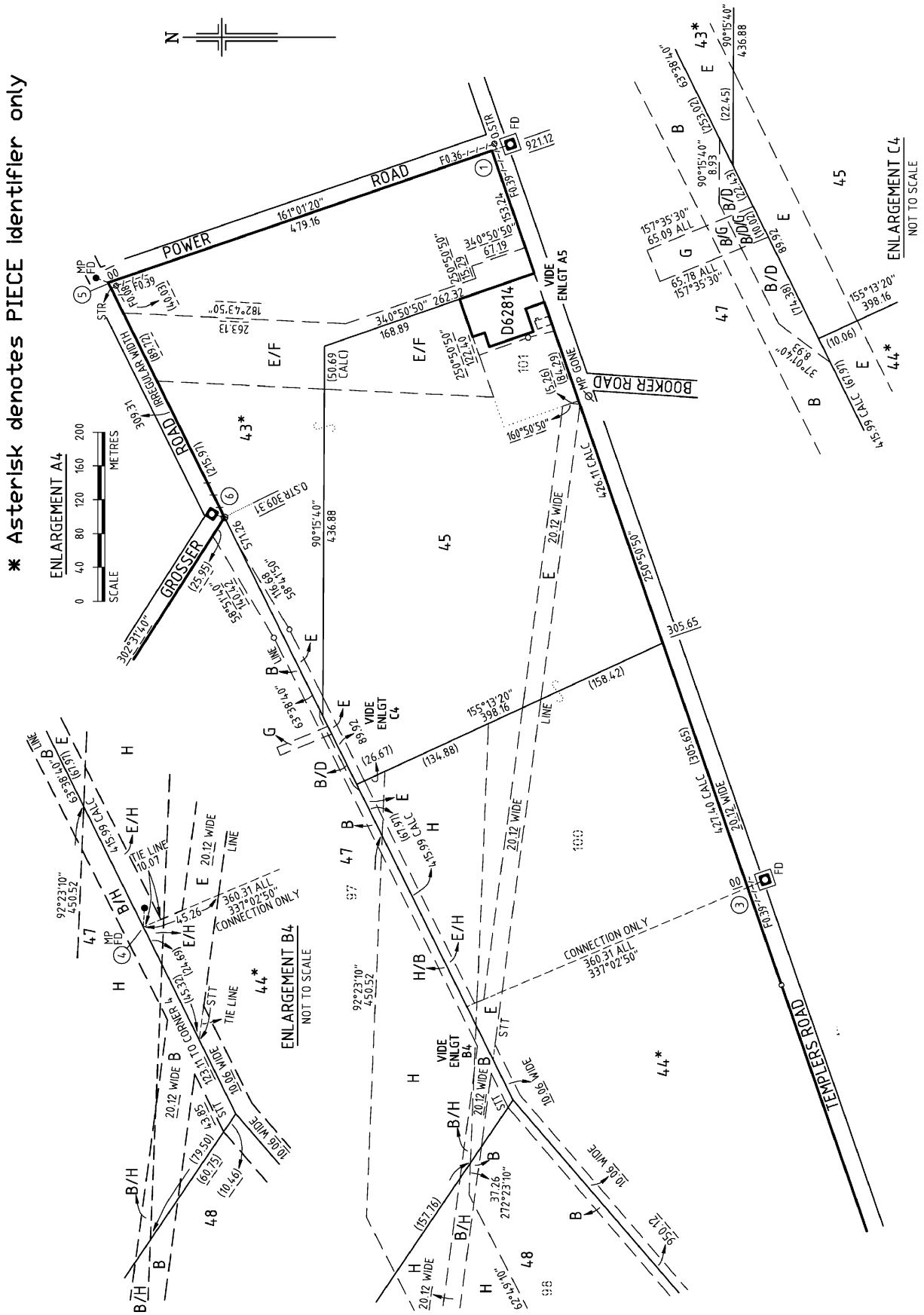

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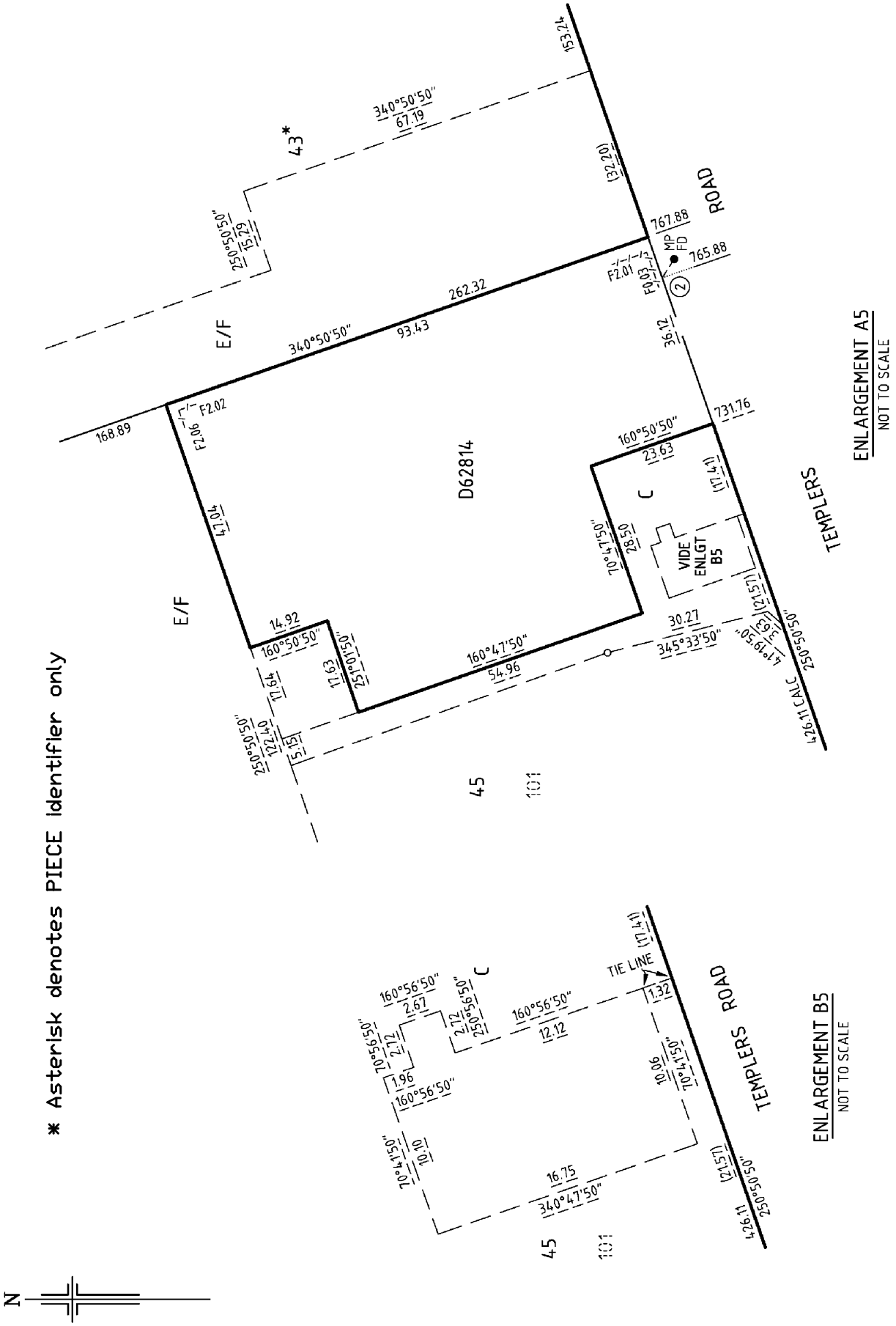

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Appendix B Project Plans

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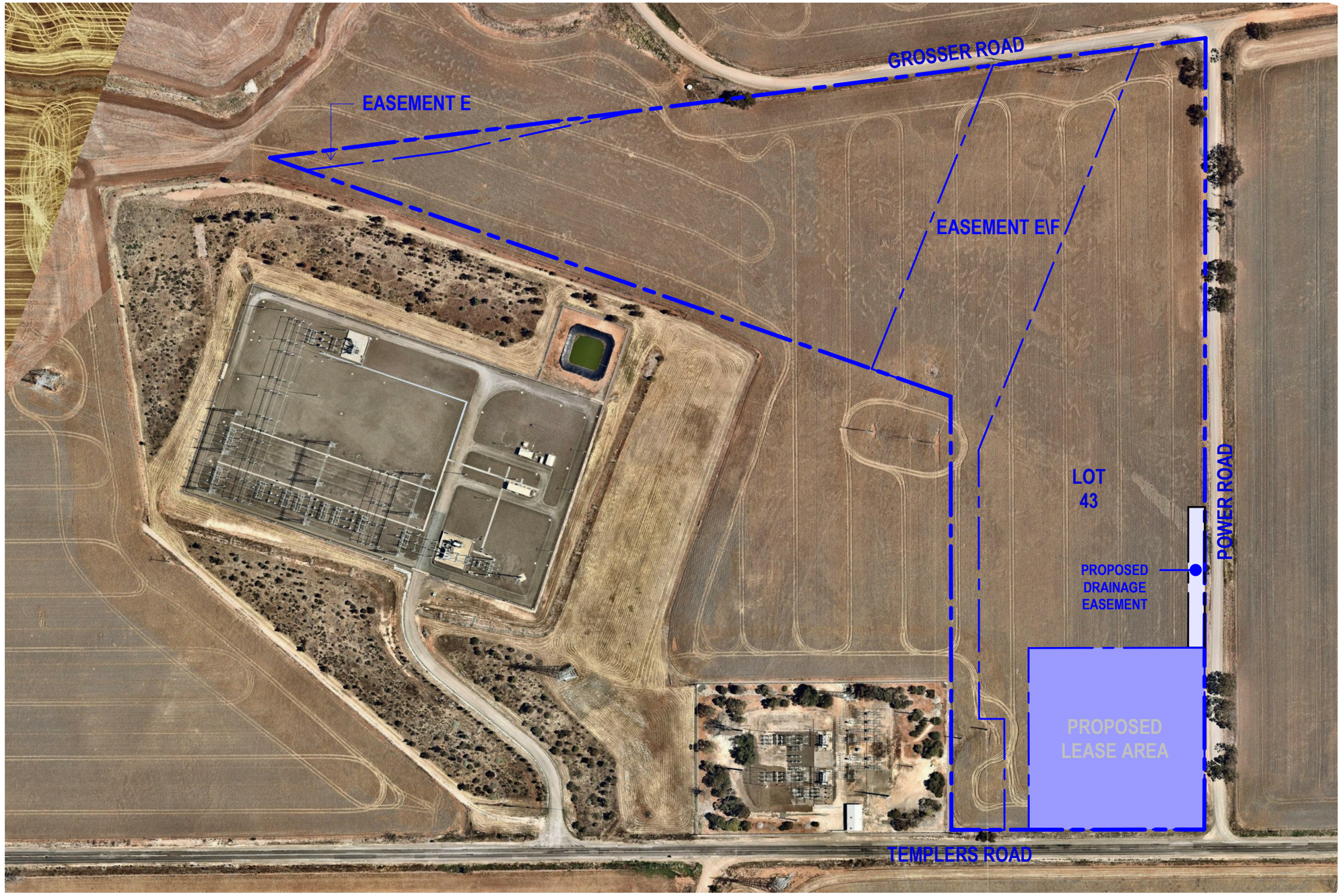

TEMPLERS BESS
CNR TEMPLERS ROAD, TEMPLERS, SA 5371

LOCALITY PLAN

SITE SCHEDULE

Name	Area
EXISTING EASEMENT 'E'	1583 m²
EXISTING EASEMENT 'E\F'	22635 m²
INDICATIVE LEASE AREA	11716 m²
PROPOSED DRAINAGE EASEMENT	852 m²
SITE AREA - LOT 43	112914 m²

CARPARKING SCHEDULE

Description	Count
TYPICAL PARKING SPACE	5

SITE COVER

BATTERY & SWITCHING HARDSTAND	3,266m²
STRUCTURES	850m²
DRIVEWAY	2,200m²
STORMWATER DETENTION BASIN	300m²
BALANCE LAND AREA (INSIDE FENCELINE)	5,100m²
LEASE AREA (APPROX)	11,716m²

INFRA DWG	N/A	APPD DATE	
LAYOUT DWG	N/A	T-LAYOUT NO.	N/A

DRAWING NUMBER
19-016 -DA-01 -D

SCALE - As indicated @A3

COORDS
N/A

PLANNING PERMIT APPLICATION

SUITE 4, LEVEL 1
760 PACIFIC HWY
CHATSWOOD, NSW 2067
TEL: +61 (0)2 8440 7400
EMAIL: info-australia@res-group.com

NOTES:

1. THIS PLAN IS A DEVELOPMENT APPROVAL ONLY AND IS NOT TO BE USED FOR CONSTRUCTION PURPOSES.
2. INFRASTRUCTURE TO CONFORM TO AUSTRALIAN STANDARDS, BCA/NCC AND LOCAL GOVERNMENT REGULATIONS.
3. THIS PLAN IS FOR THE USE OF THE CLIENT NOTED AND SHOULD NOT BE REPRODUCED IN ANY WAY UNLESS PRIOR APPROVAL HAS BEEN PROVIDED.
4. THE SITE BOUNDARIES ARE ARBITRARY AND NEED TO BE INCORPORATED INTO THE OVERALL SITE LAYOUT IN DETAIL DESIGN.
5. EXISTING INFRASTRUCTURE SERVICES HAVE NOT BEEN INCORPORATED INTO THE PLAN. PRIOR TO THE CONCEPT BEING COMPLETED ALL UNDERGROUND SERVICES ARE TO BE SURVEYED OR IDENTIFIED BY OTHER MEANS.
6. A DETAILED SURVEY OR FINISHED SURFACE LEVELS HAS NOT BEEN INCORPORATED INTO THESE DRAWINGS AND THEREFORE MUST BE CONSIDERED DURING DETAILED DESIGN.
7. THE ARRANGEMENT OF THE INTERNAL BUILDING, ASSOCIATED SERVICES AND INVERTORS WILL BE FURTHER DEVELOPED IN DETAIL DESIGN.
8. LIGHTNING PROTECTION TO BE PROVIDED IN ACCORDANCE WITH STANDARD DETAIL TO COMPLY WITH RELEVANT STANDARDS

SERVICES:

1. WATER SERVICES WILL BE REQUIRED FOR THE AMENITIES IN THE SWITCHROOM.
2. FENCING IS TO BE PROVIDED AROUND THE PERIMETER OF THE BUILDING AREA.
3. HARDSTAND SUITABLE FOR DESIGN VEHICLES WILL BE PROVIDED WITHIN THE BUILDING AREA.
4. APPROPRIATE DRAINAGE WILL BE PROVIDED FOR THE RUNOFF OF WATER IN THIS AREA
5. SEWERAGE TREATMENT WILL BE PROVIDED AS NECESSARY TO MEET THE LOCAL AUTHORITY REGULATIONS AND ENVIRONMENTAL REQUIREMENTS.

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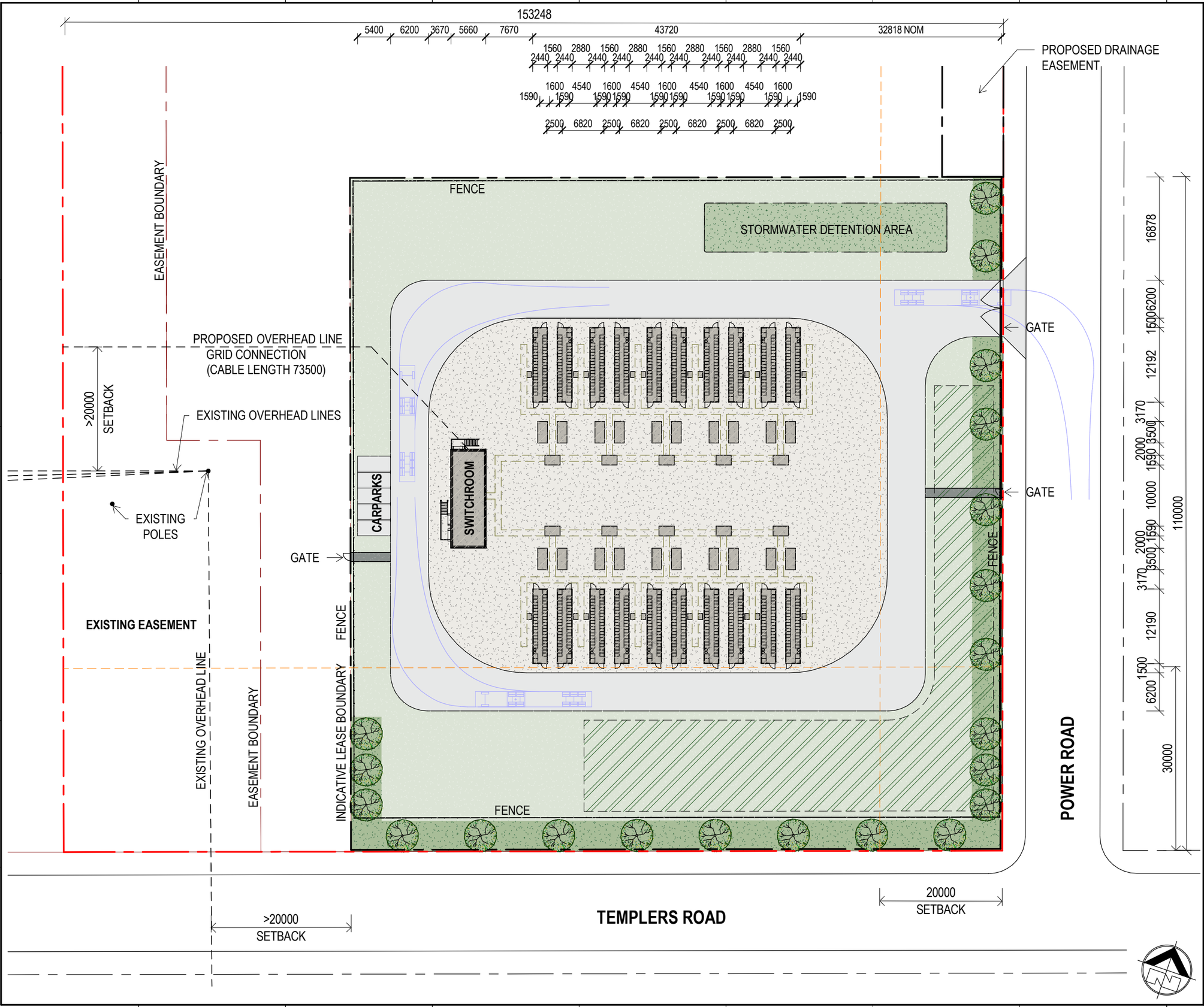

TEMPLERS BESS
CNR TEMPLERS ROAD, TEMPLERS, SA 5371

SITE PLAN

LEGEND

- SWITCH ROOM
- BATTERY STORE
- INVERTER
- TRANSFORMER
- HARDSTAND
- DRIVEWAY
- PEDESTRIAN PATH
- BALANCE LAND AREA
- LANDSCAPE BUFFER
- STORMWATER DETENTION
- TEMPORARY WORKS AREA
- SITE BOUNDARY
- EASEMENT BOUNDARIES
- PROPOSED LEASE EXTENT
- ROAD SETBACK
- OVERHEAD LINE

INFRA DWG	N/A	APPD DATE	
LAYOUT DWG	N/A	T-LAYOUT NO.	N/A

DRAWING NUMBER
19-016 -DA-02 -E

SCALE - As indicated @A3

COORDS
N/A

PLANNING PERMIT APPLICATION

SUITE 4, LEVEL 1
760 PACIFIC HWY
CHATSWOOD, NSW 2067
TEL: +61 (0)2 8440 7400
EMAIL: info-australia@res-group.com

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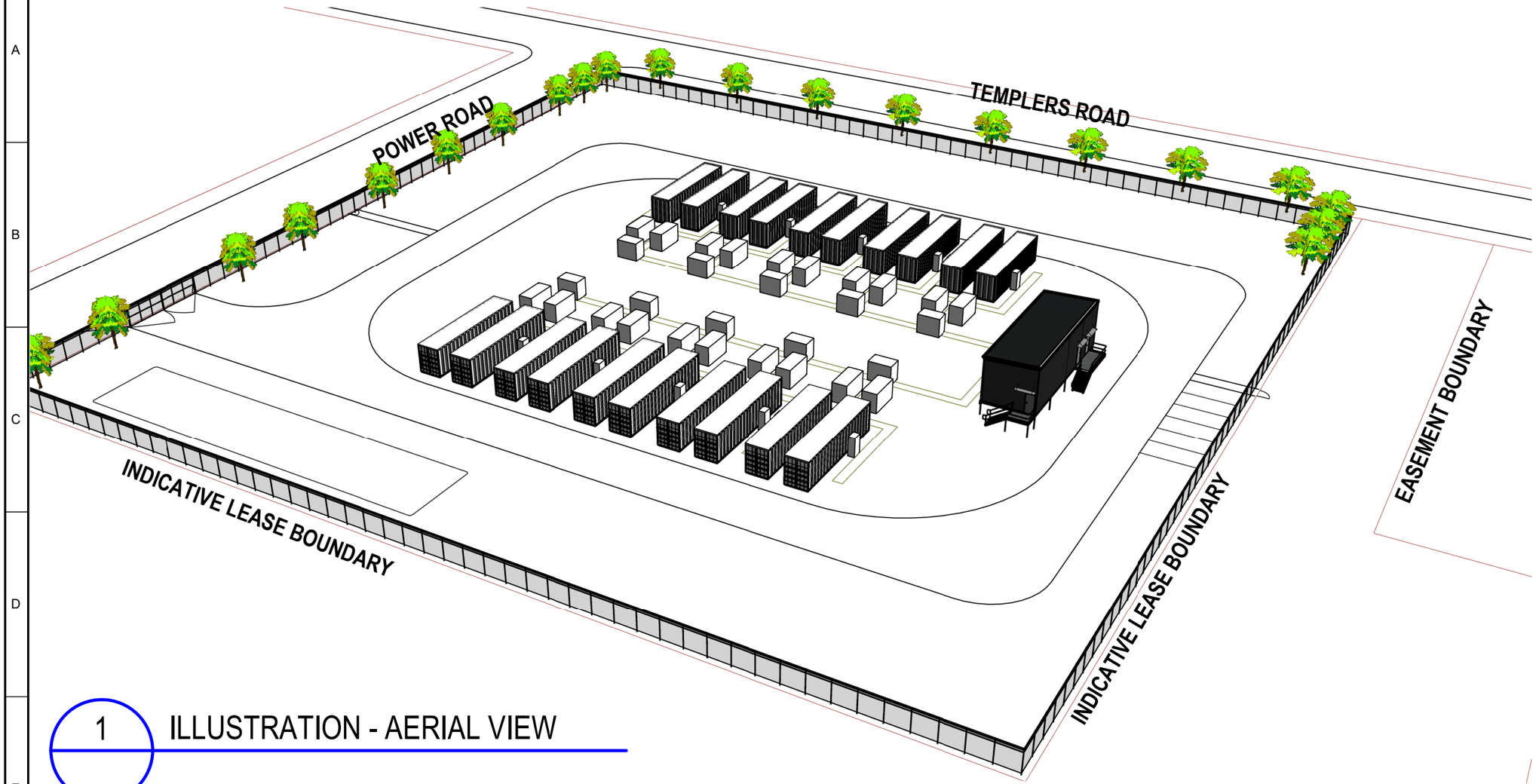

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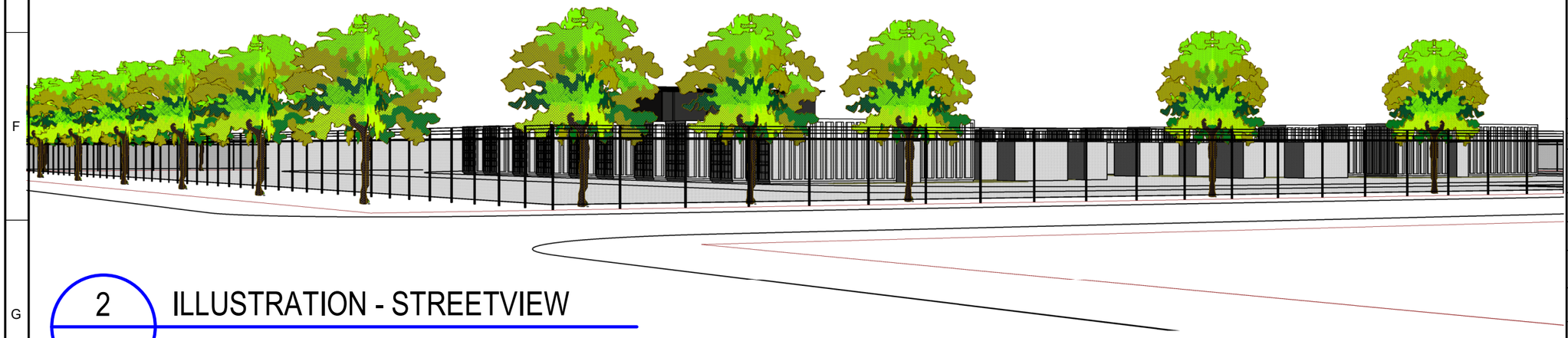

2 ILLUSTRATION - STREETVIEW

TEMPLERS BESS
CNR TEMPLERS ROAD, TEMPLERS, SA 5371

ILLUSTRATIONS

INFRA DWG N/A	APPD DATE
LAYOUT DWG N/A	T-LAYOUT NO. N/A

DRAWING NUMBER
19-016 -DA-03 -D

SCALE - NTS @A3

COORDS
N/A

PLANNING PERMIT APPLICATION

SUITE 4, LEVEL 1
760 PACIFIC HWY
CHATSWOOD, NSW 2067
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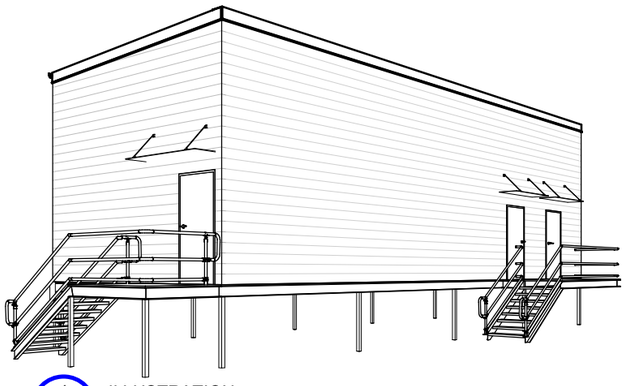

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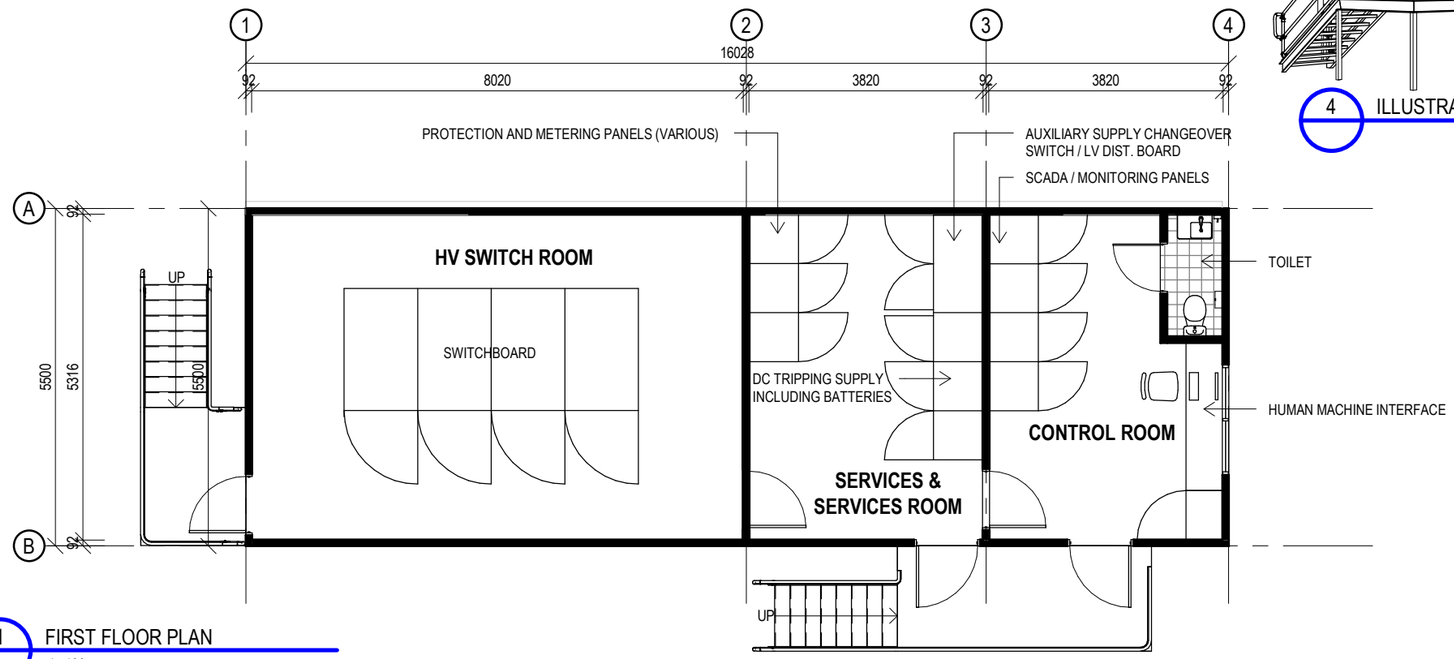
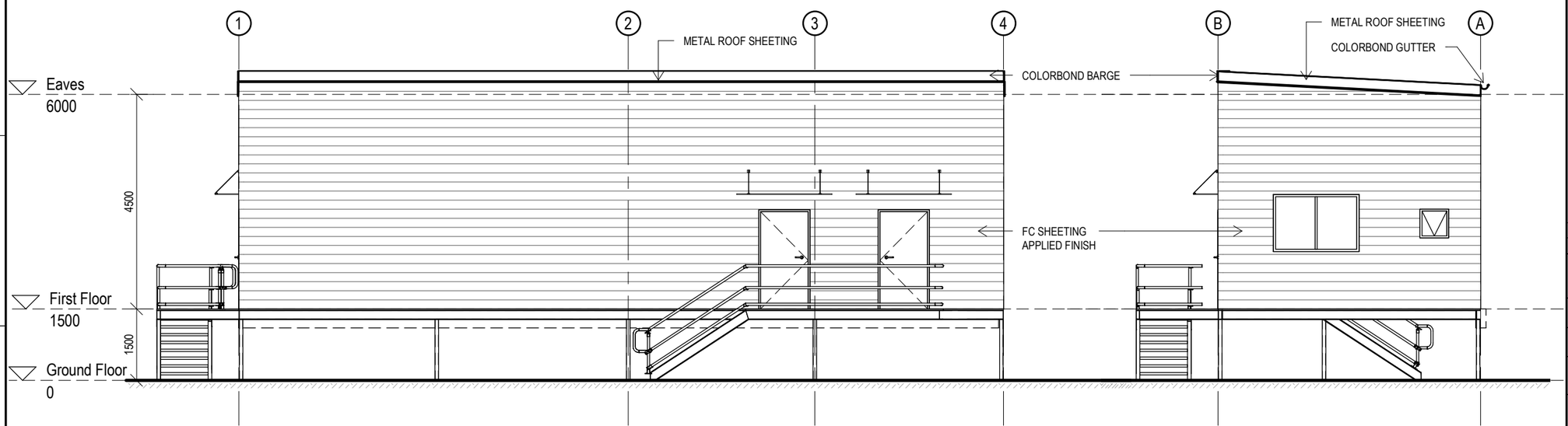


