Dunedoo Solar Farm

State Significant Development Assessment

SSD 8847

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Executive Summary

Ib Vogt GMBH (ib Vogt) proposes to develop a new 55 megawatt (MW) solar farm with 60.48 MW / 85.88 MW-hour (MWh) of battery storage located approximately 2 kilometres (km) north of Dunedoo in the Central West and Orana Region of NSW.

The project is located in close proximity to the regional road network via Castlereagh Highway and Golden Highway, and has direct access to the electricity network via Essential Energy's 66 kV overhead transmission line, which extends along the southeast corner of the site and connects to the existing Essential Energy Dunedoo Substation located adjacent to the southern site boundary. The site is located in a rural area, with nine non-associated residences located within 2 km of the development footprint.

The project would also be located in an area that could contribute to the pilot Renewable Energy Zone in the Central West-Orana Region. The project is classified as State significant development under the *Environmental Planning and Assessment Act 1979* (EP&A Act) as it is development for the purpose of electricity generating works with a capital investment value of more than $30 million.

Engagement

The Department exhibited the Environmental Impact Statement (EIS) for the project and received four public submissions (two objections and two supporting) and two submissions from special interest groups (one supporting and one providing comments). Advice was also received from 14 government agencies, including Warrumbungle Shire Council (Council).

The Department consulted with Council and relevant government agencies on key issues and inspected the site on 14 April 2021.

Council, agencies and utility providers did not object to the project and recommended the implementation of appropriate mitigation and management measures.

In response to agency advise and submissions, ib Vogt undertook additional assessments and made amendments to the project. The amendments included changes to the water sourcing arrangements to remove the need for bore drilling / aquifer interference on the site, additional traffic control measures to manage vehicular entry and exit from the site at the intersection of Castlereagh Highway and All Weather Road, additional mitigation measures to manage impacts on Aboriginal Heritage, additional visual mitigation measures to minimise visual impacts on surrounding residences and the inclusion of an additional transmission line option (Option 3) at the southern end of the site.

Additional assessments included a Preliminary Hazard Analysis (PHA) for the development, consideration of the environmental, biodiversity, amenity and heritage impacts associated with the additional transmission line option and an assessment of potential visual impacts on nearby receivers not identified within the EIS.

Assessment

The Department has undertaken a comprehensive assessment of the merits of the project and considered all potential issues, including the mandatory considerations under Section 4.15 of the EP&A

Act. The key assessment issues identified for the project are the compatibility of the proposed land use and visual amenity.

The project site covers approximately 117 hectares (ha) and is currently used for grazing and rotational dryland cropping. The main portion of the site accommodating the solar arrays is located on land that is zoned RU1 – Primary Production, where electricity generating works are permitted with consent under the *State Environmental Planning Policy (Infrastructure) 2007.* To the south, the Essential Energy Substation and adjacent land is zoned R1 – General Residential, where under a strict reading of the LEP, electricity generating works are prohibited. Despite this, these works would be limited to the transmission connection and a minor expansion of the existing substation facility and may therefore be approved under Section 4.38(3) of the EP&A Act.

The development footprint (approximately 79 ha) is primarily located on soils classified as Class 3 (highly capable land) under the *Land and Soil Capability Mapping in NSW* (OEH, 2017), and approximately 85% the site is also mapped as Biophysical Strategic Agricultural Land (BSAL). However, site soil surveys commissioned by ib Vogt concluded there were limitations to sustained cultivation within the site and indicated that only around 21% of the site would constitute BSAL.

The Department considers that the project would not significantly reduce the agricultural output of the region and that the inherent agricultural capability of the site would not be affected, as it could be returned to full agricultural use following decommissioning and rehabilitation. Further, the actual area of BSAL on the site (25 ha) represents a very small fraction of the 98,900 ha of mapped BSAL in the region (approximately 0.025%). The Department also notes that existing farming operations will continue within a portion of the site, and that continued grazing is proposed within and around the development footprint.

The site and surrounds comprise relatively flat and gently undulating land, largely cleared of native vegetation from a history of prolonged agricultural practices.

The solar farm is relatively low-lying (solar panels up to 3 m high), and the topography and existing vegetation provide screening of the project from most nearby receivers and public vantage points. In addition, all nine of the non-associated residences located within 2 km of the development footprint are considered to have low or negligible visual impacts due to distance, topography and intervening vegetation or as a result of the proposed visual mitigation measures.

The proposed upgrades to the Castlereagh Highway and its intersection with All Weather Road would facilitate heavy vehicle access to the site, and the proposed design is supported by Council and Transport for NSW.

The site is located within the 'Dark Sky Region' of the Siding Springs Observatory, and the EIS included a visual assessment with recommendations that are consistent with the Department's *Dark Sky Planning Guideline* (2016).

The project has been designed to largely avoid impacts on native vegetation and threatened species in the locality, and all unavoidable impacts, including disturbance of up to 0.91 ha of native vegetation, would be required to be offset in accordance with the NSW Biodiversity Offsets Scheme.

To address the residual impacts of the project, including Aboriginal cultural heritage, traffic, water, noise and hazards, the Department has recommended a range of stringent conditions, developed in consultation with agencies and Council, to ensure these impacts are effectively minimized or offset to meet acceptable standards.

Summary

Overall, the Department considers the site to be suitable for a solar farm as it has good solar resources and is in an area that could contribute to the pilot Renewable Energy Zone in the Central-West Orana Region with available capacity on the existing electricity network. Further, the Dunedoo substation located to the south of the site offers an opportunity for direct grid connection without significant new overhead lines and easements, and any potential impacts and efficiency losses that might otherwise result.

The project is consistent with the NSW Government's *Large-Scale Solar Energy Guideline* and with NSW's *Climate Change Policy Framework* and *Net Zero Plan Stage 1: 2020 – 2030,* as it would contribute 55 MW of renewable energy to the National Electricity Market, including a battery storage facility with a capacity of 60.48 MW / 85.88 MWh. Importantly, the battery facility would enable the project to store solar energy for dispatch to the grid outside of daylight hours and/or during periods of peak demand, which has the potential to contribute to increased grid stability and energy security.

The project would provide flow-on benefits to the local community, including up to 125 construction jobs, three operational jobs, and a capital investment of approximately $76 million.

The Department support's ib Vogt's amendments to the project and has recommended a suite of conditions to ensure the impacts on the natural and built environment, and the social and economic impacts of the development in the locality, are appropriately mitigated and/or managed.

The Department considers that the project would result in benefits to the State of NSW and the local community and is therefore in the public interest and should be approved subject to strict conditions of consent.

Contents

1 Project

Ib Vogt GMBH (ib Vogt) proposes to develop a new State significant development (SSD) solar farm approximately 2 kilometres (km) north of Dunedoo in the Warrumbungle Shire local government area (LGA) (see **Figure 1**).

Figure 1 | Regional Context Map

The project involves the construction of a new solar farm with a generating capacity of 55 megawatts (MW) and 60.48 MW / 85.88 MW-hour (MWh) of battery energy storage. It also involves the upgrading and decommissioning of infrastructure and equipment in the future. While the capacity of the project may increase over time as technology improves, the footprint of the development would not be permitted to increase without further planning approval.

The solar farm would connect to Essential Energy's existing Dunedoo Substation at the southern boundary via one of three proposed new transmission lines (see **Figure 3,** Option 1, 2 or 3). The connection point location would also include extension and augmentation works to the Dunedoo Substation.

The battery energy storage system would be distributed throughout the site adjacent to the inverter units associated with the solar arrays.

Site access for construction and heavy vehicles would be from the western end of All Weather Road via the Castlereagh Highway. Site access for light vehicles would be at the eastern end of All Weather Road via Digilah Road (see **Figure 3**).

The solar farm would be constructed over approximately 12 months, with a peak construction period of three months.

The key components of the project are summarised in **Table 1**, shown in **Figure 3,** and described in detail in the Environmental Impact Statement (EIS) (see **Appendix B**), Submissions Report (see

Appendix D), Amendment Report (see **Appendix E**) and additional information provided during the Department's assessment of the project (see **Appendix F**).

Table 1 | Main Components of the Project

Aspect	Description
Project summary	The project includes: • approximately 173,000 solar panels (up to 3 m high, single axis tracking) • up to 25 power conversion units with inverters (up to 3 m high); • an on-site substation / switching station (up to 3 m high) with transformer, control building, switch room (up to 6 m high); switchgear, synchronous condenser (up to 8 m high), 6 x lightning protection masts and communication tower (up to 25m high); • a new 66 kV overhead transmission line at one of three locations to connect to Essential Energy's existing Dunedoo Substation; • 60.48 MW / 85.88 MWh battery energy storage system in a distributed configuration (up to 3 m high); • augmentation / upgrades and extensions to the existing Essential Energy Dunedoo Substation, including construction of a new switching bay and communications tower (up to 15 m high); • operational and maintenance infrastructure, including site office (up to 5 m high) storage shed (up to 6 m high), car park, fencing; and • access roads.
Project area	Site: 117.2 ha Development footprint: 79 ha
Access route	• Heavy vehicles would access the site via Castlereagh Highway and then All Weather Road. • Light vehicles would access the site via Golden Highway, Digilah Road and then All Weather Road.
Site entry and road upgrades	• Two existing access points on All Weather Road would provide site entry for the development. • Heavy vehicles would enter the site via access point 1, at the southwest corner of the site, and light vehicles would enter the site via access point 2, adjacent to the proposed onsite substation (see **Figure 3).** • Road upgrades: - BAL treatment to the Castlereagh Highway and All Weather Road intersection; - Heavy vehicle passing bay to be provided along south-western side of All Weather Road
Construction	• The construction period would last for up to 12 months, with a peak period of 3 months. • Construction hours would be limited to Monday to Friday 7 am to 6 pm, and Saturday 8 am to 1 pm.
Operation	The expected operational life of the project is approximately 30 years. However, the project may involve infrastructure upgrades that could extend the operational life.
Decommissioning and Rehabilitation	The project also includes decommissioning at the end of the project life, which would involve removing all infrastructure.
Hours of Operation	Daily operations and maintenance would be undertaken Monday to Friday, 7 am to 6 pm and Saturdays 8 am to 1 pm.
Subdivision	Re-subdivision of the 5 lot site into 6 new lots to facilitate lease agreements for land owners and dedication of the site substation to Essential Energy.
Employment	Up to 125 construction jobs and 3 full-time operational jobs
Capital Investment Value	Approximately $76 million

