STATEMENT OF ENVIRONMENTAL EFFECTS

Boorowa Solar Farm

10 June 2021

Zenith TOWN PLANNING

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Attachment A: AHIMS Search Results

Document Details & History

Project number	2420
Project title	Boorowa Solar Farm
Document title	Statement of Environmental Effects
Client	ITP (Development) Pty Ltd
Author	Allen Grimwood, Director
ABN	Zenith Town Planning Pty Ltd PO Box 591 Moruya NSW 2537 11 624 467 349
Qualifications	Bachelor of Arts (Honours), UNSW Master of Urban & Regional Planning, USyd PIA Registered Planner — Planning Institute Australia
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EXECUTIVE SUMMARY

This Statement of Environmental Effects supports an application to Hilltops Council to develop a solar farm at Lots 130-133 and 136-139 DP 2493 Meads Lane, Boorowa, referred to as the Boorowa Solar Farm. The proponent is ITP (Development) Pty Ltd. The site is located 2.4 kilometres south of Boorowa town centre and occupies 11.99 hectares of the 38.5 hectare property. The application is for regionally significant development that needs consent and is to be determined by the Southern Regional Planning Panel.

The proposed development comprises the following:

- 12,100 solar modules ranging in height from 1.5 metres to 2.75 metres installed in rows running north to south with approximately 6.25 metres centre to centre spacing between each row,
- Two 3MW inverter stations that are 3 metres high and each mounted on a 12.2 metre long skid,
- A 2.9 metre high kiosk to convert high and medium voltage to low voltage electricity suitable for connection to the local system,
- A battery storage system that is 12.2 metre long, 2.4 metres wide and 2.9 metres high,
- A temporary car parking and materials laydown area,
- A 1.8 metre high security fence topped with three rows of barbed wire to give a total height of 2.3 metres, and
- Perimeter landscaping on the outer side of the security fence on all sides of the array with shrubs that will grow to a height of 2.5 to 3 metres except at the south-eastern corner.

The site selection process has involved liaison with Hilltops Council officers; identification of environmental and topographical constraints; existence of necessary infrastructure including accessways, power lines and sub-stations; proximity to the settlement of Boorowa to enable supply of power direct to the township; sufficient cleared land area; willingness of the land owner to develop part of the property and enter lease arrangements to facilitate the solar farm; and the availability of solar resources.

Documentation is submitted in accordance with *Schedule 1 Forms Part 1 Development Applications* of the *Environmental Planning and Assessment Regulation 2000.* It is not integrated development as there are no separate approvals required to be issued under section 4.46 of the *Environmental Planning and Assessment Act 1979*. The development is located 41.8 metres from a mapped watercourse that runs through the site and a controlled activity approval is not required under the *Water Management Act 2000*. Access to the site is to be from Meads Lane which is a local road. There are no works proposed on Lachlan Valley Way which is a classified road and approval is not required from Transport for NSW under the *Roads Act 1993*.

The nearest point at the north-west corner of the array is 269.7 metres from a high pressure gas line which includes an interconnector to Young. The application will need to be referred to the APA Group for comment as it within the 800 metre zone of influence.

The development is satisfactory to the objects of the *Environmental Planning & Assessment Act 1979* and applicable environmental planning instruments. The land is zoned RU1 Primary Production under *Boorowa LEP 2012*. The development is defined as *electricity generating works* which means a building or place used for the purpose of making or generating electricity. The proposed development of Boorowa Solar Farm is to be located on land zoned RU1 and the use is permitted with consent in that zone. It is also made permissible by provisions of *SEPP (Infrastructure) 2007*.

Key issues are potential impacts on biodiversity, access to the site and traffic impacts, the effects of flooding and noise emissions, and impacts on the rural landscape and scenic amenity. The likely impacts of the development have been considered and measures recommended to avoid, minimise or mitigate these impacts.

The cumulative impacts of the proposed development are minor. Construction of three approved windfarms is about to commence and a roof solar system has been installed on the Hilltops Council building in Boorowa. There have been no other large scale solar farm proposals other than a 1MW facility on Galong Road associated with the Sibelco quarry. There is sufficient capacity in the electricity grid system to accommodate Boorowa Solar Farm as evidenced by prior arrangements made by ITP Development Pty Ltd to connect to Essential Energy infrastructure.

The proposed development is consistent with the strategic planning framework that applies to the local government area, the site itself and to the development of electricity generating works. The solar farm is permissible with consent under provisions of *Boorowa LEP 2012* and *SEPP (Infrastructure) 2007*. It is satisfactory to other applicable SEPPs. The use is suited to a rural location due to the need for a large land area as evidenced by permissibility. The addition of a solar farm to the rural area of Boorowa would not detract unreasonably from local amenity or the natural environment and will be screened from future development of the neighbouring residential zone.

Electricity generated by the system will be directed to the settlement of Boorowa via existing electrical infrastructure to contribute to the supply of electricity for use by households and businesses. The solar farm will generate community economic benefits through local employment opportunities during the planning and construction phases as well as maintenance and inspection jobs once operational. The land may continue to be used for agriculture and returned to its current condition once the facility is decommissioned. It will assist Commonwealth and NSW Governments to achieve targets and objectives relating to emissions to address climate change.

1. INTRODUCTION

1.1 Overview

The purpose of this Statement of Environmental Effects is to support an application to Hilltops Council to develop a solar farm at Lots 130-133 and 136-139 DP 2493 Meads Lane, Boorowa, referred to as the Boorowa Solar Farm. The application is for regionally significant development that needs consent and is to be determined by the Southern Regional Planning Panel.

The purpose of this report is to assist Council's assessment of the proposal against the matters for consideration listed in section 4.15 of the *Environmental Planning and Assessment Act 1979*. There are no separate approvals required to be obtained under section 4.46 of the *Environmental Planning and Assessment Act 1979* therefore the application is not integrated development. The development is located 41.8 metres from a mapped watercourse that runs through the site and a controlled activity approval is not required under the *Water Management Act 2000*. Access to the site is to be from Meads Lane which is a local road. There are no works proposed on Lachlan Valley Way which is a classified road and approval is not required from Transport for NSW under the *Roads Act 1993*.

This Statement has been prepared having regard to advice provided by Hilltops Council during a meeting in November 2020. Information has also been sourced from the Council's website, the NSW legislation website, SIX Maps, the website of the Department of Planning, Industry & Environment, the Planning Portal and SEED (Sharing and Enabling Environmental Data). All information referenced in this Statement has been sourced from publicly available documents or websites and from expert reports produced to support the application that are listed in Table 1.

1.2 Scope of the report

The contents of this Statement have been prepared in accordance with *Schedule 1 Forms Part 1 Development Applications* of the *Environmental Planning and Assessment Regulation 2000 w*hich specifies that a statement of environmental effects must indicate:

(a) the environmental impacts of the development,
(b) how the environmental impacts of the development have been identified,
(c) the steps to be taken to protect the environment or to lessen the expected harm to the environment,

(d) any matters required to be indicated by any guidelines issued by the Planning Secretary for the purposes of this clause.

This statement is accompanied by the documents listed in Table 1 which support the development application and have been submitted under separate cover. This documentation is submitted in accordance with *Schedule 1 Forms Part 1 Development Applications* of the *Environmental Planning and Assessment Regulation 2000.*

Note that the findings and recommendations of expert reports that accompany the application are summarised in this Statement. Further information about these matters should be sought from the original documents.

Table 1: Development application documents

Plan/Doc No.	Plan/Doc Title	Prepared by	Issue	Date
BOO1B-G-0100	Boorowa 1B 5MW Solar Farm Development Application	ITP Renewables	-	-
BOO1B-G-0400	Location Plan, Site Plan	ITP Renewables	2	26/05/21
BOO1B-G-2100	General Arrangement Plan	ITP Renewables	3	27/05/21
BOO1B-G-2200	Site Elevations	ITP Renewables	2	26/05/21
BOO1B-C-4300	Inverter Footing Details	ITP Renewables	2	26/05/21
BOO1B-C-4301	BESS Footing Details	ITP Renewables	1	26/05/21
BOO1B-C-5300	Fencing Details	ITP Renewables	2	26/05/21
BOO1B-C-5301	Gate Details	ITP Renewables	2	26/05/21
BOO1B-C-6300	Access Path Details	ITP Renewables	2	26/05/21
BOO1B-C-7300	Landscape Details	ITP Renewables	2	26/05/21
BOO1B-E-3400	Nextracker Array Detail	ITP Renewables	2	26/05/21
BOO1B-E-4100	Inverter Station Plan	ITP Renewables	1	27/05/21
BOO1B-E-4300	Inverter Station Details	ITP Renewables	2	26/05/21
BOO1B-E-5300	Typical BESS Details	ITP Renewables	1	26/05/21
BOO1B-E-5301	Typical DC-DC Skid Details	ITP Renewables	1	26/05/21
MAC180781-16RP1	Noise Assessment	Muller Acoustic Consulting Pty Ltd	-	June 2021
F8641	Traffic Assessment Report	Price Merrett Consulting Pty Ltd	1	June 2021
-	Water Assessment	ITP Renewables	1	June 2021
-	Glare and Glint Assessment	ITP Renewables	3	08/06/21

Plan/Doc No.	Plan/Doc Title	Prepared by	Issue	Date
-	Waste and Decommissioning Assessment	ITP Renewables	1	01/04/21
-	Fire Assessment	ITP Renewables	1	12/02/21
-	Biodiversity Inspection Report	Red-Gum Environmental Consulting Pty Ltd	-	05/05/21
2420	Landscape Character and Visual Impact Assessment	Zenith Town Planning Pty Ltd	-	09/06/21
-	Project cost estimate	ITP	-	07/04/21

1.3 The proponent

The proponent for the proposed solar farm is ITP (Development) Pty Ltd. ITP (Development) is a private sector organization based in Canberra and Sydney, which was established in 2003. It is part of the IT Power Group which was formed in 1981 in the UK to bring together specialists in renewable energy, energy efficiency and carbon markets. IT Power offers expertise in renewable energy and energy efficiency, including research, development and implementation, managing and reviewing government incentive programs, high level policy analysis (including carbon markets), engineering design and project management.

