



APPLICATION ON NOTIFICATION – CROWN DEVELOPMENT

Applicant:	Neoen Australia Pty Ltd
Development Number:	354/V003/18
Nature of Development:	Crystal Brook Energy Park - Hybrid renewable energy project comprising a wind farm (26 turbines with a capacity up to 125MW), a solar farm (400,000-500,000 solar panels with a capacity up to 150MW), an energy storage facility (Lithium-ion battery with a capacity up to 130MW / 400MWh) and associated infrastructure for connection to the electricity grid (including a 33kV/275kV substation and a 300m long 275kV transmission line between the substation and the 275kV Para-Bungama transmission line). The energy storage facility (and substation, operations & maintenance building and storage facilities) would be located on a separate site (Lot 56 Collaby Hill Road), with the wind farm and solar farm sites connected to the battery site via an underground transmission line comprising 33kV cables. Crystal Brook Energy Park -
Type of development:	Crown development
Zone / Policy Area:	Primary Industry Zone - Port Pirie Regional Council
Subject Land:	32 allotments, approximately 3.5km north of Crystal Brook and 23km south-east of Port Pirie.
Contact Officer:	Lee Webb
Phone Number:	7109 7066
Start Date:	31 May 2018
Close Date:	29 June 2018
<p>During the notification period, hard copies of the application documentation can be viewed at the Department of Planning, Transport and Infrastructure, Level 5, 50 Flinders Street, Adelaide during normal business hours. Application documentation may also be viewed during normal business hours at the local Council office (if identified on the public notice).</p>	

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

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

Postal Address:

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

Street Address:

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

Email Address: scapreps@sa.gov.au

Fax Number: (08) 8303 0753

DEVELOPMENT APPLICATION FORM

PLEASE USE BLOCK LETTERS

COUNCIL: Port Pirie Regional Council

APPLICANT: Neoen

Postal Address: Level 6 16 Marcus Clarke Street
Canberra, ACT

Owner: _____

Postal Address: _____

BUILDER: _____

Postal Address: _____

_____ Licence No: _____

CONTACT PERSON FOR FURTHER INFORMATION

Name: Luke Griffiths

Telephone: 08 8111 6547 [work] _____ [Ah]

Fax: _____ [work] _____ [Ah]

EXISTING USE: Primary Production

FOR OFFICE USE

Development No: _____

Previous Development No: _____

Assessment No: _____

<input type="checkbox"/> Complying <input type="checkbox"/> Non Complying <input type="checkbox"/> Notification Cat 2 <input type="checkbox"/> Notification Cat 3 <input type="checkbox"/> Referrals/Concurrences <input type="checkbox"/> DA Commission	Application forwarded to DA Commission/Council on / / Decision: _____ Type: _____ Date: / /
---	--

	Decision required	Fees	Receipt No	Date
Planning: _____	_____	_____	_____	_____
Building: _____	_____	_____	_____	_____
Land Division: _____	_____	_____	_____	_____
Additional: _____	_____	_____	_____	_____
Development Approval				

Development of a wind and solar electricity generating plant, energy storage facility

DESCRIPTION OF PROPOSED DEVELOPMENT: and associated infrastructure.

LOCATION OF PROPOSED DEVELOPMENT: Collaby Hill Road, Crystal Brook SA 5523

Multiple allotments proposed, list in Appendix A of Volume 1 Development Assessment Report
 House No: _____ Lot No: _____ Street: _____ Town/Suburb: _____

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

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

LAND DIVISION:

Site Area [m²] _____ Reserve Area [m²] _____ No of existing allotments _____

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

BUILDING RULES CLASSIFICATION SOUGHT: _____ Present classification: _____

If Class 5,6,7,8 or 9 classification is sought, state the proposed number of employees: Male: _____ Female: _____

If Class 9a classification is sought, state the number of persons for whom accommodation is provided: _____

If Class 9b classification is sought, state the proposed number of occupants of the various spaces at the premises: _____

DOES EITHER SCHEDULE 21 OR 22 OF THE DEVELOPMENT REGULATIONS 2008 APPLY? YES NO

HAS THE CONSTRUCTION INDUSTRY TRAINING FUND ACT 2008 LEVY BEEN PAID? YES NO

DEVELOPMENT COST [do not include any fit-out costs]: \$ 65,550,000

I acknowledge that copies of this application and supporting documentation may be provided to interested persons in accordance with the Development Regulations 2008.

SIGNATURE: _____  _____

Dated: 29 / 3 / 2018



Neoen Australia Pty Ltd
Crystal Brook Energy Park - Development Application
Volume 1 - Project Description and Impact Assessment
Findings

March 2018

Executive summary

Introduction

Neoen Pty Ltd (Neoen) have lodged a Development Application with the South Australian State Commission Assessment Panel (SCAP) seeking approval for a hybrid renewable energy project located approximately 3.5 kilometres north-east of Crystal Brook township and approximately 23 kilometres southeast of Port Pirie. This project comprises three primary energy elements: energy storage in the form of a battery, a solar farm and a wind farm as shown in Figure 1-1. The project may also eventually include a hydrogen production plant component utilising some of the power produced by the facility (see further below). The application will be assessed by the SCAP under Section 49 of the Development Act (1993).

In accord with the Crown Sponsorship grant, Neoen are seeking approval for the use of the nominated land for the installation of an energy storage facility (up to 130MW and up to 400MWh), a solar farm (up to 150MW), a wind farm (up to 125MW) and associated infrastructure connected to the national grid. The exact balance of MW up to these maximums will depend on the final design and the need to balance arrangements between the technologies.

The project also includes other supporting buildings, infrastructure and structures (substation, below ground cabling, access tracks and management and monitoring facilities). These are necessary for the ongoing operation and maintenance of the development.

The combination of solar and wind generation extends the overall duration of electricity generation over longer periods of the day and night and over seasonal variations. The battery combined with both the solar and wind generation can provide a smoother, more predictable supply of electricity to the grid. Operating together, these three technologies represent a renewable energy supply of approximately 275 + 130MW with the ability to store and dispatch energy to the grid during peak times of demand.

Finally, as announced by the South Australian Government on 7 March 2018, Neoen has been awarded a grant from the South Australian Government to conduct economic and technical feasibility studies for a potential hydrogen production plant at the Crystal Brook site. Further, the South Australian Government has allocated \$24 million in grant and loan funding for construction of the facility pending a successful result from the feasibility study. Neoen notes that as this component of the project is in its infancy and feasibility has not yet been established, let alone technology suppliers selected, it is not yet possible to specify the final shape of the hydrogen facility with a sufficient degree of precision for a Development Application. However, as the public announcement of funding has been made, Neoen wishes to ensure transparency and ensure that all stakeholders are aware of what development is ultimately intended to be proposed for the site. Neoen therefore wishes to flag its intention to SCAP to submit either a variation to this Development Application or a separate Development Application (as appropriate) at a later date setting out a proposal for a hydrogen production facility. This variation or subsequent DA is likely to be via the section 49 *Development Act State* sponsorship process, subject to the agreement of the South Australian Department of Premier and Cabinet.

Documentation structure

The Development Application package comprises two Volumes containing the relevant information for the assessment of this project under the *Development Act 1993* as well as

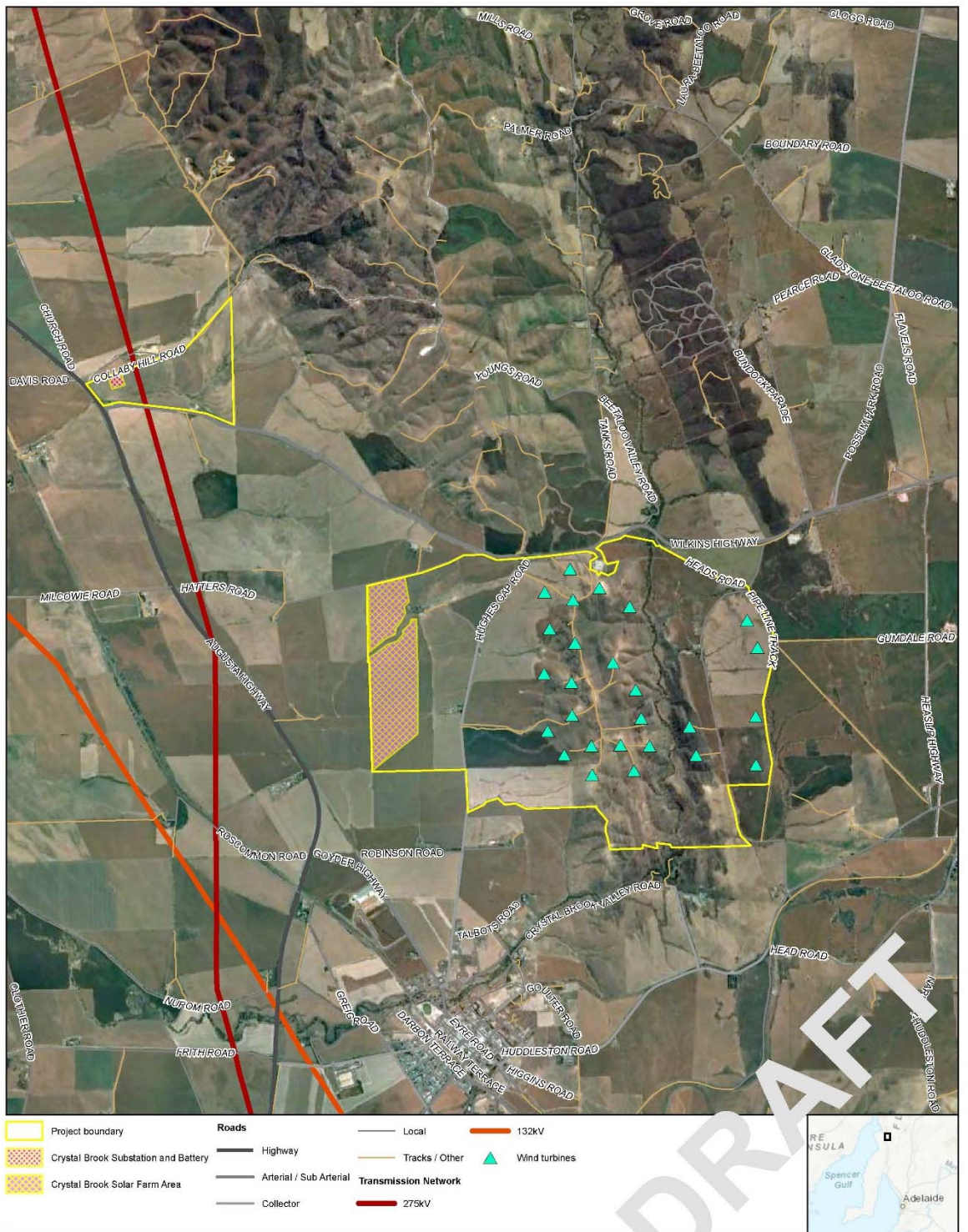
background information and context. The package has been split into two volumes to enable easier referencing between the project description and the specialist studies.

Volume 1 – Project Description and Approach

- An overview of the project (including a description of project elements that are both permanent and construction phase)
- Context for the project including how the site was selected and how the development relates to the relevant policy and strategic priorities (nationally and for the State)
- Assessment of impacts (e.g. flora and fauna, noise) and documentation of commitments to impact management.

Volume 2 – Specialist Studies

- A summary of the key findings of the specialist studies.
- Copies of the relevant specialist studies and assessments undertaken for the project.



Paper Size A3
 0 0.4 0.8 1.2 1.6 2
 Kilometres
 Map Projection: Transverse Mercator
 Horizontal Datum: GDA 1994
 Grid: GDA 1994 MGA Zone 54

Neoen Australia Pty. Ltd.
 Crystal Brook

Job Number: 33-18328
 Revision: A
 Date: 27/03/2018

Project Elements

180 Lonsdale Street Melbourne VIC 3000 T 61 3 8687 8000 F 61 3 8687 8111 E mel@mail@ghd.com W www.ghd.com.au
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 Service Layer Credits: Sources: Esri, HERE, Garmin, Mapbox, Microsoft, P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), Swisstopo, © OpenStreetMap contributors, and the GIS User Community

Figure 1-1 Project elements

Figure 2

Background

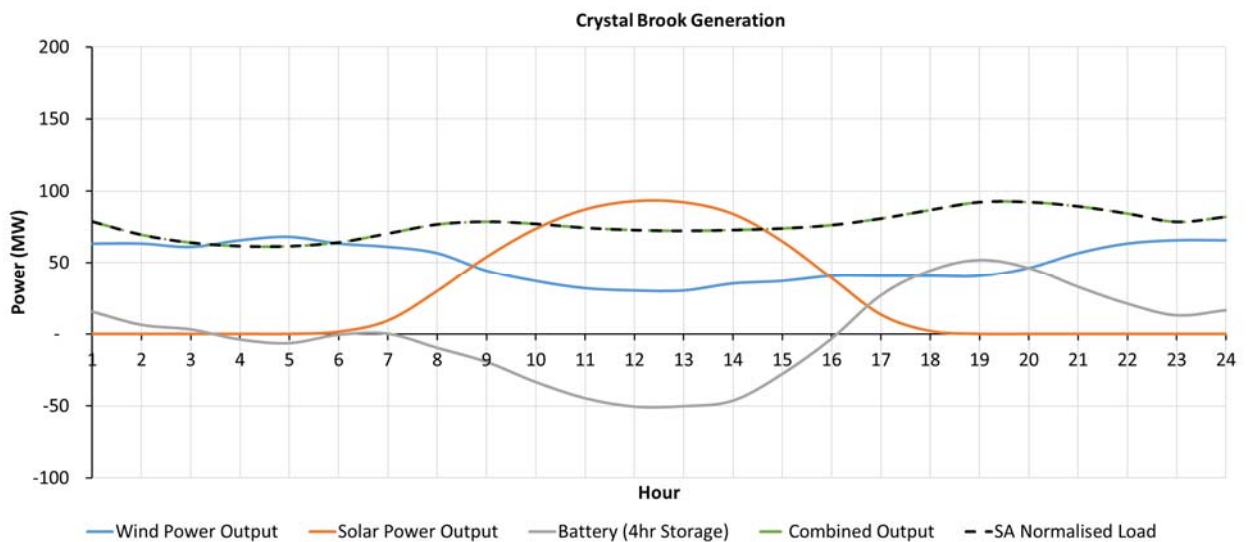
The wind resource at Crystal Brook has been investigated on a number of occasions, starting with monitoring in the early 2000s by Origin Energy. While the wind resource in this area is well known, two previous concepts, one emerging in 2009 and another in 2012 were not progressed due to a range of commercial, economic and political factors.

Origin ceased development of the project in 2012. In 2016, a key involved landowner reignited interest in the project, also identifying the opportunity to include a solar component. This landowner, along with a group of other previously landholders previously approached by Origin, requested expressions of interest from renewable energy developers to participate in a competitive tender process, and ultimately selected Neoen as their preferred project partner.

Improvements in energy storage technology and the need for less variable sources of renewable energy generation in South Australia (along with the requirements of the Office of the Technical Regulator to provide either fast frequency response or inertia capability) have since caused Neoen to examine the possibility of including a large battery storage component in the project.

Neoen are now seeking approval for this combined wind, solar and storage project. The combination of all three elements is critical to its performance: each has been carefully sized to provide a generation profile closely matching South Australian consumers' load profile. If approved, this project will be one of the largest and most innovative renewable facilities in the world, providing one of the first examples of 'baseload renewables'.

The graph below reflects an approximate idea of the correlation between generation at the Crystal Brook Energy Park and South Australian load.



Project evolution

Neoen have approached the development of this project in a staged and logical manner in order to identify critical impacts early, with a view to avoiding or manage these impacts. These critical level impacts include avoiding:

- problems with future farming operations
- significant stands of native vegetation
- noise and shadow flicker impacts above the recommended standards
- known aboriginal heritage (which must be kept confidential)
- unsafe access arrangements.

The proposed project and the layout of its components have been reviewed and adapted several times in the light of landowner, impact assessment and community feedback. This has included siting of the solar farm in a location that is most amenable to the current landowner's operations.

Neoen have also undertaken extensive community consultation which has identified a number of differing views within the community. As far as possible, Neoen have aimed to provide a balance between those in favour of the project and those opposed, and this has ultimately led to a reduction in turbine numbers from 54 to 26.

Commitment to managing impacts

Where known impacts cannot be avoided, Neoen is committed to managing impacts in order to minimise them. This is detailed in Chapters 6 and 7.

It is recognised that some impacts will need to be managed at the micro-scale. This level of detailed impact management can only be achieved through appropriate management plans that can be adapted to the specific location and timing of the impact. This is a standard and well recognised approach to dealing with impacts that are likely to occur but where the detail and degree of impact cannot be fully quantified at this point in time.

Accordingly, this application includes a draft version of the Construction Environment Management Plan (CEMP), which covers a range of likely construction impacts. This is a framework document that will provide direction to the construction contractors who are normally responsible for the preparation of the detailed CEMPs. Should this project be approved, it is normal practice that a condition of approval includes finalisation of the CEMP, which is undertaken by the construction contractor prior to construction.

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- Appendix B – Community Engagement & Feedback
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1. Introduction

1.1 Project overview

Neoen are seeking approval for the establishment of a hybrid renewable energy project and associated infrastructure (further details of this can be found in Section 3 of this report).

More specifically, Neoen are seeking approval for the use of the nominated land for the installation of up to 26 wind turbines, a solar PV farm and a battery facility. Subject to the outcome of a feasibility study conducted in partnership with the SA Government, Neoen also intends to submit a variation or separate Development Application at a latter date for a hydrogen production facility. Neoen has determined that it has insufficient technical information available at this time to incorporate the hydrogen component into the present application.

This 'associated infrastructure' includes other supporting buildings, infrastructure and structures (including access tracks, underground cabling, and management and monitoring facilities). These are necessary for the ongoing operation and maintenance of the development, as well as electricity generation and (potentially) production of hydrogen, and then transmission of this energy to the national grid (including above ground and underground transmission cabling and a substation).

1.2 The proponent

Neoen is an independent power producer specialising in renewable energy projects. The company is headquartered in Paris (France) and operates across renewable energy technologies, including solar, wind, battery storage and biomass with an experienced staff of around 120 employees. Outside of Paris the largest Neoen office is in Canberra, from which development, finance, operations and maintenance activities are coordinated. Neoen is a fully integrated renewable energy player with a genuine long-term approach.

Since its founding in 2008, Neoen expanded beyond its local market in France and currently has branches in Portugal (2010), Australia (2012), Mexico and Egypt (2013), Salvador (2014), Mozambique and Jordan (2015), Jamaica and Zambia (2016) and Argentina and the USA (2017). It is also actively developing projects in other African areas, in Central America, in the Pan-Caribbean region, in the Middle East and in the Asia-Pacific region.

Neoen's Australian subsidiary was opened in August 2012. In 6 years, Neoen Australia has initiated the development of over 1GW of solar and wind projects through organic growth, local partnerships and strategic acquisitions. Neoen's Australian projects include: the award winning 315MW Hornsdale Wind Farm, the largest generator in South Australia; the Hornsdale Power Reserve, the world's largest lithium-ion battery, the DeGrussa Solar Hybrid Project in Western Australia, several solar projects in NSW in the final stages of construction, and various other solar and wind projects across the National Energy Market (NEM) under development.

Neoen's business model is to build, own and operate its projects for their entire lifespan. Consequently, Neoen has always focused on delivering the best possible projects, built on strong technical expertise within the global team and on deep partnerships with local communities.

1.3 Community and stakeholder engagement

Neoen understands the importance of consulting with the community and key stakeholders from the beginning of a project, and has undertaken an extensive program of consultation at

Crystal Brook. A more detailed account of this community and stakeholder engagement is contained in Appendix B.

Commencing with the site selection phase of project development, Neoen undertook initial consultation with the landholder group who were the drivers behind the development of the project. This was then extended to neighbouring land holders and the nearby community and included one-on-one and group meetings.

In November 2016, a community Consultation Plan was developed and Neoen commenced its implementation. This included the first of a number of meetings with the Northern Areas and Port Pirie Councils.

The project web site was established in January 2017 and includes key project information, contact information and an on-line feedback form. In February 2017, once agreements had been finalised with the majority of involved landowners, the engagement process extended to neighbours within 3km of the project boundary and a range of other relevant stakeholders.

An initial Community Open Day was held in Feb 2017 and included the display of the draft preliminary layout, fact sheets, posters and photomontages from three different view points. At this time, Neoen also commenced engagement with the Beetaloo Valley Association (BVA), a group of approximately 43 landholders who live to the north-east of the project on small (non-primary production) landholdings. Some members of the BVA have been strongly opposed to the wind component of the project on various grounds such as visual impact, noise and infrasound.

In March and April 2017, Neoen commenced engagement with representatives of the Nukunu Peoples' Council. Neoen has a strong relationship with the Council, having worked with them on the Hornsdale Wind Farm located near Jamestown. In May/April, Neoen briefed the State members for Frome and Stuart and the Federal member for Grey.

Neoen considered feedback from members of the community and advice from expert consultants and responded by presenting a revised layout in April 2017. Neoen removed all turbines located in land zoned 'Landscape Protection Zone' under the Northern Areas Council Development Plan, and all turbines located north of Collaby Hill Road. In doing so, Neoen strove to respond to community concerns regarding the suitability of the Landscape Protection Zone for the development of renewable energy projects, reduced the visual impact on residents in the Beetaloo Valley, and avoided areas identified by our ecologists as having high conservation value.

Neoen presented the revised layout to the Port Pirie Council at its Ordinary General Meeting held on 26 April 2017. Also in April 2017, Neoen held a second meeting with the Beetaloo Valley Association to discuss Neoen's response to the initial questions posed by the Association, discuss the revised layout, and seek feedback on sharing benefits with the community.

Neoen has also consulted with numerous government agencies and departments, including the Environment Protection Authority, the Northern and Yorke Natural Resources Management Board, the Department of Defence, Air Services Australia and the Civil Aviation Services Authority.

A second Community Open Day was held in August 2017 to present the revised layout.

On 29 May 2017, Neoen received a letter from the Port Pirie Council noting that it had passed a resolution to oppose the revised layout, which still contained some turbines in the Ranges Zone to the north of the project. Council's primary concern was that it did not feel that wind turbines were consistent with the Development Plan in respect of this Ranges Zone. Verbally, Council informed Neoen that while landscape values were similar between this area and the

southern area of the project, it wished to retain the area north of the Wilkins Highway as a 'development buffer' for the Flinders Ranges 'proper' (that is, the more rugged, rocky escarpments significantly further to the north-west). It also noted that it had received various submissions from community members opposing turbines to the north (most likely the Beetaloo Valley Association).

Following this letter, Neoen paused further development activities to redesign the project. As part of this, all turbines north of the Wilkins Highway (over half of the original wind component) were removed. This also meant that approximately half of the original landholder group would no longer receive turbines on their land. These landholders were disappointed but understood the reasoning behind the decision.

To keep the project financially viable after this reduction in turbine numbers, Neoen has slightly increased the density of turbine placement in the south. It has also increased the size of the remaining turbines to a maximum tip height of 240m (due to a greater 'swept area' and the ability to access better wind speeds found at higher altitudes, larger turbines significantly improve energy yield and therefore project economics).

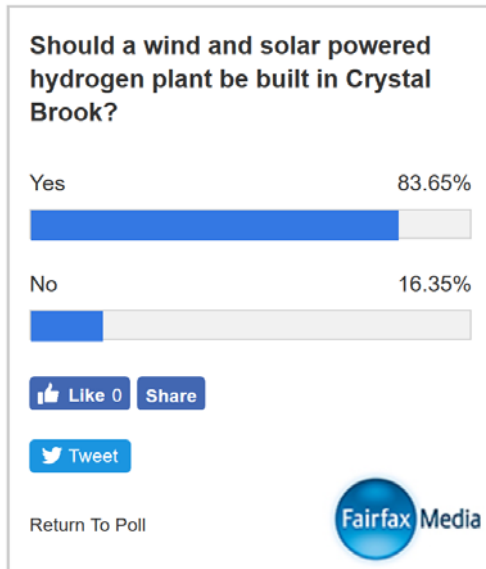
In early November 2017, Neoen met again with senior members of the Port Pirie Council (the Mayor, CEO and chief of planning) to discuss the redesigned project. The meeting was highly positive and these Council members expressed their in-principle support for the project (while noting that the Council as a whole had not yet formally voted on the revised design).

The redesign of the project also took into account concerns expressed by the Beetaloo Valley Association, with the result being that no BVA dwelling is any closer than 2.9km to a turbine, with the majority at a distance well over 5km.

On 8 March 2018, the South Australian Government announced that it was awarding Neoen \$1 million grant to conduct a hydrogen feasibility study for the Crystal Brook Energy Park, with a further \$4 million grant and \$20 million loan available for construction if the project is determined to be feasible.

On 13 March 2018, Neoen met again with representatives of the BVA to discuss the final revised layout and the hydrogen study. These representatives requested that the wind component of the project be removed entirely.

On 26 March 2018, Neoen held a third Community Open Day to present the final revised layout and some further details on the potential hydrogen option. This Community Open Day was well-attended by the community and key stakeholders including members of local and state government, and overall the reception of the project was positive. Local newspaper the *Port Pirie Recorder* ran a poll on whether the Energy Park and hydrogen facility should be built - as at 29 March 2018, respondents were over 83% in favour.



Source: <https://www.portpirirecorder.com.au/story/5271289/neoen-eyes-crystal-brook/?cs=5809>

1.3.1 Community Benefits

Throughout the development of Crystal Brook Energy Park, one of Neoen’s major priorities in engaging with communities has been to communicate the potential benefits of the project to local economies. These benefits can be divided into several categories:

- **Local employment** during construction (between 150-250 jobs for 1-2 years, depending on final sizing and the inclusion of hydrogen) and operation (between 10-40 locally based jobs for the life of the project, depending on final sizing and inclusion of hydrogen);
- Use of **local providers** for construction materials such as concrete and quarried rock;
- Indirect benefits to **local businesses** servicing the project workforce;
- Potential benefits to **tourism** (see, for example, the Hornsdale Power Reserve or ‘Tesla big battery’, which have become significant attractions to Jamestown);
- The **Crystal Brook Energy Park Community Fund** - an annual amount allocated to local causes (such as schools or local sports teams) by a committee of local stakeholders together with Neoen. The exact amount of this Fund will depend on final project sizing but is likely to be around \$80,000 per year for the life of the project.

As the project progresses, Neoen will take steps to seek feedback from community members as to how they would like this fund to be operated (for example, which persons or organisations should be on the allocation committee, or setting broad parameters for these allocations). Neoen’s experience with the Hornsdale Community Fund has been extremely positive and will form the basis for the set-up of the Crystal Brook Community Fund.

2. Site selection and description

2.1 Site selection

Neoen currently own and operate the Hornsdale Wind Farm, which is also associated with the Hornsdale battery. In addition to Hornsdale, Neoen has investigated a number of potential renewable energy sites across Australia and several of these are under development or construction. This experience has highlighted the importance of appropriate site selection based on a number of key criteria, namely:

- Evidence of strong wind and solar resources
- Proximity to national electricity grid infrastructure, mains water and mains gas (especially in the case of a potential hydrogen component)
- Topography and site characteristics (wind requires elevation while solar requires flat ground with minimal flood risk)
- Land availability
- Accessibility
- Distance from sensitive land uses.

To confirm a final layout, Neoen follows an iterative design development process, whereby the concept is refined as investigation reveals further information about the site. This includes consideration of a range of environmental assessments such as native vegetation, cultural heritage, noise, electromagnetic interference and landscape. It also includes landowner, community and local government feedback. The results of these assessments and especially the feedback have significantly influenced the final turbine layout for this project.

This final layout has been developed to achieve a balanced profile of solar and wind energy production on the site, whilst avoiding and minimising environmental, visual and noise impacts identified through consultation and specialist studies.

2.2 Locality features

The Crystal Brook development is in the southern-most portion of the Flinders Ranges, approximately 23 kilometres south-east of Port Pirie and 3.5 kilometres north-east of Crystal Brook in South Australia. The wider project area is bounded on the west by the Augusta/Princes Highway, the east by the Heaslip Highway, the north by the Wilkins Highway and then extending approximately 3.5km to the south. The area is located across Port Pirie Regional Council.

It encompasses an area of approximately:

- 20ha for the battery storage facility, the substation and the operation & maintenance compound
- 170ha of solar panels
- A total footprint of around 30ha for the wind turbines
- A footprint of up to 10ha for the hydrogen production facility and associated infrastructure (subject to confirmation).

Figure 2-1 provides an overview of the project location and site boundaries.

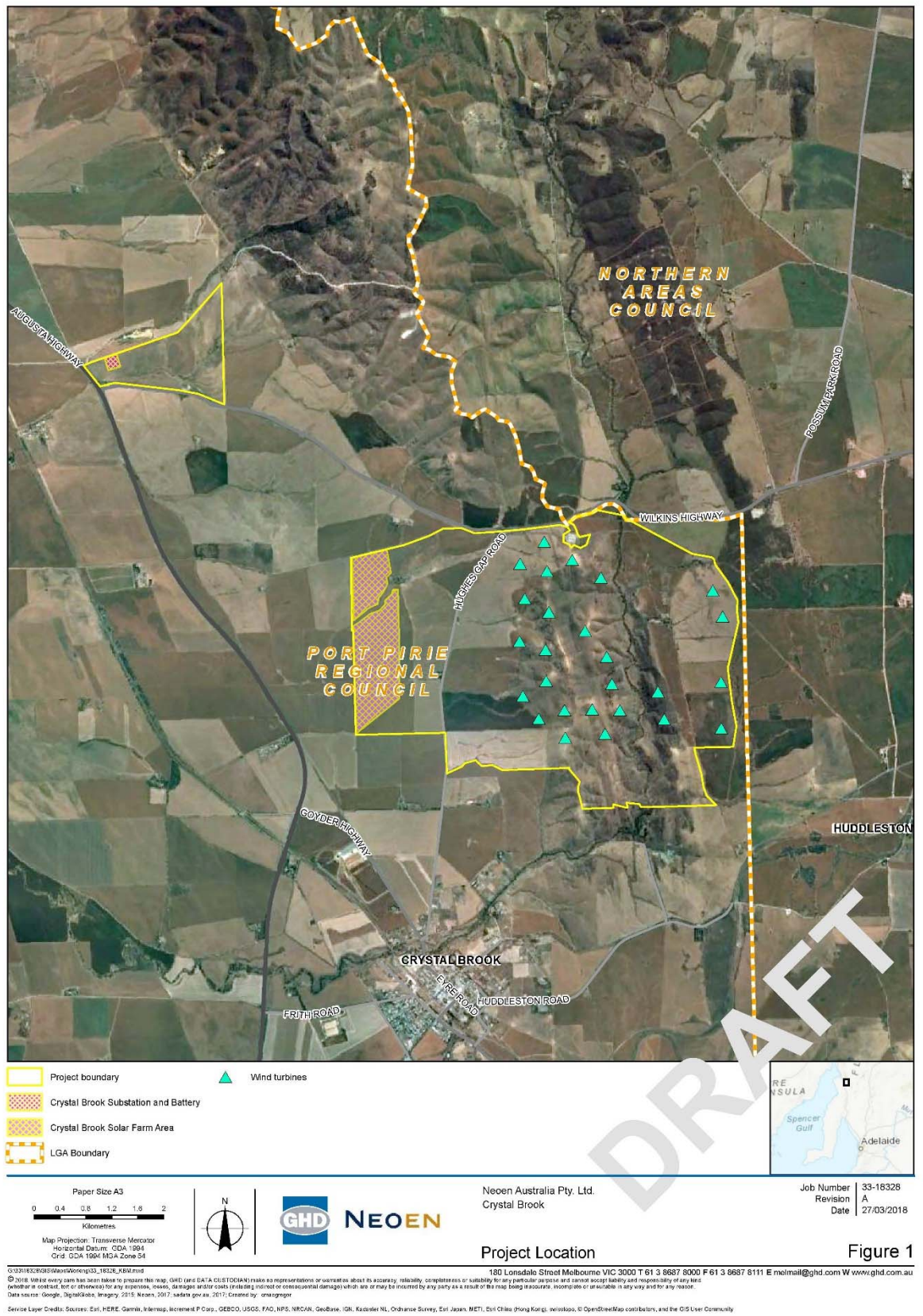


Figure 2-1 Project location

The project area experiences a wide variety of seasonal climatic conditions, typical to that throughout the Flinders Ranges with cold, wet winters and warm to hot, dry summers. The average rainfall at the site over a 10-year period is 592.5 mm per year (Philpott 2003).