Figure 2 | Project site

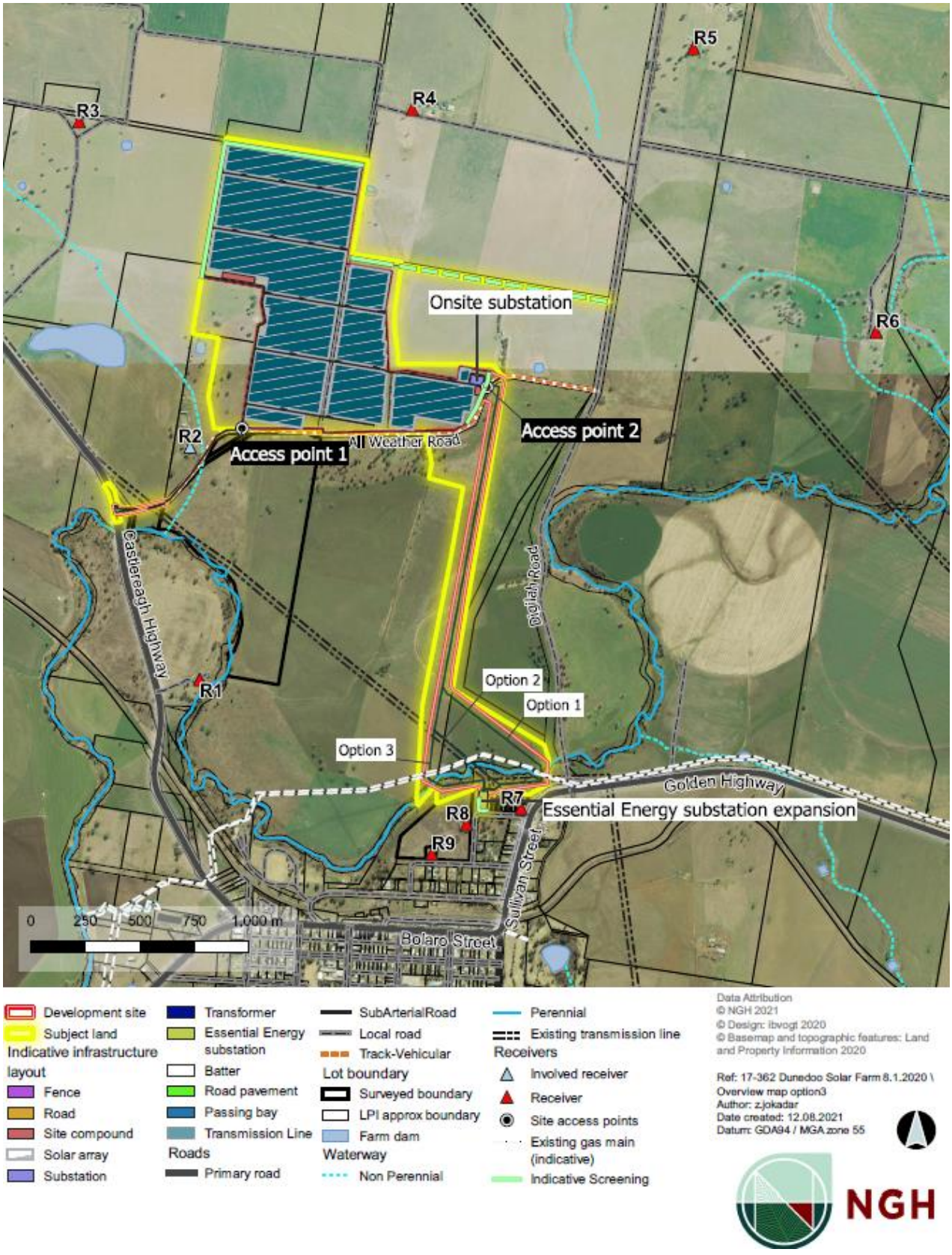

Figure 1 | Project Layout

2 Strategic Context

2.1 Site and Surrounds

The project is located on an approximately 117 hectare (ha) site within the Central West and Orana region of NSW. The main site is zoned RU1 – Primary Production under the *Warrumbungle Local Environmental Plan 2013* (LEP), while the land identified for the substation extension works at the southern boundary is zoned R1 – General Residential. The site is currently used for agricultural purposes, including grazing and dryland rotational cropping.

While NSW Biophysical Strategic Agricultural Land (BSAL) mapping data indicates that approximately 85% of the site (100 ha) is BSAL, soil studies provided with the EIS indicate that only about 21% (25 ha) of the site is BSAL, and there are limitations to sustained cultivation within the site, including soil acidity, poor soil drainage and susceptibility to wind erosion.

Under the *Land and Soil Capability Mapping in NSW* (OEH, 2017), the soils within the site are primarily classified as Class 3, meaning that the land is high capability land with moderate limitations and requires careful management for cropping and intensive grazing. Land use impacts are considered further in **section 5.1.**

There is existing electricity transmission infrastructure within and adjacent to the site, with Essential Energy's 66 kV overhead transmission line traversing the southeast corner of the site and the existing Dunedoo Substation located adjacent to the southern site boundary. There is also an existing easement for the APA Group high pressure gas pipeline, which traverses the southern end of the site adjacent to the southern boundary (see **Figure 3**).

Land within the site is largely cleared of vegetation and incudes scattered native trees, vegetation along riparian corridors and isolated areas of remnant vegetation.

The proposed development footprint is approximately 79 ha and has been designed to largely avoid site constraints, including BSAL, watercourses, groundwater bores, native remnant vegetation, hollow bearing trees, Aboriginal Heritage items and to reduce visual impacts on surrounding residences (see **Figure 3**).

The site is located within the Macquarie-Castlereagh River Catchment area, and the Talbragar River traverses the southern end of the site. There are two registered groundwater bores (one for stock and one for groundwater monitoring) and two farm dams located within the site. A wetland that includes a Black Swan nesting area of Aboriginal Heritage significance is located approximately 400 m to the west of the site.

Land surrounding the site is primarily zoned RU1 and used for agricultural purposes, such as cropping, grazing and horse stud farming. South of the site, adjacent to the Dunedoo Substation, is an established low density residential area zoned R1 – General Residential, and Dunedoo Racecourse and land zoned RE1 – Public Recreation lies to the southwest adjacent to Castlereagh Highway. Dunedoo township is located approximately 2 km south of the site.

There are nine non-associated residences located within 2 km of the site, including three to the west, two to the north/northeast, one to the east and three to the south of the site. The closest non-associated

residence (R7) is located about 50 m to the south of the site adjacent to the existing Dunedoo substation (see **Figure 3**).

Essential Energy has confirmed that the proposed connection into the electricity network via the substation expansion is feasible and that there is sufficient network capacity.

2.2 Other Energy Projects

The Central West and Orana region has attracted considerable interest from solar and wind developers given the presence of major transmission lines and existing electricity substations in the area. There are two operational, two approved and three proposed SSD energy projects within approximately 50 km of the project site, with the closest project located approximately 20 km southeast of the site. Most of the energy projects around Dunedoo Solar Farm are located to the southwest of the site (see **Table 2** and **Figure 4**).

Table 2 | Nearby renewable energy projects

Project	Capacity (MW)	Status	Approximate distance from the project (km)
Barneys Reef Wind Farm	350	Proposed	20
Tallawang Solar Farm	500	Proposed	25
Stubbo Solar Farm	400	Approved	33
Valley of the Winds	800	Proposed	35
Beryl Solar Farm	87	Operational	40
Liverpool Range Wind Farm	960	Approved	52
Bodangora Wind Farm	120	Operational	52

Given the distance of the Dunedoo Solar Farm from all other proposed or approved energy projects in the region, there would be no material cumulative visual or noise impacts (see **Figure 4**). In addition, while the surrounding regional road network may experience an increase in traffic numbers, there would be no significant cumulative impacts on the local roads along the proposed transport route from these projects, as discussed in **section 5.3**.

The closest projects to the development site are the proposed Barneys Reef Wind Farm and Tallawang Solar Farm, located approximately 20 km and 25 km southeast of the site respectively. These projects are at preliminary stages in the assessment process, with development applications not yet submitted. If approved, these projects would not share any common haulage routes other than State roads to the region.

There are seven approved energy projects in the region for which construction has not commenced, with the closest being Stubbo Solar Farm, located approximately 33 km to the southeast of the site. While there is potential for the construction of the project to overlap with the construction of any of these approved energy projects in the region, cumulative impacts are unlikely due to the distance between projects.

The potential cumulative impacts on agricultural land in the region and other issues are discussed further in **sections 5.1** and **5.3.**

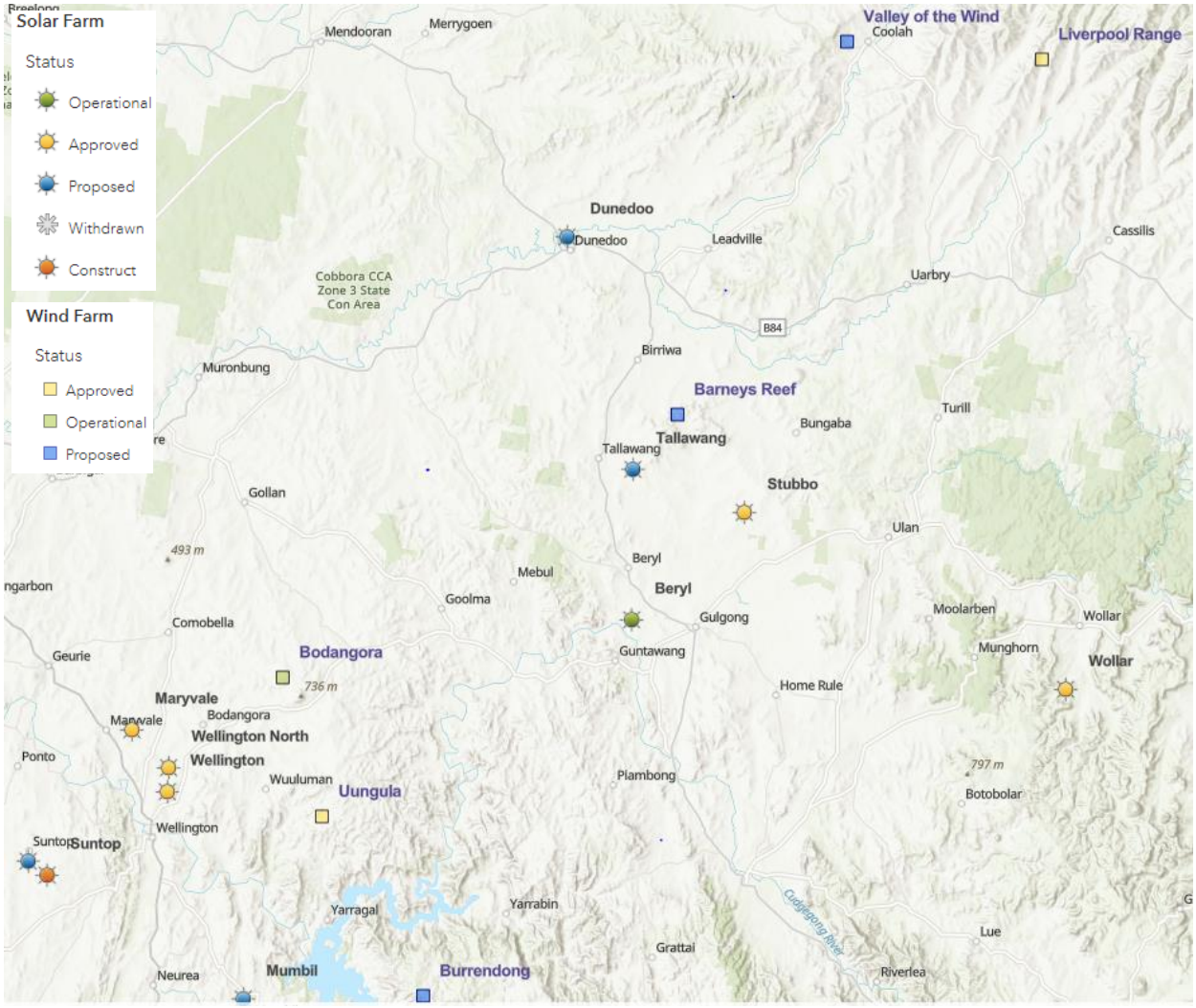

Figure 2 | Nearby renewable energy generation projects

2.3 Energy Context

In 2020, NSW derived approximately 20.4% of its energy from renewable sources. The rest was derived from fossil fuels, including 72.8% from coal and 3.1% from gas and diesel. However, there are currently no plans for the development of new coal power stations in NSW, and the development of renewable energy sources, like wind, solar and pumped hydro, is experiencing rapid growth.

NSW is one of the nation's leaders in large-scale solar, with 14 major operational projects and 11 under construction or planned to be under construction.

The *United Nations Framework Convention on Climate Change* has adopted the Paris Agreement, which aims to limit global warming to well below 2°C, with an aspirational goal of 1.5°C. Australia's contribution towards this target is a commitment to reduce greenhouse gas emissions by 26% to 28% below 2005 levels by 2030.

The *NSW Climate Change Policy Framework*, released in November 2016, sets an aspirational objective for NSW to achieve net zero emissions by 2050. The *NSW Net Zero Plan Stage 1: 2020 – 2030*, released in March 2020, builds on the framework and sets out how the NSW Government will deliver on this objective and fast-track emissions reduction over the next decade.

The Department released the *Large-Scale Solar Energy Guideline* (Solar Guideline) in December 2018 to provide the community, industry and regulators with guidance on the planning framework for the assessment of large-scale solar projects and identify the key planning considerations relevant to solar energy development in NSW.

The Guideline aims to support the growth of the solar industry, whilst ensuring that impacts are adequately assessed, effective stakeholder engagement is undertaken, and that attracting investment is balanced with considering the interests of the community. ib Vogt submitted its EIS in September 2020, and its assessment is consistent with the principles of the Guideline.

The Guideline also acknowledges that large-scale solar projects could help to reduce reliance on fossil fuels, thereby contributing to reductions in air pollution and greenhouse gas emissions, while also supporting regional NSW through job creation and investment in communities that may not have similar opportunities from other industries.

In March 2018, the NSW Government's *Transmission Infrastructure Strategy* identified 10 potential Energy Zones across three broad regional areas, including the New England, Central West and South West regions of NSW. The identified energy zones are aimed at encouraging *"investment in new electricity infrastructure and unlocking additional generation capacity in order to ensure secure and reliable energy in NSW."*

Building on this, the NSW Government announced the *NSW Electricity Strategy* in November 2019, which adopted the Central West and Orana Region as the pilot Renewable Energy Zone (REZ) to support transmission upgrades in this zone. The strategy proposes NSW Government support for this REZ to unlock regional investment and new energy generation infrastructure and for the development of new transmission to connect low cost generation to the electricity system.

