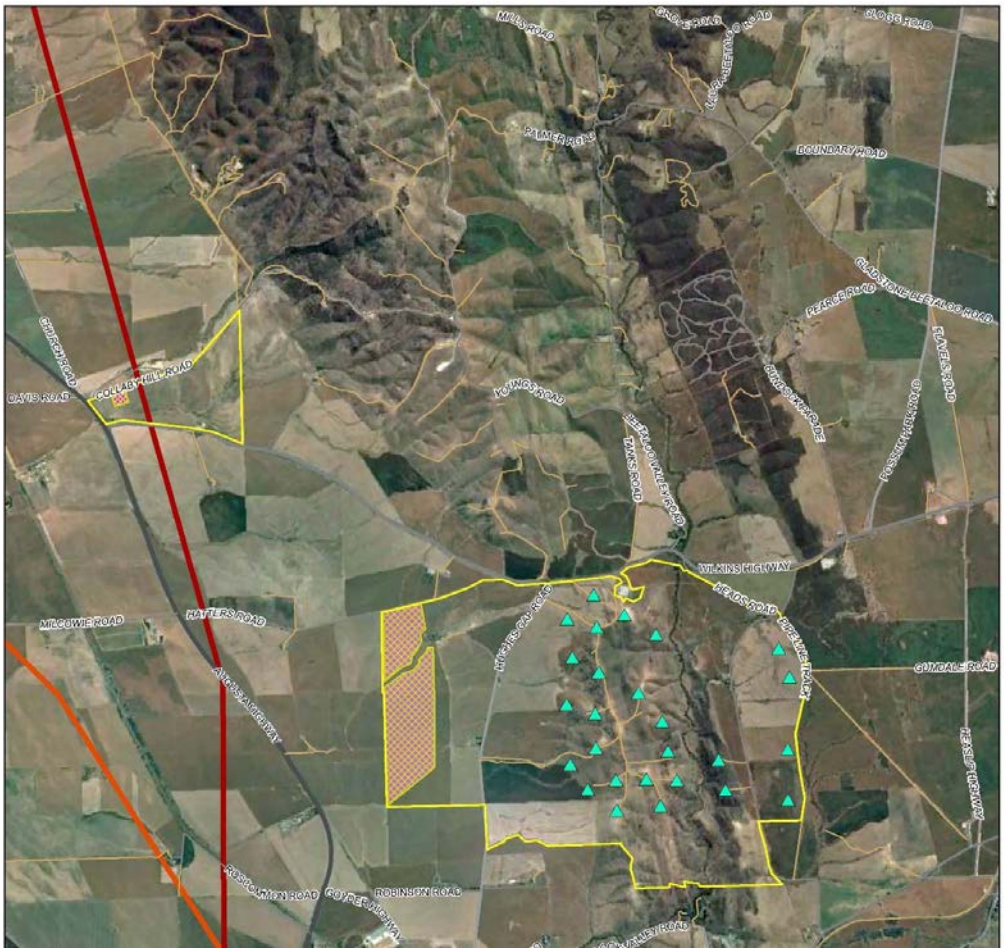
Neoen Australia Pty Ltd
Windfarm, Solar Farm and Battery Storage Facility – 'Crystal Brook Energy Park'

Crystal Brook – Mid North
354/V003/18

TABLE OF CONTENTS



SCAP AGENDA ITEM: 3.1.1

Application Summary	
Application No	354/V003/18 (ID:3140) [KNet File: 2018/08788/01]
KNET Reference	#13187873
Applicant	Neoen Australia Pty Ltd (Crown Sponsor: Department of the Premier and Cabinet)
Proposal	125 MW Windfarm, 150MW Solar Farm, 130 MW Lithium-ion Battery and associated infrastructure
Subject Land	Various land parcels 3.5km NE of Crystal Brook (Mid North)
Zone/Policy Area	Primary Production Zone
Relevant Authority	Minister for Planning
Role of the Commission:	Section 49(7) & 7(c): the State Commission Assessment Panel must undertake an assessment of the proposal and report to the Minister for Planning.
Lodgement Date	29 March 2018 (Date application submitted to DPTI)
Council	Port Pirie Regional Council
Development Plan	Port Pirie Regional Council Consolidated 31 October 2017
Categorisation	Merit
Public Notification	Crown
Representations	263, with 46 wishing to be heard (including 13 that are also representing others)
Referral Agencies	EPA, Commissioner for Highways (DPTI), DEW, NVC, AMLR NRM, NY NRM, DSD-AAR, Minister for the Mining Act, CFS, CASA, ElectraNet, SA Water, Epic Energy, Commonwealth Department of Defence.
Officers Report	Lee Webb – Senior Specialist (Environmental) Planner

EXECUTIVE SUMMARY

Neoen Australia Pty Ltd has lodged a Crown (S.49) development application (sponsored by the Department of the Premier and Cabinet) for the establishment of the Crystal Brook Energy Park, comprising a 125 MW Windfarm, 150MW Solar Farm, 130 MW (400 MWh) Energy Storage Facility and associated infrastructure.

The site is located on various land parcels approximately 3.5km NE of Crystal Brook (approximately 23 km SE of Port Pirie) in the Mid North region of South Australia.

Following public notification, 263 public representations were received. The majority of representations were in support of renewable energy and the solar and battery components. The main concerns raised were associated with the windfarm component of the proposal, primarily the visual impacts and potential health effects due to noise. In addition, proximity to the Crystal Brook township and surrounding residents (including those in the nearby Beetaloo Valley) was a key reason for objection.

Concern was also expressed that siting of the wind turbines near the southern Flinders Ranges (and the Heysen Trail) would affect its tourism value. A number of representations also supported the proposal due to the advantages it could deliver for the region and the State, including economic benefits (especially employment and flow-on effects), sustainability aspects and the potential to help lower power prices.

No formal objection was raised by the local Councils or relevant State Government agencies, although a number of assessment matters and technical details were sought or required further investigation by the applicant and/or the planning authority.

The key assessment outcomes in considering the appropriateness of the proposed development in the Primary Industry Zone of the Port Pirie Regional Council Development Plan are:

- Establishes renewable energy generation and storage facilities in appropriate areas (primarily for the harnessing of wind and solar resources).
- The proposed locations for each component have largely been cleared for mixed cropping and grazing use (especially the solar farm and battery facility sites) or have been modified by grazing (especially the windfarm site).
- Existing primary production activities (primarily grazing) can continue during operation and after decommissioning.
- Achieves suitable setback distances from residents (excluding landowners hosting turbines), the Crystal Brook township and major transport routes (especially the Augusta Highway).
- It is acknowledged that the visual impact of the windfarm component on the rural landscape and amenity of the locality would be substantial. However, such impacts are envisaged by the local Development plan and local zoning controls.
- Furthermore, the windfarm is sited an appropriate distance away from the southern extent of the Flinders ranges so as not to affect the regions tourism values. The impact on the affected part of the Heysen Trail would be minimal.
- The proposed design minimises impacts to flora and fauna and does not affect any sites of conservation significance.
- Safe access can be established to and from the project area, with construction traffic able to be satisfactorily managed.
- Airfield operations are not unduly affected by the development.
- The proposal would not result in increased bushfire risk (compared with other land uses) or affect firefighting capabilities.
- Does not impact on sites of Aboriginal or European heritage significance.
- Will have a negligible impact on existing or future adjoining land uses (in terms of the on-going use of that land for primary production or related activities).
- Would not unduly affect telecommunications reception.
- Can be constructed and operated so not to cause undue driver distraction.
- Creates locally based employment (during construction and operation) and flow on economic benefits for Crystal Brook and the region.
- Generates renewable energy and assists in reducing greenhouse gas emissions.

From a strategic perspective, the proposal aligns with the electricity network priorities of South Australia, especially improving the reliability and security of the electricity grid and putting downward pressure on electricity prices through increased, locally based generation capacity.

The proposal maximises the sites renewable resources by combining storage, solar and wind elements, with the combination of these technologies having the potential to produce a more consistent and reliable source of generation. In particular, the energy storage facility will further enhance reliability and allow for the provision of network stability services.

ASSESSMENT REPORT

1. Strategic Context

Climate change requires a coordinated response from government, industry, business, households and individuals to enable a beneficial transition to a low carbon economy. The electricity generation sector has a significant role to play in addressing the longer-term impacts of climate change, and South Australia's electricity market has commenced its transition away from more traditional forms of generation to renewable energy (being around 50% of generation capacity in SA).

Renewable energy power generation developments have been encouraged in South Australia over the past 15 years through Government policy, due to the strategic need for local alternative energy sources that have low greenhouse gas emissions compared with traditional power generation.

This direction was further facilitated in 2011/12 through the implementation of a Ministerial Statewide Wind Farms Development Plan Amendment (DPA) to incorporate policies that support renewable energy proposals, especially wind farm applications. These policies are now included in all Council Development Plans, and generally support such uses in Primary Production type zones. Since 2014, other types of renewable energy types have become more common – including large scale solar PV and pumped hydro proposals – encouraged through a mix of public policies, funding initiatives and direct action.

A key policy focus has been the support for proposals that provide both generation and storage capacity and technologies for effective integration with the national electricity grid (and also to ensure reliability of supply).

Consequently, the Mid North region has progressively been developed with wind farms due to the high grade wind resource and the close proximity of high voltage power transmission lines (i.e. that form inter-connections with the national electricity grid). More recently, the Upper Spencer Gulf region has become the focus for a range of renewable energy generation and storage proposals, including windfarms (i.e. at Lincoln Gap), solar farms (i.e. at Port Augusta and Whyalla), solar thermal tower (i.e. at Port Augusta), pumped hydro (i.e. at Goat Hill, Baroota) and hybrid 'energy parks' (i.e. near Port Augusta).

In addition to the broader 'clean' energy advantages, a renewable power developments have the potential to deliver substantial economic benefits to regional communities (which often rely on two main industries - agriculture and mining), by helping to broaden its economic base and assist in reversing the ongoing trend of employment and population decline. Direct benefits would result from landowners having increased income from land rental for turbines/ solar farms and the use of local contractors and suppliers of goods and services. Flow on effects would arise from servicing the construction work force and, to a lesser extent, the operational workers.

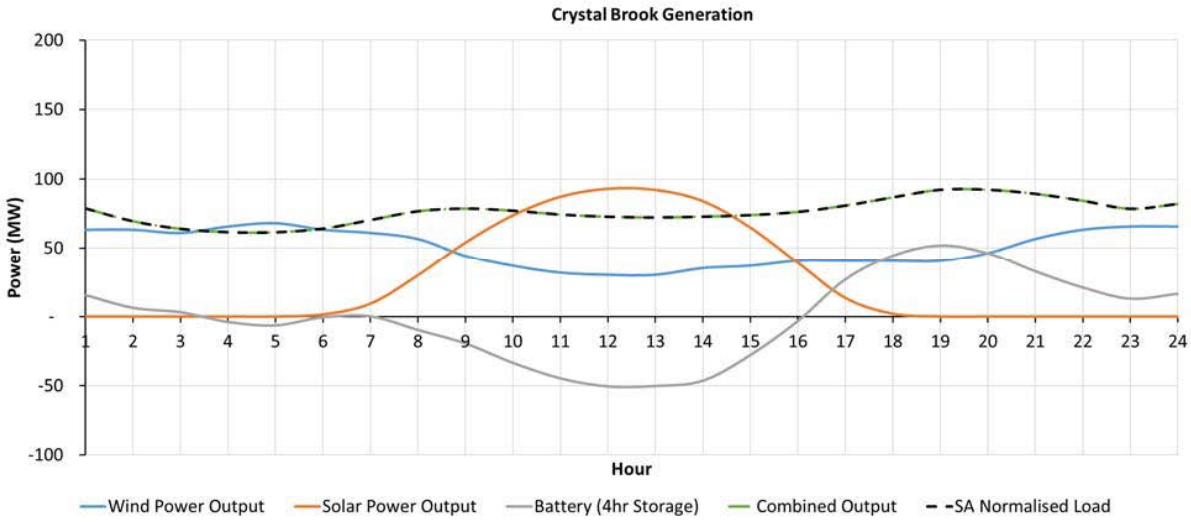
The proposal aligns with the strategic electricity network priorities of South Australia, especially improving the reliability and security of the electricity grid and putting downward pressure on electricity prices through increased, locally based generation capacity. The transition process to a decarbonised economy is creating challenges around security of supply and grid stability. The majority of South Australia's electricity comes from a mix of renewable generation and gas fired generation assets (with 50% of total electricity production coming from renewable energy sources).

The proposal seeks to utilise a mix of renewable resources by combining storage, solar and wind elements, with the combination of these technologies having the potential to produce a more consistent and reliable source of generation by extending the overall duration of electricity generation (i.e. 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 future hydrogen production element would 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.

2. DESCRIPTION OF PROPOSAL

Application details are contained in the ATTACHMENTS.

The applicant is proposing to develop a hybrid energy project, with the combination of all three elements critical to its performance and each has been carefully sized to provide a generation profile closely matching South Australian electricity demand profile. The ambition is to provide one of the first examples of 'baseload renewables'. The graph below reflects the correlation between generation and South Australian energy demand.