The project area lies within the Northern Agricultural District. While the district has diverse animal and plant life and provides habitat for a wide range of both common and threatened species and communities (Graham et al. 2001), the vast majority of the region is used for agriculture. The project area comprises predominantly gently sloping land to the west, rising to the elevated undulating terrain of the ranges and valleys to the east. The land is primarily used for cropping and grazing along with areas of remnant woodland and grassland vegetation and contains numerous rocky outcrops. The flat western regions are heavily cleared while the higher terrain to the east and north has some remnant vegetation, particularly on the steeper slopes.

The general geology of the ranges is typically weathered rock (quartzite, sandstone and siltstone) with a thin veneer of clayey soils over this variably weathered rock. The presence of groundwater is likely to be subject to seasonal variations. These geological conditions mean that a specialised approach will be required for the establishment of suitable footings for the wind farm component of the project. A detailed regime of micro-siting at each turbine location will be required to achieve an appropriate balance between protecting native vegetation and establishing sound footings.

The soils and geotechnical conditions for the other elements of the project (i.e. storage facility, solar farm, substation and operation & maintenance facility) are less problematic. There are no unusual impediments to the establishment of appropriate footings and supporting slabs for these components of the project.

The population concentration is spread across rural properties and the main township of Crystal Brook (1295 people, approximately 3.5 km south of the development). The towns of Gladstone (to the north east) and Warnertown (to the north west) are the closest towns in proximity to the proposed development area.

The region's economic base comprises agriculture, forestry and tourism. Manufacturing, retail, education and other industries are concentrated in Port Pirie.

The Heysen Trail extends through the Crystal Brook township and then follows the Crystal Brook stream in a northerly direction, through the centre of the proposed development area.

2.3 Proposed development area description

The following table identifies the involved parcels of land which comprise the site of the propose development. The total area of the involved land parcels is approximately 3,300 ha. The land occupied by project assets and associated easements is less than 300ha, which represents less than 10% of the total area.

Table 2-1 Involved land parcels

Parcel ID	CT Reference	Element
D71212A99	CT6141/640	Wind turbines and associated plant, access tracks, underground cabling
H240800S8	CT5784/13	Wind turbines and associated plant, access tracks, underground cabling
H240800S9S	CT5608/107	Wind turbines and associated plant, access tracks, underground cabling

Parcel ID	CT Reference	Element
H240800S7	CT5607/243	Solar PV, inverters, MV transformers, underground cabling, access tracks
H240800S10	CT5504/187	Solar PV, inverters, MV transformers, underground cabling, access tracks
F48290A1	CT6006/298	Wind turbines and associated plant, access tracks, underground cabling
F48290Q4	CT6007/133	Wind turbines and associated plant, access tracks, underground cabling
F205394Q92	CT6183/620	Wind turbines and associated plant, access tracks, underground cabling
H240700S33	CT5404/285	Wind turbines and associated plant, access tracks, underground cabling
H240700S37	CT6007/134	Wind turbines and associated plant, access tracks, underground cabling
H240700S40	CT6007/134	Wind turbines and associated plant, access tracks, underground cabling
H240700S41	CT6007/133	Wind turbines and associated plant, access tracks, underground cabling
F48290A2	CT6007/133	Access tracks, underground cables
F48290A3	CT6007/133	Access tracks, underground cables
F205394A91	CT6183/620	Access tracks, underground cables
H240700S32	CT6007/134	Access tracks, underground cables
H240700S36	CT5404/285	Access tracks, underground cables
H240700S44	CT6007/133	Access tracks, underground cables
H240700S45	CT6007/113	Access tracks, underground cables
H240700S48	CT6007/113	Access tracks, underground cables
H240700S54	CT6006/296	Access tracks, underground cables
H240700S55	CT6007/113	Access tracks, underground cables
H240700S60	CT6006/296	Access tracks, underground cables
H240700S239	CR5758/745	Access tracks, underground cables
F16032A1	CT5476/921	Wind turbines and associated plant, access tracks, underground cabling
F188354A222	CT5566/295	Wind turbines and associated plant, access tracks, underground cabling
D92004A2	CT6129/985	Underground cables
H240800S23	CT5886/293	Underground cables
H240800S21SE	CT5886/162	Underground cables
F32100A10	CT5885/930	Underground cables
D20184A56	CT5883/929	Underground cables, access tracks, O&M facility and associated plant, lithium-ion battery storage facility

Parcel ID	CT Reference	Element
		and associated plant, substation, hydrogen production facility and associated plant, water pipeline, gas pipeline
D54869A550	CT5800/330	Underground cables, access tracks, water pipeline, gas pipeline

2.4 Project evolution

The general area of Crystal Brook/Collaby Hill has been the subject of considerable previous monitoring and investigation. The initial concept for the project (at the time, solely wind) was developed by a separate proponent (Origin) in 2009. Background documentation suggests that the original wind farm concept had been well developed, possibly to a stage that it was close to being lodged. However, due to various political, economic and internal reasons Origin withdrew from this project along with a number of others that were on their books at the time.

Between 2009 and 2012, Origin undertook thorough research of the project area comprising the following:

- a range of environmental investigations.
- a Regulatory Pathway and Gaps Analysis Report which identified planning and environmental issues and information gaps.
- input from relevant local and state government bodies as well as legal advice.
- a Planning Advice report that summarised work undertaken to date and provided recommendations on the next steps for seeking development approval.

Prior to these investigations being undertaken, the original area Origin proposed to develop was far more extensive. The revised area was developed in response to issues/recommendations that were identified in the environmental reports, which can be summarised as follows:

- The requirement to satisfy noise criteria at all residential locations
- Avoidance of significant flora and fauna in some locations
- Minimising the overall visual impact.

Following Origin's withdrawal from the wind farm project in 2012, key landowners progressed additional investigations which identified additional potential for a solar farm. The main landowner subsequently undertook an expression of interest process in order to identify a development partner for a combined solar and wind project.

In 2016, Neoen became the successful project partner for a storage, solar, wind project and were given access by Origin to the original investigations and findings.

2.4.1 Investigations approach

Following their appointment Neoen negotiated with Origin to obtain access to the previous studies and undertook a full evaluation of these studies. It is acknowledged that some considerable progress has been made since 2012 in relation to a number of impact issues, particularly associated with wind farm development. This is summarised in the table below:

Table 2-2 Summary of previous studies

Topic Issue	Current Impact Position
Fauna Impacts – Raptors Neoen commissioned additional work to identify active and inactive raptor nests	While most bird species are not impacted by wind farms, it has been acknowledged that wind farm activity, including during construction can impact successful nesting habits of raptors, especially Wedge-tailed Eagles and Peregrines
Native Vegetation Impacts Neoen commissioned a gaps analysis of native vegetation impacts.	While comprehensive native vegetation assessment was undertaken previously, the slightly different layout and access arrangements proposed, required additional gaps analysis. Previous bushfire implications also needed consideration.
Landscape and Visual Impact Neoen have commissioned additional investigations, primarily relating to the wind turbine component of the project.	Some initial level of visual impact assessment was previously undertaken for the project. However, additional project specific assessment has been conducted to take into account the reduced number but increased height of the turbines proposed.
Noise Impacts Neoen have commissioned fresh background noise monitoring and noise assessment that complies with current EPA requirements.	Preliminary noise assessment was undertaken for the previous project. However, the EPA methodology required for noise assessment has since changed. Additional investigations that comply with the EPA requirements were needed
Traffic and Transport Neoen have commissioned a ‘gaps’ assessment of traffic and transport impacts.	Preliminary traffic and transport studies were undertaken and some key principles have been taken into account. However, a ‘gap’ assessment of additional considerations has been undertaken to include the solar and storage components.
Shadow Flicker Neoen undertook a fresh shadow flicker assessment and assessed this against the standards set in the <i>EPHC Draft National Wind Farm Development Guidelines</i> . July 2010	Shadow flicker assessment is the result of specific geography, location and dimension combinations. A fresh assessment has been undertaken for the new wind turbine layout.
Electromagnetic Interference (EMI) Neoen commissioned a fresh assessment of potential EMI issues.	The battery storage and solar elements of the project are not expected to cause any EMI (or radio interference) issues. Based on the EMI analysis, the placement of turbines is not expected to cause issues.
Aviation Impacts	Provided a wind farm does not interfere with aerodrome operations and safety arrangements, it is now accepted

Topic Issue	Current Impact Position
<p>Neoen has commissioned a fresh Aviation Impact Statement that primarily relates to the wind turbines (also factoring in glare from solar panels)</p> <p>Neoen will conform with the requirements of the CASA Advisory Circular 139-08(0) April 2005 – Reporting of Tall Structures.</p>	<p>that wind turbines are treated in the same manner as any other tall structure.</p> <p>Comprehensive investigations were previously undertaken to determine potential aviation impacts. This work identified no aviation issues. A subsequent study completed in early 2018 reached similar conclusions with respect to both wind and solar components.</p>
<p>Fire Fighting</p> <p>The issue of impact on bushfire risk is addressed as part of the impact considerations.</p>	<p>It is now acknowledged that wind turbines represent a very low risk of starting bushfires, particularly when compared to other forms of infrastructure and rural land use activities. In fact, by attracting lightning strikes away from trees and conducting them safely to earth, they may reduce the incidence of bushfires.</p> <p>There has been considerable discussion around the impact of wind farms on the ability of the CFS to fight bushfires.</p> <p>While turbines introduce an additional tall ‘constructed’ structure into the landscape, they do not prevent aerial firefighting any more than other obstacles (constructed and natural). Furthermore, ground-based firefighting forms the backbone of most firefighting activities, and the improved access tracks that are established within wind projects often improve safe access for ground-based firefighting units to locations that were previously inaccessible.</p>
<p>Aboriginal Heritage</p> <p>The previous assessment identified a low risk of impact on known heritage. This has been taken into account in the current design. Neoen have engaged with the Nukunu Peoples Council Inc. and have an agreement to work with this community to avoid sensitive locations and address potential impacts during the construction phase, likely including a heritage survey.</p>	<p>Potential impacts on Aboriginal Heritage are controlled under the Aboriginal Heritage Act, 1988. As such, this is not a core consideration under the Development Act.</p> <p>Nevertheless, it is considered appropriate practice to consider the risk of potential impacts during the project concept development phase and engage early with the relevant community(s)</p>
<p>Environment Protection and Biodiversity</p>	<p>As with previous investigations, the project area does not contain species that would trigger a controlled action under the EPBC Act. While there are some sensitive</p>

Topic Issue	Current Impact Position
Conservation Act, 1999 (Commonwealth) No further action required	species of flora within the project area, they have been identified and avoided as far as possible as part of the concept development. Micrositing will allow further mitigation of impacts. Where not possible, impacts will be offset under the <i>Native Vegetation Clearance Act 1991</i> .
Native Vegetation Clearance This will be sought in accord with the <i>Native Vegetation Clearance Act 1991</i> following the Development Act decision.	It is accepted practice that the investigation phase of infrastructure projects make every effort to avoid native vegetation impacts. This process is documented as part of the Development Act impact assessment process. Applications for native vegetation clearance are lodged following the Development Act decision.
Construction Phase Impacts Neoen have included a draft CEMP as part of this application	Construction phase impacts are well known and the relevant site management practices are well established and accepted. Issues such as water quality management, soil erosion management, dust management and the prevention of the spread of weeds are best managed using a Construction Environment Management Plan (CEMP), the draft version of which will be developed and finalised by the selected contractor(s) during the detailed design phase.

In late 2016, Neoen developed a working layout for the energy park and engaged suitable specialists to undertake preliminary investigations to identify the implications of the layout. These investigations included consideration of the following:

- Flora and fauna (including raptor nest surveys)
- Traffic and access
- EMI
- Landscape and visual
- Cultural Heritage.

This layout was also provided as part of the community engagement process to assist with the identification of local issues.

The investigations and community feedback provide information on locations that should be avoided to prevent serious impact results. This then informed the development of a working layout that avoided the critical locations and issues. Further impact assessment was then undertaken on the working layout to more clearly identify specific impacts and resulted in further refinement of the layout. These included:

- Noise modelling
- Shadow flicker and assessment
- Landscape and visual impact assessment
- Aviation.

In addition, Neoen has taken into account, to the maximum extent consistent with the feasibility of the project, community feedback which ranged from requests to be included in

the project to requests to have the project located as far away as possible. In essence, the aim has been to locate no closer than 1.3-1.5 km from non-involved dwellings, exceeding the prescribed minimum of 1km.

Neoen further modified the working layout to remove all turbines from the Landscape Policy Area of the Ranges Zone following additional consultation with residents of Beetaloo Valley and the Port Pirie Council.

The initial layout comprised between 30-100MW of battery storage, 50-100MW of solar panels and up to 54 turbines, along with associated infrastructure. Following the environmental and impact assessments and community feedback, modifications have been made resulting in the following:

- Battery – 130MW
- Solar panels – 150MW (400,000-500,000 panels)
- Turbines – 26 (125MW)
- Hydrogen production (50MW load)

2.4.2 Final layout

In summary, Neoen has reviewed all of the findings of the previous investigations undertaken by Origin and the landowner, and has commissioned updated or fresh assessments where required. Neoen has considered the impacts of the construction phase and on-going operations as well as undertaking and documenting a thorough community engagement process with key stakeholders, affected landowners, and the local community.

The results of these processes have informed the design and layout of the project as well as the draft Construction and Environmental Management Plan (CEMP) (contained in Appendix C of this Volume). Topic specific management plans are contained in the CEMP to cover specific issues and concerns.

Figure 2-2 provides an overview of the final project arrangements and layout.

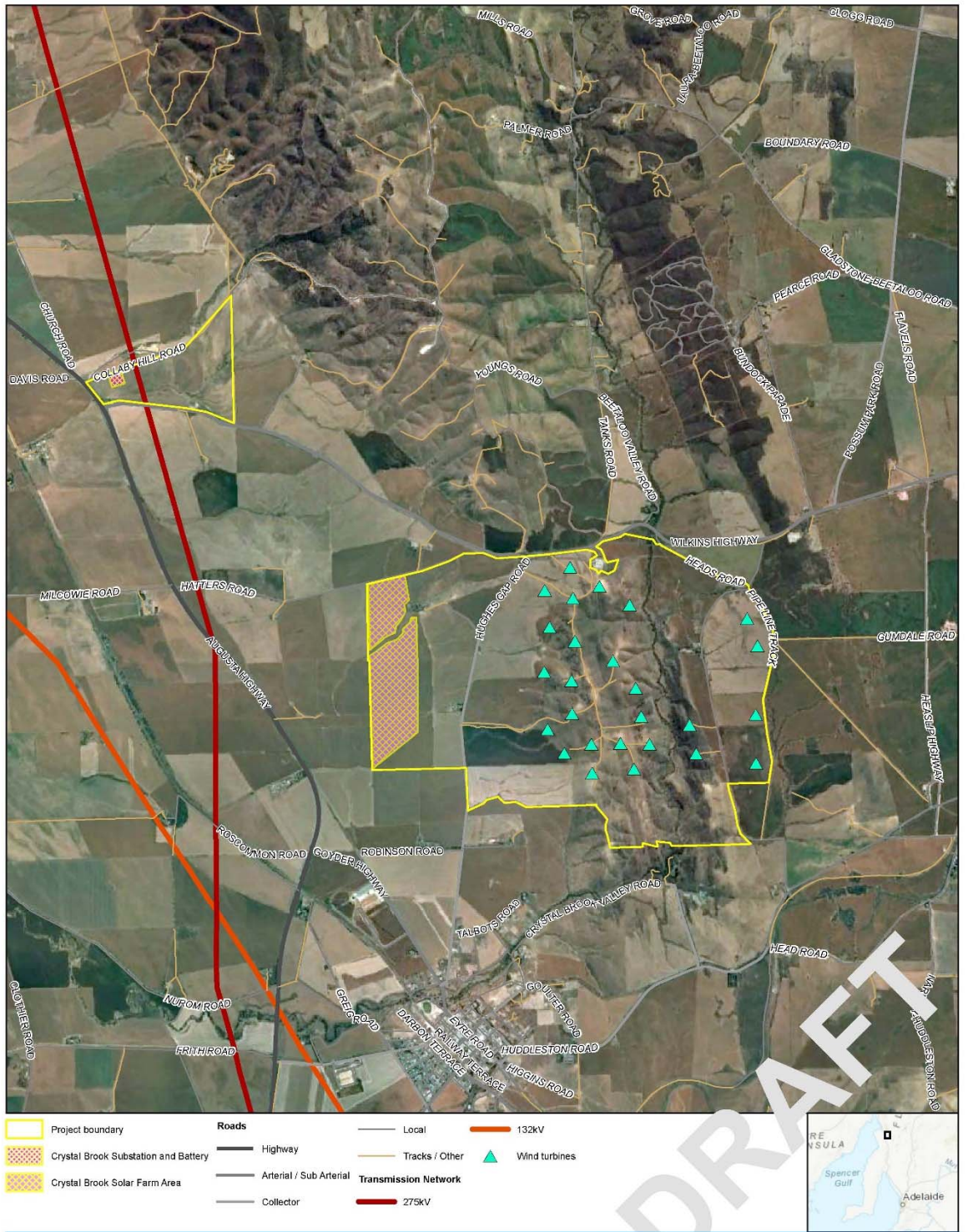


Figure 2-2 Project elements

3. Project description

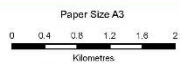
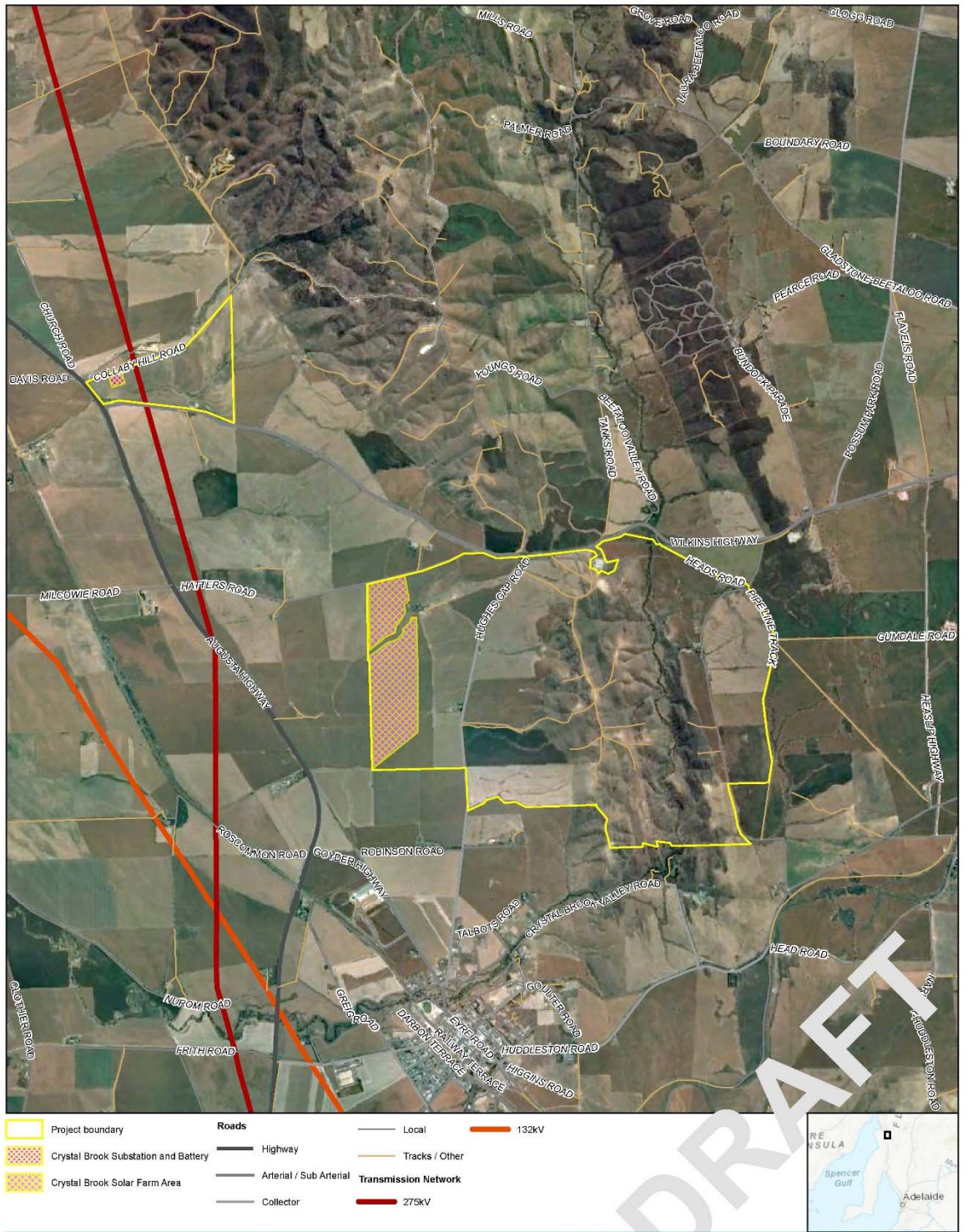
The proposed development is located on the border of the Port Pirie Council and Northern Areas Council. The proposed site is located approximately 23 kilometres southeast of Port Pirie and 3.5 kilometres north of Crystal Brook, generally in the vicinity of the Wilkins Highway (to the north), Augusta Highway (to the west) and Heaslip Highway (to the east).

There are between 5 and 8 landowners involved with this project (depending on cable routes), hosting one or more of the project elements. Other key stakeholders include: SA Water, ElectraNet, Epic Energy (gas), Port Pirie Regional Council, the South Australian Department of Planning, and the Department of Transport & Infrastructure.

There are two key components to this project:

- Permanent elements that will remain in situ for the life of the project and be removed at decommissioning
- Construction phase elements that will be removed after construction, and the area rehabilitated to its prior condition.

The project site areas and key elements are defined in general in Figure 3-1 and in more detail in the tables and plans contained in Appendix A.



Neoen Australia Pty. Ltd.
Crystal Brook

Job Number | 33-18328
Revision | A
Date | 27/03/2018

Project Concept

Figure 3

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Figure 3-1 Project concept

3.1 Permanent elements description

The table below provides more detailed location information for each of the permanent elements.

Table 3-1 Permanent elements description

Element	Description
Storage, Hydrogen production facility, Substation, Operations & Maintenance	<p>Collaby Hill Road</p> <p>Property: CT5883/929</p> <p>Parcel Area: 170ha</p> <ul style="list-style-type: none"> • Storage – 5ha; • Hydrogen facility – 10ha • Substation – 5ha • Operations & Maintenance – 5ha
Solar	<p>Hughes Gap Road</p> <p>Property: CT5607/243, CT5504/187</p> <p>Parcel Area: 465ha</p> <ul style="list-style-type: none"> • PV Panels – 170ha
Wind	<p>Extending along the ranges, south and north of Wilkins Highway</p> <p>Property: CT6141/640, CT5784/13, CT5608/107, CT6006/298, CT6007/133, CT6183/620, CT5404/285, CT6007/134, CT6007/134, CT6007/133, CT5476/921, CT5566/295, CT5516/886, CT6187/686</p> <p>Parcel Area: 1333ha</p>
Access tracks, Underground cabling, water and gas pipeline (on separate parcels)	<p>Property: CT6007/133, CT6007/133, CT6183/620, CT6007/134, CT5404/285, CT6007/133, CT6007/113, CT6007/113, CT6006/296, CT6007/113, CT6006/296, CR5758/745, CT6187/686, CT6129/985, CT5886/293, CT5886/162, CT5885/930, CT5800/330.</p> <p>Parcel Area: 1041ha</p>

3.2 Construction phase elements

The following elements will need to be established for the construction phase of the project but will be closed and the land rehabilitated post construction. The method of rehabilitation will be defined in detail in the final CEMP.

Table 3-2 Construction phase elements

Element	Description
Main construction site office and compound (employee amenities, car park, storage and laydown areas)	Located immediately adjacent to the substation Property: CT5883/929 Area: 5ha
Laydown areas (adjacent to turbines)	Will be located adjacent to each turbine site

3.3 Project definition

The following provides a more detailed description and account of the project elements.

Table 3-3 Project definition

Element	Description	Notes
Project layout	Up to 150 MW of solar and 125 MW of wind generation. Lithium-ion battery with maximum 130MW power output and energy storage of up to 400 MWh Associated infrastructure.	The project is spread across approximately 3,300ha, of which the approximate total footprint will be less than 300ha.
Energy Storage (battery)	A fenced compound of approximately 5 ha containing battery equipment, cabling and control room. Up to 400 MWh of battery storage depending on the final generation profile.	The energy storage facility will be clustered with the sub-station and the operations and maintenance facility.
Hydrogen Production Facility (subject to submission of later variation or DA, for indicative purposes only)	A fenced compound of approximately 10ha containing the electrolyzers and associated connection to water and gas pipelines.	The hydrogen facility may be located in proximity to the substation and relative proximity to the mains water and gas pipelines. This reduces visual impacts and lowers costs.
Solar Farm	400,000-500,000 solar panels mounted on single-axis trackers, cabling, access tracks and stormwater	The site of the solar farm is the result of discussion with the landowner.

Element	Description	Notes
	management infrastructure located within a fenced compound	
Wind Farm	<p>Up to 26 WTGs, underground cabling, and access tracks</p> <p>Max Height (to blade tip) – 240m</p> <p>Blade length – 79m</p> <p>Hub Height – 161m</p> <p>Foundations may be either a mass concrete foundation (raft style), piled type rock anchors or a combination of both. Final design will require Building Rules approval.</p>	<p>For the purposes of impact assessment, the maximum scale turbine has been used to identify worst case scenarios. This ensures that the final detailed approach will not exceed impact limits</p>
WTG hardstand and laydown	<p>An average area of approximately 50m x 30m adjacent each turbine for foundation and crane hardstand areas and an additional 80m x 20m for parts laydown.</p> <p>The foundations and hardstand area will remain permanently with the laydown area being rehabilitated post construction.</p>	<p>Hardstand areas will be required adjacent to the base of each WTG to enable the assembly, erection and maintenance of the WTG.</p> <p>The shape and precise dimensions will vary depending on the construction approach and the site conditions at each WTG location.</p>
Substation and Operations & Maintenance facilities	<p>One permanent 33kV /275kV substation with approximate dimensions of 150m X 150m co-located with a permanent O&M facility of approximately 100m X 100m.</p> <p>The O&M facility will include:</p> <ul style="list-style-type: none"> Buildings (office, control room, staff amenities) 	<p>The substation, O&M and storage facilities have been co-located to minimise impact on surrounding areas.</p> <p>The layout and fencing substation and storage facilities will be in accord with industry requirements and specifications.</p> <p>Vegetation screening has been identified to balance visual amenity from public roads, as well as maximise farming operations.</p>

Element	Description	Notes
	<ul style="list-style-type: none"> • Car park area for staff and visitors • Workshop and laydown area 	
Site Access	<p>On-site access tracks will be up-to 10m wide to accommodate construction activities and cranes.</p> <p>Access from public roads to the main elements of the project will be designed in consultation with Council and DPTI to accommodate the construction and on-going access requirements.</p>	<p>The main access tracks will provide access to the WTG sites and will be developed to take the weight of WTG transport and construction vehicles and the cranes used to erect the turbines.</p> <p>These will be located in consultation with landowners and the ecology advisors to ensure a balance between farming operations and protection of native vegetation.</p>
Cabling	Underground cabling will be required for transmission (33kV) and management purposes (fibre).	<p>This will be generally located adjacent the access tracks.</p> <p>The location and depth of the cabling will take into account farming practices to avoid disturbance.</p>
275kV overhead transmission	<p>Less than 300m in length and located between the proposed substation and the 275kV Para to Bungama line on the east of the Augusta Highway.</p> <p>It is expected at least two 275kV pole/tower of 47 m height with a footprint of approximately 10m x 10m will require replacement on Para to Bungama line.</p>	This relatively short section of overhead transmission will cross private, cropping land and does not require a public road crossing.
Temporary Construction Facility	<p>One main temporary construction facility of up-to 300m x 300m which will include:</p> <ul style="list-style-type: none"> • Site office and staff facilities; 	The site of the construction facility will be adjacent to the substation/O&M building/battery storage cluster.

Element	Description	Notes
	<ul style="list-style-type: none"> • Staff toilets and change rooms; • Workshops • Car park • Laydown area 	
Public Road improvements	<p>Access routes for all over-dimensional vehicles will be limited to those specified in the Traffic Management statement.</p> <p>Roads and intersections will be up-graded to meet load and safety standards as required and agreed with DPTI and Council.</p> <p>After construction, all public roads will be left in the condition they were in prior to construction (or better).</p> <p>All access routes will be subject to DPTI and Council agreement.</p>	<p>The proposed Energy Park contains numerous elements that have different traffic and vehicle profiles in relation to the construction phase. It is also likely that the construction phase will be staged (relative to the arrival of parts and equipment), requiring a more detailed approach to traffic management.</p> <p>Should the project receive approval, the applicant proposes to develop a detailed Traffic Management Plan in consultation with Council and DPTI as a condition of approval.</p>

3.3.1 Overall operation

The proposed development will operate as a cohesive whole, where the two key generators (solar and wind) will be combined with battery storage and potentially hydrogen production facilities (**subject to feasibility study and submission of variation or later DA to SCAP**) to produce a more consistent and reliable source of energy.

This requires a high level of technical management and monitoring to ensure that all elements work together to produce the most efficient results.

All three elements will be connected via underground cabling to the on-site control facility located in the O&M compound. Like the Hornsdale Wind Farm and Power Reserve, the Energy Park will be controlled and dispatched remotely from Neoen’s Canberra control room, assisted by monitoring facilities installed across the project area.

3.3.2 Storage facility

For efficiency and in order to minimise visual impact and land use, the battery will be co-located with (immediately adjacent to) the substation and O&M facility.

In addition to the Tesla technology deployed at Hornsdale, there are a number of other battery technology types available from various suppliers. In the current climate of rapid advances in the battery industry, final selection of a supplier or technology at this stage of project

development is not possible. The selection of a supplier will be a lengthy competitive process, undertaken only if the project is approved.

The battery facility will be up to 250 m by 200 m depending on final sizing and selected supplier. It will be surrounded by a chain mesh fence up to a maximum of 3.5 m in height, along with CCTV cameras and security lighting. Slim lightning rods of up to 15m height may be included to protect the facility from lightning strikes. Batteries and inverters make very little noise, and the facility is likely to be inaudible at any distance over 200m (the nearest sensitive receiver is over 1km away).

While a supplier has not yet been selected, the battery is likely to utilise lithium ion technology, as was used for the Hornsdale Power Reserve. Sizing is still being optimised, but will be a maximum of 130MW/400MWh as identified in the Crown Sponsorship. However, the Crystal Brook battery site is significantly larger in area, to accommodate increased storage capacity and the potentially different space required for different suppliers.

Until final selection of the battery supplier is completed, the exact physical appearance of the battery installations themselves cannot be described with total accuracy. The technology will be most likely be containerised or, as with Tesla's Powerpack 2 units utilised for the Hornsdale Power Reserve, comprise individual, weatherproof modules installed directly onto shallow concrete slab foundations, accompanied by inverters likewise installed onto similar foundations. These Powerpack units are approximately 1300mm long, 800mm wide and 2200mm in height. Alternately, the batteries could be housed within low (1-storey) buildings.

The specific battery storage system has yet to be selected and therefore the detailed design has yet to occur. However, the general design will comprise the following:

- A bunded concrete pad of approximately 187 m x 100 m (1-2% slope for drainage), to accommodate the battery storage and associated infrastructure
- Set within a compound of up to 250 m x 200 m
- The compound will be enclosed by chain mesh security fencing and include a control boxes and access/circulation around the batteries for maintenance access.

In principle, the facility will be an orderly arrangement of battery cabinets/low level buildings, inverters and control systems including underground electrical and data cabling. Underground cables will connect the battery to the substation and from there to the grid.

This battery technology is conservatively estimated to have a life of at least 10 years under a typical manufacturer's warranty timeframe but the life of the facility is expected to be in the order of 25 years. When the facility requires decommissioning, all equipment and the concrete pad will be removed and the land rehabilitated. The batteries are likely to be returned to the supplier for recycling (depending on the supplier selected).



Figure 3-2 Typical battery storage facility layout



Figure 3-3 Example of battery unit



Figure 3-4 Example of storage facility layout

3.3.3 Solar farm

The proposed solar farm will represent a generating capacity of 150 MW located on approximately 170ha.

The proposal includes appropriate access, internal circulation roads, underground cabling and security measures (fencing, plus lighting to the extent with consistent with mitigating visual impact for the local community.