1.4 Justification

Solar energy is energy created by the heat and light of the sun. Solar power is produced when this energy is converted into electricity or used to heat air, water, or other substances. Australia has the highest average solar radiation per square metre of any continent in the world. Despite uncertainty regarding energy policy, the Commonwealth and NSW Governments have recognized the need to supplement energy derived from fossil fuels with energy generated from renewable sources. Alternative energy supply may be sourced from solar photovoltaic, geo-thermal, solar thermal, wave and tidal action, and wind.

The development of solar photovoltaic power is well underway in NSW and across Australia. This growth in the local solar PV sector continues to provide a significant boost for Australia's regional economy with renewable infrastructure development estimated to create upwards of 2,300 direct jobs plus indirect employment.

According to the Australian Renewable Energy Agency (ARENA), the deployment of household solar PV that generates about 5 kW is expected to continue and at the same time an increase in

rooftop solar PV installations on commercial premises generating around (10-100 kW) is expected. Large scale solar PV is also rapidly expanding in Australia with several solar farms being constructed that will have the capacity to generate over 50MW. The proposed solar farm aims to fill the gap in the mid-sized plants. It will generate 5MW of AC power and contribute to renewable energy supply to supplement electricity generation from coal, oil and gas.

The proposed development is in accordance with relevant objects of the *Environmental Planning and Assessment Act 1979* in that it will assist to generate power to be distributed to the residents of NSW thereby promoting the social and economic welfare of the community in a manner that manages and conserves natural resources. The Boorowa Solar Farm will further the goals of sustainability, and the orderly and economic use of land.

1.5 Electromagnetic radiation

The information presented in this section has been sourced from the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA). It includes a description of the type of electromagnetic radiation that may be produced by the generation and distribution of electricity.

The generation, distribution and use of electricity can produce extremely low frequency (ELF) electromagnetic fields (EMF) from electrically charged particles. The electric field is produced by the voltage whereas the magnetic field is produced by the current. The strength of the electric field is measured in units of volts per metre whilst the strength of the magnetic field is expressed in units of tesla (T), microtesla (μT), gauss (G) or milligauss (mG).

ELF EMF is produced by both natural and artificial sources. Naturally occurring ELF EMF is associated with atmospheric processes such as ionospheric currents, thunderstorms and lightning. Artificial sources are the dominant sources of ELF EMF and are usually associated with the generation, distribution and use of electricity at the frequency of 50 or 60 Hz. The widespread use of electricity means that people are exposed to ELF electric and magnetic fields in the home, in the environment and in the workplace.

According to the Australian Radiation Protection and Nuclear Safety Agency, which maintains continual oversight of emerging research into the potential health effects of the EMF exposure, there is no established evidence of health effects from exposure to electric and magnetic fields from powerlines, substations, transformers or other electrical sources, regardless of proximity.

2. SITE DESCRIPTION AND CONTEXT

2.1 Description

The site of the proposed Boorowa Solar Farm is described as Lots 130-133 and 136-139 DP 2493 Meads Lane, Boorowa and is part of a large parcel with the address Lachlan Valley Way, Boorowa, NSW. The property is located approximately 2.4 kilometres south of Boorowa centre and about 1.3 kilometres from the edge of the urban area. The entire parcel comprises Lots 1-4 and 7-8 DP 236227, Lot 1 DP 531242, Lot 39 DP 754103 and Lots 125-139 and 141-145 DP 2493. The development site is an irregular shape with a total area of 38.5 hectares. The location of the site is shown in Figure 1 below.

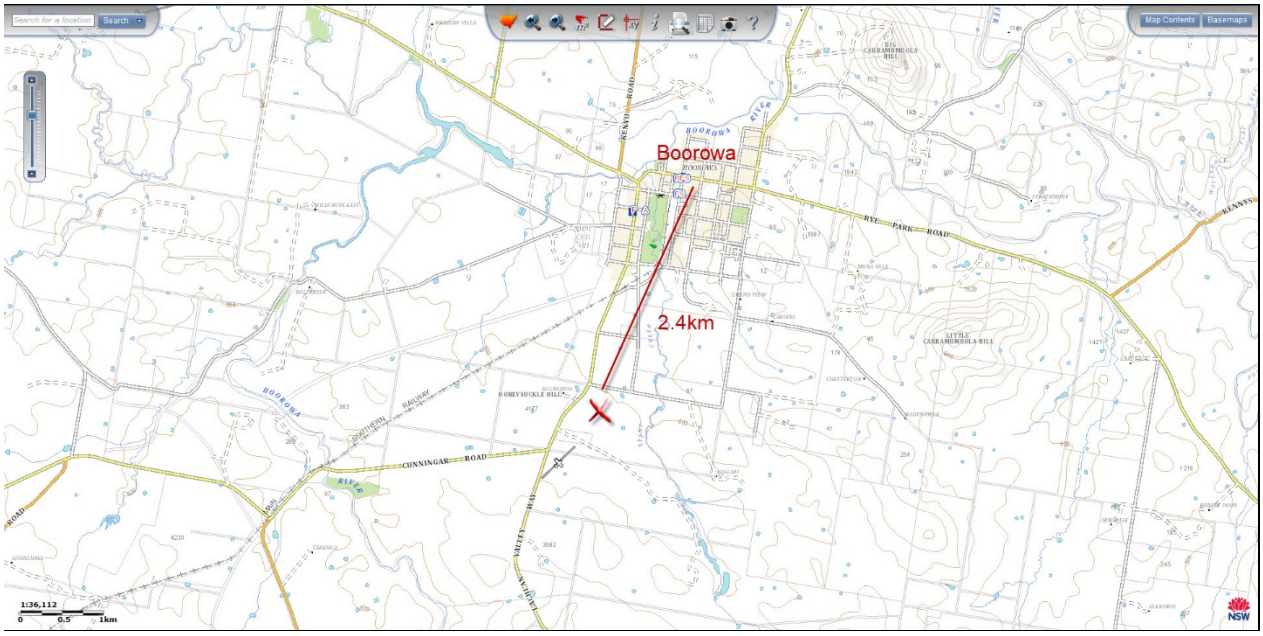


Figure 1: Locality map. Source: SIX Maps, 2020

The property is occupied by a shearing shed and a number of small farm sheds that are located on Lot 1402 DP 862746 and accessed off Lachlan Valley Way to the immediate south of the development area along the western boundary. A number of small farm dams are scattered around the property. The topography of the development site is relatively flat with a gentle fall to the north. The development site is currently used for wheat cropping. There do not appear to be any native grasses present as groundcover. There are a few scattered paddock trees including a windrow running north-south near the dwelling. Motorists travelling north along Lachlan Valley Way descend a moderate hill towards the town of Boorowa. Sparse remnants of native vegetation exist on the slopes and ridges of hills. Neighbouring development comprises agricultural uses with farm dwellings. There are large lot residential properties with dwellings located on the

northern side of Meads Lane. Meads Lane is partly vegetated with a cluster of native trees and exotic grasses between the boundary fence and the pavement. A mapped watercourse traverses the east of the site. The landscape is generally flat with low hills in each direction.

2.2 Context

Hilltops local government area is located in the southern tablelands region of NSW. It's traditional custodians are the Wiradjuri people. Young is the administrative centre of the LGA which includes the towns of Boorowa and Harden. Boorowa township is located on Lachlan Valley Way approximately 328 kilometres south-west of Sydney GPO. The town was established on its present site in 1843 after settlement mainly by Irish for farming purposes.

The character of the landscape near the site of the Boorowa Solar Farm has been significantly modified since European settlement for the purposes of agriculture. Very little native vegetation remains with patches on the low hills near the town and along creek lines and boundaries. There are expansive views across farmland and towards these low hills in most directions from the township. The landscape in the immediate vicinity of the development site is generally flat and cleared of vegetation although some remnant/regrowth vegetation exists along the creek line to the east of the site. Structures within the vicinity of the site comprise rural farm buildings, dams and large lot residential development to the north.

An aerial image of the site and surrounding land is shown in Figure 2 below which is dated 7 February 2015. The development site is edged red.

Figure 2: Aerial image. Source: SIX Maps, 7 February 2015

Below is an extract from the topographic map for land in the vicinity of Boorowa that shows the location of the settlement, transport infrastructure, dams, cadastre and waterways. The development site is shaded green. There are not airports in or near Boorowa although a farm landing strip is shown south of the development area on the topographic map. It is understood that this strip is no longer in use.