The Crystal Brook Energy Park proposes to develop a combined wind, solar and storage project comprising:

- 125 MW Windfarm – 26 turbines (based on a 4.8MW turbine model), each with a maximum height (i.e. to blade tip) of 240m, a blade length of 79m and a hub height of 161m. The foundations would be either a mass concrete foundation (raft style), a piled type rock anchor or a combination of both. Each turbine would require 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.

- 150MW Solar Farm - up to 500,000 solar panels mounted on single-axis trackers supported by approximately 55,000 piles, driven or screwed into the ground (without concrete foundations). The panel structures will be between 1.5 and 2.5 metres high depending on their degree of tilt. The panels would be arranged in groups (arrays) and be supported by 40-50 photovoltaic boxes (or skids) containing inverters and medium voltage transformers distributed across the site, plus a delivery station (in a container or on a skid platform). It would also include access, internal circulation roads, underground cabling, security measures (i.e. 2.5-3.5 metre high cyclone fencing with a barbed wire top and lighting) and landscaping.

- Energy Storage Facility - Lithium-ion battery storage with a capacity up to 130 MW (or 400 MWh) located within a fenced compound of approximately 5 ha (up to 250 m by 200 m) containing the battery equipment, cabling and control room. Conceptually, 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 electricity grid. The energy storage facility will be clustered with the sub-station and the operations and maintenance facility. It will be

surrounded by a chain mesh fence (up to a maximum height of 3.5 m), along with CCTV cameras and security lighting.

Example of solar panel arrays

Examples of containerised and skid platform photovoltaic boxes

- Associated Infrastructure - 33kV / 275kV substation (approximate dimensions 150m X 150m) co-located with an Operations & Maintenance facility (approximately 100m X 100m) that would include buildings (i.e. office, control room and staff amenities), car park area for staff and visitors, workshop and laydown area. A main construction site office will be located adjacent to the compound. Other smaller, designated laydown areas will be established at locations within the project site

- Landscaping – vegetation planted within a 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. Planting around the western and southern perimeters of these facilities would consist of locally occurring species, with a particular focus on using native species. The aim is to minimise the localised

visual impacts of the proposal particularly any views from the highway of the facilities located along Collaby Hill Road.

- Water supply - water will be required during the construction phase primarily for dust suppression purposes (and other activities such as vehicle washing) and it is estimated that approximately 2.5 mega litres of water would be required. This could potentially be sourced from a water filling station or a similar alternative location. It is proposed that all water will be trucked to the site to protect local sources.

Typical battery storage unit and storage layout.

The key components of the proposal are sited separately from each other for practical and logistical reasons. The windfarm site is generally located on the ranges south of the Wilkins Highway (i.e. south of Tank Hill) and east of the Hughes Gap Road to harness the wind resource. The solar farm is located on the plains between the Hughes Gap Road and the Augusta Highway to take advantage of the relatively flat terrain.

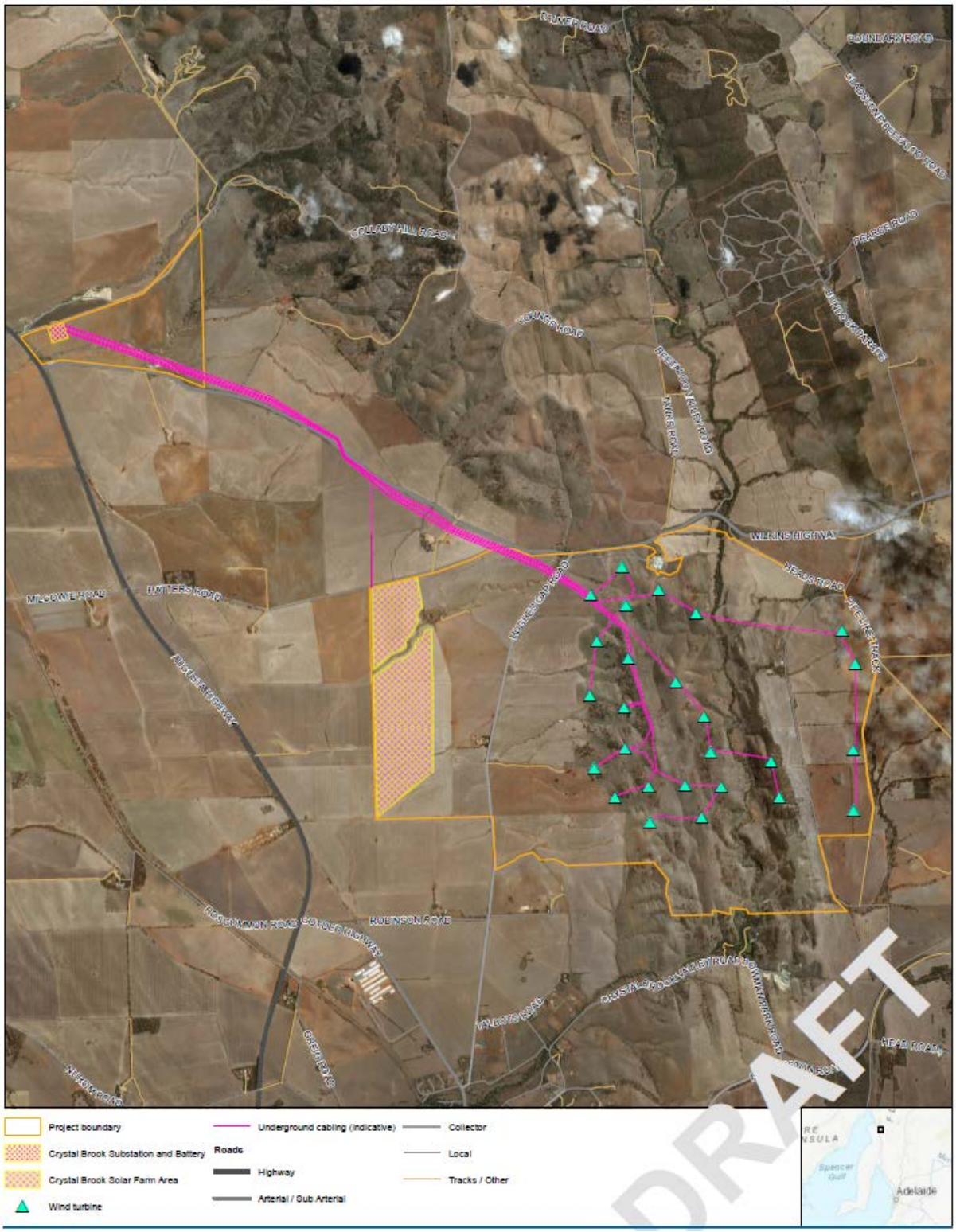
The energy storage facility site (including the substation and operations & maintenance building) is located on the corner of the Augusta Highway and the Wilkins Highway, as it can be directly connected to the existing 275kV transmission line and has convenient road access. The windfarm and solar farm sites would be connected to the energy storage site via an underground transmission line, comprising 33kV cables that follow an alignment along the Wilkins Highway.

The proposed development would operate as a cohesive whole, where the two key generators (solar and wind) would be combined with the battery facility to produce a more consistent and reliable source of energy. All three elements will be connected via underground cabling to the on-site control facility located in the Operations & Maintenance facility compound.

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. 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. Underground infrastructure, such as substantial footings, would not be removed as this is likely to have significant negative impacts on the land (especially revegetated areas). Surface treatments will ensure that a sufficient soil layer is provided for vegetation rehabilitation.

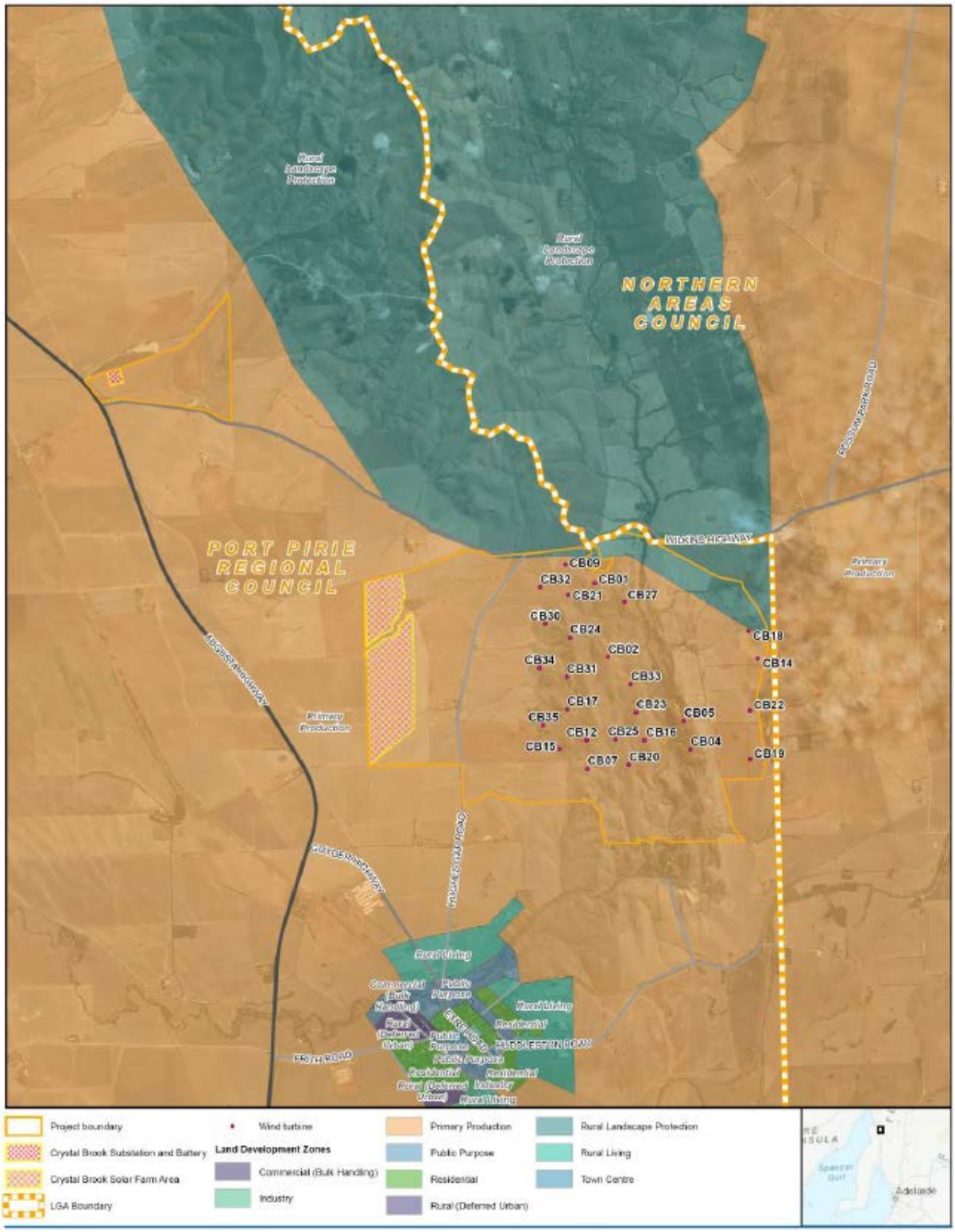
Whilst the proposal also includes a Hydrogen Production Facility (50MW load), this component may be developed in the future and will not be assessed as part of this application.



Layout plan of the proposal components

Amendment to the Application

It should be noted the initial application contained a discrepancy between the content of the reports and the mapping provided, stating the development was solely within the Primary Production Zone, while mapping showed the placement of a single wind turbine within the Rural Landscape Protection Zone.



Amended windfarm layout

The applicant provided a Development Application Amendment (dated 25 June 2018) advising the Department of Planning, Transport and Infrastructure of this discrepancy, including revised mapping showing all nominated turbines within the Primary Production Zone. Minor discrepancies in the application were also clarified.

A copy of the amendment was provided to the Port Pirie Regional Council and Northern Areas Council to assist them with their comments. A copy of the amendment is contained in the ATTACHMENTS.

3. SITE AND LOCALITY

The proposed site is located approximately 3.5km NE of Crystal Brook (approximately 23 km SE of Port Pirie) in the Mid North region and involves 32 allotments. A full list of project land holdings are detailed in the development application contained in the ATTACHMENTS.