1 FIRST FLOOR PLAN
1 : 100



2 ELEVATION
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3 ELEVATION
1 : 100

TEMPLERS BESS
CNR TEMPLERS ROAD, TEMPLERS, SA 5371

SWITCH & CONTROL ROOMS

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LAYOUT DWG	N/A	T-LAYOUT NO.	N/A

DRAWING NUMBER
19-016 -DA-05 -E

SCALE - 1 : 100 @A3

COORDS
N/A

PLANNING PERMIT APPLICATION

SUITE 4, LEVEL 1
760 PACIFIC HWY
CHATSWOOD, NSW 2067
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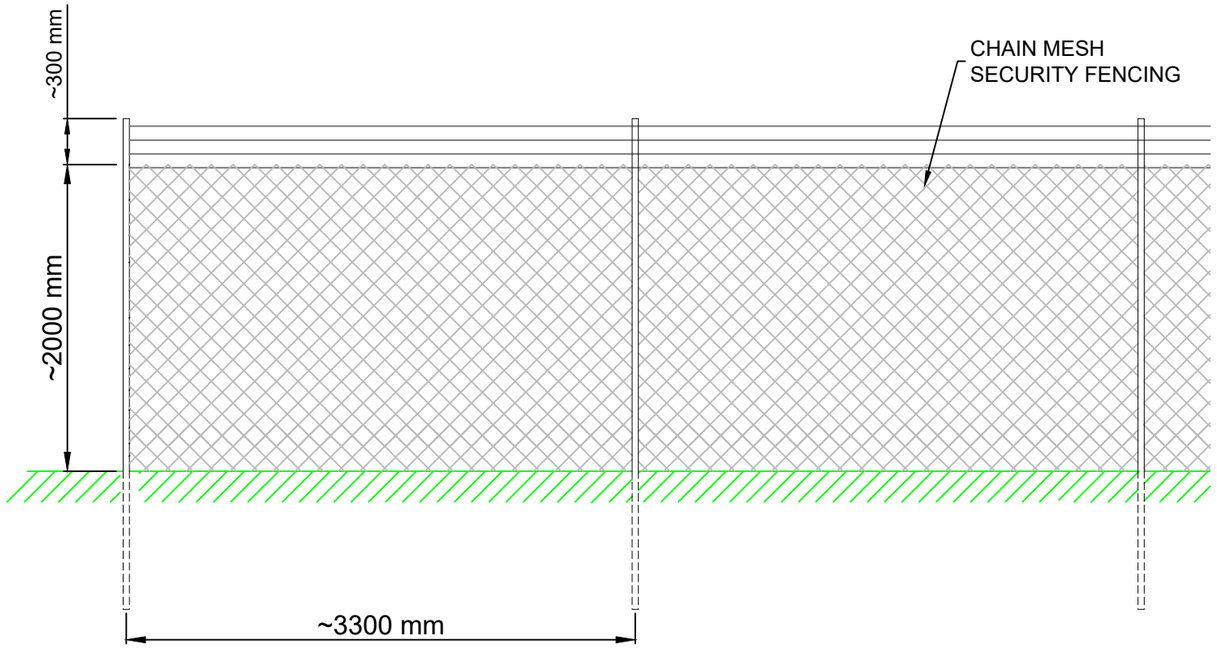


TEMPLERS BESS
CNR TEMPLERS ROAD, TEMPLERS, SA 5371

TYPICAL FENCE DETAIL

NOTES:

1. DIMENSIONS ARE INDICATIVE AND SUBJECT TO DETAILED DESIGN, BUT WILL BE GENERALLY IN ACCORDANCE WITH THIS DRAWING;
2. SECURITY FENCE TO BE INSTALLED IF REQUIRED BY INSURERS.

INFRA DWG N/A	APPD DATE 26-03-2019
LAYOUT DWG N/A	T-LAYOUT NO. N/A

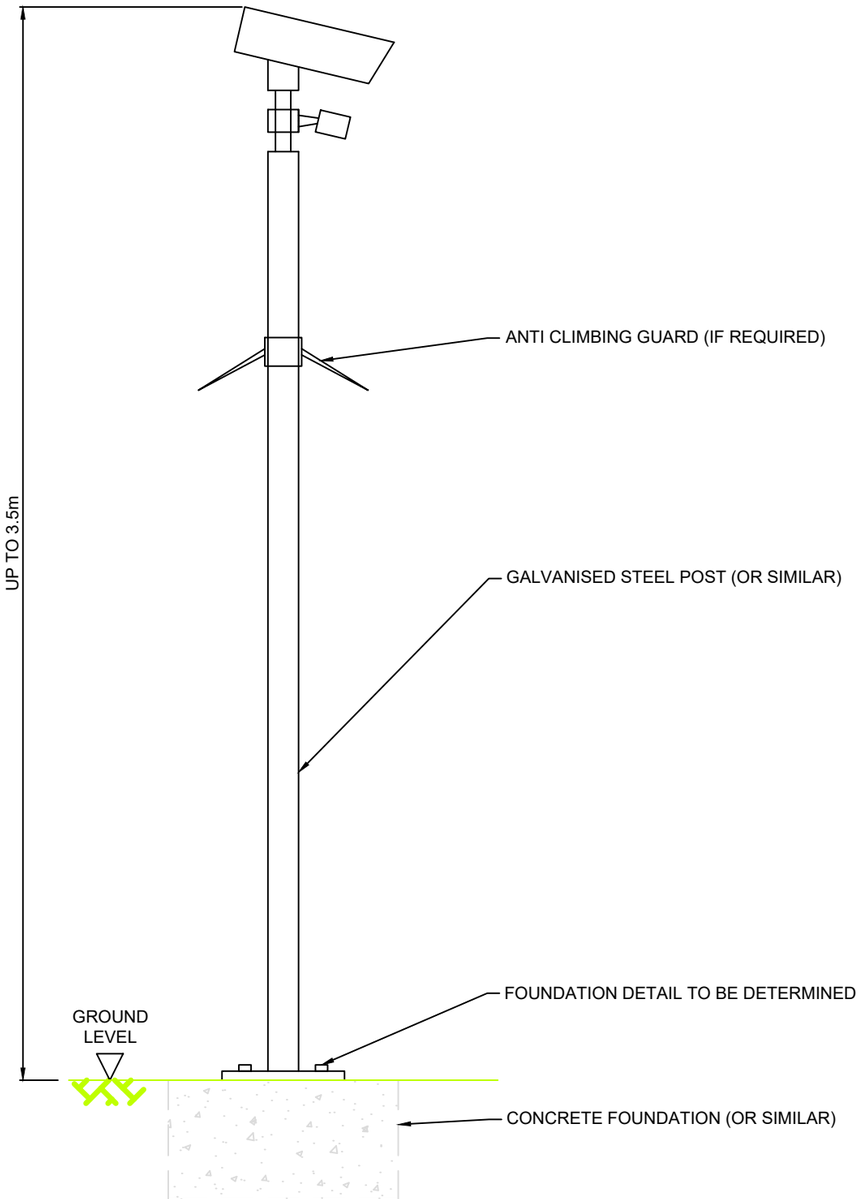
DRAWING NUMBER
917 \ 19-016 -DA-06 -A

SCALE - N.T.S **A3**

COORDS
N/A

PLANNING PERMIT APPLICATION

SUITE 4, LEVEL 1
760 PACIFIC HWY
CHATSWOOD, NSW 2067
TEL: +61 (0)2 8440 7400
EMAIL: info-australia@res-group.com



ELEVATION

TEMPLERS BESS
CNR TEMPLERS ROAD, TEMPLERS, SA 5371

TYPICAL CCTV SUPPORT DETAILS

NOTES:

1. ALL DIMENSIONS ARE MAXIMUM ANTICIPATED AND SUBJECT TO DETAILED DESIGN, BUT WILL BE GENERALLY IN ACCORDANCE WITH THIS DRAWING;
2. CAMERAS WILL BE INFRARED;
3. CCTV SUPPORTS TO BE LOCATED ADJACENT TO SECURITY FENCING;
4. CAMERAS MAY BE INSTALLED WITH PAN FUNCTION;
5. TO BE INSTALLED IF REQUIRED BY INSURERS.

INFRA DWG	N/A	APPD DATE	26-03-2019
LAYOUT DWG	N/A	T-LAYOUT NO.	N/A

DRAWING NUMBER
917 \ 19-016 -DA-07 -A

SCALE - N.T.S.

COORDS
N/A

PLANNING PERMIT APPLICATION

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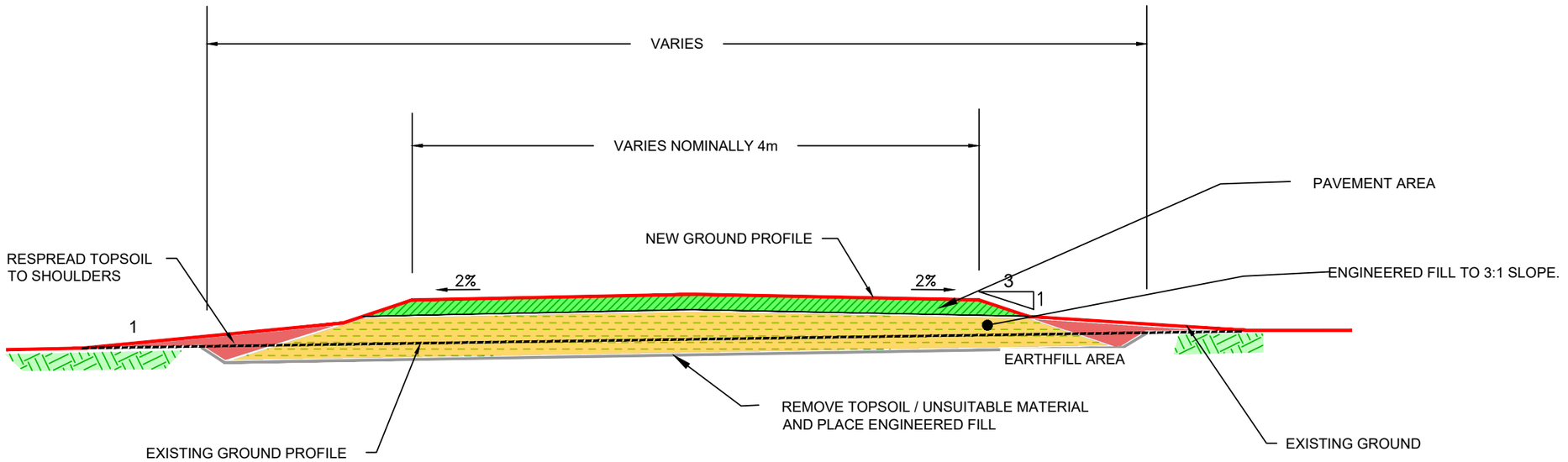
760 PACIFIC HWY
CHATSWOOD, NSW 2067
TEL: +61 (0)2 8440 7400
EMAIL: info-australia@res-group.com



TYPICAL SITE TRACK
CROSS SECTION

TEMPLERS BESS
CNR TEMPLERS ROAD, TEMPLERS, SA 5371

TYPICAL ACCESS TRACK DETAIL

LEGEND

- EXISTING GROUND PROFILE
- FINISHED GROUND PROFILE
- ENGINEERED FILL
- CRUSHED STONE PAVEMENT
- EXISTING GROUND
- RESPREAD TOPSOIL

NOTES

GENERAL SITE ROAD DETAILS SHOWN, WHERE POSSIBLE AREAS OF FILL TO BE AVOIDED, ADDITIONAL WIDENING OF TRACK REQUIRED ON CORNERS AND PASSING BAYS TO ACCOMMODATE TRAFFIC;

ADDITIONAL TEMPORARY TRACK WIDENING MAY BE REQUIRED FOR CRANE MOVEMENTS. WIDENED ZONES TO BE REMOVED AT THE DISCRETION OF THE REGULATING AUTHORITY;

TRACK WIDTH WIDENED LOCALLY TO PROVIDE PASSING BAYS & TURNING HEADS;

ALL MEASUREMENTS ARE INDICATIVE BUT FINAL DESIGN WILL BE CONSISTENT WITH WHAT IS SHOWN.

INFRA DWG N/A	APPD DATE 26-03-2019
LAYOUT DWG N/A	T-LAYOUT NO. N/A

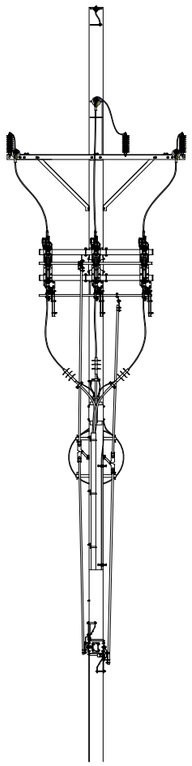
DRAWING NUMBER
917 \ 19-016 -DA-08 -A

SCALE - N.T.S

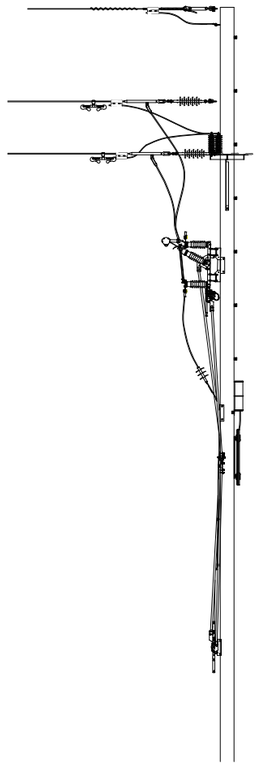
COORDS
N/A

PLANNING PERMIT APPLICATION

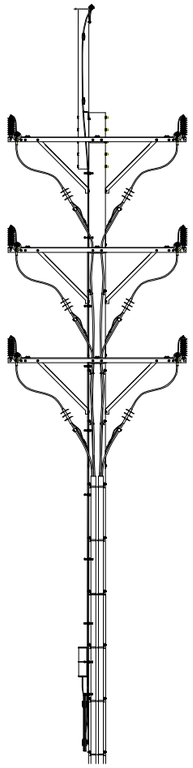
SUITE 4, LEVEL 1
760 PACIFIC HWY
CHATSWOOD, NSW 2067
TEL: +61 (0)2 8440 7400
EMAIL: info-australia@res-group.com



FRONT VIEW

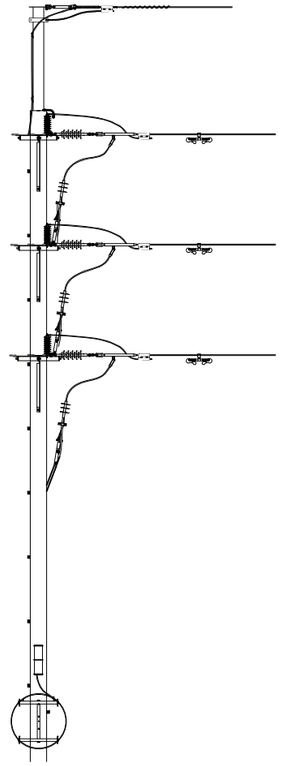


33kV SINGLE CIRCUIT WITH OPGW TERMINAL POLE WITH UNDERGROUND TO OVERHEAD CONNECTION



SIDE VIEW

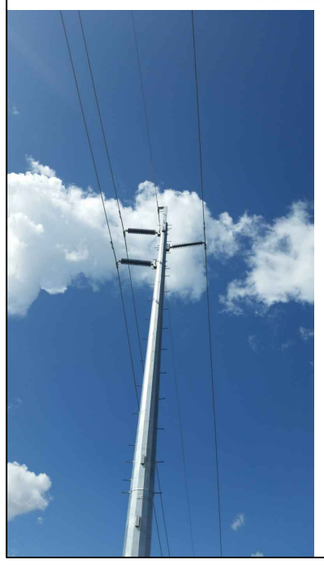
FRONT VIEW



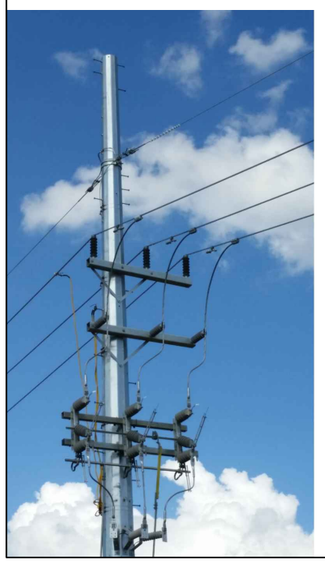
33kV DOUBLE CIRCUIT WITH OPGW TERMINAL POLE WITH UNDERGROUND TO OVERHEAD CONNECTION

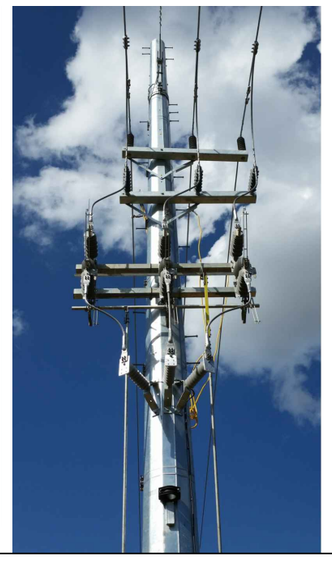
SIDE VIEW

TYPICAL
INTERMEDIATE POLES



TYPICAL
TERMINATING POLES





TEMPLERS BESS
CNR TEMPLERS ROAD, TEMPLERS, SA 5371

TYPICAL 33 KV OVERHEAD LINE POLES

NOTES

STRUCTURES MAY BE MADE OUT OF CONCRETE, STEEL OR WOOD OR A COMBINATION OF THESE MATERIALS;

POLE CONFIGURATIONS ARE INDICATIVE ONLY AND MAY CHANGE DURING DETAILED DESIGN.
INSULATORS MAY BE PORCELAIN OR POLYMERIC;

THERE MAY BE 1 OR 2 CONDUCTORS PER PHASE;

OPTICAL FIBRE GROUND WIRE (OPGW) IS SHOWN, OPGW IS AN EARTHING WIRE COMBINED WITH COMMUNICATION CABLES;

POLE HEIGHT WILL BE APPROXIMATELY 30m HEIGHT;

THE FINAL DESIGN WILL BE GENERALLY IN ACCORDANCE WITH WHAT IS SHOWN;

DOUBLE "H" TYPE POLES MAY BE A FEATURE OF FINAL DESIGN AND / OR AT A CHANGE IN DIRECTION OF THE TRANSMISSION LINE SUBJECT TO FINAL DESIGN;

BASED ON SENERGY DRAWING 9116-E-005 REV 0.

Senergy
A member of the Lloyd's Register group

INFRA DWG	N/A	APPD DATE	26-03-2019
LAYOUT DWG	N/A	T-LAYOUT NO.	N/A

DRAWING NUMBER
917 \ 19-016 -DA-09 -A

SCALE - NTS **@A3**

COORDS
N/A

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Appendix C Surface Water Assessment

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Templers Battery Energy Storage System

Surface Water Assessment

JBS&G

24 April 2019
Ref: 2019030902R001B

tonkin

Building exceptional
outcomes together

Document History and Status

Rev	Description	Author	Reviewed	Approved	Date
A	Draft for client comment	MM	KSS/OO	OO	4 April 2019
B	For use	MM	OO	OO	24 April 2019

Contents

Project: Templers Battery Energy Storage System | Surface Water Assessment
Client: JBS&G
Ref: 2019030902R001B

Tables

Figures

1 Introduction

JBS&G has been appointed by RES Australia to undertake planning as required for the preparation of a Development Application (DA) for a commercial battery energy storage system (BESS) in South Australia. RES has been developing renewable energy in Australia since 2004, in the form of wind and solar farms, transmission and energy storage. For this project, RES is proposing to construct a series of battery units (stored within containers) which will connect to the nearby Templers substation.

A stormwater management plan (SMP) is required to support the development application for the BESS. The SMP, as detailed in this report, addresses Light Regional Council's (Council) requirements relating to the management of stormwater. In developing the proposed management strategies consideration has been given to the management of flows from external catchments and the management of flows generated within the site.

1.1 Site description

The proposed development is located within the parcel of land identified as Lot 43 Templers Road. This property is bounded by Grosser Road to the north, Power Road to the east and Templers Road to the south, as shown on the locality plan in Figure 1.1. An ephemeral watercourse flows through the middle of the property.

The proposed BESS will only occupy a small (1.5 ha) portion of the property and will be situated at the southernmost portion of the property within the area identified for lease on Figure 1.1. Review of available topographic information, combined with observations made during the site visit, indicates that the site of the proposed BESS is the highest part of the property and runoff from the area would currently flow in the form of shallow sheet flow in a north-north easterly direction towards the watercourse.

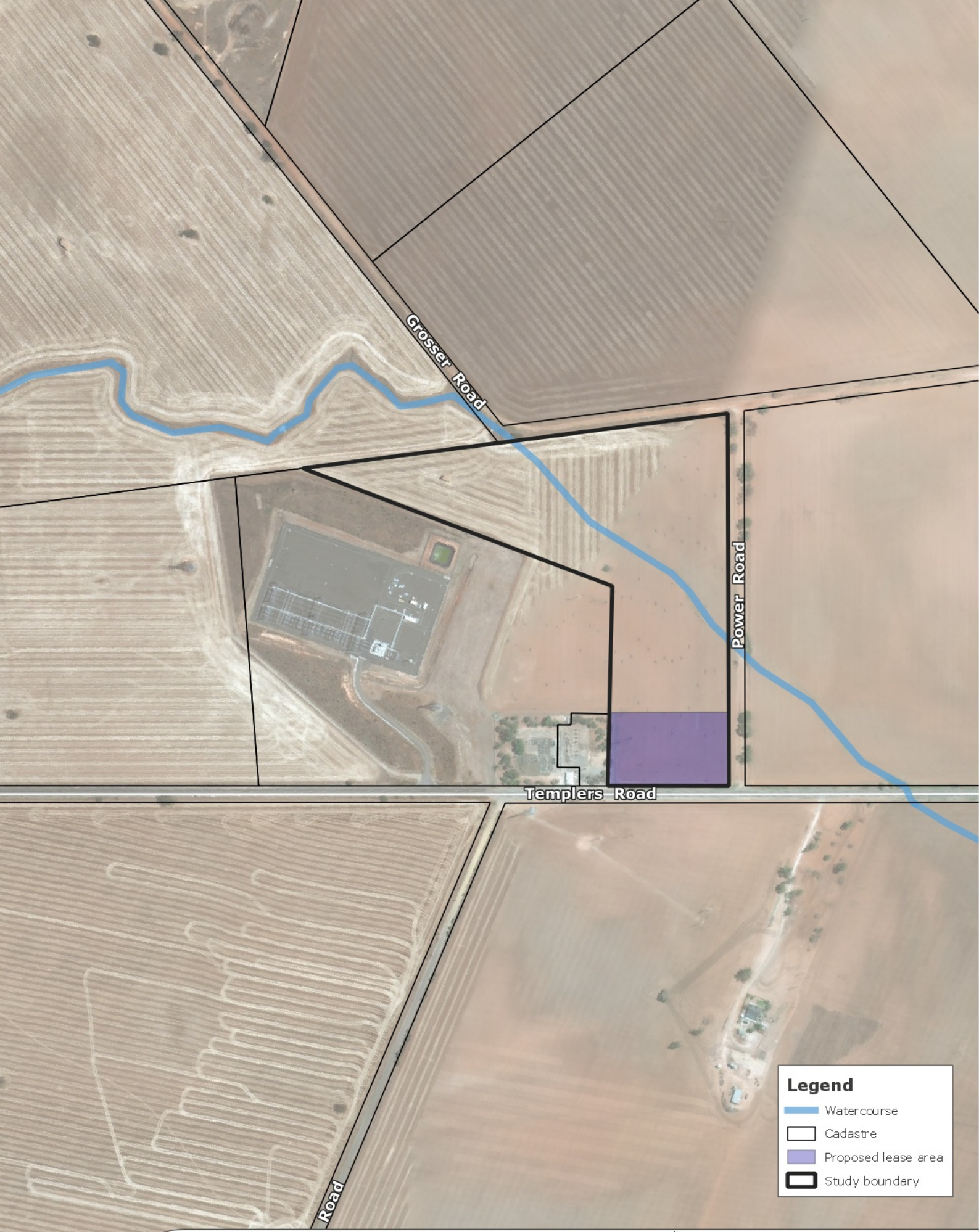
The site and surrounding area are predominantly agricultural in nature. There is a substation to the west of the site.

1.2 Council requirements

Review of Council's Development Plan (DPTI, 2016) identified a number of requirements relating to site drainage and the management of stormwater, including:

- Development should include stormwater management systems to protect it from damage in a 100-year average recurrence interval (ARI) flood.
- Development should include stormwater management systems to mitigate peak flows and manage the rate and duration of stormwater discharges from the site to ensure downstream systems are not overloaded.
- Development should include stormwater management systems to minimise the discharge of sediment, suspended solids, organic matter, nutrients, bacteria, litter and other contaminants to the stormwater system.
- Where it is not practicable to detain or dispose of stormwater on-site, only clean stormwater runoff should enter the public stormwater drainage system.

The SMP presented in this report addresses the above requirements.



tonkin

0 100 200 300 m

N

JBS&G

TEMPLERS BATTERY ENERGY STORAGE SYSTEM
SURFACE WATER ASSESSMENT
LOCALITY PLAN

Job Number:	20190309
Filename:	2019030902GQ001
Revision:	Rev A
Date:	2019-03-26
Drawn:	MM

Data Acknowledgement:
Aerial imagery from ESRI Satellite, 2017
Cadastre from Data SA, 2015
Roads from Data SA, 2018

Figure 1.1

2 External flow assessment

The extent of the external catchments that are likely to contribute to flows through the site was defined based on a review of 5 m contour data accessed on Location SA Viewer combined with observations made during a visit to the area. No detailed survey of the site and surrounding area was available.

Two main flow paths were identified – flows in the watercourse to the north of the BESS site and flows that would originate in catchments to the south of the site and which currently flow through the site towards the watercourse in the form of shallow sheet flow. Details of the assessment of the two flow paths are provided in the following sections. The assessments aim to address Council's requirements of the finished levels required to protect the facility from inundation during a 100-year ARI event.

2.1 Watercourse flows

Tonkin has previously undertaken hydrologic and hydraulic modelling within the Light Regional Council area as part of the development of flood mapping for the townships of Freeling, Greenock and Kapunda. As part of this previous work hydrologic modelling of undeveloped catchments, similar in nature to the catchment contributing flows to the watercourse, was undertaken using the RORB model. As part of the previous study the peak flows estimated by RORB were compared to flows estimated using a number of regional regression equations and it was found that the modelled flows were generally within the bounds of those estimated by the regional regression equations. It is therefore concluded that the regional equations provide an adequate representation of the likely peak flows.