The project would be located in an area that could contribute to the pilot Renewable Energy Zone in the Central-West Orana Region and would have access to the electrical grid at a location with available network capacity. With a capacity of 55 MW, the project would generate enough electricity to power over 20,000 homes and is therefore consistent with NSW's *Climate Change Policy Framework* and *Net Zero Plan Stage 1: 2020 – 2030.*

3 Statutory Context

3.1 State Significant Development

The project is classified as State significant development under Section 4.36 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). This is because it triggers the criteria in Clause 20 of Schedule 1 of State Environmental Planning Policy (SEPP) (State and Regional Development) 2011, as it is development for the purpose of electricity generating works with a capital investment value of more than $30 million.

Consequently, the Minister for Planning and Public Spaces is the consent authority for the development. However, under the Minister's delegation of 26 April 2021, the Director, Energy Assessments, may determine the development application as Council did not object, there were less than 50 unique submissions from the general public and a political donations disclosure statement has not been made.

3.2 Amended Application

In accordance with Clause 55 of the *Environmental Planning and Assessment Regulation* 2000 (EP&A Regulations), a development application can be amended at any time before the application is determined. Accordingly, ib Vogt has sought to amend its application, the details of which are summarised in **section 4.4** of this report.

Under Clause 55 of the EP&A Regulation, an application can be amended with the agreement of the consent authority (i.e. the Minister for this development). However, under the delegation of 26 April 2021, the Director, Energy Assessments can agree to amendments to an application.

The Director, Energy Assessments has accepted ib Vogt's amended application for the following reasons:

- the project amendments directly respond to some of the key issues raised in submissions received by the Department during the exhibition of the original application;
- the project amendments would not increase the impacts of the project as a whole;
- ib Vogt assessed the impacts of the amended project (see **Appendix E**); and
- the Department made the additional information available online, sent it to the relevant agencies for comment and directly notified potentially affected residences.

3.3 Permissibility

The main site is located wholly within land zoned RU1 - Primary Production under the Warrumbungle LEP, while the Essential Energy Dunedoo Substation and adjoining land at the southern end of the site identified for the transmission connection and substation expansion, occur on land zoned R1 - General Residential.

The RU1 zone includes various land uses that are both permitted with and without consent. As electricity generating works are not expressly listed as permitted with or without consent, they are a prohibited land use under a strict reading of the LEP. However, the LEP expressly references the *State Environmental Planning Policy (Infrastructure) 2007* (Infrastructure SEPP) and acknowledges that electricity generating works are regulated by the Infrastructure SEPP rather than the LEP. Under the

Infrastructure SEPP, electricity generating works are permissible on any land in a prescribed rural, industrial or special use zone, including land zoned RU1 - Primary Production.

The R1 zone, however, expressly prohibits development for the purpose of electricity generating works under the LEP and the Infrastructure SEPP. Importantly, the prohibition relates to a very minor portion of the overall project site, and includes only the southern-most portion of the transmission connection and a minor expansion of the existing Essential Energy Dunedoo substation facility. Accordingly, under Section 4.38(3) of the EP&A Act, development consent for the project as a whole may be granted despite the prohibition. Further, Council did not object to the project.

3.4 Integrated and Other Approvals

Under Section 4.41 of the EP&A Act, a number of other approvals are integrated into the SSD approval process, and therefore are not required to be separately obtained for the proposal.

Under Section 4.42 of the EP&A Act, a number of further approvals are required, but must be substantially consistent with any development consent for the proposal (e.g. approvals for any works under the *Roads Act 1993*).

The Department has consulted with the relevant government agencies responsible for the integrated and other approvals, considered their advice in its assessment of the project, and included suitable conditions in the recommended conditions of consent to address these matters (see **Appendix G**).

ib Vogt considers that the project does not need to obtain approval from the Commonwealth Minister for the Environment under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act), as surveys undertaken to date have not identified any significant impacts on matters of national environmental significance listed under the EPBC Act.

3.5 Mandatory Matters for Consideration

Section 4.15 of the EP&A Act outlines the matters that a consent authority must take into consideration when determining development applications. These matters are summarised as:

- the provisions of environmental planning instruments (including draft instruments), development control plans, planning agreements, and the EP&A Regulations;
- the environmental, social and economic impacts of the development;
- the suitability of the site;
- any submissions; and
- the public interest, including the objects in the EP&A Act and the encouragement of ecologically sustainable development (ESD).

The Department has considered all of these matters in its assessment of the project, as well as ib Vogt's consideration of environmental planning instruments in its EIS, as summarised in **section 5** of this report**.** The Department has also considered relevant provisions of the environmental planning instruments in **Appendix H.**

4 Engagement

4.1 Department's engagement

The Department publicly exhibited the EIS from 20 October 2020 until 17 November 2020, advertised the exhibition in the *Mudgee Guardian* and the *Dubbo Mailbox Shopper* and notified adjoining landowners adjacent to the project boundary.

The Department consulted with Council and the relevant government agencies throughout the assessment and inspected the site and surrounds on 14 April 2021.

The Department notified and sought comment from the Director of the Siding Springs Observatory in accordance with the EP&A Regulation; and from Essential Energy and Transport for NSW (TfNSW) in accordance with the Infrastructure SEPP, as discussed further in **sections 4.5** and **5.3**.

4.2 ib Vogt's engagement

ib Vogt undertook engagement with the local community as detailed in the EIS, including newspaper advertisements, a project newsletter, community information sessions, and a dedicated project-specific website including a dedicated email address, phone number and feedback form. ib Vogt also consulted with nearby landholders via letters, fact sheet notifications, email, phone calls and individual meetings with adjacent and nearby landowners.

ib Vogt also undertook consultation with the Department and relevant government agencies during the assessment process.

4.3 Summary and Submission Report

During the exhibition period of the EIS, the Department received four public submissions, consisting of two objections and two in support.

Two special interest groups also provided submissions on the project, consisting of one objection and one providing comment.

Advice was also received from 14 government agencies, including Warrumbungle Shire Council.

Full copies of the agency advice, public submissions and interest group submissions are attached in **Appendix C.**

ib Vogt provided a response to all matters raised in submissions on the project (see **Appendix D**) and has also provided additional information during the Department's assessment (see **Appendix F**).

4.4 Amended Application

Following consideration of submissions on the project, ib Vogt amended its application in March 2021 and July 2021, as detailed in the Amendment Reports (see **Appendix E**).

The amendments include:

- sourcing of water from local suppliers as an alternative to use of groundwater;
- additional mitigation for Aboriginal Heritage by including Black Swan nesting areas within the Aboriginal Cultural Heritage Management Plan;
- a third transmission line option to the west of the Essential Energy substation; and
- additional visual mitigation measures for surrounding residences, including the provision of additional screen landscaping along project boundaries.

The Department provided the Amendment Reports to relevant government agencies for review and comment and made them available on the Department's website. As the project amendments would not increase the impacts of the project as a whole, the Department did not exhibit the Amendment Reports. Residences in proximity to the third transmission option were, however, notified of the amendments, but made no submissions.

Council and TfNSW have indicated support for the project as amended.

4.5 Key issues – Government Agencies

Warrumbungle Shire Council did not object to the project, but initially raised concerns that the proposed subdivision would create undersized allotments and also requested clarification regarding the waste management measures proposed for the development.

Regarding subdivision, ib Vogt noted in the Submissions Report that the existing allotments are already undersized, that agricultural practices could continue under the proposed plan and that the subdivision is designed to facilitate leasing arrangements for the solar farm and dedication of the project substation. The Department notes that Council raised no residual concerns regarding the subdivision in its subsequent comments on the project. Subdivision is further discussed in **section 5.3**.

Regarding waste management, ib Vogt has committed to the development and implementation of a Waste Management Plan at all phases of the project, and these requirements have been included in the recommended conditions of consent.

Transport for NSW (TfNSW) initially raised concerns about the adequacy of the proposed upgrades to the Castlereagh Highway / All Weather Road intersection and the use of Digilah Road for heavy vehicle access. In its Amendment Report, ib Vogt developed a traffic control plan to support the proposed intersection upgrades and confirmed access via Digilah Road would be for light vehicles only. TfNSW confirmed it had no residual concerns subject to conditions, which the Department has included these requirements in the recommended conditions of consent.

Department of Primary Industries – Agriculture (DPI Agriculture) initially raised concerns about impacts on highly productive agricultural land including BSAL, and requested further information about the site's existing agricultural use. In the Submissions Report, ib Vogt outlined the steps taken to avoid BSAL, including attempts to involve less productive lands to the north and avoidance of more productive lands to the south. ib Vogt also confirmed the site's dominant use as dryland cropping to support grazing, noting this could continue during operation of the solar farm. DPI Agriculture has confirmed there are no residual issues subject to the recommended conditions of consent. These matters are discussed further in **section 5.1**.

The Department's **Water Group** (DPIE Water) and the **Natural Resources Access Regulator** (NRAR) support the project, but initially sought further information regarding water supply arrangements including access to groundwater. DPIE Water and NRAR also provided recommendations regarding erosion and sediment control and works within waterfront land. In the Amendment Report, ib Vogt confirmed groundwater bores were no longer required as part of the project and committed to preparing a Construction Environmental Management Plan incorporating erosion and sediment control measures. The Department has included conditions relating to erosion and sediment control, and DPIE Water and NRAR have confirmed there are no residual issues.

Crown Lands raised no objection to the project and provided advice regarding land acquisition for transmission works over Talbragar River Reserve. ib Vogt have obtained approval from Council, as Crown Land manager, for the works within the Reserve, and Crown Lands have advised they have no residual concerns.

The **Department's Biodiversity Conservation and Science Directorate** (BCS) supports the project and is satisfied with the biodiversity and flood impact assessments undertaken by ib Vogt. Biodiversity offset requirements have been included in the recommended conditions of consent. Biodiversity is further discussed in **section 5.3**.

The **Rural Fire Service** (RFS) and **Fire and Rescue NSW** (FRNSW) recommended requirements related to bushfire and hazard preparation and management, which have been incorporated into the recommended conditions of consent. Hazards are discussed further in **section 5.3**.

WaterNSW raised no objection to the project and recommended conditions to ensure protection and access to existing monitoring bores surrounding the site. In the Submissions Report, ib Vogt confirmed the development would not impact or prevent access to surrounding bores, and this is accepted by the Department noting the separation distance from the development.

Heritage NSW – Aboriginal Cultural Heritage supports the project and have recommended Registered Aboriginal Parties (RAPs) be engaged regarding relocation of salvaged Aboriginal objects. The Department has included these recommendations in the conditions of consent.

Essential Energy supports the project and has confirmed sufficient network capacity to accommodate the project.

Regional NSW – Mining, Exploration & Geoscience (MEG), the **Environment Protection Authority (EPA)** and **Siding Springs Observatory** raised no objections to the project, noting no land sterilisation concerns, no environmental protection licencing requirements and no visual impacts of the development on the Siding Springs Observatory respectively. The **Department of Primary Industries – Fisheries** (DPI Fisheries) also raised no objections to the project.

4.6 Key Issues – Community

Of the 6 public submissions, 2 objected, 3 were in support and 1 provided comment. Two objections were received from the local community of Dunedoo, whilst the other submissions were received from interest groups or from individuals outside of the region.

The issues raised in public submissions objecting to the project relate to the potential loss of agricultural land, potential visual impacts and potential flood impacts.

The submissions received in support of the project noted the benefits to the local community and businesses.

4.7 Key Issues – Special Interest Groups

Wellington Valley Wiradjuri Aboriginal Corporation (WVWAC) provided comment regarding the cultural significance of the wetlands in proximity to the site known to be a nesting area for Black Swans. In the Submissions Report, ib Vogt committed to including the wetlands in the Aboriginal Cultural Heritage Management Plan for the project and this commitment has been included as part of the recommended conditions of consent. In its subsequent comments on the project amendments, WVWAC raised no residual concerns regarding impacts on the Black Swans nesting area or with the proposed measures to manage impacts on Aboriginal cultural heritage within and around the site.

APA Group is responsible for managing gas infrastructure across Australia and provided comment on the Central Ranges gas pipeline traversing the site, which it owns and operates. APA Group has advised that additional studies, including a Risk Assessment and Electrical Interference Study, are required to be prepared in consultation with APA Group to ensure the safety and protection of the high-pressure gas line. ib Vogt have accepted APA's recommendations, and the Department has included appropriate recommended conditions of consent.

Section 5 of this report provides a summary of the Department's consideration of these matters and recommended conditions.

5 Assessment

The Department has undertaken a comprehensive assessment of the merits of the project. This report provides a detailed discussion of the key assessment issues, namely land use compatibility (see **section 5.1**) and visual amenity (**section 5.2**).