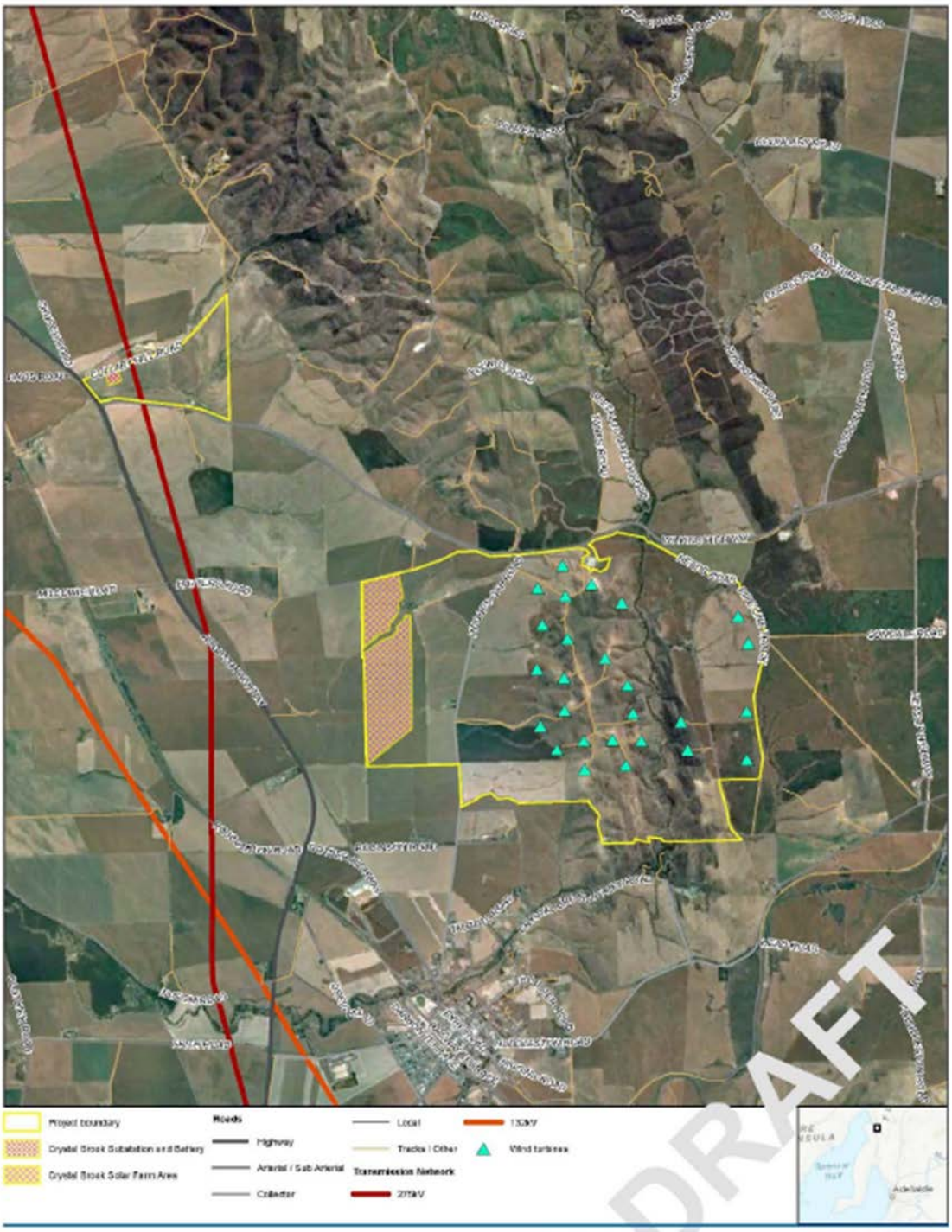
The main site office / construction compound (and energy storage facility and sub-station) would be located at Lot 56 Collaby Hill Road, Warnertown (i.e. corner of the Augusta Highway and the Wilkins Highway). Excluding allotments to be used for underground cabling and access tracks, the windfarm, solar farm and battery sites comprises the following land parcels:

Lot No	Plan No	Hundred	Street / Road	Suburb	Title
A.56	D20184	Napperby	Collaby Hill Rd	Warnertown	CT 5883/929
A.99	D71212	Napperby & Howe	Hughes Gap Rd	Crystal Brook	CT 6141/640
S.8	H240800	Napperby	Hughes Gap Rd	Crystal Brook	CT 5608/107
A.1	F48490	Howe	Heads Rd	Crystal Brook	CT 6006/298
Q.4	F205394	Howe	Heads Rd	Crystal Brook	CT 6007/133
Q.92	F205394	Howe	Heads Rd	Crystal Brook	CT 6183/620
S.33	H240700	Howe	Heads Rd	Crystal Brook	CT 5404/285
S.37 & S.40	H240700	Howe	Heads Rd	Crystal Brook	CT 6007/134
S.41	H240700	Howe	Heads Rd	Crystal Brook	CT 6007/134
A.1	F16032	Howe	Heads Rd	Crystal Brook	CT 5476/921
A.222	F188354	Napperby	Hughes Gap Rd	Crystal Brook	CT 5566/295
S.7	H240800	Napperby	Hughes Gap Rd	Crystal Brook	CT 5607/243
S.10	H240800	Napperby	Hughes Gap Rd	Crystal Brook	CT 5504/187

The wider project area is bounded to 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 location 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. 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.

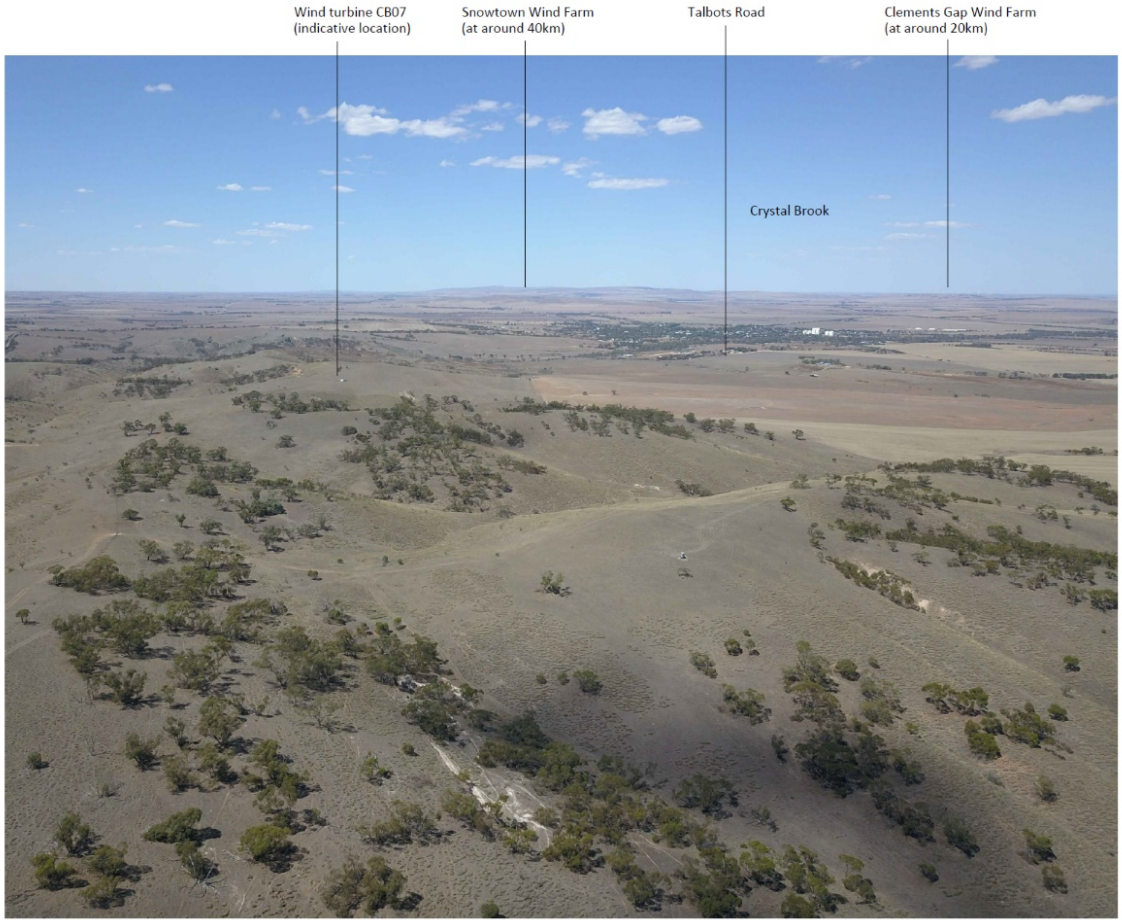


Location plan

The site encompasses an area of approximately 3,300 ha total area (i.e. the involved land parcels), but the land occupied by the proposal components and associated easements is less than 300ha and includes:

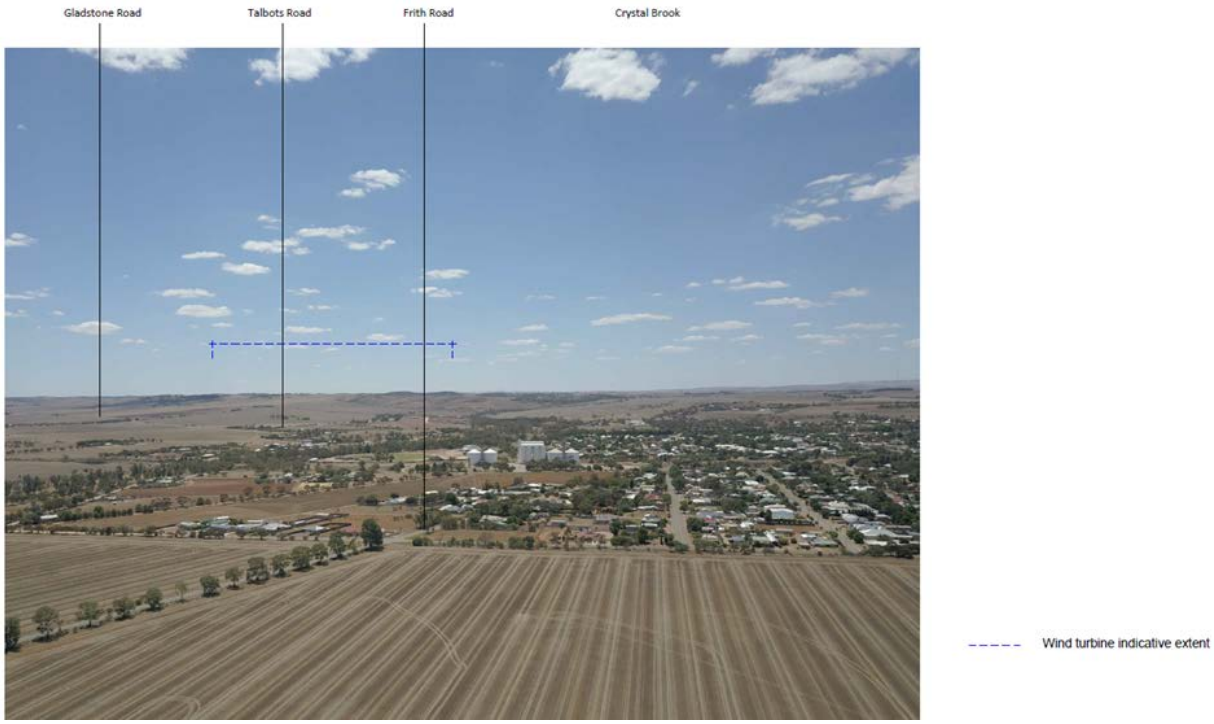
- 20ha for the battery storage facility, the substation and the operation & maintenance compound.
- 170ha of solar panels.
- A total footprint of around 30ha for the wind turbines.

It also includes a footprint of up to 10ha for a future hydrogen production facility and associated infrastructure.



Aerial photo viewpoint A3 - Aerial view south from project site above wind turbine CB28

Typical view of the site from the ranges looking towards Crystal Brook



Typical view of the site looking north-east from Crystal Brook

Typical view of the solar farm site looking east

The proposed site was selected as it had the following key advantages:

- Strong wind and solar resources.
- Close proximity to national electricity grid infrastructure.
- Suitable topography and site characteristics (wind requires elevation while solar requires flat ground with minimal flood risk).
- Land availability.

The locality had previously been considered for a more extensive windfarm by Origin Energy between 2009 and 2012. The applicant has significantly scaled back the original design to avoid any direct visual and environmental impacts on the ranges north of the Wilkins Highway (including the Beetaloo Valley). The number of turbines has been substantially reduced by increasing the height and power output of turbines to ensure overall generation efficiency. The inclusion of the solar farm and battery facility has also enabled the number of turbines to be minimised, and to meet recent network stability and technical requirements introduced in May 2017. The turbine layout has been restricted to the lower altitude hills south of the Wilkins Highway in a more clustered footprint that maximises the available wind resource.

4. COUNCIL COMMENTS or TECHNICAL ADVICE

The **Port Pirie Regional Council** advised that it values and supports the continued preservation of the natural character of the Flinders Ranges, which is reinforced by the 'Desired Character Statement' for the Primary Production Zone (and Principle of Development Control 10) that outlines the protection of natural resources and views.

Whilst this statement does envisage wind farm development within valuable scenic and environmental areas, it should be noted the zone places further conditions on development between National Highway 1 and the adjoining Rural Landscape Protection Zone, where development is designed and sited to ensure the natural views of the Flinders Ranges are not impaired.

Given the Flinders Ranges are an important natural resource to the local community, especially as an entry to the ranges for vehicles travelling north, it is suggested further consideration is given to the height, mass, scale, cluster and siting of the development (in particular, the turbines and associated infrastructure). This is aimed at ensuring the development does not present a visual detraction on the scenic qualities of the southern end of the ranges.

Council advised it reserves its support for the proposal pending the consideration by the SCAP of the following issues raised by Council.