The project will consist of the following components:

- Solar arrays consisting of between 400,000-500,000 solar panels supported by approximately 55,000 piles, driven or screwed into the ground (without concrete foundations) in order to support the solar array's mounting system
- The panels to be installed will be mounted on single-axis tracking systems, potentially with an appropriate tilt
- Approximately 40-50 photovoltaic boxes or skids containing inverters and medium voltage transformers distributed across the site
- Cabling and electrical connections between solar arrays and panel inverters
- One delivery station in a container or on a skid platform
- 33kV cables and trenches
- Internal access tracks to provide access throughout the site during operation
- Perimeter security fencing
- Landscaping where required (including vegetative screening).

The detailed layout of the solar arrays will be confirmed during the detailed design phase and will be contained within the area shown in Figure 3-5.



Figure 3-5 Solar farm area

The final panel structures will be between 1.5 and 2.5 metres high depending on their degree of tilt.

The following photos provide an indicative illustration of the nature of the proposed solar farm development.



Figure 3-6 Example of single-axis solar panel array

Photovoltaic boxes or skids

Between 40-50 photovoltaic boxes or skids will be installed across the site. These will contain inverters to convert the variable direct current (DC) output of the photovoltaic solar panel into an alternating current (AC) that can be fed into the electrical grid.

Each of the boxes or skids would contain a centralised inverter and a medium-voltage transformer (either 11 kV, 22 kV or 33 kV). The proposal may either use centralised inverters or string (decentralised) inverters and the preferred option will be selected during detailed design. Centralised inverters have a higher capacity than de-centralised inverters which enables them to be connected to a larger number of solar arrays. String inverters have a lower capacity and connect to a single solar array string. These inverters would be installed directly onto the mounting structures. If string inverters are implemented, the centralised inverter in or on each of the boxes or skids would not be required.

The indicative dimensions of the boxes and skids are up to 12.5 metres long by 2.5 metres wide and about 3.5 metres high. The precise dimensions will depend on the type of boxes or skids selected and this will be determined during detailed design. Examples of the photovoltaic box and skids are shown in Figure 3-7 and Figure 3-8 respectively.



Figure 3-7 Example of a containerised photovoltaic box



Figure 3-8 Example of a photovoltaic skid platform

3.4 Ancillary project elements

3.4.1 Site access

Once the project is established, the site access demands will be relatively low and limited to general maintenance and inspection requirements, mostly via light vehicles. The main access to the project elements will be via the Augusta Highway and then:

- Collaby Hill or the Wilkins Highway to access the O&M compound, substation, battery and hydrogen facilities
- Wilkins Highway to access the wind and solar farm.

The wind and solar farm will then be accessed via local roads. The access for the solar farm will be via Hatters Road. The wind farm will be accessed via Hughes Gap road, Pipe Line Track/Heads Road and the Heaslip Highway. An internal network of tracks on private land will provide access within the solar and wind farm sites which will also facilitate cable routes.

Access during construction has been considered in the traffic impact assessment. The access requirements will need to be assessed in detail and agreed with the Department of Planning, Transport and Infrastructure and both Councils. This is common practice for large construction projects.

These agreements will contain provisions permitting (and obliging) Neoen to upgrade the roads and intersections used for construction access to ensure appropriate safety standards for construction vehicles and local traffic users. They will also contain provisions ensuring that roads are repaired to their pre-construction standard or better at the completion of construction.

3.4.2 Underground cabling

Underground cabling on site will be fully compliant with Australian and international standards. This will take into account the temperature of the ambient environment in which the cables and ancillaries would operate, and the allowable currents compatible with an acceptable warming-up as stated in the standards and the manufacturers' recommendations.

Underground cabling will generally be located adjacent to the project tracks and access roads, except where otherwise required.

Trenches would accommodate and protect the cables and would contain:

- Power ducts to export the production from the solar arrays to the array boxes
- Power ducts to export the production from the array boxes to the photovoltaic boxes or skids
- One copper wire for equipotentiality
- The medium voltage cable for the two antennae from the photovoltaic boxes or skids to the delivery station
- A fibre optic connection
- A low current duct for communication.

Sand would be used to backfill the trench around the cables, and soil excavated from the trench would be placed over the sand. The trench would be backfilled to match adjacent ground levels. An indicative trench design example is shown in Figure 3-9.

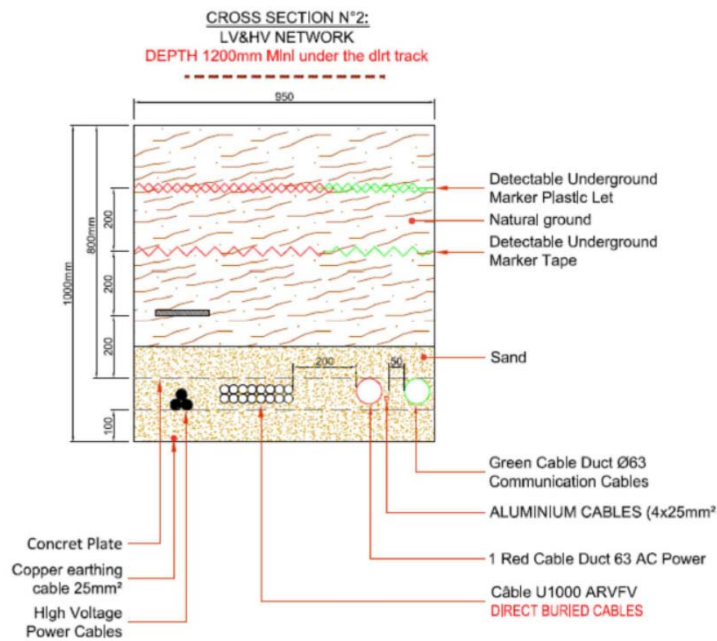


Figure 3-9 Indicative trench design

3.4.3 Site security

Security fencing for the operations & management, battery and substation facilities will be required (and for the hydrogen production facility, subject to submission of a variation or further subsequent DA).

Security fencing of approximately 2.5-3.5 metres height would be installed around the entire perimeter of the solar farm site. Security gates of a similar height to the fencing would be installed at the key access points. The final design of the fencing would be confirmed during detailed design; however, it is expected to consist of cyclone fencing with a barbed wire top.

3.4.4 Landscape plan

A detailed landscape plan will be developed in consultation with Council, DPTI and adjacent residences and landowners.

The aim of the plan is to minimise the localised visual impacts of the proposal particularly any views from the highway of the facilities located along Collaby Hill Road. Planting around the western and southern perimeters of these facilities would consist of locally occurring species, with a particular focus on using native species.

Vegetation would be planted within an approximately five-metre-wide buffer zone around the perimeter of the site in the vicinity of potentially impact properties. Vegetation (i.e. trees) would be planted in two staggered rows. The position and selection of screening vegetation would ensure that the survival of vegetation is maximised.

The position of any specific screening vegetation would be confirmed during detailed design and following consultation with the relevant landowners and neighbours.

Screening vegetation would be maintained for the life of the solar farm. This would include replacing any vegetation which does not survive.

3.5 Construction and decommissioning

At this stage, it is not envisaged that the project will be staged, but this will be considered further during the detailed design phase.

The project is likely to take 12-18 months to construct and is estimated to have a land use life of approximately 25-30 years.

Most of the technology and associated components are expected to operate for about 25-30 years. At the end of its operational life, the proposal would be either reconditioned or decommissioned. Reconditioning would involve replacing components that were originally installed with new components that reflect technology that is available at that time. Decommissioning would involve removal of all above-ground infrastructure and rehabilitation of the sites to allow use for its prior purposes such as agriculture or grazing.

It is well-established principle that underground infrastructure, such as substantial footings, should not be removed as this is likely to have significant negative impacts on revegetated areas. However, surface treatments will ensure that a sufficient soil layer is provided for vegetation rehabilitation.

3.5.1 Construction site office and laydown areas

The main construction site office will be located adjacent to the substation/battery/O&M compound/hydrogen cluster. This site has been selected to provide reasonably central access to the main elements of the project but has also considered the potential traffic impact on local residents.

The main site office will be accessed via the Augusta Highway and the Wilkins Highway to avoid significant traffic increases through Crystal Brook. However, it is noted that workers based in Crystal Brook will use local roads to access their work site.

Other smaller, designated laydown areas will be established within the subject site. These will be identified by the construction contractor and included in the detailed construction project layout.

3.5.2 Water

Water will be required during the construction phase primarily for dust suppression purposes but also for other activities such as vehicle washing. It is estimated that approximately 2.5 mega litres of water would be required during construction. This would potentially be sourced from a water filling station or a similar alternative location. It is envisaged that all water will be trucked to the site to protect local sources, but the source of water will be finally determined during detailed design and construction planning and in consultation with the community and Council.

3.6 On-going management and maintenance

3.6.1 Hours of operation

Daily operations and maintenance by site staff would be undertaken during standard working hours:

- Monday to Friday: 7am to 6pm
- Saturday: 8am to 1pm.

Outside of emergencies, night works and work on Sundays or public holidays are unlikely to be required.

3.6.2 Workforce

The site would be remotely operated with onsite personnel limited to a small number required during maintenance activities. An estimated 10-15 permanent employees would be required

for the operational phase of the development. The number of people accessing the site during emergencies would increase, however these situations are likely to be rare and short-term in nature. Should the hydrogen component be included (subject to a variation or further DA), the number of permanent employees may increase up to 40.

3.6.3 Maintenance activities

Once operational, activities would include daily operations and maintenance. This would include:

- Visual inspection of the key project elements and other infrastructure including the use of drones
- General maintenance of infrastructure including any cleaning and servicing activities
- Management of vegetation on the site including both landscaping and the grass located below the solar arrays. This would include a monitoring program to manage any bare areas to minimise erosion
- Response to security breaches
- Response to emergency events
- Replacement of equipment and infrastructure, as required.

During normal operation, it is likely that only a small number of light vehicles would be present at the site on a permanent basis. Operational activities such as maintenance would be undertaken primarily during standard work hours.

Emergency works would potentially be required outside the standard hours; however, these would be infrequent.

During major outages or emergencies, 20 to 30 vehicles may be present at any one time, including some larger vehicles such as trucks to provide replacement equipment.

4. Strategic and policy context

The proposed project is located in an area known as the Mid North Region of South Australia and across one Council area being the Port Pirie Regional Council. The current land use is predominantly agriculture and stock grazing. The south and western areas of the project area are flat and the north and eastern most areas of the project area are undulating hills. There is some scattered native vegetation across the hills and along road sides.

4.1 Strategic context

The proposed project is aligned to a key Vision of South Australia's Strategic Plan "South Australian's think globally, act locally and are international leaders in addressing climate change". This Vision includes a number of related Goals that aim to reduce our greenhouse gas emissions by supporting the development of reliable and sustainable renewable energy.

Furthermore, the proposed project complements the recently released State Energy Plan by enabling a relatively new generator (Neoen) to make the most of renewable resources by combining storage, solar, hydrogen and wind elements in the overall project.

The combination of these technologies has the potential to produce a more consistent and reliable source of generation by extending the overall duration of electricity generation over longer periods of the day and night and over seasonal variations. The energy storage facility will further enhance this reliability, as well as allowing for the provision of network stability services. The hydrogen production element planned for future submission will enable the conversion of surplus energy at times of low power demand and price into another form of energy (gas) that can be used for a variety of applications.

These four technologies operating together will result in a significant boost to South Australia's clean energy future and help to cement its position as a global leader in renewable energy.

Strategic Plans

The Planning Strategy provides a wider strategic context for the consideration of significant projects. The relevant strategic planning document for this region is the "Mid North Region Plan" (May 2011). The location is at the very southern end of the lower Flinders Ranges. The Flinders Ranges are highly valued for their aesthetic beauty and natural habitat and are a key tourism feature in the State. Key messages in the Plan highlight:

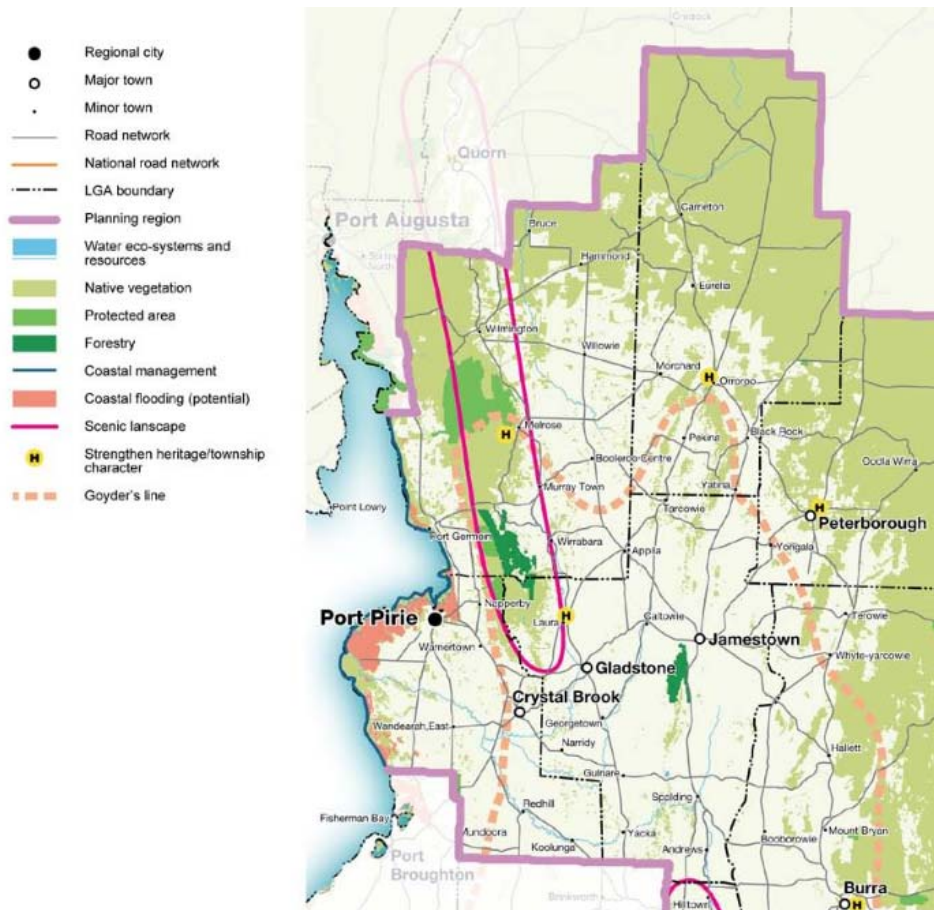
- The protection of and support for productive grains and agricultural business – relevant to the area around Crystal Brook.
- Avoiding development in areas where there will be an adverse impact on scenic landscapes – this is relevant to the northern portion of the project area.
- Support for infrastructure development – expanding local electrical generation through renewables.

Under 'Infrastructure and Service Provision', one of the key goals for the region is the expansion of local electricity generation through renewable energy sources and solar is identified as one of a number of innovative solutions that can make the best use of energy supplies which are currently limited in many parts of the region.

However, the Mid North Region Plan also places high value on the landscapes of the Southern Flinders Ranges and tourism is anticipated to expand in this area due to its scenic value. Therefore, any renewable energy development would have to give careful regard to visual impact.

The strategic plan indicates a reasonable level of support for the essential nature of the project. However, there will be a need to balance the opportunity that the project could deliver with its potential impact on an identified scenic landscape (see Figure 4-1 below) and the loss of productive agricultural land.

It is noted that the proposed project area is at the very southern extent of the scenic landscape area. This area comprises low, sparsely vegetated and grazed hills and not the rugged escarpments for which the Flinders Ranges are known.



Source: Mid North Region Plan, May 2011 – extract Environment and Culture Plan D1, p21

Figure 4-1 Environment and Culture Strategic Plan

4.2 Development Plan Policy

The following section identifies the policy context that is relevant for the proposed development. This project has received Crown Sponsorship as an infrastructure project that has public benefit. As such the assessment process will include consideration of the relevant zoning and policies of the Port Pirie Development Plan (Consolidated – 31 October 2017).

The portion of the site covered by the Port Pirie Development Plan is within the 'Primary Production Zone'. The boundary of the Primary Production Zone follows the alignment of the gas pipeline which means that the whole of the project is location with in this zone.

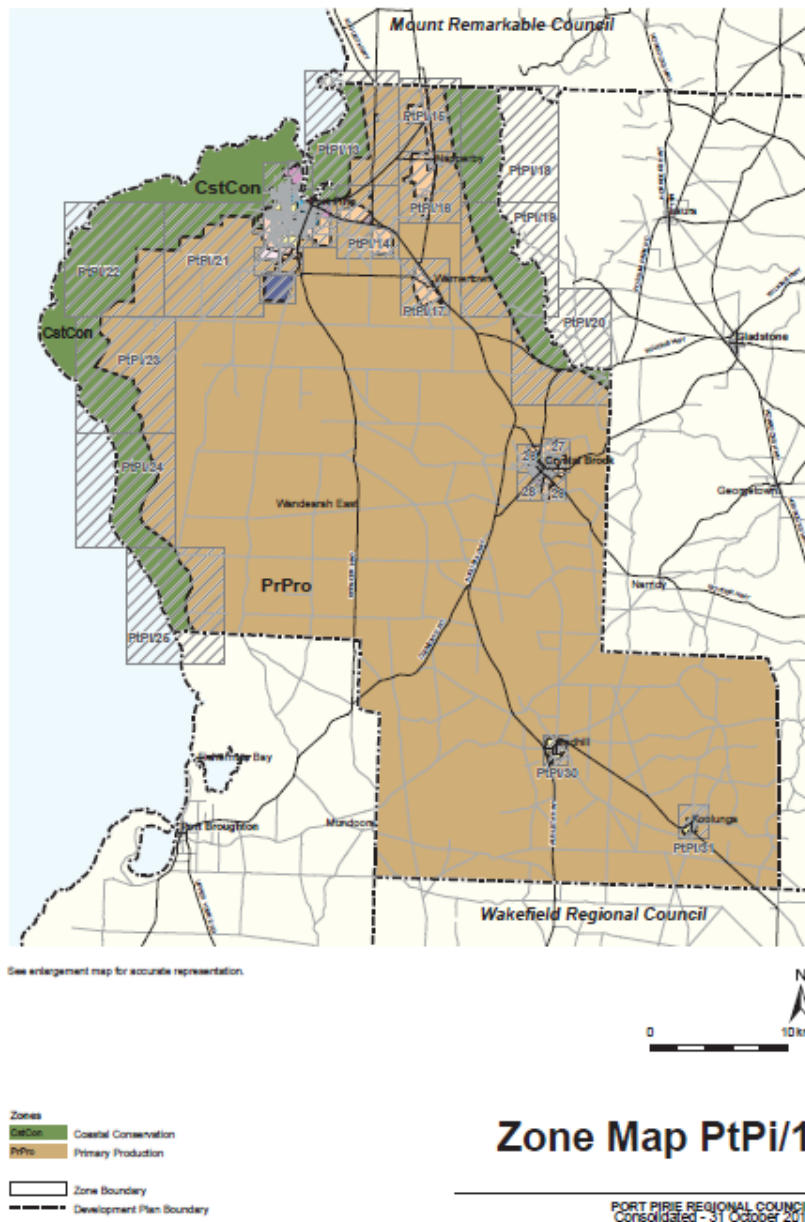


Figure 4-2 Relevant zoning and policy areas

The relevant development plan policies against which the development would be assessed are summarised below in Table 4-1 (Council Wide Policy) and Table 4-2 (Zone Specific Policy).

In summary, the policy provides some limited guidance for wind farm developments. It is somewhat significant that the only Zone that contains policy specific to wind farms is the General Farming Zone (Port Pirie).

Based on the arguments for previous decisions, this policy is generally recognised as indicating that wind farms are an accepted land use within the Zone. While this does not mean that wind farms are unacceptable in other locations, it does mean that additional supporting arguments need to demonstrate that a wind farm is appropriate and suitable in other zones.

There is also a lack of policy regarding solar farms and electricity storage. In a similar vein to the above, this does not mean that these uses are inappropriate, only that supporting arguments are required to demonstrate that they are appropriate in that they have limited or acceptable impacts on existing land uses or those land uses that are intended for the Zone.

The lack of policy specific to the nature of the proposed land use can be problematic as it can generate intense public debate.

It should be noted that Development Plans generally comprise policy that address typical, private land use types. Wind farms are one of the few types of infrastructure specifically identified in the Development Plan. In most cases infrastructure is not referenced because most infrastructure applications are lodged and assessed under Section 49 of the Act. As such, it is not unusual for an assessment of an infrastructure project to be undertaken in the absence of clear Development Plan policy.

Table 4-1 Summary of council wide policies and related issues

Council Area and Policy Direction	Key Issues
<p>Port Pirie Council</p> <p>Council wide objectives cover a range of issues including: management of interface issues, transportation and access, bushfire protection, natural resource conservation and heritage.</p> <p>The policy encourages economic and community development, including the creation of employment opportunities for rural areas.</p> <p>There are specific policies that relate to and support renewable energy facilities generally. These policies include specific guidance for wind farms and solar farms and the location of turbines.</p>	<p>The Council Wide policy of this Development Plan specifically refers to both wind and solar farms.</p> <p>Key issues for wind farms identified by the renewable energy policy include:</p> <ul style="list-style-type: none"> • Impact on transport, in this case, particularly aviation. • Setbacks of 1km from non-associated dwellings and tourist accommodation and 2km from defined townships, settlements and urban areas and general visual impact • Provision of vegetated buffers around substations, maintenance facilitate and other ancillary structures. • Localised impacts such as shadowing, flickering and reflection and noise, • Interference with signals (including TV and radio). <ul style="list-style-type: none"> • Impact on flora and fauna (including native vegetation). • Turbines set back from dwellings, tourist accommodation and frequently visited public places for safety. <p>It should be noted that some parts of the project area are identified as having medium and high bushfire risk.</p>

Table 4-2 Summary of zone policies and related issues

Zone/Area and Policy Direction	Key Issues
Port Pirie Council – Zone Policy	
<p>Primary Production Zone</p> <p>The zone emphasises the use of land for a wide range of primary production and prevention of land uses that are incompatible with</p>	<p>Compatibility with farming practices is critical in this zone.</p> <p>The policy envisages wind and solar farm land uses in the zone.</p>

Zone/Area and Policy Direction	Key Issues
<p>such uses. Policy also recognises the need to protect scenic landscapes and native vegetation.</p> <p>Wind and solar farms and associated infrastructure are recognised as a legitimate land use in this zone with appropriate attention to impacts.</p>	<p>The policy recognises that wind farms might need to occur in visually prominent locations.</p> <p>Development between the Highway and the ranges (policy area 10) should be designed and sited having regard to the views of the Ranges.</p>

5. Assessment of impacts

5.1 Approach

As previously identified, the project concept has undergone several reviews to identify key issues and possible management solutions. As a consequence, the layout has also undergone a series of changes and modifications in order to address potential impacts.

The following is a summary of the issues identified and the response adopted.

Impacts which are too detailed to be identified in the process outlined above are managed through contractual obligations outlined in the Construction Environment Management Plan (CEMP) contained in Appendix C.

It should be noted that the electricity industry has its own, rigorous design standards that have been developed over many decades to address safety issues. These standards will need to be met to the satisfaction of the electricity industry regulators, regardless of the planning and environmental impacts assessment. Neoen will ensure that its chosen contractors commit to all such standards.

5.2 Summary of impact assessment findings

This project comprises four key energy elements. Of the four, the wind farm has the potential to generate the most significant impacts including vegetation clearance, noise, construction traffic and visual impact. While it is inevitable that the wind turbines will be the most visually prominent feature of the project, being tall structures sited on hills, they can be managed by standards that have been set by the EPA and the common law.

The wind turbines and their sites have been selected and sited to meet key impact management criteria including:

- The EPA's noise criteria
- A minimum distance of 1km from un-involved residences and 2km from the closest zoned living area (the Rural Living Zone)
- A 500m buffer around the existing (though unoccupied) Wedge-Tailed Eagle nest.

The other elements of the project have fewer impact issues due to their much lower height and less visually prominent locations. While these elements will also generate construction traffic and some low level noise and have localised visual impacts, these impacts can be managed through appropriate landscaping and management regimes.

All of the elements will generate traffic during the construction period. However, post construction, these elements will generate minimal traffic.

5.3 Landscape and Visual Impact Assessment

Green Bean Design undertook a Landscape and Visual Impact Assessment (LVIA) for the proposed Crystal Brook Energy Park. The LVIA included development of photomontages of the proposed development, these figures can be viewed in the full LVIA in Volume II of this application.

The LVIA assessed the impact that the proposed development would have on the surrounding landscape and community; the key findings are summarised below:

- The landscape character type, identified and described in this LVIA, is generally well represented throughout the rural areas and more generally within the broader portions of the landscape area surrounding the Project Site.
- The distinguishable characteristics of the landscape character area may be altered by the Project, although the landscape character area would have the capability to absorb some change. The degree to which the landscape character area may accommodate the Project will potentially result in the introduction of prominent elements to the landscape character area, but these may be accommodated to some degree.
- Views toward the Project from local roads will offer a range of transitory views which will be subject to direction of travel and potential screening influence of vegetation alongside road corridors. Views from highways and some local roads would be partially screened and/or filtered by local topography and roadside tree planting.
- Given separation distances, the Project is unlikely to have a significant visual effect on the character of surrounding residential localities and the Crystal Brook township, where views toward the Project from the majority of residential and/or commercial view locations would be screened by adjoining buildings or structures and/ or surrounding tree cover and landform. Visual impacts at the northern edge of the Crystal Brook township may tend toward moderate.
- Some residential dwellings surrounding the wind farm maintain privacy and/or shelter planting around dwellings. The extent of planting reduces the potential visibility of the wind farm from a number of residential view locations within the surrounding viewshed. Neoen intends to offer additional vegetative screening to nearby neighbours.
- This LVIA identified 14 non-host residential dwellings within 3 km of the wind turbines and determined that the majority of these would not experience a significant (high) visual effect as a result of the Project.
- Given separation distances between sensitive view locations and the Project Site, it is unlikely that electrical infrastructure including the solar facility, terminal substation, battery storage facility and ancillary infrastructure, would form prominent elements within existing views.

Overall this LVIA concludes that the Project would not have an unreasonable impact on the landscape character, or the visual amenity of people living, working, or travelling through the landscape surrounding the Project Site.

5.4 Shadow flicker

A shadow flicker report has been prepared by DNV GL Australia Pty Ltd (DNV GL) to provide an assessment of the expected annual shadow flicker duration and any associated blade glint in the vicinity of the proposed Crystal Brook Wind Farm. Modelling has been undertaken considering the 26 turbine layout and a hypothetical turbine model with a hub height of 161 m, rotor diameter of 158 m and tip height of 240 m. Modelling was undertaken on in accordance with the 36 dwellings located within the subject area (2420 m from each turbine location) including four host landowners.

The results of the modelling indicate that three of the involved land owners' residences will experience shadow flicker considered to exceed the limit recommended by the Draft National Guidelines. The report identifies a number of mitigation measures to reduce the effect of shadow flicker on these residences including the installation of shielding structure or the planting of vegetation to block shadow cast by the turbines. Noise Impact Assessment

Sonus undertook a noise impact assessment to determine the effect of construction and operational noise would have on both the neighbouring landowners and the beneficiary landowners associated with the proposed development. The assessment was undertaken against the relevant criteria as provided by the *Wind farms environmental noise guidelines 2009* (the Guidelines), and the *Environment Protection (Noise) Policy 2007*. The assessment was made based on the information derived from monitoring which occurred at 5 locations in the vicinity of the proposed wind farm between 7 December 2017 and 24 January 2018.

The background noise level (L_{A90}) was measured in 10 minute intervals over the course of the assessment period. In accordance with the Guidelines the background noise data was correlated with wind speeds recorded by Neoen over the same period at heights of 40 m and 160m (above ground level).

For the purpose of assessment the associated project noise was identified as being from:

- Solar inverters and transformers distributed at up to 50 locations across the solar photovoltaic site
- 26 WTG's distributed throughout the proposed wind farm
- Battery inverters and cooling systems required for the battery storage located at the substation and battery storage site
- A number of transformers with a combined capacity of 510MVA located at the substation and battery storage site

The closest dwellings to the project are also located in the above zones and the.

- Port Pirie Regional Council Development Plan: Rural Living Zone
- Northern Areas Council Development Plan: Rural Landscape Protection Zone.

Sound propagation modelling was undertaken utilising specialist equipment including the CONCAWE noise propagation model and SoundPLAN noise modelling software. The sound propagation model considered the following influences:

- sound power levels (acoustic energy produced) by each individual noise source
- the locations of noise sources
- separation distances between noise sources and dwellings
- local topography
- influence of the ground
- air absorption
- meteorological conditions.

The model divides meteorological conditions into six separate weather categories ranging from Weather Category 1 to Weather Category 6 with Weather Category 6 being worst case scenario. In order to achieve a conservative assessment the noise model has used Weather Category 6 to predict noise levels at all residences.

The results of the modelling are represented in Figure 5-1 and has predicted that all identified residences will be compliant in relation to the allowable noise criterion as identified by the *Environment Protection (Noise) Policy 2007*.

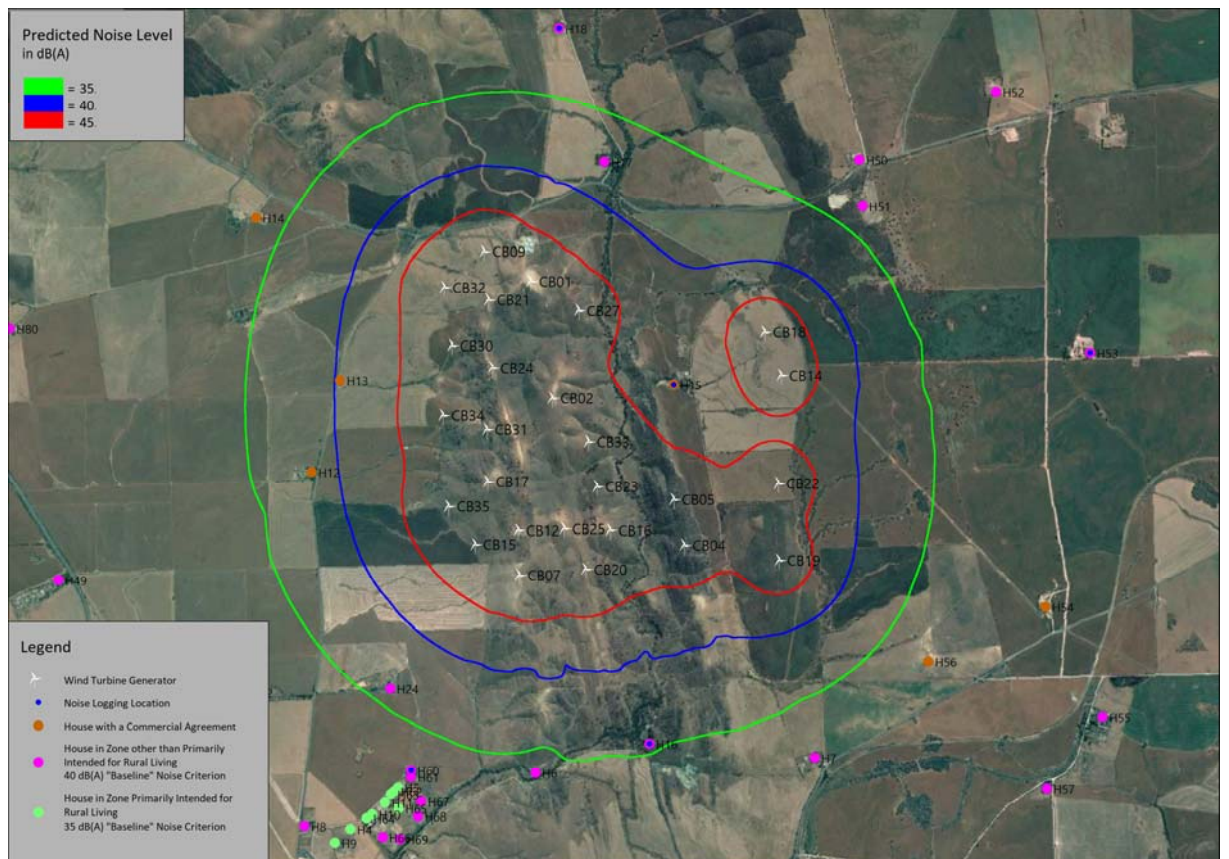


Figure 5-1 Predicted WTG Noise (maximum sound power level)

5.5 Traffic Impact Assessment

A traffic impact assessment has been undertaken for the project and a copy of this report is included in Volume 2 of the application package. This assessment has considered the traffic volumes both during construction and post construction. As is typical of renewable energy projects, the most significant traffic impact will occur during construction. The construction period is projected to take twelve (12) months at a minimum; however, the worst-case scenario in terms of traffic loading occurs during a core six (6) month period

Post construction, the project will generate relatively minimal traffic with permanent employees of approximately 8-15 people (pending the outcome of the hydrogen feasibility study, which may increase this figure). Higher levels of traffic may be generated sporadically when more significant maintenance events occur.