Review of the available topographic information determined that the upstream catchment has an area of 6.6 km^2 and is bounded by the railway line in the south, the township of Freeling to the east and a ridge which extends between Bullock Road and Grosser Road to the north.

The 100-year ARI flows for the catchment were estimated using a number of regional regression equations from different sources, but which have all been developed for South Australian catchments. The equations take the form:

$Q_{100} = CA^B$

The values of the empirical coefficients C and B and the resultant estimates of 100-year ARI peak flows in the watercourse are summarised in Table 2.1. For the purpose of assessing the flow depths in the watercourse in the vicinity of the proposed development, a flow of 18.5 m^3/s has been adopted.

Table 2.1 Estimates of 100-year ARI flows in the watercourse

Regression	C	B	Q_{100} (m^3/s)
Eusuff - high (1985)	3.8	0.73	15.1
Eusuff – low (1985)	1.09	0.87	5.6
Akter and Daniell (1993)	6.2	0.58	18.5
Transport SA (Kemp, 2003)	3.08	0.91	17.2

2.1.1 Estimate of flow depth

The watercourse has very flat batters, estimated based on review of the contour data to be 1 vertical to 18 horizontal. The longitudinal slope is estimated to vary between 0.8 and 1.1%.

On the basis of the above, and assuming a Manning's roughness coefficient (n) of 0.035 which is considered representative of the landcover observed on the site, through use of the Manning's equation it is estimated that a flow of 18.5 m^3/s would correspond to a flow depth of 0.85 m.

The site proposed for the construction of the BESS is on the highest section of the parcel of land and, based on the contours is conservatively estimated to be a minimum of 5 m above the invert of the creek. On this basis it is considered that there is no risk of inundation of the BESS as a result of flows in the watercourse.

2.2 Southern catchments

There is a relatively small catchment (approximately 0.3 ha) on the southern side of Templers Road which may generate flows that flow through the site towards the watercourse during large rainfall events. The land on the southern side of Templers Road falls towards the road. Flows arriving at the road will be in the form of shallow sheet flows. Templers Road grades towards the east, and flows arriving at the road will either flow along the road reserve towards the intersection or cross the road.

Based on observations made during the site visit, it is possible that flows arriving at the western end of the southern boundary will cross the boundary and flow across the site as shallow sheet flow. There is a shallow depression on the northern side of Templers Road in the vicinity of the intersection with Power Road. Flows arriving at this location will be intercepted and directed towards the intersection of Templers Road and Power Road.

Power Road falls in a northerly direction towards the watercourse. The land of the proposed BESS is built up relative to the levels in Power Road and there is no risk of flows from Power Road entering the site.

On the basis of the above, it is considered possible that shallow sheet flows from catchments to the south of Templers Road may flow through the site. The nature of the flows means that they will not pose a safety hazard, and assuming that critical infrastructure and equipment within the site is built up a minimum of 300 mm above existing natural surface levels, they will not impact site operations.

If desired, a low-level bund constructed on the southern boundary of the site could be used to prevent these overland flows from entering the site. The bund would divert flows in an easterly direction towards the intersection of Templers Road and Power Road.

3 Internal stormwater management

This section summarises the recommended measures for the management of flows generated within the site. The measures have been assessed in relation to Council's requirements and are considered suitable for the purposes of accompanying the Development Application.

3.1 Runoff from impervious areas

The site plan supplied by JBS&G (dwg no. 19-016 SK3-01 Rev B) indicates that there will be a number of new impervious areas introduced to the site as part of the development, including the batteries and switching compound (4,150 m^2) and driveway (2,250 m^2). These areas account for approximately 43% of the proposed lease area and will result in an increase in site runoff. The increase in runoff will be greatest during frequent rainfall events when the existing site, in its undeveloped state, would be unlikely to generate any runoff.

3.2 Hydrological modelling

Hydrological modelling was undertaken to provide estimates of pre- and post-development peak flows leaving the site. The hydrological assessment is based upon the recommendations and guidance provided within the 2016 edition of Australian Rainfall and Runoff (ARR2016).

The modelling was undertaken using the DRAINS software package (version 2019.03). The model was run for all durations from five minutes to 168 hours. As recommended in ARR2016, for each duration the model was run for an ensemble of ten rainfall patterns using the latest (2016) intensity-frequency-duration (IFD) data.

An ILSAX-type hydrological model was used to model the study area. The storm losses recommended in ARR2016 (summarised in Table 3.1) were adopted for pervious areas. The paved area depression storage of 2 mm is based on the proposed use of compacted, crushed rock for all impervious surfaces.

Table 3.1 DRAINS model parameters

Parameter	Value
Paved area depression storage (equivalent to an impervious area initial loss)	2 mm
Grassed area depression storage (equivalent to a pervious area initial loss)	32 mm
Antecedent moisture condition	3

The model was run for minor (0.2 exceedances per year (EY); equivalent to a 5 year ARI) and major (1% annual exceedance probability (AEP); equivalent to a 100 year ARI) rainfall events. The estimates of peak flows discharged from the proposed lease area pre and post-development are summarised in Table 3.2.

Table 3.2 Modelled flowrates (L/s)

Pre-development 0.2 EY	Post-development 0.2 EY	Pre-development 1% AEP	Post-development 1% AEP
0	85	122	173

The modelling confirms that the development will increase runoff.

3.3 Detention basin sizing

Council's engineer was contacted during the development of the SMP to understand Council's requirements for the management of the increased peak flow rates from the development. Council advised that retention is not required, and that detention to limit the peak flows to 'a reasonable rate' prior to discharge to the watercourse will be sufficient. This approach is consistent with the management strategy for stormwater from the substation to the west of the BESS.

The DRAINS model was used to size the detention basin. The modelling indicates that a 180 m^3 basin with a 150 mm diameter outlet pipe provides sufficient detention. The modelling assumes a basin depth of 1.2 m and a surface area of 300 m^2 however the configuration of the basin may be refined during the detailed design process. A summary of the peak modelled flow rates is provided in Table 3.3.

In minor events the design limits the peak flow rate to 22 L/s. These low flows will not have a significant impact on the downstream watercourse and it is likely that they will disappear via evaporation and infiltration along a relatively short section of the watercourse. In a major (1% AEP) flow event the flows will be slightly higher (6%) than the pre-development flow rate. This minor increase in flow rate will not have an impact on the downstream receiving environment. On this basis it is considered that the proposed development, incorporating the recommended detention basin, will have a negligible impact on the flood risk of the downstream systems.

Table 3.3 Detention basin modelling results

Rainfall event	Peak flow rate in outlet pipe (L/s)	Peak basin overflow (L/s)
0.2 EY	22	0
1% AEP	22	108

The outlet pipe will direct flows from the basin to a shallow depression which will convey the flows towards the watercourse. Scour protection at the pipe outlet will be required to reduce the likelihood of erosion due to concentrated flows. The detailed design of the basin should also incorporate a rock lined overflow weir (nominal width 2 m) to direct overflows to the swale during major flow events.

The basin needs to be located in a position where all flows from the site can be directed into the basin under gravity. The recommended location for the basin is a linear basin immediately to the north of the access road. An alternative location at the eastern extent of the site has also been identified.

Survey of the site will be needed to inform the detailed design of the basin. The basin may be fully excavated below the natural surface or a combination of excavation with a levee on the lower side to provide the required storage.

3.4 Additional stormwater management measures

All runoff from the site will be directed to the detention basin via a combination of open swales, stormwater inlet pits and an underground pipe network. Details of the drainage infrastructure will need to be refined as the design of the BESS progresses to detailed design. Indicative requirements for the internal stormwater infrastructure are discussed in the following sections and are shown on the stormwater management plan in Figure 3.1.

Runoff from the developed portion of the site, specifically in the vicinity of the proposed batteries, is expected to follow the natural topography of the land which falls towards the north. The site should be graded to direct flows towards formalised flow paths which will then convey flows in an easterly direction towards grated inlet pits.

The grated inlets will discharge into an underground pipe (nominally 375 mm diameter) which will then convey runoff to the basin.

The ring road will not be kerbed. The road should be designed to have one-way cross fall to direct runoff from the road into swales adjacent to the road. The swales will then convey the flows towards inlet pits discharging into the underground pipe network that ultimately discharges into the detention basin.

3.5 Basin outlet

The piped outlet from the basin should be directed to a shallow depression that runs along the eastern boundary of the property. The shallow flow path (nominally 300 mm deep) will serve to convey low flows from the outlet of the basin to the watercourse.

In larger flow events, if the capacity of the flow path is exceeded flows may sheet across the surrounding land in a similar fashion to what currently occurs.

As the swale draining to the watercourse is located outside of the proposed lease area, a drainage easement may be required.

3.6 Minimum finished levels

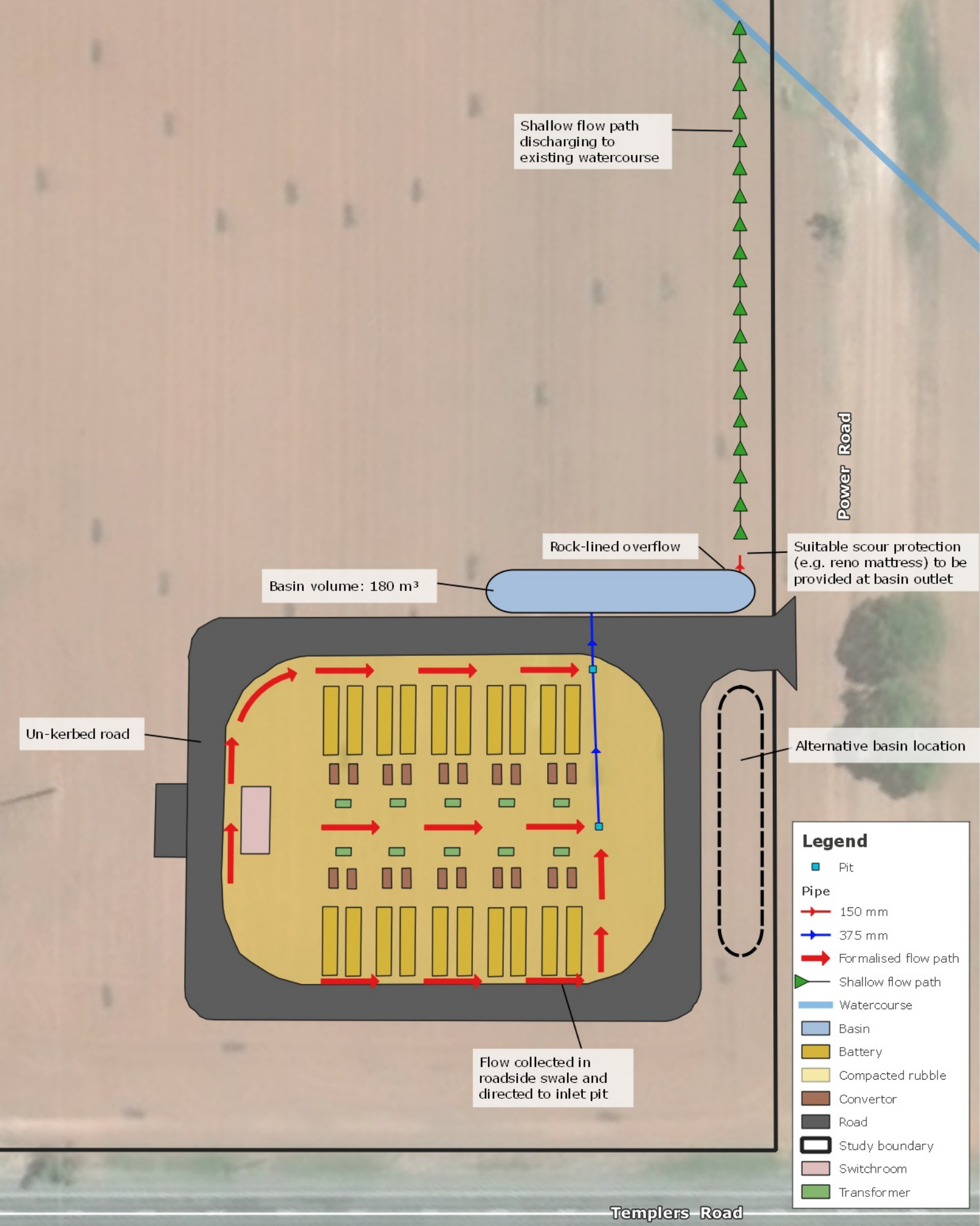
It is recommended that critical equipment and infrastructure be constructed with finished levels a minimum of 300 mm above the surface. This will provide sufficient freeboard above shallow sheet flows that may occur within the site.

3.7 Stormwater management plan

A GIS-based plan detailing the recommended measures to manage stormwater discharged from the site is shown in Figure 3.1.

The key features of the stormwater management strategy include:

- Site grading to create formalised flow paths directing flows into grated inlets.
- Design of the ring road to direct flows to an inlet pit via swales.
- A detention basin to limit peak flow rates.
- A shallow depression to provide a formalised flow path for low flows from the basin.



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JBS&G

TEMPLERS BATTERY ENERGY STORAGE SYSTEM
SURFACE WATER ASSESSMENT
STORMWATER MANAGEMENT PLAN

Job Number:	20190309
Filename:	2019030902GQ001
Revision:	Rev B
Date:	2019-04-24
Drawn:	MM

Data Acknowledgement:
Aerial imagery from ESRI Satellite, 2017
Cadastre from Data SA, 2015
Site layout from JBS&G, 2019

Figure 3.1

3.8 Water quality management

Council advised that due to the nature of the development no measures specifically to improve water quality are required.

The proposed detention basin and swales, detailed in the previous section, will provide some water quality improvement prior to discharge into the watercourse.

4 Conclusions

This SMP has been developed to support a Development Application for a new battery energy storage system in Templers, South Australia. The SMP considers the risks associated with flows from external catchments passing through the site and presents measures to manage flows generated within the site.

The key stormwater conclusions and recommendations are:

- Flows from external catchments do not present a flood risk to the development.
- Peak flows from the development will be managed via a detention basin prior to discharge into the watercourse.
- The development will have no impact on the flood risk of neighbouring properties and downstream systems.
- The water quality of runoff discharged from the site is not considered to pose a risk to the watercourse and downstream receiving waters.

5 References

Akter, S. and Daniell, T.M. (1993). *Regional Flood frequency in the Mount Lofty Ranges.* I.E. Aust Hydrology and Water Resources Symposium, Newcastle, June 1993. pp281-286.

Ball J, Babister M, Nathan R, Weeks W, Weinmann E, Retallick M, Testoni I (Editors) (2016), *Australian Rainfall and Runoff: A Guide to Flood Estimation*, Commonwealth of Australia.

Eusuff, T.H. (1995). *A Regional Flood Frequency Approach to the Mount lofty Ranges.* Unpublished thesis, University of Adelaide, June 1995.

Kemp, D. (2003) *Hydrological Study of the Upper Onkaparinga River Catchment.* For the Onkaparinga Water Management Board by Transport SA.

Appendix D Ecology Assessment

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Templers Battery Energy Storage System

Flora & Fauna Assessment

March 2019

T&M Ecologists

RES Australia

Templers Battery Energy Storage System

Flora and fauna assessment

Document Information	
Client	JBS&G
Issue Date	22nd March, 2019
Version	Final
Author	Sarah Telfer
Title	Director, T&M Ecologists
Signature	
Verified by	Tim Milne
Title	Director

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Draft	20th March, 2019
Final	22nd March 2019

Certain assumptions have been made in the preparation of this report. We have assumed that all information and documents provided to us by the Client or as a result of a specific request or enquiry were complete, accurate and up-to-date. Where we have obtained information from a government register or database, we have assumed that the information is accurate. Where an assumption has been made, we have not made any independent investigations with respect to the matters the subject of that assumption. We are not aware of any reason why any of the assumptions are incorrect.

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Contents

1. Introduction

As part of its broader energy storage strategy, RES Australia has designed and developed a 30MW/ 30MWh lithium-based Battery Energy Storage System (BESS) project located at Templers, in the mid North of South Australia. The site is located within the Light Regional Council (see Figure 1).

The proposed project includes the construction of a series of battery units stored within containers which will connect to the adjacent Templers substation. The total area of the project site is approximately 1.8 hectares, however it is anticipated that the development footprint will be less than this.

The nominal area for the BESS Project are shown in Figure 2. On-ground fieldwork is likely to be confined to the project footprint, however desktop investigation of adjacent areas (to identify potential sensitivities) are included in the scope of investigation.

The intent of this report is to provide an overall summary of the flora and fauna present (or potentially present) within the development site, with reference to relevant State and National environmental legislation (particularly with regard to the *Native Vegetation Act 1991*), as well as identifying methods to minimise impacts on the biodiversity values of the site.

2. Native Vegetation Act 1991

If native vegetation is proposed to be cleared on the subject land, approval will be required under *Regulation 12(34) – Infrastructure* of the *Native Vegetation Act 1991*. This Regulation allows for clearance of vegetation incidental to the construction or expansion of a building or infrastructure (and associated services) where the Minister has declared that the clearance is in the public interest.

Risk assessment

When making a decision in relation to the information to be provided by an applicant to inform whether approval should be granted, the Native Vegetation Council (NVC) will assess the level of risk to biodiversity presented by the clearance proposal. In this instance the level of risk is likely to be **'Level 1'** because it is proposed to clear <0.05 hectares.

A Level 1 clearance requires a Desktop assessment (Applicant to provide information) to be provided to the NVC. This includes a map of area of impact, site photographs, explanation of the purpose of clearance, why there is no alternative and whether there has been any other clearance application on the property in the last 5 years.

Significant Environmental Benefit

The Significant Environmental Benefit (SEB) required to offset a Level 1 vegetation clearance is a minimum **$500 payment into the Native Vegetation Fund**.

Clearance approval and conditions

If approval is granted, clearance is only permitted once any conditions that apply to the approval are complied with, including in relation to the SEB. Conditions imposed in connection with an approval are binding and enforceable against the person to whom the approval is granted, and this includes any subsequent owners and occupiers of the land. Permitted clearance must be undertaken within 2 years of approval being granted, unless otherwise specified.

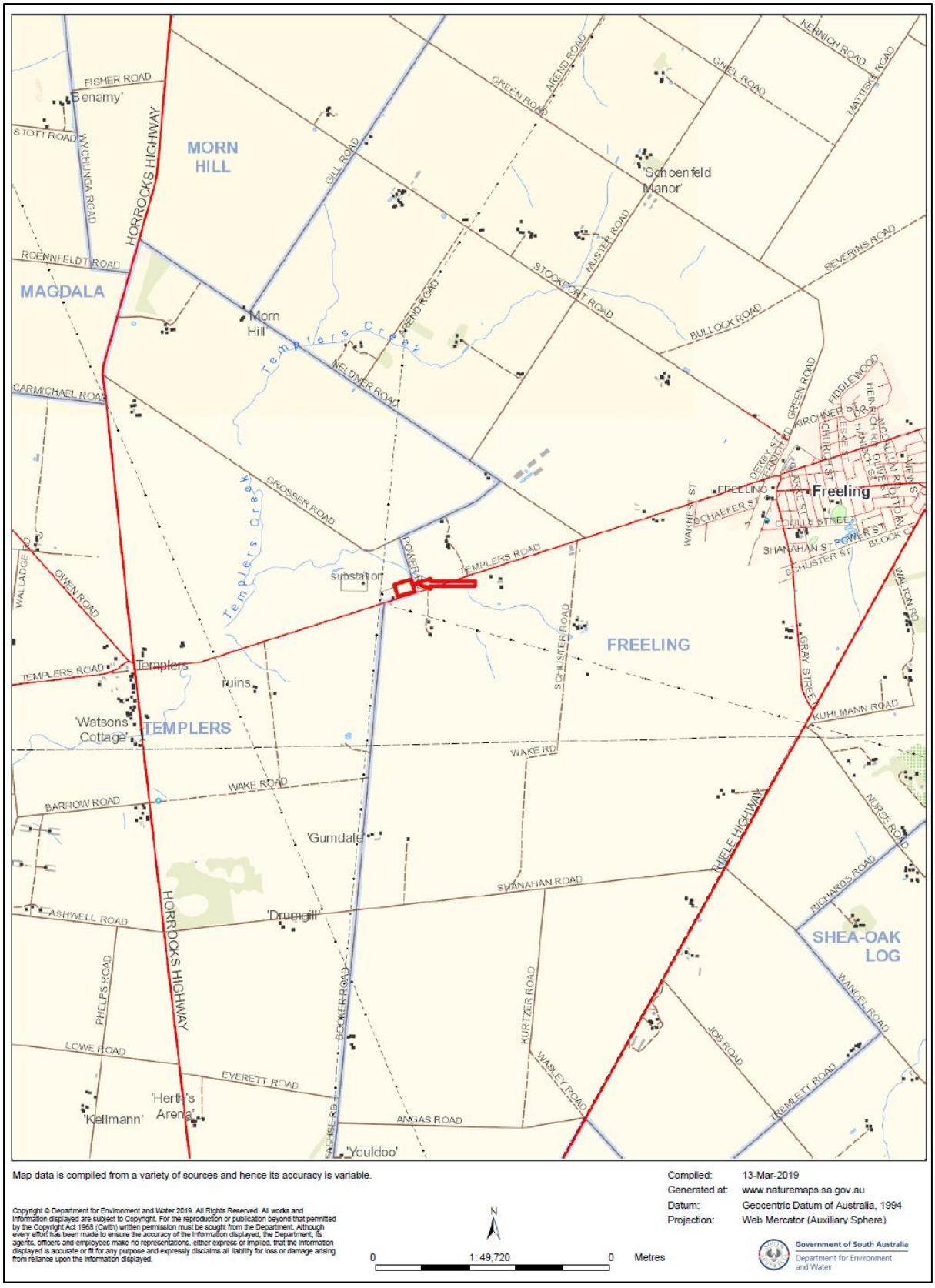

Figure 1: Location of proposed Templers battery energy storage system

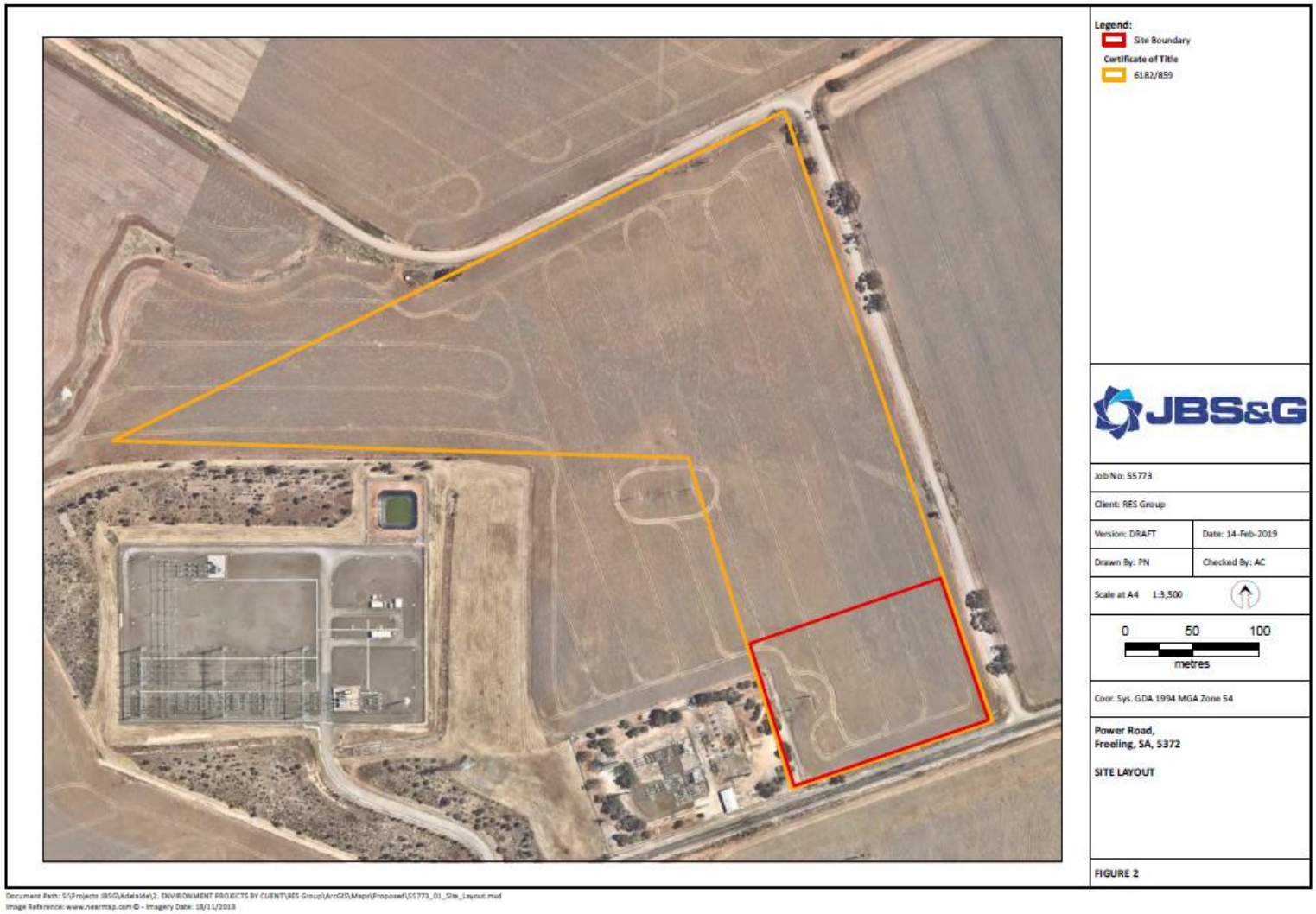

Figure 2: Project site – Templers battery energy storage system

3. Clearance assessment methodology

3.1 Flora assessment

An on-site vegetation assessment was undertaken on 13th March 2019. Data was gathered using DEW's Bushland Assessment methodology[1].

3.2 Database Searches for Flora and Fauna

Results from the on-site assessment were supplemented with searches within a 5 kilometre buffer of the boundaries of the survey area using the following resources:

- Biological Database of South Australia (BDBSA)and
- Department of Environment and Energy (DoEE) Protected Matters Search Tool (PMST)[2].

The 5km buffer was chosen in keeping with the Native Vegetation Council's "Bushland Assessment Method[3]".

4. General description of the vegetation

4.1 Project site

The site of the proposed battery energy storage system covers approximately 1.8 hectares within Q43 D90124, Hundred of Light, which is situated on the south-west corner of Templers Road and Power Road at Templers (Figure 1).

No native vegetation is currently present in the site (which is a cropped paddock) aside from a strip (0.5 metre – 1 metre wide) of Rigid Panic Grass (*Walwhalleya proluta*) on the western boundary of the project area, immediately adjacent to the electricity substation. This strip of native grass is approximately 0.0174 hectares in area. A single Tall Spear Grass tussock (*Austrostipa nodosa*) was detected in this patch, as well as two seedling eucalypts (*Eucalyptus* sp.). One of these eucalypts is approximately 30cm tall and the other was <10cm tall.

This patch of native grass is heavily weed-infested. Notable weeds include Couch (**Cynodon dactylon*), Golden Palensis (**Asteriscus spinosus*), Brome Grass (**Bromus diandrus*), Wild Oat (**Avena barbata*), Rice Millet (**Piptatherum miliaceum*), Scabious (**Scabiosa atropurpurea*) and Stinkweed (**Dittrichia graveolens*).

4.2 Surrounding roadsides

Templers Road

The roadside verge adjacent to the site on Templers Road is heavily weed infested. Notable weeds include Couch (**Cynodon dactylon*), Golden Palensis (**Asteriscus spinosus*), Rice Millet (**Piptatherum miliaceum*), Scabious (**Scabiosa atropurpurea*) and Stinkweed (**Dittrichia graveolens*).

The only native vegetation noted is one solitary 5 metre tall Inland South Australian Blue Gum (*Eucalyptus leucoxylon* ssp. *pruinosa*). See Figure 3 for location and Photo 3.

[1] Native Vegetation Management Unit, Department of Environment and Water, 2017.
[2] Australian Government (2018). http://www.environment.gov.au/epbc/protected-matters-search-tool accessed 21/11/2018.
[3] Native Vegetation Management Unit (2017). Native Vegetation Council (NVC) Bushland Assessment Manual. Government of South Australia, Adelaide.

Power Road

Power Road is a gravel road which runs north-south along the eastern boundary of the project site. The roadside verge immediately adjacent the site (western side of road), is largely bare ground with a few very sparsely scattered individual Rigid Panic Grass (*Walwhalleya proluta*). These plants occur immediately adjacent to the carriageway, probably because this is a zone of increased water runoff. See Photo 4.

The roadside verge on the eastern side of Power Road (opposite to the project site) supports a few scattered mature Inland South Australian Blue Gum (*Eucalyptus leucoxylon* ssp. *pruinosa*). Understorey comprises a mix of native and weed species (Photo 5). Native species include:

- Ruby Saltbush (*Enchylaena tomentosa var. tomentosa*)
- Notable Wattle (*Acacia notabilis*)
- Mealy Saltbush (*Rhagodia parabolica*)
- Black-anther Flax-lily (*Dianella revoluta*)
- Wingless Fissure-plant (*Maireana enchylaenoides*)
- Wallaby Grass (*Rytidosperma* sp.)
- Spear Grass (*Austrostipa* sp.)
- Native Wheat Grass (*Anthosachne scabra*)

See Figure 3 for the location of this vegetation and Photo 5. It is not anticipated that this patch will be impacted by the proposed project.