- The zone policies require wind turbine generators be regularly spaced. Given the clustering of the towers (which is considered to be less than the minimum separation distances between towers prescribed by the manufacturer's guidelines), the potential unknown effects to the surrounding area (i.e. low frequency noise

levels, infrasound subsonic and amplified modulation) are expected to magnify when adding the proposed size, design and height of the turbines, scale of the overall development and proximity to the township and residences. Therefore, Council requests that assurance be given to the design of the turbines and other structures to promote an efficient, coordinated and orderly development that creates a pleasant environment in which to live, does not prejudice the orderly development of the locality

- The zone policies require development to be located and designed to prevent adverse impacts on the surrounding road networks. This includes but is not limited to all-weather access, interference with flow of traffic, conflict between different road users, accommodating the type and volume of traffic through appropriate surface treatments and management of internal and external road networks and parking areas. The proponent has agreed to develop a Traffic Management Plan (TMP), in consultation with the relevant state and local road authorities to ensure all road safety and traffic issues areas are addressed and impacts to road users are minimised.

- The application identifies the potential for minor service degradation to technologies which may include local community radio broadcast (for example, impact to the current service and reach of local radio towers on Huddleston Road, Crystal Brook), television reception (digital TV and Wireless Broadband) and cellular mobile phone reception. Council considers the acceptable level of impact to existing owners or occupiers should be nil.

- The potential and actual impacts of construction, operation and maintenance on flora / fauna and ecological communities is unclear due to the indicative layout of construction. Council advised it has set aside restoration lands for revegetation if needed as a vegetation offset.

- The zone policies recognise that a vegetation buffer is an essential part of minimising the visual impact of the proposal on the locality (especially around substations, maintenance sheds and other ancillary structures. The application advised that a detailed landscaped plan will be developed in consultation with Council, DPTI and adjacent residences and landowners

Whilst Council recognises that potential downgrading in property valuation is not a direct planning assessment matter, the financial value of the surrounding area is determined (to a degree) on the amenity of the surrounds, which is raised as a concern.

It should be noted Council advised the proposed development meets the minimum setback requirements (i.e. 1,000 metres from non-assisted dwellings / tourist accommodation and 2,000 metres from defined and zoned townships / settlement areas). In addition, whilst detailed design specifications have not yet been undertaken, early indications show the development has the ability to negate any nuisances.

Council has requested the following requirements by adopted if approval is granted:

- Final layout and design be submitted prior to construction (including all temporary or minor constructions for example staff amenities, temporary construction facilities, workshops and laydown areas) to ensure the provisions mentioned above are met.

- To ensure the development minimises any impact on owners/occupiers, road users and environment, it is requested a final Construction Environmental Management Plan be provided and attenuation measures supplied on the final design and layout prior to operation and post construction. This is aimed at ensuring relevant standards and guidelines are met (including manufacturer s guidelines) and the

development does not detrimentally impact the surrounding area or cause unreasonable interference through the emission of effluent, dust, airborne-pollutants, noise, vibration, electrical interference, light spill, flickering, shadowing, reflection, glare, glint or other harmful nuisances.

- A revised map identifying the location of all transmission lines and associated infrastructure be provided to safeguard infrastructure outside the Rural Landscape Protection Zone (i.e. which abuts the northern site boundary).

- If approved, a condition be incorporated which states that prior to the commencement of any works, the proponent shall provide the relevant authorities a detailed Traffic Management Plan and enter into an agreement with the Council on any local road upgrades. Additionally, a notation to any approval should be added to state that all costs associated with any road upgrades and ongoing maintenance are to be borne by the proponent.

- To ensure the retention, protection and restoration of natural resources and environment, the Environmental Management Plan should incorporate measures to address post closure works and rehabilitation of the land to a level compatible with the surrounding landscape (including details on a suitable use for the site at end of life). These measures must be provided prior to construction.

- The applicant undertake a survey on electromagnetic interference and signal reception within the vicinity before and after construction to identify and negate any potential impacts on the local community.

- A detailed landscaped plan be provided to the reasonable satisfaction of Council to include the location of all structures and species proposed onsite (it should also screen panel frameworks) and measures to ensure vegetation is maintained and replaced as necessary.

- The development site is unsewered, so the proponent would need to lodge a wastewater application with Council for approval, in accordance with *Public Health Act 2011*.

Applicants Response

The applicant provided a detailed response to the matters raised by Council. A copy of the applicant's response is contained in the ATTACHMENTS.

The key responses include:

- The applicant considered the layout of the windfarm component to ensure turbines were confined to the Primary Production Zone, which is characterised by cropland and low, rounded, sparsely vegetated hills, in order to protect the scenic character of the southern Flinders Ranges (including a 4km buffer).
- The nature of the topography and wind resource dictates that turbines cannot be regularly spaced for efficiency reasons. The larger turbines will not result in greater noise emissions.
- The Construction Environmental Management Plan and the Traffic Management Plan will be prepared to the satisfaction of Council.
- A suitable Decommissioning and Rehabilitation Plan would be prepared.
- It is reasonable for a 'minor' level of impacts to reception and service to be considered acceptable (noting that the EMI study does not consider impacts likely), provided all practically available measures to avoid, mitigate or remedy such impacts are pursued.

The proposed site abuts the **Northern Areas Council**, which advised that a number of requirements in regard to traffic management would need to be considered, primarily that a road safety audit be undertaken and a satisfactory Deed of Agreement with Council be included in any final Traffic Management Plan.

Applicants Response

The applicant will meet the Council requirements.

5. STATUTORY REFERRAL BODY COMMENTS

Referral responses are contained in the ATTACHMENTS.

Overall, none of the referral bodies expressed opposition or significant concerns with the application.

5.1 Environment Protection Authority (EPA) [Mandatory Referral]

The mandatory referral trigger to the EPA was for the windfarm component, so its comments primarily relate to the noise impact from the turbines, which was based on the EPA's *Wind Farms Environmental Noise Guidelines* (2009).

The EPA reviewed the acoustic report provided as part of the application, which considered both landowners involved with the windfarm and surrounding neighbours and had regard to relevant Development Plan policies.

The report used background noise monitoring to characterise the existing ambient noise environment at various wind speeds to determine the noise criteria applicable to the windfarm at the rated power output. Landowners that enter into commercial agreements with the applicant would be subject to different noise criteria (i.e. an indoor noise level of 30dB(A) and 45dB(A) outside).

The EPA accepted the findings of the acoustic report, which determined the windfarm (plus the transformers and air-conditioning units associated with the solar farm and battery storage) would comply with the relevant noise criteria at all residences for all wind speeds.

The EPA considered that the proposed windfarm is appropriately located and designed to minimise noise impacts on dwellings and recommended a suite of conditions that would need to be applied for reinforcing installation and commissioning requirements to ensure it is compatible with the guidelines and the potential for adverse noise impacts at relevant receivers is minimised.

Applicants Response

The applicant, following consultation with its expert acoustic consultant, considers the EPA has recommended a number of conditions that impose specifications that are either unnecessarily prescriptive in terms of commercial parameters, or significantly more stringent than those set out in the EPA's Wind Farm Environmental Noise Guidelines (2009). A set of modified conditions has been suggested.

It should be noted that the EPA has provided its formal response, which will be considered by the SCAP in its assessment of the proposal and the Minister for Planning when making a decision on the application.

Planning Comment

Further advice will be sought from the EPA in response the applicant's queries, however independent, third-party review and monitoring at the operational stage is supported to ensure previous modelling and compliance standards are verified.

5.2 Commissioner of Highways (CoH) -Department of Planning, Transport and Infrastructure (DPTI) [Mandatory Referral]

DPTI did not object in-principle to the proposal and raised several issues that would need to be further addressed.

Access and Road Safety

DPTI advised the Augusta Highway, Wilkins Highway and Hughes Gap Road are arterial roads under the care, control and management of the CoH. All other roads are local roads under the care, control and management of the Port Pirie Regional Council. The Augusta Highway is a Major Traffic Route, Primary Freight Route and Tourist Route. The Wilkins Highway is a Primary Freight Route and Tourist Route.

Both Augusta Highway and Wilkins Highway are gazetted for vehicles up to 36.5 metres Road Trains and Hughes Gap Road and portion of Collaby Hill Road are gazetted for vehicles up to 26.0 metres B-Doubles. Hatters Road, Heads Road and Pipe Line Track are not gazetted for use by vehicles larger than a General Access Vehicle. The applicant will need to apply to the National Heavy Vehicle Regulator (via www.nhvr.gov.au) for permits to utilise these roads for access by Restricted Access Vehicles.

The application includes a traffic impact assessment that indicates that during the construction phase a significant amount of traffic will be generated, but does not clearly identify the proposed access locations to the site or fully assess the impacts of the increased traffic on the safety of the adjacent road network.

DPTI reviewed the options for access and considers that safe and direct access to Wilkins Highway to serve the wind farm is unlikely to be achievable, as the adjacent section of road has vertical and horizontal curves that limit sightlines along the site's frontage and an overtaking lane also exists within this area.

Furthermore, it is noted that the existing Wilkins Highway/Heads Road junction has poor sightlines and is unsealed, thus potentially resulting in this road being unsuitable for extensive use. Consequently, access to this part of the development will need to be predominantly via Hughes Gap Road at a location that achieves adequate sightlines.

With respect to the proposed solar farm it is noted that access to the site will be either via Hatters Road or via Hughes Gap Road. In the event that Hatters Road is to be used for access purposes it is likely that upgrading of its junctions with the arterial road network will need to occur.

DPTI noted the location of the proposed energy storage facility and substation will be immediately adjacent to Collaby Hill Road and that subsequently access to the site will be via this road. Whilst the Augusta Highway/Collaby Hill Road junction is sealed and provided with an auxiliary left turn lane, no right turn facility is provided. Accordingly, it will be necessary to review the traffic impacts at this location to determine if any upgrades are required to safely cater for the projected traffic volumes.

DPTI considered there is a need for further traffic assessment to be undertaken in order to quantify the traffic impact of the construction phase of the development on the adjacent road network and to identify what infrastructure improvements/modifications are required to facilitate safe access to the development. Consequently, it is recommended that these matters be addressed via the provision of a traffic management plan to the satisfaction of both DPTI and Council prior to the commencement of on-site works.

Transmission Lines

In regard to the underground electrical cables intended to connect each component, any crossing of arterial roads will need to be undertaken to the satisfaction of DPTI.

Visual Impact

From a review of the road environment, whilst the wind turbines are located a reasonable distance from the adjacent road reserves (i.e. no closer than 200 metres), DPTI considers there could be potential for driver distraction on the eastbound approach to the Wilkins Highway/Hughes Gap Road junction (at least one of the turbines may appear directly in front of a driver as they negotiate the incline and reverse curves at this location) and to a lesser extent on both sides of the bend in Wilkins Highway adjacent the site (between Heads Road and Tanks Road) for westbound vehicles.

In order to assess the potential impact, DPTI recommended that photo montages be prepared to show the position and scale of the turbines visible on these approaches, prior to full approval being granted. It should be noted that depending on the outcome of the assessment of these montages, modifications to the final position of the turbines may be required.

Applicants Response

- Agrees the Wilkins Highway does not appear to comprise a suitable access point at this time. Instead of a proposed condition locking in access to the site via Hughes Gap Road or abutting roads, the applicant would prefer that access remain open to discussion to provide time to evaluate and plan potential access arrangements in detail.
- disagrees there is any significant potential for distraction eastbound along the Wilkins Highway on approach to the Hughes Gap/Wilkins intersection due to turbine setback distance, site topography and turbine visibility. An additional photo was included to demonstrate this. The applicant would consider painting the lower sections of the closest towers a different colour to reduce immediate visual impact.
- Agrees with proposed conditions 2, 4 and 6.

5.3 Department for Environment and Water (DEW) - Strategic Policy and Impact Assessment Branch (co-ordinated advice, including Native Vegetation Council and the Northern & Yorke Natural Resources Management Board)

DEW advised it considered the ecological surveys provided as part of the application to be appropriate for the scale of the proposed development and the mitigation actions proposed to be suitable for the predicted level of impacts. However, it was noted that the floristic surveys conducted by EBS were undertaken during summer and autumn, which may not have identified all significant plant species that may be present on the site (especially threatened orchid species).

DEW suggested that, if the application is approved, pre-clearance surveys would be needed, along with annual surveys as part of ongoing monitoring. The surveys would

need to be conducted at a suitable time of the year (i.e. August – November). DEW also noted the presence of Peppermint Box Woodland on parts of the site, which is a listed Threatened Ecological Community under the EPBC Act and may require a referral to the Australian Government Department of Environment and Energy.

In regard to the wind turbine collision risk for raptors, DEW supports the proposed 500m buffer around the Wedge-tailed Eagle nest identified in the application. Whilst the nest has been abandoned, there is a high likelihood it would be utilised in the future (especially given the prevalence of the species along ridgelines in the region.

DEW also suggested the applicant may wish to consider the collection and storage of seeds of significant / threatened plant species for the State Seed Conservation Centre.

The Native Vegetation Council advised that the development footprint, primarily the wind farm component, is located on land that supports native vegetation. Should the clearance of native vegetation be required, approval under Native Vegetation Regulation 12(34) - Infrastructure is necessary. An advisory note was suggested to advise the applicant on the requirements of the *Native Vegetation Act 1991* and Regulations.