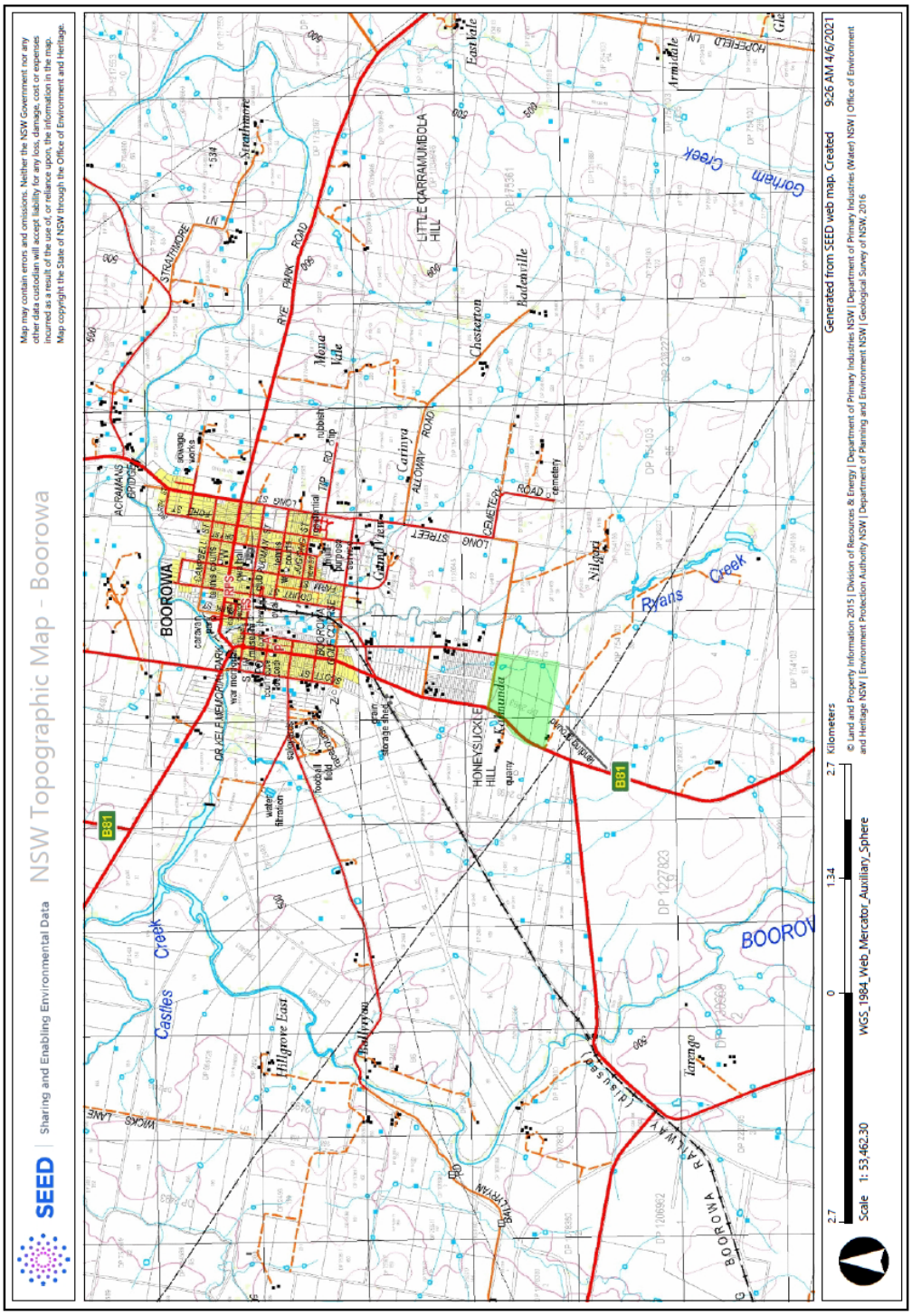


Figure 3: Extract from the topographic map. Source: Land & Property Information 2015

2.3 Climate

Global solar exposure is described by the Australian Bureau of Meteorology as being the total amount of solar energy falling on a horizontal surface. The daily global solar exposure is the total solar energy for a day. Typical values for daily global solar exposure range from 1 to 35 MJ/m^2 (megajoules per square metre). The values are usually highest in clear sun conditions during the summer, and lowest during winter or very cloudy days. Global solar exposure coincides with seasons – the longer the daylight hours the greater the solar radiation due to the tilt of the earth during summer months. Rainfall is spread relatively evenly across the year and so does not appear to impact on the level of solar radiation.

Solar exposure estimates are important for a wide range of applications, including for agriculture, power generation and solar heating system design and use. This climatic information sourced from the Australian Bureau of Meteorology indicates that the global solar exposure, or solar radiation, is sufficient to support power generation in the proposed location which benefits from the presence of electricity power lines in the vicinity of the development site. The map below (Figure 4) shows the average daily hours of sunshine across Australia. Hilltops LGA receives an average of between 7 and 8 hours of sunshine each day.

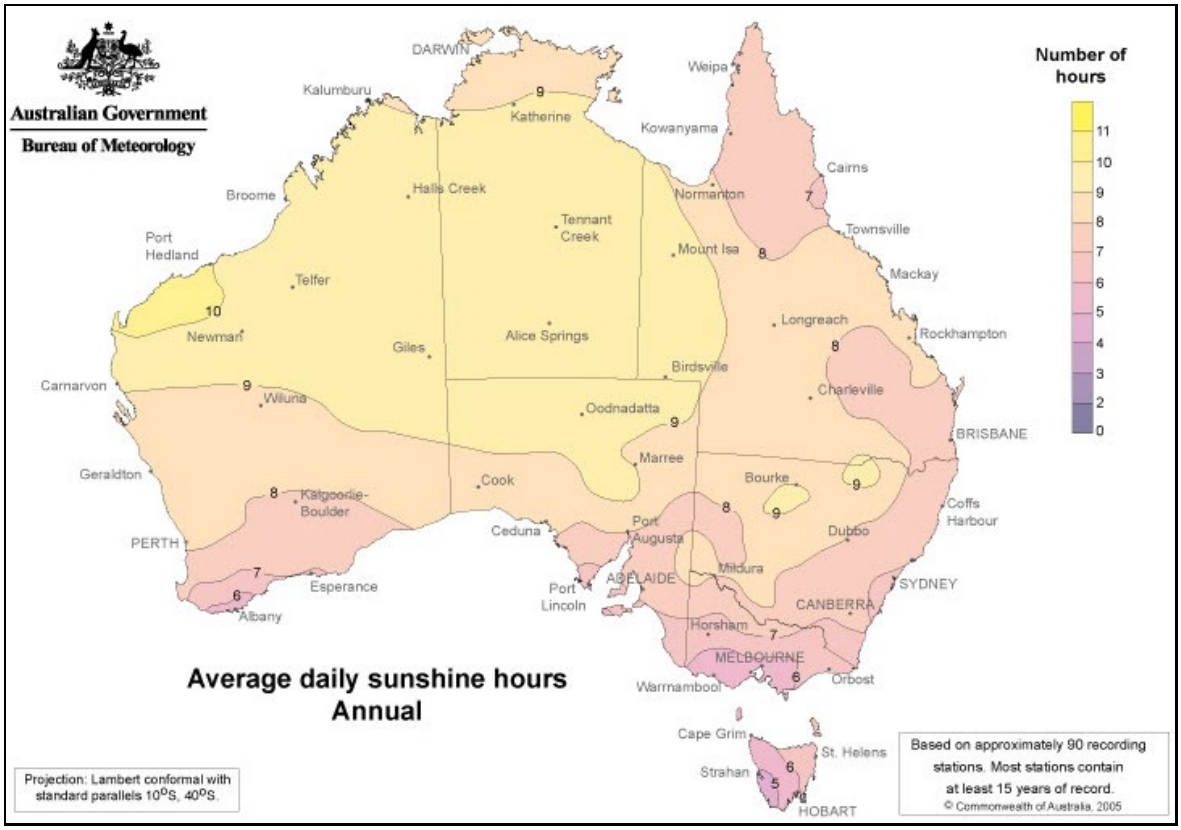


Figure 4: Average daily sunshine hours. Source: Australian Bureau of Meteorology

The mean monthly global solar exposure measured at the Boorowa Post Office station (station number 070220), the closest measuring station to the solar farm site, is given in Table 2 below. The annual mean daily global exposure for 2020 was 17.1MJ/m^2.

Table 2: Mean monthly global solar exposure at Boorowa, 2020

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Monthly mean	26.0	21.9	18.5	12.4	11.0	8.9	9.9	11.1	16.2	19.7	24.9	24.6

This data demonstrates that Boorowa receives adequate solar energy to harness and convert to clean electricity and is eminently suitable for the development of a solar photovoltaic farm.

3. DETAILS OF THE PROPOSED DEVELOPMENT

3.1 Overview

The proposed development comprises a solar farm and ancillary facilities with an AC capacity of 5MW on 11.99 hectares, giving a coverage of 30% of the total site.

The capital investment value of the solar farm is estimated to be $8.66 million.

3.2 The array

There are proposed to be 12,100 solar modules installed in 140 rows that are 103.5 metres long and 2 metres wide running east to west. There is approximately 6.25 metres spacing between each row. The array is proposed to be placed in the northern section of the property adjacent the northern boundary to Meads Lane.

The array is to be contained within an area with perimeter dimensions of 247.2 metres across the northern side, 245.8 metres along the southern side, 465.3 metres along the eastern side and 469 metres along the western side.

Each row of PV modules will rotate to track the sun across the sky from east to west each day. The hub height of each tracker is 1.5 metres with the peak of the modules reaching an approximate height of 2.75 metres when the array is fully tilted to 60 degrees from horizontal, i.e. in the early morning and late evening.

The layout and exact placement of the array is shown on General Arrangement Plan (Drawing No BOO1B-G-2100). The nearest point at the north-west corner of the array is 269.7 metres from a high pressure gas line which runs in a north-west to south-east direction and includes an interconnector to Young. The application will need to be referred to the APA Group for comment as it within the 800 metre zone of influence.

3.3 Inverters and ancillary items

Two 3.4MW AC inverter stations and a converter-DC coupler will be installed within the centre of the array and mounted on a 12.2 metre long skid. The inverter stations incorporate high and medium voltage switchgear. Allowance is made for a 2.9 metre high battery energy storage facility (BESS) alongside the inverter stations. A 2.5 metre high kiosk is to be located at the north-eastern corner of the array. Underground high voltage cables will connect to the kiosk

which typically includes additional switchgear, a transformer and busbars to connect high and medium voltage cables to the existing grid.

The inverter will be connected by way of an overhead high voltage power line to an existing power line that runs east-west along the northern side of the road reserve of Meads Lane to inject power to the electricity grid at the Essential Energy Boorowa Zone Substation. Dial-before-you-dig investigations would be carried out prior to commencing all subsurface work.