The key intersections that will need to be used during construction and on an on-going basis are:

- Augusta Highway / Wilkins Highway Intersection
- Wilkins Highway / Hughes Gap Road (Gladstone – Laura Road) Intersection
- Hughes Gap Road / Goyder Highway Intersection

The assessment found that, when taking into account the current road usage near the proposed Crystal Brook site and the expected increase in traffic, particularly during the construction phase, the impacts from traffic and traffic related activities are not considered to be significant. Where impacts are identified these can be mitigated with sound management and the implementation of a detailed Traffic Management Plan and Environmental Management Plan during construction.

Based on the traffic and transportation assessment undertaken for the proposed Crystal Brook Energy Park, the following conclusions can be made:

- Existing traffic volumes surrounding the wind farm site are relatively low. There will be a substantial increase in heavy vehicle traffic during the construction phase of the project. However, existing traffic volumes are low and it is not expected this additional traffic will have a substantial impact on roadway capacity.
- Due to the substantial increase in heavy vehicle traffic in the area surrounding the proposed wind farm site, there is a risk some motorists may unexpectedly encounter slow moving vehicles. Signs warning motorists to expect slow moving traffic would be erected to manage this risk.
- Also resulting from the increased heavy vehicle traffic is the potential for road pavement damage to occur during the construction phase. It has been proposed to undertake consultation with DPTI to identify areas most at risk of damage and implement an inspection program to monitor pavement condition and instigate repairs at Neoen's cost where necessary.
- Sight distance at the proposed Energy Park site access point is potentially below requirements under the Austroads guidelines. Further assessment to conclusively determine sight distance will be required during the concept design stage. No sight distance issues were found at key intersections within the study area.
- Due to the greatly reduced traffic generation during the operational phase of the project, no significant operational traffic impacts have been identified in addition to construction stage impacts.
- Permits will need to be obtained from DPTI for all vehicles transporting equipment and materials to Crystal Brook Energy Park which are outside the mass and dimension limits of current gazette notices on Port Wakefield Road, Augusta Highway, Wilkins Highway, Hughes Gap Road (Gladstone – Laura Road) and any others.
- Preliminary inspection and measurement of the proposed site access point and key intersections which will be used to access Crystal Brook Energy Park did not reveal any substantial safety or sight distance issues.

5.6 Flora and Fauna Assessment

A number of field investigations have been undertaken within the project area both by Origin and Neoen. None have ever indicated the requirement for a referral under the *Environment Biodiversity and Conservation Act 1999*.

The most recent survey was conducted by EBS in February 2018 to ensure currency following the revised turbine layout. The primary issues identified as a result of this survey relate to the disturbance of intact vegetation communities, threatened flora species, threatened bird species and the location of a Wedge-tailed Eagle nest.

As a result of the survey EBS has made recommendations with regard to mitigation of the potential impacts relating to development of the Crystal Brook Energy Park. These recommendations are based on a hierarchy of mitigation being avoid, minimise, restore and offset.

- Avoid intact mallee habitat on site and implement a 100m buffer zone around this area to reduce impacts on Diamond Firetail and Hooded Robin
- Avoid area of *Eucalyptus odorata* Woodland due to sensitivity as a possible Threatened Ecological Community (TEC)

- Maintain existing 500m protective buffer zone around the intact Wedge-tailed Eagle nest
- Ensure existing water sources for birds, including Diamond Firetail, exceed 100m buffer from turbines through micrositing or movement of water source
- Development a Weed Management Plan/Rehabilitation Plan:
 - When an SEB offset is determined (when a Native Clearance Report is prepared for the Native Vegetation Council), a Weed Management Plan or Rehabilitation Plan will assist with this.
- Implement a Construction Environmental Management Plan (CEMP)
- Employ best practice environmental management measures:
 - Best practice environmental management measures should be adopted during and following the construction phase. For example, vehicles and equipment should be cleaned to ensure they are free of plant material and soil, to reduce the dispersal of exotic flora species into, out of, and within the project area. Control of declared and environmental weeds found within the site may be required. The construction footprint should be minimised, e.g. along access roads, in turn-around areas and around turbine pads.
- Ensure staff training and awareness:
 - Staff working in the project area should be aware of the threatened flora and fauna species and ecological communities present and potentially present, and the potential and actual impacts of construction, operation and maintenance of the proposed wind farm on flora and fauna species and habitats. Training should reinforce staff expectations to minimise potential impacts related to on-site works, and encourage staff to report significant flora and fauna sightings e.g. any bird strike observations or carcasses.

5.7 Cultural Heritage (European)

The SA Heritage Register and Port Pirie and Northern Areas Council Development Plans do not list any Cultural Heritage Places (European) on any parcels of land across the project site. The only heritage place in close proximity to the site is Stables (local heritage) which adjoin the southernmost boundary of the site (CR 5851/203 and CR 5758/744).

This area is known as Bowman Park and is a staging point for the Heysen Trail but is known to have been used by indigenous people as a meeting place and ceremonial ground. The park is locally managed and offers a range of community activities and facilities.

Due to the dense, mature vegetation surrounding Bowman Park and its location in a valley, it is not expected that the turbines (the closest being 1.4km away) will have a large visual or noise impact.

5.8 EMI

Electromagnetic Interference (EMI) occurs when wind turbines are located in such a way that radio system interference occurs. Radio system interference is the unwanted disturbance between the signal source and the signal receiver. Such a disturbance can occur in a number of ways, including:

- Radiation of electromagnetic energy – potentially occurs when electrical infrastructure radiates energy with a frequency within the operating frequency of a radio communications system;

- Diffraction – where a wind turbine may be positioned as to partially or temporarily block a point to point radio communications system and cause a reduction in signal power at the receiver tower;
- Reflection – wind turbine infrastructure is positioned such as to reflect a ray of radio communication from its normal path and therefore results in reduction of signal power or unwanted duplication of signal;
- Scattering – where a receiver is in a direct line of sight of a wind turbine that is shielding the transmission tower and the subsequent signal is scattered by the infrastructure away from the receiver, causing a reduction of signal power; and
- Near field effects – wind turbine infrastructure located within the near field of a radiating antennae detrimentally affecting the normal radiation pattern and causing a potential signal power reduction.

GHD undertook a search of the Australian Communications and Media Authority (ACMA) radio communications database in February 2018 for the purpose of identification of all licensed radio systems operating above 30 MHz and within a 40 km zone of the proposed Crystal Brook Energy Park. Radio services below 30 MHz, including AM Radio Broadcast services, were excluded as they operate on a surface wave rather than a direct-ray transmission characteristic and hence are not affected by the proposed types of infrastructure.

This analysis is based on the assumption of a maximum turbine height of 240 m and blade length of 79m. Radio system technologies considered in this assessment included:

- Fixed point to point microwave radio systems
- LMR and Point to Multipoint Services
- Digital Television Broadcast
- Aircraft Telecommunications Systems
- Maritime Radio Systems
- Defence Radio Systems
- Meteorological Radar
- AM/FM Radio Broadcast
- Cellular Mobile Phone Systems
- Wireless Broadband.

Of the 10 systems identified, six were identified as anticipating either minor to no impact as the result of the proposed Crystal Brook Energy Park while three were described as having the potential for impact. Detail on the Defence Radio System is yet to be confirmed as Defence radio systems are not required to be listed on the ACMA database. To date, the Defence Spectrum Office (DSO) have not responded to GHD's attempts at contact. It is anticipated this will be updated should the DSO deem it be required to respond.

The services with a potential for impact and the associated mitigation measures are identified in Table 6-1 Summary of potential impacts.

Utilisation of ElectraNet (275 kV) and SA Power Networks (33 kV) design standards will ensure that safe levels of electromagnetic radiation are achieved for the project.

5.9 Aeronautical and Aviation

Aeronautical and aviation studies have been undertaken by Chiron Consultants.

The purpose of the studies undertaken was to assess safety and other impacts from wind turbines on aeronautical and aviation operations across:

- Recreational and commercial flying
- Emergency services (Royal Flying Doctors, Aerial Fire Fighting Service)
- Low Level Helicopter Operations (e.g. Transmission Line Inspections)
- Aerial agricultural industry operations
- Defence aviation operations and communications.

The assessments also looked at:

- Whether there is a need for obstacle lighting around wind turbines
- Management and pre-planning measures required to minimise risk.

Findings and recommendations regarding the areas listed above can be summarised as follows:

- The proposed development poses no impacts or safety issues to infrastructure supporting the aeronautical and aviation operations listed above (e.g. Aeroplane Landing Areas)
- The proposed development will not impact on the types of flying operations listed above based on the assumption that management and pre-planning measures are put in place to minimise risk.

Management and pre-planning measures recommended are:

- Wind farm operators establishing liaison contacts with aerial agricultural industry operators
- Marking the proposed development in AIP publications which guide aviation operations and routes
- Aircraft are required to operate at a height that exceeds the maximum height of wind turbines at the proposed wind farm
- Consultation with the Department of Defence
- Location and height of the proposed wind farm is provided to all stakeholders in the region.

5.10 Fire and Bushfire

It is not anticipated that the Crystal Brook Energy Park will increase the risk of bushfires in the area. The risk of fire at wind farms is very low because

1. Flammable elements are located high above the ground;
2. Each turbine is situated next to a cleared construction pad reducing the available fuel load;
3. Lightning protection devices are installed on every turbine, ultimately reducing ground strikes which might otherwise have started fires; and
4. Monitoring systems installed in the turbines detect temperature increases and will automatically slow or shut down the turbine if the temperature or wind speed exceeds an assigned threshold.

Likewise, solar farms have minimal impact on fire risk for several reasons:

1. The panels themselves are made from non-flammable materials – glass, silicon, steel, aluminium, concrete and small amounts of plastic;

2. Once installed, they shade the ground and tend to inhibit the growth of vegetation within this shaded area, reducing the fuel available for grass fires; and
3. Solar inverters, which capture DC current from the panels and convert it to AC current for transport to the substation, will have inbuilt fire detection systems to allow an early response to any (unlikely) malfunctions.

Firefighting

Wind farms are not considered to pose any special hazards when it comes to fighting fires from the air. The following are some facts about wind farms and aerial firefighting:

1. The most effective way to manage a fire is the use of ground-based resources closely integrated with support from aircraft when required;
2. Wind turbines are not expected to pose increased risks due to wind turbulence or moving blades. Pilots view turbines as no different to other tall structures and hazards such as power lines, transmission towers, radio masts, mountains and valleys. Wind farms are just another piece of infrastructure in the environment that needs to be managed on a risk basis when fighting fires;
3. Pilots fly by sight and will not fly into smoke. Wind turbines, if not covered by smoke, are easily visible in the environment; and
4. The Australasian Fire and Emergency Services Council (AFAC) position paper on Wind Farms and Bushfire Operations concluded that *“wind turbines are not expected to pose increased risks due to wind turbulence or the moving blades. Local wind speeds and direction are already highly variable across landscapes affected by turbulence from ridge lines, tall trees and buildings.”*

6. Impact management

The proposed site presents a fundamentally sound location for the proposed development. Specialist studies conducted have identified potential issues however all are able to be mitigated through development of detailed management plans, as detailed below.

Noise

The results of the noise report indicate that the proposed development has the ability to meet all the noise requirements under the *Environment Protection (Noise) Policy 2007* and *Wind Farms Environmental Noise Guidelines 2009*. As the detailed design has not yet been undertaken the report was undertaken using examples of equipment available on the market which have the capacity to be utilised in the final construction of the Crystal Brook Energy Park. As outlined in the report, following the detailed design and commercial tendering for the required equipment, Neoen have committed to conducting a final assessment on proposed equipment to ensure the capability of the completed project is compliant with the *Environment Protection (Noise) Policy 2007* and *Wind Farms Environmental Noise Guidelines 2009*. Additionally, ongoing monitoring during the operational phase will ensure that the appropriate standards are maintained.

A construction noise and vibration management plan (CNVMP) will be implemented prior to beginning of the construction phase. The CNVMP will outline detail such as construction times, requirements for activities outside of these times (e.g. concrete pours on days of extreme heat), the process for stakeholder engagement and complaint management and address strategies for specific activities (e.g. blasting).

A letter has been provided from the involved land owner of residence H15 detailing their understanding of the impact relating to the proximity of their residence to the nearest turbine located on their property.

The involved land owner of residence H13 has also written a letter indicating their intent to demolish the H13 residence when Neoen reach financial close for the proposed Crystal Brook Energy Park

These letters are attached within the Noise Impact Assessment Appendix in Volume II of this report.

EMI

The EMI report has identified the potential for impact the proposed infrastructure may have on the surrounding community. Table 6-1 details the technology types, potential impact and the mitigation strategy Neoen is committing to undertake to ensure that impacts associated with the proposed Crystal Brook Energy Park are minimised.

Table 6-1 Summary of potential impacts

Technology	Impact	Mitigation Strategy	Recommendation
LMR and Point to Multipoint Services	Potential impact anticipated to SA Water mobile radio services.	Dependent on level of impact (to be determined).	Liaise with SA Water to determine the usage area of mobile radios associated with this transmitter to determine impact.

Technology	Impact	Mitigation Strategy	Recommendation
Digital TV	Potential minor service degradation to local community, i.e. TV reception within 10 km of wind farm may be affected.	Use (wherever practical) of equipment complying with the Electromagnetic Emission Standard, AS/NZS 61000.6.4:2012. Neoen Australia Pty Ltd will commit to addressing and fixing TV signal issues if experienced (potential solutions available include re-orientation of antennas to alternative transmitter sites to achieve higher signal level, upgrade of affected television user infrastructure to include a combination of high performance antennas and signal amplifiers, or offering a satellite television alternative if available).	Neoen Australia may choose to conduct a survey on TV signal reception within the vicinity of the proposed Energy Park (1) before construction, and (2) after construction to verify any complaints by local residents.
Wireless Broadband	Potential minor service degradation to local community, i.e. wireless broadband reception within 3km west of the	Use (wherever practical) of equipment complying with the Electromagnetic Emission Standard,	Neoen Australia may choose to conduct a survey on wireless broadband signal reception within the vicinity of the proposed Energy Park (1) before construction, and (2) after construction to verify any complaints by local residents.

Technology	Impact	Mitigation Strategy	Recommendation
	wind farm may be affected.	AS/NZS 61000.6.4:2012. Neoen Australia Pty Ltd will commit to addressing and fixing wireless broadband signal issues if experienced (potential solutions available include re-orientation of antennas to alternative transmitter sites to achieve higher signal level, upgrade of affected wireless broadband user infrastructure to include a combination of high performance antennas and signal amplifiers, or offering a satellite broadband alternative if available).	

Landscape and Visual Impact

The Landscape and Visual Impact Assessment (LVIA) addresses the impact of the required infrastructure on the surrounding landscape and community. It similarly addressed the impact that the construction process has for the duration of the construction period.

The LVIA concluded that the existing landscape has the capacity to absorb some change in relation to the development of the proposed Crystal Brook Energy Park. It noted sufficient separation distances between the proposed locations of major infrastructure including the electrical substation

The LVIA has made recommendations for mitigating the impact of the proposed development by way of refinements through the detailed design phase including microsite where possible to assist with height and scale of the proposed infrastructure and refine material and colour selections to ensure the development does not impose itself on the landscape more than is reasonably necessary.

While the construction phase is being undertaken excess vegetation removal should be avoided, progressive rehabilitation of landscaping undertaken, excessive light spill avoided from construction sites and wherever possible protection of mature trees.

During operation ongoing repair and maintenance should be routinely undertaken including the replacement of damaged or missing constructed elements. Long term maintenance of vegetation within the project site should be undertaken to assist with visual filtering and screening of external views.

Shadow Flicker

The results of the shadow flicker investigations determined that three involved landowners are expected to experience high levels of shadow flicker under certain conditions and specified times throughout the year. Recommendations have been made to ensure that screening and landscaping be undertaken to cast shadows in the areas most susceptible to receiving the effects of shadow flicker. Additionally based on the information provided as the result of the investigation should ongoing concern with shadow flicker be identified turbine control strategies can be implemented and shut the implicated turbine down for the duration of shadow flicker occurrence.

Flora and Fauna

The flora and fauna survey undertaken identified a number of constraints relating to vulnerable species within project area. In particular:

- A Wedge-tailed Eagle nest
- Two threatened species of bird, the Diamond Firetail and Hooded Robin, a threatened flora species
- An intact vegetation community, *Eucalyptus odorata*..

In relation to these constraints Neoen will institute the recommended 500 m buffer around the Wedge-tail eagle nest. While it was identified that the nest had not been used this season it was reflected in the completed report that these nests can go disused for a period of time and be reoccupied after a number of seasons. Neoen will also institute a 100 m buffer zone around intact mallee communities as a measure to protect the habitat of the Diamond Firetail and Hooded Robin. Additionally areas of endangered woodland will be avoided in the detailed design as a protection measure for the threatened community.

A draft Construction Environment Management Plan will be developed to institute best practice management techniques and ensure the correct training and awareness protocols are in place for construction and operational staff.

Traffic Impact Assessment

In accordance with the recommendations of the Traffic Impact Assessment a Transport Management Plan will be developed prior to the commencement of construction.

The applicant is aware of their obligations in relation to the Aboriginal Heritage Act 1988 and the Native Vegetation Act 1991.

The applicant acknowledges that the detailed layout design has yet to be undertaken and that final layout plans will need to be provided. This is necessary in the context of electricity infrastructure to ensure that appropriate safety standards are achieved in the detailed design phase.

Overall, the proposed development is considered to have minimal impacts and is generally compatible with the desired character of the Primary Production Zone.

It is acknowledged that this development will introduce a significant change to the visual appearance of the land involved and will have a visual impact in the context of the immediate locality.

The potential impacts are considered to be generally confined to the site and its immediate surrounds and the measures outlined in this chapter and more detail in the corresponding reports will be implemented to ensure compliance with all associated guidelines.

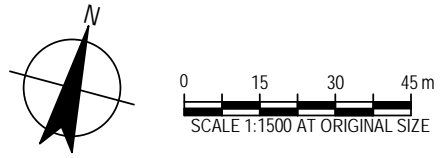
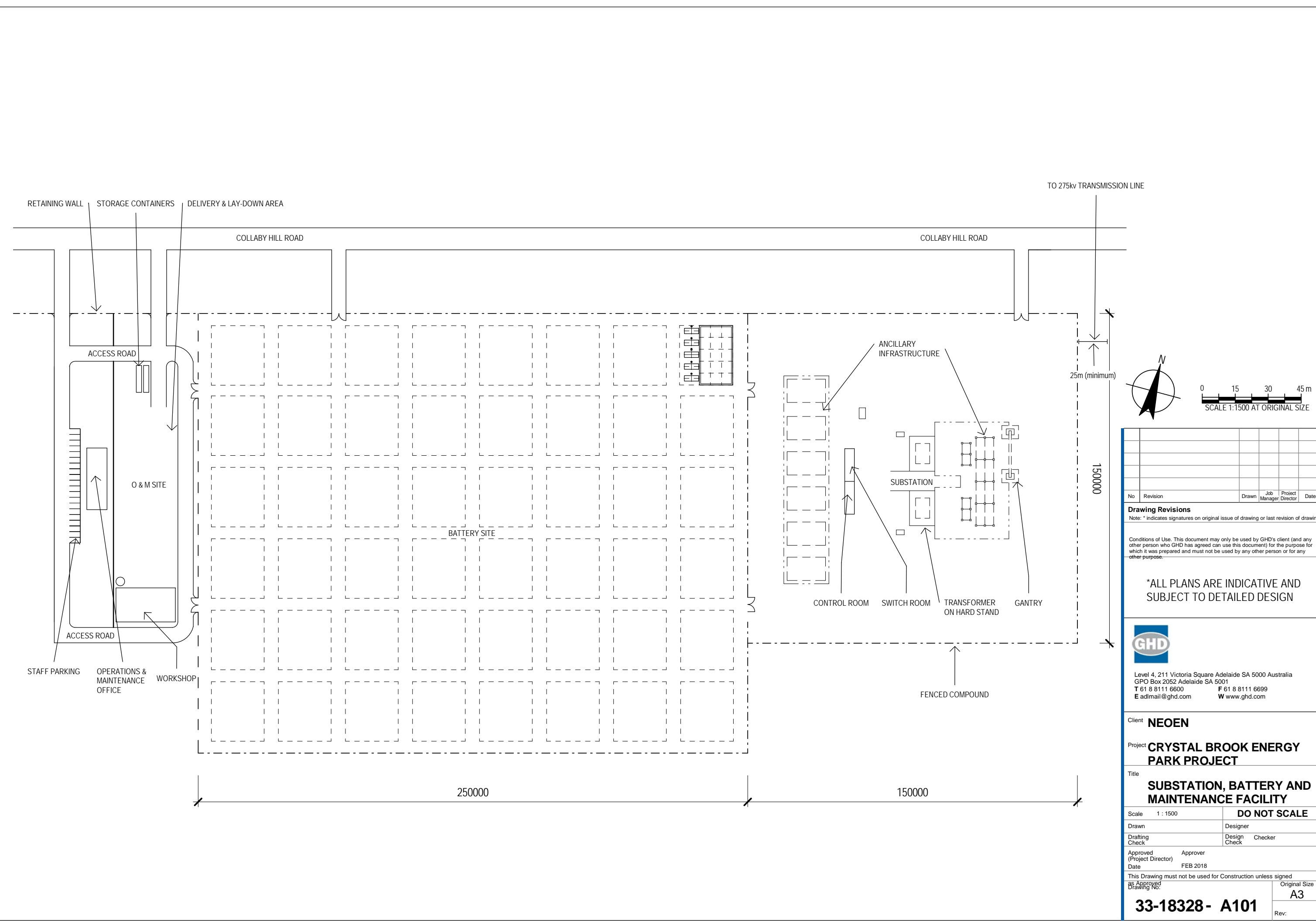
Appendices

Appendix A – Location References and Project Layout Plans

Parcel ID	CT Reference	Element
D71212A99	CT6141/640	Wind turbines and associated plant, access tracks, underground cabling
H240800S8	CT5784/13	Wind turbines and associated plant, access tracks, underground cabling
H240800S9S	CT5608/107	Wind turbines and associated plant, access tracks, underground cabling
H240800S7	CT5607/243	Solar PV, inverters, MV transformers, underground cabling, access tracks
H240800S10	CT5504/187	Solar PV, inverters, MV transformers, underground cabling, access tracks
F48290A1	CT6006/298	Wind turbines and associated plant, access tracks, underground cabling
F48290Q4	CT6007/133	Wind turbines and associated plant, access tracks, underground cabling
F205394Q92	CT6183/620	Wind turbines and associated plant, access tracks, underground cabling
H240700S33	CT5404/285	Wind turbines and associated plant, access tracks, underground cabling
H240700S37	CT6007/134	Wind turbines and associated plant, access tracks, underground cabling

Parcel ID	CT Reference	Element
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H240700S41	CT6007/133	Wind turbines and associated plant, access tracks, underground cabling
F48290A2	CT6007/133	Access tracks, underground cables
F48290A3	CT6007/133	Access tracks, underground cables
F205394A91	CT6183/620	Access tracks, underground cables
H240700S32	CT6007/134	Access tracks, underground cables
H240700S36	CT5404/285	Access tracks, underground cables
H240700S44	CT6007/133	Access tracks, underground cables
H240700S45	CT6007/113	Access tracks, underground cables
H240700S48	CT6007/113	Access tracks, underground cables
H240700S54	CT6006/296	Access tracks, underground cables
H240700S55	CT6007/113	Access tracks, underground cables
H240700S60	CT6006/296	Access tracks, underground cables
H240700S239	CR5758/745	Access tracks, underground cables
F16032A1	CT5476/921	Wind turbines and associated plant, access tracks, underground cabling
F188354A222	CT5566/295	Wind turbines and associated plant, access

Parcel ID	CT Reference	Element
		tracks, underground cabling
D92004A2	CT6129/985	Underground cables
H240800S23	CT5886/293	Underground cables
H240800S21SE	CT5886/162	Underground cables
F32100A10	CT5885/930	Underground cables
D20184A56	CT5883/929	Underground cables, access tracks, O&M facility and associated plant, lithium-ion battery storage facility and associated plant, substation, hydrogen production facility and associated plant, water pipeline, gas pipeline
D54869A550	CT5800/330	Underground cables, access tracks, water pipeline, gas pipeline



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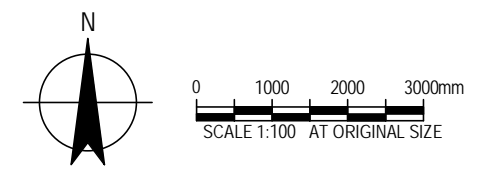
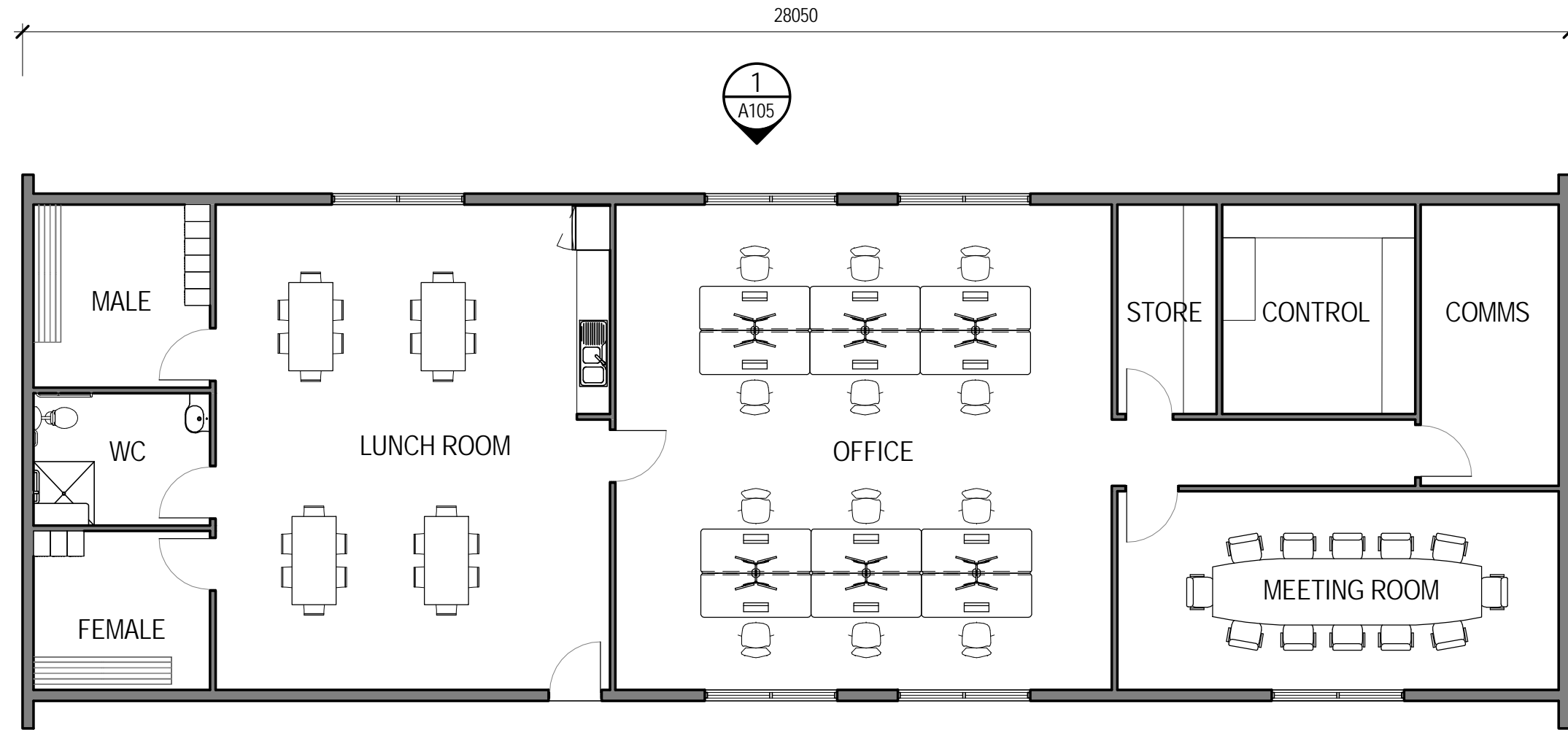
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 Project **CRYSTAL BROOK ENERGY PARK PROJECT**

Title
SUBSTATION, BATTERY AND MAINTENANCE FACILITY

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Drafting Check	Design Check		
Approved (Project Director)	Approver		
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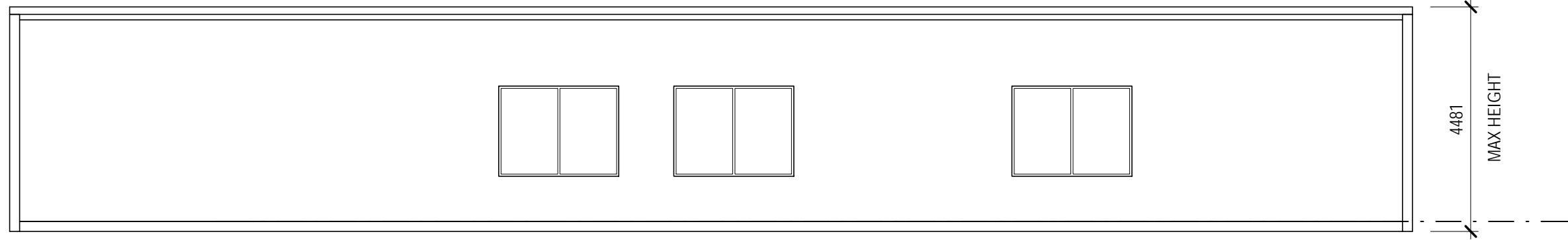
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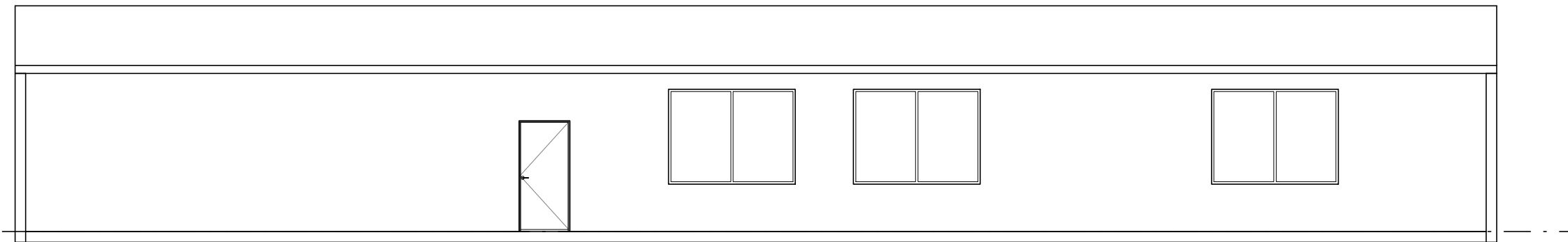
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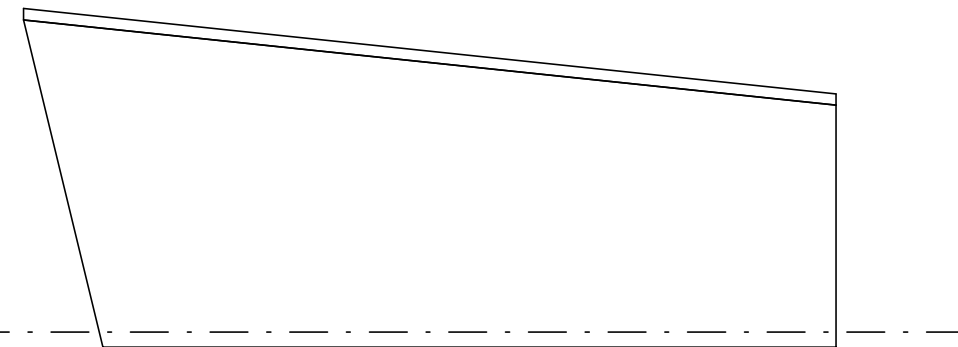
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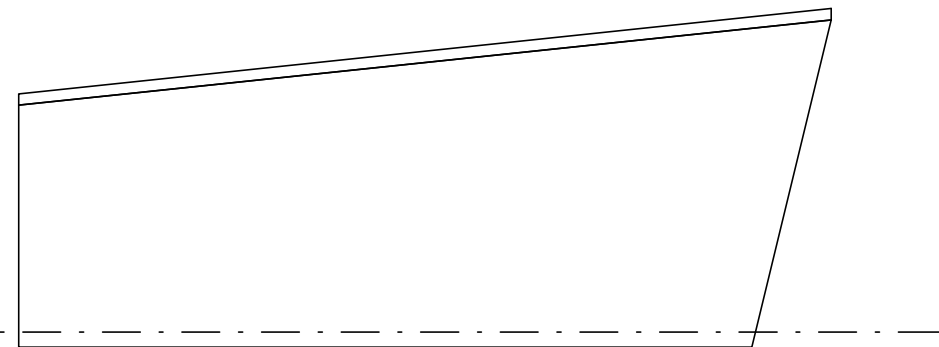
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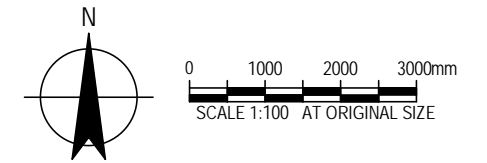
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SCALE 1 : 100