Applicants Response

- The applicant conducted a spring field survey in late September 2018 and no orchids were found. Annual surveys would be conducted as part of ongoing monitoring, with mitigation actions to be undertaken if orchid species are identified.
- Further studies to determine whether the *Eucalyptus odorata* areas qualify under the EPBC Act would not be undertaken, as such quality patches are not located within the project area.
- Collision modelling of Wedge-Tailed Eagles will be undertaken.
- The applicant will collaborate with DEW on the collection and storage of seeds of significant/threatened plant species.

5.4 Country Fire Service (CFS)

The CFS has no direct concerns with the proposal.

The Bushfire Protection Zone for the area is designated as 'high' and the area has a history of uncontrollable fires, so the applicant would need to consider the safety of personnel and the protection of infrastructure in the event of a bushfire, including fire escape from the site into the wider landscape (i.e. threat to environmental and economic assets).

The CFS considered the proposed development poses a number of fire safety and fire service response issues, including:

- Current infrastructure – a lack of accessible reticulated water supply and reliable communication networks in the area. Static fire water tanks for both bushfire and building fires would be required.
- Fire response capability – first response by the Crystal Brook CFS fire would need to be secondary fire service crews, which may have some distance to travel. Additional on-site firefighting infrastructure may be required.

In addition, the application does provide any references specifically related to bushfire risk from the solar farm, battery storage, substation, associated buildings and the future hydrogen production facility.

The CFS detailed a number of measures that should be addressed to mitigate bushfire hazard, including:

- Access/egress roads.
- Firefighting equipment (during construction).
- Water supply.
- Vegetation management.
- Emergency response procedures.

Applicants Response

The applicant will meet the CFS requirements.

5.5 Department of the Premier & Cabinet – Aboriginal Affairs & Reconciliation (DPC-AAR)

DPC-AAR advised that the central archive, which includes the Register of Aboriginal Sites and Objects (the Register), has entries for Aboriginal sites within the proposed development location. These entries for Aboriginal sites are described two scarred trees and one archaeological site. It should be noted the map attached to the DPC-AAR submission shows the two site to be located outside the footprint of the development.

Applicants Response

N/A.

5.6 Civil Aviation Safety Authority (CASA)

CASA advised the wind turbines are considered to be a potential hazard to air navigation. The risk can be suitably mitigated by the installation of suitable hazard lighting in accordance with the *National Airports Safeguarding Framework Guideline D – Managing the Risk to Aviation Safety of Wind Turbine Installations (Wind Farms)/Wind Monitoring Towers (2012).*

CASA recommended that, in accordance with the Civil Aviation Safety Regulations 1998, all permanent obstacles 100m or more above ground level should be reported to Airservices Australia.

Applicants Response

N/A – the CASA submission was not provided to the applicant (in error, but since forwarded for their consideration). It should be noted the Aviation Impact Statement contained in the application addressed all relevant legislative requirements. The final design would need to consider whether hazard lighting is required (i.e. in consultation with CASA).

6. PUBLIC NOTIFICATION

Pursuant to Section 49 (7d) of the *Development Act 1993*, as a development with a project cost exceeding $4M, the application was publicly notified in the Adelaide *Advertiser* and the *Port Pirie Recorder* newspapers on 31 May 2018.

A total of 263 public representations were received.

The majority of representations received were in support of renewable energy and the solar and battery components of the proposal, but not the windfarm component.

Significant concerns were raised in respect to the windfarm, due to the close proximity of the wind turbines to the Crystal Brook township and surrounding residents (including the nearby Beetaloo Valley), primarily the visual impact and potential noise effects.

The siting of the turbines close to the Southern Flinders Ranges (and the Heysen Trail) was seen to negatively impact on Crystal Brook being the 'gateway to the Flinders', and be detrimental to the region's tourism value. The effect on the tourism appeal of Crystal Brook and the nearby Bowmans Park (a local tourism and recreation site) was also raised by residents.

Similar to concerns raised about other windfarm proposals, other issues raised included:

- Potential health risks for nearby residents, especially from low-level noise (infrasound) emissions, such as interrupted sleeping patterns, vertigo and nausea. Representations considered that the risks have not been completely disproven and that further scientific investigations are required (especially for newer turbine models that have a higher generation capacity).
- Use of arable land and the impact on primary industries, such as construction traffic effecting grain transport and aerial spraying implications.
- Fire risk (including aerial firefighting implications).
- Shadow flicker / strobing.
- Environmental impacts, primarily vegetation loss and effects on local biodiversity (especially bird species).
- Traffic generation and road safety.
- Disruption or loss of telecommunications services and TV reception, which may be difficult to rectify.
- Rehabilitation and decommissioning.
- Property devaluation and the potential effect of the expansion of the northern urban boundary of Crystal Brook (and the attractiveness of the town as a country living or retirement destination).

Representations also considered that the local community would not directly benefit from the power generated (such as improved local supply or cheaper power prices). In addition, it was felt that the proposal had resulted in a social divide and a loss of community cohesion within the district.

A number of representations also questioned the thoroughness and accuracy of the application, including the assumptions made (such as the level of community support for the project and whether adequate consultation was undertaken). The economic benefits were also considered to be overstated.

From a broader perspective, the cumulative impact of windfarms in the region or the capacity for State to accommodate more windfarms without having a widespread impact on the landscape and rural communities were raised.

Alternatively, there were a number of representations that supported the project due to the positive impacts it could deliver for the region and the State, including:

- Economic benefits - investment, employment and 'spin-off' effects.
- Sustainability aspects – renewable source of electricity and displacement of fossil fuel generation (i.e. which would lead to a reduction in greenhouse gas emissions).
- Hybrid nature of the proposal would deliver base-load power, which provides better integration of renewable energy into the power grid. It would increase local generation and improve security and reliability of supply. Increased penetration of renewable would lead to reduced power prices.
- The proposed community fund.
- Create a tourist attraction that would encourage visitors to Crystal Brook (with economic benefits).

7. APPLICANTS RESPONSE

A copy of the applicant's response is contained in the ATTACHMENTS.

The applicant has provided a detailed response to the matters raised in public representations, which addressed the following issues (which predominantly relate to the windfarm component):

- Visual effects of the windfarm, including the effect on the scenic character of the area (including the proximity to Crystal Brook and the Southern Flinders Ranges) and the size of the turbines. Additional viewpoint photos were provided.
- Effect on property values, especially agricultural land and lifestyle properties.
- Noise effects, including the adequacy of modelling and the implications of larger turbines and clustering of turbines.
- Telecommunications interference, including mobile phone coverage, TV reception and AM/FM radio reception.
- Health concerns (including infrasound and shadow-flicker effects) and community cohesion concerns.
- Tourism implications.
- Flora and fauna.
- Traffic, including heavy vehicle traffic and access.
- Aerial firefighting implications.
- Safety risk, including fire.
- Use of arable land.
- Decommissioning.
- Errors / inconsistencies in the development application.
- Adequacy of public consultation.

8. POLICY OVERVIEW

The proposed site is located in the Port Pirie Regional Council Development Plan area, within the Primary Production Zone.

8.1 Council-wide Objectives and Policies

Renewable Energy Facilities

Council-Wide policies seek the establishment of renewable energy facilities that benefit the environment, local communities and the state more generally. Such facilities should be located in areas that provide opportunities to harvest natural resources for the efficient generation of electricity. The location, siting, design and operation of renewable energy facilities should avoid or minimise adverse impacts on the natural environment and other land uses.

Other Council-Wide policies of relevance to the assessment of the application relate to: form of development; design and appearance; hazard (bushfire protection, salinity and flooding); conservation; infrastructure; interface between land uses; orderly and sustainable development; landscaping; natural resources; water catchment; siting and visibility; orderly and sustainable development; and transportation and access.

8.2 Primary Production Zone

Objectives

1. *The long term continuation of primary production, including value adding activities associated with primary production.*

2. *Economically productive, efficient and environmentally sustainable primary production.*
3. *Allotments of a size and configuration that promote the efficient use of land for primary production.*
4. *Protection of primary production from encroachment by incompatible land uses and protection of scenic qualities of rural landscapes.*
5. *Wind farms and ancillary development located in the zone, accepting that this may need to be sited in visually prominent locations to take advantage of natural resources such as wind.*
6. *Development that contributes to the desired character of the zone.*

Desired Character

The zone covers the greater majority of the Council area between the edge of the ranges to the north east and the coastal regions to the west, apart from the specialist zones associated with the existing townships.

The natural character of the area is therefore predominantly gently undulating, open cleared rural land that includes the Broughton river system, the Clements Gap Conservation Park and isolated pockets of remnant vegetation.

The area is strategically located in relation to the major infrastructure networks providing transport linkages through the area, including National Highway 1 and the National Rail link. It also contains the alignment of the Morgan-Whyalla pipeline, major power transmission lines and a linkage to the natural gas pipeline network.

Agriculture production within the rural area contributes the most significant component to the local economy, principally in the form of broad acre cropping and livestock production together with diversification and value-adding. The central location and the nature of the land, the accessibility to primary produce sourced from the national transport routes as well as local and the region and the proximity to the range of transport networks, infrastructure and local employment services promotes the area to a wide range of value-adding activities associated with primary produce.

It is envisaged that the area will continue to accommodate agricultural activities as the dominant land uses and that selected value-adding activities will be developed to complement and expand on the existing rural activities in the region. It is important that all future activity within the area will have regard to the maintenance of agricultural productivity, minimizing fragmentation of rural land, protection of natural resources, minimizing fire risk, protecting natural views and providing appropriate buffers to adjoining sensitive uses.

Wind farms and ancillary development are an envisaged form of development within the zone. Such facilities may be of a large scale, comprise a number of components and require an extended and/or dispersed development pattern. These facilities will need to be located in areas where they can take advantage of the natural resource upon which they rely and, as a consequence may be need to be:

- *Located in visually prominent locations such as ridgelines.*
- *Visible from scenic routes and valuable scenic and environmental areas.*
- *Located closer to roads than envisaged by generic setback policy.*

This, coupled with the large scale of these facilities (in terms of both height and spread of components), renders it difficult to mitigate the visual impacts of wind farms to the degree expected of other types of development. Subject to implementation of management techniques set out by general / council wide policy regarding renewable energy facilities, these visual impacts are to be accepted in pursuit of benefits derived from increased generation of renewable energy.

Principles of Development Control

Relevant policies include:

Land Use

PDC 1: *The following forms of development are envisaged in the zone:*

- *bulk handling and storage facility;*
- *commercial forestry;*
- *dairy farming;*
- *farming;*
- *horticulture;*
- *intensive animal keeping;*
- *tourist accommodation (including through the diversification of existing farming activities and conversion of farm buildings);*
- *solar and ancillary development;*
- *value-adding activities associated with primary production;*
- *wind farm and ancillary development; and*
- *wind monitoring mast and ancillary development.*

PDC 3: *Wind farms and ancillary development should be located in areas which provide opportunity for harvesting of wind and efficient generation of electricity and may therefore be sited:*

a) *in visually prominent locations in the landscape; and*
b) *closer to roads and not to be subject to the setback requirements of other forms of development.*

PDC 6: *Buildings, other than where required to facilitate wind farms and ancillary development, should primarily to be limited to farm buildings, a detached dwelling associated with primary production or a tourist related use on the allotment and residential outbuildings that are:*

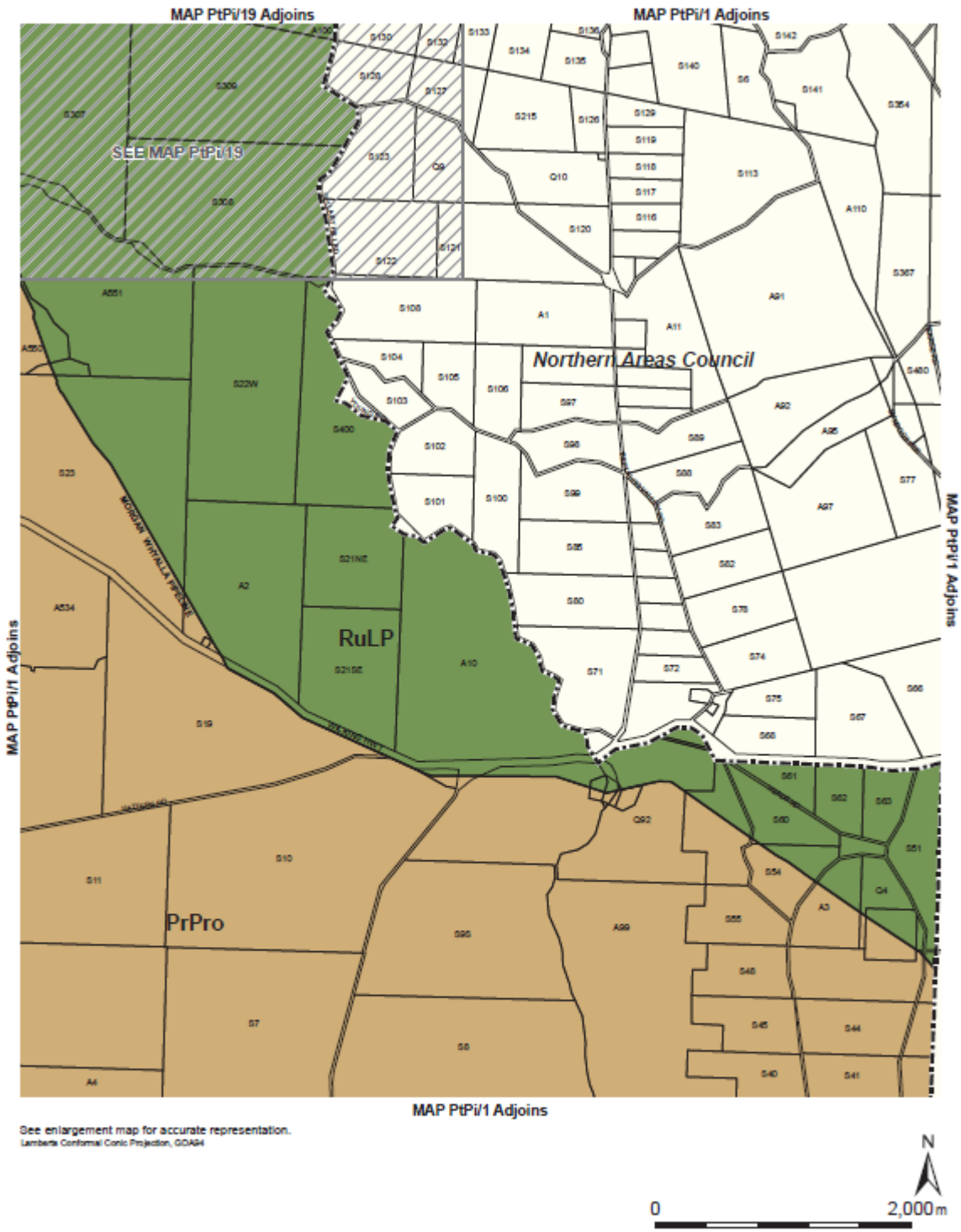
a) *grouped together on the allotment and set back from allotment boundaries to minimise the visual impact of buildings on the landscape as viewed from public roads; and*
b) *screened from public roads and adjacent land by existing vegetation or landscaped buffers.*