3.4 Construction

The mounting system for the PV panels is constructed on piles that are driven into the ground using a vibrating pile driver. The piles will be driven approximately 1.5 to 3.5 metres into the ground, as to be confirmed by a geotechnical and structural engineer.

During construction there is expected to be 50 personnel on site working from 7.00am – 4.00pm Monday to Friday. The construction is expected to take approximately three months. Should it be necessary to carry out work outside these hours then activities would be limited to those generating low noise emissions. Once operational the site will be unmanned. Maintenance is expected to be carried out quarterly by a crew of 2 to 3 people.

3.5 Services

Reticulated water and sewer services are not required to be provided to the solar farm as there are no permanent offices or amenities proposed on site. Portaloos for wastewater disposal (see https://www.kennards.com.au/site-equipment/showers-toilets.html) and water supply by way of a portable tank or cart (see https://www.kennards.com.au/site-equipment/water-tank.html) are proposed to be installed during the construction phase.

Maintenance workers would not be required to remain on site. Cleaning of the PV panels would be carried out on an annual basis to maximise the performance of the system. This is done using water brought into the site and a sponge mop.

3.6 Access and car parking

It is proposed to use a new access point into the development site off Meads Lane located 105 metres from the intersection with Lachlan Valley Way. A 4 metre wide internal road will run along the western side of the array to a mid-pint of the array and then head east to the centre where the inverter station and BESS will be located. A temporary materials laydown is to be located centre west of the array.

A temporary car parking area will be located at the western end of the array. It is expected that car parking for up to 40 small vehicles will be needed to cater for 50 construction workers at the rate of 0.8 spaces per worker.

Traffic generation is given in Table 3 below. It is proposed that heavy vehicles only access the site between 10.00am and 2.00pm.

Table 3: Expected traffic generation

Phase	Description of vehicles	Expected vehicle movements
Establishment	10-15 trucks and trailers to deliver gravel with 4 to 5 workers with 2 persons per vehicle	5 vehicle trips per day
	Light vehicles	6 to 8 vehicle trips per day
Construction	45 articulated trucks (maximum 26m length) to deliver equipment	4 vehicle trips per day non-peak
	40 light vehicle one-way trips for 50 construction workers (worst case without shuttle bus and one person per vehicle)	40 vehicle trips per day
	Potential shuttle bus service to and from the site	2 vehicle trips per day
Commissioning	Light & 12 metre heavy rigid vehicles for 10 workers with 2 persons per vehicle	5 vehicle trips per day
Operational	1 light vehicle for maintenance contractor	1 vehicle trip every 2 to 3 months

3.7 Landscaping

It is proposed to plant a 3 metre wide vegetated screen on the outer side of the security fence on all sides of the array except the south-eastern corner with shrubs that will grow to a height of 2.5 to 3 metres. A mix of native shrubs and ground covers that grow to a maximum height of 3 metres have been selected to ensure that overshadowing of panels does not occur. The plants would provide a continuous screen upon maturity.

Land that is disturbed during construction of the solar farm and not to be used for access or other maintenance purposes will be sown with grasses following completion of construction. Planting will also assist to minimise site disturbance and contribute to the rural landscape and character of the immediate area.

Plantings will be maintained and watered by maintenance crew on a regular basis. The planting will be carried out whilst construction takes place to enable use of the hired portable tank or cart that will provide water supply to the site. Construction will take approximately 3 months so regular watering during that period would ensure the establishment of plants. The use of native plants means that watering requirements once established would be minimal and would be done once every 2 or 3 months by the landowner. There would be nil impact on Council's infrastructure and no augmentation of services would be required. Bore water would be sourced to maintain the plants if available, otherwise water may be brought onto the site in tanks fixed to utility trays.

Regular inspections of the site will be carried out to ensure that grassland is managed to reduce the risk of bushfire to surrounding land and to control weeds. Mowing or slashing between rows of PV panels and in the area immediately surrounding the arrays would be carried out as required. Livestock grazing is being trialled elsewhere and may be carried out around and beneath panels in the future. A low wire stock fence is proposed to be erected on the outer side of the landscaping to protect the plants from livestock.

3.8 Security

The solar farm is to be enclosed within a 1.8 metre high security fence setback 117.2 metres from the northern boundary, variable with a minimum of 147.8 metres from the eastern boundary, variable with a minimum of 146.4 metres from the western boundary and approximately 250 metres from the southern boundary. Solar arrays are to be setback 10 metres from the security fence. The proposed fence is to be chain mesh steel topped with three rows of barbed wire giving a total height of 2.3 metres. A 10 metre wide asset protection zone is proposed between the array and the security fence.

Security lighting is not proposed to be installed.

3.9 Waste management and decommissioning

A *Waste and Decommissioning Assessment* of the waste generated during construction and operation of the proposed solar farm has been carried out by ITP Renewables to determine the appropriate means of waste disposal and recycling. The findings of the assessment are summarized below. Reference should be made to the *Waste and Decommissioning Assessment* that is submitted with the development application for further information or clarification of any matter concerning the assessment and recommendations.

The largest amount of waste will be generated during the construction phase and be classified as general solid waste (non-putrescible). Wastes would include wooden pallets, cardboard,

plastics, green waste and domestic waste. Construction of a solar farm would not generate any putrescible waste products. Minimal waste would be generated when the farm is operational other than small amounts of replacement parts and packaging required for maintenance and repair works.

Local waste management facilities and capacities are identified in the assessment. Technology for recycling of PV panels is advancing rapidly worldwide and while recycling options currently exist, they are likely to be more advanced and readily available at the time of decommissioning. Options for recycling of PV panels should be reviewed as the project progresses.

Estimates of waste materials and proposed management arrangements for each phase of the development project are provided in Table 4 below.

Table 4: Estimated waste materials and waste management arrangements

Phase	Waste material	Proposed management
Construction	• Packaging waste such as cardboard, wood pallets, plastic wrap, scrap metal, general waste including approximately 860 wooden pallets and carboard packing boxes • Concrete waste during setting of footings and mounts • Electric cable waste and cable reels • Plastic pipe offcuts/scrap • Empty drums and containers (minimal quantities) • Minimal used lubricating oil and filters • Unused or spent chemicals	Waste products will be sorted and stored separately in skip bins located in the materials laydown area in accordance with EPA Waste Classification Guidelines. This will facilitate disposal through appropriate waste streams as follows: Recycling: • Steel and scrap metal (recycled) • Timber/cardboard (recycled) • Recyclable plastics Landfill: • General wastes and plastic (other than where recyclable) All recycling and general waste would be collected and taken to off-site waste management facilities for disposal Fluids would be recycled where possible or taken to off-site waste management facilities for disposal

Phase	Waste material	Proposed management
Operational	• Minimal volumes of domestic wastes such as office consumables, paper, plastics and glass • Waste resulting from maintenance or replacement of equipment	All waste materials would be taken to off-site waste management facilities for recycling or disposal
Decommissioning	• PV modules (12,100 panels) and supporting poles and mounts • Glass for panels (270 tonnes) • Silicon for wafers (40 tonnes) • Inverters / transformers / batteries • PV boxes, skids, scrap metal (860 tonnes) • Electrical cables • Fencing • Storage containers (two 20-foot containers)	The solar farm infrastructure would be dismantled into separate waste products such as metals, glass, plastics and concrete. All products would be sorted on site into recyclable and general waste streams in accordance with the EPA Waste Classification Fencing and storage containers would be removed from the site and reused

Waste management should be predicated on the international hierarchy of waste management to avoid/reduce, reuse, recycle, recover, treat and dispose of waste products to avoid or reduce waste materials where possible, and to re-use, recycle and recover the majority of waste materials generated during each of the construction, operational and decommissioning phases.

It is recommended that a waste management plan be developed to provide detailed procedures to manage the waste stream. The plan should contain:

- Strategies to reduce waste during all project phases,
- Recycling, re-use and recovery strategies and opportunities,
- Classification of all waste streams with a tracking register and details,
- On site recycling management,
- Allocation of responsibilities for recycling, re-use and disposal, and
- Reporting and notification procedures if a waste incident occurs and there is a threat to the environment.

The expected operating life of the Boorowa Solar Farm excluding the construction and decommissioning phases is projected to be 35 years. Upon decommissioning all infrastructure,

including cabling and panels and mounting frames including footings and inverters would be disassembled and removed from the site. The bulk of materials that are used in solar panel manufacturing include glass (75%), aluminum (8%), silicon (5%) and copper (1%). There are also small amounts of silver, tin and lead. These materials are recoverable.

Decommissioning will involve:

- Notification of stakeholders (e.g. Essential Energy, Hilltops Council) of proposed de-energisation,
- De-energisation of the solar farm and disconnection of assets,
- Removal of PV modules and associated infrastructure,
- Removal of electrical wiring,
- Remediation of land.

Relevant equipment will be brought to site to facilitate decommissioning, including amenities for site crew for the duration of the works. This equipment may include mobile cranes, excavators, skid steers, loaders, rollers/compactors, pile drivers, telehandlers, skip bins, water carts, temporary shipping containers for storage, site office and site ablution blocks.

Full details of the process are provided in the *Waste and Decommissioning Assessment* prepared by ITP Renewables. Reference should be made to that report for an explanation of each step in the decommissioning process.

4. STATUTORY FRAMEWORK

4.1 Legislation

4.1.1 Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment (EPA) Act 1979* is the principal piece of legislation governing the use and development of land in NSW. The objects of the Act are:

(a) to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources,

(b) to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment,

(c) to promote the orderly and economic use and development of land,

(d) to promote the delivery and maintenance of affordable housing,

(e) to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats,

(f) to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage),

(g) to promote good design and amenity of the built environment,

(h) to promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants,

(i) to promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State,

(j) to provide increased opportunity for community participation in environmental planning and assessment.