WEST ELEVATION
SCALE 1 : 100



EAST ELEVATION
SCALE 1 : 100



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Project **CRYSTAL BROOK ENERGY PARK PROJECT**
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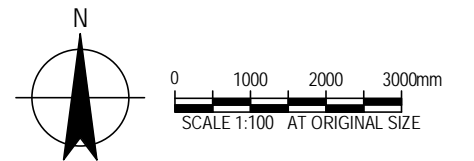
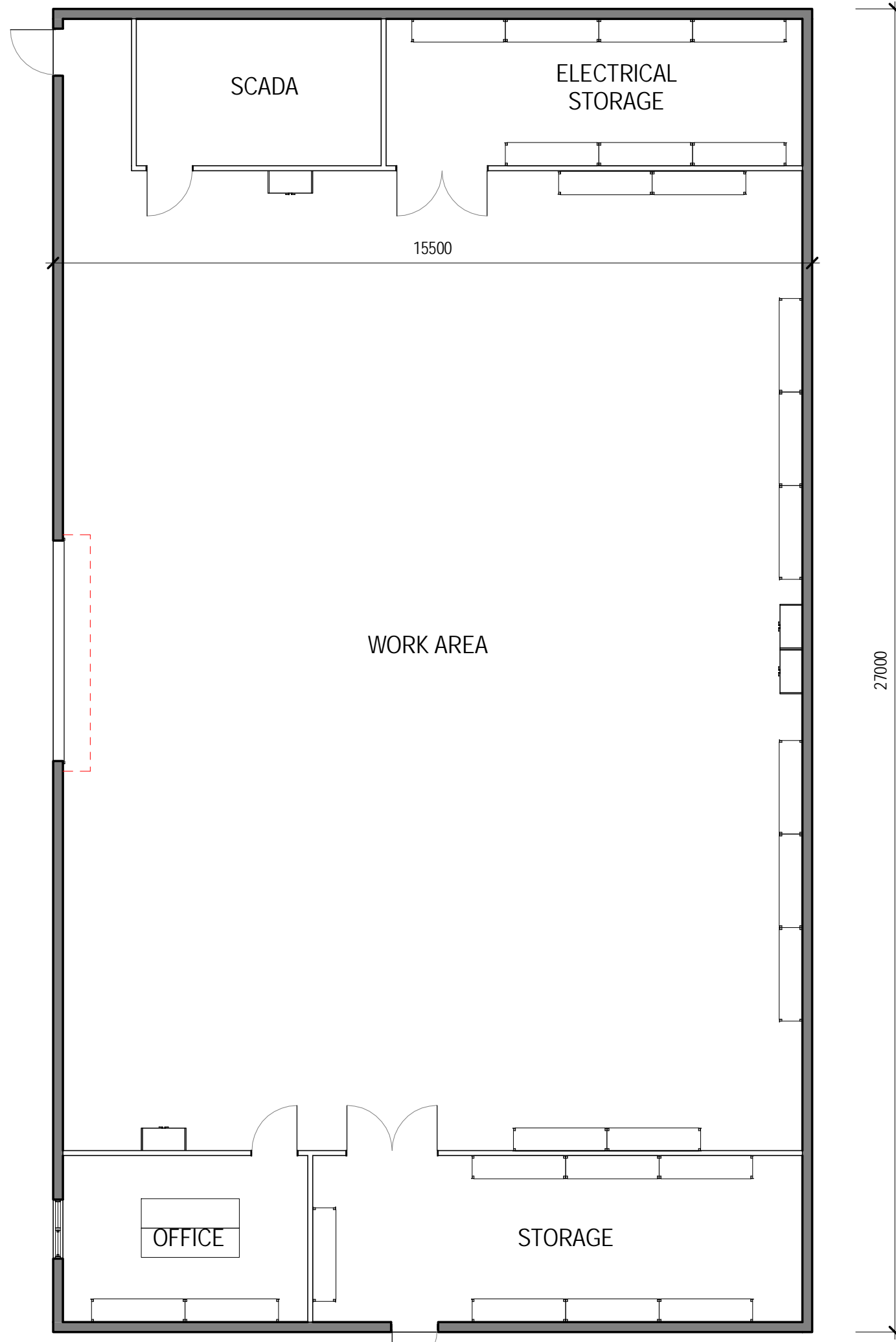
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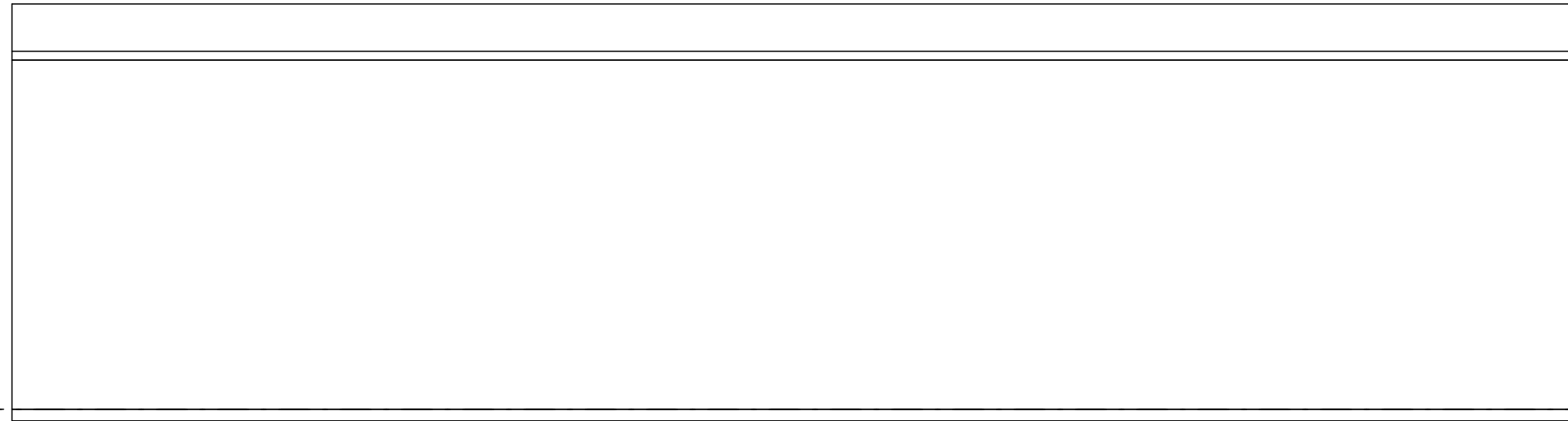
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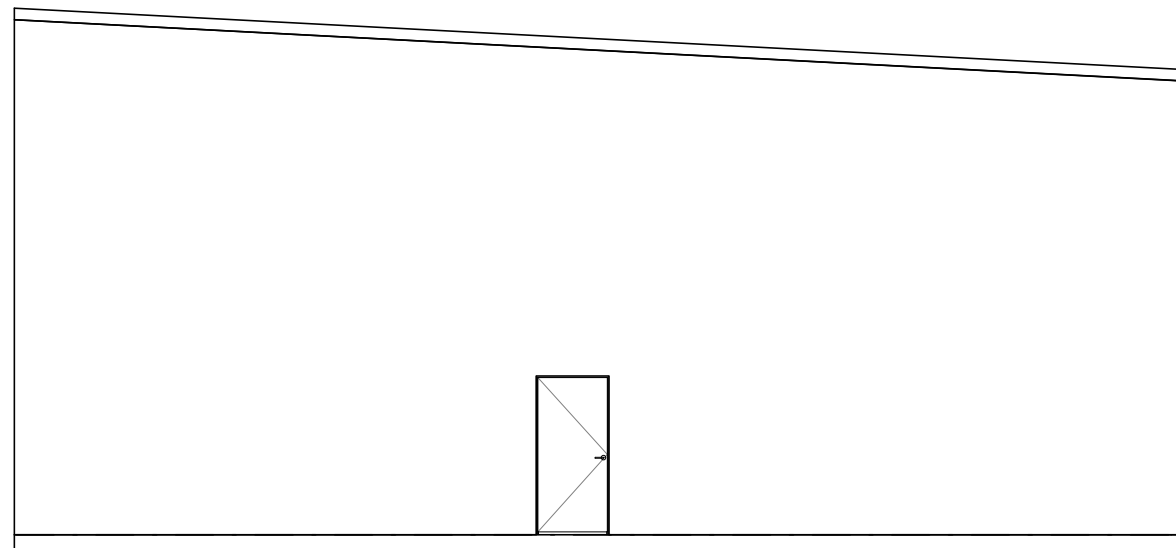
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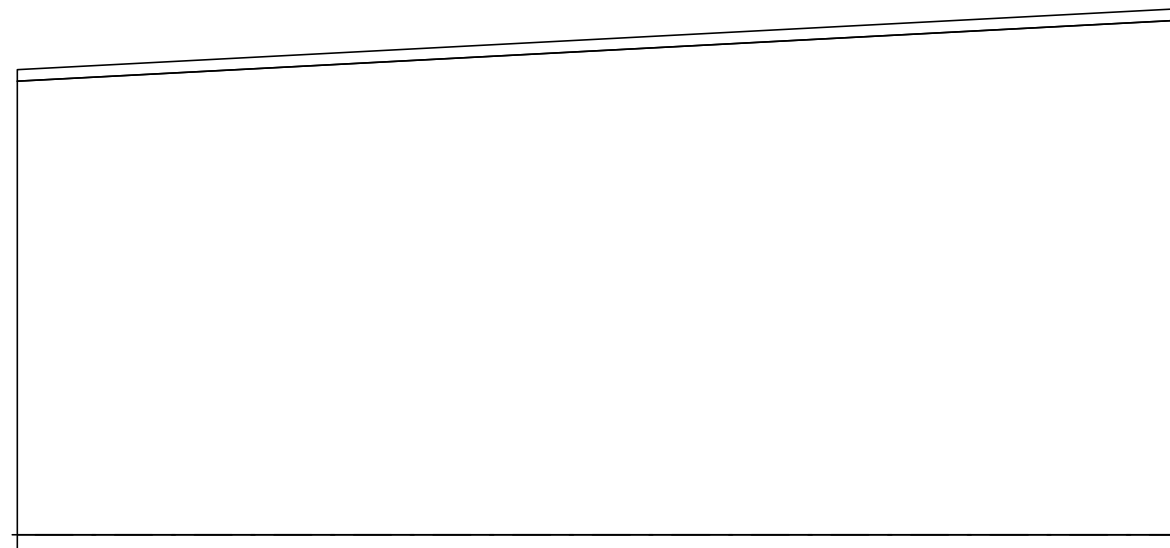
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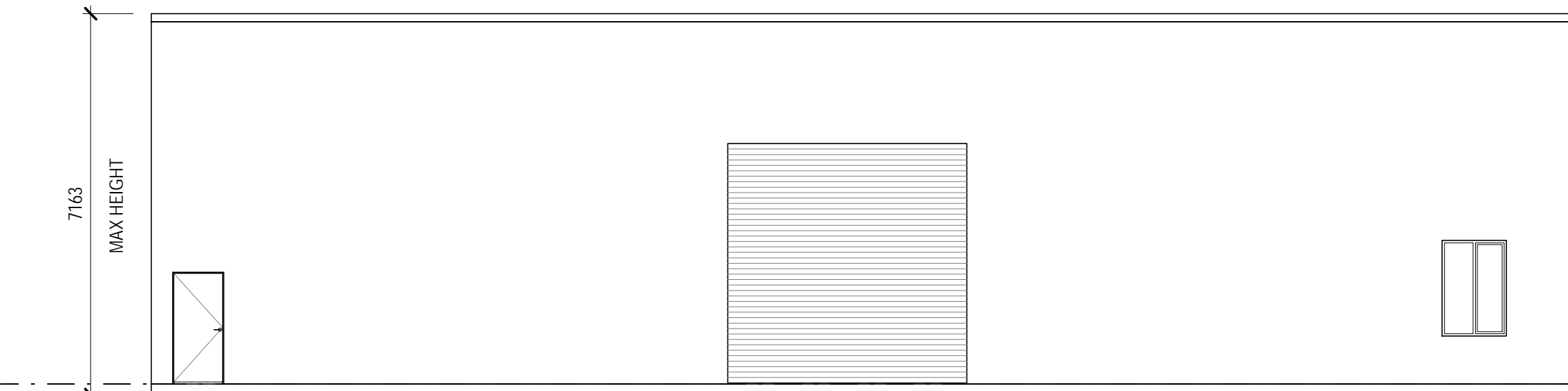
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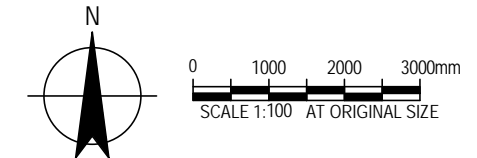
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NORTH ELEVATION
SCALE 1 : 100



WEST ELEVATION
SCALE 1 : 100



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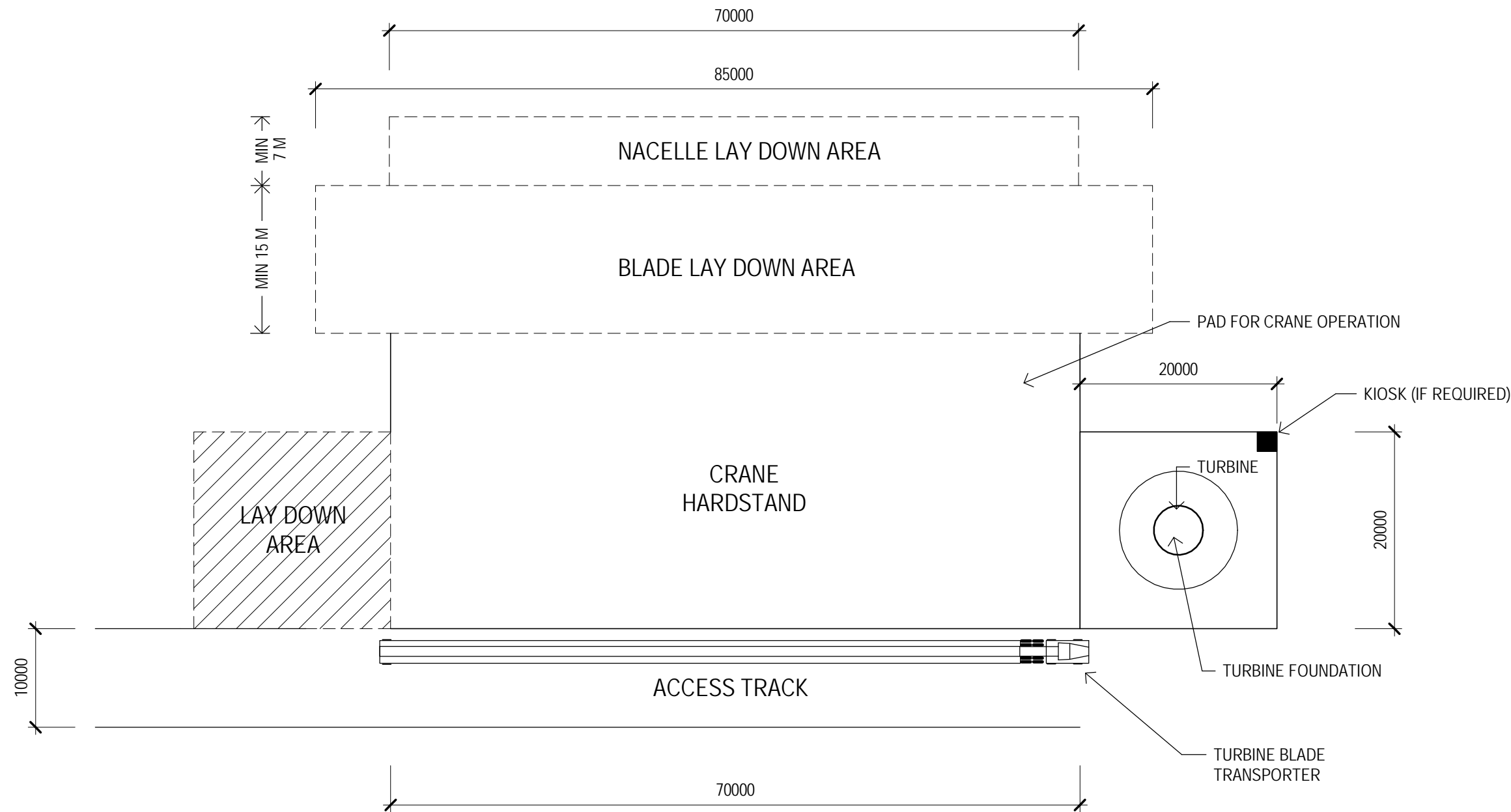
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Project **CRYSTAL BROOK ENERGY PARK PROJECT**
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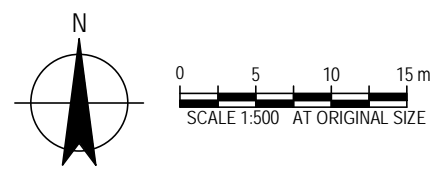
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 Project **CRYSTAL BROOK ENERGY PARK PROJECT**
 Title **TOWER SITE**

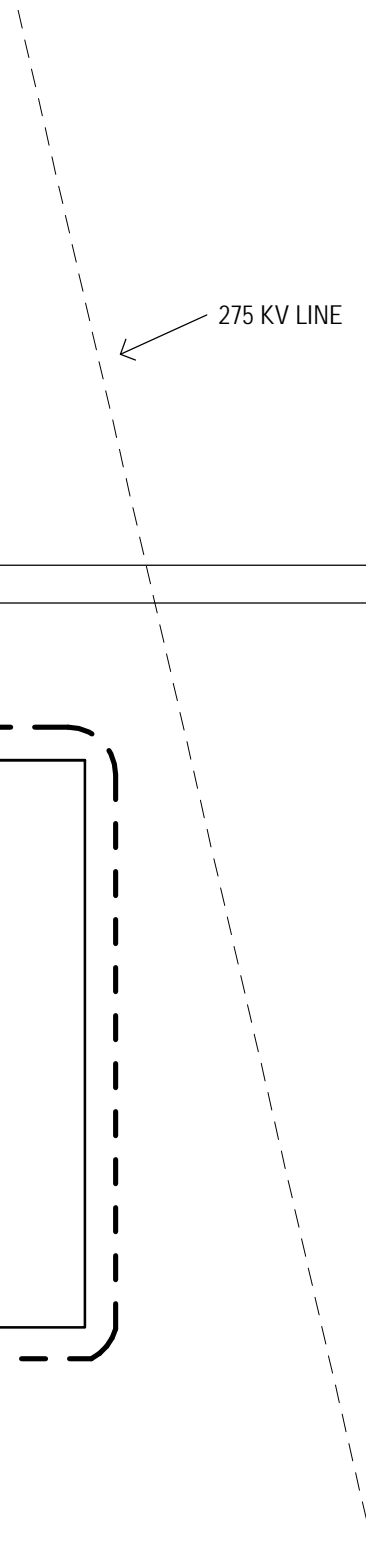
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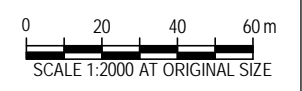
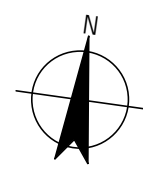
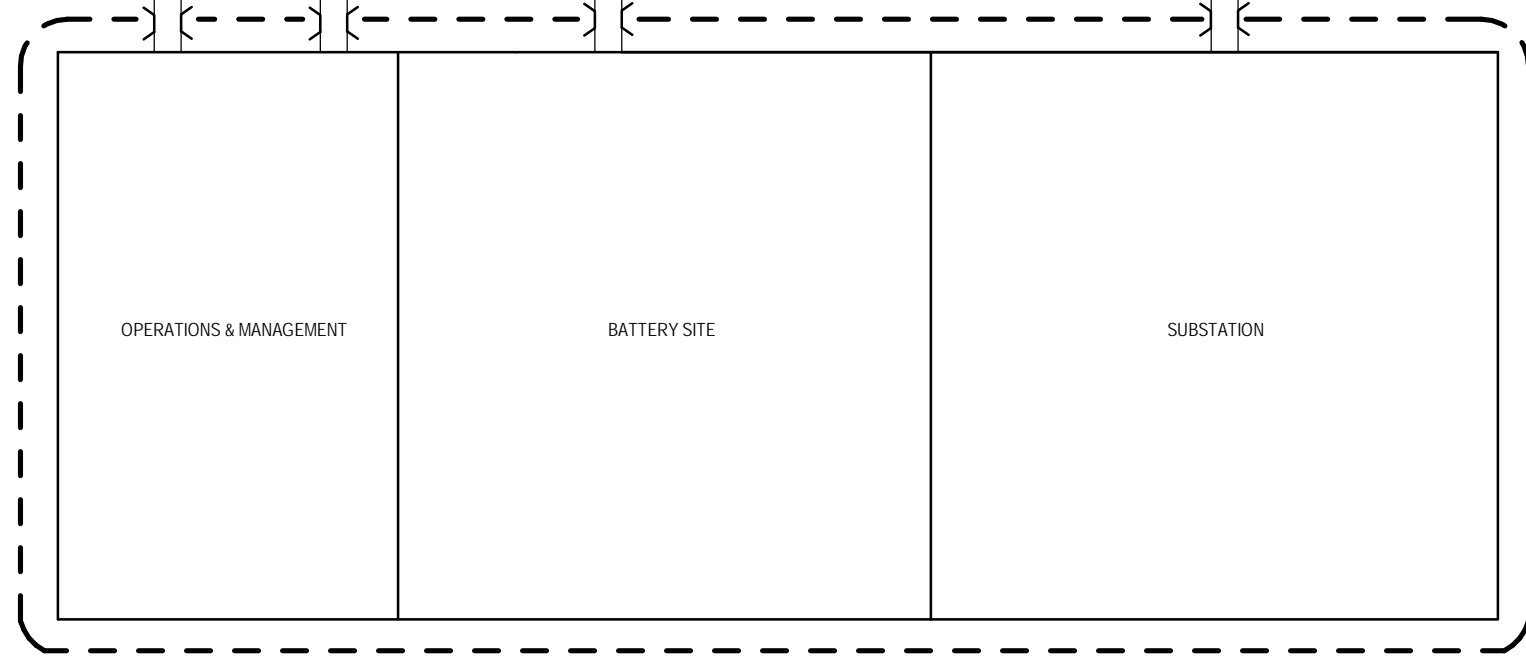
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--- SWALE

COLLABY HILL ROAD

COLLABY HILL ROAD



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Project **CRYSTAL BROOK ENERGY PARK PROJECT**

Title

Site Plan

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Drafting Check	Design Check	Design Check	Checker

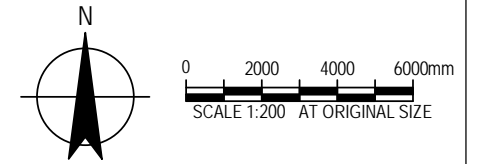
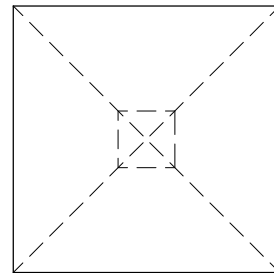
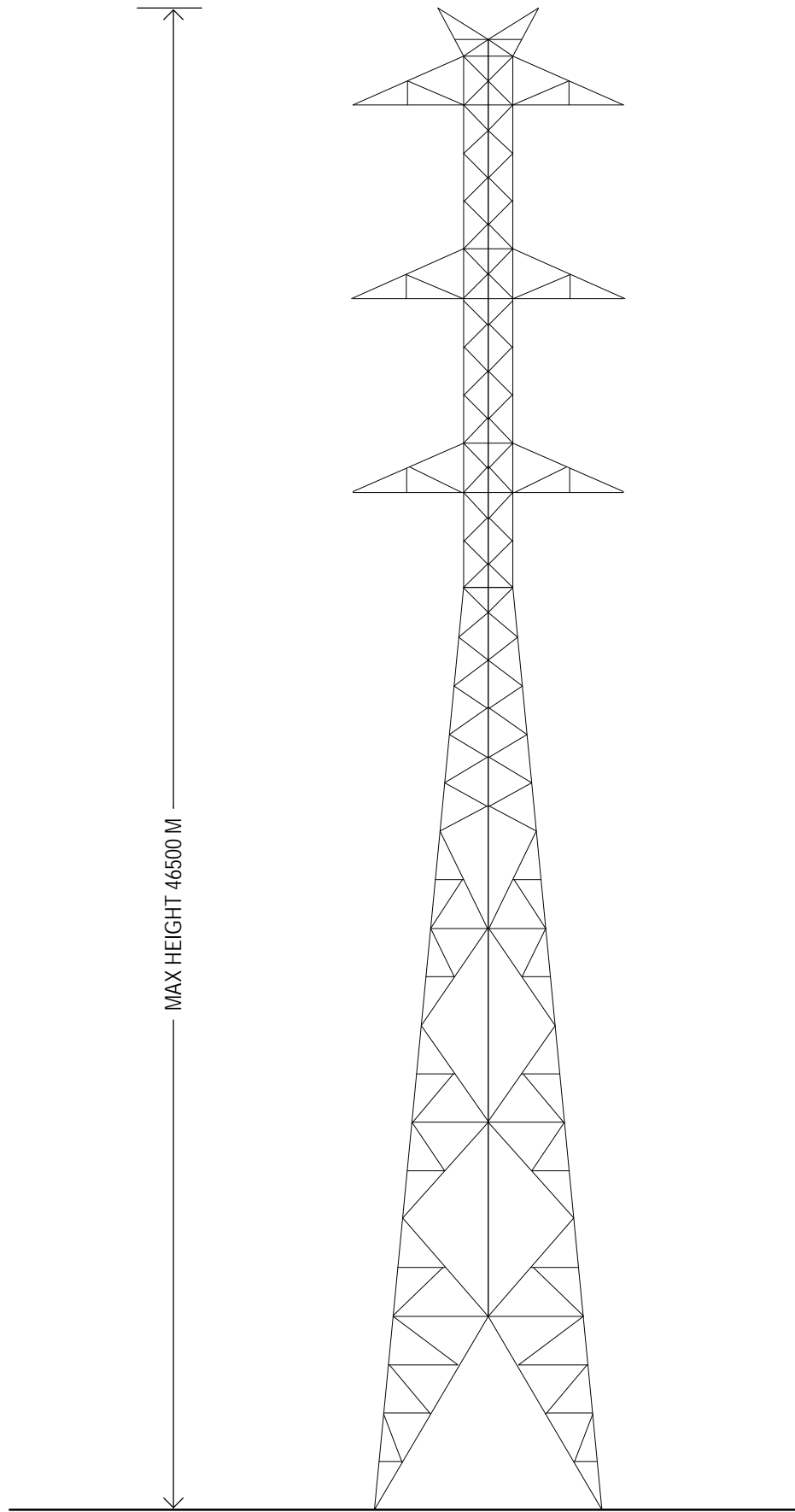
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Original Size
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 Project **CRYSTAL BROOK ENERGY PARK PROJECT**
 Title **275 KV TRANSMISSION LINE TYPICAL ELEVATION & FOOTPRINT**

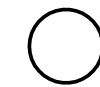
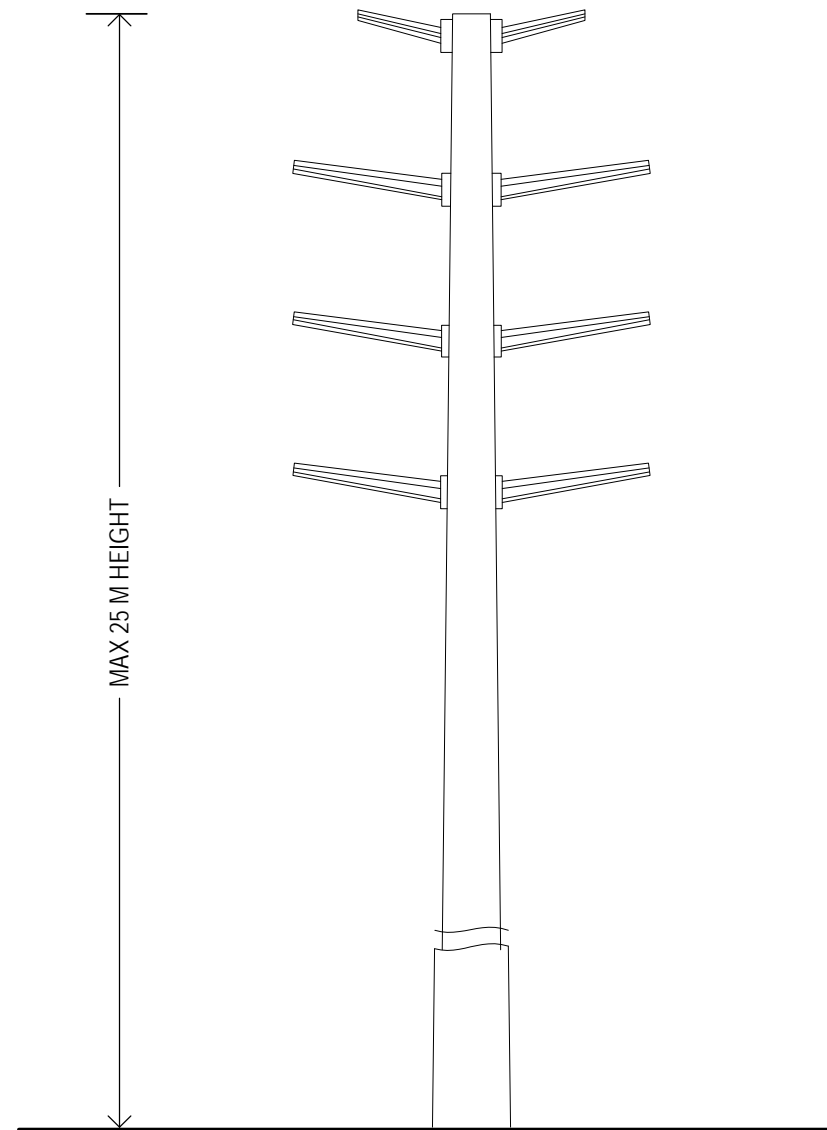
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Drafting Check	Design Check

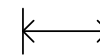
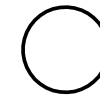
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Date	15.08.2014

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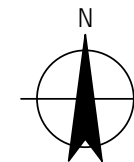
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33-18328- A119	A3
Rev:	



MAX 972 MM DIAM.
25 M POLE HEIGHT



MAX 1128 MM DIAM.
30 M POLE HEIGHT



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Client **NEOEN**

Project **CRYSTAL BROOK ENERGY PARK PROJECT**

Title **33 KV TRANSMISSION LINE TYPICAL ELEVATION & FOOTPRINT**

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Drawn JB Designer JB

Drafting Check Design Check Checker

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Date 15.08.2014

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Appendix B – Community Engagement & Feedback

Community Consultation Report

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8. Engagement tools implemented.....	14
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13. Conclusion.....	Error! Bookmark not defined.

1. Introduction

Crystal Brook Energy Park is a combined storage, solar and wind project located north of Crystal Brook and south-east of Port Pirie in South Australia. There are 4 participant landholders involved in the project, which covers an area of several thousand hectares.

Origin began investigating the project site in 2009. When they decided to cease development in 2012, the landholders began a competitive tender, seeking Expressions of Interest from other developers to take over the project. Following this uniquely landholder-driven process, Neoen was selected as the preferred project partner and recommenced development of the site in mid-2016.

Building on the lessons learned by Neoen through many successful Australian projects, well-planned community engagement has formed an integral part of the design and development of the Crystal Brook Energy Park. The project has achieved strong community support from host landholders, local and regional contractors, Crystal Brook residents and Aboriginal representatives.

Neoen also strives to be as responsive as possible to feedback and comments from the local community. Significant changes (detailed further below) have been made to the initial project design to take into account feedback from Port Pirie Council as well as from the local community regarding visual amenity in the Flinders Ranges and the suitability of land zoned Landscape Protection Zone for locating wind turbines.