Form and Character

PDC 10: *Development should not be undertaken unless it is consistent with the desired character for the zone.*

PDC 11: *Development should not occur within 500 metres of a National Park, Conservation Park, Wilderness Protection Area or significant stands of native vegetation if it will increase the potential for, or result in, the spread of pest plants.*

PDC 13: *Development on land situated between National Highway 1 and Landscape Protection Policy Area 10 should be designed and sited to ensure the natural view of the ranges is not impaired.*



Development Plan zoning

9. PLANNING ASSESSMENT

This planning assessment considers the potential impacts of the proposal on the subject land; along the interface with adjacent land, land-uses and landowners; and on the wider surrounding environment and community. It aims to strike a balance between the land use policies of the Primary Production Zone (and the relevant Council—wide objectives) of the Development Plan and the strategic benefits for the State's energy and emissions reduction requirements (i.e. for both local supply and the national electricity grid). It also considers the potential economic benefits to the State and local communities (i.e. reduced power prices, employment, investment and secondary economic effects) and any disadvantages that might arise for the local community if the proposal were approved.

9.1 Technical Investigations

The general area of Crystal Brook/Collaby Hill has been the subject of previous monitoring and investigation. The initial concept for the project (at the time, solely wind) was developed by Origin Energy in 2009. Between 2009 and 2012, Origin undertook more thorough research of the project area, including a range of environmental investigations, the identification of planning / environmental issues (and information gaps), input from relevant local / state government bodies and planning advice. Such information was incorporated into the application.

The applicant undertook additional investigations, including:

- to identify active and inactive raptor nests;
- gaps analysis of native vegetation impacts (i.e. due to the slightly different layout, access arrangements and previous bushfire implications);
- visual impact assessment to take into account the reduced number but increased height of the turbines proposed;
- new background noise monitoring and noise assessment that complies with current EPA requirements;
- gap assessment of traffic and transport impacts, especially to include the solar and storage components;
- new shadow flicker assessment, including against the standards set in the Environment Protection and Heritage Council draft National Wind Farm Development Guidelines (2010), especially for the new wind turbine layout;
- new assessment of potential telecommunications interference (EMI) issues; and
- a new Aviation Impact Statement that primarily relates to the wind turbines (also factoring in glare from solar panels), including conformance with the requirements of the *CASA Advisory Circular 139-08(0) April 2005 – Reporting of Tall Structures.*

The application includes a range of investigations (desk-top reviews, previous studies by Origin, additional studies, surveys and modelling) and adopted a risk assessment approach of the key issues, including:

- Geology, topography and soils.
- Surface water and hydrology.
- Ecology.
- Landscape and visual impact.
- Noise.
- Cultural heritage.
- Social and economic implications.
- Traffic.
- Shadow flicker.
- EMI.
- Aviation.

It quantified the likelihood, consequence and risk of potential environmental, social and economic impacts. The application also addressed a wide range of relevant legislative requirements that would apply to a windfarm, solar farm and battery storage development.

The applicant undertook an engagement process with other stakeholders (including pre-lodgement discussions with the Department, relevant agencies and Council), prior to lodgement of the application to identify relevant planning issues.

9.2 Strategic Overview

The proposal aligns with the State Government energy policy objectives to deliver more generating capacity close to a major load centre, increase network stability and put downward pressure on prices to ensure the provision of a reliable and affordable supply of energy for South Australian consumers.

From a planning policy perspective, the 2011/12 Ministerial Statewide Wind Farms Development Plan Amendment (DPA) incorporated policies into Council Development Plans that support renewable energy developments, especially wind farm applications. The DPA explicitly envisaged wind farms in all rural type zones in the state and established the following requirements, primarily to manage the visual amenity of wind farms:

- Wind turbine generators need to be setback at least 1km from non-associated dwellings and tourist accommodation and at least 2km from defined urban and township zones;
- They need to be regularly spaced, uniform in colour and mounted on tubular towers as opposed to lattice towers; and
- Vegetated buffers need to be provided around substations, maintenance sheds and other ancillary structures.

Wind farm related policies were also incorporated to avoid or minimise the following impacts on nearby property owners/occupiers, road users and wildlife:

- Shadowing, flickering, reflection or glint;
- Excessive noise;
- Interference with television and radio signals and geographic positioning systems;
- Interference with low altitude aircraft movements associated with agriculture;
- Modification of vegetation, soils and habitats; and
- Striking of birds and bats.

It also specified certain zones where windfarms would not be supported, including:

- Barossa Valley Protection District.
- McLaren Vale Protection District.
- Fleurieu Peninsula.
- The landscape protection zones applying in the Flinders Ranges.
- The River Murray corridor.
- The Clare Valley corridor.
- Zones applying to the coast and State waters.
- Conservation zones.

9.3 Land Use

The establishment of renewable energy facilities are anticipated forms of development in the Primary Production Zone. Whilst there are specific policies for windfarms, there are no standalone policies for large-scale solar farm and battery storage developments. The Development Plan is relatively silent, as these facilities (at scale) are new to South Australia. Whilst the Development Plan policies accept there will be a visual impact from

wind farms, solar farms and battery storage facilities are not specifically addressed in the same way. However, their visual impact is substantially less. The associated on-site substation would connect with the electricity grid via an existing transmission line.

Compared to wind turbines, solar arrays are positioned much closer to the ground, making them less visually intrusive, but cover a far greater surface area.

For these facilities, noise and electromagnetic disturbance impacts are far less significant (i.e. having fewer moving components), with solar glare or reflectivity being the main issue. The solar farm would have impacts similar to a large 'low profile' shed structure, such as the need for site clearance/disturbance, earthworks to level parts of the site, underground infrastructure and the establishment of a large, relatively impermeable surface that would result in increased and/or concentrated run-off.

The battery storage facility would have similar impacts, but would appear like a collection of shipping containers or shed like structures. Co-located the facility with the sub-station and operations and maintenance building would group such structures / buildings together to restrict impacts to one location (and also allows more effective, localised vegetation screening to be considered if required).

The development of a renewable energy park within the Primary Production Zone is both orderly, sustainable and economic - consistent with zone policies, generating renewable energy and providing an economic return for landowners and the community more generally through employment and the sale of goods and services.

9.4 Impacts on the Community

The population concentration around the site 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 next closest towns. The region's economic base comprises agriculture, forestry and tourism. Manufacturing, retail, education and other industries are concentrated in Port Pirie.

Based on previous experience, it is considered the majority of impacts on the community would be most significant during the construction phase, due to the transport of materials/equipment, use of heavy machinery, site clearing activities, earthworks, installation of infrastructure and the erection of buildings. Dust, noise and traffic movements would be the main impacts. During operation, the visual impacts of the development would be the main effect.

Economic Benefits

A key economic benefit from the proposal will be the potential effect of the lowering of overall electricity supply prices in South Australia due to the expansion of the renewable energy industry. Currently, there is a high degree of market concentration for scheduled generation capacity in South Australia, with approximately 90% of generation capacity owned by three companies.

It is expected that any increase in the variety and ownership of alternative generation assets would place downward pressure on wholesale market prices. This increase in supply is expected to lower the price for generation capacity, as each new generator would bid into the electricity market, helping to reduce both the overall level of price spikes and the duration of such price spikes. The proposal would also provide greater electricity network stability, which would be a benefit to the wider economy.

Job creation and opportunities for local contractors and suppliers (including construction materials, such as concrete and quarried rock) would arise, with a workforce of approximately 150-250 people required over the 1-2 year construction period.

During operation, between 10-40 employees would be required, comprising – for the most part - locally based workers servicing and maintaining the development. Various multiplier effects would arise from servicing the construction work force and, to a lesser extent, the operational workers.

Direct benefits would also result from landowners having increased income from land rental for turbines/ solar farms, which is often spent locally on the use of local contractors and suppliers of goods and services. Local employment opportunities would assist in maintaining the population of the Crystal Brook township and the surrounding farming district (and providing an incentive for younger age groups to remain in the region), although the concerns of representors – in respect to the potential for tourism impacts (and perhaps visitation levels not being maintained or declining) - is also noted.

Visual Impacts

The proposed site is located in an area where the northern Mt Lofty Ranges ends and the southern Flinders Ranges begins. The Wilkins Highway could be considered as a 'transition point' between the agricultural lands to the south (i.e. where the hills are largely cleared) and the steeply rising ridges covered in remnant vegetation to the north (i.e. that typify the scenic and conservation values of the southern Flinders).

For vehicles travelling north along the Augusta Highway, it is the views north of Wilkins Highway that can signify the start of the Flinders Ranges region. The site could also be considered as the northern extent of the 'windfarm region' of the Mid North that stretches from Snowtown in the south to Hallett in the east. Thus, the locality has pleasant rural views, but does not have a *noticeably* higher scenic quality when compared to the ranges around the Mount Remarkable National Park area to the north.

The application includes a qualitative landscape character and visual impact assessment (including photomontages), conducted by suitably qualified consultants, which concluded:

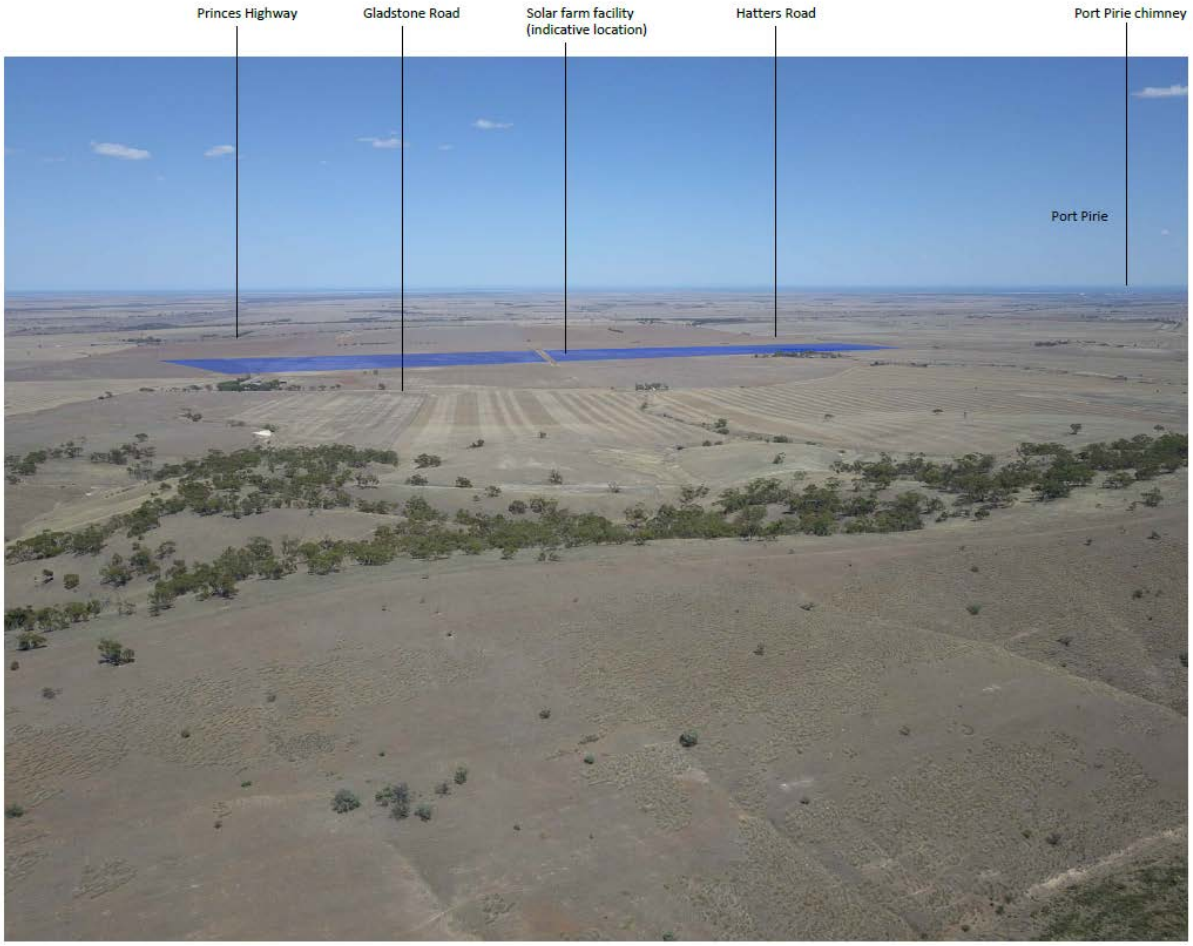
- The landscape character type is generally well represented throughout the rural areas around the site.
- A total of 14 non-host residential dwellings were identified within 3 km of the wind turbines and it was determined that the majority of these would not experience a significant (high) visual effect from the development.
- Some residential dwellings surrounding the wind farm have existing privacy and/or shelter plantings around dwellings, which reduce the potential visibility of the wind farm from these places.
- Given the proposed separation distances, the proposal is unlikely to have a significant visual effect on the character of surrounding residential localities and the Crystal Brook township, where views from the majority of residential and/or commercial 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 were adjudged to be 'moderate'.
- Given proposed separation distances between sensitive view locations and the site, it is unlikely that electrical infrastructure including the solar facility, substation, battery storage facility and ancillary infrastructure, would form prominent elements within existing views.
- Views 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.