The key constraints for the project are shown in **Figure 3**. The Department has also considered the full range of potential impacts associated with the project and has included a summary of the conclusions in **Section 5.3.** A list of the key documents that informed the Department's assessment is provided in **Appendix A.**

5.1 Compatibility of Proposed Land Use

Provisions of the Warrumbungle LEP

The main site is located within the RU1 Primary Production zone under the LEP, while the Essential Energy substation and adjoining land identified for the substation extension at the southern end of the site are zoned R1 General Residential. As discussed in **section 3.3**, a solar farm is a prohibited land use within the RU1 and R1 zones, under a strict reading of the LEP.

However, based on a broader reading of the LEP, and consideration of the zone objectives of the RU1 zone and other strategic documents for the region, the Department considers that there is no clear intention to prevent the development of a solar farm on the project site.

Firstly, the LEP expressly references the Infrastructure SEPP and acknowledges that electricity generating works are regulated by the Infrastructure SEPP, rather than the LEP. As described above, a solar farm is permitted with consent on land zoned RU1 under the Infrastructure SEPP.

Secondly, the project is consistent with the objectives of the RU1 zone under the Warrumbungle LEP, particularly in relation to:

- encouraging diversity in primary industry enterprises and systems appropriate for the area; and
- minimising fragmentation and alienation of resource lands.

While the Warrumbungle Shire LGA has traditionally relied upon agriculture, the introduction of solar energy generation would contribute to a more diverse local industry, thereby supporting the local economy and community. In addition, the proposed solar farm would encourage renewable energy development, which is consistent with the *Warrumbungle Shire Local Strategic Planning Statement 2019* and *Warrumbungle Shire Community Strategic Plan 2017-2032*. Development of the site for a solar farm would also represent an orderly and economic use of the land.

Finally, the LEP prohibition within the R1 zone pertains to a very minor portion of the overall project site, comprising the transmission connection and a minor expansion of the existing Dunedoo substation. Accordingly, under Section 4.38(3) of the EP&A Act, development consent for the project as a whole may be granted despite the prohibition.

The project is consistent with the Department's *Central West and Orana Regional Plan 2036,* which identifies the development of renewable energy generation as a future growth opportunity for the region and Council did not object to the project.

Whilst the Department considers that the project is compatible with the LEP for the above reasons, the project's impacts on agricultural land are further discussed below.

Potential Impacts on agricultural land

Concerns about the project's impact on agricultural land were raised by two of the community submissions objecting to the project.

The project is located within the Central West and Orana Region, which has a strong and diverse agricultural sector. The region includes over 8.9 million ha of land used for agricultural output and over 98,000 ha of mapped Biophysical Strategic Agricultural Land (BSAL).

The site (117.2 ha) is mapped as Biophysical Strategic Agricultural Land (BSAL) and is currently used for grazing and dryland rotational cropping. While NSW regional mapping data indicates that approximately 85% of the site (approximately 100 ha) is BSAL, soil studies undertaken as part of the EIS indicate that that there are limitations to the soils throughout most of the site, including waterlogging and susceptibility to wind erosion, and that only around 21% of the site (approximately 25 ha) is BSAL (see **Figures 5** and **6**).

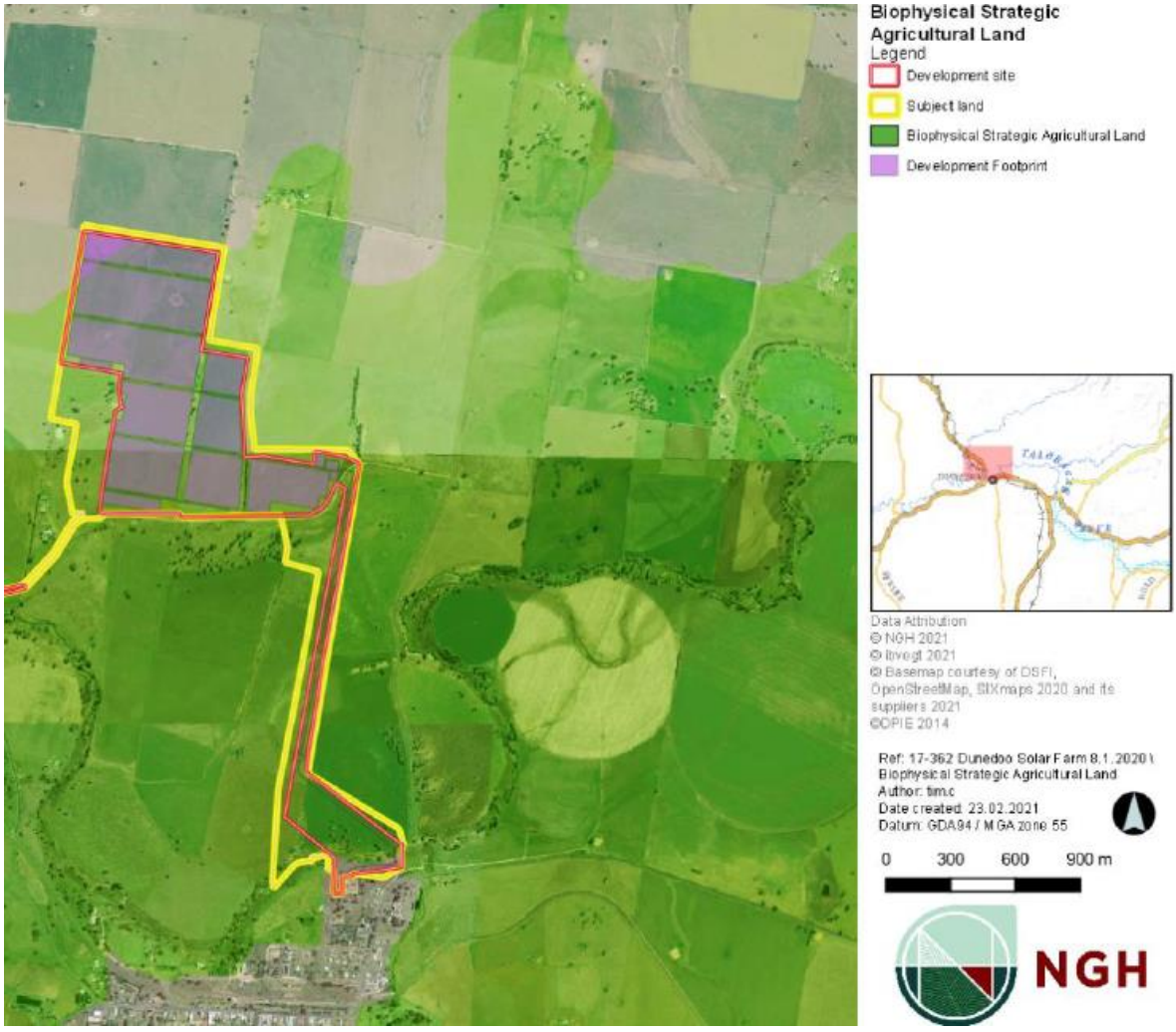

Figure 5 | BSAL Mapping of Development Site Based on NSW Regional Mapping

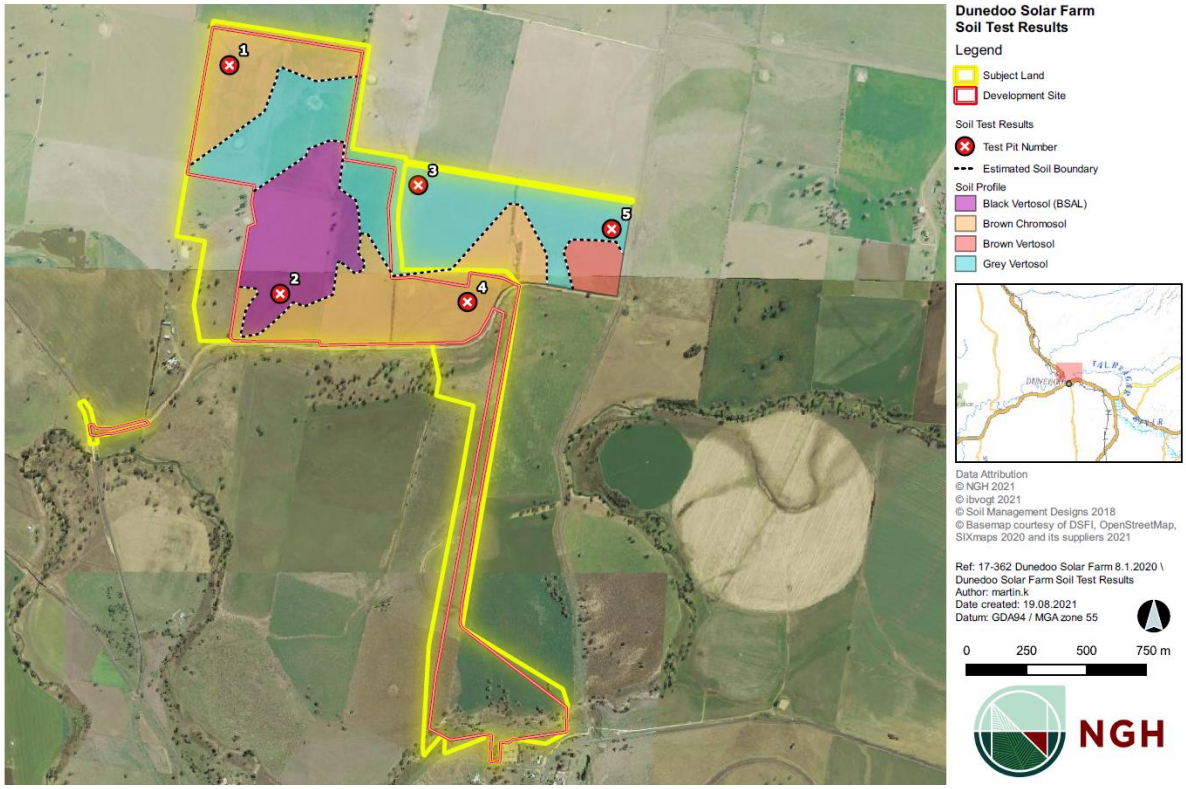

Figure 6 | Reduced BSAL Classification on Site Based on Site Soil Studies

Under the *Land and Soil Capability Mapping in NSW* (OEH, 2017), approximately 70% of the soils within the site (82.55 ha) are classified as Class 3, 27% of the soils (31.8 ha) are classified as Class 2 and approximately 3% of the soils within the site (2.97 ha) are Class 5, meaning that the land is capable of sustained cultivation and cropping on a rotational basis, but only with careful ongoing land management practices to avoid environmental degradation. Class 3 land is also suited to grazing.

As the site is currently used for grazing and dryland rotational cropping, the solar farm would reduce the agricultural output of the site while the solar farm remains operational. However, the development footprint occupies approximately 67% of the site, allowing the current agricultural practice to continue over the remaining 33% (approximately 38 ha) of the site. Moreover, ib Vogt is proposing to manage the land within the project footprint through sheep grazing during the operation of the solar farm.

The inherent agricultural capability of the land would not be affected by the project due to the relatively low impact nature of the development, and ib Vogt proposes to return the land back to existing levels of agricultural capability following decommissioning. Accordingly, the Department has included requirements to maintain the current land capability of the site during the construction and operational phases of the project, including establishing ground cover over the land and maintaining grazing within the development footprint, where practicable. A requirement to return the development footprint to existing land and soil capability following decommissioning has also been included.

In regard to potential cumulative impacts, the development footprint of the project combined with other approved and/or operational SSD solar farms in the Central West and Orana region would be approximately 6,000 ha. The loss of 6,000 ha of agricultural land represents a very small fraction (0.069%) of the 8.9 million ha of land being used for agricultural output in the Central West and Orana region and would result in a negligible reduction in the overall productivity of the region. Similarly, the

area of BSAL on the site is 25 ha, which equates to approximately 0.025% of the mapped BSAL in the region.

The potential loss of a small area of cropping and grazing land in the region must be balanced against:

- the broader strategic goals of the Commonwealth and NSW governments for the development of renewable energy into the future;
- the environmental benefits of solar energy, particularly in relation to reducing greenhouse gas emissions;
- the economic benefits of solar energy in an area with good solar resources and capacity in the existing electricity infrastructure; and
- the benefits of dispatchable energy for grid stability and reliability.

Based on these considerations, the Department considers that the proposed solar farm represents an effective and compatible use of the land within the region and that the site is suitable to accommodate the development.

The Department considers that the development would not fragment or alienate any resource lands in the LGA, as the land could be easily returned to agricultural land following decommissioning, and ib Vogt has committed to facilitate agriculture activities in and around the solar farm where practical.