This report summarises Neoen’s community consultation approach and the activities conducted to date. For Neoen, community consultation is an ongoing process, and we will continue to engage with a broad range of stakeholders throughout the permitting, construction and operation phases.

2. Community Engagement Policy

Neoen is committed to fair and open engagement with the local community around the Crystal Brook Energy Park. Neoen’s approach to community engagement follows a best practice Community Engagement Policy (**Attachment 1**) to ensure that open dialogue and information transfer can occur with local residents, stakeholders and the wider community in an efficient manner. This Policy has been heavily influenced by the *Best practice community engagement in wind development* (2014) (Best Practice Guidelines) which are annexed to the policy.

1. Principles and Objectives

Since the initial inception of the project, extensive and transparent community engagement has been a key priority. The objectives and desired outcomes of the community engagement approach are outlined below:

a. Community Engagement Objectives

- *Adopt a transparent and open approach to project development and ensure ‘no surprises’ for the local community.*
 - Be honest about the pros and cons of the project and manage local expectations.
 - Outline the benefits that the project will bring while not ‘overpromising and under delivering’.
- *Ensure regular and personal communication from the project team with the local community and key stakeholders.*
 - Communication and engagement will always be done by members of the project team and not consultants.
 - Regular face-to-face meetings will occur with all stakeholders and the project team will always make themselves available to stakeholders when requested.
- *Be a long-term partner to the community.*
 - Treat the local community as the best partner and advocate the project can have.
 - Nurture the long-term relationship with key stakeholders.
- *Be an example of best practice community engagement for the wind industry.*
- *Create shared value – a strong local community supports a commercially successful project, and a commercially successful project helps the local community to grow and prosper.*

b. Desired Community Engagement Outcomes

- Broad support for the project at a community, local government and state government level.
- An open and productive dialogue with the local community and key stakeholders.
- A project design that achieves social and commercial objectives.
- Ongoing partnership between the Crystal Brook community and the Crystal Brook Energy Park.

To date, Neoen has been extremely successful in meeting these objectives. Neoen has presented a final project design that has been met with approval from local and State government, as well as the local community.

After presenting an initial project design in February 2017, Neoen listened to community concerns regarding the suitability of the Landscape Protection Zone, as well as advice from our expert consultants, and presented a revised project design in April 2017. Following concerns being raised by the Port Pirie Council and the Beetaloo Valley Association regarding locating wind turbines in the Ranges Zone, Neoen made further changes to the project design, removing all wind turbines in this zone. This has reduced the wind component of the project to approximately half its original size.

Throughout the consultation process, Neoen has been open and transparent with the local community and other key stakeholders. Neoen has responded to all queries received through the project website, acknowledged the receipt of all Community Feedback Forms and taken this feedback into account in determining the final design, and met with a wide range of individuals and organisations. As a long-term owner and operator, Neoen will continue to engage with the local and regional community throughout the life of the project.

c. Community Engagement Principles

The project team commenced its initial feasibility studies for the Crystal Brook project in early 2016. In line with its community engagement objectives already outlined, the project has taken a comprehensive and wide-ranging approach to public engagement in line with the principles below:

- *Transparency:* In all dealings with the community, pro-actively provide accurate information regarding the project to those who may want it.
- *Meet face-to-face:* Where possible meet face-to-face with stakeholders, particularly where concerns exist.
- *Fairness:* In proposing solutions to stakeholder concerns always consider if such a solution meets community standards of fairness. This is particularly true of solutions that involve money.
- *Responsiveness:* When responding to stakeholder questions or concerns always provide notify receipt within 48 hours and set a reasonable time-line to follow-up after that.
- *Access:* Never use consultants for community engagement other than to provide expert advice. Allow community stakeholders to access key project personnel so that the project team becomes the most trusted source of information.

3. Community Engagement Tools

The Best Practice Guidelines identify a number of community engagement tools which Neoen has utilised in engaging with the Crystal Brook and broader community. These tools are shown in Table 1 below.

Table 1: Engagement Tools

Activity	Date
<i>Stakeholder Research</i>	Desktop mapping, one-on-one meetings with local stakeholders and identifying others
<i>One-way communications</i>	Project website, fact sheets, newsletter, press releases, newspaper ads, regular news columns, information in other local publications
<i>Two-way communications</i>	Telephone lines, briefings, social media, meetings
<i>Community education</i>	Publicly displayed information, workshops, stalls
<i>Community outreach</i>	Meeting with neighbouring landholders, information sessions, wind farm tours
<i>Decision-making feedback loops</i>	Public comment, town meeting or community forum, complaints management mechanisms, community representatives, community polling, focus groups, surveys
<i>Working with local groups and representatives</i>	Engagement with local Council and State and Federal representatives, engagement with local community organisations, environmental and advocacy groups and education institutions, formal collaboration with local groups and representatives
<i>Partnership & local benefit sharing models</i>	Sponsorship of local groups, neighbourhood benefits, local purchasing policies

4. Stages of Community Consultation

The Best Practice Guidelines outline the key wind development phases as follows:

- 1) Site selection
- 2) Feasibility
- 3) Planning & Approvals;
- 4) Construction;
- 5) Commissioning & Operations; and

6) De-commissioning.

The project team has completed stages 1 and 2 of the Crystal Brook Energy Park, and stage 3 is underway. The level of engagement undertaken by the project team has typically represented the 'High level of engagement' approach outlined by the Best Practice Guidelines. The public engagement approach during each phase of development is outlined in detail below.

a. Site selection

The Crystal Brook Energy Park is a unique project in that it was the landholder group who were the drivers behind the development of the project. The landholder group issued an Expressions of Interest (EOI) in early 2016 for the development of a wind farm near Crystal Brook. Neoen responded to this EOI, and was selected as the group's preferred project partner.

Neoen purchased project information from Origin Energy, including specialist studies and wind resource data. The local landholdings and landholders in the vicinity of the Crystal Brook site were identified and mapped through cadastral data overlaid with wind resource modelling. Neoen also conducted high-level desktop mapping to identify potential areas for expanding the original project site.

Initial community engagement commenced through face-to-face meetings with the involved landholder group, and was expanded to adjacent landholders over a period of approximately 10 months. Engagement with this group of landholders was through both one on one and group meetings. Legal and financial terms offered to the landholders were uniform across the group to ensure a cooperative and unified approach to the development.

Information provided to landholders included information regarding Neoen and its operations, high-level project information and mapping. Neoen encouraged landholders to make contact with landholders participating in other wind or solar projects and to visit those projects. Many of the landholders have subsequently visited the Hornsdale Wind Farm and the Hornsdale Power Reserve, which are owned and operated by Neoen.

b. Feasibility

Neoen engaged the consultancy GHD to assist in the community engagement process for the Crystal Brook Energy Park. In November 2016, GHD prepared a Community Consultation Plan for the project. The first steps in this plan included preparing a register of the relevant stakeholders, and collation of key information including website content, fact sheets and contact mechanisms.

The original project design covered areas of land within the jurisdiction of the Northern Areas Council and the Port Pirie Council. Neoen briefed executive members of the Port Pirie Council and the Northern Areas Council in December 2016. The project website was launched in January 2017 (accessible at www.crystalbrookenergypark.com.au). This website includes key project information, contact information, and feedback mechanisms including an online Community Feedback Form. The website has been regularly updated as the project progresses.

Once legal agreements were finalised with the majority of landholders comprising the project site, the project team identified and started contacting and meeting one-on-one with all of the neighbouring landholders within approximately 3km of the project boundaries. Neoen has been conducting one-on-one meetings with neighbours and Crystal Brook residents since February 2017, and will continue to meet with individuals, groups and organisations throughout the project development process.

c. Planning & Approvals

As the planning documentation for the project was prepared, Neoen engaged with a range of stakeholders in the lead-up to submitting the Development Application.

Neoen held an initial Community Information Session in February 2017, at which we presented a draft preliminary layout, fact sheets, posters and photomontages from three different viewpoints. At this time, Neoen also commenced engagement with the Beetaloo Valley Association (BVA), a group of approximately 43 landholders who live to the north-east of the project. The BVA has been strongly opposed to the wind component of the project.

In March and April 2017, Neoen commenced engagement with representatives of the Nukunu Peoples' Council. Neoen has a strong relationship with the Council, having worked with them on the Hornsdale Wind Farm located near Jamestown. In May/April, Neoen briefed the State members for Frome and Stuart and the Federal member for Grey.

Neoen considered feedback from members of the community and advice from our expert consultants and responded by presenting a revised layout in April 2017. Neoen removed all turbines located in land zoned 'Landscape Protection Zone' under the Northern Areas Council Development Plan, and all turbines located north of Collaby Hill Road. In doing so, Neoen responded to community concerns regarding the suitability of the Landscape Protection Zone for the development of renewable energy projects, reduced the visual impact on residents in the Beetaloo Valley, and avoided areas identified by our ecologists as having high conservation value.

Neoen presented the revised layout to the Port Pirie Council at its Ordinary General Meeting held on 26 April 2017. Also in April 2017, Neoen held a second meeting with the Beetaloo Valley Association to discuss Neoen's response to the initial questions posed by the Association, discuss the revised layout, and seek feedback on sharing benefits with the community.

Neoen approached the Nyrstar Port Pirie Smelter in May 2017 to discuss the potential for Neoen to provide energy to the Nyrstar Port Pirie Smelter via the Crystal Brook Energy Park. Discussions between Neoen and Nyrstar are ongoing. Neoen has also been approached by another entity interested in entering into an offtake agreement with respect to energy produced by the Crystal Brook Energy Park.

Neoen has also consulted with numerous government agencies and departments, including the Environment Protection Authority, the Northern and Yorke Natural Resources Management Board, the Department of Defence, Air Services Australia and the Civil Aviation Services Authority.

Neoen held a second Community Information Session in August. The Information Session was well-attended.

On 29 May 2017, Neoen received a letter from the Port Pirie Council noting that it had passed a resolution to oppose the revised layout, which still contained some turbines in the Ranges Zone to the north of the project. Council's primary concern was that it did not feel that wind turbines were consistent with the Development Plan in respect of this Ranges Zone. Verbally, Council informed Neoen that while landscape values were similar between this area and the southern area of the project, it wished to retain the area north of the Wilkins Highway as a 'development buffer' for the Flinders Ranges 'proper' (that is, the more rugged, rocky escarpments significantly further to the north-west). It also noted that it had received various submissions from community members opposing turbines to the north (most likely the Beetaloo Valley Association).

Following this letter, Neoen paused further development activities to redesign the project. As part of this, all turbines north of the Wilkins Highway (over half of the original wind component) were removed. This also meant that approximately half of the original landholder group would no longer receive turbines on their land. These landholders were disappointed but understood the reasoning behind the decision.

To keep the project financially viable after this reduction in turbine numbers, Neoen has explored two avenues:

1. Increasing the size of the remaining turbines to a maximum tip height of 240m (due to a greater 'swept area' and the ability to access better wind speeds found at higher altitudes, larger turbines significantly improve energy yield and therefore project economics);
2. Engaging with another landholder to the south-east of the project (not part of the original group) to explore the possibility of placing turbines on his land. Used for cropping, this land is considerably flatter and less elevated than the rest of the project and thus possesses a lower wind resource. With the larger proposed turbines, however, these locations would still be viable.

In early November 2017, Neoen met again with senior members of the Port Pirie Council to discuss the redesigned project. The meeting was highly positive and these Council members expressed their in-principle support for the project (while noting that the Council as a whole had not yet formally voted on the revised design).

The redesign of the project also took into account concerns expressed by the Beetaloo Valley Association, with the result being that no BVA dwelling is any closer than 2.9km to a turbine, with the majority at a distance well over 5km.

5. Timeline of key community consultation activities

Neoen has engaged continuously with a broad range of stakeholders throughout the development of the Crystal Brook Energy Park. Table 2 below provides a summary of the key community consultation activities that have been undertaken by the project team.

Table 2: Timeline of key community consultation activities

Activity	Date	Comments
Briefing: Port Pirie Council CEO and Director of Development and Regulation	Dec 2016	Presented preliminary project concept, discussed Neoen’s intention to go through the s 49 Public Infrastructure/Crown Development assessment process.
Briefing: Northern Areas Council CEO and Manager of Operational Services	Dec 2016	Presented preliminary project concept, discussed Neoen’s intention to go through the s 49 Public Infrastructure/Crown Development assessment process.
Port Pirie Council: Letter of No Objection	Dec 2016	Port Pirie Council sends letter to the South Australian DPC expressing no objection to the s 49 assessment process.
Project website launched	Jan 2017	The website has been regularly updated. All emails and Community Feedback Forms have been responded to.
Briefing: Low Carbon Economy Unit, SA Govt	Jan 2017	Presented preliminary project concept. Granted Crown Sponsorship in Feb 2017.
One-on-one meetings: neighbours	Feb 2017 onwards	Majority supportive of project. Concerns raised by members of the Beetaloo Valley Association and two residents on Talbots Road.
Community Information Session	Feb 2017	Neoen presented draft preliminary layout, posters, fact sheets and photomontages. Well-attended and predominantly positive feedback.
Meeting: Beetaloo Valley Association	Feb 2017	Numerous issues raised. Verbal and written response provided.
Briefing: The Hon. Geoff Brock MP, Member for Frome	March 2017	Presented preliminary project concept. Urged Neoen to meet with the Member for Stuart and elected members of both Councils.
Briefing: Rowan Ramsey MP, Federal Member for Grey	March 2017	Presented preliminary project concept. Supportive of new renewable projects provided that adequate storage included.
Meeting: Nukunu Peoples’ Council	March 2017	Support for project provided commercial terms acceptable.
Response to 2 objection letters	March/April	Written response provided to O’Deas and Petersons. Meetings held with Luke O’Dea and Ian Peterson.

Briefing: Dan van Holst Pellekaan MP, Member for Stuart	April 2017	Presented preliminary project concept.
Meeting: Beetaloo Valley Association	April 2017	Presented revised layout (no. of turbines reduced from 51 to 34). Verbal and written response provided.
Presentation: Port Pirie Council Ordinary General Meeting	March/April	Council preparing report to be presented on 24 May. Council passed resolution to oppose locating turbines in the Ranges Zone.
Meeting: Nyrstar	May 2017	Discussions between Nyrstar and Neoen are ongoing.
Response to Noise Monitoring letters	May 2017	Response to letters requesting that background noise monitoring be conducted subject to certain conditions. One-on-one meetings offered.
Briefing: Port Pirie Council Mayor, CEO and Director of Planning and Development	June 2017	Discussed layout changes to incorporate Council concerns regarding Ranges Zone and Neoen discussions with large industrial energy users in the region.
Second Community Information Session	August 2017	Presenting redesigned project to the Crystal Brook community
Briefing: Port Pirie Council Mayor, CEO and Director of Planning and Development	November 2017	Presented redesigned project to senior Council members; Council expresses its support for the project.

6. Community Benefits

Throughout the development of Crystal Brook Energy Park, one of Neoen’s major priorities in engaging with communities has been to communicate the potential benefits of the project to local economies. These benefits can be divided into several categories:

- **Local employment** during construction (between 100-200 jobs for 1-2 years) and operation (between 8-15 jobs for the life of the project);
- Use of **local providers** for construction materials such as concrete and quarried rock;
- Indirect benefits to **local businesses** servicing the project workforce;
- Potential benefits to **tourism** (see, for example, the Hornsdale Power Reserve or ‘Tesla big battery’, which have become attractions to Jamestown);
- The **Crystal Brook Energy Park Community Fund** - an annual amount allocated to local causes (such as schools or local sports teams) by a committee of local stakeholders together with Neoen. The exact amount of this Fund will depend on final project sizing but is likely to be between \$50,000-\$200,000 per year for the life of the project. One of the issues on which

Neoen seeks feedback from community members is how they would like this fund to be operated (for example, which persons or organisations should be on the allocation committee, or setting broad parameters for these allocations).

7. Issues raised during community consultation process

Neoen has sought and received feedback on the Crystal Brook Energy Park through a broad range of mechanisms, including:

- One-on-one meetings with involved landholders, project neighbours, local residents and local, State and Federal Government representatives;
- Community Open Days;
- Face-to-face meetings with concerned residents including the Beetaloo Valley Association;
- The Community Feedback Form and Contact Us facilities on the project website; and
- Emails and letters received from stakeholders.

The following table summarises the key issues that were raised throughout the community consultation process, and the response of the project team.

Table 3: Issues raised and project response

Issue Raised	Project Response
<i>Support the Crystal Brook Energy Park and renewable energy generally</i>	Encourage these stakeholders to remain engaged through website and other channels of communication
<i>Appreciate the economic benefits the project will bring to the local community</i>	Encourage these stakeholders to remain engaged through website and other channels of communication
<i>Appreciate the project’s potential to contribute to energy security in SA and provide baseload power</i>	Encourage these stakeholders to remain engaged through website and other channels of communication
<i>Appreciate the benefit the project will bring to agriculture in the region</i>	Encourage these stakeholders to remain engaged through website and other channels of communication
<i>Appreciate the project’s commitment to the Community Fund/expressed interest in sponsorship opportunities</i>	Encourage these stakeholders to remain engaged. Seek feedback on how the community would like the Fund to operate (eg committee members, towns involved)
<i>Appreciate the potential benefit the project will bring to local tourism</i>	Encourage these stakeholders to remain engaged through website and other channels of communication

<p><i>Desire to become involved in the project through employment opportunities</i></p>	<p>Encourage these stakeholders to email their CV or a list of their skills to the project team at contact@crystalbrookenergypark.com.au. These details are being compiled in a list to provide to the head contractor for contacting.</p>
<p><i>Desire to become involved in the project as a host landholder</i></p>	<p>Additional land has since been considered for its suitability for wind or solar and some additional land has now been included in the project site as a result of local consultation.</p>
<p><i>Appreciate the community engagement approach to date</i></p>	<p>Encourage these stakeholders to remain engaged through website and other channels of communication.</p>
<p><i>Concern in relation to the visual impact of wind turbines, particularly in the Ranges and Landscape Protection Zones</i></p>	<p>A comprehensive Visual and Landscape Assessment has been undertaken to assess the visual impact of the project. Additional photomontages have been created to clearly show the level of effect from additional vantage points within the locality.</p> <p>The initial project design has been amended to remove all wind turbines north of the Wilkins Highway, including all those located in land zoned 'Landscape Protection' and 'Ranges'. This has greatly reduced the visual impact of the project in the north.</p>
<p><i>Concern raised in relation to noise and infrasound and potential health impacts on the local community</i></p>	<p>The development must comply with the SA Environment Protection Authority (EPA) Wind Farm Guidelines. Expert acoustic engineering advice has been integral to the siting of the proposed wind turbines to ensure the SA Environment Protection Authority (EPA) Wind Farm Guideline is met.</p> <p>Regarding infrasound, there is no scientific data to suggest that the levels of low frequency noise emitted by wind turbines make humans sick. Research to date has not shown any negative health effects at the noise levels produced by operational wind turbines.</p> <p>The project team has also taken a conservative approach, and no wind turbines will be located within 1.3km of a non-involved landholder (the Guidelines specify 1km).</p>
<p><i>Concern in relation to property devaluation</i></p>	<p>Studies into the potential impact of wind farm developments on property prices, including by the NSW Valuer-General (2009) and Urbis (2016), have concluded that there is insufficient evidence to suggest that wind farms can be linked to adverse impacts on property prices.</p>
<p><i>Concern in relation to fire management and the effect of the project on aerial fire-fighting</i></p>	<p>Neoen will prepare a Construction Environment Management Plan (CEMP), including a Bushfire Risk Management Plan developed in consultation with the Country Fire Service (CFS). Neoen will also prepare an Environmental Management and</p>

	<p>Monitoring Plan (EMMP) including a Bushfire Risk Management Plan.</p> <p>During operation, the risk of a fire being started as a result of a wind turbine, solar panel or battery is remote. In addition, the access tracks constructed to each wind turbine are assets when it comes to fighting fires. On-site firefighting equipment, concrete bunds, and oil containment facilities, where required, will be present on site.</p> <p>The CFS views wind turbines similarly to other vertical infrastructure. Where obstructions do exist, a dynamic risk assessment is undertaken by the pilot. A comprehensive Aviation Impact Statement has also been prepared for the project.</p>
<p><i>Concern in relation to impacts on flora and fauna, particularly the impacts on raptors</i></p>	<p>A comprehensive Flora and Fauna assessment has been undertaken of the project site. Neoen has also committed to funding an additional study on raptors. Neoen has taken into account the feedback from our ecologists in revising the project design to avoid or minimise the impacts on flora and fauna, including a large setback from a potentially viable (though currently unoccupied) Wedge-Tailed Eagle nest.</p>
<p><i>How will the project engage with local schools and educate the community about renewable energy?</i></p>	<p>Neoen has spoken to several members of the community working with local schools who have expressed strong interest in working together to educate students about renewable technology and the future of clean energy. Neoen will be thrilled to participate in these initiatives and is happy to commit to working with schools as the project progresses. For the broader community, substantial amounts of information on the pioneering Hornsdale Wind Farm and Power Reserve have been made available on information panels in Jamestown, and Neoen would be glad to place something similar in Crystal Brook as the project progresses.</p>
<p><i>Why has Neoen included a 1.3km setback from wind turbines to neighbouring residences?</i></p>	<p>The Port Pirie Council Development Plan (2013) provides that wind turbines should be located at least 1km from non-involved dwellings. In order to strive for 'best practice' outcomes, Neoen has included a larger buffer of 1.3km from non-involved dwellings and tourist accommodation in the design of the Crystal Brook Energy Park.</p>
<p><i>What is the energy payback period for wind and solar projects?</i></p>	<p>Estimates of the energy payback period for wind turbines range from approximately 5 months (Martinez et al, 2009) or 6 months (Haapala and Prempreeda, 2014) to approximately one year (Crawford, 2009). Estimates for the energy payback period for solar PV vary depending on the type of photovoltaic systems used, and can range from 0.7 years to 12.1 years (Peng, Lu and Yang, 2013).</p>

<p><i>Did Neoen continue the land agreements signed between landholders and Origin?</i></p>	<p>No. Neoen has signed new agreements with the involved landholders.</p>
<p><i>What is Neoen’s contingency plan for any loss of TV or mobile phone reception caused by the project?</i></p>	<p>It is a priority for Neoen to ensure that landholders in the vicinity of the project are not affected by poor TV reception or mobile phone reception as a result of the project. Neoen will conduct both pre-construction and post-construction surveys of TV reception and mobile phone reception to determine any problem areas for reception. Any reception issues which may arise will be dealt with on a case-by-case basis to find the best solution for the residents involved, such as free installation of a higher performance TV aerial, or for phone coverage issues, subsidising switching to a different carrier with better coverage. Due to the proximity and orientation of the nearby TV transmitting tower, TV interference is not expected to be a significant issue for Crystal Brook Energy Park.</p>
<p><i>Which access roads does Neoen intend to use? The increased traffic movements expected during construction of the wind farm needs to be understood.</i></p>	<p>The project will work with Port Pirie Council and DTEI to ensure an agreed plan for traffic management and road maintenance is developed and planned for to ensure roads are upgraded and repaired, minimising inconvenience to local residents wherever possible.</p> <p>Internal site access tracks will be carefully sited, taking into account landowner requirements and environmental sensitivities and using existing roads wherever possible.</p>
<p><i>How will Neoen utilise local contractors?</i></p>	<p>Neoen will enter into an Engineering, Procurement and Construction (EPC) contract with a head contractor. The Crystal Brook Energy Park website invites anyone with skills that may be useful during the design, construction or operation of the energy park to email us at contact@crystalbrookenergypark.com.au with contact details and a brief summary of the services and skills they can provide. These details are being compiled in a list which will be provided to the EPC contractor.</p> <p>The EPC contract between Neoen and the head contractor will stipulate a requirement to use local contractors wherever the required skills are available and cost competitive.</p>
<p><i>Concern in relation to impacts on the Heysen Trail and users of the Trail</i></p>	<p>Neoen has made positive contact with the community group ‘Friends of the Heysen Trail’ to discuss the project, and will continue this dialogue as the project progresses. Turbines and associated infrastructure such as access roads will not be sited on the Trail itself, and will instead be sited so as to minimise visual or noise impacts upon it. Due to topography and vegetation, turbines will be visible to walkers only over a relatively small section. Subject to agreement from stakeholders, informational materials on the project may be</p>

	placed at a suitable point to allow users of the trail to inform themselves about renewable technology.
<i>Concern in relation to impacts of the project on agriculture and natural resources</i>	<p>Regarding agriculture, only the solar component will have any substantial impact by occupying some (privately held) agricultural land. The wind turbines are located largely on land used for grazing and will in any case have very small footprints relative to the project area. There is, furthermore, no evidence to suggest that turbines are disruptive to livestock; they tend to adjust to their presence very quickly and often stand in the shade cast by turbine towers.</p> <p>Regarding impact on natural resources, the project has been sited on agricultural land which has, for many years, been cropped or grazed, and generally subjected to significant environmental degradation. Neoen has commissioned expert environmental consultants to survey the site in detail and every effort has been made to site infrastructure to avoid native flora where any is present. Where this is not possible (and where approved by the Department of Environment, Water and Natural Resources) offset land will be acquired as per the <i>Native Vegetation Act 1991</i> and associated regulations. Please see https://www.environment.sa.gov.au/managing-natural-resources/native-vegetation/offsetting for more information.</p>
<i>Where will the energy produced from the project be used?</i>	As with all electricity generation assets connected to the National Electricity Market (NEM), energy produced from the Crystal Brook Energy Park will be dispatched into the South Australian grid and used across the state as required. Occasionally, South Australian power may be exported into Victoria at times when South Australian generators are producing more power than the State can use.
<i>Land clearing</i>	The project is largely located on agricultural land used for cropping or grazing, and thus already substantially cleared. Minimal additional clearing will be required, and where necessary, will be offset by land acquired for conservation in other areas of the state. Please see https://www.environment.sa.gov.au/managing-natural-resources/native-vegetation/offsetting for more information.

8. Engagement tools implemented

The table below provides a summary of the community engagement tools that the project has implemented through each of the development phases completed to date, and the proposed engagement tools and activities for the further development phases not yet undertaken. The various activities have been aligned with the key activity areas outlined in the Best Practice Guidelines.

a. Site Selection

Table 4: Site Selection Phase – Engagement Tools

Issue Raised	Project Response
<i>Stakeholder Research</i>	<ul style="list-style-type: none"> - Conducted high-level desktop mapping of wind and solar resources, local landholdings and landholders.
<i>One-way communications</i>	<ul style="list-style-type: none"> - Provided high-level project information, company information and mapping to landholders approached to participate. - Landholders negotiated as a group which meant that uniform legal and financial terms were offered.
<i>Two-way communications</i>	<ul style="list-style-type: none"> - Conducted one-on-one, face-to-face meetings with all landholders approached to participate. - Conducted group meetings with participating landholders.
<i>Community education</i>	<ul style="list-style-type: none"> - Conducted one-on-one meetings with landholders. - Issued general information to landholders. - Encouraged landholders to make contact with landholders participating in other renewable projects and to visit the nearby Hornsdale Wind Farm.
<i>Decision making-feedback loops</i>	<ul style="list-style-type: none"> - Used knowledge of local landholders to inform site boundaries and appropriate location of project infrastructure (e.g. discussed appropriate site for the solar farm with the relevant landholder).

b. Feasibility

Table 5: Feasibility Phase – Engagement Tools

Issue Raised	Project Response
<i>Stakeholder Research</i>	<ul style="list-style-type: none"> - Met one-one-one with project neighbours. - Included additional land where feasible.
<i>One-way communications</i>	<ul style="list-style-type: none"> - Continued to provide regular updates to involved landholders. - Launched project website, including key project information, contact information, and feedback mechanisms including an online Community Feedback Form. - Prepared project fact sheets which were uploaded to the website.
<i>Two-way communications</i>	<ul style="list-style-type: none"> - Met with the Northern Areas Council and the Port Pirie Council. - Established project email and phone number.

<i>Community education</i>	<ul style="list-style-type: none"> - Met one-one-one with project neighbours. - Issued general information to landholders. - Encouraged landholders to make contact with landholders participating in other renewable projects and to visit the nearby Hornsdale Wind Farm.
<i>Community outreach</i>	<ul style="list-style-type: none"> - Met with project neighbours.
<i>Partnership and local benefit sharing models</i>	<ul style="list-style-type: none"> - Developed register of local contractors and suppliers.

c. Planning & Approvals

Table 6: Planning & Development Phase – Engagement Tools

Issue Raised	Project Response
<i>Stakeholder Research</i>	<ul style="list-style-type: none"> - Continued to identify community stakeholders.
<i>One-way communications</i>	<ul style="list-style-type: none"> - Advertised the Community Information Sessions in local and regional newspapers and on the project website. - Distributed fact sheets, draft preliminary layout and contact information at the Community Information Session in February 2017.
<i>Two-way communications</i>	<ul style="list-style-type: none"> - Met with the Beetaloo Valley Association. - Met with the Nukunu Peoples’ Council. - Met with State and Federal members. - Met with a representative from the Nyrstar Port Pirie Smelter. - Consulted with government agencies and departments. - Met with individuals who expressed an interest in meeting one-on-one at the Community Information Session.
<i>Community education</i>	<ul style="list-style-type: none"> - Presented layouts, fact sheets, photomontages and posters at the Community Information Sessions.
<i>Community outreach</i>	<ul style="list-style-type: none"> - Held an initial Community Information Session in February 2017. - Met with stakeholder groups including the Beetaloo Valley Association and the Nukunu Peoples’ Council. - Held a second Community Information Session in February 2018

<i>Decision-making feedback loops</i>	<ul style="list-style-type: none"> - Held an initial Community Information Session in February 2017. - Feedback received during consultation taken into account in revising the initial project design.
<i>Partnership and local benefit sharing models</i>	<ul style="list-style-type: none"> - Continued to update register of local contractors and suppliers. - Discussed administration of the Community Fund with community stakeholders.

d. Construction

Table 7: Construction Phase – Engagement Tools

Issue Raised	Project Response
<i>Stakeholder Research</i>	<ul style="list-style-type: none"> - The project team and EPC contractor must ensure that all key stakeholders are identified and included in all relevant project communications.
<i>One-way communications</i>	<ul style="list-style-type: none"> - The project team and EPC contractor must ensure that regular construction updates are provided to local residents via the website and local mailouts. - Traffic disruptions or other major events must be advertised in the local media.
<i>Two-way communications</i>	<ul style="list-style-type: none"> - The project team and EPC contractor must maintain an active dialogue with local landholders and the broader community during construction. This must include a comprehensive handover from the development to the construction team, and clear avenues of communication with Neoen must remain open to local community stakeholders. - Contractor contractually bound to all communication requirements in landholder agreements, management plans, and environmental approvals and commitments.
<i>Community education</i>	<ul style="list-style-type: none"> - EPC contractor to coordinate site tours and information sessions. - The project should offer local employment and training opportunities.
<i>Community outreach</i>	<ul style="list-style-type: none"> - Opportunities for local employment and training. - Use of local suppliers.
<i>Decision making-feedback loops</i>	<ul style="list-style-type: none"> - The EPC contractor must have a landholder liaison responsible for day-to-day engagement with the local landholders during the construction phase.

	<ul style="list-style-type: none"> - Feedback to be provided to the relevant construction teams. - Project team to be informed of all stakeholder feedback.
<i>Working with local groups and representatives</i>	<ul style="list-style-type: none"> - Project team and EPC contractor to continue working with all key stakeholders throughout construction.
<i>Partnership & local benefit sharing models</i>	<ul style="list-style-type: none"> - Establish Community Fund. - EPC contractor to create community benefit statement.

e. Commissioning & Operations

Table 8: Commissioning & Operations Phase – Engagement Tools

Issue Raised	Project Response
<i>Stakeholder Research</i>	<ul style="list-style-type: none"> - The project team and EPC contractor must ensure that all key stakeholders are identified and included in all relevant project communications.
<i>One-way communications</i>	<ul style="list-style-type: none"> - The project team and EPC contractor must ensure that regular construction updates are provided to local residents via the website and local mailouts. - Traffic disruptions or other major events must be advertised in the local media.
<i>Two-way communications</i>	<ul style="list-style-type: none"> - The project team and EPC contractor must maintain an active dialogue with local landholders and the broader community during construction. - Contractor contractually bound to all communication requirements in landholder agreements, management plans, and environmental approvals and commitments.
<i>Community education</i>	<ul style="list-style-type: none"> - EPC contractor to coordinate site tours and information sessions. - The project should offer local employment and training opportunities.
<i>Community outreach</i>	<ul style="list-style-type: none"> - Opportunities for local employment and training. - Use of local suppliers.
<i>Decision making-feedback loops</i>	<ul style="list-style-type: none"> - The EPC contractor must have a landholder liaison responsible for day-to-day engagement with the local landholders during the construction phase. - Feedback to be provided to the relevant construction teams.