The objects of the EPA Act are intended to guide land planning and management. Section 4.15 of the Act lists matters for consideration when assessing and determining an application for development.

4.1.2 Biodiversity Conservation Act 2016

The *Biodiversity Conservation Act 2016* introduced the *Biodiversity Offsets Scheme* which is used to determine whether the *Biodiversity Assessment Method* is necessary to assess the impacts of a development proposal on threatened species, endangered ecological communities and habitats. Determining whether a *Biodiversity Development Assessment Report* is required under the

Biodiversity Conservation Act 2016 and subsequently whether the *Biodiversity Offsets Scheme* would apply to the proposed works is subject to three steps.

- The first step is to identify whether the site is mapped on the *Biodiversity Values Map*.
- The second step is to estimate whether the extent of native vegetation to be cleared for the proposed development is above the threshold which in this case is 1 hectare.
- The third step is to carry out a test of significance to predict whether impacts on biodiversity are likely to be significant.

Under the *Biodiversity Offsets Scheme* offset obligations may apply whereby the biodiversity assessment finds that the removal of vegetation to facilitate the development will have significant impacts on flora. These offsets are in the form of credit obligations whereby payment is made to a biodiversity conservation fund which enable vegetation removal and provides funds to assists to preserve the same vegetation community elsewhere. Credit obligations also apply to fauna species where particular species are likely to be living in or frequenting the property. These matters are addressed in section *5.1 Biodiversity* of this Statement.

4.1.3 Water Management Act 2000

The *Water Management Act 2000* includes provisions to control or permit works near a watercourse or stream. Works within specified distances of the top of the bank of a watercourse may necessitate issue of a *controlled activity approval* by the Natural Resources Assessment Regulator. Impacts on surface and groundwaters are addressed in *5.3 Water resources* of this Statement.

4.1.4 Local Land Services Act 2013

The *Local Land Services Act 2013* regulates the clearing of native vegetation on rural land and where an activity is permitted without Council consent. There are two broad categories of land under the LLS Act - Category 1 (Exempt) land and Category 2 (Regulated, Vulnerable or Sensitive) land which are shown on the Native Vegetation Regulatory Map .

Clearing may be authorised on Category 1 (Exempt) Land but only where the activity is permitted without consent and when no other permit is required under other legislation. The onus is on the applicant to ensure they are not committing an offense under other legislation. If located on Category 2 (Regulated, Sensitive or Vulnerable) Land, the clearing may be authorised as an Allowable Activity or under the Land Management (native vegetation) Code within the *LLS Act*. If the clearing on Category 2 Land is not an Allowable Activity or is not authorised under the Land Management (native vegetation) Code, the clearing will need to be offset under the Biodiversity Offset Scheme. This means a Biodiversity Development Assessment Report is needed and the

clearing will need to be approved by the Native Vegetation Panel. The LLS Act does not apply to the proposed solar farm as development consent is required to be obtained to enable the works to proceed.

4.1.5 National Parks and Wildlife Act 1994

The objectives of the *National Parks and Wildlife Act 1974* are to conserve and protect habitat, ecosystems, biodiversity, landforms, landscapes and objects, places or features of cultural value in NSW. Under the NPW Act, it is an offence to knowingly harm or desecrate an Aboriginal object. Harm includes destroy, deface or damage an Aboriginal object or Aboriginal Place, and in relation to an object, move the object from the land on which it has been situated. Aboriginal objects include sites, relics or cultural material such as scar trees, middens and ancestral remains.

The NPW Act can also protect areas of land that have no Aboriginal objects, that is, they may have no physical evidence of Aboriginal occupation or use. These areas can be declared 'Aboriginal places' if they have spiritual, natural resource usage, historical, social, educational or other type of significance.

Anyone who exercises due diligence in determining that their actions will not harm Aboriginal objects has a defence against prosecution for the strict liability offence if they later harm an object. The *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* provides a process whereby a reasonable determination can be made as to whether or not Aboriginal objects will be harmed by an activity, whether further investigation is warranted and whether the activity requires an application for an Aboriginal Heritage Impact Permit.

4.1.6 Heritage Act 1977

The aims of the *Heritage Act 1977* are to identify, protect and conserve items of State heritage significance. Provisions of the Heritage Act facilitate the establishment of a State Heritage Register for the listing of items of State significance and the preparation of conservation management plans for these items. The Heritage Act also sets out the procedures for the approval of works relating to items listed on the State Heritage Register. Impacts on listed heritage items are addressed in section *5.8 Heritage* of this Statement.

4.1.7 Noxious Weeds Act 1993

The aims of the *Noxious Weeds Act 1993* are to prevent the establishment, reduce the risk of spread and minimise the extent of noxious within NSW. The extent of noxious weeds and

procedures to eradicate weed infestation from the development site are addressed in section *3. Details of the proposed development* in this Statement.

4.1.8 Roads Act 1993

Under section 138 of the Roads Act 1993, consent is required to carry out works in, on or over a public road, remove or interfere with a structure, work or tree on a public road or connect a road to a classified road. The consent of Transport for NSW is required in the case of works relating to a classified road. Traffic impacts are addressed in section *5.6 Traffic and access* of this Statement.

4.1.9 Commonwealth Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* aims to protect nationally and internationally important flora, fauna, ecological communities and heritage places. The approval of the Commonwealth Minister for the Environment is required for actions that may have a significant impact on matters of national environmental significance. The *EPBC Act* also requires Commonwealth approval for certain actions on Commonwealth land.

An assessment of the potential impact of the proposed works on any matters of national environmental significance under the *EPBC Act* and the need for referral to the Commonwealth is provided in section *5.1 Biodiversity* of this Statement.

4.2 State Environmental Planning Policies

4.2.1 State Environmental Planning Policy No 55 – Remediation of Land

SEPP 55 requires Council to consider whether land is contaminated and to determine whether the proposed use is suitable with or without contamination. Council can require an applicant for development to conduct a preliminary investigation and a subsequent more detailed investigation if warranted. Where contamination exists and remediation is necessary, Council must be satisfied that the remediation will take place before the land is used for the proposed purpose. It is noted that should the preliminary investigation identify contamination on the site then the NSW *Contaminated Land Planning Guidelines* apply to subsequent investigations.

4.2.2 State Environmental Planning Policy (Infrastructure) 2007

The aims of *SEPP (Infrastructure) 2007* are to ensure a consistent and flexible planning system to facilitate the delivery of services. The policy identifies environmental assessment categories for types of infrastructure, matters to consider when assessing development adjacent to

infrastructure and provides for consultation with relevant public authorities. The policy applies to the whole of NSW.

SEPP (Infrastructure) contains provisions relating to approval processes and assessment requirements for infrastructure proposals according to the type or sector of infrastructure. It outlines land use zones where types of infrastructure are permissible with or without consent and identifies certain works as exempt and complying development.

Part 3 Division 4 of the policy relates to electricity generating works or solar energy systems. Section 34(7) enables development for the purpose of a solar energy system to be carried out by any person with consent on any land. The proposed development is permitted with consent by *SEPP (Infrastructure) 2007*.

Clause 45 of *SEPP (Infrastructure) 2007* requires the consent authority to consult with the electricity supply authority where development occurs near electricity infrastructure. If an electricity line runs within an easement on or near the development site, Council is to consult Essential Energy prior to determination of the application.

Clause 104 - Traffic-generating development also applies. Schedule 3 triggers a referral to Transport for NSW if the proposed development generates vehicle movements within a specified threshold.

4.2.3 State Environmental Planning Policy (Primary Production and Rural Development) 2019

The aims of *SEPP (Primary Production and Rural Development) 2019* are:

(a) to facilitate the orderly economic use and development of lands for primary production,

(b) to reduce land use conflict and sterilisation of rural land by balancing primary production, residential development and the protection of native vegetation, biodiversity and water resources,

(c) to identify State significant agricultural land for the purpose of ensuring the ongoing viability of agriculture on that land, having regard to social, economic and environmental considerations,

(d) to simplify the regulatory process for smaller-scale low risk artificial waterbodies, and routine maintenance of artificial water supply or drainage, in irrigation areas and districts, and for routine and emergency work in irrigation areas and districts,

(e) to encourage sustainable agriculture, including sustainable aquaculture,

(f) to require consideration of the effects of all proposed development in the State on oyster aquaculture,

(g) to identify aquaculture that is to be treated as designated development using a well-defined and concise development assessment regime based on environment risks associated with site and operational factors.

The policy applies to *State significant agricultural land,* farm dams and other artificial waterbodies, livestock industries and aquaculture. There is no *State significant agricultural land* listed in the schedule to the policy. It is noted that, separately, the Department of Primary Industries are in the process of preparing mapping of *Important Agricultural Land* in NSW to assist decision-making regarding development on rural land.

4.2.4 State Environmental Planning Policy (State and Regional Development) 2011

Development that is state and regionally significant is identified in *SEPP (State and Regional Development) 2011*. Electricity generating works including solar farms which have a capital investment value of more than $30 million, or a capital investment value of more than $10 million and are located in an environmentally sensitive area of State significance, are declared state significant development. Private infrastructure, including electricity generating stations, that have a capital investment value of over $5 million are declared regionally significant and are to be determined by a Regional Planning Panel.

4.2.5 State Environmental Planning Policy (Koala Habitat Protection) 2021

SEPP (Koala Habitat Protection) 2021 aims to encourage the conservation and management of areas of natural vegetation that provide habitat for koalas to support a permanent free-living population over their present range and reverse the current trend of koala population decline. The new policy is implemented through the *Koala Habitat Protection Guideline*. Schedule 1 lists local government areas to which the policy applies. A koala assessment report is required for development on rural properties greater than 1 hectare in area and for where a koala plan of management has not been prepared. Consent may be granted where there are no feed trees and the land is not koala habitat. This matter is addressed in section *5.1 Biodiversity* of this Statement.