- During the construction phase, a temporary change to visual amenity would occur as a result of earthworks, the presence of construction equipment of and an overall increase in the number of people and vehicles accessing the site.

Conceptual view of the windfarm from the western end of Wilkins Highway (looking east)

Conceptual view of the windfarm from the eastern end of Wilkins Highway (looking west)

Conceptual view of the windfarm from the Crystal Brook end of the site (looking north-east)



Conceptual view of the solar farm

The overriding issue for the majority of representors, including those with dwellings in close proximity of the site and residents of Crystal Brook, is the visual impact of wind turbines on the landscape and the consequential interruption to their visual amenity and diminution of the scenic character of the southern Flinders Ranges. The impact on local scenic places and tourism features, such as Bowmans Park and the Heysen Trail (which passes through the windfarm site), was also a concern.

In particular, the larger height of the turbines compared to other windfarms and the closer spacing (i.e. greater concentration or 'clustering' of turbines) was perceived to exacerbate the visual effect.

The Development Plan policies for the zone accept there will be a visual impact from windfarms and that the degree of impact would depend upon its proximity to a viewer and the viewer's perception of the structures.

Current planning policies do not provide specific guidance in respect to the visual impacts of renewable energy facilities (with the exception of wind farms), although it is noted that planning policy does seek to restrict their establishment in other zones (such as the Rural Landscape Protection Zone, which includes the foothills and ridgelines of the southern Flinders Ranges to the north of the site).

This is an important distinction, as the weighting of policy is different, such that larger, more visually dominant wind turbine structures can be considered within the Primary Production Zone, but are less desirable, or not anticipated where landscape values have much greater standing (and therefore such developments less merit) in other zones.

At a more general level, 'renewable energy facilities' policies seek to manage the impact of such development through setback requirements, spacing, uniformity in colour scheme, and the use of tubular towers.

The establishment of a windfarm (and to a much lesser degree a solar farm and battery facility) would change the viewscape of the locality by introducing a series of prominent features (that could be considered 'industrial' in appearance), which is an inevitable consequence of such a development.

Whilst the windfarm component would not generally be visible from Crystal Brook (especially the main street), it would form a backdrop to the township and be visible to varying degrees from residences around its northern urban boundary. The windfarm would also be visible to varying degrees from semi-rural and rural properties and from local roads in the district.

The applicant proposes to prepare a Landscape Plan, with the aim of establishing vegetated screen plantings around properties where the visual amenity is substantially affected. The plan would also establish screen plantings around the solar farm, substation and associated infrastructure.

The design of the windfarm has sought a compromise by using larger turbines in a more concentrated layout, in order to minimise the overall footprint (whilst still being cost-effective). The original proposals in 2009 and 2012 involved smaller turbines that were spaced further apart, but occupied a greater length of the ridges – extending north of the Wilkins Highway and into the Beetaloo Valley. The current design restricts turbines to the ridge south of the Highway.

From a planning perspective, when considered against the planning policies and desired character sought by the Primary Production Zone in the Development Plan, the findings of the visual assessment reasonably concluded the proposal would not have an unreasonable impact on the landscape character or the visual amenity of the area.

It is considered the open rural character of the zone would not be significantly eroded by the proposal. This is in the context that windfarms are envisaged in the zone and that they will have a visual impact in order to harness the wind resource (and provide the benefits of renewable energy generation).

In summary, planning policies seek to protect areas of 'high scenic value', but allow development to occur in other areas, such that the current proposal has been designed to avoid the Rural Landscape Protection Zone to the north of the site.

Noise Emissions

Development plan policies seek to limit the impact to more sensitive receivers of environmental noise generated by windfarm developments and other renewable energy facilities. In the first instance, the requirement to provide a separation distance from a turbine's location to both host and non-participant dwellings of 1km and 2km (respectively) provides an initial threshold test which the current proposal meets.

The application included a noise impact assessment to determine the effect of construction and operational noise on both the neighbouring landowners and 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 site monitoring data. Noise modelling was undertaken utilising specialist

equipment, including the CONCAWE noise propagation model and SoundPLAN noise modelling software.

The assessment identified noise sources as being from:

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

The results of the modelling predicted that all identified residences will be compliant in relation to the allowable noise criterion prescribed by the *Environment Protection (Noise) Policy 2007.*

The EPA reviewed the findings of the acoustic report and considered that the proposed windfarm is appropriately located and designed to minimise noise impacts on dwellings. The EPA recommended a number of conditions that would need to be applied at both installation and commissioning stages to ensure the development remains compatible with current guidelines and the potential for adverse noise impacts at relevant receivers is minimised. If approved, the recommendations would need to be incorporated as conditions of approval.

The application also considered the potential impact of infrasound resulting from turbine operation, with the incidence of infrasound considered to be no more or less from that which naturally occurs in the environment. The EPA also conducted a study into infrasound levels from windfarms (released in January 2013) and no adverse findings were reported.

Air Emissions and Dust

Construction air quality impacts to sensitive receivers could occur as a result of dust emissions during construction activities (and the use of unsealed roads) or as a result of exhaust emissions from construction equipment.

The application considered that, through the utilisation of standard environmental management controls (e.g. use of water trucks for dust suppression and the use of properly maintained equipment), impacts are expected to be negligible. Dust could be an issue during operation until such a time that adequate vegetation cover has re-established.

An Air Quality Management Plan will be provided as part of the final CEMP.

Electromagnetic Interference with Telecommunications

Renewable energy facilities have the potential to cause electromagnetic (EM) interference and/or signal disruption (either from the operation of equipment, which creates EM fields or physical interference due to obstruction, reflection or diffraction). In respect to windfarm operations, services that could be affected by wind turbines include aircraft navigation systems, broadcast radio and television signals, mobile phone systems, commercial radio and microwave links.

The application included an investigation into the potential for interference to existing telecommunications links (i.e. point to point, point to multi-point, emergency services radio communications, meteorological radar, broadcast television, broadcast radio, mobile phones, wireless internet, satellite television, internet and GPS systems), based on a search of the Australian Communications and Media Authority (ACMA) database. It identified that there may be potential minor service degradation to local TV reception within

10km of the windfarm and to local community wireless broadband reception within 3km west of the windfarm. If such reception issues arise, the applicant would implement a range of possible solutions to fix any such problems. This would need to be reinforced by a condition of approval, with any remedial costs met by the proponent.

Tourism

The township of Crystal Brook has a country rural character that is a general attraction for tourism. The main appeal is its setting near the southern end of the Flinders Ranges. In particular, the Heysen Trail extends through the township and then follows the Crystal Brook stream in a northerly direction. Bowmans Park, located to the north-east of the township is a popular tourism and recreation spot that provides base or overnight accommodation for users of the trail. It also has Aboriginal and European heritage values and features.

The Heysen Trail passes through the centre of the proposed windfarm site, so views would be substantially altered along this section. The level of potential impact is difficult to quantify, as some visitors may consider wind turbines to be intrusive while others may consider them a point of interest (especially if walkers following the trail have passed through windfarms on other sections). The impact may not be as substantial given the ranges have been modified by past agricultural use, with walkers experiencing the more scenic landscape north of Wilkins road after they have passed through the windfarm site.

The Wilkins Highway is a designated tourist route that stretches from the Mid North region to the Spencer Gulf. The route passes through open rural vistas, where windfarms have become a relatively common feature (and for some visitors an attraction that adds diversity to the landscape and an example of the State's transition to renewable energy sources).

Whilst research indicates there is no conclusive evidence to suggest a serious negative economic impact of windfarms on tourist visitation, at the local level, small scale tourism businesses can be more sensitive to windfarm developments on account of their landscape view offerings, typical visitor profile, and limited product diversity.

The Development Plan is relatively silent on the potential for tourism impacts and visitation levels from windfarm developments, for what is an envisaged land use, with effects highly dependent on local circumstances. Minimal or neutral impacts are likely, given the area does not have the level of attractions or tourist accommodation options to make it a prime tourist destination in the region (i.e. when compared to other towns, such as Melrose, Clare, Mintaro and Burra), which may decrease over time indicating a certain degree of acceptance.

9.5 Transport / Access

The application included a traffic impact assessment that considered the traffic volumes both during construction and post construction. The most significant traffic impact will occur during construction, which is likely to be in the order of 12-18 months. However, the worst-case scenario in terms of traffic loading occurs during a core six (6) month period. Post construction, the proposal will generate relatively minimal traffic, due to a low number of permanent employees.

Construction materials obtained from Adelaide will likely traverse the Port Wakefield and Augusta Highways, although if specific materials are required to be sourced from Victoria, vehicles will be able to use the Dukes Highway to connect to Murray Bridge and then deviate north to Route 20 via Mannum Road.

Oversized and overmass vehicles will be used to deliver some specialised components (i.e. in accordance with relevant permits from the National Heavy Vehicle Regulator and DPTI). Light vehicles will be used to transport workers to the site.

The assessment found that, when taking into account the current road usage and the expected increase in traffic during the construction phase, the impacts from traffic and traffic related activities are not considered to be significant.

The key intersections that will need to be used during construction are:

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

The application stated that impacts on road pavement due to increased heavy vehicle traffic is dependent on the existing road condition and design of the road pavement. Construction would result in a relatively large and sustained increase in heavy vehicle traffic on the surrounding roads and highways, including the Hughes Gap Road (Gladstone – Laura Road) and Wilkins Highway, especially through 'Hughes Gap'. Therefore, it is possible that some pavement damage will result, particularly on minor, local roads such as Hatters Road and Collaby Hill Road, which will be required to traverse around to and from the Crystal Brook Energy Park site.

Impacts would be mitigated and addressed via the implementation of a detailed Traffic Management Plan and Environmental Management Plan during construction.

DPTI considered there is a need for a further traffic assessment to be undertaken in order to quantify the traffic impact of the construction phase of the development on the adjacent road network and to identify what infrastructure improvements/modifications are required to facilitate safe access to the development. In particular, alternative access points to the wind farm and solar farm would need to be investigated due to road safety along the Wilkins Highway.

The Port Pirie Regional Council and the Northern Areas Council requested that prior to the commencement of any works, the proponent should provide the relevant road authorities a detailed Traffic Management Plan and enter into an agreement with the Council on any local road upgrades. Additionally, any approval should state that all costs associated with any road upgrades and ongoing maintenance are to be borne by the proponent.

Consequently, these matters would need to be further addressed via the provision of a Traffic Management Plan to the satisfaction of both DPTI and Council prior to the commencement of on-site works. If approved, the DPTI and Council requirements would been incorporated as conditions of approval.

9.6 Environmental Issues

Flora and fauna

The main environmental associated with this type of development are habitat loss (primarily through vegetation clearance), collision with wind turbine blades ('bird strike'), disturbance from human activities and the potential spread of weeds and pest animals. The application includes thorough investigations into potential flora and fauna impacts, undertaken by consultants/experts with experience and knowledge in their field (especially windfarm developments).

A search of existing databases, supplemented by field surveys, identified the occurrence, abundance and distribution of species on and around the site (especially any species of National and State conservation significance). A risk assessment was undertaken to determine potential environmental impacts, with no risks identified as 'extreme' or 'high'. In particular, the probability of bird species colliding with wind turbines was investigated

as a key issue, including a risk assessment of the flight characteristics of bird species known to occur in the area (especially local Wedge-tailed Eagles).