5.2 Visual

One objection from the community raised concerns about the potential visual impacts of the development. The objection was from an adjoining landowner who owns four non-associated residences located within 2 km of the site, including two within 1 km (R3 and R4) and two between 1 km and 2 km from the site (HA and HB). These concerns included the proximity of the project to surrounding rural residences and Dunedoo township, impacts on the scenic quality, landscape and rural outlook of the area and concerns regarding potential visual impacts associated with glint and glare from the solar farm, including potential impacts on road users. The objection also raised concerns about visual impacts on residences R3, R4 and HA as well as concerns that the original visual assessment undertaken did not adequately consider visual impacts from surrounding residences. These issues are discussed further below.

Visual Context

Land within the site is generally flat with a gentle north to south gradient and includes largely cleared agricultural land with patches of remnant vegetation. The site is currently used for grazing and dryland rotational cropping. Native vegetation within the site remains in the form of small patches of remnant woodland and riparian vegetation and includes paddock trees scattered throughout the southern end of the site.

Land surrounding the site comprises relatively flat and gently undulating agricultural land largely cleared of vegetation with scattered paddock trees and roadside vegetation, largely limiting and obscuring views to the site from surrounding areas. A low ridgeline is located approximately 1 km north of the site.

Essential Energy's overhead 66 kV transmission line traverses the southeast corner of the site in a northwest to southeast direction from the Castlereagh Highway and adjoining land, extending on surrounding land to the east of the site along the Golden Highway.

Dunedoo township is located approximately 2 km to the south of the proposed development and would have minimal views of the site due to separation distance, topography, and intervening vegetation.

Castlereagh Highway, which runs in a north-westerly direction, is located approximately 800 m to the west of the development site at its closest point, while the Golden Highway is located approximately 2 km to the south of the solar array infrastructure and runs parallel to the site's south eastern boundary. Any views of the solar farm from these roads would be fleeting, limited by distance and filtered by roadside, and other intervening vegetation.

There are two non-associated residences located within 1 km of the solar array development footprint, with the closest residence (R4) located 346 m to the northeast, and R3 located 664 m to the west of the nearest solar infrastructure. There are an additional seven residences located between 1 km and 2 km of the solar array footprint, including two residences to the west of the site (HA and HB), two residences to the east of the site (R5 and R6) and three residences to the south of the site (R7, R8 and R9). Due to the topography of the surrounding landscape, the site is located at a slightly lower elevation than some surrounding residences, particularly those to the west, north and northeast of the site.

While residences R7, R8 and R9 are located over 1.7 km from the solar array footprint, these residences are located within approximately 200 m of the southern boundary of the site, and residences R7 and R8 are respectively located approximately 80 m from the nearest transmission line option and substation extension (see **Figure 7**).

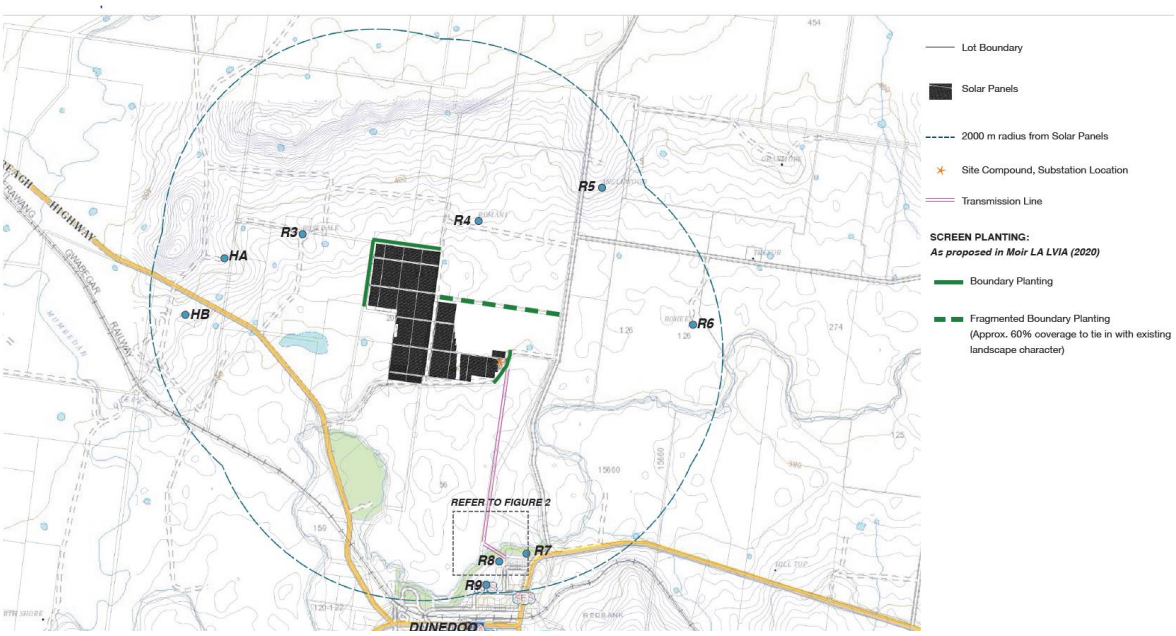

Figure 7 | Development Footprint and Surrounding Receivers

Visual Mitigation

ib Vogt has proposed the following avoidance and mitigation measures to reduce the visual impacts on surrounding receivers and the public domain:

- a commitment to install native screen plantings five metres wide along sensitive parts of the site boundary including the northernmost site boundaries, north west boundary and southeast corner of the solar array and ancillary infrastructure, including over 1 km of intermittent boundary planting extending beyond the second northernmost boundary of the solar array;
- a commitment to install native screen plantings (to a width of 5 m) along the southwest corner of the substation expansion site area;

- co-locating transmission infrastructure along the existing transmission line corridor, where feasible, in order to minimise the appearance of additional poles;
- locating ancillary structures away from residences to reduce visual impacts on residences;
- using non-reflecting materials and paints to reduce glint and glare;
- minimising unnecessary night-time lighting of the development and using lower intensity lighting to reduce disturbance to neighbouring properties, including a commitment to comply with the lighting design principles outlined in the Dark Sky Planning Guideline; and
- using colours and materials sympathetic to the existing environment, to minimise visual impacts.

Assessment

Residences

ib Vogt provided an additional visual impact assessment (VIA) in its Amendment Report and additional information that considered the visual impacts of the development from all nine non-associated residences within 2 km of the development, including residences R3, R4, HA and HB owned by the adjoining landowner. The VIA is based on representative viewpoints from each of the nine residences located within 2 km of the site, including a viewshed analysis and photomontages of key viewpoints from R3 and R4.

The VIA identified that, with the exception of residences R3, R4 and R5, the unmitigated visual impacts on residences surrounding the site are expected to be low or negligible due to topography, distance and / or intervening vegetation. Residences R3, R4, and R5 are all located at a slightly higher elevation than the site, and the unmitigated visual impact on these residences would be moderate.

However, with the implementation of the proposed visual mitigation measures, which includes native and endemic screen plantings with a mature height of up to 10 m along the project boundaries between potentially impacted residences and the development footprint, the expected visual impacts on these residences would be low. The additional information ib Vogt provided included verification from a landscape architect confirming the suitability of the proposed native landscape plantings for the area, and confirming that these plantings would be appropriately established, maintained and managed to provide effective visual mitigation to surrounding residences within 3 years of commencing construction.

Table 3 provides a summary of the mitigated and unmitigated visual impacts of the project on surrounding sensitive receivers based on the VIA provided ib Vogt. With the mitigation measures proposed by ib Vogt, and noting the separation distances, low height of the proposed infrastructure and established intervening vegetation, it is considered unlikely that surrounding residences would experience significant visual impacts associated with the development.

Table 3 | Visual Impacts to Surrounding Residences within 2 km of site

Receiver	Distance to site boundary (m)	Distance to development footprint (m)	Unmitigated Visual Impact Rating	Mitigating Factors	Mitigated Visual Impact Rating
R3	664	664	Moderate	Mature existing vegetation at the residence. Additional vegetation plantings proposed at site boundaries.	Low
R4	346	346	Moderate	Mature existing vegetation at the residence, with some intervening vegetation between the residence and development footprint. Additional vegetation plantings proposed at site boundaries.	Low
R5	1609	1609	Moderate	Mature existing vegetation at the residence, with some intervening vegetation between the residence and development footprint. Additional vegetation proposed at site boundaries.	Nil - Low
R6	1150	1753	Low	Mature existing vegetation at the residence, with additional vegetation plantings proposed at the site boundary. Solar farm infrastructure set back from project boundary, and further mitigated by topography.	Nil - Low
HA	1357	1357	Negligible	Mature existing vegetation at the residence, with some intervening vegetation between the residence and development footprint. No additional mitigation measures required.	N/A
HB	1722	1722	Negligible	Mature existing vegetation at the residence, with some intervening vegetation, including roadside vegetation, between the residence and development footprint. No additional mitigation measures required.	N/A
R7	50	80 (to transmission line)	Negligible - Low	Residence would have negligible views of the solar arrays due to distance from solar panels (approximately 1.73 km), mature existing vegetation at the residence and intervening vegetation. Mature existing vegetation at the residence and intervening vegetation located between the residence and transmission line and between residence and eastern boundary of substation would also limit views of these structures. No additional mitigation proposed.	Negligible – Low

Receiver	Distance to site boundary (m)	Distance to development footprint (m)	Unmitigated Visual Impact Rating	Mitigating Factors	Mitigated Visual Impact Rating
R8	75	75 (to substation)	Low	Residence would have negligible views of the solar arrays due to distance from solar arrays (approximately 1.78 km) and mature existing intervening vegetation. Existing intervening vegetation between residence and transmission lines and between residence and substation would also provide some visual screening of these structures. Additional planting proposed along southwest corner of substation extension would further limit views of substation from residence.	Low
R9	230	230 (to substation)	Negligible	Residence would have negligible views of the solar arrays due to distance from solar arrays (approximately 1.95 km) and mature existing intervening vegetation. Existing mature vegetation within residence and intervening vegetation between residence and transmission line would provide some visual screening between residence and transmission line, and in addition intervening residences would limit views of the substation from this residence. Additional planting proposed along southwest corner of substation extension would further limit views of substation from residence.	Negligible

Residence R3 is located approximately 664 m to the northwest of the solar array development footprint and is elevated approximately 15 m above the development site. While existing intervening vegetation along the eastern and southern boundaries of this residence would minimise views to the development from the residence, there would be a moderate visual impact on R3 due to the orientation of the dwelling and the location of the array footprint within the primary viewshed of this residence if the proposed mitigation measures described below were not implemented.

Residence R4 is located 346 m to the northeast of the solar array development footprint and is elevated approximately 10 m above the development site. While there is some existing intervening vegetation located along the southern boundary and southwest corner of this residence, as well as some scattered trees located in adjoining land between R4 and the development footprint, residence R4 would have views of the development without the implementation of the proposed mitigation measures.

Residence R5 is located over 1.6 km to the northeast of the development footprint and is elevated approximately 20 m above the development site. R5 did not object to the development. Intervening vegetation exists in the form of scattered trees between the residence and the development footprint.

Visual mitigation measures for these residences include the provision of planting along the project boundaries between these residences and the development footprint, including planting along the northwest and northernmost boundaries of the site; approximately 1 km of intermittent planting extending eastward adjacent to the second northernmost site boundary; and boundary planting along the southeast corner of the site. These plantings would be 5 m in depth and would comprise of local and endemic species capable of growing up to 10 m in height at maturity.

ib Vogt has provided verification from a landscape architect confirming the suitability and effectiveness of these plantings in providing adequate visual mitigation to surrounding residences. These measures would significantly reduce views of the development from residences R3, R4 and R5 and would result in a low visual impact on these residences (see **Figures 8** – **11**).

Figure 8 | Photomontage showing solar infrastructure without proposed screen planting from representative viewpoint for R3

Figure 9 | Photomontage showing solar infrastructure with proposed screen planting from representative viewpoint for R3

Figure 10 | Photomontage showing solar infrastructure without proposed screen planting from representative viewpoint for R4

Figure 11 | Photomontage showing solar infrastructure with proposed screen planting from representative viewpoint for R4

Regarding visual impacts on residence HA owned by the objector, the VIA determined that impacts would be negligible due to the distance of this residence from the development footprint (1.3 km to the west), as well as existing intervening vegetation along the eastern property line of the residence. ib Vogt considered additional visual mitigation measures would not be required to address potential visual impacts on this residence. However, with the implementation of the proposed mitigation measures to address the potential visual impacts on other residences, the VIA concluded that the development would have no visual impact on residence HA.