4.3 Database searches

A search of the Biological Database of South Australia (BDBSA) within a 5km radius of the project site was undertaken and a total of 7 National and/or State threatened flora species and 1 threatened fauna species were listed.

A search of the National Environment Protection & Biodiversity Conservation (EPBC) Protected Matters Search Tool was undertaken to identify if species of National conservation significance potentially may occur within the project area. The search results indicated that 2 threatened ecological communities listed under the EPBC Act have been recorded within a 5km radius of the study area. A total of 5 threatened flora species, 1 threatened reptile species, 1 threatened mammal species, 7 threatened bird species and a further 11 migratory bird species have also been recorded within a 5km radius. (Note that marine bird species were excluded.)

These species are listed in Table 1. It is not considered that any of these species would utilise the project area due to it being a cropped paddock and the almost complete lack of native vegetation present.

Table 1: Llist of threatened ecological communities and threatened flora and fauna species recorded within a 5km radius of the project area.

Species	Common Name	EPBC Rating	NPWS Rating	*Source
Ecological community				
Iron Grass Natural Temperate Grassland of South Australia		Critically Endangered	Endangered	2
Peppermint Box (*Eucalyptus odorata*) Grassy Woodland of South Australia		Critically Endangered	Endangered	2
Flora				
Austrostipa gibbosa	Swollen Spear-grass		Rare	1
Bothriochloa macra	Red-leg Grass		Rare	1
Caladenia argocalla	White Beauty Spider-orchid	Endangered	Endangered	1
Caladenia stellate	Star Spider-orchid		Rare	1
Caladenia tensa	Inland Greencomb Spider-orchid	Endangered	-	2
Caladenia xantholeuca	Flinders Ranges White Caladenia	Endangered	Endangered	2
Eucalyptus behriana	Broad-leaved Box		Rare	1
Olearia pannosa ssp. pannosa		Vulnerable		2
Podolepis jaceoides	Showy Copper-wire Daisy		Rare	1
Prasophyllum pallidum	Pale Leek-orchid	Vulnerable	Rare	2
Prasophyllum validum	Mt Remarkable Leek-orchid	Vulnerable	Rare	2
Pycnosurus globosus	Drumsticks		Vulnerable	1
Mammals				
Phascogale tapoatafa	Brush-tailed Phascogale		Endangered(Believed to be regionally extinct)	1
Pteropus poliocephalus	Grey-headed Flying-fox	Vulnerable	Vulnerable	2
Reptiles				
Aprasia pseudopulchella	Flinders Ranges Worm-lizard	Vulnerable	-	2
Birds				
Actites hypoleucos	Common Sandpiper	Migratory Wetland	Rare	2
Botaurus poiciloptilus	Australasian Bittern	Endangered	Vulnerable	2

Species	Common Name	EPBC Rating	NPWS Rating	*Source
Calidris acuminata	Sharp-tailed Sandpiper	Migratory Wetland	-	2
Calidris ferruginea	Curlew Sandpiper	Critically Endangered	-	2
Calidris melanotos	Pectoral Sandpiper	Migratory Wetland	Rare	2
Gallinago hardwickii	Latham's Snipe	Migratory Wetland	Rare	2
Grantiella picta	Painted Honeyeater	Vulnerable	Rare	2
Leipoa ocellata	Malleefowl	Vulnerable	Vulnerable	2
Numenius madagascariensis	Eastern Curlew	Critically Endangered	Vulnerable	2
Pandion haliaetus	Osprey	Migratory Wetland	Endangered	2
Pedionomus torquatus	Plains-wanderer	Critically Endangered	Endangered	2
Rostratula australis	Australian Painted-snipe	Endangered	Vulnerable	2
Tringa nebularia	Common Greenshank	Migratory Wetland	-	2
***Source: 1= Biological Database of SA; 2= National Environment Protection & Biodiversity Conservation (EPBC) Protected Matters Search Tool**				

Figure 3: Native vegetation present – proposed site of the Templers battery energy storage system

Photo 1: Strip of Rigid Panic Grass (Walwhalleya proluta) on the western boundary of the project area, immediately adjacent to the substation

Photo 2: One of 2 seedling Eucalypts (Eucalyptus sp.) which occurs in the patches of Rigid Panic Grass.

Photo 3: One solitary 5 metre tall Inland South Australian Blue Gum (Eucalyptus leucoxylon ssp. pruinosa) on the Templers Road verge adjacent to the project site.

Photo 4: Western road verge, Power Road (immediately adjacent to the project site.

Photo 5: Small patch of Inland South Australian Blue Gum (Eucalyptus leucoxylon ssp. pruinosa) over a mixed native and weed understorey – eastern road verge, Power Road.

5. Discussion

5.1 Habitat for wildlife

It is considered that, due to the sparse cover of native vegetation, the cropped nature of the vast majority of the project site and the heavily cleared nature of the surrounding landscape, no fauna species of either State or National conservation significance would utilise the proposed site.

5.2 Threatened flora species

No threatened flora species were recorded from the site or on the surrounding road verges. Whilst the survey was undertaken in summer (when some annual species are not evident), it is considered highly unlikely that any species of conservation significance would be present.

5.3 Threatened plant community

E. leucoxylon ssp. *pruinosa* +/- *E. odorata* Grassy Low Woodland on loams of hill slopes in the Mid North of South Australia is listed as Critically Endangered under the *Environment Protection & Biodiversity Conservation Act 1999*. It is listed as 'Vulnerable' in South Australia[4]. However, it is unlikely that the small patch which is on the western side of Power Road will be impacted by the proposed development.

[4] DEH (in progress). *Provisional List of Threatened Ecosystems of South Australia*, unpublished and provisional list.

5.4 Mitigation

With regard to approvals under the *Native Vegetation Act 1991*, it is possible that, due to the limited area of native vegetation across the project site, the clearance of native vegetation can be avoided. If it is not possible to avoid the patches of native grass and the two seedling eucalypts on the eastern boundary adjacent to the electricity substation, then the clearance would be very minor, and could be submitted as a 'Level 1' application under the *Act*.

Appendix E Traffic Assessment

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Templers BESS Traffic and Transport Review

Traffic Impact Assessment

JBS&G

17 April 2019
Ref: 2019030901

tonkin

Building exceptional
outcomes together

Document History and Status

Rev	Description	Author	Reviewed	Approved	Date
A	For Client Comment	AN	BA/SB	SB	3/04/2019
B	Final Issue	AN	SB	SB	17/04/2019

Contents

Project: Templers BESS Traffic and Transport Review | Traffic Impact Assessment
Client: JBS&G
Ref: 2019030901

Tables

Figures

1 Introduction

Tonkin has been engaged by JBS&G to undertake a traffic impact assessment of a proposed commercial battery energy storage system (BESS) located at Templers, South Australia. The site is located on existing farming area at the corner of Templers Road and Power Road.

The total area of the project site is approximately 1.8 ha, and will consist of the battery storage area, a switch room and an internal road to service the site.

This report presents a traffic impact assessment for the proposed development, detailing the likely traffic impacts on the wider road network.

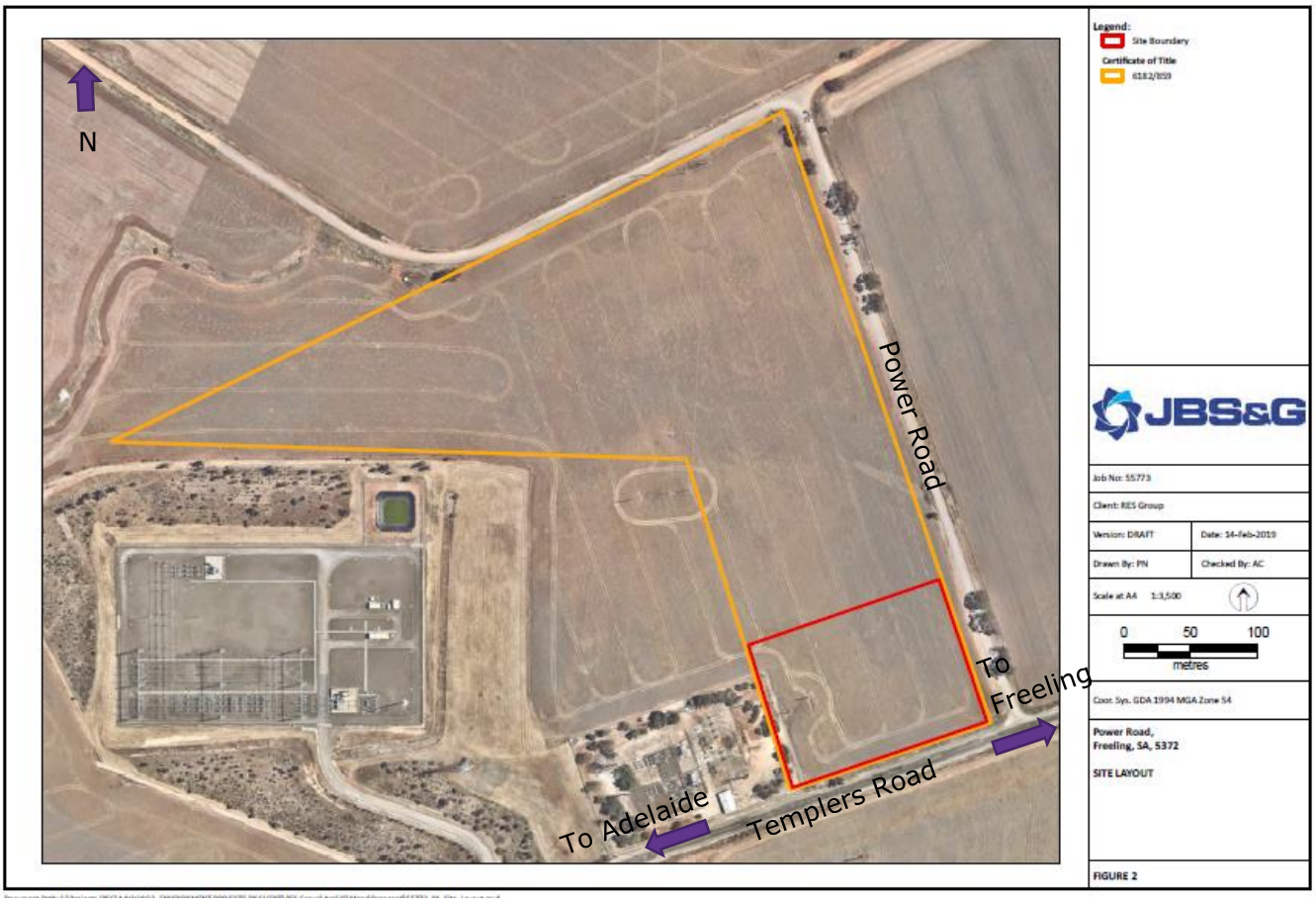

Figure 1 Site Location (provided by JBS&G)

2 Existing Conditions

2.1 Subject Site

The development site fronts both Templers Road and Power Road in the area of Templers, which lies approximately 60km to the north of Adelaide, just off the Horrocks Highway. The closest town is Freeling, located 3km to the east.

The proposed development site is surrounded by farmland.

2.2 External Road Network

2.2.1 Adjoining Roads

2.2.1.1 Templers Road

Templers Road is under care and control of the Department of Planning, Transport and Infrastructure (DPTI). It consists of a single carriageway with two lanes (1 lane in each direction) and a speed limit of 100km/h. The road consists of sealed and unsealed shoulders, with a total carriageway width of approximately 12.5m, and a sealed width of 6.7m.

Based on 2015 traffic data, Templers Road has a traffic volume of 700 vehicles per day (vpd) with a commercial vehicle (CV) percentage of 14.5% (Location SA).

Templers Road is gazetted for a PBS (Performance Based Standard) Level of 2A, which corresponds to a maximum vehicle size of a 26m B-double.

A visual inspection of the pavement adjacent the project site showed no significant signs of structural damage such as rutting, pot holing, bleeding, stripping or edge break. The pavement appeared to be in good condition.

2.2.1.2 Power Road

Power Road is a two way unsealed road which services the local farming areas. This road is a dry weather only road, with a carriageway width of approximately 9m. Power Road is under care and control of Light Regional Council.

No traffic data is available for Power Road, however there are no significant developments in the area, this suggesting that the average daily traffic volume will be relatively small (ie 100–200vpd). This estimation was further reinforced during the site visit where only a single vehicle was observed, travelling from Templers Road towards Grosser Road.

Access to the site is proposed to be via Templers Road and Power Road. No traffic related to the subject site will travel on Power Road to the north of the site access.

A visual inspection of Power Road showed no signs of bull dust, corrugation, potholes or other structural damage, and the road appeared to be in good structural condition.

2.2.2 Crash Data

Crash data shows that there have been no crashes in the vicinity on the site in the 5 year period between January 2013 and December 2017 (Location SA).

2.2.3 Pedestrian Infrastructure

There is no existing pedestrian infrastructure within or in the vicinity of the proposed site. Given the rural location of the site, pedestrians are not expected to utilise either Power Road or Templers Road.

Within the site itself, pedestrians will be able to utilise the driveway and hardstand areas with low volume, slow moving vehicles. Once commissioned, it is expected that on-site traffic will be generally comprise only one vehicle at a time.

3 Development Proposal

3.1 Layout

The proposed layout consists of a circulating perimeter roadway, with the battery storage located centrally. Carparks are provided on the western side of the site adjacent the switch room.

The proposed layout is shown below.

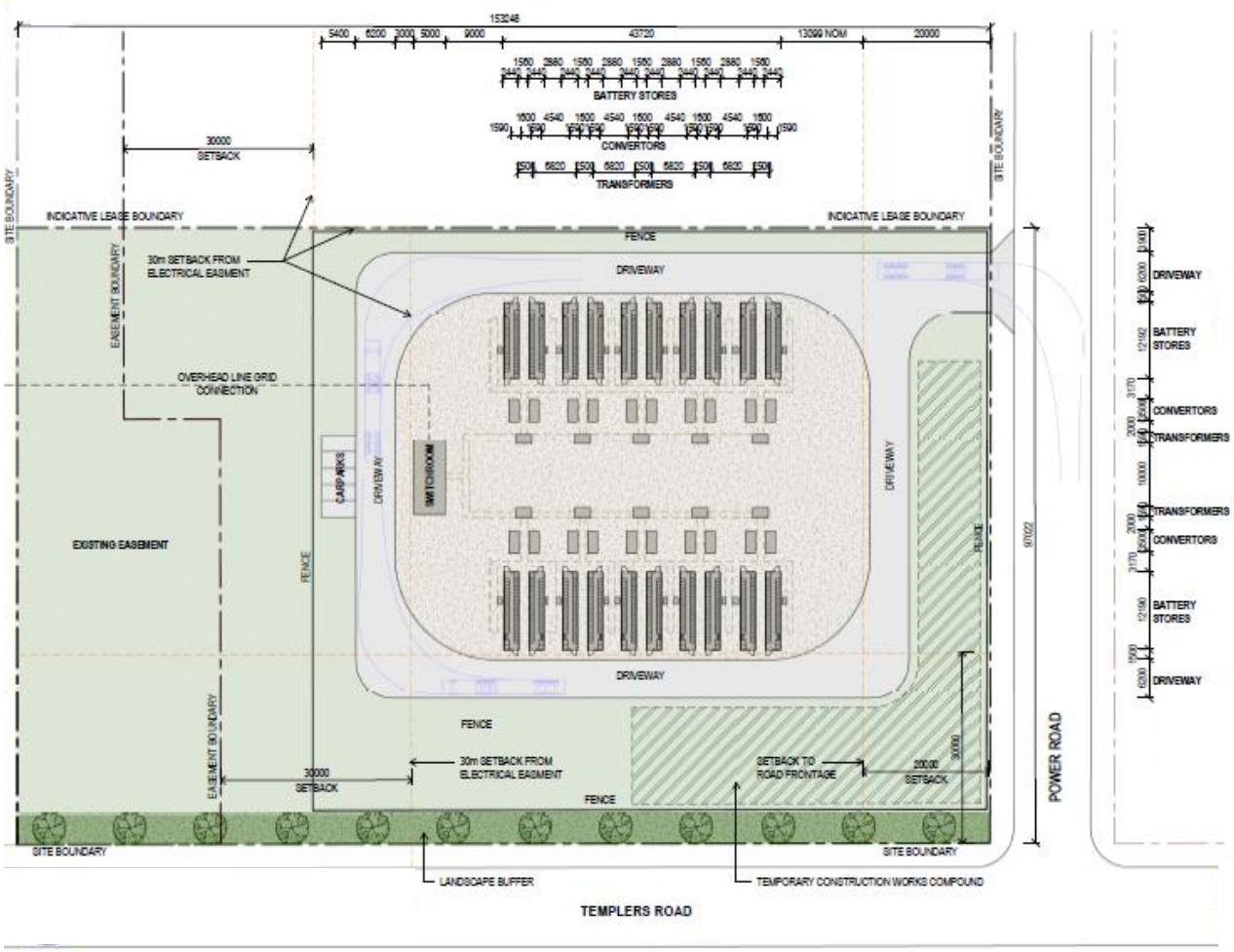

Figure 2 Proposed Site Layout (as supplied by JBS&G)

3.2 Vehicle Access

Access is proposed from a single point along Power Road. The access point is shown to be located at the northern extent of the site, approximately 85m from Templers Road.

3.3 Site Usage

The site usage is divided into two phases, initially for construction and upon commissioning, for operations and maintenance.

The construction phase is estimated to take 6-7 months and will generate the greatest traffic activity across the site for its planned use. Construction traffic will comprise semi-trailers, flatbed lorries and tankers to supply materials to site, along with cars and light vehicles to be used by staff.

Upon completion of the construction phase, usage of the site will consist of operational and maintenance related traffic. This traffic volume is expected to be very small, noting that for day-to-day operations, the site will be unmanned.

Section 4 of this report quantifies the expected traffic volumes associated with each phase of the site's development and operation.

3.4 Parking

Site plans show an allocation of 5 parking spaces (refer Figure 2), positioned to provide access to the switch room.

4 Assessment

This section assesses the traffic impacts of the proposed development.

4.1 Traffic Generation

JBS&G have provided the estimated traffic generation associated with both the construction and general operation phases of the site.

4.1.1 Construction Phase

The construction phase will generate a large volume of vehicles compared to the operations phase and will consist of both light and heavy vehicles.

Below is an estimate of the traffic generation for the entire construction phase of the project (approximately 6-7 months), as supplied by RES from a comparable site.

Table 1 Construction Phase Traffic Generation

Phase	Purpose	Vehicle	Class	Return Trips
Site Set-Up	Portacabins, generators, water & fuel tanks plus associated construction plant	Low Loader	Heavy Vehicle	28
Road & Hard standings	Stone for access tracks and compounds	Truck and dog	Heavy Vehicle	240
Foundations	Foundation for inverters, substation and battery storage	Mixer truck	Heavy Vehicle	12
Battery Storage and PCS	Equipment	Semi-trailer	Heavy Vehicle	34
Battery Storage Building	Material	Semi-trailer	Heavy Vehicle	9
Cabling	Material	Semi-trailer	Heavy Vehicle	6
Fencing	Equipment	Semi-trailer	Heavy Vehicle	12
CCTV	Equipment	Flatbed lorry	Heavy Vehicle	1
Potable Water	Staff drinking supplies	Tanker	Heavy Vehicle	26
Service Water	Dust Control and Fire Services	Tanker	Heavy Vehicle	52

Waste Removal	Removal of skips, recycling and septic tank empty	Skip lorry, tanker	Heavy Vehicle	26
Site Demobilisation	Portacabins, generators, water & fuel tanks plus construction plant	Low loader	Heavy Vehicle	28
All	Staff and small deliveries	Cars and minivans	Light Vehicle	1210

Based on a construction period of 6 months, the following is the breakdown of expected average vehicle movements per day.

Vehicle Class	Return Trips Per Day	Percentage of Traffic Volume
Heavy Vehicle	3	30
Light Vehicle	7	70

These volumes are rounded up to the nearest whole number and assume that the traffic will be distributed evenly across the construction period. Given that it is likely that more vehicles will frequent the site during certain periods of the construction phase, it has been assumed that the number of return trips on these days double the average volume. This would equate to 6 heavy vehicle and 14 light vehicle return trips per day. These traffic volumes are considered to be very minor over the life of the road infrastructure; over an 8 hour working day this would generate approximately 5 vehicle movements per hour (ie one vehicle every 12 minutes).

We have assumed that all construction traffic, materials and plant will be confined to the project site. Should the construction works impact Power and/or Templers Road, appropriate traffic control measures need to be taken to ensure the safety of road users.

4.1.2 General Usage

After the construction phase, the facility is to be unmanned. As such, the operational traffic will be very low and is expected to be under 5 return trips per day (based upon a conservative estimate provided by JBS&G). This number of trips is considered to be negligible (1 vehicle every 48 minutes on average) and will not have any significant impact on the road network.

4.2 Traffic Impact

As discussed above, the estimated traffic generation of the site will have very little impact on the road network. Templers Road currently has an Annual Average Daily Traffic (AADT) of 700 vehicles, which is considered to be a low daily volume. During peak hour traffic periods, it is expected that approximately 70 vehicles will travel along this section of Templers Road (based on a peak hour volume of 10% of the AADT). The peak hour volume corresponds to just over 1 vehicle per minute, which provides sufficient gaps in the Templers Road traffic to enable vehicles to safely exit Power Road.

4.3 Site Access

4.3.1 Vehicle Type

During the construction phase a variety of heavy vehicles will be required to access and egress the site, as mentioned above. The access and internal layout of the site has been designed for a 19m semi-trailer, which will allow access for the over dimensional vehicles mentioned.

4.3.2 Access Points

A single access point is proposed from Power Road to the site. This access point allows the turning movement of the design vehicle into the site with enough space for a vehicle to simultaneously queue at the exit while the movement is undertaken.

Based on AS2890.1: *Off-Street Car Parking*, an access driveway width of 3 to 5.5m is required, which combines the entry and exit lane to the site (this is based on frontage to a local road with less than 25 parking spaces provided). The access point provided has a width of approximately 9.3m which well exceeds the minimum requirement and provides access for a 19m semi-trailer.

Council recommended that two access points be provided, however given the width of the planned access, the proposed arrangement is considered adequate. The proposed single access point limits the overall number of access/egress points on Power Road and provides the greatest distance possible to Templers Road, improving sight lines and allowing for greater driver reaction time in the event of a potential conflict.

The plans provided by JBS&G state that the access point along with the internal road network will be constructed from hardstand pavement suitable for the design vehicle, in keeping with written Council requirements. The entry/exit points, crossover and driveway within the site will all be sealed, with a geometry designed to cater for the adopted design vehicle.

4.3.3 Intersection of Templers Road and Power Road

Due to the estimated low traffic volumes on Power Road, it is considered acceptable for the design vehicle to use the full width of Power Road when turning into and out of Templers Road. It is highly unlikely that a conflict will occur with a design vehicle turning into Power Road at the same time that a vehicle is turning onto Templers Road; such potential conflict however can be managed through the provision of warning signage. It should be noted that such interaction would potentially only occur during construction.

Temporary traffic control may need to be implemented when there is a concentration of construction traffic – e.g. when pavement materials are being delivered to site by multiple trucks. This will be a localised, short term impact and can be considered on a case by case basis.

Sealing of Power Road is required as mentioned in Council correspondence provided by JBS&G between the site access/egress point and Templers Road to ensure all weather access.

4.4 Internal Layout

4.4.1 Parking

A total of 5 car parking spaces have been provided on site. Given that the operational traffic generation is expected to be less than 5 return trips per day, the number of parking spaces is considered adequate. It is understood that these parking spaces will only be used by staff.

Based on the site layout plans provided by JBS&G, the carparks have a length of 5.4m and a width of 2.5m, with an aisle width of 6.2m. This meets the minimum requirement for employee parking as stated in Australian Standard, AS2890.1.

4.4.2 Internal Road Network

The internal road network consists of a circulating road way. Turning path modelling has been provided by JBS&G; this shows that the 19m semitrailer design vehicle can complete all required turns in one continuous movement. The vehicle requires to use the majority of the sealed width, however given that the roadway is to be used by staff and with the low traffic volumes, this is considered to be acceptable.

AS2890.1 requires a minimum width of 5.5m for straight two-way roadways and 6.3m for curved two-way roadways with a turn radius of 20-50m (the radii shown on the site plan provided by JBS&G fit into this category). 6.2m roadways have been provided on the straight sections, which widen to a maximum of 13m on the curves. The minimum requirements as stated in AS2890.1 are met.

4.5 Power Road Pavement

Currently Power Road is unsealed and only provides access during dry weather. Council have recommended this road to be sealed to provide all weather access to the site. This is recommended to allow egress from the site during a wet weather event, preventing vehicles from being stranded on site.

Power Road should be sealed past the site access point, far enough to protect the unsealed section of Power Road from traffic entering or exiting the site. In total this measures an estimated minimum length of 100m, between Templers Road and the site access/egress. This length assumes that all traffic will access the site via Templers Road to Power Road. Based on Austroads *'Guide to Road Design Part 3: Geometric Design'*, with an AADT of 1-150, the sealed width should be a minimum of 3.7m with 2.5m unsealed shoulders, for a total carriageway width of 8.7m. However, it is recommended that the road is sealed to a width of 7m to allow two travel lanes (plus unsealed shoulders). An analysis for the design vehicle turning movements suggests that road widening is not required to facilitate entry/exit movements. This should be confirmed in the final design.

4.6 Sight Distance

A site inspection was undertaken to assess the sight lines at the Power Road/Templers Road Intersection. These have been assessed in accordance with Austroads Guide to Traffic Engineering Practice (Part 4A – Unsignalised Intersections at Grade), herein referred to as the 'Austroads Guide'. This publication represents accepted Australian road design guidelines that address minimum sight distances associated with the geometry of the intersection and permanent infrastructure.

The Austroads Guide describes the following two sight distances:

- Approach Sight Distance (ASD)
  ASD is numerically equal to normal car Stopping Sight Distance (SSD), which is defined as the distance travelled by a vehicle between the time when the driver receives a stimulus signifying a need to stop, and the time at which the vehicle comes to rest. ASD/SSD is generally regarded as the *minimum* sight distance that should be available for drivers in the primary road at an intersection. ASD/SSD includes a reaction time + braking distance.
- Safe Intersection Sight Distance (SISD)
  SISD is regarded as the *desirable* minimum distance which should be provided in the primary road at any intersection. SISD provides sufficient distance for a driver of a vehicle on the major road to observe a vehicle on a minor road approach moving into a collision situation (e.g. in the worst case, stalling across the traffic lanes) and to decelerate to a stop before reaching the collision point. It differs from ASD/SSD in that SISD also allows for a 3 second observation time for a driver on the priority legs of the intersection to detect the problem ahead, (e.g. car from minor road stalling in through lane) plus the SSD. SISD can be difficult to achieve in constrained locations.

By way of comparison, Austroads nominates the following distances for ASD/SSD and SISD at 100 km/h with a reaction time between 1.5 – 2.0 seconds.

- ASD/SSD = 151 – 165m
- SISD = 234 – 248m

Importantly, these distances are for drivers on Templers Road (as the primary road at this intersection) to observe vehicles entering from Power Road and stop if needed. They are not the required sight lines for drivers exiting from Power Road to be able to observe approaching traffic and determine if a suitable gap exists. The following diagram shows the sight distance measurements.

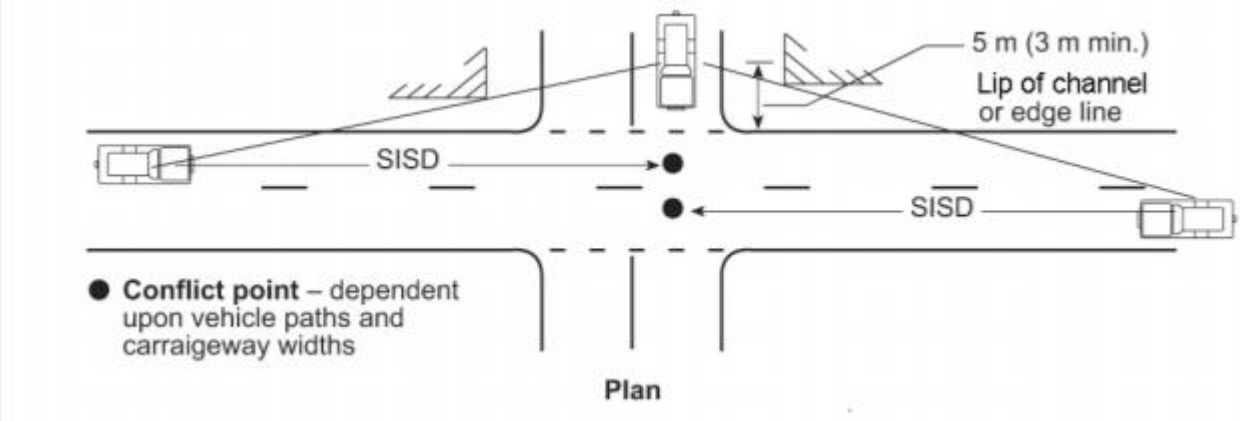

Figure 3 Sight Distance Measurements

A summary of sight distances is shown in the table below.