	<ul style="list-style-type: none"> - Project team to be informed of all stakeholder feedback. - Clear avenues of communication open to stakeholders to contact Neoen, not only contractors
<i>Working with local groups and representatives</i>	<ul style="list-style-type: none"> - Project team and EPC contractor to continue working with all key stakeholders throughout construction.
<i>Partnership & local benefit sharing models</i>	<ul style="list-style-type: none"> - Establishment of a Community Fund. - EPC contractor to create community benefit statement.

f. De-commissioning

Table 9: De-commissioning Phase – Engagement Tools

Issue Raised	Project Response
<i>Stakeholder Research</i>	<ul style="list-style-type: none"> - De-commissioning contractor required to meet the remediation requirements in landholder agreements and project planning approval.
<i>One-way communications</i>	<ul style="list-style-type: none"> - Project website to be kept up to date with information about de-commissioning.
<i>Two-way communications</i>	<ul style="list-style-type: none"> - Project team and de-commissioning contractor to engage with local landholders and relevant authorities as required.
<i>Community education</i>	<ul style="list-style-type: none"> - Project to evaluate whether there are opportunities to engage with local schools and community groups to provide information and education about the de-commissioning process.
<i>Community outreach</i>	<ul style="list-style-type: none"> - Project to engage with local landholders to determine if any of the farm infrastructure can be repurposed for ongoing land use activities.
<i>Decision making-feedback loops</i>	<ul style="list-style-type: none"> - Community liaison representative to be present throughout the de-commissioning process.
<i>Working with local groups and representatives</i>	<ul style="list-style-type: none"> - Project to engage with local land care groups and state agencies to ensure de-commissioning activities meet required environmental standards.
<i>Partnership & local benefit sharing models</i>	<ul style="list-style-type: none"> - EPC contractor contractually bound to utilise local labour and materials where possible during the de-commissioning phase.

9. Ongoing Engagement Approach

The project team will continue to engage with local stakeholders in line with the principles, strategies and goals of our Community Engagement Policy. This will include monitoring calls and emails received through the project website and information hotline as project development progresses. The following communication principles are applied:

- All phone calls and email messages will be promptly responded to.
- All enquiries received via phone and email will be documented in a communications log, including caller name, contact details and enquiry raised.
- Project team members will follow up with face to face meetings for any critical enquiries.
- Project team members will conduct face to face briefings with all key stakeholders at a minimum frequency of once per quarter in the lead up to construction, and during construction of the project.
- Detailed communication protocols will be developed at the commencement of the construction phase, and the commencement of the operational phase of the project.
- The communication tools outlined previously in this report will implemented for the various activities outlined.

The project team will also require the EPC contractor to follow these key communication principles. The details of the communication protocols that the EPC contractor will adopt will be agreed as part of the EPC contract negotiations.

Appendix C – Draft CEMP



Neoen Australia Pty Ltd
Crystal Brook Energy Park
Draft Construction Environmental Management Plan

March 2018

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1. Introduction

1.1 Introduction

This draft Construction Environmental Management Plan (CEMP) has been prepared to accompany a development application for the proposed Crystal Brook Energy Park project.

This draft plan sets the guiding principles for final CEMPs to be prepared by the respective construction element contractors and accepted by the relevant authority prior to construction. The CEMP will be submitted to the relevant authority, before being issued to prospective contractors who will undertake the construction works associated with this Project.

This document has been prepared to cover the following phases:

- Implementation and construction phase.
- Site closure and make good phase.

1.2 Purpose of this CEMP

This draft CEMP seeks to provide high level guidance to avoid and/or minimise potential environmental impacts associated with the construction of the Crystal Brook Energy Park and identifies potential mitigation measures and strategies that should be adopted during construction.

A final detailed CEMP and issue specific CEMPs will be prepared by the respective construction contractors for review and acceptance prior to works commencing on site. Detailed site-specific mitigation measures will be developed and included in any final CEMP to be prepared by the construction contractors. A CEMP is a dynamic document and is to be updated by the contractor(s) as required to reflect detailed methodology, changes to site conditions or scheduled works. The construction contractor(s) will take responsibility for reviewing and managing the outcomes identified in the CEMP.

The purpose of the CEMP is to:

- Provide for works to be carried out in accordance with the environmental conditions outlined in the Development Approval;
- Provide for works to be carried out in accordance with the applicable environmental legislation and standards;
- Outline how the environmental features of the site are to be protected during construction;
- Ensure all potential environmental risks associated with construction are identified and assessed;
- Protect environmental features and sensitive receptors;
- Outline measures to monitor and control potential environmental impacts associated with the works that are implemented effectively;
- Provide government, community and other stakeholders with assurance that environmental issues associated with the works are managed appropriately;
- Allocate clear responsibilities for the environmental management at all levels; and
- Optimise construction methods.

1.3 Data Sources

Background documents prepared for the Hornsdale Wind Farm and the development application report for the Crystal Brook Energy Park were used to inform the preparation of this draft CEMP. In particular the following documents provided background information:

- Crystal Brook Energy Park Development Application (GHD, 29 March 2018)
- Flora and Fauna Assessment (EBS, 26 March 2018)
- Aviation Impact Statement Solar Glare Review Qualitative Risk Assessment and Obstacle Lighting Review (Chiron Consultants, 5 March 2018)
- Crystal Brook Landscape and Visual Assessment (Green Bean Design, 29 March 2018)
- Electromagnetic Interference Assessment Crystal Brook Energy Park (GHD, Feb 2018)
- Crystal Brook Energy Park Traffic Impact Assessment Report (GHD, March 2018)
- Crystal Brook Wind Farm Shadow Flicker and Blade Glint Assessment (DNV-GL, 28 March 2018)
- Crystal Brook Energy Park Environmental Noise Assessment (Sonus, March 2018)
- Northern and Yorke Regional Natural Resource Management Plan (NRM, 2008)

These studies, and any other finalised post production of this draft document, will need to be reviewed by the contractor prior to completion of the final CEMP.

2. Project Information

2.1 Project Description

2.1.1 Site Context

Location and surrounding towns/features

The project site is located approximately 3.5 kilometres north of Crystal Brook and approximately 23 kilometres south-east of Port Pirie. The project is located within the Port Pirie Regional and Northern Areas Council areas and the Northern and Yorke Natural Resource Management area.

Crystal Brook is the nearest town with a population of approximately 1,260 and a range of regional level services including a hospital, a medical centre and a satellite Council office.

Involved landowners and landuse

The project will be located on a number of private properties primarily used for cropping and grazing. The project area is predominantly rural in nature with limited occupied residential properties.

Topography and climate

The topography of the area comprises undulating hills of the Ranges and a number of associated valleys. There are a number of watercourses within the area, with the majority being ephemeral.

The most comprehensive available climate dataset is from the Yongala weather station approximately 20km north-east of the Hornsdale project area. Both rainfall and temperature follow typical Mediterranean seasonal climate, with cool wet winter months and warm dry summer months. The long-term mean annual rainfall for the area is 365.3 mm, with June through to September typically the wettest months (BOM 2011 in EBS 2011)

Transport and Infrastructure

The project is located approximately 2.5 hrs north of Adelaide via Port Wakefield road and Augusta Highway (A1) which is a DPTI road. The key main access road will be the Wilkins Highway, also a DPTI road. Other local roads include Hughes Gap Road (northern end), Collaby Hill Road, Hatters Road and Heads Road.

This locality hosts a range of existing infrastructure including a major water pipeline – the Morgan-Whyalla pipeline (SA Water) a gas main (Epic Energy) and 132kV and 275 kV transmission lines.

2.1.2 Site Location and Project Layout

The site is located in the area known as Crystal Brook (SA, 5523) with the main access being via the Augusta Highway and then Collaby Hill Road (to the O&M, substation, battery and hydrogen facilities) or via the Wilkins Highway for the solar and wind farms. The site is approximately 220 ha in total area.

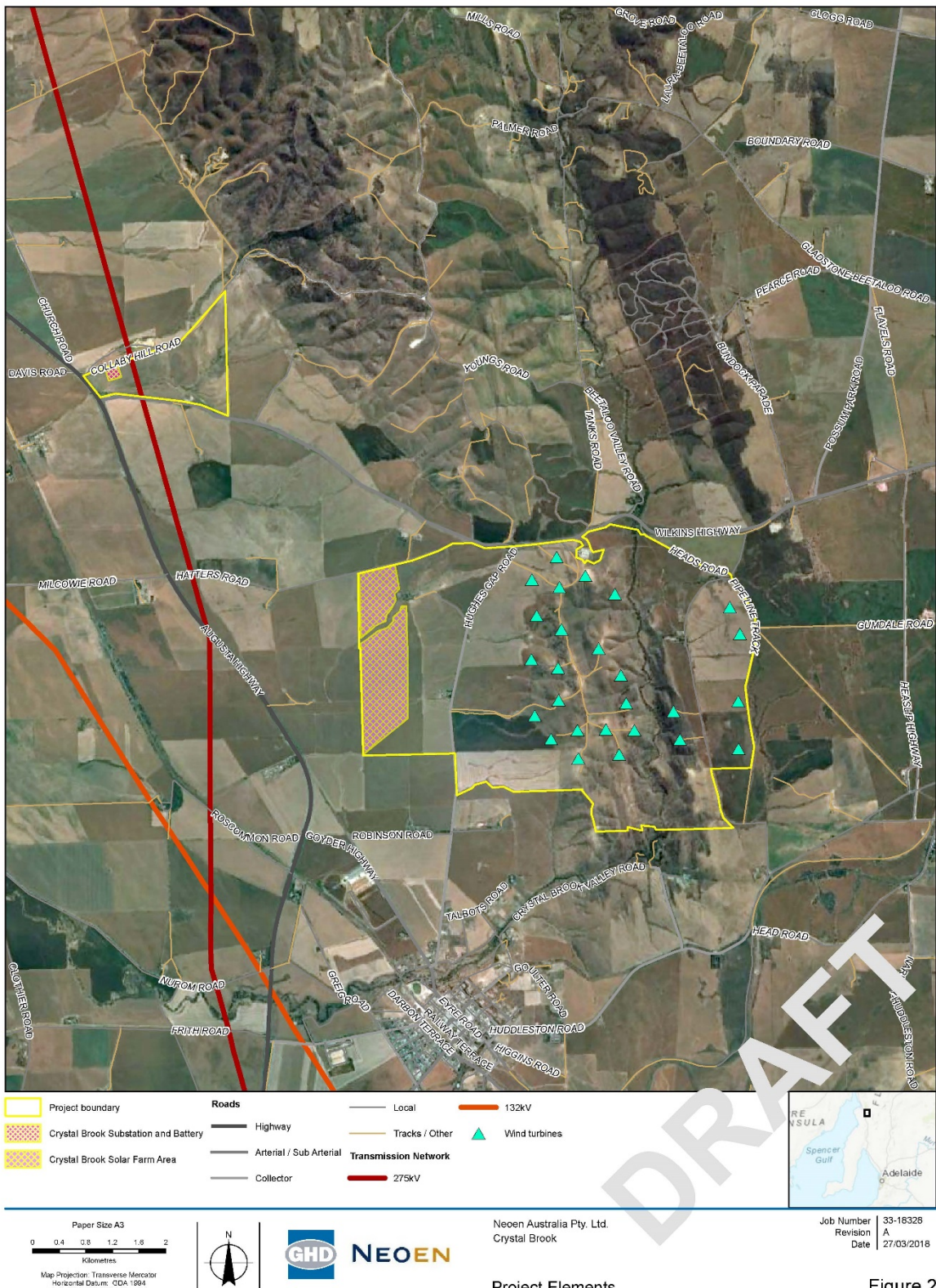
The infrastructure required for the installation and operation of the project includes permanent facilities and temporary facilities for the duration of construction phase. The permanent infrastructure will include, but is not limited to:

- 26 wind turbines
- A field of solar panels, approximately 170 ha;

- A storage facility (battery), approximately 5 ha;
- A substation, approximately 2.25 ha
- An Operations and Maintenance facility, approximately 1.35 ha.
- Underground cabling and access tracks;

The following Figure provides a conceptual layout of the project.

Figure 1 Project Layout



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Construction activities associated with the development will be undertaken over the following phases (which may start simultaneously):

- Site establishment;
- Access tracks and hardstand construction;
- Foundation construction;
- Underground cabling installation;
- Overhead line installation (if required);
- Operations and maintenance building construction;
- Equipment delivery and installation;
- Connection to the electricity grid;
- Commissioning; and
- Construction site decommissioning, removal of all temporary structures and restoration of the site.

Temporary infrastructure associated with the construction phase of the proposed wind farm includes a main compound area, site offices and staff facilities.

It is expected that the processes involved in the construction will include the following key elements:

- Temporary storage of chemicals, spoil and equipment
- Topsoil stripping and vegetation removal
- Excavation and borrow pit development
- Grading and compaction (cut and fill if required)
- Bore hole drilling
- Concrete pouring
- Haul and construction vehicle movements
- Installation of equipment, fencing and cabling.

Temporary construction facilities will be dismantled and sites rehabilitated post construction.

2.2 Sensitive Receptors

This section summarises the environmental features which have been identified as potential sensitive receptors for this project. The potential construction impacts upon these receptors are considered in Section 3.

Table 1 Sensitive Receptors

Standard	Management Criteria
Community	<p>The closest town to the project area is Crystal Brook. Other towns in the general vicinity include Warnertown to the north and Gladstone to the west. The Beetaloo Valley is a cluster of properties located on the western side of the rages and north of the Wilkins Highway</p> <p>The development will be located on a number of allotments primarily used for cropping and grazing which will involve 7 landowners who reside in the locality.</p> <p>The majority of these communities are serviced by unsealed gravel roads with sealed roads connecting the towns. The existing traffic volumes along these roads are relatively low and the roads are generally only used by local farmers for access to their properties and transportation of farming equipment and materials.</p> <p>The Project Area lies at the intersection of the traditional lands of the Nukunu, Ngadjuri and Kurna Aboriginal groups. Discussion and agreements with the relevant representative group will be undertaken.</p>
Ecology	<p>The wind farm component of the project is primarily located in and around the Crystal Brook ranges. This area is predominantly used for grazing where access permits. This area includes areas of scattered remnant native vegetation which ranges in quality and habitat value. A raptor nest is located in this area and required a 500m buffer.</p> <p>The rest of the project area is relatively flat with high quality soil conditions which have made this land favourable for agricultural land use. This has resulted in the clearing of the majority of native vegetation in the area. Remnant native vegetation is not anticipated on the site as most of it has been cropped which has resulted in the removal of native vegetation (including re-growth).</p> <p>It should be noted that remnant native vegetation may existing in locations such as un-cropped stormwater drainage lines and road side reserves. The concept layout aims to avoid these areas in order to avoid impact on native vegetation.</p>
Water Resources	<p>The project area is located within the Broughton River catchment and there are a number of drainage lines within and near the project site. These are fed by rainfall and are ephemeral. Average annual rainfall in this area is between 400 and 450mm.</p> <p>The only watercourse that feeds directly into the Broughton River system is Crystal Brook/Mercowie watercourse, which is located at the southern end of the project area and runs through the township of Crystal Brook.</p> <p>While the site is not within a prescribed water resource area, all effort should be made to contain stormwater runoff within the site boundaries.</p>
Soils and Geology	<p>The topography of the project area ranges from relatively flat, to undulating at the base of the Crystal Brook ranges. Within the ranges the topography also varies with some very steep locations and rocky outcrops.</p> <p>The soils in the project area vary widely depending on the location. Soils on at the base of the rages are relatively deep and susceptible to stormwater erosion. An example of this runs through the solar farm site. Soils on the ranges are generally shallow and susceptible to wind and water erosion.</p>
Cultural Heritage	<p>The Project Area is situated within the traditional lands of the Nukunu Aboriginal group and lies at the intersection of the traditional lands of the Nukunu, Ngadjuri and Kurna Aboriginal groups.</p> <p>Bowman Park, which is located just to the north-east of Crystal Brook has heritage values from both an Indigenous and European perspective. This area contains a local heritage and is considered to be a gathering site for indigenous communities. This is also a staging point for the Heysen Trail which extends north from the Park, through the project area.</p>

3. Environmental Management System

Managing environmental issues and promoting environmental awareness during the site works is an essential component of responsible project management. It requires the active consideration of environmental issues and health and safety as a prerequisite to all construction operations. This section identifies the key management measures which will be required to avoid or minimise these likely impacts. The contractor's EMS is expected to comprise an environmental policy and the basic elements indicated in Section 3 of this report.

3.1 Implementation Responsibility

The roles and responsibilities of the following key participants in the construction works for the project are outlined below:

- Neoen Principal
- Contractor Superintendent
- Contractor Environmental Manager
- Contractor and Staff.

The Neoen Principal will engage a construction company ("the Contractor") who will be responsible for ensuring the final CEMP is developed and implemented by all staff and their subcontractors involved with the construction works.

The Principal should ensure that all contractual documents specifically quote a CEMP in terms of responsibility for addressing and implementing relevant environmental requirements. The contractual documents should also indicate that the Contractor is responsible for ensuring legislative and CEMP compliance controls are maintained on site.

The Contractor is responsible for obtaining all relevant approvals/permits/licences prior to works commencing. The Contractor will appoint an Environmental Manager who is responsible for developing environmental impact mitigation measures compliant with all approvals, permits, licences and management measures and incorporating this into the CEMP for construction works. The Contractor will assign a superintendent who will have overall responsibility for ensuring that all employees, subcontractors, and persons involved with the planning and carrying out of the proposed works are familiar with their obligations to comply with environmental requirements.

Successful implementation relies upon support for, and compliance with, the CEMP's requirements from all involved parties. Responsibilities are detailed below:

Neoen Principal (the "Principal")

- Key contact and representative of Neoen.
- Ensure contractual documents include environmental responsibilities, adequate training and preparation of a final CEMP prior to construction commencing.
- Overall responsibility for ensuring the project meets its compliance obligations and environmental requirements are implemented.
- Agree procedures for emergency response.
- Agree frequency and method of auditing, monitoring and other matters which are to be reported to Neoen.

Environmental Manager (assigned by the Contractor)

- Responsible for managing environmental aspects during the construction and site closure phases and that the Superintendent has the information required to implement site controls successfully.
- Checks all environmental requirements, licences and procedures are implemented.
- Advises staff of special requirements.
- Conducts or commissions a consultant to undertake environmental audits/monitoring during all stages to ensure implementation of requirements.
- Determines and/or ensures environmental controls and procedures are in place and maintained during all phases of the project.
- Determines the training/instructions required for staff to be able to meet their environmental obligations.
- Reports environmental incidents during construction.
- Responsible for the emergency response procedure for environmental incidents.

Superintendent (assigned by the Contractor)

- Supervises and implements environmental controls on site during the construction works.
- Ensures training/instructions required by staff to be able to meet their environmental obligations, are undertaken and recorded.
- Reporting of environmental incidents to the Environmental Manager.
- During an emergency situation, responsible for informing the Environmental Manager and activating the response procedure.

Contractor(s) and Staff

- Implement environmental controls as directed
- Report environmental incidents to the superintendent.

Table 2 summarises the relevant project phase responsibilities relevant to implementation of a CEMP.

Table 2 Project Role Description and Responsibility

Planning	Principal	Oversees planning and Tender phase. Responsible for ensuring environmental compliance during the design phase and CEMP preparation.
	Design Consultant	Responsible for design of the wind farm facilities Responsible for preparation of a draft CEMP to guide development of a project-specific CEMP and outline legislative requirements.
	Environmental Manager	Responsible for review of the draft CEMP and preparation of final CEMP prior to construction commencing.
Construction Works	Principal	Responsible for environmental compliance.
	Superintendent	Oversees construction phase and enforces environmental controls on site.

3.2 CEMP Review, Reporting and Monitoring

The CEMP will only be effective if it is appropriately managed and utilised. Although the final CEMP will be developed prior to the commencement of construction works by the Contractor with the intention of covering the detailed methodology, circumstances may differ from those anticipated. Consequently it is very important that the CEMP be regularly reviewed and updated. This will ensure that the measures, responsibilities, criteria and corrective actions remain achievable, effective and suitable to the project, whilst maintaining compliance with relevant legislation and policy.

An important principle that is embodied in this draft CEMP is that of “continuous improvement”. To facilitate this process it is critical that an appropriate monitoring, reporting and review process be developed and adopted.

3.2.1 Review of CEMP

The CEMP is to be reviewed throughout the construction phase monthly (or at a frequency determined by the Contractor). The review is to examine the following as a minimum:

- The implemented environmental management activities
- The incident reporting and preventative action procedures
- The complaints handling procedures
- The emergency response procedures for environmental incidents.

3.2.2 Monitoring Records

The results of any monitoring required by any approvals, licences or Conditions of Consent granted for the construction phase of the development must be:

- In a legible form
- Kept for at least 4 years after the monitoring or event to which they relate/took place
- Be available upon request to any authorised person.

The following minimum records will be kept in regards to any monitoring / sampling activity:

- The date(s) on which the monitoring was taken
- The time(s) at which the monitoring was collected
- The point at which the monitoring was taken
- The name of the person who conducted the sample.

3.2.3 Sampling Quality Control Plan

Where practicable NATA accredited laboratories will be used for any testing of samples taken in association with approvals, licences or consent conditions. Laboratory detection limits must be below the adopted assessment criteria.

Quality Assurance / Control measures such as collection and testing of duplicates and blind duplicates will be used to ensure the accuracy and quality of the required monitoring.

3.2.4 Follow Up Action

Where adherence to the requirements in this document are found to be unsatisfactory in achieving broader environmental and site management goals, action will be taken to investigate the cause and make amendments to the CEMP as required.

3.2.5 Reporting

The Contractor shall provide a fortnightly report to the Principal to cover the following circumstances:

- Include a report on any monitoring undertaken in accordance with licences, approvals or conditions of consent
- Provide a summary of complaints received during the construction phase of this project
- Report of compliance with the CEMP.

3.3 Training and Site Induction

The Contractor will oversee that all employees, sub- contractors and visitors receive environmental instruction in relation to the CEMP and legislative requirements. Each person will be made aware of and have an understanding of their obligations and duties detailed in this CEMP. Everyone involved with the project should be familiar with the CEMP components that are relevant to their role.

The Principal is responsible for overseeing that the contractual agreement with the Contractor specifies the necessity of providing adequate training to the construction teams. This responsibility is to be assigned to the Superintendent who can liaise with the Principal and other agencies, if required. During construction works, the Contractor must ensure that each operative is trained to use the machinery and materials on site efficiently to avoid environmental nuisance, including noise, air pollution, impacts on water quality, spread of waste material and land contamination.

3.4 Emergency Response and Incident Management

The final CEMP should detail emergency response procedures, with clear lines of responsibility to enable effective response with minimal environmental harm or disruption. The following sections provide an outline of procedures and protocols that should be included in the final CEMP.

3.4.1 Environmental Incidents (Notification of Environmental Harm)

The type of incidents that may require notification in accordance with legislation depends on the extent of harm or the potential damage to the environment. To ensure that Neoen has a consistent approach to incident reporting, the Principal must be contacted immediately after the site has been made safe. However, the steps necessary to render the site safe and notify appropriate authorities may require an immediate response from Neoen's Principal. In addition valuable time may be lost in attempts to contact the Principal who may be unavailable to respond, however attempts to contact the Principle should be made immediately following an event. Therefore the Contractor's Environmental Manager and Superintendent will be responsible for ensuring:

- An immediate assessment of the potential onsite and offsite impacts of the incident
- Consulting (if necessary) with emergency services
- Instigating appropriate steps to mitigate the impacts

- Advising regulatory authorities, where these authorities can provide assistance with mitigation of impacts.

Failure to report an incident may result in enforcement action on all involved.

The Principal will provide written details of the notification to the appropriate authorities within 7 days of the dates on which the incident occurred.

The Principal will liaise with the appropriate authorities to provide suitable details within the time specified.

3.4.2 Emergency Response Plan

Emergencies that may occur during the construction phase of the project include:

- Fire
- Chemical spill
- Flooding
- Explosion
- Wildlife Injury
- Damage to existing infrastructure
- Personnel injury
- Seismic activity.

Prior to the commencement of the construction phase, the Principal and the Contractor are to agree on procedures for emergency response. It is the responsibility of the Contractor to develop, implement and train staff in the emergency response procedures.

To ensure emergencies are managed in an appropriate manner the Contractor is to follow the general procedures outlined in Table 4.

Table 3 General Emergency Response Plan

Standard	Management Criteria
Policy	To minimise the risk of an environmental accident or emergency during construction phase of the Project.
Performance Objective	Ensure that an Emergency Response Plan is kept in place to respond to any accidents or incidents that may impact on the environment and that all personnel are inducted in its application.
Implementation Strategy/ Mitigation Measures	Material Safety Data Sheets for all relevant materials used or stored on site, regardless of quantity, for the construction works shall be kept on site by the Contractor.
	Spill Response Kits, fire extinguishers and other emergency response equipment should be fully maintained and readily available.
	In the event of an emergency the Contractor's Superintendent is to immediately notify the Principal. The Superintendent will also notify the relevant emergency services.
Monitoring	Following an emergency, the affected areas shall be monitored as required. In the event of a spill, it should be ensured that all contaminated material, including soil, has been removed and properly disposed of by a suitably qualified contractor.

Standard	Management Criteria
	Follow up action is to be undertaken to ensure adequate provisions are implemented to minimise or eliminate the risk of reoccurrence of the emergency.
Reporting	Once immediate mitigation steps have been undertaken and the incident contained. All incidents/emergencies will be reported to the Principal. The Contractor is to record emergency information on an Incident/Complaints Form and will include the following: <ul style="list-style-type: none"> • Location of the emergency or incident • Name and telephone number of the designated contact person • Time of the emergency/incident • The environmental harm or nuisance caused, threatened, or to be caused by the emergency/incident • Any remediation work undertaken • Actions to be taken to prevent further incidents/emergencies and mitigate any environmental harm and/or nuisance caused by the incident/emergency.
Corrective Action	Non-conformance with this plan shall be documented by the Principal and corrective action undertaken to ensure future conformance. All non-conformances shall be documented and passed onto the Contractor.

3.4.3 Incident and Corrective Action Records

All environmental incidents need to be documented, recorded and followed up with identified corrective action(s). Incident Reporting documentation needs to be completed by those personnel involved along with the Contractor's Environment Manager; approval should be sought from the Principal. Corrective actions should be identified and documented in Corrective Action documentation and approved by the Principal's Representative. While identifying corrective actions to be taken, personnel responsible for implementing the corrective action need to be identified and informed of their responsibilities. Corrective Action documentation should be updated throughout the course of the construction works and/or until the identified actions have been fully completed.

Incident/Emergency Response Plan Contact Register

In the event of an incident or emergency occurring at the site, contact will be made with the key emergency services as identified in Table 4.

Table 4 Incident/Emergency Contact Register

Organisation	Title	Telephone Number
Principal (Neoen)	TBC	TBC
Neoen Representative	TBC	TBC
Contractor Environmental Manager	TBC	TBC
Contractor nominated Superintendent	TBC	TBC
EPA	Pollution and Environmental Incident reporting (24 hour)	(08) 8204 2004
Fire Brigade Police Ambulance	Emergency	000

3.5 Community information and grievance procedure

A programme will be established of public information provision to residents or other nearby sensitive receptors which may be impacted by the construction works, including haul traffic. A grievance procedure will be included in the final CEMP and implemented during the construction phase. A complaints register including details of the complaint, how the complaint was actioned / resolved should be maintained and retained throughout the construction period.

3.6 Fire prevention

Fires can eventuate from work activities or during operation. The dry grass may ignite causing damage to the grazing paddocks and adjacent dwellings. Fire may spread causing damage to the ancillary services and structures and smoke may disrupt traffic on adjacent roads.

Liaison with the CFS will be required prior to construction commencing, with regards to requirements during the "Fire Danger Period". Determine, in consultation with CFS, the appropriate firefighting measure and equipment required on site during construction.

Table 5 Fire prevention outline plan

Objective	Minimise the risk of fire resulting from the construction of the Crystal Brook Energy Park.
Legislation / Policy	<i>Electricity Act 1996</i> <i>Fire and Emergency Services Act 2005</i> <i>Electricity Regulations 2012- General</i> <i>Electricity Regulations 2010 – Principles of Vegetation Clearance</i> <i>Australian Standard 1851(2012) – Portable Fire Extinguishers</i> <i>Australian Standard 1940(2004) – The storage and handling of flammable and combustible liquids.</i>
Potential Impacts	Fires can eventuate from work activities or during operation. The dry grass may ignite causing damage to the grazing paddocks and adjacent dwellings. Fire may spread causing damage to the wind turbines and ancillary services and structures. Smoke may disrupt traffic on adjacent roads.
Mitigation	Liaise with CFS during the pre-construction stage with regards to requirements surrounding turbine and other infrastructure, during the "Fire Danger Period" Determine, in consultation with CFS, the appropriate firefighting measures and equipment required on site during construction. Provide CFS and SES information regarding the location of the equipment and measures implemented during the construction stage. During construction , the site will be maintained as follows: <ul style="list-style-type: none"> • Grass must be no more than 200 mm in height; • Maintenance works such as mowing and tree pruning to be done before entering the Fire Danger Season or under CFS supervision. • Leaf litter must be less than 20 mm deep; • No fires would be lit at any time, for any purpose, including burning waste materials; • Spark-arrestors to be installed on all vehicle and machinery powered by internal combustion engines; • Vehicles may only be operated on approved roads and tracks for that class of vehicle. Only diesel powered vehicles may operate "off road" at any time.

	<ul style="list-style-type: none"> • Welding to be undertaken under controlled manner; • Minimise on-site storage of flammable materials; and • All vehicles to be equipped with compliant fire extinguishers. <p>When conducting work using or generating intensive heat:</p> <ul style="list-style-type: none"> • Use a fire resistant shield to prevent sparks or hot material from leaving the work area; • Provide a fire proof container for off-cuts; • The work area around active grinding equipment (mom) and hot work source (1.5m) to be kept clear of flammable material or will be kept wet; and • Fire extinguishers and water tap to be made available in close proximity of the hot works area. <p>During periods of High Fire Danger:</p> <ul style="list-style-type: none"> • All hot work will be banned and no permits will be issued (including explosives) <p>During operation and decommissioning, the same categories of work may be undertaken, therefore all the above applies for the life cycle of the wind farm. Particular measures for the safe operation of the wind turbine includes:</p> <ul style="list-style-type: none"> • Communication protocol in case of fire to be implemented to all staff involved and operation and maintenance works; • All staff to be trained in working in bushfire prone area, to be able to respond in case of emergency; • Regular updates to be given to CFS regarding firefighting materials and measures implemented on site; • Location of water supply infrastructure to be clearly indicated on site; and • Firebreaks will typically be created around the perimeter of the site, the storage facility and other buildings.
<p>Strategy</p>	<p>A Fire Prevention Management Plan will be provided as part of the final CEMP.</p>

4. Issue Specific Management Plans

The following sections outlines potential mitigation strategies to avoid and/or minimise potential impacts to various environmental aspects associated with the construction works. Key legislative considerations and potential approvals/permits are highlighted. This will need reviewing against the construction methodology, once finalised. The Contractor's Environmental Manager will need to define the Inspection / Criteria/ Target / Evidence required to determine compliance with each element of the CEMP. Mitigation measures provided represent the minimum requirements that should be adopted in any final CEMP to be prepared prior to commencement of construction. Where indicated, Management Plans should be prepared and provided as part of the final CEMP.

The following outline management plans provided here are:

- Flora and Fauna Protection
- Weed, Pest and Disease Control
- Water Quality Protection
- Soil Management, Erosion and Sediment Control
- Construction Noise and Vibration Control
- Air Quality Control
- Materials, Fuels and Waste Management
- Protection of Sites of Cultural and Natural Heritage Significance.

In addition, specific management plans will be required for:

- Construction traffic
- Remediation and rehabilitation.