While residences R7, R8 and R9 are located within approximately 200 m of the substation extension area and the nearest proposed transmission line infrastructure, visual impacts to these residences are expected to be low to negligible due to intervening vegetation between residences and transmission line infrastructure, as well as proposed landscape planting along the boundaries of the substation extension. Further, due to the proximity of the Dunedoo Substation to these residences, transmission lines are an existing element in the surrounding landscape. While residence R7 is located 80 m from

the nearest proposed transmission line, this transmission line at its closest point would be collocated with the existing transmission line infrastructure. For residences R8 and R9, the nearest proposed transmission line and associated infrastructure would be collocated with the existing transmission line corridor where practicable, to minimise the introduction of significant visual elements in the landscape.

While the substation extension area is located approximately 80 m to the northeast of R8, proposed screen landscaping along the southwest corner of the substation extension would obscure views to the substation from R8 and minimise any potential visual impacts on this residence.

In summary, the nature of the proposed development would serve to minimise its visibility from surrounding residences, as the solar panels would be relatively low lying (up to 3 m high), and the proposed screen plantings along the project boundaries would minimise views of the development from surrounding residences, including residences R3, R4 and R5.

Existing intervening vegetation, as well as the proposed vegetation plantings along the southwest corner of the Dunedoo substation extension at the southern end of the site, would also provide visual screening between the residences to the south of the site and the proposed substation and transmission infrastructure.

Other on-site infrastructure would be located a significant distance from residences and would generally be of a similar size to agricultural sheds commonly used in the area. Further, ib Vogt has committed to design and paint buildings to blend in with the local landscape, and the Department has recommended conditions to ensure that this occurs.

Landscape

The solar farm would be located in an area largely surrounded by relatively flat and gently undulating cleared agricultural land, with isolated ridgelines located in the distance to the north of the site.

One public submission expressed concerns that the development would have a visual impact on residents within Dunedoo township and would detract from the rural landscape character of the area.

Impacts on the local landscape have been considered through project design, including buffer distances between project infrastructure, roads and residences where practicable, the retention of remnant native vegetation along site boundaries and within the site and the use of neutral colour palettes for building materials. The solar panels would be relatively low lying (up to 3 m in height), and the proposed maintenance buildings and substation would be similar in size to agricultural structures commonly found in the area.

Views of the development from Dunedoo township would be minimised by distance to the site (approximately 2 km) and would largely be obscured by intervening vegetation, buildings and structures.

Visual impacts on motorists travelling along Digilah Road, Castlereagh Highway and the Golden Highway would be minimised by intervening vegetation or distance from the site. While there would be some visual impacts for motorists travelling along All Weather Road, the visual impacts are not considered to be significant, as this road is largely used as an access road for the single rural residence associated with the development.

The Department recognises that the development of the solar farm would result in a material change to the local landscape, but considers that it would have a limited impact beyond the project's immediate vicinity, and that there would be no significant adverse visual impacts on Dunedoo township as a result of the development.

Cumulative Visual Impacts

While there are numerous proposed or approved state significant development energy projects within the Central West and Orana REZ, the nearest proposed SSD projects, being Barneys Reef Wind Farm and Tallawang Solar Farm, would be located approximately 20 km and 25 km to the southeast of the site respectively. These projects are at preliminary stages, with development applications not yet submitted.

The nearest approved SSD energy project, Stubbo Solar Farm, would be located approximately 35 km to the south of the development. Given the distance of the project from other proposed or approved SSD renewable energy projects in the region, there would be no cumulative visual impacts on nearby residences.

Glint and Glare

While photovoltaic panels are designed to absorb rather than reflect sunlight, the Department recognises that galvanised steel used for the solar panel framework has the potential to generate glare or reflection, but that this diminishes over time.

The setback distances from nearby receivers, intervening vegetation and the proposed vegetation screening would shield or minimise potential glare and reflection impacts, which would be temporary in any case.

The Department has recommended conditions to minimise the off-site visual impacts of the development, including potential glare or reflection, and to ensure the appearance of all ancillary infrastructure blends in as far as possible with the surrounding landscape.

Siding Springs Observatory

The project is located approximately 85 km southeast of the Siding Springs Observatory, and therefore falls inside the Dark Sky Region covered by the NSW Government's *Dark Sky Planning Guideline.*

There would be no permanent night lighting installed within the project site, and after hours lighting would be strictly for maintenance and emergency situations. ib Vogt have also committed to complying with the lighting design principals outlined in the Dark Sky Planning Guideline.

The Department consulted with the Observatory during its assessment, and it confirmed it had no concerns regarding the project.

The Department considers that visual impacts of the project on surrounding residences and road users would be minimal, and is satisfied that the project would not affect the observing conditions of the Observatory in accordance with the Dark Sky Planning Guideline.

Recommended Conditions

The Department has recommended conditions of consent requiring ib Vogt to:

- minimise the off-site visual impacts of the development, including the potential for any glare or reflection;
- ensure the appearance of all ancillary infrastructure (including paint colours) blends in as far as possible with the surrounding landscape;
- prohibit any signage or advertising on the development, unless it is for safety purposes;

- ensure that external lighting is minimised and complies with *Australian/New Zealand Standard AS/NZ 4282:2019 – Control of Obtrusive Effects of Outdoor Lighting and the Dark Sky Planning Guideline* (DPIE 2018), or the latest versions;
- establish and maintain a landscape screening vegetation buffer at the nominated locations to minimise views of the development from residences R3, R4, R8 and R9 and planting this landscape screening prior to commencing construction; and
- prepare a detailed Landscaping Plan in consultation with Council and to the satisfaction of the Planning Secretary prior to commencing construction.

Subject to the recommended conditions, the Department is satisfied that the project would not result in significant visual impacts on surrounding residences, and the rural character and visual quality of the area would not be adversely affected.

5.3 Other issues

The Department's consideration of other issues is summarised in **Table 4.**

Table 4 | Other issues

Findings	Recommendations
Traffic and Transport	
• The transport route for heavy vehicles during construction and operation is from the west via Castlereagh Highway and All Weather Road. Light vehicles access from the south-east via, Digilah Road and All Weather Road. • Two site access points are proposed along All Weather Road; Access Point 1 for heavy vehicles and Access Point 2 for light vehicles and shuttle bus access (see **Figure 3**) • The main increase in traffic volumes would occur during the 12 month construction period, with a peak construction period of up to 3 months. During the peak period, the project would generate up to 80 heavy vehicle movements per day and 24 light vehicles movements per day. No over-dimensional vehicle movements would be required during construction, upgrading or decommissioning activities. • To reduce the overall number of light vehicles movements, ib Vogt has committed to implementing a shuttle bus service to and from Dunedoo, dependent upon workforce and accommodation requirements, the details of which would be provided in the project's Construction Traffic Management Plan. • Traffic during operations would be negligible, with a maximum of 6 light vehicles per day. • Castlereagh Highway and Golden Highway have sufficient capacity to accommodate construction traffic associated with the project, however upgrade to the Castlereagh Highway / All Weather Road intersection comprising with a Basic Left Turn (BAL) treatment is required to facilitate heavy vehicle access to the site. • All Weather Road has sufficient capacity to accommodate	• Upgrade the Castlereagh Highway / All Weather Road intersection with BAL treatment. • Provide a heavy passing bay along the south-eastern section of All Weather Road. • Restrict the number of vehicles during construction, upgrading or decommissioning to the peak volumes identified within the EIS. • Ensure the length of vehicles does not exceed 20.6 m. • Prepare and implement a Traffic Management Plan in consultation with TfNSW and Council, including measures that would be implemented to address road safety, details of the employee shuttle bus service and minimising cumulative impacts. • Undertake road dilapidation surveys for the Castlereagh Highway / All Weather

Findings	Recommendations
construction traffic and site access, subject to provision of a heavy vehicle passing bay to the west of Access Point 1. • Cumulative traffic impacts may occur on common construction access transport routes, including Castlereagh Highway and the Golden Highway. The nearest approved, but not yet constructed project is Stubbo Solar farm, located approximately 33 km south-east of the site. The construction of Stubbo may in part overlap with the Dunedoo project. • Cumulative impacts are however expected to be minimal noting the high capacity of the common roads designed for heavy vehicle traffic. Moreover, any overlap of construction would be temporary and the project TMP would take into account other road users including freight from other projects that may generate additional traffic impacts. • With the above upgrades, dilapidation surveys and maintenance requirements, and implementation of a Traffic Management Plan, the Department, TfNSW and Council are satisfied that the project would not result in significant impacts on the road network capacity, efficiency or safety.	Road intersection, All Weather Road and Digiliah Road prior to construction, upgrading or decommissioning activities, and repair any damage identified.
Biodiversity	
• The site is largely comprised of cleared agricultural land used for grazing and rotational cropping. • Remnant vegetation is heavily modified, occurring in small isolated patches including 8 paddock trees. • The project has been designed to minimise impacts on biodiversity and remnant vegetation where possible, and approximately 90% of the impacted vegetation comprises low condition modified grassland that is not of sufficient quality to require biodiversity offsets. • Depending on which transmission line option is chosen, the project would disturb up to approximately 0.9 ha of native vegetation within the southern portion of the site adjacent to the proposed transmission line easement. Collectively, impacted Plant Community Types (PCTs) comprise up to: - 0.06 ha of Fuzzy Box Woodland (PCT 201); - 0.26 ha of River Red Gum riparian tall / open forest woodland (PCT 78); and - 0.63 ha of Rough-Barked Apple Red Gum – Yellow Box woodland (PCT 281). • ib Vogt concluded there were no significant impacts on matters of national environmental significance under the EPBC Act. • No evidence of Koala was recorded and no impacts on aquatic ecological values are predicted to occur within the site. • Depending on which transmission line option is chosen, residual impacts on native vegetation would generate up to 24 ecosystem credits under the BC Act. The final credit requirement would be retired in accordance with the NSW Biodiversity Offset Scheme, which may include acquiring or	• Retire the applicable biodiversity offset credits in accordance with the *NSW Biodiversity Offsets Scheme*. • Prepare and implement a Biodiversity Management Plan in consultation with BCS, including measures to protect and manage vegetation and fauna habitat outside the approved disturbance area.

Findings	Recommendations
retiring biodiversity credits, making payments in an offset fund or funding a biodiversity conservation action. • With these measures, both BCS and the Department consider that the project is unlikely to result in a significant impact on the biodiversity values of the locality.	
Heritage	
Aboriginal Cultural Heritage • Site surveys undertaken in consultation with Registered Aboriginal Parties (RAPs) identified 9 isolated finds, 15 artefact scatters and 3 archeologically sensitive areas, which were subject to subsurface testing, recording a further 85 artefact finds. • Most subsurface artefacts recovered were able to be incorporated into assemblages of previously identified sites, except adjacent to the Essential Energy substation, which was recorded as a new site (AFT 24). • A previously recorded AHIMS site was inspected however no artefacts were identified, with RAPs noting the site had been previously impacted and destroyed. • A total of 16 sites comprising isolated finds and artefacts scatters would be impacted by the development. • Of the 16 impacted sites, surface collection salvage is proposed for 14 sites, AFT 24 would be subject to a salvage excavation programme as requested by RAPs, and no mitigation is proposed for the previously recorded AHIMS site. • ib Vogt has committed to provide ongoing management opportunities through a Cultural Heritage Management Plan in consultation with RAPs. • Wellington Valley Wiradjuri Aboriginal Corporation (WVWAC) raised concerns regarding potential impacts on the Black Swans nesting areas adjacent to the site. • In the Response to Submissions Report, ib Vogt noted that there would be no impacts on the Black Swans nesting area. BCS raised no issues regarding impacts on this nesting area. Nevertheless, ib Vogt has committed to developing and implementing additional mitigation measures for the Black Swans nesting area in consultation with WVWAC and incorporating those commitments into the Heritage Management Plan. • As a result of the amendments to the project, which include additional land not considered in the original application, ib Vogt undertook additional consultation with RAPs regarding potential impacts on Aboriginal Cultural Heritage. • The Murong Gialinga Aboriginal and Torres Strait Islander Corporation recommended that all impacted Aboriginal objects be collected and reburied as close to the point of origin as possible in consultation with RAPs. • In the Amendment Report, ib Vogt noted that the measures recommended by the Murong Gialinga RAP were addressed in the ACHAR. • Other RAPS, including WVWAC, raised no concerns regarding the proposed amendments.	• Ensure the development does not cause any direct or indirect impacts on any items located outside the approved development footprint. • Salvage and relocate Aboriginal items in consultation with RAPs. • Prepare and implement a Heritage Management Plan including a contingency plan and reporting procedure if unexpected items are found, in consultation with RAPs and Heritage NSW.