Table 2 Power Road / Templers Road Sight Distances

Direction from Power Road	Available Sight Distance (m)	Compliance with ASD/SSD	Compliance with SISD
East	>270	Yes	Yes
West	≈220	Yes	No (14-28m short)

This assessment is based on an assumed travel speed of 100km/h (equal to the posted speed). Traffic data could be collected to provide the 85th percentile travelling speed, however without this data the posted speed has been used.

Photos of the sight distances are shown below.

Figure 4 **Sight Lines from Power Road to the Eastern Approach of Templers Road**

Figure 5 **Sight Lines from Power Road to the Western Approach of Templers Road**

Figure 6 Sight Lines from Western Approach of Templers Road to Power Road

Although the SISD is not achieved for the western approach to Power Road, the ASD/SSD is well exceeded. In addition to this, the SISD is almost achieved for a reaction time of 1.5 seconds. Given that the SSD is what is required to safety stop prior to an observed hazard, and that the SISD is often difficult to achieve, the sight distance is considered to be adequate.

Vehicles are likely to be travelling at a low speed after turning onto Power Road from Templers Road. Therefore, there sight distance required between the site access and Power Road is reduced. Taking a conservative approach, the design speed is assumed to be 40km/h for vehicles turning onto Power Road. Given the condition of Power Road, it is assumed that the 85th percentile speed along the length of Power Road will be 80km/h.

The following sight distances are required between the site access and Power Road:

- SISD = 73m to the south of the access (towards the Templers Road junction)
- SISD = 181m to the north of the access (assuming an 85th percentile speed of 80km/h)

A summary of sight distances is shown in the table below.

Table 3 Site Access / Power Road Sight Distances

Direction from Site Access	Available Sight Distance (m)	Required SISD (m)	Compliance with SISD
South	85	73	Yes
North	≈230	181	Yes

Sight distances from the site access point are not considered to be of concern given the low volume of vehicles and the low prevailing speeds due to the close proximity to Templers Road. A vehicle turning onto Power Road will be travelling at a low speed and so will have time to observe, react and stop before impacting a vehicle turning into/out of the site access point.

Overall, sight distances are considered adequate.

5 Conclusions and Recommendations

Based on the site inspection and examination offered within this report, the following conclusions and recommendations have been made:

- Both the construction and general operation traffic generation will not adversely impact the operation of the surrounding road network
- The proposed site access point is located in an adequate position
- The intersection of Power Road and Templers Road is considered to be adequate for the proposed traffic volumes and for the turning movements of the design vehicle
- Adequate parking is provided on site for the small operational traffic volumes expected
- The internal road network is suitable for the expected traffic volumes and vehicle types
- Power Road should be sealed just past the site access (approximately 100m) to provide all weather access to the site
- Sight distances are considered adequate
- RES has a suitable fire safety plan to addressing Councils concerns.

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Appendix F Development Plan Assessment

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Templers Battery Energy Storage System – Development Plan Assessment

The following tables assess whether the RES Australia battery energy storage system (BESS) at Templers is at variance with the objectives and principles contained in the Light Regional Council Development Plan (consolidated 8 December 2016). The tables address the objectives and principles of development control that apply to the entire council area and the Primary Production Zone.

Light Regional Council Development Plan – Objectives / Principles

Table 1 – Response to the Light Regional Council Development Plan – General Section

No	Objective / Principle	Not at variance	DA Ref.	Response
Advertisements				
N/A – This has been excluded as the Project does not involve or relate to outdoor advertising.				
Animal Keeping				
N/A – This has been excluded as the Project does not involve or relate to animal keeping.				
Building near Airfields				
N/A – This has been excluded as the Project is not located near an airfield.				
Bulk Handling and Storage Facilities				
N/A – This has been excluded as the Project does not involve or relate to bulk handling and storage facilities.				
Centres and Retail Development				
N/A – This has been excluded as the Project does not involve or relate to any retail and business activities.				
Coastal Areas				
N/A – This has been excluded as the Project does not involve or relate to coastal areas. The Project is not located in a coastal area.				
Community Facilities				
N/A – This has been excluded as the Project does not involve or relate to community facilities.				
Crime Prevention				
O1.	A safe, secure, crime resistant environment where land uses are integrated and designed to facilitate community surveillance.	✓	2.4 2.7	The site will be securely fenced using 2 metre cyclone fencing with a gate for vehicle access. Alarms and cameras will be used to monitor the Project facilities

Table 1 – Response to the Light Regional Council Development Plan – General Section

No	Objective / Principle	Not at variance	DA Ref.	Response
				24 hours a day, 7 days a week. Security lighting will be utilised in certain locations, such as around the access gate and carparks.
P1.	Development should be designed to maximise surveillance of public spaces through the incorporation of clear lines of sight, appropriate lighting and the use of visible permeable barriers wherever practicable.	✓	2.4 2.7	The Project location will not be publicly accessible.
P2.	Buildings should be designed to overlook public and communal streets and public open space to allow casual surveillance.	✓	2.4 2.7	The Project location will not be publicly accessible.
P3.	Development should provide a robust environment that is resistant to vandalism and graffiti.	✓	2.4 2.7	Refer to the response to O1.
P4.	Development should provide lighting in frequently used public spaces including those: (a) along dedicated cyclist and pedestrian pathways, laneways and access routes (b) around public facilities such as toilets, telephones, bus stops, seating, litter bins, automatic teller machines, taxi ranks and car parks.	✓	2.4 2.7	The Project location will not be publicly accessible.
P5.	Development, including car park facilities should incorporate signage and lighting that indicate the entrances and pathways to, from and within sites.	✓	2.4 2.7	The sites will include appropriate signage to indicate access points and access requirements. Lighting will be utilized in carparks and other areas.
P6.	Landscaping should be used to assist in discouraging crime by: (a) screen planting areas susceptible to vandalism (b) planting trees or ground covers, rather than shrubs, alongside footpaths (c) planting vegetation other than ground covers a minimum distance of 2 metres from footpaths to reduce concealment opportunities.	✓	2.4 8.4.2	Landscaping to buffer structures and buildings will be implemented. A vegetation buffer will be established along Templers and Power Roads boundary.
P7.	Site planning, buildings, fences, landscaping and other features should clearly differentiate public, communal and private areas.	✓	2.4 8.4.2	The site will be closed to the public with access only to authorised personnel.
P8.	Buildings should be designed to minimise and discourage access between roofs, balconies and windows of adjoining dwellings.	✓	2.7	The Project will involve minimal buildings which will not have balconies. There are no other adjoining buildings or any dwellings in the vicinity of the Project.
P9.	Public toilets should be located, sited and designed: (a) to promote the visibility of people entering and exiting the facility (eg by avoiding recessed entrances and dense shrubbery that obstructs passive surveillance) (b) near public and community transport links and pedestrian and cyclist networks to maximise visibility.	N/A	2.4 2.7	The site will be closed to the public with access only to authorised personnel. The Project does not include public toilets.
P10.	Development should avoid pedestrian entrapment spots and movement predictors (eg routes or paths that are predictable or unchangeable and offer no choice to pedestrians).	N/A	2.4 2.7	The site will be closed to the public with access only to authorised personnel. Only site workers and approved visitors will have access to the Project area, which will be fenced.
Design and Appearance				

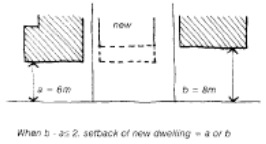
Table 1 – Response to the Light Regional Council Development Plan – General Section

No	Objective / Principle	Not at variance	DA Ref.	Response
O1.	Development of a high architectural standard that responds to and reinforces positive aspects of the local environment and built form.	✓	2.7	The architecture of the Project will be in line with surrounding infrastructure including the adjacent substations and agricultural buildings.
O2.	Roads, open spaces, buildings and land uses laid out and linked so that they are easy to understand and navigate.	✓	2.4 2.7 Appendix B	The final footprint of the Project will not be large and not involve many buildings. There will be an access road surrounding the battery storage units which will be appropriately signed for navigation.
P1.	The design of a building may be of a contemporary nature and exhibit an innovative style provided the overall form is sympathetic to the scale of development in the locality and with the context of its setting with regard to shape, size, materials and colour.	✓	2.4 2.7 Appendix B	The architecture of the Project will be in line with surrounding infrastructure including the adjacent substations and agricultural buildings.
P2.	Buildings should be designed and sited to avoid creating extensive areas of uninterrupted walling facing areas exposed to public view.	✓	2.4 2.7 Appendix B	The Project will not involve large wall facing areas.
P3.	Buildings should be designed to reduce their visual bulk and provide visual interest through design elements such as: (a) articulation (b) colour and detailing (c) small vertical and horizontal components (d) design and placing of windows (e) variations to facades.	✓	2.4 2.7 Appendix B	The visual impact of the Project will be in line with that of the adjacent substations. The final design will take into consideration to reduce the industrial appearance of the buildings and help the facility assimilate with the rural surrounding. A Colourbond colour in a suitable colour will be selected for the battery containers.
P4.	Where a building is sited on or close to a side boundary, the side boundary wall should be sited and limited in length and height to minimise: (a) the visual impact of the building as viewed from adjoining properties (b) overshadowing of adjoining properties and allow adequate sun light to neighbouring buildings.	✓	2.4 2.7 Appendix B	The battery storage units will be located at least 30 m and 20 m from the boundaries. There are no neighbouring buildings.
P5.	Building form should not unreasonably restrict existing views available from neighbouring properties and public spaces.	✓	2.4 2.7 Appendix B	The final building forms will not restrict any views available with the height of the tallest building at approximate 6 m.
P6.	Transportable buildings and buildings which are elevated on stumps, posts, piers, columns or the like, should have their suspended footings enclosed around the perimeter of the building with brickwork or timber, and the use of verandas, pergolas and other suitable architectural detailing to give the appearance of a permanent structure.	✓	2.4 2.7 Appendix B	The Project does not involve permanent elevated transportable buildings or buildings elevated on stumps, posts, piers, columns or the like. Some of the temporary construction facilities will be elevated as this will facilitate easy and efficient removal on completion.
P7.	The roof pitch of transportable dwellings should be greater than 17 degrees.	✓	2.4 2.7 Appendix B	The Project does not anticipate buildings with a pitched roof.

Table 1 – Response to the Light Regional Council Development Plan – General Section

No	Objective / Principle	Not at variance	DA Ref.	Response
P8.	The external walls and roofs of buildings should not incorporate highly reflective materials which will result in glare to neighbouring properties or drivers.	✓	2.4 2.7 Appendix B	The final colour of the buildings will be as stated in P3 and will not result in glare.
P9.	Structures located on the roofs of buildings to house plant and equipment should form an integral part of the building design in relation to external finishes, shaping and colours.	✓	2.4 2.7 Appendix B	The Project does not anticipate structures located on the roofs of buildings.
P10.	Building design should emphasise pedestrian entry points to provide perceptible and direct access from public street frontages and vehicle parking areas.	✓	2.4 2.7 Appendix B	The layout of the Project site will allow for internal pedestrian access (the site will not be accessible to the public) and for personnel car parking.
P11.	Development should provide clearly recognisable links to adjoining areas and facilities.	✓	2.4 2.7 Appendix B	The Project will not be accessible to the public and will not require links to adjoining areas and facilities.
P12.	Buildings, landscaping, paving and signage should have a co-ordinated appearance that maintains and enhances the visual attractiveness of the locality.	✓	2.4 2.7 Appendix B	Landscaping will be established along the road frontages of the Project site.
P13.	External materials and colours used for buildings in rural areas should blend with the colours and textures of surrounding soils, trees, rocks and slopes.	✓		Refer to the response to P3.
P14.	Buildings (other than ancillary buildings or group dwellings) should be designed so that their main façade faces the primary street frontage of the land on which they are situated.	✓	2.4 2.7 Appendix B	The final layout of the Project will consider the most efficient access to the adjacent substation for the overhead powerline. The longest façade of the battery storage units will be along Templers Road.
P15.	Where applicable, development should incorporate verandas over footpaths to enhance the quality of the pedestrian environment.	N/A		The Project will not require verandas.
P16.	Development should be designed and sited so that outdoor storage, loading and service areas are screened from public view by an appropriate combination of built form, solid fencing and/or landscaping.	✓		Refer to response to P12.
P17.	Outdoor lighting should not result in light spillage on adjacent land.	✓	2.4 2.7 Appendix B	Lighting will be used in carparks and other areas as well as for security purposes. Light spill will be minimise as far as practicable to adjacent land. The site will be unlit at night and will only be on if emergency maintenance or response is required during night-time hours.
P18.	Balconies should: (a) be integrated with the overall architectural form and detail of the building (b) be sited to face predominantly north, east or west to provide solar access (c) have a minimum area of 2 square metres.	N/A		The Project does not involve balconies.
P19.	The setback of buildings from public roads should:	✓	2.4 2.7	The buildings will be set back 30 from Templers Road and 20 m from Power Road.

Table 1 – Response to the Light Regional Council Development Plan – General Section

No	Objective / Principle	Not at variance	DA Ref.	Response
	(a) be similar to, or compatible with, setbacks of buildings on adjoining land and other buildings in the locality (b) contribute positively to the streetscape character of the locality (c) not result in or contribute to a detrimental impact upon the function, appearance or character of the locality.		Appendix B	
P20.	Except where specified in a particular zone, policy area or precinct, the main face of a building should be set back from the primary road frontage in accordance with the following table: **Setback difference between buildings on adjacent allotments** / **Setback of new building** Up to 2 metres / The same setback as one of the adjacent buildings, as illustrated below:  When b - as 2, setback of new dwelling = a or b Greater than 2 metres / At least the average setback of the adjacent buildings.	✓		Refer to response to P19.
P21.	Except where specified in a zone, policy area or precinct, the setback of development from a secondary street frontage should reflect the setbacks of the adjoining buildings and other buildings in the locality.	N/A		The Project does not involve adjoining buildings.
P22.	Development likely to encroach within a road widening setback under the *Metropolitan Adelaide Road Widening Plan Act 1972* should be set back sufficiently from the boundary required for road widening.	✓		Refer to response to P19.
Energy Efficiency				
The Project is a valuable energy storage facility. The energy efficiency objectives and principles have been reviewed, which predominately consider the siting and location of buildings and public infrastructure, and therefore a thorough assessment has not been provided and is not relevant for a development of this type.				
Forestry				
N/A – This has been excluded as the project does not involve or relate to forestry.				

No	Objective / Principle	Not at variance	DA Ref.	Response
Hazards				
O1.	Maintenance of the natural environment and systems by limiting development in areas susceptible to natural hazard risk.	✓	6.4	The Project is not considered to be located in an area that is susceptible to significant hazard risk. The level of risk is considered to be highly manageable with the implementation of the measures outlined in section 6.4 of the DA.
O2.	Development located away from areas that are vulnerable to, and cannot be adequately and effectively protected from the risk of natural hazards.	✓	6.4	
O3.	Critical community facilities such as hospitals, emergency control centres, major service infrastructure facilities, and emergency service facilities located where they are not exposed to natural hazard risks.	N/A		The site will be closed to the public with access only to authorised personnel. Project does not involve critical community facilities
O4.	Development located and designed to minimise the risks to safety and property from flooding.	✓	6.2	A surface water assessment has been undertaken for the Project. Measures will be in place to minimise flooding risks such as a detention basin.
O5.	Protection of life and property from the effects of flooding by: (a) the prevention of development which could cause a potential hazard in the event of a major flood (b) development within the Gawler Rivers Floodplain Area as shown on Overlay Maps – Development Constraints: (i) which minimises impedance to the flow of floodwaters (ii) which recognises that the level of flood hazard varies within the floodplain.	✓	6.2	A surface water assessment has been undertaken for the Project. Measures will be in place to minimise flooding risks such as a detention basin.
O6.	Development located to minimise the threat and impact of bushfires on life and property.	✓	6.4	The Project is located in a general bushfire risk zone of the Bushfire Protection Area. The Project will employ fire response measures to mitigate the risk and prevalence of bushfires. This has been discussed in Section 6.4 of the DA.
O7.	Expansion of existing non-rural uses directed away from areas of high bushfire risk.	✓	6.4	The Project is located in a general bushfire risk zone of the Bushfire Protection Area. The Project will comply with Council and CFS requirements in regard to fire prevention and minimisation. A track will be provided within the site to enable maintenance and emergency vehicular access if required.
O8.	The environmental values and ecological health of receiving waterways and marine environments protected from the release of acid water resulting from the disturbance of acid sulphate soils.	✓	6.1	The Project is not expected to result in the release of acid water. The potential for acid sulphate soils was assessed using the ASRIS, which identified the Project area being in a location with 'negligible probability' of acid sulphate soils. If acid sulphate soils are encountered during construction, they will be managed to avoid impacts to environmental values.
O9.	Protection of human health and the environment wherever site contamination has been identified or suspected to have occurred.	✓	6.1	The Project site is not on the South Australian Contamination Site Index. Site investigations have not discovered any site contamination issues or risks.
O10.	Appropriate assessment and remediation of site contamination to ensure land is suitable for the proposed use and provides a safe and healthy living and working environment.	✓	6.1	The Project site is not on the South Australian Contamination Site Index. Site investigations have not discovered any site contamination issues or risks.
O11.	Minimisation of harm to life, property and the environment through appropriate location of development and appropriate storage, containment and handling of hazardous materials.	✓	6.1	Storage, containment and handling of hazardous materials will be carried out in accordance with Australian Standards.

No	Objective / Principle	Not at variance	DA Ref.	Response
P1.	Development should be excluded from areas that are vulnerable to, and cannot be adequately and effectively protected from, the risk of hazards.	N/A		The Project is not in an area that is at risk of any considerable natural hazard.
P2.	Development located on land subject to hazards as shown on the *Overlay Maps - Development Constraints* should not occur unless it is sited, designed and undertaken with appropriate precautions being taken against the relevant hazards.	N/A		The Project is not located on land subject to hazards as shown on the *Overlay Maps-Development Constraints.*
P3.	There should not be any significant interference with natural processes in order to reduce the exposure of development to the risk of natural hazards.	✓	6.2	The Project will not significantly impact natural processes. The Project will maintain flow paths, with limited clearing and earthworks to be undertaken only where needed.
Flooding				
P4.	Development should not occur on land where the risk of flooding is likely to be harmful to safety or damage property.	✓	6.2	A surface water assessment of the Project site has determined that there is no risk of inundation as a result of flows in the watercourse. Mitigation will be in place to minimise possible effects of peak flow rates.
P5.	Development should not be undertaken in areas liable to inundation by tidal, drainage or flood waters unless the development can achieve all of the following: (a) it is developed with a public stormwater system capable of catering for a 1-in-100 year average return interval flood event (b) buildings are designed and constructed to prevent the entry of floodwaters in a 1-in-100 year average return interval flood event.	✓	6.2	A surface water assessment of the Project site has determined that there is no risk of inundation as a result of flows in the watercourse. Mitigation will be in place to minimise possible effects of peak flow rates.
P6.	The floor level for dwellings, buildings for the keeping of animals and gully traps should be a minimum of 300 millimetres above the height of a 1-in-100 year average return interval flood or natural surface level, whichever is greater.	N/A		The Project does not include buildings for keeping of animals.
P7.	Development, including earthworks associated with development, should not do any of the following: (a) impede the flow of floodwaters through the land or other surrounding land (b) increase the potential hazard risk to public safety of persons during a flood event (c) aggravate the potential for erosion or siltation or lead to the destruction of vegetation during a flood (d) cause any adverse effect on the floodway function (e) increase the risk of flooding of other land (f) obstruct a watercourse.	✓	6.2	The BESS Project will result in minimal earthworks, only where required for levelling for a structure foundation and for cabling and trenching related with the BESS associated infrastructure. A surface water assessment has been prepared for the Development Application. The Project is not likely to result in the worsening of flooding events and will generally continue to enable existing flow paths and surface sheet flow/infiltration surrounding the site. All of the watercourses that could interact with the Project are ephemeral and ungauged. They are robust with limited erosion risk due to disturbance; have low environmental values due to lack of aquatic habitat values; and are common stream types within the region.
P8.	Additions to dwellings located on land subject to flooding or inundation by a 1-in-100 year average return interval flood event	✓	6.2	A surface water assessment of the Project site has determined that there is no risk of inundation as a result of flows in the watercourse.

No	Objective / Principle	Not at variance	DA Ref.	Response
	should be in the form of upper level additions and should not increase the total floor area at ground level of the dwelling.			
P9.	Buildings for human habitation proposed on land subject to flooding or inundation by a 1-in-100 year average return interval flood event should be designed: (a) to withstand forces arising from flow, debris and buoyancy pressure (b) to ensure that wiring, power outlets and fixed electrical items (such as air-conditioning units) are positioned above the design flood level (c) to minimise bulk and scale impacts and mitigate potential overlooking.	N/A		The Project does not involve buildings for human habitation.
P10.	Residential outbuildings (garages or sheds) on land subject to flooding or inundation by a 1-in-100 year average return interval flood event should: (a) not be used for living purposes (b) not exceed 60 square metres in total floor area (c) be fitted with roller doors, removable panels or similar on two ends or sides (whichever elevations face the direction of the water flow). (d) incorporate a bund to prevent spills or leaks leaving the confines of the building.	N/A		The Project does not involve residential outbuildings.
P11.	Permanent storage of goods and equipment on land liable to inundation by floodwaters should be at least 300 millimetres above the predicted level of a 1-in-100 year annual return interval flood event.	✓	6.2	A surface water assessment of the Project site has determined that there is no risk of inundation as a result of flows in the watercourse. Mitigation will be in place to minimise possible effects of peak flow rates.
P12.	Development should not occur where access by emergency vehicles or essential utility service vehicles would be prevented by a 1-in-100 year average return interval flood event.	✓	6.2	A surface water assessment of the Project site has determined that there is no risk of inundation as a result of flows in the watercourse. Mitigation will be in place to minimise possible effects of peak flow rates.
P13.	Educational establishments, child care and aged care facilities should not be located in areas that may be affected by a 1-in-100 year average return interval flood event unless public safety can be protected and safe evacuation is available if needed.	N/A		The Project does not involve educational establishments.
P14.	Emergency service facilities such as hospitals, fire stations, police stations and other similar types of facilities should be located above	N/A		The Project does not involve emergency service facilities.

No	Objective / Principle		Not at variance	DA Ref.	Response
	the predicted level for a 1-in-1000 year average return interval flood event.				
Gawler Rivers Floodplain Area - The following principles of development control apply to development located within the Gawler Rivers Floodplain Area as shown on Overlay Maps – Development Constraints. These principles of development control are additional to others contained within this development plan, and shall prevail where conflict may exist.					
P15.	Development should be sited, designed and undertaken with appropriate precautions consistent with the relevant flood risk category as described in the table below:		✓	6.2	A surface water assessment of the Project site has determined that there is no risk of inundation as a result of flows in the watercourse. Mitigation will be in place to minimise possible effects of peak flow rates.
	Flood Risk Category	Water Depth and Flow Velocity			
	General - (relates to low depth and low velocity flooding where evacuation via wading by people is possible and escape by small vehicle is achievable)	Zero to 0.3 metres depth at flood where velocities are generally low (up to 0.3 metres per second).	✓		
	Medium - (relates to areas where the flood depth is deeper and/or flows are faster where wading through water by children and elderly is more difficult and evacuation by small car is only possible in the early stages of flooding, with 4WD vehicles or trucks required at later stages)	Up to 0.6 metres depth at flood where velocities are low, or from 0.3 metres depth where velocities are high (up to 0.8 metres per second).	✓		
	High - (relates to deeper and or fast flow of waters where wading through water is either difficult or impossible for adults and evacuation is required by boat or helicopter)	From 0.6 metres (including areas of 2 metres plus) depth of flood, even where velocities are very low, or at depths from 0.6 metres where velocities are high (up to 1.5 metres per second and greater).	✓		
P16.	All-weather vehicular access to an area outside of the medium or high flood risk category areas should be available to development that does		✓	6.2	A surface water assessment of the Project site has determined that there is no risk of inundation as a result of flows in the watercourse. Mitigation will be in place to minimise possible effects of peak flow rates.

No	Objective / Principle	Not at variance	DA Ref.	Response
	not require any part of the evacuation route to pass through land that is identified within a medium or high flood risk category area.			
P17.	Development of a dwelling should only occur if the site is wholly located within the general flood risk category area.	✓	6.2	A surface water assessment of the Project site has determined that there is no risk of inundation as a result of flows in the watercourse. Mitigation will be in place to minimise possible effects of peak flow rates.
P18.	Allotments within the general flood risk category area should contain sufficient area to accommodate the uses for which the land is intended.	✓	6.2	A surface water assessment of the Project site has determined that there is no risk of inundation as a result of flows in the watercourse. Mitigation will be in place to minimise possible effects of peak flow rates.
P19.	Land division should: (a) not result in additional allotments created wholly within the medium and high flood risk category areas (b) provide public access to the banks of the river in the form of a reserve or easement necessary for public utility services or to facilitate the construction of flood protection works associated with a regional flood mitigation scheme.	N/A		The Project does not require development consent for subdivision but will require land division on the basis the Project site is leased for >6 years. According to Schedule 3(2) of the *Development Regulations 2008*, no development approval is required for the long-term lease of the land over part of an allotment as the Regulations exclude from the definition of development, the grant of a lease or licence by virtue of which a person becomes entitled to possession or occupation of only part of an allotment, other than a lease over land that comprises a dwelling, or which permits the use of the leased land for residential purposes.
P20.	Development should not have a ground floor area, measured from the external faces of the walls of the building or buildings, of more than 25 percent of the area of the site subject to flooding.	✓	6.2	A surface water assessment of the Project site has determined that there is no risk of inundation as a result of flows in the watercourse. Mitigation will be in place to minimise possible effects of peak flow rates.
P21.	Intensive animal keeping should not be established within the Gawler Rivers Floodplain Area.	N/A		The Project does not involve animal keeping
P22.	Filling required to raise the finished floor level of a building should: (a) not extend more than 7 metres beyond the external walls of that building (b) be of good quality composition and compaction providing suitable ground stability in the event of flooding.	✓	6.2	A surface water assessment of the Project site has determined that there is no risk of inundation as a result of flows in the watercourse. Mitigation will be in place to minimise possible effects of peak flow rates.
P.23	Filling for ancillary purposes such as driveways, access tracks, vehicle parking areas and crop rows should be: (a) limited to a maximum of 100 millimetres above natural ground level (b) no more than 5 metres wide.	✓	6.2	A surface water assessment of the Project site has determined that there is no risk of inundation as a result of flows in the watercourse. Mitigation will be in place to minimise possible effects of peak flow rates.