4.2.6 State Environmental Planning Policy No. 33 – Hazardous and Offensive

State Environmental Planning Policy No. 33 – Hazardous and Offensive and the Hazardous Industry Planning Advisory Paper No. 6 – Guidelines for Hazard Analysis require that a Preliminary Hazard Assessment be prepared for potentially hazardous or offensive development. Although SEPP No 33 does not apply to the development of solar farms, ITP Development Pty Ltd

has carried out a hazard analysis and risk screening, submitted separately and titled *Fire Assessment*.

The results of risk screening are that PHA is not required for dangerous goods to be stored on the site. However, the following management measures have been recommended to be implemented:

- Installing reliable, automated monitoring and control systems, with an alarm and shutdown response capability
- Taking reasonable and safe measures to prevent the risks of external heat effects in the event of a bushfire
- Designing appropriate separation and isolation between battery cubicles, and between the BESS and other infrastructure, in accordance with the manufacturers' recommendations, and including gravel set-off areas around the facility
- Compliance with all applicable Australian codes and standards
- Preparation of a BESS-specific fire response plan, in conjunction with the NSW Rural Fire Service
- Installing an adequate automatic fire suppression system integrated into the detection and control system
- Disposal (and where possible, recycling) of any potentially hazardous material in accordance with the best international practices available at that time
- Fuels and pesticides/herbicides in use at the site will be stored at the laydown area in appropriately bunded areas designed in accordance with AS1940-2004

In terms of fire safety including the threat of bushfire, the report recommends that the facility with battery storage can be made safer through the integration of safety in design principles from bushfire standards including APZ clearances, internal protection areas, comprehensive system fault monitoring, automated fire detection and suppression systems and safety procedures built into WHS policies and procedures to ensure these farm assets and the surrounding area are protected from the risk of fire.

4.3 Local Environmental Plans

4.3.1 Boorowa Local Environmental Plan 2012

The property is zoned RU1 Primary Production under *Boorowa LEP 2012*. The objectives of zone RU1 are:

- *To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.*
- *To encourage diversity in primary industry enterprises and systems appropriate for the area.*
- *To minimise the fragmentation and alienation of resource lands.*
- *To minimise conflict between land uses within this zone and land uses within adjoining zones.*
- *To encourage development that is in accordance with sound management and land capability practices, and that takes into account the natural resources of the locality.*
- *To support rural communities.*

The development is defined as ***electricity generating works*** which means a building or place used for the purpose of making or generating electricity. This use is permitted with consent in zone RU1.

The proposed development is satisfactory to the objectives of zone RU1 in that renewable energy through the harnessing of sunlight is a form of primary industry, is a sustainable means to utilise a source of infinite energy that does not reduce the natural resource base and will not cause fragmentation or alienation of resource land as sheep grazing may continue beneath and around the solar arrays when the facility is constructed and operating. The solar farm will diversify rural activities and provide an alternative means of income thereby supporting other on-farm activities. It will not lead to land use conflict with other rural activities as it will not produce noise, odour, dust or other emissions. Employment opportunities will be created for the local community both during construction and operation.

The following clauses of *Boorowa LEP 2012* apply to the proposed development.

Clause 6.3 Terrestrial biodiversity

The objective of clause 6.3 is to maintain terrestrial biodiversity by protecting native flora and fauna, protecting ecological processes and encouraging conservation and recovery. The consent authority for a development application is required to consider any adverse impacts on flora and fauna, vegetation and habitat, the structure, function and composition of biodiversity and connectivity. Development is to be designed, sited and managed to avoid, minimize or mitigate adverse impacts.

Certain patches of vegetation within the development site are mapped as being of high conservation value on the Terrestrial Biodiversity Map as shown in Figure 5 below.

The positioning of the array is over land that is currently given over to the cropping of wheat and will not cause the removal of any native vegetation. The array is to be setback a minimum of 146.4 metres and a maximum of 313.1 metres from the western boundary. It is sited to avoid paddock trees within the site. The biodiversity inspection report carried out by Red-Gum Consulting (see section 5.1 below) concludes that the activities as proposed will not have a significant effect on any threatened species and ecological communities and/or their conservation.

Figure 5: Extract from the Terrestrial Biodiversity Map Sheet BIO_003A

Clause 6.8 Essential services

This clause requires a consent authority to be satisfied that any of the following services that are essential for the development are available or that adequate arrangements have been made to make them available when required:

(a) the supply of water,
(b) the supply of electricity,
(c) the disposal and management of sewage,
(d) stormwater drainage or on-site conservation,
(e) suitable road access.

The supply of reticulated water and sewerage services is not required for the proposed development. However, portaloos for wastewater disposal (see https://www.kennards.com.au/site-equipment/showers-toilets.html) and water supply by way of a portable tank or cart (see https://www.kennards.com.au/site-equipment/water-tank.html) are proposed to be installed during the construction phase.

Electrical services are available to the site. Stormwater management is proposed to be addressed by controls recommended in this Statement with full details to be provided with the application for a construction certificate. A driveway entrance off Meads Lane is proposed to provide access to the development within the site.

There are no draft environmental planning instruments that are on exhibition or have been exhibited but not yet published that apply to the site, or that relate to the proposed development of electricity generating works.

4.4 Development Control Plans

4.4.1 Boorowa Development Control Plan 2013

The aims of *Boorowa DCP 2013* are:

a) To provide detailed provision for regulating development;
(b) To protect and improve the environment;
(c) To protect and improve amenity and design of development;
(d) To encourage a diversity of housing to meet the needs of the residents; and
(e) To facilitate development that is environmentally sustainable.

The plan applies to all land in the former LGA of Boorowa. There are no controls or guidelines for the development of renewable energy, however, the *Large-Scale Solar Energy Guideline* that applies to state significant development and was released by the NSW Government in December 2018 has been used as a reference to identify considerations for this Statement of Environmental Effects.

4.5 Land use strategies

4.5.1 South East and Tablelands Regional Plan

The *South East and Tablelands Regional Plan 2036* was released in July 2017. It establishes a framework for growth over the next 20 years for the South East and Tablelands Region. Hilltops

LGA is located in the north-western corner of the region. The settlements of Boorowa, Harden and Young are nominated as *Centres*. Renewable energy is identified in the plan as a priority growth sector for the region and it is noted that the planning system needs to respond to the specific needs of this sector and others to generate economic growth.

A series of goals, directions and actions are to guide land use planning priorities and decision-making. Direction 6 is to *position the region as a hub of renewable energy excellence*. It is noted that further investment to increase the capacity of existing facilities would enhance the region's reputation as a hub for renewable energy. This can be achieved by drawing on the innovation and research on renewable energy from the Australian National University in Canberra, the established network of high voltage transmission lines that traverse the region, and the NSW and ACT governments targets for net zero carbon emissions. The Regional Plan makes reference to aligning the development of renewable energy with the *South East Region of Renewable Energy Excellence* and the objectives of the *NSW Renewable Energy Action Plan*.

The Regional Plan contains the following actions in relation to the development of renewable energy facilities:

6.1 Identify opportunities for renewable energy industries.
6.2 Develop analytical tools to map large-scale renewable energy potential.
6.3 Encourage the co-location of renewable energy projects to maximise infrastructure, including corridors with access to the electricity network.
6.4 Promote best practice community engagement and maximise community benefits from renewable energy projects.
6.5 Promote appropriate smaller-scale renewable energy projects using bioenergy, solar, wind, small-scale hydro, geothermal or other innovative storage technologies.

Support for the development of renewable energy facilities is also given in Direction 17 to *mitigate and adapt to climate change*. Building community capacity to deliver and own renewable energy is noted as a means to assist reducing emissions and minimizing energy consumption.

4.5.2 NSW Renewable Energy Action Plan

The *NSW Renewable Energy Action Plan* supports the achievement of the national target of 20% renewable energy by 2020. It aims to position NSW to increase the use of energy from renewable sources at least cost to the energy customer and with maximum benefits to NSW. The plan is predicated on the following three goals:

- Attract renewable energy investment and projects
- Build community support for renewable energy

- Attract and grow expertise in renewable energy technology

These goals are supported by 24 actions which include considering a more strategic and integrated approach to assessment of renewable energy projects and promoting NSW as a leader of research and innovation in renewable energy.

The plan notes that the NSW Government is in the process of streamlining the state planning system and advocates new planning legislation founded on the principle of sustainable development that meets the needs of the current generation without compromising the ability of future generations to meet their needs. Renewable energy projects are a good example of sustainable development in action. Streamlining will focus public participation on strategic planning in order to provide greater certainty for applications and the community in development assessment.

4.5.3 Hilltops Local Strategic Planning Statement Future 2040

Hilltops LSPS 2040 identifies future growth precincts in Boorowa. The development site lies directly south of and adjoining the Boorowa South precinct which is nominated for residential development on the eastern side of Lachlan Valley Way (shown as E in Figure 2 below) and industrial development to the west of Lachlan Valley Way and diagonally opposite to the north-west of the site (shown as C in Figure 6 below). There is a paper subdivision over part of this land, comprising an historical subdivision which has been approved but not developed. Residential lots are proposed to be an average of 2,000m^2 to match the existing paper subdivision and industrial development is to comprise commercial and light industry. The land to be developed for residential use is currently zoned R2 Low Density Residential and the land identified for industrial use is zoned IN1 General Industrial under *Boorowa LEP 2012*. The land designated for future residential development was sown with canola at the time of the site visit in November 2020.

Land use and infrastructure planning are designed to support liveability, strong communities, economic development, the environment, and a strong and sustainable LGA. Relevant actions are:

- to increase the local provision and integration of renewable energy in areas identified for future growth, and
- investigate land requirements for renewable energy development and capacity to accommodate medium scale solar projects.