Findings	Recommendations
• Heritage NSW advised that it is satisfied with the Aboriginal Cultural Heritage assessment undertaken and is satisfied with ib Vogt's responses to issues raised by the RAPs. • If Aboriginal artefacts or skeletal remains are identified during construction of the project, all work would cease, and an unexpected finds procedure would be implemented. • With these measures, the Department and Heritage NSW consider that the project would not significantly impact the heritage values of the locality. <u>Historic Heritage</u> • No heritage items listed on State registers are located within or surrounding the site. • Site inspections did not identify any new heritage sites or items occurring within or near the development site. • Heritage NSW did not raise concerns in relation to historic heritage and noted that there are no heritage items within or surrounding the site. • ib Vogt has committed to an unexpected finds protocol for historic heritage. The Department is satisfied that the project would not have any adverse impacts on local or State heritage items in the local area.	
Water, Soil and Erosion	
• The project would require around 42 megalitres (ML) of water during construction (mainly for dust suppression) and 0.17 ML of water annually during operation (mainly for cleaning panels). A 20,000 litre capacity static water supply would also be established and maintained for fire protection. • Two unnamed farm dams located within the northwest corner of the development footprint would be infilled with material from the site, and would be utilised for the siting of the solar panels. Removal of these dams is not expected to have any broader environmental impacts on rivers, streams or wetlands either on or offsite. • ib Vogt initially included the use of groundwater to meet water demands, but amended the project to source water from surface water capture including rainwater tanks, and supplies from local licenced water contractors. • The project is not expected to affect groundwater resources or groundwater dependent ecosystems and ib Vogt has committed to follow any applicable water restrictions in the area. • There are three registered groundwater bores within the site, including one used for stock, one used as a monitoring well and one used for irrigation purposes. These groundwater bores would not be impacted by the project. • Water NSW noted in its comments on the EIS that there is a telemetered monitoring bore along the southern boundary of the site and recommended that the development not restrict Water NSW from accessing this bore. • In the Submissions Report, ib Vogt confirmed the groundwater bores would not be impacted and that there would be no access restrictions imposed.	• Minimise the siting of solar panels and ancillary infrastructure within watercourses. • Design, construct and maintain the project to reduce impacts on surface water and flooding at the site. • Minimise any soil erosion in accordance with *Managing Urban Stormwater: Soils and Construction (Landcom, 2004)* and ensure the project is constructed and maintained to avoid causing erosion on site. • Unless DPIE Water agrees otherwise, ensure all works are undertaken in accordance with *Guidelines for Controlled Activities on Waterfront Land* (NRAR, 2018). • Prohibit water pollution in accordance with Section 120 of the *Protection of the Environmental Operations Act 1997.* • Ensure there is sufficient water for all stages of the

Findings	Recommendations
Flooding • One public submission raised concerns about potential water impacts from the project, including concerns regarding potential flooding. • The site is not identified as flood prone land under the Warrumbungle LEP, though the site is located within the floodplain of the Macquarie River Catchment Area. • The Talbragar River, a tributary to the Macquarie River, traverses the southern portion of the site from east to west, approximately 2 km from the solar array development footprint. • The Flood Impact Assessment submitted with the EIS notes that the development footprint for the solar arrays and associated infrastructure is not located in an area of high flood risk, and that the existing Dunedoo Substation at the southern end of the site is located above the floodplain and would not be inundated in a PMF event. • Flood modelling for the development indicates that the development would not have any significant impacts on the flood affectation or inundation levels on the site or on surrounding land. • ib Vogt has committed to constructing project infrastructure to withstand flooding impacts. This involves locating critical infrastructure, such as the on-site substation and inverters, to avoid potentially flood affected areas of the site, as well as designing the footings, buildings and associated equipment to avoid the predicted flood depths in a flooding event. • ib Vogt has also committed to a Flood Response Plan encompassing all stages of the development. • With these measures, the Department is satisfied that the project would not be adversely impacted by flooding and that the project is designed to limit any potential downstream impacts from flooding events. Soil and Erosion • DPIE Water recommended ib Vogt prepare a Construction and Operational Environmental Management Plan that includes an Erosion and Sediment Control Plan. • ib Vogt has committed to implement measures to avoid and minimise soil erosion, sedimentation, and any downstream impacts, including a Soil and Water Management Plan that includes provisions for sediment and erosion control. • ib Vogt has also committed to implement buffer zones along the riparian corridor in accordance with the *Guidelines for Controlled Activities on Waterfront Land*. • Subject to the recommended conditions, the Department and DPIE Water consider that the project would not result in significant impacts to water resources.	project, and if necessary, adjust the scale of the development to match available water supply.
Hazards	
• The site is classified as bushfire prone land under the Warrumbungle LEP. • Ib Vogt would be required to maintain a 10 m defendable space	• Ensure that the development complies with the relevant requirements in the RFS's *Planning for Bushfire*

Findings	Recommendations
around all project infrastructure and manage the defendable space and solar array areas as an Asset Protection Zone. • ib Vogt would also be required to comply with the RFS's *Planning for Bushfire Protection 2019* and prepare a Fire Safety Study and Emergency Plan to manage the fire risk. • The Department, RFS and FRNSW are satisfied that the bushfire risks can be suitably controlled through the implementation of standard fire management procedures. • The project would comply with the International Commission on Non-Ionizing Radiation Protection (ICNIRP) guidelines for electric, magnetic and electromagnetic fields. • ib Vogt completed a preliminary risk screening for the project in accordance with *SEPP No.33 – Hazardous and Offensive Development* (SEPP 33), which concluded that the storage and transport of hazardous materials for the project (including the risks associated with battery storage) would not exceed the relevant risk screening thresholds and the project is not considered to be 'potentially hazardous'. • ib Vogt prepared a preliminary hazard analysis (PHA) in accordance with the *Hazardous Industry Planning Advisory Paper No. 6 'Hazard Analysis'* (HIPAP 6) and *Multi-level Risk Assessment* including for the battery storage component of the project. The PHA study found that risks were able to be effectively managed with hazard prevention and mitigation measures. • ib Vogt has committed to implementing a range of hazard prevention and mitigation measures to manage potential risks associated with the battery storage facility, including: - preparation of a Fire Safety Study for the battery storage facility to the satisfaction of FRNSW and the Planning Secretary prior to commencing construction; - preparation of an Emergency Response Plan (ERP) in consultation with FRNSW and RFS; - a 10 m Asset Protection Zone (APZ) around the solar array footprint, including the battery storage facility; - vegetation management on-site to limit fire fuel loads; - monitoring and control systems with automated shutdown capability; and - appropriate separation between battery sub-units. • Subject to the recommended conditions, the Department is satisfied that risks associated with the facility would not be significant.	*Protection 2019* and Standards for Asset Protection Zones. • Ensure the defendable space and solar arrays are managed as an APZ and the development is suitably equipped to respond to fires including water supply tank and appropriate connectors. • Prepare and implement an Emergency Plan in consultation with RFS and FRNSW. • Prepare a Fire Safety Study to the satisfaction of FRNSW and the Planning Secretary. • Store and handle all liquid chemicals, fuels and oils used on-site in accordance with all relevant Australian Standards and the EPA's *Storing and Handling of Liquids: Environmental Protection – Participants Handbook*.
Subdivision	
• ib Vogt proposes re-subdivision of the 5 lot site into 6 new lots to facilitate lease agreements for land owners and dedication of the site substation to Essential Energy. • Warrumbungle Shire Council did not object to the project, but initially raised concern the associated subdivision created undersized allotments, fragmenting rural agricultural land. • Under the Warrumbungle LEP, the minimum subdivision lot size is 600 ha, however all existing lots within the site are well	• Subdivide the proposed lots in accordance with requirements of section 157 of the *Environmental Planning and Assessment Regulation 2000.*

Findings	Recommendations
below this standard, ranging between approximately 2.8 ha and 242 ha. • Following subdivision, lots would remain undersized, ranging between approximately 23 ha and 164 ha, excluding the allotments dedicated for the substation. • Whilst the agricultural potential of the site would be unlikely to change as a result of the proposed subdivision, the new allotments would still be below the minimum lot size standard and would therefore be prohibited under the strict reading of the LEP. • Notwithstanding, under Section 4.38(3) of the EP&A Act, development consent for the project as a whole can be granted despite the subdivision component of the application being prohibited. • In the Submissions Report, ib Vogt noted that the proposed re-subdivision of the site would enable the current agricultural practices to continue within a portion of the site, that grazing would occur between the solar arrays where practical and that the land would be returned to its existing use after decommissioning. • In subsequent comments on the project, Council raised no residual concerns regarding the subdivision of the site or the fragmentation of rural agricultural land. • The Department is satisfied that the subdivision should be approved as it: – facilities ownership and operation of the substation; – would not result in any additional dwelling entitlements on the subdivided lots; and – is consistent with the key objectives of the RU1 zone as it would encourage diversity in primary industry enterprises and minimises conflicts between land uses. • The Department considers that based on the above, the proposed subdivision would allow the solar farm to be developed and consequently provide net benefits to the National Electricity Market that can be realised in a timely manner, whilst not adversely affecting the use of surrounding land for agricultural purposes.	
Decommissioning and rehabilitation	
• The Department has developed strict conditions to cover the decommissioning stage of the project life cycle, including clear decommissioning triggers and rehabilitation objectives such as removing all above and below ground infrastructure and restoring land capability to its pre-existing agricultural use. • With the implementation of these measures, the Department considers that the solar farm would be suitably decommissioned at the end of the project life, or within 18 months if operations cease unexpectedly, and that the site would be appropriately rehabilitated.	• Include rehabilitation objectives requiring the site to be rehabilitated within 18 months of cessation of operations.

Findings	Recommendations
Socio-economic impacts	
• The project would generate direct and indirect benefits to the local community, including: - the employment of up to 125 workers during the construction period; - the employment of 3 full time workers during the operational period; - expenditure on local accommodation and business in the local economy by workers who would reside in the area; and - the procurement of goods and services by ib Vogt and associated contractors. • ib Vogt estimates that approximately 70% of the construction staff would be sourced from the local and regional community, including from Dubbo, Mudgee and Gulgong. • The project is unlikely to result in significant demand on community services and infrastructure (excluding roads considered below) given the availability of accommodation in the area and the relatively low level of local employment generated once it is operational. • Noting the above, the Department considers that the project would provide economic benefits for the local community. • There is potential for construction of the project to overlap with the construction of other major projects in the region, including Maryvale Solar, Suntop Solar and Wellington Solar as well as Suntop Solar 2, Stubbo Solar, Mumbil Solar, Wellington North Solar, Uungula Wind and Valley of the Wind (if approved). Should this occur, up to 2,735 construction personnel may be required in the region. However, the Department considers that although possible, it is unlikely that the entire construction periods of these projects would overlap. • While the Department considers there to be sufficient workers accommodation for this project, to manage the potential cumulative impacts associated with multiple projects in the region and to encourage locally sourced workers, ib Vogt would be required to develop an Accommodation and Employment Strategy in consultation with Council. The Strategy would require ib Vogt to: - propose measures to ensure there is sufficient accommodation for the workforce associated with the project; - consider cumulative impacts with other projects in the area; - prioritise employment of local workers; and • monitor and review the effectiveness of the strategy, including regular monitoring during construction.	• Prepare an Accommodation and Employment Strategy for the project in consultation with Council, with consideration to prioritising the employment of local workers.
Noise	
• There are five non-associated residences located within 1 km of the site, with the nearest residences (R7 and R8) located approximately 80 m from the nearest proposed transmission line and substation extension area. There are a further four	• Minimise noise generated by the construction, upgrading or decommissioning activities on site in accordance with

Findings	Recommendations
residences located between 1 km and 2 km from the development. • Noise generated by the proposed construction, upgrading and decommissioning activities would be well below the 'highly noise affected' criterion of 75 dB(a) in the EPA's *Interim Construction Noise Guideline* (the ICNG) at all surrounding residences, and construction would be limited to daytime hours. • Construction noise is predicted to exceed the noise management level of 45 dB(A) for one non-associated residence to the north of the site (R4), and for two non-associated residences to the south of the site adjacent to the transmission line easement (R7 and R8). • The noise levels predicted for these residences range between 46 – 53 dB(A), but would be for a short duration and limited to standard daytime hours. ib Vogt has also committed to a suite of noise mitigation measures including the management of work sequencing to reduce concentration of noise, regular inspection and maintenance of equipment, strategic placement of machinery within site to reduce noise impacts on residences, and a noise complaints procedure to handle complaints from the community. • Construction traffic noise would comply with the criteria in the EPA's Road Noise Policy. • Vibration impacts from construction works would not impact any surrounding non-associated residences. • Noise generated during the normal operation of the proposed facility would not exceed 35 dB(A) $L_{Aeq,15min}$ for any non-associated residences during daytime and evening hours and is predicted to comply with the noise trigger levels under the EPA's *Noise Policy for Industry* (NPI) for these times of day. • However, operational noise during the night-time hours is predicted to exceed night-time noise trigger levels at one non-associated residence (R4), with noise levels of up to 36 dB(A) at this residence. • This exceedance would be minor (i.e. 1 dB(A) above the night-time noise trigger levels), is unlikely to be perceptible and is well below the sleep disturbance criteria under the NPI. • Noting the above, the Department is satisfied that construction and operational noise impacts would be limited and has recommended conditions requiring ib Vogt to minimise noise during construction, upgrading or decommissioning as well as limiting operational noise.	best practice requirements outlined in the ICNG. • Comply with the noise management levels as derived from the *NSW Noise Policy for Industry* (EPA, 2017) at any non-associated residence • Restrict construction hours to Monday to Friday, 7 am -6pm and Saturday, 8 am - 1 pm.