No	Objective / Principle	Not at variance	DA Ref.	Response
Bushfire				
P24.	The following bushfire protection principles of development control apply to development of land identified as General, Medium and High bushfire risk areas as shown on the *Bushfire Protection Area BPA Maps - Bushfire Risk*.	✓	6.4	The Project is located in a general bushfire risk zone of the Bushfire Protection Area. The Project will employ fire response measures to mitigate the risk and prevalence of bushfires. This has been discussed in Section 6.4 of the DA.
P25.	Development in a Bushfire Protection Area should be in accordance with those provisions of the *Minister's Code: Undertaking development in Bushfire Protection Areas* that are designated as mandatory for Development Plan Consent purposes.	✓	6.4	The Project is located in a general bushfire risk zone of the Bushfire Protection Area. All construction will be in accordance to the Minister's Code and will undergo an individual site assessment.
P26.	Buildings and structures should be located away from areas that pose an unacceptable bushfire risk as a result of one or more of the following: (a) vegetation cover comprising trees and/or shrubs (b) poor access (c) rugged terrain (d) inability to provide an adequate building protection zone (e) inability to provide an adequate supply of water for firefighting purposes.	✓	6.4	The Project is located in a general bushfire risk zone of the Bushfire Protection Area. The Project is situated on a gently sloping ex-cropping paddock where native vegetation is limited. A cleared access track will surround the BESS infrastructure. There is a low amount of fire-prone vegetation on site, the batteries will have a built-in fire suppression system and fire water will be available on-site for emergency services to utilise.
P27.	Residential, tourist accommodation and other habitable buildings should: (a) be sited on the flatter portion of allotments and avoid steep slopes, especially upper slopes, narrow ridge crests and the tops of narrow gullies, and slopes with a northerly or westerly aspect (b) be sited in areas with low bushfire hazard vegetation and set back at least 20 metres from existing hazardous vegetation (c) have a dedicated and accessible water supply available at all times for firefighting.	N/A		The Project site will be closed to the public with access only to authorised personnel. The Project does not involve tourist accommodation or habitable buildings.
P28.	Extensions to existing buildings, outbuildings and other ancillary structures should be sited and constructed using materials to minimise the threat of fire spread to residential, tourist accommodation and other habitable buildings in the event of bushfire.	✓	6.4	Suitable materials will be used to minimise the threat of fire spread.
P29.	Buildings and structures should be designed and configured to reduce the impact of bushfire through using simple designs that reduce the potential for trapping burning debris against the building or structure, or between the ground and building floor level in the case of transportable buildings.	✓	6.4	The Project is located in the Flinders Mid-North Bushfire Management Area Plan area. Section 6.4 of the Development Application identifies health, safety and fire responses. A number of practices and measures to prevent the likelihood or prevalence of fires have been identified in the chapter. Some of these practices include: • Smoking will not be permitted on site, other than in designated smoking areas; • Fire extinguishers will be provided in all buildings and construction vehicles; • Prohibition of onsite burning of any material; and

No	Objective / Principle	Not at variance	DA Ref.	Response
				• Regular maintenance of onsite fire-fighting equipment and adequate staff training.
P30.	Land division for residential or tourist accommodation purposes within areas of high bushfire risk should be limited to those areas specifically set aside for these uses.	N/A		The Project does not involve land division for residential or tourist accommodation purposes
P31.	Where land division does occur, it should be designed to: (a) minimise the danger to residents, other occupants of buildings and firefighting personnel (b) minimise the extent of damage to buildings and other property during a bushfire (c) ensure each allotment contains a suitable building site that is located away from vegetation that would pose an unacceptable risk in the event of bushfire (d) ensure provision of a fire hazard separation zone isolating residential allotments from areas that pose an unacceptable bushfire risk by containing the allotments within a perimeter road or through other means that achieve an adequate separation.	N/A		The Project does not require development consent for subdivision but will require land division on the basis the Project site is leased for >6 years.
P32.	Vehicle access and driveways to properties and public roads created by land division should be designed and constructed to: (a) facilitate safe and effective operational use for firefighting and other emergency vehicles and residents (b) provide for two-way vehicular access between areas of fire risk and the nearest public road.	N/A		The Project does not require development consent for subdivision but will require land division on the basis the Project site is leased for >6 years.
P33.	Olive orchards should be located and developed in a manner that minimises their potential to fuel bushfires.	N/A		The Project does not involve olive orchards.
Salinity				
P24.	Development should not increase the potential for, or result in an increase in, soil and water salinity.	✓	6.1	An Erosion and Sediment Control Plan (ESCP) will be developed for the Project prior to the commencement of construction activities and will detail the construction particulars, control measures to be implemented, and the expected outcomes and staging of erosion and sediment control measures once construction is complete.
P35.	Preservation, maintenance and restoration of locally indigenous plant species should be encouraged in areas affected by dry land salinity.	✓	7	The Project will not require the clearing of vegetation as it is cited on land already cleared for agriculture.
P36.	Irrigated horticulture and pasture should not increase groundwater-induced salinity.	N/A		The Project does not involve irrigated horticulture.
Acid Sulphate Soils				
P37.	Development and activities, including excavation and filling of land, that may lead to the disturbance of potential or actual acid sulfate soils should be avoided unless such disturbances are managed in a way	✓	6.1	The potential for acid sulphate soils was assessed using the ASRIS, this identified the Project area being in a location with 'Negligible Occurrence' of acid sulphate soils.

No	Objective / Principle	Not at variance	DA Ref.	Response
	that effectively avoids the potential for harm or damage to any of the following: (a) natural water bodies and wetlands (b) agricultural or aquaculture activities (c) buildings, structures and infrastructure (d) public health.			
P38.	Development, including primary production, aquaculture activities and infrastructure, should not proceed unless it can be demonstrated that the risk of releasing acid water resulting from the disturbance of acid sulphate soils is minimal.	N/A		The Project does not involve any activity that will result in releasing acid water from the disturbance of acid sulphate soils. The Project site is located in an area identified as having extremely low probability of occurrence of acid sulphate soils (Australian Soil Resources Information System 2014)
Site Contamination				
P39.	Development, including land division, should not occur where site contamination has occurred unless the site has been assessed and remediated as necessary to ensure that it is suitable and safe for the proposed use.	✓	6.1	The Project site is not on the South Australian Contamination Site Index. Site investigations have not discovered any site contamination issues or risks. However, spill kit(s) will be located onsite and spills will be immediately cleared to avoid any potential land contamination. If unexpected contaminated land is found management measures will be implemented to avoid, contain, remediate or otherwise manage the potential spread of contamination as required.
Containment of Chemical and Hazardous Materials				
P40.	Hazardous materials should be stored and contained in a manner that minimises the risk to public health and safety and the potential for water, land or air contamination.	✓	6.1	Storage, containment and handling of hazardous materials will be carried out in accordance with Australian Standards.
P41.	Development that involves the storage and handling of hazardous materials should ensure that these are contained in designated areas that are secure, readily accessible to emergency vehicles, impervious, protected from rain and stormwater intrusion and other measures necessary to prevent: (a) discharge of polluted water from the site (b) contamination of land (c) airborne migration of pollutants (d) potential interface impacts with sensitive land uses.	✓	6.1	Storage, containment and handling of hazardous materials will be carried out in accordance with Australian Standards.
Landslip				
P42.	Development, including associated cut and fill activities, should not lead to an increased danger from land surface instability or to the potential of landslip occurring on the site or on surrounding land.	N/A		The Project does not involve any 'cut and fill' activities to the scale of causing landslip on surrounding land.
P43.	Development on steep slopes should promote the retention and replanting of vegetation as a means of stabilising and reducing the possibility of surface movement or disturbance.	✓		The BESS Project site is relatively flat. There are no steep slopes located on the Project site.

No	Objective / Principle	Not at variance	DA Ref.	Response
P44.	Development in areas susceptible to landslip should: (a) incorporate split level designs to minimise cutting into the slope (b) ensure that cut and fill and heights of faces are minimised (c) ensure cut and fill is supported with engineered retaining walls or are battered to appropriate grades (d) control any erosion that will increase the gradient of the slope and decrease stability (e) ensure the siting and operation of an effluent drainage field does not contribute to landslip (f) provide drainage measures to ensure surface stability is not compromised (g) ensure natural drainage lines are not obstructed.	N/A		The Project site is not susceptible to landslip. All measures required will be employed to minimise erosion during construction and operation phases.
Heritage Places				
O1.	The conservation of State and local heritage places.	✓	8.2	No registered or recorded sites of significance to Aboriginal archaeology, anthropology, history or tradition were identified within the area of the currently proposed development, based on the results of the background research. Mitigation measures will be established to manage potential impacts should any sites, objects or remains be discovered during construction. There are no non-Indigenous Heritage Places within close proximity to the Project, with the closest heritage places located in the township of Templers, approximately 4 km to the south-west of the Project area.
O2.	The continued use, or adaptive re-use of State and local heritage places that supports the conservation of their cultural significance.	✓	4.2	Refer to the response to O1.
O3.	Conservation of the setting of State and local heritage places.	✓	4.2	Refer to the response to O1.
P1.	A heritage place spatially located on *Overlay Maps – Heritage* and more specifically identified in *Table Lig/9 - State Heritage Places* or in *Table Lig/8 - Local Heritage Places* should not be demolished, destroyed or removed, in total or in part, unless either of the following apply: (a) that portion of the place to be demolished, destroyed or removed is excluded from the extent of the places identified in the *Table(s)* (b) the structural condition of the place represents an unacceptable risk to public or private safety.	✓	4.2	The identified heritage places in *Table MtR/3 – State Heritage Places* are not located within close proximity to the Project, with the closest heritage places located in the township of Templers, approximately 2.5 km to the west of the Project area.
P2.	Development of a State or local heritage place should retain those elements contributing to its heritage value, which may include (but not be limited to): (a) principal elevations (b) important vistas and views to and from the place (c) setting and setbacks	N/A		The Project will not impact on any identified heritage places.

No	Objective / Principle	Not at variance	DA Ref.	Response
	(d) building materials (e) outbuildings and walls (f) trees and other landscaping elements (g) access conditions (driveway form/width/material) (h) architectural treatments (i) the use of the place.			
P3.	Development of a State or local heritage place should be compatible with the heritage value of the place.	N/A		The Project will not impact on any identified heritage places.
P4.	Original unpainted plaster, brickwork, stonework, or other masonry of existing State or local heritage places should be preserved, unpainted.	N/A		The Project does not involve plaster, brickwork, stonework, or other masonry.
P5.	New buildings should not be placed or erected between the front street boundary and the façade of existing State or local heritage places.	N/A		The Project is not located in proximity of existing State or local heritage places.
P6.	Development that materially affects the context within which the heritage place is situated should be compatible with the heritage place. It is not necessary to replicate historic detailing, however design elements that should be compatible include, but are not limited to: (a) scale and bulk (b) width of frontage (c) boundary setback patterns (d) proportion and composition of design elements such as rooflines, openings, fencing and landscaping (e) colour and texture of external materials.	N/A		The Project does not involve historic places.
P7.	The introduction of advertisements and signage to a State or local heritage place should: (a) be placed on discrete elements of its architecture such as parapets and wall panels, below the canopy, or within fascias and infill end panels and windows (b) not conceal or obstruct historical detailing of the heritage place (c) not project beyond the silhouette or skyline of the heritage place (d) not form a dominant element of the place.	N/A		The Project does not involve historic places.
P8.	The division of land adjacent to or containing a State or local heritage place should occur only where it will: (a) create an allotment pattern that maintains or reinforces the integrity of the heritage place and the character of the surrounding area (b) create an allotment or allotments of a size and dimension that can accommodate new development that will reinforce and complement the heritage place and the zone or policy area generally (c) be of a size and dimension that will enable the siting and setback of new buildings from allotment boundaries so that they do not	N/A		The Project does not require development consent for subdivision but will require land division on the basis the Project site is leased for >6 years.

No	Objective / Principle	Not at variance	DA Ref.	Response
	overshadow, dominate, encroach on or otherwise impact on the setting of the heritage place (d) provide an area for landscaping of a size and dimension that complements the landscape setting of the heritage place and the landscape character of the locality (e) enable the State or local heritage place to have a curtilage of a size sufficient to protect its setting.			
Historic Conservation Area				
N/A – This has been excluded as the project does not involve areas of historical significance.				
Industrial Development				
N/A – This has been excluded as the project is not located in an industrial zone.				
Infrastructure				
O1.	Infrastructure provided in an economical and environmentally sensitive manner.	✓	8.0	The Project has accounted for several economic and environmental considerations during its planning stage. The Project is being undertaken to ensure that impacts on the natural environment and economy are reduced, where possible.
O2.	The visual impact of infrastructure facilities minimised.	✓	8.4	The visual amenity of the Project has been considered in the Development Application. This takes into consideration viewpoints and potential impacts of the Project on the amenity of the area.
O3.	The efficient and cost-effective use of existing infrastructure.	✓	2.0	There is a substation adjacent to the site. The Project site was selected due to its proximity to the substation and will connect directly to the substation via a short (130m) overhead line.
P1.	Development should not occur without the provision of adequate utilities and services, including: (a) electricity supply (b) water supply (c) drainage and stormwater systems (d) effluent disposal systems (e) formed all-weather public roads (f) telecommunications services (g) gas services.	✓	2.0	The Project will provide several utilities, facilities and services. a) During the construction phase, electricity will be supplied by generators. The Project will operate off site generated power during operation. b) Water will be supplied during construction and operation. Several water supply options are currently being considered. Water trucked in, or captured stormwater are the two most likely sources to be utilised on site. c) Site drainage and stormwater systems will be implemented and installed. d) A waste storage area will be provided to allow for effective and proper waste disposal. e) Wastewater generated during construction will be captured in septic tanks and removed from site by a licensed waste contractor. A small sewage treatment system or use of septic tanks may be used for the operational phase. f) Site access roads and tracks will be suitable for all-weather access.

No	Objective / Principle	Not at variance	DA Ref.	Response
				g) Telecommunication facilities will be provided. This will be provided through established, remote or wireless networks. h) The Project will include a site office, lunch rooms and an ablution block for operational staff. i) The Project is not expected to require connection to gas services.
P2.	Development should incorporate any relevant and appropriate social infrastructure, community services and facilities.	N/A		The Project is not intended for social infrastructure.
P3.	Development should only occur only where it provides, or has access to, relevant easements for the supply of infrastructure.	✓	2.0	Easements will be created as required.
P4.	Development should incorporate provision for the supply of infrastructure services to be located within common service trenches where practicable.	✓	2.0	Electricity required for the Project will connect to the 132/63 kV Templers Substation
P5.	Development should not occur until adequate and coordinated drainage of the land is provided.	✓	6.2	As required, drainage measures will be established as outlined in Section 6.2 of the Development Application.
P6.	Development in urban areas should not occur without provision of an adequate reticulated domestic quality mains water supply and an appropriate waste treatment system.	N/A		The Project is not located in an urban area.
P7.	In areas where no reticulated water supply is available, buildings whose usage is reliant on a water supply should be equipped with an adequate and reliable on-site water storage system.	✓	2.0	Untreated water will be supplied during construction for use in dust suppression and portable toilets. Drinking water will be supplied in bottled form.
P8.	Urban development should have a direct water supply.	N/A		The Project is not located in an urban area.
P9.	Electricity infrastructure should be designed and located to minimise its visual and environmental impacts.	✓	8.4	The visual impact of the Project infrastructure has been assessed in Section 8.4 of the Development Application.
P10.	Utilities and services, including access roads and tracks, should be sited on areas already cleared of native vegetation. If this is not possible, their siting should cause minimal interference or disturbance to existing native vegetation and biodiversity.	✓	7.1	Vegetation clearance is not anticipated for construction of the Project. If required, clearance of native vegetation will be minimised as much as practicable.
P11.	Utility buildings and structures should be grouped with non-residential development where possible.	N/A		The Project is not within proximity to residential development.
P12.	Development in proximity to infrastructure facilities should be sited and be of a scale to ensure adequate separation to protect people and property.	✓	2.4	The proposed infrastructure associate with the Project will be adjacent and a smaller scale to the existing substations. The proposed infrastructure will not be located near to people or property.
P13.	Incompatible uses should not encroach upon the easements of infrastructure corridors for existing and proposed transmission lines.	✓	2.4	The Project is located entirely on freehold land and will not encroach upon easements of infrastructure corridors for existing and proposed transmission lines.
P14.	In urban areas, electricity supply (except transmission lines) serving new development should be installed underground, excluding lines having a capacity greater than or equal to 33kV.	N/A		The Project is not located in an urban area.

No	Objective / Principle	Not at variance	DA Ref.	Response
P15.	Provision should be made for new transmission and distribution substations and overhead major electricity line corridors (having a capacity greater than or equal to 33kV) in areas which have the required buffer distance to protect people and allow for adequate access.	✓	2.4	A 33kV overhead powerline will connect the BESS Project to the Templers substation.
P16.	Land division for the purpose of residential and other sensitive land uses should not occur within electricity line corridors or existing electricity easements unless the resultant allotments are large enough to enable accommodation of safe clearances and expected structures.	N/A		The Project does not require development consent for subdivision for the purpose of residential and other sensitive land uses but will require land division on the basis the Project site is leased for >6 years.
P17	Utility services (excluding transmission lines with a capacity greater than or equal to 33 kV) should be placed underground, with ridgelines and visually sensitive open landscapes being avoided.	✓	2.4	A 33kV overhead line will connect the Project to the adjacent Templers substation. This will be comparable to existing infrastructure in the locality and in line with current visual landscape of the area.
P18	If located above-ground, utility structures should be constructed of materials that have low light reflecting surfaces; and blend with the surrounding landscape.	✓	8.4.2	The colour and material of the battery storage units will be of an appropriate colourbond colour and non-reflective surface.
P19.	Development should not compromise the viability of existing transmission line corridors and substation sites.	✓	2.0 8.4	The Project will be located adjacent to the current substations and will not interfere with the viability of these sites. RES is in negotiation with SAPN and ElectraNet for a connection agreement.
Interface between Land Uses				
O1.	Development located and designed to minimise adverse impact and conflict between land uses.	✓	8.1	The Land Use surrounding the majority of the Project is classified as 'Agriculture' and 'Utilities-Infrastructure' under Land Use Generalised 2017 mapping obtained via SA Location Viewer (Government of South Australia 2017). The Project will not restrict the ongoing utilisation of agricultural land uses in the locality.
O2.	Protect community health and amenity from adverse impacts of development.	✓	8.1	Due to the nature of the Project and the location, it is highly unlikely that the facility would negatively impact on community health and amenity or the operation of all desired land uses.
O3.	Protect desired land uses from the encroachment of incompatible development.	✓	8.1	The Project is in line with current adjacent land use and is not considered an incompatible development.
P1.	Development should not detrimentally affect the amenity of the locality or cause unreasonable interference through any of the following: (a) the emission of effluent, odour, smoke, fumes, dust or other airborne pollutants (b) noise (c) vibration (d) electrical interference	✓	6.1 6.2 6.3 8.3 8.4 8.5 8.6	Potential impacts and mitigation are addressed in the DA.

No	Objective / Principle	Not at variance	DA Ref.	Response
	(e) light spill (f) glare (g) hours of operation (h) traffic impacts.			
P2.	Development should be sited and designed to minimise negative impact on existing and potential future land uses considered appropriate in the locality.	✓	2, 8.1, 8.4	The Project will not adversely impact adjacent land uses and will be restricted to the Project area.
P3.	Development adjacent to a **Residential Zone** or residential area within a **Township Zone** should be designed to minimise overlooking and overshadowing of adjacent dwellings and private open space.	N/A		The Project is not adjacent to a Township Zone.
P4.	Residential development adjacent to non-residential zones and land uses should be located, designed and/or sited to protect residents from potential adverse impacts from non-residential activities.	N/A		The Project does not involve residential development.
P5.	Sensitive uses likely to conflict with the continuation of lawfully existing developments and land uses considered appropriate for the zone should not be developed or should be designed to minimise negative impacts.	N/A		The Project does not involve sensitive land uses.
P6.	Non-residential development on land abutting a residential zone should be designed to minimise noise impacts to achieve adequate levels of compatibility between existing and proposed uses.	N/A		The Project is not located next to or within a residential zone.
P7.	Residential development, development accessible by the public and other development potentially sensitive to industrial emissions (i.e. community centres; tourist accommodation; educational establishments; hospitals; motels; multiple dwellings) should be designed and sited to achieve a minimum separation distance of 500 metres from the boundary of **Precinct 7 Kingsford North**.	N/A		The Project does not involve residential development.
P8.	Outdoor lighting should be designed and installed in accordance with Australian Standard AS 4282 Control of the obtrusive effects of outdoor lighting.	✓	2.4	Security lighting will be installed in accordance with Australian Standard AS 4282. Lighting will not be permanently used at night-time and only used for maintenance or response if required.
P9.	The development and use of land should take place in a manner which will not cause nuisance or hazard to the community by the introduction of or an increase in the number of pest plants or vermin.	✓	2.10	It is not envisaged that the Project will increase the risk of pest plants and vermin. Construction and operation management plans will be developed which will address waste and cleaning vehicles prior to entering the site.
Noise Generating Activities				

No	Objective / Principle	Not at variance	DA Ref.	Response
P10.	Development that emits noise (other than music noise) should include noise attenuation measures that achieve the relevant Environment Protection (Noise) Policy criteria when assessed at the nearest existing noise sensitive premises.	✓	8.3	Noise impacts are primarily expected to occur during the construction phase. Minimal noise is likely to be generated during operation and maintenance. Equipment used during construction would include earth-moving equipment for civil works, diesel generators, trucks and cranes with similar noise outputs to farm machinery e.g. Tractors. Through the utilisation of standard environmental management controls, construction noise impacts at sensitive receivers are expected to be negligible.
P11.	Development with the potential to emit significant noise (e.g. industry) should incorporate noise attenuation measures that prevent noise from causing unreasonable interference with the amenity of noise sensitive premises.	✓		Refer to Response to P10. There are limited receptors within close proximity to the Project sites.
P12.	Outdoor areas (such as beer gardens or dining areas) associated with licensed premises should be designed or sited to minimise adverse noise impacts on adjacent existing or future noise sensitive development.	N/A		The Project does not involve outdoor public areas.
P13.	Development proposing music should include noise attenuation measures that achieve the following desired noise levels:	N/A		The Project does not involve the proposed activities, as such the desired noise levels are not included.
Air Quality				
P14.	Development with the potential to emit harmful or nuisance-generating air pollution should incorporate air pollution control measures to prevent harm to human health or unreasonable interference with the amenity of sensitive uses within the locality.	N/A		The Project does not involve emissions of harmful or nuisance-generating air pollution.
P15.	Chimneys or exhaust flues associated with commercial development (including cafes, restaurants and fast food outlets) should be designed to ensure they do not cause a nuisance or health concerns to nearby sensitive receivers by: (a) incorporating appropriate treatment technology before exhaust emissions are released to the atmosphere (b) ensuring that the location and design of chimneys or exhaust flues maximises dispersion and takes into account the location of nearby sensitive uses.	N/A		The Project does not involve chimneys or exhaust flues.
Rural Interface				
P16.	The potential for adverse impacts resulting from rural development should be minimised by:	N/A		The Project does not involve horticulture or intensive animal keeping.

No	Objective / Principle	Not at variance	DA Ref.	Response
	(a) not locating horticulture or intensive animal keeping on land adjacent to townships (b) maintaining an adequate separation between horticulture or intensive animal keeping and townships, other sensitive uses and, where desirable, other forms of primary production.			
P17.	Traffic movement, spray drift, dust, noise, odour and the use of frost fans and gas guns associated with primary production should not lead to unreasonable impact on adjacent land uses.	N/A		The Project does not involve primary production activities.
P18.	Existing primary production and mineral extraction should not be prejudiced by the inappropriate encroachment of sensitive uses such as urban development.	N/A		The Project does not involve urban development.
P19.	Development that is adjacent to land used for primary production (within either the zone or adjacent zones) should include appropriate setbacks and vegetative plantings designed to minimise the potential impacts of chemical spray drift and other impacts associated with primary production.	✓	2.4	The Project footprint will be set back approximately 15 m from the closest primary production area. Potential impacts of chemical spray drift and other impacts associated with primary production will not be an issue for the Project.
P20.	New urban development should provide a buffer of at least 40 metres wide (inclusive of any fuel break, emergency vehicle access or road) separating urban and rural activities.	N/A		The Project does not involve urban development.
P21.	Development located within 300 metres of facilities for the handling, transportation and storage of bulk commodities should: (a) not prejudice the continued operation of those facilities (b) be located, designed and developed having regard to the potential environmental impact arising from the operation of such facilities and the potential extended hours of operation.	N/A		The Project is not located within any facilities for the handling, transportation and storage of bulk commodities.
Land Division				
N/A – This has been excluded as the project does not require development consent for subdivision but will require land division on the basis the Project site is leased for >6 years. According to Schedule 3(2) of the *Development Regulations 2008*, no development approval is required for the long-term lease of the land over part of an allotment as the Regulations exclude from the definition of development, the grant of a lease or licence by virtue of which a person becomes entitled to possession or occupation of only part of an allotment, other than a lease over land that comprises a dwelling, or which permits the use of the leased land for residential purposes.				
Landscaping, Fences and Walls				

No	Objective / Principle	Not at variance	DA Ref.	Response
O1.	The amenity of land and development enhanced with appropriate planting and other landscaping works, using locally indigenous plant species where possible.	✓	8.4.2	Landscaping will be incorporated as part of the Project and will be selected and designed so it is sensitive to the landscape and visual receptors. Landscaping will need to take into consideration fire prevention measures.
O2.	Functional fences and walls that enhance the attractiveness of development.	✓	2.7	For security and health and safety to the public, a 2 m cyclone fence will be required around the Project site.
P1.	Development should incorporate open space and landscaping and minimise hard paved surfaces in order to: (a) complement built form and reduce the visual impact of larger buildings (eg taller and broader plantings against taller and bulkier building components) (b) enhance the appearance of road frontages (c) screen service yards, loading areas and outdoor storage areas (d) minimise maintenance and watering requirements (e) enhance and define outdoor spaces, including car parking areas (f) maximise shade and shelter (g) assist in climate control within and around buildings (h) minimise heat absorption and reflection (i) maintain privacy (j) maximise stormwater re-use (k) complement existing vegetation, including native vegetation (l) integrate existing mature vegetation (m) contribute to the viability of ecosystems and species (n) promote water and biodiversity conservation.	✓		Refer to response to O1.
P2.	Landscaping should: (a) include the planting of locally indigenous species where appropriate (b) be oriented towards the street frontage (c) result in the appropriate clearance from powerlines and other infrastructure being maintained.	✓		Refer to response to O1.
P3.	Landscaping should not: (a) unreasonably restrict solar access to adjoining development (b) cause damage to buildings, paths and other landscaping from root invasion, soil disturbance or plant overcrowding (c) introduce pest plants (d) increase the risk of bushfire (e) remove opportunities for passive surveillance (f) increase leaf fall in watercourses	✓		Refer to response to O1.

No	Objective / Principle	Not at variance	DA Ref.	Response
	(g) increase the risk of weed invasion (h) obscure driver sight lines (i) create a hazard for train or tram drivers by obscuring sight lines at crossovers.			
P4.	Development in rural areas, and verges of roads and tracks, should be landscaped to minimise erosion.	✓	8.4.2	Appropriate erosion management measures will be implemented during the construction and operation phases of the Project. Any landscaping will take into account erosion controls.
P5.	Fences and walls, including retaining walls, should: (a) not result in damage to neighbouring trees (b) be compatible with the associated development and with existing predominant, attractive fences and walls in the locality (c) enable some visibility of buildings from and to the street to enhance safety and allow casual surveillance (d) incorporate articulation or other detailing where there is a large expanse of wall facing the street (e) assist in highlighting building entrances (f) be sited and limited in height, to ensure adequate sight lines for motorists and pedestrians especially on corner sites (g) in the case of side and rear boundaries, be of sufficient height to maintain privacy and/or security without adversely affecting the visual amenity or access to sunlight of adjoining land (h) be constructed of non-flammable materials.	✓		Refer to response to O2.
Mineral Extraction				
N/A – This has been excluded as the Project does not involve or relate to mineral extraction activities.				
Natural Resources				
O1.	Retention, protection and restoration of the natural resources and environment.	✓	7.1 7.2	The Project will aim to protect natural resources by minimizing vegetation clearance, locating temporary disturbance areas within the final footprint, ensuring clearances is restricted within designated boundaries.
O2.	Protection of the quality and quantity of South Australia's surface waters, including inland and underground waters.	✓	6.2	Surface water and groundwater resources will be protected by utilising the following: • stormwater from the site will be collected and managed • hazardous materials will be stored in accordance with Australian Standards and spills will be cleaned up immediately. • Erosion, sediment and drainage controls will be established • Infrastructure will not be located in drainage lines • A Soil Erosion and Drainage Management Plan will be prepared

No	Objective / Principle	Not at variance	DA Ref.	Response
O3.	The ecologically sustainable use of natural resources including water resources, including ground water, surface water and watercourses.	✓	6.1, 6.2	Soil and water resources will be protected. Rainwater from buildings will be harvested for use on site and underground water use is not proposed. Water use is described in Section 6.2 of the DA.
O4.	Natural hydrological systems and environmental flows reinstated, and maintained and enhanced.	✓	6.2	Surface profiles and natural drainage patterns will largely be maintained. The Project will have very limited impact on natural water flows. Measures outlined in the DA to protect water quality will be implemented. All project components will be designed and constructed in accordance with the Code of Practice for the Building and Construction Industry, (Environment Protection Agency Government of South Australia, 1999), a Soil Erosion and Drainage Management Plan (SEDMP) will be prepared for the construction phase of the Project to specify erosion and sediment management controls. The SEDMP will include soil and erosion control best practice as detailed in the IECA (2008) guidelines "Best Practice Erosion and Sediment Control".
O5.	Development consistent with the principles of water sensitive design.	✓	6.2	
O6.	Development sited and designed to: (a) protect natural ecological systems (b) achieve the sustainable use of water (c) protect water quality, including receiving waters (d) reduce runoff and peak flows and prevent the risk of downstream flooding (e) minimise demand on reticulated water supplies (f) maximise the harvest and use of stormwater (g) protect stormwater from pollution sources.	✓	6.1, 6.2	
O7.	Storage and use of stormwater which avoids adverse impact on public health and safety.	✓	6.2	Runoff from the site will be directed to a detention basin via a combination of open swales, stormwater inlet pits and an underground pipe network.
O8.	Native flora, fauna and ecosystems protected, retained, conserved and restored.	✓	7.1, 7.2	An ecological survey did not identify any native vegetation on the site or on the road verge which will be impacted by the construction of the Project.
O9.	Restoration, expansion and linking of existing native vegetation to facilitate habitat corridors for ease of movement of fauna.	✓	7.1, 7.2	
O10.	Minimal disturbance and modification of the natural landform.	✓	6.1	Construction of the Project will have minimal impacts to the natural landform of the site.
O11.	Protection of the physical, chemical and biological quality of soil resources.	✓	6.1	Disturbance and modification of the natural landform will be minimised, soil resources will be protected, and the area is not prone to erosion
O12.	Protection of areas prone to erosion or other land degradation processes from inappropriate development.	✓	6.1	
O13.	Protection of the scenic qualities of natural and rural landscapes.	✓	8.4	The scenic quality of the sites is relatively low.
P1.	Development should be undertaken with minimum impact on the natural environment, including air and water quality, land, soil, biodiversity, and scenically attractive areas.	✓	6,7,8	The project will not result in significant impacts to the natural environment. No native vegetation or habitats exist on-site. Refer to Chapters 6, 7 and 8 of the DA for a discussion of all potential impacts and the proposed mitigation measures.
P2.	Development should ensure that South Australia's natural assets, such as biodiversity, water and soil, are protected and enhanced.	✓	6,7,8	
P3.	Development should not significantly obstruct or adversely affect sensitive ecological areas such as creeks and wetlands.	✓	6,7,8	
P4.	Development should be appropriate to land capability and the protection and conservation of water resources and biodiversity.	✓	6,7,8	
Water Sensitive Design				