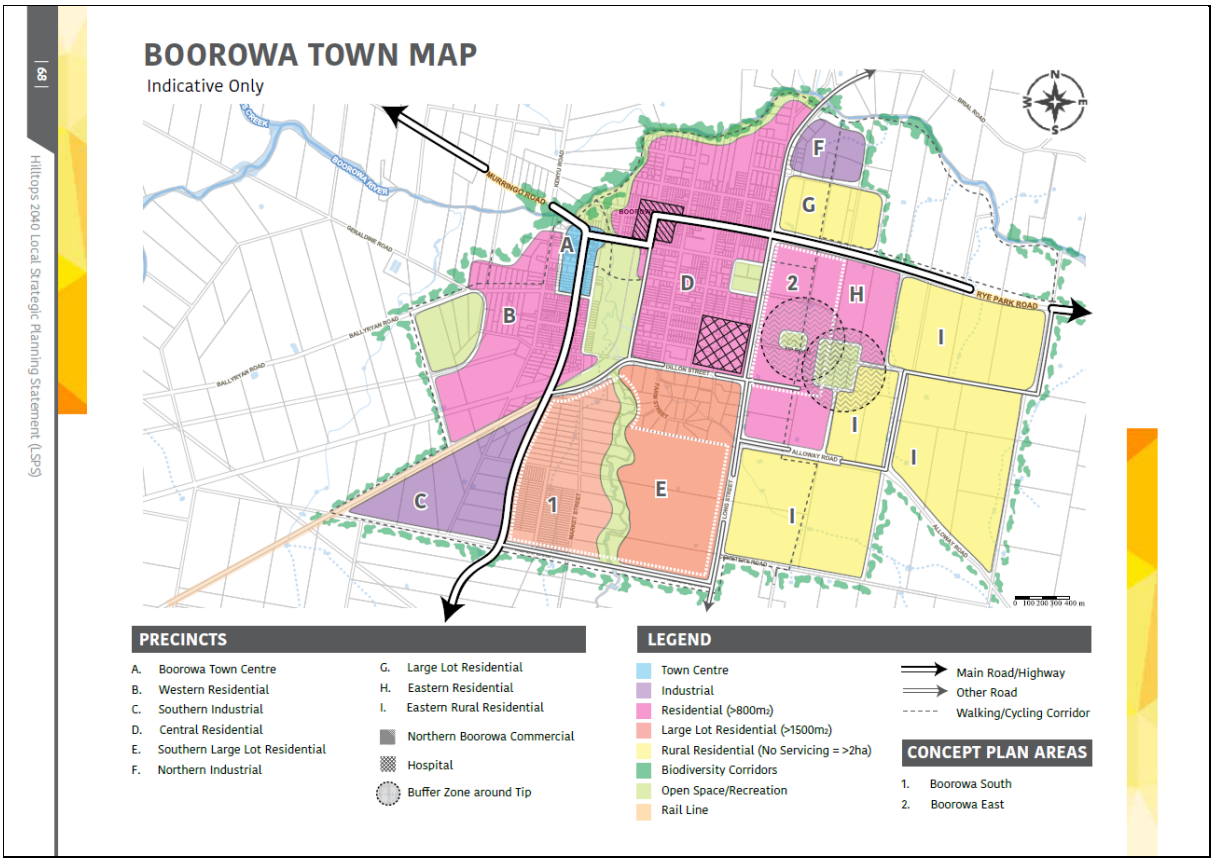


Figure 6: Boorowa growth precincts (indicative only). Source: Hilltops Council LSPS

4.5.4 Hilltops Council Economic Growth and Land Use Strategy

The *Hilltops Council Economic Growth and Land Use Strategy* was prepared in March 2019 to assist Council to examine the economic structure and identify opportunities for the expansion and diversification of commercial development across the LGA. It was prepared to inform the LSPS and a new combined local environmental plan for Hilltops LGA.

The focus in rural terms is on agriculture and extractive industries, particularly opportunities to value-add to existing enterprises. Although the development of renewable energy facilities is not addressed in the report, it is recommended that a flexible and responsive approach to land zoning and permissible uses be considered to enable other development which may have strong planning merit.

4.5.5 Hilltops Rural and Residential Study

The *Hilltops Rural and Residential Study* was prepared in 2019 in tandem with the economic strategy described above to assist Council to develop the LSPS and a new combined local environmental plan for Hilltops LGA.

Renewable energy is considered in the study in the context of the adequacy of solar exposure of the region. Solar power generation is noted as having potential as a future land use in the region. The R2 Low Density Residential zone south of the township of Boorowa is seen as an opportunity for further residential expansion although is it noted that the minimum lot size of 4,000 square metres is unlikely to be achieved given the development of small acreages with a particular character and amenity that has occurred making it difficult to re-subdivide. Development guidelines that include character and amenity objectives are recommended to maintain consistency with the existing area.

5. ENVIRONMENTAL EFFECTS

5.1 Biodiversity

5.1.1 Assessment of impacts

A biodiversity assessment has been carried out by Red-Gum Environmental Consulting Pty Ltd to determine the potential impact on any threatened species and endangered ecological communities that are present on the development site and in the vicinity of the site. The findings of the assessment are summarized below. Reference should be made to the *Biodiversity Inspection Report* that is submitted with the development application for further information or clarification of any matter concerning the assessment and recommendations.

Methodology for the biodiversity assessment involved desktop research and a site inspection. The assessment covered details of recorded sightings of threatened species including koalas and identification of vegetation communities in the vicinity of the development site. The *Biodiversity Inspection Report* provides a test of significance in accordance with requirements of the *Biodiversity Conservation Act 2016,* an assessment of potential koala habitat as required by *SEPP (Koala Habitat Protection) 2021*, and also satisfies requirements of the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999*.

5.1.2 Findings

Red-Gum contends that the project requires no loss of native grass and zero remnant native trees. The proposed activities are unlikely to have an adverse effect on the foraging ability or the life cycle of threatened species that may be opportunistically using the site or surrounding areas. Given the zero loss of native vegetation, the development will not endanger or have a significant effect on any existing native vegetation, habitats within the site, or fauna species that may be using the site. This project will not displace any rare or threatened species. While the proposed works are unlikely to introduce noxious weeds, vermin, feral species or genetically modified organisms into an area, the movement of vehicles, plant, equipment and people on and off the subject site has the potential to introduce such impacts. Wherever possible, removal of weeds should be undertaken prior to seed developing, which for most species occurs during summer months.

The typical home ranges of Koalas are from 2 hectares of connected vegetation to hundreds of hectares. Koala feed almost exclusively on a few preferred tree species which are of primary and secondary importance. The occurrence of both primary and secondary tree species varies widely on a regional, local and even a seasonal basis, meaning that koalas are unevenly distributed

across their range. In the study area, primary tree species are Brittle gum (*E. mannifera*), Scribbly gum (*E. rossii*), Ribbon gum (*E. viminalis*), Broad-leaved peppermint (*E. dives*) and Red stringybark (*E. macrorhyncha*).

A small revegetation plot is along the west boundary, however, this is not designated for removal and there are connected vegetation zones surrounding the site which represent areas of viable Koala habitat – particularly to the east along the creek. The site is highly unlikely to be traversed or used by the species who are much more likely to stay within the connected canopy of the riparian vegetation corridor along Ryan's creek to the east of the site.

The report concludes that the activities as proposed will not have a significant effect on any threatened species and ecological communities and/or their conservation.

5.1.3 Mitigation measures

By way of a clearing process that minimizes the risk to threatened species that may be opportunistically using the site, it is recommended that:

I. Construction limits and exclusion zones clearly identified prior to work;
II. A visual inspection is conducted by environmental staff before construction commences to identify any areas of the site that might be supporting native fauna;
III. Vehicle movements around the site will be restricted to the construction footprint and away from any existing planted trees and flagging exclusion fencing to be installed.
IV. Soil disturbance by vehicle and pedestrian access is to be kept to a minimum outside the construction footprint.
V. Any weeds removed (particularly those bearing seeds) are to be disposed of appropriately at the nearest waste management facility.

5.2 Natural hazards

5.2.1 Flooding

There is no Flood Planning Map in *Boorowa LEP 2012.* However, the development site has been found to be affected by minor flooding from the direction of the Boorowa River and Ryans Creek in a floodplain risk management study prepared by Lyall & Associates in 2018. An analysis of flood potential is summarised and mitigation measures are provided in section *5.3 Water resources* of this Statement.

5.2.2 Bushfire

The site is not mapped as being affected by bushfire hazard on the bushfire prone land map. Infrastructure comprising electricity generating works is not a habitable building and is not listed as a *special fire protection purpose* under section 100B of the *Rural Fires Act 1997*.

However, defendable space is available within the 10 metre setback between the array and the security fence. It is also proposed that a fire emergency management plan be prepared through liaison with Council, Essential Energy and the Rural Fire Service. That plan would establish procedures to respond to a fire event and other measures such as maintenance of ground fuels, access arrangements, on site fire-fighting equipment and isolation of electrical infrastructure.

5.2.3 Land contamination

The development site is not identified as contaminated land and is not listed on a register of contaminated land or noted as such on a Council file. The property has been cleared and farmed for many years. The deposited plan number indicates that the land was formerly Crown land. It was potentially cleared as far back as the 1890s. There has been no known historical usage that would cause the land to be contaminated. It is considered that a preliminary investigation is not required for the development of a solar farm.

5.2.4 Mitigation measures

See section *5.3 Water resources* for recommended mitigation measures to address flooding.

Prepare a fire emergency management plan and include that plan in the environmental management plan.

There are no mitigation measures recommended in relation to land contamination.