6 Recommended Conditions

The Department has prepared recommended conditions of consent for the project (see **Appendix G**).

The Department consulted with ib Vogt and the relevant agencies on the conditions for the project, particularly Council and TfNSW in regard to the road upgrades and maintenance requirements.

These conditions are required to:

- prevent, minimise, and/or offset adverse impacts of the project;
- ensure standards and performance measurements for acceptable environmental performance;
- ensure regular monitoring and reporting; and
- provide for the ongoing environmental management of the project.

The recommended conditions use a risk-based approach that focuses on performance-based outcomes. This reflects current government policy and the fact that solar farms require relatively limited ongoing environmental management once the project has commenced operations. In line with this approach, the Department has recommended operating conditions to minimise traffic, biodiversity, amenity, heritage, water and bushfire impacts, and that the following management plans be prepared and implemented:

- Traffic Management Plan;
- Biodiversity Management Plan;
- Heritage Management Plan; and
- Emergency Plan.

The recommended conditions also require ib Vogt to provide detailed final layout plans to the Department prior to construction.

Other key recommended conditions include:

- *roads* – requiring relevant road upgrades are undertaken prior to the commencement of construction, and maintenance and repair of any damage during construction, upgrades or decommissioning activities;
- *biodiversity offsets* – retiring biodiversity offset credits in accordance with the NSW Biodiversity Offsets Scheme;
- *operating hours* – undertaking construction, upgrading or decommissioning activities on-site during standard construction hours, unless these activities are inaudible at non-associated receivers;
- *fire* – ensure that the development complies with the relevant asset protection requirements in the RFS's *Planning for Bushfire Protection 2019*; and
- *accommodation and employment* – requiring an accommodation and employment strategy be prepared and implemented to ensure there would be sufficient accommodation to house construction workers, and to prioritise employment of local workers.

7 Evaluation

The Department has assessed the development application, EIS, submissions, Submissions Report, amended development application and additional information provided by ib Vogt and advice received from relevant government agencies. The Department has also considered the objectives and relevant considerations under Section 4.15 of the EP&A Act.

The main site accommodating the solar arrays is wholly located on land that is zoned RU1, while a small portion of land at the southern end of the site required for the Dunedoo substation extension is zoned R1. Electricity generating works are permissible with consent in the RU1 zone under the Infrastructure SEPP, and the minor transmission connection and substation expansion works are permitted under Section 4.38(3) of the EP&A Act.

The project site is located in a rural area, with nine non-associated residences located within 2 km of the development footprint, and the nearest non-associated residence located approximately 50 m from the site adjacent to the existing Dunedoo substation at its closest point.

The site would have direct access to the local and regional road network via Castlereagh Highway and Golden Highway and has direct access to the electricity network via Essential Energy's transmission line and substation located at the southern end of the site.

The Department considers the site to be suitable for a solar farm as it has good solar resources and available capacity on the existing electricity network and is located in an area that could contribute to the pilot Renewable Energy Zone in the Central-West Orana Region.

The project has been designed to largely avoid key constraints, including amenity impacts to nearby non-associated residences, high quality agricultural land, watercourses, remnant native vegetation and Aboriginal heritage sites. Any residual impacts would be relatively minor and can be managed through the recommended conditions of consent.

The Department considers that the project is not likely to have significant visual impacts on surrounding residents and motorists due to topography, distance to receivers, existing intervening vegetation or as a result of the proposed screen planting along project boundaries.

While the project would impact 25 ha of BSAL within the site, this represents a very small proportion (approximately 0.025%) of the 98,900 ha of mapped BSAL in the region. The project would not result in any significant reduction in the overall agricultural productivity of the region, and approximately 33% of the site (about 38 ha) would be retained for continued agricultural practices. Additionally, ib Vogt is proposing grazing sheep within and around the solar farm where practical. The site could be returned to agricultural uses after the project is decommissioned, and the inherent agricultural capability of the land would not be affected.

The Department has considered the biodiversity impacts of the project under the BC Act and notes that the project has been designed to largely avoid impacts on native vegetation and threatened species habitat, and all residual impacts would be offset in accordance with the NSW Biodiversity Offset Scheme. Further, the Department notes that approximately 90% of the vegetation impacted comprises low condition, modified grassland that is not of sufficient quality to require biodiversity offsets.

Importantly, the project would assist in transitioning the electricity sector from coal power stations to low emission sources. It would generate up to approximately 144,000 megawatt hours (MWh) of clean electricity annually, which is enough to power up to 20,000 homes and save up to 116,000 tonnes of

greenhouse gas emissions per year. It is therefore consistent with the goals of the NSW *Climate Change Policy Framework* and *Net Zero Plan Stage 1: 2020-2030.*

The Department considered the submissions made through the exhibition of the project, and the issues raised by the community during consultation and in submissions have been addressed through changes to the project and the recommended conditions of consent. In addition, Council and the agencies consulted supported the project subject to conditions.

To address the residual impacts of the project, the Department has recommended a range of detailed conditions, developed in conjunction with agencies and Council, to ensure these impacts are effectively managed, minimised and/or offset. ib Vogt has reviewed the conditions and does not object to them.

On balance, the Department considers that the project achieves an appropriate balance between maximizing the efficiency of the solar resource development and minimising the potential impacts on surrounding land uses and the environment. The project would also stimulate economic investment in renewable energy and provide flow-on benefits to the local community, through job creation and capital investment. Further, the project can be developed in a manner that is consistent with the objects of the EP&A Act and the relevant environmental planning instruments.

The Department recommends that the project is in the public interest, subject to the recommended conditions of consent (see **Appendix G**).

8 Recommendation

It is recommended that the Director, as delegate of the Minister for Planning and Public Spaces:

- **considers** the findings and recommendations of this report
- **accepts and adopts** all of the findings and recommendations in this report as the reasons for making the decision to grant consent to the application;
- **agrees** with the key reasons for approval listed in the notice of decision;
- **grants consent** for the application in respect of Dunedoo Solar Farm (SSD 8847) as amended; and
- **signs** the attached development consent and recommended conditions of consent (see **Appendix G**).

Recommended by:

2/9/2021

Karl Okorn
Team Leader
Energy Assessments

Recommended by:

2/9/2021

Lander Robinson
Senior Environmental Assessment Officer
Energy Assessments

9 Determination

The recommendation is **Adopted / ~~Not adopted~~** by:

2/9/2021

Nicole Brewer
Director
Energy Assessments

Appendices

Appendix A – List of Documents

Dunedoo Solar Farm – Environmental Impact Statement, NGH Environmental Pty Ltd (23 September 2020)

Dunedoo Solar Farm – Submissions Report, NGH Environmental (8 March 2021)

Dunedoo Solar Farm – Amendment Report, NGH Environmental (8 March 2021)

Dunedoo Solar Farm – Additional Information, NGH Environmental (3 June 2021)

Dunedoo Solar Farm – Amendment Report, NGH Environmental (23 July 2021)

Appendix B – Environmental Impact Statement

See the Department's website at:

https://www.planningportal.nsw.gov.au/major-projects/project/10021

Appendix C – Submissions

See the Department's website at:

https://www.planningportal.nsw.gov.au/major-projects/project/10021

Appendix D – Submissions Report

See the Department's website at:

https://www.planningportal.nsw.gov.au/major-projects/project/10021

Appendix E – Amendment Report

See the Department's website at:

https://www.planningportal.nsw.gov.au/major-projects/project/10021

Appendix F – Additional Information

See the Department's website at:

https://www.planningportal.nsw.gov.au/major-projects/project/10021

Appendix G – Recommended Conditions of Consent

See the Department's website at:

https://www.planningportal.nsw.gov.au/major-projects/project/10021

Appendix H – Statutory Considerations

In line with the requirements of Section 4.15 of the EP&A Act, the Department's assessment of the project has given detailed consideration to a number of statutory requirements. These include:

- the objects found in Section 1.3 of the EP&A Act; and
- the matters listed under Section 4.15(1) of the EP&A Act, including applicable environmental planning instruments and regulations.

The Department has considered all of these matters in its assessment of the project and has provided a summary of this assessment below.

Aspect	Summary
Objects of the EP&A Act	The objects of most relevance to the Minister's decision on whether or not to approve the project are found in Section 1.3(a), (b), (c), (e) and (f) of the EP&A Act. The Department is satisfied that the project encourages the proper development of natural resources (Object 1.3(a)) and the promotion of orderly and economic use of land (Object 1.3(c)), as the project: • is a permissible land use on the subject land; • is located in a logical location for efficient solar energy development; • is able to be managed such that the impacts of the project could be adequately minimised, managed, or at least compensated for, to an acceptable standard; • would contribute to a more diverse local industry, thereby supporting the local economy and community; • would not fragment or alienate resource lands in the LGA; and • is consistent with the goals of the *Net Zero Plan Stage 1: 2020 – 2030*, and would assist in meeting Australia's renewable energy targets whilst reducing greenhouse gas emissions. The Department has considered the encouragement of ESD (Object 1.3(b)) in its assessment of the project. This assessment integrates all significant socioeconomic and environmental considerations and seeks to avoid any potential serious or irreversible environmental damage, based on an assessment of risk-weighted consequences. In addition, the Department considers that appropriately designed SSD solar development, in itself, is consistent with many of the principles of ESD. ib Vogt has also considered the project against the principles of ESD. Following its consideration, the Department considers that the project can be carried out in a manner that is consistent with the principles of ESD. Consideration of the protection of the environmental (Object 1.3(e)) is provided in **section 5** of this report. ib Vogt has applied both the precautionary principle and the *conservation of biological diversity* and *ecological integrity* and undertaken careful evaluation and assessment to avoid serious or irreversible damage to the environment where practicable. Following its consideration, the Department considers that the project can be undertaken in a manner that would improve or at

Aspect	Summary
	least maintain the biodiversity values of the locality over the medium to long term and would not significantly impact threatened species and ecological communities of the locality. The Department is also satisfied that any residual biodiversity impacts can be managed and/or mitigated by imposing appropriate conditions and retiring the required biodiversity offset credits. Consideration of the sustainable management of built and cultural heritage (Object 1.3(f)) is provided in **section 5** of this report. Following its consideration, the Department considers the project would not significantly impact the built or cultural heritage of the locality.
State significant development	Under Section 4.36 of the EP&A Act and the *State Environmental Planning Policy (SEPP) (State and Regional Development) 2011* the project is considered a State Significant Development. The Minister for Planning and Public Spaces is the consent authority for the development. However, under the Minister's delegation of 26 April 2021, the Director, Energy Assessments, may determine the project.
Environmental Planning Instruments	The *Warrumbungle Local Environmental Plan 2013* applies and is discussed in **sections 3.3, 5.1** and **5.3** of this report, particularly regarding permissibility, land use zoning, bushfire and subdivision. The project is permissible under the Infrastructure SEPP. In accordance with the Infrastructure SEPP, the Department has given written notice of the project to TfNSW, Essential Energy and the Director of the Siding Springs Observatory. The Department has considered the provisions of the *SEPP (Primary Production and Rural Development) 2019*. Of relevance to the project, the SEPP aims to facilitate the orderly economic use and development of lands for primary production, to reduce land use conflict and sterilisation of rural land and to identify State significant agricultural land. While the location of State significant agricultural land has not been finalised, the Department has considered all these matters in **section 5** of this report. The Department has considered the provisions of *SEPP No. 55 – Remediation of Land*. A search of the NSW EPA contaminated land register found no evidence or records of contaminated land within the project site, and the Department is satisfied the site is suitable for the development. Warrumbungle Council is listed under SEPP *(Koala Habitat Protection)* 2021. ib Vogt's assessment found no evidence of Koala, and the Department has considered this in **section 5.3** of this report.