No	Objective / Principle	Not at variance	DA Ref.	Response
P5.	Development should be designed to maximise conservation, minimise consumption and encourage reuse of water resources.	✓	2.4.11	Rainwater will be harvested for on-site use and water conservation measures will be implemented. The project does not involve unsustainable use of surface or underground water resources. Natural drainage patterns will largely be maintained. The project will have very limited impact on natural water flows. Measures outlined in the DA to protect water quality will be implemented. All Project components will be designed and constructed in accordance with the Code of Practice for the Building and Construction Industry, (Environment Protection Agency Government of South Australia, 1999), a Soil Erosion and Drainage Management Plan (SEDMP) will be prepared for the construction phase of the Project to specify erosion and sediment management controls. The SEDMP will include soil and erosion control best practice as detailed in the IECA (2008) guidelines "Best Practice Erosion and Sediment Control".
P6.	Development should not take place if it results in unsustainable use of surface or underground water resources.	✓	6.2	
P7.	Development should be sited and designed to: (a) capture and re-use stormwater, where practical (b) minimise surface water runoff (c) prevent soil erosion and water pollution (d) protect and enhance natural water flows (e) protect water quality by providing adequate separation distances from watercourses and other water bodies (f) not contribute to an increase in salinity levels (g) avoid the water logging of soil or the release of toxic elements (h) maintain natural hydrological systems and not adversely affect: (i) the quantity and quality of groundwater (ii) the depth and directional flow of groundwater (iii) the quality and function of natural springs.	✓	6.1, 6.2	
P8.	Water discharged from a development site should: (a) be of a physical, chemical and biological condition equivalent to or better than its pre-developed state (b) not exceed the rate of discharge from the site as it existed in pre-development conditions.	✓	6.2	Appropriate stormwater management measures will be implemented. The project will have very limited impact on natural water flows. Drainage for much of the site terminates internally and there is likely to be minimal change to off-site runoff volumes.
P9.	Development should include stormwater management systems to protect it from damage during a minimum of a 1-in-100-year average return interval flood.	✓	6.2	
P10.	Development should have adequate provision to control any stormwater over-flow runoff from the site and should be sited and designed to improve the quality of stormwater and minimise pollutant transfer to receiving waters.	✓	6.2	
P11.	Development should include stormwater management systems to mitigate peak flows and manage the rate and duration of stormwater discharges from the site to ensure the carrying capacities of downstream systems are not overloaded.	✓	6.2	
P12.	Development should include stormwater management systems to minimise the discharge of sediment, suspended solids, organic matter, nutrients, bacteria, litter and other contaminants to the stormwater system.	✓	6.2	
P13.	Stormwater management systems should preserve natural drainage systems, including the associated environmental flows.	✓	6.2	
P14.	Stormwater management systems should:	✓	6.2	

No	Objective / Principle	Not at variance	DA Ref.	Response
	(a) maximise the potential for stormwater harvesting and re-use, either on-site or as close as practicable to the source (b) utilise, but not be limited to, one or more of the following harvesting methods: (i) the collection of roof water in tanks (ii) the discharge to open space, landscaping or garden areas, including strips adjacent to car parks (iii) the incorporation of detention and retention facilities (iv) aquifer recharge.			
P15.	Where it is not practicable to detain or dispose of stormwater on site, only clean stormwater runoff should enter the public stormwater drainage system.	✓	6.2	
P16.	Artificial wetland systems, including detention and retention basins, should be sited and designed to: (a) ensure public health and safety is protected (b) minimise potential public health risks arising from the breeding of mosquitoes.	N/A		There are no artificial wetlands in close proximity to the Project site.
P17.	Stormwater runoff directed to the Gawler River or North Para River should first be filtered on-site before reaching the river.	N/A		The Project is not in the vicinity nor will direct stormwater to the Gawler River or North Para River.
P18.	Where stormwater is used for industrial purposes, break tanks should be incorporated to prevent any back contamination with process liquids.	N/A		The Project will not use stormwater for industrial purposes.
Water Catchment Areas				
P19.	Development should ensure watercourses and their beds, banks, wetlands and floodplains are not damaged or modified and are retained in their natural state, except where modification is required for essential access or maintenance purposes.	✓	6.2	There are no watercourses which traverse the Project site. Degraded ephemeral watercourses to the north of the site will not be modified.
P20.	No development should occur where its proximity to a swamp or wetland will damage or interfere with the hydrology or water regime of the swamp or wetland.	✓	6.2	Surface profiles and natural drainage patterns will largely be maintained. No significant swamps or wetlands are present. Areas subject to inundation on the site are highly degraded and do not provide significant habitat.
P21.	A wetland or low-lying area providing habitat for native flora and fauna should not be drained, except temporarily for essential management purposes to enhance environmental values.	✓	6.2, 7.1, 7.2	
P22.	Along watercourses, areas of remnant native vegetation, or areas prone to erosion, that are capable of natural regeneration should be fenced off to limit stock access.	✓	6.2	There are no watercourses which traverse the Project site. Stock will not be able to access the site.
P23.	Development such as cropping, intensive animal keeping, residential, tourism, industry and horticulture, that increases the amount of surface run-off should include a strip of land at least 20 metres wide	✓	6.2	The Project site is not in close proximity to a permanent watercourse.

No	Objective / Principle	Not at variance	DA Ref.	Response
	measured from the top of existing banks on each side of a watercourse that is: (a) fenced to exclude livestock (b) kept free of development, including structures, formal roadways or access ways for machinery or any other activity causing soil compaction or significant modification of the natural surface of the land (c) revegetated with locally indigenous vegetation comprising trees, shrubs and other groundcover plants to filter run-off so as to reduce the impacts on native aquatic ecosystems and to minimise soil loss eroding into the watercourse.			
P24.	Development resulting in the depositing of an object or solid material in a watercourse or floodplain or the removal of bank and bed material should not: (a) adversely affect the migration of aquatic biota (b) adversely affect the natural flow regime (c) cause or contribute to water pollution (d) result in watercourse or bank erosion (e) adversely affect native vegetation upstream or downstream that is growing in or adjacent to a watercourse.	✓	6.2	The Project is not located in close proximity to a watercourse and is not expected to contribute to water pollution or bank erosion.
P25.	The location and construction of dams, water tanks and diversion drains should: (a) occur off watercourse (b) not take place in ecologically sensitive areas or on erosion-prone sites (c) provide for low flow by-pass mechanisms to allow for migration of aquatic biota (d) not negatively affect downstream users (e) minimise in-stream or riparian vegetation loss (f) incorporate features to improve water quality (eg wetlands and floodplain ecological communities (g) protect ecosystems dependent on water resources. (h) exclude stock and provide alternative watering points (i) provide spillways designed to allow passage of high flows without causing structural damage to the dam or soil erosion within the spillway or spillway discharge area.	N/A		The Project does not involve the construction of dams, water tanks and diversion drains.
P26.	Dams should: (a) have an irregular edge to minimise soil erosion (b) have a variety of depths to increase habitat for a variety of plants	N/A		The Project does not involve the construction of dams. A detention basin to mange surface water runoff will be located to the north of the BESS.

No	Objective / Principle	Not at variance	DA Ref.	Response
	and animals (c) where necessary include a silt trap (one tenth the capacity of the dam) upstream of the dam to trap incoming silt and nutrients.			
P27.	The design, construction and location of levees, weirs, retaining walls, bridges and culverts should: (a) provide for the needs of ecosystem (b) minimise the impact or risk of flooding (c) not cause or increase watercourse erosion.	N/A		The Project does not involve he construction of levees, weirs, retaining walls, bridges and culverts.
P28.	Irrigated horticulture and pasture should not increase groundwater-induced salinity.	N/A		The Project does not involve irrigated horticulture and pasture.
P29.	Areas for activities such as loading and unloading, wash down of vehicles, plant or equipment, or storage of waste refuse bins in commercial or industrial developments should be paved and bunded to exclude stormwater run-off from external sources.	✓	2.4, 6.2	The site will include a stormwater management system which will prevent any run-off or waste from entering the stormwater system.
P30.	Development should comply with the current *Environment Protection (Water Quality) Policy*.	✓	6.2	The Project will comply with water quality criteria that is specified in the policy. The Project will also comply with general obligations to avoid discharge of pollutants to receiving water.
P31.	Development bordering a watercourse defined on the 1:50 000 SA Government topographic map should be set-back from the banks at least the following distances to provide for the protection and enhancement of riparian areas: (a) 50 metres for detached dwellings, residential outbuildings, tourist accommodation, farm buildings (eg implement and storage sheds but excluding all animal husbandry buildings), septic tanks or other domestic waste water treatment facilities (b) 50 metres for all buildings associated with industrial, animal husbandry or commercial uses and household waste water disposal areas (c) 100 metres for industrial or intensive animal husbandry waste water disposal areas (d) in townships where there is a satisfactory waste water disposal scheme and a stormwater treatment scheme, commercial development may be set-back 25 metres from the watercourse provided the area adjacent to the watercourse is suitably landscaped and protected from the impacts of the development.	N/A		The are no riparian or permanent watercourses on or near the Project site.

No	Objective / Principle	Not at variance	DA Ref.	Response
Biodiversity and Native Vegetation				
P32.	Development should retain existing areas of native vegetation and where possible contribute to revegetation using locally indigenous plant species.	✓	7.1, 7.2	An ecological survey did not identify any native vegetation on the site or on the road verge which will be impacted by the construction of the Project. Refer to Sections 7 of the DA for a discussion of the fauna and flora present on site and the proposed mitigation measures to ensure their protection and conservation.
P33.	Development should be designed and sited to minimise the loss and disturbance of native flora and fauna.	✓	7.0	
P34.	Native vegetation should be conserved and its conservation value and function not compromised by development if the native vegetation does any of the following: (a) provides an important habitat for wildlife or shade and shelter for livestock (b) has a high plant species diversity or includes rare, vulnerable or endangered plant species or plant associations and communities (c) provides an important seed bank for locally indigenous vegetation (d) has high amenity value and/or significantly contributes to the landscape quality of an area, including the screening of buildings and unsightly views (e) has high value as a remnant of vegetation associations characteristic of a district or region prior to extensive clearance for agriculture (f) is growing in, or is characteristically associated with a wetland environment.	✓	7.0	
P35.	Native vegetation should not be cleared if such clearing is likely to lead to, cause or exacerbate any of the following: (a) erosion or sediment within water catchments (b) decreased soil stability (c) soil or land slip (d) deterioration in the quality of water in a watercourse or surface water runoff (e) a local or regional salinity problem (f) the occurrence or intensity of local or regional flooding.	✓	7.0	
P36.	Development should not destroy or impair the growth of: (a) native vegetation stands between Nain and the Belvidere survey beacon (b) significant roadside vegetation across the district (c) native vegetation along watercourses.	N/A		
P37.	Development that proposes the clearance of native vegetation should address or consider the implications that removing the native vegetation will have on the following:	✓	7.0	

No	Objective / Principle	Not at variance	DA Ref.	Response
	(a) provision for linkages and wildlife corridors between significant areas of native vegetation (b) erosion along watercourses and the filtering of suspended solids and nutrients from run-off (c) the amenity of the locality (d) bushfire safety (e) the net loss of native vegetation and other biodiversity.			
P38.	Where native vegetation is to be removed, it should be replaced in a suitable location on the site with locally indigenous vegetation to ensure that there is not a net loss of native vegetation and biodiversity.	✓	7.0	
P39.	Development should be located and occur in a manner which: (a) does not increase the potential for, or result in, the spread of pest plants, or the spread of any non-indigenous plants into areas of native vegetation or a conservation zone (b) avoids the degradation of remnant native vegetation by any other means including as a result of spray drift, compaction of soil, modification of surface water flows, pollution to groundwater or surface water or change to groundwater levels (c) incorporates a separation distance and/or buffer area to protect wildlife habitats and other features of nature conservation significance.	✓	7.0	
P40.	Development should promote the long-term conservation of vegetation by: (a) avoiding substantial structures, excavations, and filling of land in close proximity to the trunk of trees and beneath their canopies (b) minimising impervious surfaces beneath the canopies of trees (c) taking other effective and reasonable precautions to protect both vegetation and the integrity of structures and essential services.	✓	7.0	
P41.	Horticulture involving the growing of olives should be located at least: (a) 500 metres from: (i) a national park (ii) a conservation park (iii) a wilderness protection area (iv) the edge of a substantially intact stratum of native vegetation greater than 5 hectares in area (b) 50 metres from the edge of stands of native vegetation 5 hectares or less in area.	N/A		The Project does not include any horticultural activities.
P42.	Horticulture involving the growing of olives should have at least one locally indigenous tree that will grow to a height of at least 7 metres sited at least every 100 metres around the perimeter of the orchard.	N/A		The Project does not include any horticultural activities.

No	Objective / Principle	Not at variance	DA Ref.	Response
P43.	Non native vegetation should be conserved and its value and function not compromised by development, where it: (a) has scenic, historical or scientific significance or interest (b) screens buildings or unsightly views (c) provides shade or acts as a windbreak (d) assists in the prevention of soil erosion.	N/A		The Project does not include non-native vegetation which would provide value or function.
Soil Conservation				
P44.	Development should not have an adverse impact on the natural, physical, chemical or biological quality and characteristics of soil resources.	✓	6.1	Development is not expected to have an adverse impact on soil resources. Generally, the area is not prone to erosion. Disturbance during construction will be minimized and storm water from the Project site will be captured to ensure erosion does not occur.
P45.	Development should be designed and sited to prevent erosion.	✓	6.1	
P46.	Development should take place in a manner that will minimise alteration to the existing landform.	✓	6.1	
P47.	Development should minimise the loss of soil from a site through soil erosion or siltation during the construction phase of any development and following the commencement of an activity.	✓	6.1	
Open Space and Recreation				
N/A – This has been excluded as the Project does not involve or relate to open space or recreation.				
Orderly and Sustainable Development				
N/A – This has been excluded as this relates to urban development.				
Regulated Trees				
N/A – This has been excluded as the Project does not involve regulated trees.				
Renewable Energy Facilities				
N/A – This has been excluded as the Project does not involve renewable energy facilities.				
Wind Farms and Ancillary Development				
N/A – This has been excluded as the Project does not involve wind farms and ancillary development				
Residential Development				
N/A – This has been excluded as the Project does not relate to or involve residential development.				
Short-Term Workers Accommodation				

No	Objective / Principle	Not at variance	DA Ref.	Response
N/A – This has been excluded as the Project does not relate or involve temporary accommodation.				
Siting and Visibility				
O1.	Protection of scenically attractive areas, particularly natural, rural and riverine landscapes.	✓	8.4	The Project is not located in a designated scenically attractive area and will utilize existing power transmission infrastructure.
P1.	Development should be sited and designed to minimise its visual impact on: (a) the natural, rural or heritage character of the area (b) areas of high visual or scenic value, particularly rural and coastal areas (c) views from the coast, near-shore waters, public reserves, tourist routes and walking trails (d) the amenity of public beaches.	✓	8.4	The Project is not located in an area of high visual or scenic value. The project is not visible from areas with high sensitivity. Visual impact will be low.
P2.	Buildings should be sited in unobtrusive locations and, in particular, should: (a) be grouped together (b) where possible, be located in such a way as to be screened by existing vegetation.	✓	8.4	Buildings will be of a similar nature to the adjacent substations. Vegetation screening will be installed along the road fronts. No views and features of significance are in proximity to the site.
P3.	Development should be designed to ensure that corridors to views and features of significance are maintained.	✓	8.4	
P4.	Buildings outside of urban areas and in undulating landscapes should be sited in unobtrusive locations and in particular should be: (a) sited below the ridgeline (b) sited within valleys or behind spurs (c) sited in such a way as to not be visible against the skyline when viewed from public roads (d) set well back from public roads, particularly when the allotment is on the high side of the road.	✓	8.4	
P5.	Buildings and structures should be designed to minimise their visual impact in the landscape, in particular: (a) the profile of buildings should be low and the rooflines should complement the natural form of the land (b) the mass of buildings should be minimised by variations in wall and roof lines and by floor plans which complement the contours of the land (c) large eaves, verandas and pergolas should be incorporated into designs so as to create shadowed areas that reduce the bulky appearance of buildings.	✓	8.4	Building height will be the minimum required to serve their required purpose. Colours and finishes will blend with the landscape as far as possible. No significant buildings are proposed.
P6.	The nature of external surface materials of buildings should not detract from the visual character and amenity of the landscape.	✓	8.4	The final design will take into consideration to reduce the industrial appearance of the buildings and help the facility assimilate with the rural surrounding. A

<table>
<tr><th>No</th><th>Objective / Principle</th><th>Not at variance</th><th>DA Ref.</th><th>Response</th></tr>
<tr><td></td><td></td><td></td><td></td><td>Colourbond colour in the mid grey range will be selected for the battery containers.</td></tr>
<tr><td>P7.</td><td>The number of buildings and structures on land outside of urban areas should be limited to that necessary for the efficient management of the land.</td><td>✓</td><td>2.0</td><td>Infrastructure will be kept to the minimum required to meet the objectives of the Project.</td></tr>
<tr><td>P8.</td><td>Driveways and access tracks should be designed and surfaced to blend sympathetically with the landscape and to minimise interference with natural vegetation and landforms.</td><td>✓</td><td>2, 6.1, 7.0</td><td>Access roads and tracks will be designed to follow the natural land surface as far as possible, minimise cut and fill and avoid more significant areas of native vegetation / habitat as far as possible.</td></tr>
<tr><td>P9.</td><td>Development should be screened through the establishment of landscaping using locally indigenous plant species:
(a) around buildings and earthworks to provide a visual screen as well as shade in summer, and protection from prevailing winds
(b) along allotment boundaries to provide permanent screening of buildings and structures when viewed from adjoining properties and public roads
(c) along the verges of new roads and access tracks to provide screening and minimise erosion.</td><td>✓</td><td>2.0</td><td>Landscaping and screening will be provided along the road boundaries to minimise the visual impact to passing motorists and nearby residential dwellings.</td></tr>
<tr><td>P10.</td><td>Buildings should be set-back the following minimum distances from public roads within the rural areas:
<table><tr><th>Road Type</th><th>Set-back</th></tr><tr><td>Primary arterial</td><td>50 metres</td></tr><tr><td>Secondary arterial</td><td>30 metres</td></tr><tr><td>Local and other roads</td><td>20 metres</td></tr><tr><td>All roads in the Barossa Valley Region Policy Area 2</td><td>100 metres</td></tr></table></td><td>✓</td><td>2.4</td><td>Project infrastructure will be set back 30 m from Templers Road (secondary road) and 20 m from Power Road (local road).</td></tr>
<tr><td colspan="5">Sloping Land</td></tr>
<tr><td>O1.</td><td>Development on sloping land designed to minimise environmental and visual impacts and protect soil stability and water quality.</td><td>✓</td><td>6.1, 6.2</td><td>Land identified for the Project is flat. Soil stability and water quality will be protected.</td></tr>
<tr><td>P1.</td><td>Development and associated driveways and access tracks should be sited and designed to integrate with the natural topography of the land and minimise the need for earthworks.</td><td>✓</td><td>6.1, 6.2</td><td>Access tracks will be situated as close as possible to infrastructure, and will be constructed to allow all weather access and will be sufficient in width to allow access by emergency services and maintenance crews.</td></tr>
<tr><td>P2.</td><td>Development and associated driveways and access tracks, including related earthworks, should be sited, designed and undertaken in a manner that:
(a) minimises their visual impact</td><td>✓</td><td>6.1, 6.2</td><td>Access tracks will be designed to consider the natural topography of the land and minimize erosion</td></tr>
</table>

No	Objective / Principle	Not at variance	DA Ref.	Response
	(b) reduces the bulk of the buildings and structures (c) minimises the extent of cut and/or fill (d) minimises the need for, and the height of, retaining walls (e) does not cause or contribute to instability of any embankment or cutting (f) avoids the silting of watercourses (g) protects development and its surrounds from erosion caused by water run-off. (h) incorporates roof lines which complement the natural slope of the land			
P3.	Driveways and access tracks across sloping land should be accessible and have a safe, all-weather trafficable surface.	N/A		
P4.	Development sites should not be at risk of landslip.	✓	6.1, 6.2	
P5.	Development on steep land should include site drainage systems to minimise erosion and avoid adverse impacts on slope stability.	N/A		
P6.	Steep sloping sites in unsewered areas should not be developed unless the physical characteristics of the allotments enable the proper siting and operation of an effluent drainage field suitable for the development intended.	N/A		No sewage infrastructure will be located on steep slopes.
P7.	The cutting and/or filling of land outside townships and urban areas should: (a) be kept to a minimum and be limited to a maximum depth or height no greater than 1.5 metres so as to preserve the natural form of the land and the native vegetation (b) only be undertaken in order to reduce the visual impact of buildings, including structures, or in order to construct water storage facilities for use on the allotment (c) only be undertaken if the resultant slope can be stabilised to prevent erosion (d) result in stable scree slopes which are covered with top soil and landscaped so as to preserve and enhance the natural character or assist in the re-establishment of the natural character of the area.	✓	6.1, 6.2	See above, P1
P8.	Retaining walls should comprise a stepped series of low walls, include landscaping of the wall and its surrounds to enhance the appearance of the wall and not exceed the following heights (refer to the figure below): (a) 0.5 metres if located forward of the building line (b) 1 metre if located elsewhere on the site.	N/A		The Project does not include any retaining walls.
Supported Accommodation and Housing for Seniors				

No	Objective / Principle	Not at variance	DA Ref.	Response
N/A – This has been excluded as the Project does not involve or relate to supported accommodation and housing for seniors.				
Telecommunications Facilities				
O1.	Telecommunications facilities provided to deliver communication services to the community.	N/A		The Project does not relate to telecommunications facilities for delivering communication services to the community.
O2.	Telecommunications facilities sited and designed to minimise visual impact on the amenity of the local environment.	N/A		Any telecommunications infrastructure installed for the project would not be expected to impact visual amenity.
P1.	Telecommunications facilities should: (a) be located in a coordinated manner to deliver communication services efficiently (b) use materials and finishes that minimise visual impact (c) have antennae located as close as practical to the support structure (d) be located primarily in industrial, commercial, business, office, centre and rural zones (e) where technically feasible, be co-located with other telecommunications facilities (f) incorporate landscaping to screen the development, particularly equipment shelters and huts (g) be designed and sited to minimise the visual impact on the character and amenity of the local environment, in particular visually prominent areas, main focal points and significant vistas.	N/A		The telecommunications facilities are a minor ancillary use required for the operation of the BESS. The Project as a whole is appropriately located in a rural zone.
P2.	Telecommunications facilities in areas of high visitation and community use should use innovative design techniques (eg sculpture and other artworks) where possible and where the resulting design would positively contribute to the character of the area.	N/A		
P3.	Telecommunications facilities should be located in residential zones only if sited and designed to minimise visual impact by: (a) using existing buildings and vegetation for screening (b) incorporating the facility within an existing structure that may serve another purpose (c) taking into account the size, scale, context and characteristics of existing structures, landforms and vegetation so as to complement the local environment.	N/A		
P4.	Telecommunications facilities should not have a direct or significant effect on the amenity, character and settings of Historic Conservation Areas, the Historic (Conservation) Kapunda Mine Zone, local heritage places, State heritage places or State Heritage Areas.	N/A		
Tourism Development				
N/A – This has been excluded as the Project does not relate or involve any tourism development.				

No	Objective / Principle	Not at variance	DA Ref.	Response
Transportation and Access				
O1.	A comprehensive, integrated, affordable and efficient air, rail, sea, road, cycle and pedestrian transport system that will: (a) provide equitable access to a range of public and private transport services for all people (b) ensure a high level of safety (c) effectively support the economic development of the State (d) have minimal negative environmental and social impacts (e) maintain options for the introduction of suitable new transport technologies.	✓	8.5	Construction and operational vehicles will use the existing road network and will enter the Project site from Power Road.
O2.	Development that: (a) provides safe and efficient movement for all motorised and non-motorised transport modes (b) ensures access for vehicles including emergency services, public infrastructure maintenance and commercial vehicles (c) provides off street parking (d) is appropriately located so that it supports and makes best use of existing transport facilities and networks.	✓	8.5	Site access, the internal access network and provision of onsite parking will be designed to meet project requirements.
O3.	A road hierarchy that promotes safe and efficient transportation in an integrated manner throughout the State.	✓	8.5	The Project supports the road hierarchy.
O4.	Provision of safe, pleasant, accessible, integrated and permeable pedestrian and cycling networks.	N/A		The Project will not be open to the public. The Project will provide adequate walkways within the facility to allow safe movement by pedestrians. Cyclists will not be allowed onsite.
O5.	Safe and convenient freight movement throughout the State.	✓	8.5	Freight movement associated with the Project will comply with all relevant road laws and ensure safe freight movement throughout the State.
O6.	Development that discourages heavy vehicle movements through major town centres.	N/A		The Project is not located in a town centre.
Land Use				
P1.	Land uses arranged to support the efficient provision of sustainable transport networks and encourage their use.	✓	8.5	The Project will not affect existing transport networks. There will be an increase in traffic during construction, with a minor increase during the operation phase.
Movement Systems				
P2.	Development should be integrated with existing transport networks, particularly major rail and road corridors as shown on *Location Maps* and *Overlay Maps - Transport*, and designed to minimise its potential impact on the functional performance of the transport networks.	✓	8.5	According to *Overlay Map Lig/11-Transport*, Templers Road adjacent to the site is a secondary route. RES has undertaken a traffic impact assessment. The main site access will be via Power Road with minimal impacts to traffic on Templers Road expected and with sight distances are considered adequate. A Traffic Management Plan will be prepared to manage construction and operation phases.

No	Objective / Principle	Not at variance	DA Ref.	Response
P3.	Transport corridors should be sited and designed so as to not unreasonably interfere with the health and amenity of adjacent sensitive land uses.	N/A		The Project does not involve a transport corridor.
P4.	Roads should be sited and designed to blend with the landscape and be in sympathy with the terrain.	✓	8.5	The access road and internal access tracks will generally blend with the landscape. Where possible they will be non-intrusive.
P5.	Land uses that generate large numbers of visitors such as shopping centres and areas, places of employment, schools, hospitals and medium to high density residential uses should be located so that they can be serviced by existing transport networks and encourage walking and cycling.	N/A		The Project does not relate to provision of these types of facilities.
P6.	Development generating high levels of traffic, such as schools, shopping centres and other retail areas, entertainment and sporting facilities, should incorporate passenger pick-up and set down areas. The design of such areas should ensure interference to existing traffic is minimised and give priority to pedestrians, cyclists and public and community transport users.	N/A		The Project does not relate to provision of these types of facilities.
P7.	The location and design of public and community transport set-down and pick-up points should maximise safety and minimise the isolation and vulnerability of users.	N/A		The Project does not relate to provision of these types of facilities.
P8.	Development should provide safe and convenient access for all anticipated modes of transport including cycling, walking, public and community transport, and motor vehicles.	N/A		Access roads and carparks will be constructed to safely meet the requirements of the Project.
P9.	Development at intersections, pedestrian and cycle crossings, and crossovers to allotments should maintain or enhance sightlines for motorists, cyclists and pedestrians to ensure safety for all road users and pedestrians.	✓	8.5	Traffic management measures will be implemented to ensure that traffic impacts during construction are minimised. Traffic during operation will be very low.
P10.	Driveway cross-overs affecting pedestrian footpaths should maintain the level of the footpath.	N/A		There are no public pedestrian footpaths. Access between buildings for Project personnel will be provided as required and maintained.
P11.	Development should discourage commercial and industrial vehicle movements through residential streets and adjacent other sensitive land uses such as schools.	N/A		The Project is not located in proximity to residential streets or sensitive uses.
P12.	Industrial/commercial vehicle movements should be separated from passenger vehicle car parking areas.	✓	8.5	Car-parking will be provided within the Project area. Where possible, industrial/commercial vehicles will be separated from passenger vehicle parking areas.
P13.	Development should make sufficient provision on site for the loading, unloading and turning of all traffic likely to be generated.	✓	8.5	Traffic management measures will be implemented to ensure that traffic impacts during construction are minimised. Traffic during operation will be very low.
P14.	Parking, loading and manoeuvring areas for commercial vehicles should be developed in accordance with *Australian Standards 2890.2 Commercial Vehicles facilities*.	✓	8.5	The Project site will include a driveway which will allow for large vehicles to manoeuvre around and unload. Site vehicle parking will be constructed. These aspects will be developed in accordance with *Australian Standards 2890.2 Commercial Vehicles facilities*.