There are very few environmental issues associated with the proposal as the site predominantly comprises cleared land. The windfarm site has patches of remnant vegetation that generally have relatively low ecological value due to past and current agricultural activities. Within the region, more significant habitat is provided along the ranges north of the site, especially within the Mt Remarkable National Park.

The majority of vegetation affected comprises *Austrostipa* spp. (tussock) Grasslands and *Eucalyptus porosa* (Mallee Box) Woodlands that have low-moderate conservation values. Areas of ecological value, such as the nationally threatened Peppermint Box *(Eucalyptus odorata)* Grassy Woodland, would be avoided. Habitat for the nationally endangered Pygmy Blue-tongue Lizard (*Tiliqua adelaidensis)* was not recorded on the site.

Two bird species with a state conservation rating, the Diamond Firetail (*Stagonopleura guttata*) and Hooded Robin (*Melanodryas cucullata),* are known to occur in the area and would need to be protected.

The proposal would also result in a greater amount of exposed or disturbed surfaces that could encourage weed growth or rabbit populations and the network of access tracks could encourage pest animals, such as foxes, dogs and cats (especially near sensitive habitats).

The layout has been designed to minimise land disturbance, especially the use of existing tracks and cleared areas. Weeds and pests can be adequately managed through standard control measures.

The application proposes to manage potential environmental impacts based on a hierarchy of mitigation measures for avoidance, minimisation, restoration and offsetting, including:

- Avoiding intact Mallee habitat and implementing a 100m buffer zone around such habitat to reduce impacts on Diamond Firetail and Hooded Robin.
- Maintaining a 500m protective buffer zone around the intact Wedge-tailed Eagle nest.
- Ensuring existing water sources for birds, including Diamond Firetail, exceed 100m buffer from turbines through micro-siting or movement of water source.
- Development of a Weed Management Plan/Rehabilitation Plan.
- Implementing a Construction Environmental Management Plan (CEMP).
- Employing best practice environmental management measures.
- Ensuring staff training and awareness.

DEW advised it considered the ecological surveys provided as part of the application to be appropriate for the scale of the proposed development and the mitigation actions proposed to be suitable for the predicted level of impacts. However, it was noted that the floristic surveys conducted by EBS were undertaken during summer and autumn, which may not have identified all significant plant species that may be present on the site (especially threatened orchid species). The applicant's response included the results of an additional vegetation survey conducted in spring this year (i.e. September 2018) that did not identify any orchid species (nor any other species of significance).

Water Quality, Stormwater and Soil Erosion Management

Construction activities, permanent modifications to the land and the establishment of structures / buildings can result in the disturbance of soils, changed landforms and altered hydrology that can lead to reduced water quality for water courses / water bodies and erosion problems. The windfarm location is the most at risk site to such impacts, due to the steep terrain and being within the catchment of the Crystal Brook water course (which is part of the Broughton River catchment).

Standard management practices would be adopted to manage water quality, stormwater and erosion during both construction and operation, primarily through the Construction Environmental Management Plan (CEMP). The draft CEMP in the application specifies that a Water Management Plan and a Soil, Erosion and Sedimentation Management Plan will be prepared as part of the final CEMP.

9.7 Risks and Hazards

Aviation

Planning policies seek to ensure that the safety of aircraft movements to and from existing airports and air landing grounds are maintained and navigational equipment is not compromised with the establishment of renewable energy facilities (which can potentially introduce additional obstacles and additional risk factors for aviation). The main potential impact from solar farms is from solar glare, with the potential to impact on pilot vision.

The application included an aeronautical and aviation assessment (including an Aviation Impact Statement prepared in accordance with the requirements of Airservices Australia) on the potential effect of wind turbines on:

- 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 assessment identified the Port Pirie Airport as the only registered aerodrome within 30 nm (55.6 km) of the windfarm site. The obstacle limit surface (OLS) extends to 15 km, so would not be affected. The Jamestown and Booleroo Centre aerodromes are located approximately 35 km and 46 km respectively from the site and would not be affected.

The assessment determined the proposal will not impact on flying operations provided standard management and pre-planning measures are put in place to minimise risk.

If approved, the windfarm would need to meet the Civil Aviation Safety Authority (CASA), requirements.

Driver Distraction

A number of representors have raised concerns in respect to the possible risk to driver safety by the establishment of windfarm turbines close to main roads as being a source of driver distraction. The Department of Planning, Transport and Infrastructure raised a concern there could be potential for driver distraction on the eastbound approach to the Wilkins Highway/Hughes Gap Road junction (at least one of the turbines may appear directly in front of a driver as they negotiate the incline and reverse curves at this location) and to a lesser extent on both sides of the bend in Wilkins Highway adjacent the site (between Heads Road and Tanks Road) for westbound vehicles. Additional photo montages to show the position and scale of the turbines visible on these approaches was requested.

There is no scientific evidence to suggest that vehicle drivers will be overly distracted by the operation of wind turbines close to a main road (as compared with messaging contained on outdoor advertising signage and the use of mobile phones and other portable devices whilst driving). Such developments have been established around the world – including many adjacent to main roads – and these types of facilities are not new or so different as to be a unique experience such that a measurable risk to driver safety could be reasonably identified (as opposed to road and weather conditions, driver behaviour etc).

The proposed windfarm will be visible from a distance, and the turbines themselves are no longer a unique or unexpected structures within rural landscapes, being relatively commonplace in the Mid North. For most road users it would become common knowledge that a windfarm had been established. Those driving vehicles on the state's roads are bound by National road rules and safe driving practices.

Fire and Bushfire Risk

The application anticipated that the proposal will not increase the risk of bushfires in the area. In particular, the risk of fire at wind farms is very low because each turbine is situated next to a cleared construction pad (i.e. reducing the available fuel load), lightning protection devices are installed on every turbine (i.e. ultimately reducing ground strikes which might otherwise have started fires) and turbine monitoring systems manage the risk of ignition. In addition, the windfarm and solar farm would not inhibit firefighting capability. It is considered the establishment of suitable fire breaks, improved access, the control of fuel loads and the provision of water supply tanks would improve firefighting capabilities around the windfarm site.

The draft Construction Environmental Management Plan includes a fire prevention outline plan that details a range of measures for mitigating fire risks during construction and operation. A Fire Prevention Management Plan will be provided as part of the final CEMP.

The Country Fire Service (CFS) the Bushfire Protection Zone for the area is designated as 'high' and the area has a history of uncontrollable fires. The CFS raised no objection to the development, either on bushfire risk or potential interruption to aerial fighting operations. A number of standard conditions were recommended in respect to road construction and access, type and availability of firefighting equipment, vegetation management and clearance, water supply and on-site availability, and emergency response procedures. If the application is approved, these requirements will need to be incorporated into a Fire and Emergency Management Plan (FEMP) that must be prepared in consultation with the SA Country Fire Service.

Any additional wind monitoring masts would need to be suitably marked and identified, to ensure that less prominent guidewires are visible at all times.

Shadow Flicker

Shadow flicker is a term used to describe the visual effect caused by the intermittent shadow cast through constrained openings (such as windows) by the rotating blades of a wind turbine, leading to a flickering effect and the potential for annoyance to be experienced by the occupants of a building. The phenomenon is mitigated by distance, as the intensity of the shadow dissipates, which is generally accepted as being limited to around 500m from a turbine.

The Environment Protection and Heritage Council draft *National Wind Farm Development Guidelines* (2010) provides specific guidance on this issue, whilst Development Plan policies seek only the avoidance or minimisation of such effects. The principal mitigation factor for the proposed development is distance, with each of the proposed turbines being more than 2km from a non-host residence.

The application included a shadow flicker report that provided an assessment of the expected annual shadow flicker duration and any associated blade glint in the vicinity of the proposed windfarm. Modelling was undertaken on the 36 dwellings located within the subject area (2420 m from each turbine location) including four host landowners. The modelling indicated that three of the involved land owners' residences will experience shadow flicker considered to exceed the limit recommended by the guidelines and identified a number of mitigation measures to reduce the effect on these residences (including the

installation of shielding structures / the planting of vegetation to block the shadow cast by the turbines or by managing the operation of each turbine).

Thus, it not expected that shadow flicker would pose any risk.

Blade Glint and Solar Glare

Blade glint and solar glare refer to the reflection of visible light from the surface of an infrastructure element. When the reflection occurs specifically from the surface of a wind turbine blade it is referred to as blade glint, when it occurs from the surface of a solar photovoltaic (PV) field it is referred to as glare. For wind farms, the main mitigation measure is the use of low-reflectivity treatments on the blades (which is now the standard finish applied by the main turbine manufacturers).

For solar PV modules, their design seeks to absorb rather than reflect light, then convert this into electricity, and for this reason their appearance is much darker. To maximise their efficiency, anti-reflective coatings are applied to solar PV modules, further reducing the risk of glare.

Thus, it not expected that blade glint and solar glare would pose any risk.

9.8 Heritage

The protection and conservation of European and Aboriginal culturally significant places (including anthropological and archaeological sites) is a key objective of planning policy.

The application states 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 DPC-AAR advised that the central archive has entries for Aboriginal cultural sites within the project area. However, the two sites are located outside the footprint of the development.

The application indicates that an Archaeological and Cultural Heritage Management Plan may be provided as part of the final CEMP, including working with the Nukuna Community prior to construction.

9.9 Management and Monitoring

For such a large scale proposal, the impacts of the development during construction and operation would need to be addressed through an Environmental Management Plan (EMP) framework. The EMP would provide the 'umbrella' document, under which various Management Plans would sit.

The application includes a draft Construction Environmental Management Plan (CEMP) that outlines the commitments and various mitigation measures that would be implemented via a final CEMP. Monitoring would be included to report on the effectiveness of mitigation and management (including reporting and review procedures). The CEMP would also include staff training / induction processes, emergency response procedures and community information and grievance procedures. The final CEMP would be developed during the detailed design stage in consultation with the relevant contractors.

The CEMP would be primarily based on a series of issue specific Management Plans, including:

- Flora and Fauna Protection (i.e. a Flora and Fauna Management Plan may be needed).
- Weed, Pest and Disease Control.
- Water Quality Protection (i.e. a Water Management Plan will be prepared).

- 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.

A Construction Traffic Management Plan and a Materials, Fuels and Site Waste Management Plan and a Fire Prevention Management Plan will also be prepared as part of the final CEMP. An Archaeological and Cultural Heritage Management Plan may also be provided.

In addition, a specific management plans will be required for remediation and rehabilitation.

If approved, a range of management and operational plans will need to be required as conditions.

10. CONCLUSION

The key assessment findings in considering the merit of the proposed development within the Primary Industry Zone of the Port Pirie Regional Council Development Plan are:

- Establishes renewable energy generation and storage facilities in appropriate areas (primarily for the harnessing of wind and solar resources).
- The proposed locations for each component have largely been cleared for mixed cropping and grazing uses (especially the solar farm and battery facility sites) or have been modified by grazing (especially the windfarm site).
- Existing primary production activities (primarily grazing) can continue during operation and after decommissioning.
- Achieves suitable setback distances from non-host residents, the Crystal Brook township and major transport routes (especially the Augusta Highway).
- It is acknowledged that the visual impact of the windfarm component on the rural landscape and amenity of the locality would be substantial. However, such impacts are envisaged by the local Development plan and local zoning controls.
- Furthermore, the windfarm is sited an appropriate distance away from the southern extent of the Flinders ranges so as not to affect the regions tourism values. The impact on the affected part of the Heysen Trail would be minimal.
- The proposed design minimises impacts to flora and fauna and does not affect any sites of conservation significance.
- Safe access can be established to and from the project area, with construction traffic able to be satisfactorily managed.
- Airfield operations are not unduly affected by the development.
- The proposal would not result in increased bushfire risk (compared with other land uses) or affect firefighting capabilities.
- Does not impact on sites of Aboriginal or European heritage significance.
- Will have a minimal impact on existing or future adjoining land uses (in terms of the on-going use of that land for primary production or similar activities).
- Would not unduly affect telecommunications reception.
- Can be constructed and operated so not to cause undue driver distraction.
- Creates locally based employment (during construction and operation) and flow on economic benefits for Crystal Brook and the region.
- Generates renewable energy and assists in reducing greenhouse gas emissions.

In addition, it is noted that there was no formal state agency or council objection to the development, whilst the Office of the Technical Regulator has assessed the project and granted a certificate to ensure that it meets network connection and stability guidelines

Pursuant to Section 49 of the *Development Act 1993*, and having undertaken an assessment of the application against the relevant Development Plan, the application is NOT seriously at variance with the provisions of the plan for the reasons outlined.

A final report and recommendation – including draft conditions (which will need to address both construction and operational matters) - will be provided to the panel in due course, so as to take into account any additional information required from the applicant (as a result of those issues raised at the hearing of representors in Port Pirie), further advice on those issues that may not have been satisfactorily addressed in the applicant's response document and any additional matters of clarification or technical review required to inform the assessment of the proposal.

Lee Webb
SENIOR SPECIALIST (ENVIRONMENTAL) PLANNER
DEVELOPMENT DIVISION (DPTI)