4.1 Flora and Fauna and Rehabilitation

Table 6 Flora and Fauna Protection

Objective	Minimise impacts to native flora and fauna including vegetation clearance and manage the works so as to avoid damage to protection vegetation and fauna.
Legislation / Policy	<p><i>Native Vegetation Act 1991</i></p> <p><i>Native Vegetation Regulations 2003</i></p> <p><i>Environment Protection and Biodiversity Conservation Act 1999</i></p> <p><i>Natural Resources Management Act 2004</i></p> <p><i>National Parks and Wildlife Act 1972</i></p>
Permits/Approvals	<p>Consent to clear Native Vegetation under Native Vegetation Act 1991.</p> <p>The concept design for the site has been developed to avoid native vegetation and fauna impacts. However, the detailed design stage may result in changes that lead to a higher risk of impact. If native vegetation requires clearance an approval will be required.</p>

Table 7 Flora and Fauna Protection Mitigation and Controls

Key Construction Tasks	Potential impact	Control / Action	Inspection / Criteria/ Target / Evidence	Responsibility
<p>Site Establishment</p> <p>Topsoil stripping and vegetation removal</p> <p>Excavation and borrow pit development</p>	<p>Potential disturbance to fauna located in areas to be cleared.</p> <p>Potential disturbance to fauna residing in habitats adjacent works area.</p> <p>Native vegetation located within the works area could be impacted.</p> <p>Vegetation within the footprint of the proposal may require clearance approval.</p>	<p>Approvals for clearance will be required and a Flora and Fauna Management Plan may be needed as part of the final CEMP.</p> <p>Minimise the construction area footprint and avoid, where possible, disturbance to native vegetation</p> <p>Vegetation exclusion zones should be clearly identified and communicated to site personnel.</p> <p>Place equipment and stockpile areas on previously cleared areas away from trees, bushes and native grasses, where possible.</p> <p>Avoid work/storage within the drip-line of trees to prevent damage to the tree roots and soil compaction.</p> <p>If there is any removal of native vegetation required during construction, it will be conducted in accordance with the</p>	TBC	<p>Environmental Manager</p> <p>Superintendent</p>

Key Construction Tasks	Potential impact	Control / Action	Inspection / Criteria/ Target / Evidence	Responsibility
		requirements of and approvals under Native Vegetation Act 1991. Any direction provided by the NVC must be adhered to. Do not burn off cleared vegetation.		
Construction traffic movement	Increased potential for wildlife vehicle strike on haul roads to and from site.	Use existing access tracks where possible to minimise additional disturbance Speed limits on haulage traffic may be required to prevent increased occurrence of wildlife strike.	TBC	Environmental Manager Superintendent
Tidy and make good work areas	Minimise permanent impacts to flora and fauna.	The reinstatement works will be undertaken as soon as practical after the completion of earthworks. Temporary or permanent measures will be implemented either to help with the revegetation process or to provide additional protection against erosion. On steep slopes erosion control matting may be used to provide interim protection until the vegetation cover is fully established.	TBC	Environmental Manager Superintendent

4.2 Weed, Pest and Disease Control

Table 8 Weed, Pest and Disease Control

Objective	Prevent the movement or increase in weeds, pests or diseases.
Legislation / Policy	<i>Native Vegetation Act 1991</i> <i>Native Vegetation Regulations 2003</i> <i>Environment Protection and Biodiversity Conservation Act 1999</i> <i>Natural Resources Management Act 2004</i> <i>National Parks and Wildlife Act 1972</i>
Permits/Approvals	Permit to move pest plants or animals (Natural Resources Management Act 2004)

Table 9 Weed, Pest and Disease Mitigation and Controls

Key Tasks	Potential impact	Control / Action	Inspection / Criteria/ Target / Evidence	Responsibility
<p>Site Establishment Topsoil stripping and vegetation removal Excavation and borrow pit development</p>	<p>Potential spreading of weeds, pests and diseases. Potential increase in prevalence of pest animals.</p>	<p>A Weed, Pest and Disease Management Plan will be provided as part of the final CEMP. Control weeds on site during construction and monitor the site for any outbreaks. Ensure that raw materials, such as rubble, gravel, sand, soil and water brought into the construction site are free of Phytophthora. Check rock prior to transportation and clean/spray as appropriate. Vegetation from weed species should be disposed of separately at a licensed waste depot.</p>	TBC	<p>Environmental Manager Superintendent</p>
<p>Construction traffic movement</p>	<p>Potential spreading of weeds and pests. Potential increase in prevalence of pest animals.</p>	<p>Follow weed or disease hygiene procedures ensuring vehicles and equipment are cleaned as required.</p>	TBC	<p>Superintendent</p>

4.3 Water Quality Protection

Table 10 Water Quality Protection

Objective	Minimise impact to surface and ground water quality within works area and haul routes.
Legislation / Policy	<p><i>Environment Protection Act 1993</i> <i>Environment Protection Regulations 2009</i> <i>Environment Protection (Water Quality) Policy 2003</i> <i>Natural Resources Management Act, 2004</i> <i>Stormwater Pollution Prevention, Code of Practice for the Building and Construction Industry</i> <i>EPA Guidelines (EPA 396/10) - Water Quality, Dredging and Earthworks Drainage.</i></p>
Permits/Approvals	Earthworks drainage authorisation (section 7(6) of Schedule 1 of the Environment Protection Act 1993) may be relevant.

Exception to exceed water quality criteria above Protected Environmental Values under the Environment Protection (Water Quality) Policy 2003 may be required.

Approvals may be require for actions/activities that have an impact on water resources such as up-grades of watercourse crossings, water extraction, water degradation (Natural Resource Management Act, 2004).

Table 11 Water Quality Mitigation and Controls

Key Tasks	Potential impact	Control / Action	Inspection / Criteria/ Target / Evidence	Responsibility
Site Establishment Topsoil stripping and vegetation removal Excavation and borrow pit development Bore hole drilling Grading and compaction (cut and fill if required) Concrete pouring Water usage for construction works Instillation of permanent equipment Temporary storage areas	<p>Impact to the natural movement of surface and groundwater affecting availability to flora and fauna and local communities and landowners.</p> <p>Impacts to water quality can affect aquatic fauna, decreases the aesthetic value of a watercourse or water body and can damage transport infrastructure.</p>	<p>A Water Management Plan will be prepared prior to construction.</p> <p>Existing natural drainage paths and stormwater facilities not blocked or restricted.</p> <p>Runoff from unsealed areas at the construction site does not enter stormwater drains or natural drainage lines.</p> <p>Stormwater diverted around stockpiles.</p> <p>Control surface run-off entering and leaving the work area.</p> <p>The stormwater drainage infrastructure installed will be inspected and its suitability to the permanent configuration of the access tracks, hardstands and buildings compounds will be assessed.</p> <p>Consideration will be given to stormwater drainage control when establishing the construction site. The following objectives will be considered:</p> <ul style="list-style-type: none"> • Limit site access to designated routes and controlled area; • Locate and secure all stockpiles resulted from excavation or imported materials away from watercourses and concentrated water flow paths; • Ensure that all the stormwater drainage are in place before site clearing works begin; • Assess the impact of the proposed stormwater drainage systems on the adjacent properties; 	TBC	Environmental Manager Superintendent

Key Tasks	Potential impact	Control / Action	Inspection / Criteria/ Target / Evidence	Responsibility
		<ul style="list-style-type: none"> • Consideration to existing underground services will be given when establishing the access tracks and construction site, and protection will be provided where required. • Construction of access road networks may alter surface drainage paths. Drainage should be installed to mitigate potential effects, taking into consideration ephemeral watercourses • Ensure any conditions/obligations relating to a Permit for surface or groundwater extraction is complied with. <p>Chemical testing of any identified water source should be carried out to determine the suitability of water for use in mixing concrete, or for dust suppression.</p>		
Reinstatement of excavation and borrow pit areas Tidy and make good work areas		Cleared areas to be stabilised / rehabilitated promptly.	TBC	Environmental Manager Superintendent

4.4 Soil Management, Erosion and Sediment Control

Table 12 Soil Management, Erosion and Sediment Control

Objective	Minimise erosion within works area and haul routes and minimise sediment laden stormwater leaving the site.
Legislation / Policy	<i>Environment Protection Act 1993</i> <i>Environment Protection Regulations 2009</i> <i>Environment Protection (Water Quality) Policy 2003</i> <i>Natural Resources Management Act, 2004</i> <i>Stormwater Pollution Prevention, Code of Practice for the Building and Construction Industry</i>

Permits/Approvals

Earthworks drainage authorisation (section 7(6) of Schedule 1 of the Environment Protection Act 1993.) may be required.

Table 13 Soil Management, Erosion and Sediment Mitigation and Controls

Key Tasks	Potential impact	Control / Action	Inspection / Criteria/ Target / Evidence	Responsibility
<p>Site Establishment</p> <p>Excavation and borrow pit development</p> <p>Grading and compaction (cut and fill if required)</p> <p>Concrete pouring</p>	<p>The soil characteristics are likely to be subject to soil erosion by water and potentially wind if ground is disturbed.</p> <p>Soil erosion can contaminate watercourses, lead to loss of vegetation, impact on aquatic fauna, decreases the aesthetic value of a watercourse, reduce the agricultural capacity of land and can damage transport infrastructure.</p>	<p>Soil erosion and generation should be minimised during construction.</p> <p>A Soil, Erosion and Sedimentation Management Plan will be provided as part of the final CEMP.</p> <p>Minimise areas of ground cover/vegetation loss on areas identified for clearance.</p> <p>Erosion and sedimentation control devices installed prior to commencement of construction/works.</p>	TBC	<p>Environmental Manager</p> <p>Superintendent</p>
<p>Topsoil stripping and vegetation removal</p>	<p>Damage to top soil and subsoil.</p>	<p>The Management Plan should be developed that includes the following:</p> <ul style="list-style-type: none"> • Maps showing areas to be stripped and left in-situ. • Minimise areas of vegetation loss to areas identified for clearance as part of the scheme. • The appropriate method for stripping, stockpiling, respreading and ameliorating the soils. • The location of soil stockpiles and content (e.g. Topsoil type A subsoil type B). • Schedules of volumes for each material. • Expected after-use for each soil whether topsoil to be used on site, used or sold off site, or subsoil to be retained for landscape areas, 	TBC	<p>Environmental Manager</p> <p>Superintendent</p>

Key Tasks	Potential impact	Control / Action	Inspection / Criteria/ Target / Evidence	Responsibility
		<p>used as structural fill or for topsoil manufacture.</p> <ul style="list-style-type: none"> • Identification of person responsible for supervising soil management. <p>Soil should be handled in the right conditions of weather and soil moisture and using suitable machinery in an appropriate way. Soil that is wet or very moist (wetter than the plastic limit) should ideally be allowed to dry further.</p> <p>Use tracked equipment wherever possible to reduce compaction.</p> <p>Confine movement of trucks or dumpers to designated temporary haul routes. Multiple handling of soil materials increases the risk of damage to soil structure so should be minimised.</p> <p>Avoid stripping topsoil, intended for reuse, too deeply so that subsoil becomes incorporated, thereby reducing fertility.</p> <p>Do not remove topsoil from below the spread of trees to be retained.</p>		
Temporary storage of spoil	Soil erosion can contaminate watercourses, lead to loss of vegetation, impact on aquatic fauna, decreases the aesthetic value of a watercourse, reduce the agricultural capacity of land and can damage transport infrastructure.	<p>Implement controls to prevent and minimise the risk of any sediment from earthworks entering the stormwater system. Areas of exposed soil, including stockpiles, are protected from erosion, or that suitable control measures are in place to prevent any mobilised soil being transported off site.</p> <p>Locate stockpiles away from watercourses and not in drainage lines.</p> <p>Stormwater diverted around stockpiles.</p> <p>Any dewatering on site to be undertaken in a manner which prevents sediment entering stormwater drains and water course.</p>	TBC	Environmental Manager Superintendent

Key Tasks	Potential impact	Control / Action	Inspection / Criteria/ Target / Evidence	Responsibility
		<p>Use of sediment curtains, cofferdams or similar to prevent suspended sediment movement during construction within water or areas likely to be inundated.</p> <p>Maintain the sediment control and stormwater drainage devices at all times.</p>		
Construction traffic movement	Soil compaction	Construction traffic must use agreed haul roads to travel to move around site and approved areas for parking to reduce unnecessary soil compaction.	TBC	Superintendent
Reinstatement of excavation and borrow pit areas Tidy and make good work areas		<p>All stockpiles resulting from excavation works will be removed from site.</p> <p>The access tracks width will be reduced to approximately 5 metres. Top soil will be spread over exposed batters and vegetation will be reinstated.</p> <p>The reinstatement works will be undertaken as soon as practical after the completion of earthworks.</p> <p>Cleared/excavated areas to be stabilised / rehabilitated promptly and where possible enhance the natural value of these areas.</p> <p>Temporary or permanent measures will be implemented either to help with the revegetation process or to provide additional protection against erosion. On steep slopes erosion control matting will be used to provide interim protection until the vegetation cover is fully established.</p>	TBC	Superintendent

4.5 Construction Noise and Vibration

Table 14 Construction Noise and Vibration

Objective	Avoid and/or minimise noise and vibration emissions during construction works.
Legislation / Policy	<p><i>Environmental Protection Act 1993</i></p> <p><i>Environment Protection Regulations 2009</i></p> <p><i>Environment Protection (Noise) Policy 2007</i></p> <p><i>AS2436 – 1981 “Guide to Noise Control on Construction, Maintenance and Demolition Sites</i></p> <p><i>Australian Standard AS 1055–1997 Acoustics – Description and measurement of environmental noise</i></p> <p><i>Australian Standard 2187.2 2006 – Explosives – Part 2: Use of explosives</i></p>
Permits/Approvals	Blasting permits may be required.

Table 15 Construction Noise and Vibration Mitigation and Controls

Key Tasks	Potential impact	Control / Action	Inspection / Criteria/ Target / Evidence	Responsibility
<p>Site Establishment.</p> <p>All construction activities</p> <p>All installation activities</p> <p>Bore hole drilling</p> <p>Tidy and make good work areas.</p>	Noise and vibration from construction activities may impact on nearby sensitive receptors including residential dwellings and/or wildlife.	<p>A Construction Noise and Vibration Management Plan will be</p> <p>Throughout construction activities the Contractor will be required to observe all obligations under the Environment Protection Act 1993 and Section 6 of AS2436 – 1981 “Guide to Noise Control on Construction, Maintenance and Demolition Sites”.</p> <p>Activities to be undertaken must be compliant with requirements of Environment Protection (Noise) Policy 2007.</p> <p>Plant and equipment used to be properly maintained and have noise limitation equipment installed as per manufacturer’s specification.</p> <p>Plant and equipment used on site to be stood down when not required.</p> <p>Construction to occur only during the hours specified in the Development Approval.</p> <p>Works carried out outside of the hours will only entail:</p>	TBC	Environmental Manager Superintendent

Key Tasks	Potential impact	Control / Action	Inspection / Criteria/ Target / Evidence	Responsibility
		<ul style="list-style-type: none"> • works that do not cause noise emissions which exceed the noise limits of the Policy at any nearby dwelling not associated with the project; or • the delivery of materials as requested by Police or other authorities for safety reasons; or • emergency work to avoid the loss of lives, property, and/or to prevent environmental harm; or • works with the prior consent of the Environment Protection Authority (EPA) (an example might be occasional concrete pours on hot days). <p>Nearby residents/stakeholders will be notified of construction activities.</p> <p>Separation distances maintained to the greatest extent possible from construction works or fixed plant, to any sensitive receptors.</p> <p>Site perimeter fencing may need to be established for the work area and may include a noise and vibration barrier where relevant.</p> <p>Noise monitoring undertaken if required upon receipt of a complaint.</p> <p>To monitor potential vibration impacts from construction works on nearby structures, dilapidation surveys may be required.</p>		
Blasting (may be required)	Noise and vibration from blasting activities may impact on nearby sensitive receptors including residential dwellings, structures and/or wildlife.	Blasting permits are required prior to construction, and all blasting will comply with current legislation, ensuring safety for workers and minimisation of impact on surrounding infrastructure and sensitive receptors.	TBC	Superintendent

Key Tasks	Potential impact	Control / Action	Inspection / Criteria/ Target / Evidence	Responsibility
Construction traffic movement	Haul traffic may cause noise and vibration nuisance or damage to residential and sensitive receptors traveling to and from the site	<p>A Construction Traffic Management Plan will be established prior to construction commencing.</p> <p>Appropriate routes for light and heavy construction vehicles selected to minimise disturbance prior to commencement of construction works.</p> <p>Construction traffic must use agreed haul roads to travel to and from site. Approved areas for parking will be identified.</p> <p>All vehicles and equipment will be operated and maintained to comply with regulatory standards in order to control noise emissions.</p> <p>Best practice in regard to construction traffic in residential or township areas.</p>	TBC	Environmental Manager Superintendent

4.6 Air Quality Control

Table 16 Air Quality Control

Objective	Avoid and/or minimise air quality impacts during construction works.
Legislation / Policy	<p><i>Environmental Protection Act 1993</i></p> <p><i>Environment Protection Regulations 2009</i></p> <p><i>Environment Protection (Air Quality) Policy 1994</i></p> <p><i>Concrete batching Industry Guidelines (EPA) 2009</i></p>
Permits/Approvals	

Table 17 Air Quality Mitigation and Controls

Key Tasks	Potential impact	Control / Action	Inspection / Criteria/ Target / Evidence	Responsibility
Site Establishment.	Dust from construction impacting surrounding	An Air Quality Management Plan will be provided as part of the final CEMP.	TBC	Environmental Manager

Key Tasks	Potential impact	Control / Action	Inspection / Criteria/ Target / Evidence	Responsibility
<p>All construction works</p> <p>Concrete pouring</p> <p>Tidy and make good work areas.</p>	<p>environment including residential areas, water bodies and wildlife.</p> <p>Odour from construction works impacting amenity of surrounding area.</p>	<p>Dust controls to be implemented during construction including management of stockpiles (height, orientation etc.) and the use of suppressants including water spraying as required.</p> <p>Works that are likely to generate dust will cease when dry or windy conditions are conducive to the release of dust should dust suppression strategies be rendered ineffective.</p> <p>Air Quality monitoring undertaken if required upon receipt of a complaint.</p> <p>Stockpiles covered or watered down.</p> <p>Develop and follow a fire prevention plan.</p>		Superintendent
<p>Construction traffic movement.</p>	<p>Exhaust fumes from construction and haulage to and from site impacting surrounding environment including residential areas and wildlife.</p> <p>Dust emitted from transported loads.</p>	<p>A Construction Traffic Management Plan will be prepared prior to construction commencing which will identify the haul route and any specific mitigation required i.e. management of potential fugitive material during transportation, operation of equipment to control exhaust emissions, a procedure for complaints.</p> <p>All vehicles and equipment will be operated and maintained to comply with regulatory standards for exhaust emissions.</p> <p>Construction site roads watered down.</p> <p>Spray with water and/or cover pavement materials and aggregates before transporting.</p> <p>Any loads of dust generating or odorous materials entering or leaving site to be covered.</p>	TBC	Superintendent

4.7 Materials, Fuels and Waste Management

Table 18 Materials, Fuels and Waste Management

Objective	Avoid and/or minimise impacts associated with the release of hazardous substances or materials. Avoid and/or minimise waste generation during the construction works.
Legislation / Policy	<i>Environment Protection Act 1993</i> <i>Environment Protection Regulations 2009</i> <i>Dangerous Substances Act 1979</i> <i>Dangerous Substances Regulations 2002.</i> <i>Controlled Substances Act, 1984</i> <i>Natural Resources Management Act, 2004</i> <i>Environment Protection (Waste to Resources) Policy 2010</i> <i>EPA Guidelines for Stockpile Management – Waste and Waste Derived Fill</i> <i>EPA Guidelines for Bunding and Spill Management</i> <i>EPA Current criteria for the classification of waste - including Industrial and Commercial Waste (Listed) and Waste Soil</i> <i>Concrete batching Industry Guidelines (EPA) 2009</i>
Permits/Approvals	Dangerous Substances (Dangerous Substances Act 1979) and/or Waste Transporter's licence (Environment Protection Act 1993 and Environment Protection Regulations 2009.)

Table 19 Materials, Fuels and Waste Management Mitigation and Control

Key Tasks	Potential impact	Control / Action	Inspection / Criteria/ Target / Evidence	Responsibility
<p>Site Establishment. Temporary storage of chemicals, spoil and equipment. Permanent storage areas for fuels and equipment. Blasting Concrete pouring Tidy and make good work areas.</p>	<p>Contamination of the environment with hazardous substances and/or materials.</p>	<p>Prior to construction commencing, a Materials, Fuels and Site Waste Management Plan will be established which will identify the materials and storage requirements for all chemicals used on site or transported to site.</p> <p>All hazardous chemicals and dangerous goods used or stored at the subject site during construction will be stored in accordance with the Dangerous Substances Act and the EPA Guidelines.</p> <p>Material Safety Data Sheets for all relevant materials used or stored on site, regardless of quantity, for the construction works shall be kept on site by the Contractor.</p> <p>Spill kits will be located on site to be used in the event that there is an incident and appropriate personnel will be trained in the use of this equipment.</p> <p>Storage of materials should not be in areas at risk of inundation.</p> <p>All hazardous chemicals and dangerous goods should be stored away from any drainage channels and stormwater drains.</p> <p>Decanting/pumping of hazardous substances and materials to occur in bunded area where possible.</p> <p>Spills cleaned up immediately (spill kit).</p> <p>Emergency procedures in the event of a spill should be documented.</p>	<p>TBC</p>	<p>Environmental Manager Superintendent</p>

Key Tasks	Potential impact	Control / Action	Inspection / Criteria/ Target / Evidence	Responsibility
<p>Site Establishment. All construction works Tidy and make good work areas.</p>	<p>Waste generated during construction impacting upon the environment. Waste generated during construction inappropriately disposed of offsite and impacting the environment.</p>	<p>Prior to construction commencing, a Materials, Fuels and Site Waste Management Plan will be established which will identify the type and amount of waste to be generated during construction and procedures for the storage, reuse, recycling and/or appropriate disposal of waste. Contaminated soil and/or groundwater disposed of appropriately, if required. Management of waste in accordance with all statutory and licensing requirements. Any food waste should be contained and removed from site regularly to prevent attracting pest species. Implement to reduce waste:</p> <ul style="list-style-type: none"> • Re-use of materials wherever possible in accordance with legislative requirements. • Adequate waste separation repositories. • All waste generated during construction separated at source and taken to an appropriately licenced waste disposal facility if not able to be re-used on site. • No burning or waste burial on site. • Management of litter and site debris. 	TBC	Environmental Manager Superintendent
Grading and compaction (cut and fill if required)		<p>Any use of waste derived fill undertaken in accordance with legislative requirements. If waste fill required, should be suitably assessed by a qualified environmental professional and have classification status confirmed prior to importation to site. Site Contamination Audit Report, if required, prior to the use of waste derived fill during construction.</p>	TBC	Environmental Manager Superintendent

4.8 Protection of Sites of Cultural and Natural Heritage Significance

Table 20 Protection of Sites of Cultural and Natural Heritage Significance

Objective	Manage the works to prevent or minimise impacts to sites or artefacts of Indigenous or European heritage.
Legislation / Policy	<p><i>Native Title (South Australia) Act 1994</i></p> <p><i>Aboriginal Heritage Act 1988</i></p> <p><i>Heritage Places Act 1993</i></p> <p><i>Aboriginal and Torres Strait Island Heritage Protection Act 1984 (Cwth)</i></p> <p><i>Native Title Act 1993 (Cwth)</i></p> <p><i>Environment Protection Act 1993</i></p>
Permits/Approvals	Authority to disturb an Aboriginal site or object (Section 23 approval under the Aboriginal Heritage Act 1988).

Table 21 Protection of Sites of Cultural and Natural Heritage Significance Mitigation and Controls

Key Tasks	Potential impact	Control / Action	Inspection / Criteria/ Target / Evidence	Responsibility
<p>Site Establishment.</p> <p>Topsoil stripping and vegetation removal.</p> <p>Excavation and borrow pit development</p> <p>Blasting.</p> <p>Tidy and make good work areas.</p>	<p>Damage to sites or artefacts of indigenous or European heritage or to their setting.</p>	<p>An Archaeological and Cultural Heritage Management Plan may be provided as part of the final CEMP.</p> <p>Work with the Nukuna Community prior to construction commencing to meet the requirements of signed agreements.</p> <p>Should any archaeological occurrences be located during the course of the works the contractor and the Principal must report such an occurrence to the appropriate Aboriginal organisations and AARD in accordance with the Aboriginal Heritage Act 1988. All work is to cease that may negatively impact on the sites integrity until it has been assessed by an appropriately qualified Cultural Heritage professional with representation from the Indigenous recognised Aboriginal stakeholders.</p> <p>Should known or suspected human remains be located during the course of construction all work should cease within the locations vicinity that may</p>	TBC	<p>Environmental Manager</p> <p>Superintendent</p>

Key Tasks	Potential impact	Control / Action	Inspection / Criteria/ Target / Evidence	Responsibility
		compromise it and the process outlined in the below flowchart followed.		



Discovery of Aboriginal Heritage Procedure

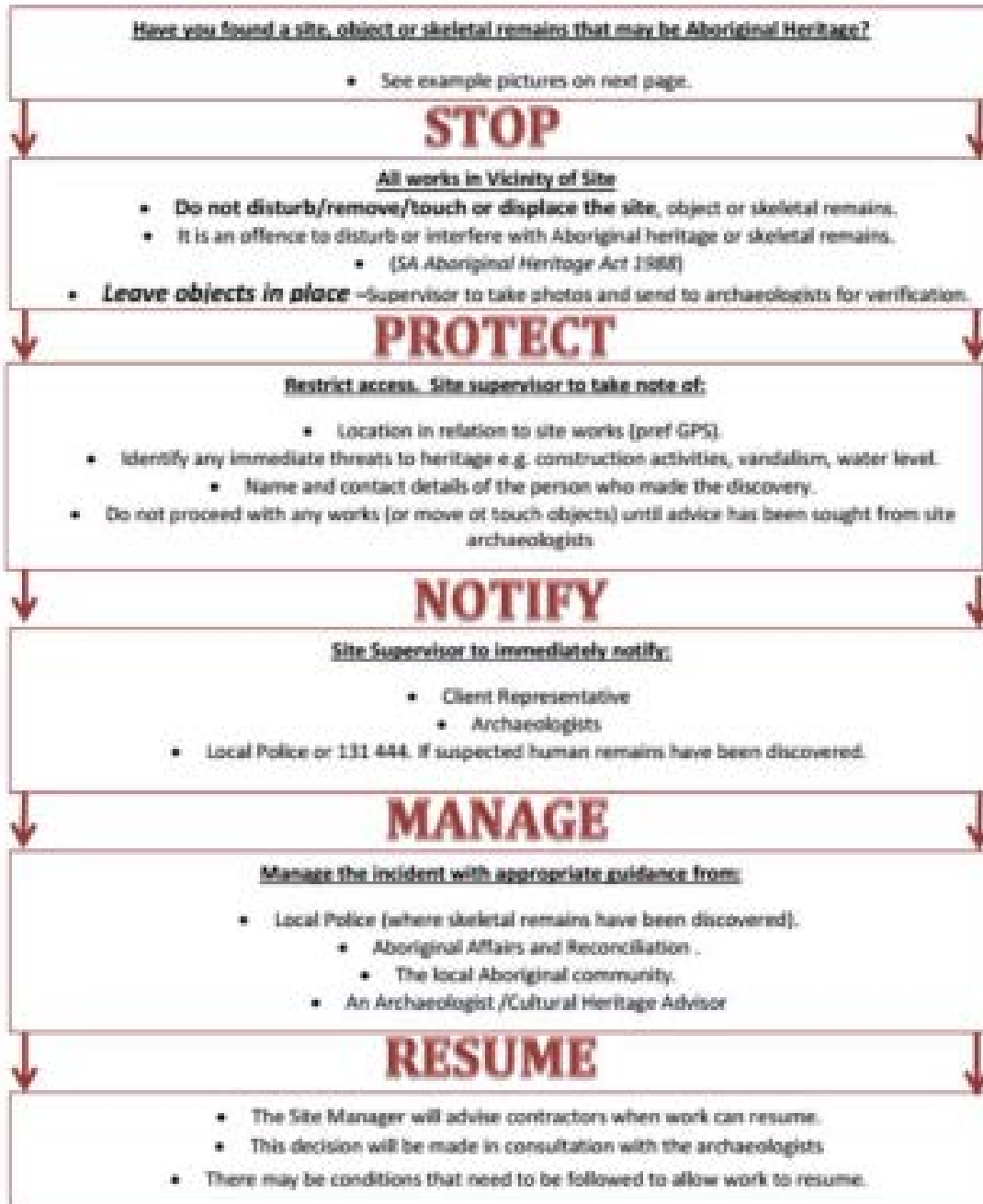


Figure 2 Site Discovery Procedure

4.9 Scope and limitations

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Appendix D – Sponsorship and OTR Certification



B125304

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21 November 2017

Mr Garth Heron
Head of Wind Development Australia
Neoen
Level 6, 16 Marcus Clarke Street
CANBERRA ACT 2601

Email: garth.heron@neoen.com

Dear Mr Heron

CROWN SPONSORSHIP VARIATION FOR THE CRYSTAL BROOK ENERGY PARK PROJECT DEVELOPMENT

Thank you for your letter of 31 October 2017 to the former Chief Executive of the Department of the Premier and Cabinet (Department), Mr Kym Winter-Dewhirst, seeking an extension to the Crown sponsorship of Neoen's planned Crystal Brook Energy Park.

The Crystal Brook Energy Park was provided with Crown sponsorship on 6 February 2017, noting that the project has the potential to benefit South Australia and can be considered public infrastructure. The original Crown sponsorship was valid until 31 December 2017 and covered the construction of up to 280 MW of solar and wind generation and up to 100 MW of storage forming the Crystal Brook Energy Park. I note that the project has since been refined such that it will now involve the construction of 90 - 140MW of wind capacity, 50 - 100MW of solar PV capacity and 20 - 100MW of battery storage capacity. I also understand Neoen is examining the possibility of installing 30 - 100 MW of hydrolysers for the purposes of hydrogen production.

Since Neoen was provided with Crown sponsorship for the Crystal Brook Energy Park, I am aware that certain factors relating to your community consultation have impacted on Neoen's ability to submit a development application prior to its current expiry. I also note the detrimental impact that the Christmas period is likely to have on Neoen's ability to conduct public consultations across this time.

On this basis, I have considered your request for an extension of Crown sponsorship of the Crystal Brook Energy Park and have formed a view that the supporting reasons underlying your request are valid. I therefore approve your request for a

three-month extension to the current Crown sponsorship for the Crystal Brook Energy Park from its current date of expiry.

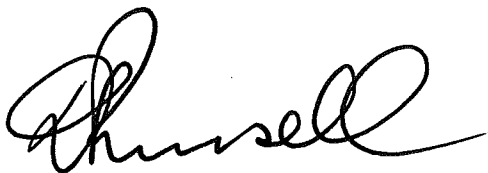
It is the responsibility of Neoen to prepare all documentation as required by section 49 of the Act. All costs in the preparation of the development application, lodgement and any other subsequent action in relation to this application are the responsibility of Neoen.

The Department of the Premier and Cabinet makes no representations or gives no warranties in relation to the outcome of the development application or time that it takes to secure a planning outcome. It is Neoen's responsibility to obtain all other statutory approvals, licences, connection agreements and permits from relevant authorities, manage community expectations and to fund the project. The State Government makes no commitment to purchase any product or service related to the project.

With a three month extension, a development application under this Crown sponsorship variation must now be lodged with the State Planning Commission on or prior to 31 March 2018. If this is not achieved by that time, my support under Section 49(2)(c) of the *Development Act 1993* for Neoen's Crystal Brook Energy Park will lapse.

If you have any questions regarding the preparation of the material to support this section 49 variation application, please contact Mr Mark Jackson on (08) 8429 5082 or via email mark.jackson@sa.gov.au.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Dr Russell', written in a cursive style.

Dr Don Russell
CHIEF EXECUTIVE



Ref: 2017/01873.01 D18031195

5 March 2018

Tom Jenkins
Neoen
Level 6, 16 Marcus Clarke Street
Canberra ACT 2601
By email: tom.jenkins@neoen.com

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

Dear Tom,

RE: CERTIFICATE FOR DEVELOPMENT OF CRYSTAL BROOK ENERGY PARK

The development of Crystal Brook Energy Park has been assessed by the Office of the Technical Regulator (OTR) under Section 37 of the Development Act 1993.

Regulation 70 of 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 letter to the OTR 'Crystal Brook Energy Park – Letter to Office of the Technical Regulator', which was emailed to the OTR by yourself on 5 March 2018.

After assessing the information provided, I advise that approval is granted for the proposed project, provided the Fast Frequency Response requirements prescribed by the OTR's Generator Development Approval Procedure Revision 1.1 are met at all times.



Should you have any questions regarding this matter, please do not hesitate to call David Bosnakis on (08) 8226 5521.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'Rob Faunt'.

Rob Faunt
TECHNICAL REGULATOR

cc: Garth Heron – Neoen
Jennie Burdeniuk – GHD
Megan Ward – Neoen
Luke Griffiths - GHD

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Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
0	L.Griffiths	M.Scott		M.Scott		29/03/2018

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