No	Objective / Principle	Not at variance	DA Ref.	Response
Cycling and Walking				
P15.	Development should ensure that a permeable street and path network is established that encourages walking and cycling through the provision of safe, convenient and attractive routes with connections to adjoining streets, paths, open spaces, schools, public transport stops and activity centres.	N/A		The Project does not involve a street or path network. It will not be publicly accessible and no specific cycle or pedestrian facilities or networks are proposed.
P16.	Development should provide access, and accommodate multiple route options, for cyclists by enhancing and integrating with open space networks, recreational trails, parks, reserves and recreation areas.	N/A		
P17.	Cycling and pedestrian networks should be designed to be permeable and facilitate direct and efficient passage to neighbouring networks and facilities.	N/A		
P18.	New developments should give priority to and not compromise existing designated bicycle routes.	N/A		
P19.	Where development coincides with, intersects or divides a proposed bicycle route or corridor, development should incorporate through-access for cyclists.	N/A		
P20.	Developments should encourage and facilitate cycling as a mode of transport by incorporating end-of-journey facilities including: (a) showers, changing facilities, and secure lockers (b) signage indicating the location of bicycle facilities (c) secure bicycle parking facilities.	N/A		
P21.	Pedestrian facilities and networks should be designed and provided in Accordance with relevant provisions of the *Australian Standards and Austroads Guide to Traffic Engineering Practice Part 13*.	N/A		
P22.	Cycling facilities and networks should be designed and provided in accordance with the relevant provisions of the Australian Standards and *Austroads Guide to Traffic Engineering Practice Part 14*.	N/A		
Access				
P23.	Development should have direct access from an all-weather public road.	✓	8.5	The main access point to the Project site will be along Power Road, which will be upgraded to an all-weather public road.
P24.	Development should be provided with safe and convenient access which: (a) avoids unreasonable interference with the flow of traffic on adjoining roads (b) provides appropriate separation distances from existing roads or level crossings (c) accommodates the type and volume of traffic likely to be generated by the development or land use and minimises induced traffic through over-provision	✓	8.5	The Project will be accessible via Power Road. Traffic management measures will be implemented to ensure that traffic impacts during construction are minimised. Traffic during operation will be very low.

No	Objective / Principle	Not at variance	DA Ref.	Response
	(d) is sited and designed to minimise any adverse impacts on the occupants of and visitors to neighbouring properties. (e) provides adequate access within the site to the rear of the allotment or development site.			
P25.	Development should not restrict access to publicly owned land such as recreation areas.	✓	8.5	The Project will not restrict access to publicly owned land.
P26.	The number of vehicle access points onto arterial roads shown on *Overlay Maps - Transport* should be minimised, and where possible access points should be: (a) limited to local roads (b) shared between developments.	✓	8.5	No new access points onto arterial roads are proposed.
P27.	The number of access points for cyclists and pedestrians onto all adjoining roads should be maximised.	N/A		The Project is not expected to provide cycling and pedestrian provisions or facilities, aside from pedestrian facilities onsite to allow movement between the carpark and buildings/infrastructure. The Project is located in a rural area not within close proximity to residential areas.
P28.	Development with access from roads with existing or projected traffic volumes exceeding 6000 vehicles per day should be sited to avoid the need for vehicles to reverse on to or from the road.	✓	8.5	Templers Road has an average volume of 700 vehicles per day. Access to the site will be via Power Road.
P29.	Development with access from arterial roads or roads as shown on *Overlay Maps - Transport* should be sited to avoid the need for vehicles to reverse on to the road.	✓	8.5	Traffic Impact Assessment has been undertaken for the Project. Vehicles will not be required to reverse on to the road at any time.
P30.	Driveways, access tracks and parking areas should be designed and constructed to: (a) follow the natural contours of the land (b) minimise excavation and/or fill (c) minimise the potential for erosion from run-off (d) avoid the removal of existing vegetation (e) be consistent with *Australian Standard AS 2890 Parking facilities*.	✓	2.0, 6.1, 7.01	Access roads and tracks will be designed to follow the natural land surface as far as possible, minimising cut and fill and avoiding more significant areas of native vegetation / habitat as far as possible. Parking facilities will be consistent with Australian Standard AS 2890.
Access for People with Disabilities				
P31.	Development should be sited and designed to provide convenient access for people with a disability.	✓	4.1.1	Any site access features and buildings will be designed in accordance with Australian Building Code requirements.
Vehicle Parking				
P32.	Development should provide off-street vehicle parking and specifically marked accessible car parking places to meet anticipated demand in accordance with *Table Lig/2 - Off Street Vehicle Parking Requirements* unless all the following conditions are met: (a) the site is located in a designated area as shown on *Concept Plan Map Lig/14 (Kapunda District Centre Carpark Fund)* (b) an agreement is reached between the Council and the applicant for	✓	2.4, 8.5	On-site parking will be provided in accordance with these requirements. Car park surfacing will be fit for purpose.

No	Objective / Principle	Not at variance	DA Ref.	Response
	a reduced number of parking spaces (c) a financial contribution is paid into the Council Car Parking Fund specified by the Council, in accordance with the gazetted rate per car park.			
P33.	Sufficient vehicle parking spaces should be provided on the site of or on a site nearby a development and have regard to the anticipated parking demand, availability of on-street parking, shared usage of other parking areas and safety.	✓	2.4, 8.5	On-site parking will be provided in accordance with these requirements.
P34.	Development should be consistent with *Australian Standard AS 2890 Parking facilities*.	✓	2.4, 8.5	Parking facilities will be consistent with *Australian Standard AS 2890 Parking facilities*.
P35.	Car parking signage should be designed in accordance with *Australian Standard 1742.11 Manual of uniform traffic control devices - Parking controls*	✓	2.4, 8.5	Car parking signage will be consistent with *Australian Standard 1742.11 Manual of uniform traffic control devices - Parking controls*
P36.	Vehicle parking areas should be sited and designed in a manner that will: (a) facilitate safe and convenient pedestrian linkages to the development and areas of significant activity or interest in the vicinity of the development (b) include safe pedestrian and bicycle linkages that complement the overall pedestrian and cycling network (c) not inhibit safe and convenient traffic circulation (d) result in minimal conflict between customer and service vehicles (e) avoid the necessity to use public roads when moving from one part of a parking area to another (f) minimise the number of vehicle access points to public roads (g) avoid the necessity for backing onto public roads (h) where reasonably possible, provide the opportunity for shared use of car parking and integration of car parking areas with adjoining development to reduce the total extent of vehicle parking areas and the requirement for access points (i) not dominate the character and appearance of a centre when viewed from public roads and spaces (j) provide landscaping that will shade and enhance the appearance of the vehicle parking areas.	✓	2.4, 8.5	Vehicle parking areas will be provided in accordance with these requirements, where applicable.
P37.	Vehicle parking areas should be designed to reduce opportunities for crime by: (a) maximising the potential for passive surveillance by ensuring they can be overlooked from nearby buildings and roads (b) incorporating walls and landscaping that do not obscure vehicles or provide potential hiding places;	✓	2.7, 8.5	The Project area will not be publicly accessible. Security measures such as CCTV and perimeter fencing will be installed. Parking areas will be visible from site offices.

No	Objective / Principle	Not at variance	DA Ref.	Response
	(c) being appropriately lit (d) having clearly visible walkways.			
P38.	Where parking areas are not obviously visible or navigated, signs indicating the location and availability of vehicle parking spaces associated with businesses should be displayed at locations readily visible to customers.	✓	2.4, 8.5	All parking areas will be known to employees and appropriately signed for visitors.
P39.	Parking areas that are likely to be used during non-daylight hours should provide floodlit entrance and exit points and site lighting directed and shaded in a manner that will not cause nuisance to adjacent properties or users of the car park.	✓	2.4, 8.4	Lighting will be provided for parking areas.
P40.	Parking areas, including driveways and loading/unloading areas should be sealed or paved in order to minimise dust and mud nuisance.	✓	2.4	The final form of parking areas will be determined during the final design phase.
P41.	To assist with stormwater detention and reduce heat loads in summer, vehicle parking areas should include soft (living) landscaping.	✓	2.4, 8.5	Car parking area will be designed and landscaped to minimise stormwater runoff and reduce heat loads.
P42.	Parking areas should be line-marked to indicate parking bays, movement aisles and direction of traffic flow.	✓	2.4	Parking areas will be designed to standards.
P43.	Commercial and industrial development should provide separate vehicle parking areas for visitors, staff and commercial vehicles.	✓	2.4	Parking areas will be designed to standards.
Waste				
O1.	Development that, in order of priority, avoids the production of waste, minimises the production of waste, reuses waste, recycles waste for reuse, treats waste and disposes of waste in an environmentally sound manner.	✓	2.10	Waste will be managed in accordance with the waste management hierarchy.
O2.	Development that includes the treatment and management of solid and liquid waste to prevent undesired impacts on the environment including, soil, plant and animal biodiversity, human health and the amenity of the locality.	✓	2.10	Treatment and management of solid and liquid wastes will prevent undesired impacts on the environment.
P1.	Development should be sited and designed to prevent or minimise the generation of waste (including wastewater) by applying the following waste management hierarchy in the order of priority as shown below: (a) avoiding the production of waste (b) minimising waste production (c) reusing waste (d) recycling waste (e) recovering part of the waste for re-use (f) treating waste to reduce the potentially degrading impacts (g) disposing of waste in an environmentally sound manner.	✓	2.10	Waste will be managed in accordance with the waste management hierarchy and an environmental management plan. Treatment and management of solid and liquid wastes will prevent undesired impacts on the environment. Any waste will be disposed of safely in accordance with South Australian regulations and spill kits will be provided in hazardous material storage areas.
P2.	The storage, treatment and disposal of waste materials from any development should be achieved without risk to health or impairment of the environment.	✓	2.10	

No	Objective / Principle	Not at variance	DA Ref.	Response
P3.	Development should avoid the discharge or deposit of waste (including wastewater) onto land or into any waters (including processes such as seepage, infiltration or carriage by wind, rain, sea spray, stormwater or by the rising of the water table) or areas that are subject to inundation by a 1-in-100 year average return interval flood event or areas that are subject to inundation by a 1-in-100 year average return internal flood event.	N/A		Waste generated during the construction or operational phase is not anticipated to be discharged or deposited onto land or into any waters. Any waste will be disposed of safely in accordance with South Australian regulations and spill kits will be provided in hazardous material storage areas.
P4.	Untreated waste should not be discharged to the environment, and in particular to any water body.	✓	2.10	A waste storage area will be located in the Project area, where waste will be stored and removed by licenced waste contractors.
P5.	Development should include appropriately sized area to facilitate the storage of receptacles that will enable the efficient recycling of waste.	✓	2.10	The waste storage area will include an area for recyclable material only.
P6.	Development that involves the production and/or collection of waste and/or recyclable material should include designated collection and storage area(s) that are: (a) screened and separated from adjoining areas (b) located to avoid impacting on adjoining sensitive environments or land uses (c) designed to ensure that wastes do not contaminate stormwater or enter the stormwater collection system (d) located on an impervious sealed area graded to a collection point in order to minimise the movement of any solids or contamination of water (e) protected from wind and stormwater and sealed to prevent leakage and minimise the emission of odours (f) stored in such a manner that ensures that all waste is contained within the boundaries of the site until disposed of in an appropriate manner.	✓	2.10	Appropriate management measures will be implemented for designated waste storage and collection areas.
Wastewater				
P7.	The disposal of wastewater to land should only occur where methods of wastewater reduction and reuse are unable to remove the need for its disposal, and where its application to the land is environmentally sustainable.	✓	2.9	Operational wastewater management is expected to use septic tanks, but may use an approved on-site wastewater treatment system if appropriate.
P8.	Land use activities which produce strong organic, chemical or other intractable wastes, or require the storage of bio-chemicals or chemical agents should not be established on land shown to be at risk of inundation by flood waters.	N/A		The Project will not include activities which will produce strong organic, chemical or other intractable wastes, or require the storage of bio-chemicals or chemical agents.
P9.	Wastewater lagoons should not be sited in any of the following areas:	N/A		No wastewater lagoons are proposed.

No	Objective / Principle	Not at variance	DA Ref.	Response
	(a) within land subject to a 1-in-100-year average return interval flood event (b) within 50 metres of the top of the bank of a watercourse (c) within 500 metres of the coastal high-water mark (d) where the base of the lagoon would be below any seasonal water table.			
P10.	Artificial wetland system for the storage of treated wastewater, such as wastewater lagoons, should be: (a) sufficiently separated from adjoining sensitive uses to minimise potential adverse odour impacts. (b) sited and designed to minimise potential public health risks arising from the breeding of mosquitoes.	N/A		No wastewater treatment on site is proposed.
Waste Treatment Systems				
P11.	Development that produces any sewage or effluent should be connected to a waste treatment system that complies with (or can comply with) the relevant public and environmental health legislation applying to that type of system.	✓	2.9	Operational wastewater management is expected to use septic tanks, but may use an approved on-site wastewater treatment system if appropriate.
P12.	The methods for, and siting of, effluent and waste storage, treatment and disposal systems should minimise the potential for environmental harm and adverse impacts on: (a) the quality of surface and groundwater resources (b) public health (c) the amenity of a locality (d) sensitive land uses.	✓	2.9	If an approved on-site wastewater treatment system is used, these criteria will be met
P13.	Waste treatment should only occur where the capacity of the treatment facility is sufficient to accommodate likely maximum daily demands including a contingency for unexpected high flows and breakdowns.	✓	2.9	
P14.	Any on-site wastewater treatment system/ re-use system or effluent drainage field should be located within the allotment of the development that it will service.	✓	2.9	
P15.	A dedicated on-site effluent disposal area should not include any areas to be used for, or could be reasonably foreseen to be used for, private outdoor open space, driveways, car parking or outbuildings.	✓	2.9	If an approved on-site wastewater treatment system is used, it will not be located in any of the listed areas.
P16.	The spreading or discharging of treated liquid or solid waste onto the ground should only occur where the disposal area consists of soil and vegetation that has the capacity to store and use the waste without contaminating soil or surface or ground water resources or damaging crops.	N/A		Operational wastewater management is expected to use septic tanks, but may use an approved on-site wastewater treatment system if appropriate. It is not known at this time if spreading or discharge of solids will be required.

No	Objective / Principle	Not at variance	DA Ref.	Response
P17.	Industrial and commercial development should, where practicable, incorporate systems which enable the collection and reuse of treated effluent for irrigation or other suitable purposes on or off the site.	N/A	2.9	The Project will not be on a scale which will allow sufficient collection and reuse of treated effluent for irrigation or other suitable purposes on or off the site.
P18.	Animal keeping activities which includes the transport and handling of livestock should be provided with appropriate areas for washing of transport vehicles.	N/A		The Project does not involve animal keeping.
P19.	Stock slaughter works, poultry processors, saleyards, piggeries, cattle feedlots, milking sheds, milk processing works, fish processing works, wineries, distilleries, tanneries and fellmongeries, composting works and concrete batching works should have a wastewater management system that is designed so as not to discharge wastes generated by the premises: (a) into any waters (b) onto land in a place where it is reasonably likely to enter any waters by processes such as: (i) seepage (ii) infiltration (iii) carriage by wind, rain, sea spray, or stormwater (iv) the rising of the watertable.	N/A		The project does not relate to provision of these types of facilities.
P20.	Winery waste management systems should be designed to ensure: (a) surface runoff does not occur from the wastewater irrigation area at any time (b) wastewater is not irrigated onto waterlogged areas, land within 50 metres of a creek, or swamp or domestic or stock water bore, or land subject to flooding, steeply sloping land, or rocky or highly permeable soil overlaying an unconfined aquifer (c) wastewater is not irrigated over an area which is within 50 metres of any residence on neighbouring land or 10 metres of any type of publicly owned land (d) wastewater is released using low trajectory low pressure sprinklers, drip irrigators or agricultural pipe, and is not sprayed more than 1.5 metres into the air or in fine droplets if there is a potential for the spread of diseases from the wastewater (e) stormwater run-off from areas which are contaminated with grape or grape products is drained to winery waste management systems during vintage periods (f) stormwater from roofs and clean hard paved surfaces is diverted away from winery waste management systems and disposed of in an environmentally sound manner or used for productive purposes.	N/A		The project does not relate to provision of these types of facilities.

No	Objective / Principle	Not at variance	DA Ref.	Response
Waste Management Facilities				
N/A – The proposal does not constitute a waste management facility.				

Table 2 – Response to the Light Regional Council Development Plan – Primary Production Zone

No	Objective / Principle	Not at variance	DA Ref.	Response
Primary Production Zone				
Objectives				
O1.	The long-term continuation of primary production.	✓	2.2	RES has entered into an agreement with the landowner to lease part of the land parcel for the Project. The location of the Project will not hinder continuation of primary production on the northern part of the land parcel.
O2.	Economically productive, efficient and environmentally sustainable primary production.	N/A		The Project does not include primary production. The use of this land for a use other than primary production will not adversely affect the region or local landowners.
O3.	Allotments of a size and configuration that promote the efficient use of land for primary production.	N/A		The Project does not involve primary production.
O4.	Protection of primary production from encroachment by incompatible land uses and protection of scenic qualities of rural landscapes.	✓	8.1	The battery energy storage system will be constructed on land which is currently used for cropping and grazing. It is not expected to impact on the natural, rural character and scenic features of the zone.
O5.	Accommodation of wind farms and ancillary development	✓	8.1	The Project does not involve wind farms and ancillary development. The project involves development of an energy storage facility and is located in an area that maximises the generation and supply of electricity. It will have access to existing power transmission infrastructure.
O6.	Development that contributes to the desired character of the zone.	✓	8.1	The Project will take advantage of existing infrastructure in the area and further develop this to establish an energy storage source for South Australia
Desired Character				
DC	Preservation of rural and landscape character with farming on large properties, designated areas for horticulture, limited additional dwellings, minimal non-agricultural development and retention of natural vegetation.	✓	8.4	The Project will not impact on the surrounding character of the region.
DC	Preservation of the extensive dune fields of sand and associated vegetation located in the vicinity of Ward Belt.	N/A		The Project is not located in the vicinity of the Ward Belt.
DC	Protection of the Light, North Para and Gawler Rivers from incompatible development and pollution, and their recognition as natural resources of significant value to the district as a pleasant rural contrast to the surrounding countryside and a permanent supply of fresh water.	N/A		The Project is not located near the Light, North Para and Gawler Rivers.
DC	Preservation of the white quartz sand reserves occurring north of Freeling and the brick clays west of Freeling as significant mineral resources.	N/A		The Project site is not located in white quartz sand reserves.

Table 2 – Response to the Light Regional Council Development Plan – Primary Production Zone

No	Objective / Principle	Not at variance	DA Ref.	Response
DC	Development that takes into consideration the limited physical and social infrastructure such as all-weather roads, public utilities and community facilities in the area.	✓	8.5	RES with work with Council to upgrade and maintain Power Road during construction and operation of the Project.
DC	Wind farms and ancillary development such as substations, maintenance sheds, access roads and connecting power-lines (including to the National Electricity Grid) are envisaged within the zone and constitute a component of the zone's desired character. These facilities will need to be located in areas where they can take advantage of the natural resource upon which they rely and, as a consequence, components (particularly turbines) may need to be: • located in visually prominent locations such as ridgelines • visible from scenic routes and valuable scenic and environmental areas • located closer to roads than envisaged by generic setback policy. This, coupled with the large scale of these facilities (in terms of both height and spread of components), renders it difficult to mitigate the visual impacts of wind farms to the degree expected of other types of development. Subject to implementation of management techniques set out by general / council wide policy regarding renewable energy facilities, these visual impacts are to be accepted in pursuit of benefits derived from increased generation of renewable energy	✓	2.0, .4	The project involves development of a renewable energy facility and will benefit the environment, the community and the state. The Project is located in an area that maximises the storage of electricity. It will have access to existing power transmission infrastructure. All infrastructure for the battery energy storage system project will be located on the plains and not in visually prominent locations such as scenic routes.
Principles of Development Control				
Land Use				
P1	The following forms of development are envisaged in the zone: • bulk handling and storage facility • commercial forestry except where it is located within **Precinct 18 Kapunda Fringe** • farming • farm building • horticulture where it is located within **Barossa Valley Region Policy Area 2, Precinct 16** Horticulture or **Precinct 17 Market Garden** • light industry and service industry associated with the processing, packaging and distribution of produce where it is located within **General Farming Policy Area 3** • small scale tourist accommodation (including through the diversification of existing farming activities and conversion of farm buildings).	N/A		The Project is not located in the list of envisaged activities for the Zone, therefore it is not expected to impact on any of the listed activities.

Table 2 – Response to the Light Regional Council Development Plan – Primary Production Zone

No	Objective / Principle	Not at variance	DA Ref.	Response
	• wind farm and ancillary development **outside of the Barossa Valley Region Policy Area 2** and **Precinct 19 Marananga Seppeltsfield Fringe** • wind monitoring mast and ancillary development outside of the **Barossa Valley Region Policy Area 2** and **Precinct 19 Marananga Seppeltsfield Fringe** • winery where it is located within the **Barossa Valley Region Policy Area 2**.			
P2	Development listed as non-complying is generally inappropriate.	N/A		Battery energy storage system facilities are not included in the list of non-complying Development.
P3	Wind farms and ancillary development should be located in areas which provide opportunity for harvesting of wind and efficient generation of electricity and may therefore be sited: (a) in visually prominent locations (b) closer to roads than envisaged by generic setback policy.	✓	8.4	The Project does not involve wind farms but involves development of an energy storage facility. All infrastructure for the battery energy storage system project will be located on the plains and the topography and surrounding vegetation will limit the direct line of sight to residents and road users.
P4	Industry and warehousing should only be developed if it supports primary production, processing, storage and distribution of local primary produce or products produced on the same site, and should be developed where: (a) it has a direct relationship with primary production (b) it is unlikely to limit or inhibit the use of adjoining land for primary production (c) the particular use requires a site in proximity to a particular natural resource or other product or materials sourced from the locality (d) it will not result in the alienation of land or water resources identified as significant for primary production or ecological reasons (e) the use would be inappropriate within a township. (f) the capacity of the infrastructure, including roads, is capable of supporting the use without detriment to existing users	✓		The battery energy storage system project is not expected to impact or limit access to surrounding land users.
P5.	A dwelling should only be developed if it achieves (a) or (b): (a) it involves the conversion of a Local Heritage Place place listed in *Table Lig/8 - Local Heritage Places* or a State Heritage Place listed in *Table Lig/9 - State Heritage Places* (b) there is a demonstrated connection with farming or other primary production and it achieves all of the following: (i) the location of the dwelling will not inhibit the continuation of farming, other primary production or other development that is in keeping with the provisions of the zone (ii) it is located more than 500 metres from an existing intensive	N/A		The Project does not involve a dwelling.

Table 2 – Response to the Light Regional Council Development Plan – Primary Production Zone

No	Objective / Principle	Not at variance	DA Ref.	Response
	animal keeping operation unless used in association with that activity (iii) it does not result in more than one dwelling per allotment.			
P6.	Non-agricultural development should be limited to maximise farm productivity and horticultural productivity and prevent incremental erosion of the existing landscape character.	✓	2.2	RES has entered into an agreement with the landowner to lease part of the land parcel for the Project. The location of the Project will not hinder continuation of primary production on the northern part of the land parcel. Erosion management controls will be implemented so that surrounding land will not be affected.
P7	Tourist accommodation should not be converted to dwellings and should be designed to preclude the conversion of buildings into dwellings such as through shared facilities, common utility services, grouped accommodation and/or shared parking.	N/A		The Project does not include tourist accommodation.
P8	A shop should be: (a) ancillary to primary production or processing uses, or tourist accommodation or other tourist development (b) located on the same site as the primary use.	N/A		The Project does not include a shop.
Form and Character				
P9	Development should not be undertaken unless it is consistent with the desired character for the zone.	✓	8.4	Battery Storage Systems specifically are not described in the desired character for the zone, however it is not expected that the development of this facility will impact on the Desired Character. Wind farms and ancillary development (e.g. batteries) are envisaged.
P10	Development should not occur within 500 metres of a National Park, Conservation Park, Wilderness Protection Area or significant stands of native vegetation if it will increase the potential for, or result in, the spread of pest plants.	N/A		There are no National Parks, conservation or protection areas are within close proximity to the Project.
P11.	Development should provide an access way of at least 3 metres wide that provides access for emergency vehicles to the rear of the allotment.	✓	2.4, 8.5	An access road will be constructed around the battery storage containers which will allow access for large trucks as well as emergency vehicles.
P12.	Buildings should primarily be limited to farm buildings, a detached dwelling associated with primary production on the allotment and residential outbuildings that are: (a) grouped together on the allotment and set back from allotment boundaries to minimise the visual impact of buildings on the landscape as viewed from public roads (b) screened from public roads and adjacent land by existing vegetation or landscaped buffers.	N/A		The Project does not involve farm buildings, detached buildings associated with primary production or residential buildings.
P13.	Native vegetation, including the full range of tree, understorey and groundcover species, should be retained and managed so as to maintain and enhance its environmental values and functions,	✓	7.0	An ecological assessment of the site did not identify any native vegetation.

Table 2 – Response to the Light Regional Council Development Plan – Primary Production Zone

No	Objective / Principle	Not at variance	DA Ref.	Response
	including conservation, biodiversity and habitat, and minimisation of dry land salinity.			

Appendix G Section 49 Endorsement

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Government of South Australia

Department for Energy and Mining

Our Ref: DEMC19/00465

Mr Marcus Keller
Head of Energy Storage
RES Australia Pty Ltd
Suite 4 Level 1 760 Pacific Highway
CHATSWOOD NSW 2067

Via acantin@jbsg.com.au

Dear Mr Keller

CROWN SPONSORSHIP TEMPLERS BATTERY ENERGY STORAGE SYSTEM (BESS)

Thank you for your letter of 7 March 2019, requesting Crown Sponsorship under section 49 of the *Development Act 1993* to assist with RES Australia's (RES) proposed Templers BESS Project (Project).

The Project has been considered within the South Australian Department for Energy and Mining (DEM) with input from the Department of Planning, Transport and Infrastructure, the Department for Environment and Water, and the Environmental Protection Agency. In principle, the Project is supported, recognising the possible environmental and community issues that will need to be addressed through the development assessment process.

On balance, the development of the Project has the potential to benefit South Australia and can be considered public infrastructure. Accordingly I, as Chief Executive of the DEM, will support the development and specifically endorse the Development Application to construct the Project comprising up to 30MW/30MWh of battery storage as a development of public infrastructure as required by section 49 of the *Development Act 1993* (the Act).

It is the responsibility of RES to prepare all documentation as required by section 49 of the Act. All costs in the preparation of the Development Application, lodgement and any other subsequent action in relation to this Application are the responsibility of RES.

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

The DEM makes no representations and gives no warranties in relation to the outcome of the Development Application or time that it takes to secure a planning outcome. It is the responsibility of RES to obtain all other statutory approvals, licences, connection agreements and permits from relevant authorities, manage community expectations and to fund the Project. The South Australian Government makes no commitment to purchase any product or service related to the Project.

A Development Application under this Crown sponsorship must be lodged with the State Planning Commission and is valid for 12 months from the date of this letter. If this is not achieved by that time, my support under Section 49(2)(c) of the *Development Act 1993* for the Project will lapse.

If you have any questions regarding the preparation of the material to support this section 49 application, please contact Mr Mark Jackson on (08) 8429 2722 or via email: mark.jackson@sa.gov.au.

Yours sincerely

Paul Heithersay
CHIEF EXECUTIVE

3 / 5 / 2019

SOUTH AUSTRALIA

Appendix H Certificate from the Technical Regulator

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Government of South Australia
Department for Energy and Mining

Ref: 2017/01873.01 D19012554

Energy and Technical Regulation

Office of the Technical Regulator

Level 8, 11 Waymouth Street
Adelaide SA 5000

GPO Box 320
Adelaide SA 5001

Telephone: 08 8226 5500
Facsimile: 08 8226 5866

www.sa.gov.au/otr

12 February 2019

Martin Hemphill
Grid Commercial and Strategy Manager
RES Australia
Suite 4, L1, 760 Pacific Highway
CHATSWOOD NSW 2067
martin.hemphill@res-group.com

Dear Martin,

RE: CERTIFICATE FOR DEVELOPMENT OF THE TEMPLERS BATTERY ENERGY STORAGE SYSTEM PROJECT

The development of TEMPLERS BATTERY ENERGY STORAGE PROJECT has been assessed by the Office of the Technical Regulator (OTR) under Section 37 of the Development Act 1993.

The *Development Regulations 2008* prescribes if the proposed development is for the purposes of the provision of electricity generating plant with a generating capacity of more than 5 MW that is to be connected to the State's power system – a certificate from the Technical Regulator is required, certifying that the proposed development complies with the requirements of the Technical Regulator in relation to the security and stability of the State's power system.

In making a decision on your application, our office has taken the following information into account:

- Your initial application for an OTR Certificate, emailed to the OTR on 4 February 2019;
- Your email dated 12 February 2019 to clarify questions with regards to an erroneous reference to the "Twin Peaks Windfarm"

After assessing the information provided, I advise that approval is granted for the proposed project.

Should you have any questions regarding this matter, please do not hesitate to call Reinhard Struve on (08) 8429 3306.

Yours sincerely

Rob Faunt
TECHNICAL REGULATOR

Energy and Technical Regulations

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