5.3 Water resources

5.3.1 Assessment of impacts

A *Water Assessment* of potential impacts on groundwater and surface water flows and flooding has been carried out by ITP Renewables. The findings of the assessment are summarized below. Reference should be made to the *Water Assessment* that is submitted with the development application for further information or clarification of any matter concerning the assessment and recommendations.

5.3.2 Findings

Potential adverse surface water-related impacts to the site relate to site accessibility and managing downstream sedimentation. There will be no extraction of groundwater or interference with the groundwater table and the works are not expected to contribute to any regional groundwater issues.

There are no major floodways through the site, however, the 1% AEP flood inundation map prepared by Lyall & Associates in 2018 indicates that the project site is at low risk of flooding from the direction of the Boorowa River. There is also some potential for localized (minor) inundation from minor drainage lines associated with Ryans Creek to the east of the site.

The development has the potential to alter existing water quality conditions within the site. The impervious area of solar facilities is typically only marginally increased owing to associated hardstand and building areas.

However, the panels may impact the nature of vegetation/grass coverage on the site, which has the potential to increase surface runoff and peak discharge. Increased flow concentration off the panels also has the potential to erode soil at the base of solar panels.

As the site has been historically used for farming there is very little natural ground cover vegetation. A Soils Profile Report for a site 500 metres to the south of the proposed development site indicates a soil profile with dark yellowish-brown loam with a massive structure and few coarse fragments in the top horizons and reddish clay in the lower horizons. The physiography shows that the area is used for improved pasture with hard set service conditions and imperfect drainage. The erosion hazard is moderate with no salting evident.

5.3.3 Mitigation measures

The following mitigation measures given in Table 5 are recommended to manage downstream sedimentation.

The potential for site accessibility and the potential for inundation issues during flood events should be reviewed and procedure developed to halt construction during heavy rainfall to reduce potential impacts to the development and to increases in downstream sedimentation.

Table 5: Proposed mitigation measures to manage downstream sedimentation

Stage	Measure	Activities/approach
Design	Site drainage and water quality controls	Design Basis • Undertake hydrological assessment of the site's catchment in accordance with relevant methods outlined in Australian Rainfall and Runoff • Determine sediment management targets and drainage control standards in accordance with Managing Urban Stormwater: Soils and Construction Vol 1 (Blue Book) (DECC, 2008). • Develop a site erosion and sediment control plan in accordance with the Blue Book. • Develop site drainage design incorporating detention basins and sedimentation management structures where relevant. • Permanent site drainage should coincide with temporary arrangements where possible
Construction and/or demolition	Site drainage and water quality controls	General site works: • Catch drains to be located downslope of any proposed road works. • Install location appropriate sediment fences or other applicable control measures depending on whether the feature is upstream or downstream of a disturbed part of the site or will need to be trafficable. • All stormwater collection points need to have appropriate sedimentation and erosion controls. • Undertake ongoing inspections of stormwater facilities and water control measures to assess their effectiveness. • Vibration grids or wash bays at all construction exits. • Level spreaders at locations where concentrated flow is discharged offsite to ensure sheet flow like conditions are maintained. • Flat land erosion control options include erosion control

Stage	Measure	Activities/approach
		blankets, gravelling, mulching, soil binder, turfing and revegetation
Construction and/or Demolition	Stormwater point source control	In the event of concrete works: • Do not undertake works if chance of heavy rain. • Store rinsate water, if applicable, separately to other water on site and dispose of offsite as appropriate. • Block on site drains in the area of the works and remove any contaminated runoff. In the event that dewatering practices are required: • Elevate pump hose intakes for withdrawing water from excavations to minimise sediment pumping and direct hose to a containment area for settling prior to discharge of water. • Limit direct discharge off site (consistent with the design requirements for sediment pond discharge). • Stormwater collected on site should be reused where possible. Controls should be inspected and maintained on a regular basis. All water released from sediment basins should be clear or disposed of off site by vehicle. • Material and waste storage areas should be designed and operated to minimise interaction with surface waters. • Vehicle washdown areas should be located away from water courses

5.4 Air quality

5.4.1 Assessment of impacts

The Department of Planning, Industry and Environment maintain air quality monitoring stations across rural NSW. The instruments used at most rural network sites are low cost indicative particulate monitors that respond to all aerosols including smoke and fog.

Total suspended particles are solid particles and liquid droplets 100 micrometres or less in diameter. They come from natural and human-made sources, such as pollen, bushfires and motor vehicle emissions. Dust emissions are also a source of air pollution and can cause poor air quality. The pollutants measured by the Department are nitrogen dioxide, sulphur dioxide and ammonia.

Particles are also measured as PM_{10} and $PM_{2.5}$. PM_{10} are particles less than 10 micrometres in diameter. Sources include crushing or grinding operations and dust stirred up by vehicles on roads. $PM_{2.5}$ are fine particles less than 2.5 micrometres in diameter. Sources include all types of combustion, including motor vehicles, power plants, residential wood burning, forest fires, agricultural burning, and some industrial processes.

Table 6 gives average hourly readings of PM_{10} particles and $PM_{2.5}$ particles and the DPIE rating for the nearest monitoring station to the development site.

Table 6: Average hourly air quality readings

Monitoring station	**Goulburn**	
Period	31 May 2021, 10am-11am	
Particles	Reading	Rating
PM_{10}	5.0	Good
$PM_{2.5}$	3.4	Good

Activities that disturb the earth's surface and that are carried out with the use of machinery have the potential to generate dust emissions. This may be exacerbated by wind exposure to an exposed ground surface. The previous use of the land for farming may have involved regular tilling, sowing and harvesting that may create dust and impact on air quality. Similarly, grazing would generate dust as animals trample the ground surface. The land has been modified for agriculture with the consequent loss of most native vegetation leading to exposed soil surfaces.

The construction of the solar farm will not involve extensive earthworks. Pile driving for footings for the array framework and excavation for roads and ancillary structures will be carried out. Along with the delivery of materials using heavy vehicles, these construction works may generate dust, however, once operational the change of use of the land from agricultural to solar photovoltaic electricity generation is expected to reduce particulate emissions and lead to an improvement in local air quality. Vehicle movements would be restricted to internal access roads and the majority of the site would be revegetated with native or pasture grasses.

5.4.2 Mitigation measures

To minimize dust generation during the construction and operational phases the following mitigation measures are proposed:

During construction:

- Limit vehicle movements to areas necessary to deliver panels, ancillary structures and equipment
- Suppress dust emissions using watering and cease works during dry and windy conditions
- Ensure ground disturbance is limited to areas necessary to place footings or to be used for access
- Ensure minimal handling of excavated materials
- Ensure stockpiles of excavated material is bunded and protected from wind and vehicle movements

During operation:

- Grade and add road base to internal accessways
- Revegetate the site with suitable endemic native groundcover immediately construction works are completed
- Ensure all plant and equipment operates in accordance with specifications

5.5 Noise

5.5.1 Assessment of impacts

A *Noise Assessment* of the impacts of noise emissions has been carried out by Muller Acoustic Consulting. The findings of the assessment are summarized below. Reference should be made to the *Noise Assessment* that is submitted with the development application for further information or clarification of any matter concerning the assessment and recommendations.

The purpose of the *Noise Assessment* is to quantify potential environmental noise emissions associated with the construction and operation of the project. Where impacts are identified, recommendations are made to mitigate and manage noise. The location of noise sensitive receptors are shown in Figure 5.

Figure 5: Location of noise sensitive receivers. Source: Muller Acoustic Consulting

5.5.2 Findings

The results of the Noise Assessment demonstrate that noise levels are expected to exceed the NMLs by up to 7dB at seven receivers when works are at their nearest proximity during standard construction hours. Exceedances at these receivers are expected from all construction activities (piling, trenching & assembly), however, would be of a temporary nature and of short duration.

Operational noise management levels are satisfied at all identified receiver locations. Sleep disturbance is not anticipated, as there are no operational noise sources that generate significant maximum noise events and noise emissions from the project are predicted to satisfy the EPA maximum noise level criteria.

Road noise emissions associated with the project are anticipated to satisfy the relevant RNP criteria at all receivers along the proposed transportation route.

A qualitative assessment of potential vibration impacts has been completed. Due to the nature of the works proposed and distances to potential vibration sensitive receivers, vibration impacts from the project would be negligible.

Based on the Noise Assessment results, there are no noise related issues which would prevent approval of the proposed project.

5.5.3 Mitigation measures

The following mitigation measures are recommended to address noise emissions during the construction phase:

- a construction noise management protocol to minimise noise emissions, manage out of hours (minor) works to be inaudible, and to respond to potential concerns from the community,
- where possible use localised mobile screens or construction hoarding around piling rig/plant to act as barriers between construction works and receivers, particularly where equipment is near the site boundary and/or a residential receiver including areas in constant or regular use (e.g. unloading and laydown areas),
- operating plant in a conservative manner (no over-revving), shutdown when not in use, and be parked/started at farthest point from relevant assessment locations,
- selection of the quietest suitable machinery available for each activity,
- minimise noise plant/machinery working simultaneously where practicable,
- minimise impact noise wherever possible,
- utilise a broadband reverse alarm in lieu of the traditional high frequency type reverse alarm,
- provide toolbox meetings, training and education to drivers and contractors visiting the site during construction so they are aware of the location of noise sensitive receivers and to be cognisant of any noise generating activities,
- signage is to be placed at the front entrance advising truck drivers of their requirement to minimise noise both on and off-site, and
- utilise project related community consultation forums to notify residences within proximity of the site with project progress, proposed/upcoming potentially noise generating works, its duration and nature and complaint procedure.

It is recommended that noise emissions from the solar farm be minimised when operational. To assist in noise management, it is recommended that a one-off noise validation monitoring assessment be completed to quantify emissions from the site and to confirm that relevant criteria are satisfied.

5.6 Traffic and access

5.6.1 Assessment of impacts

A *Traffic Impact Assessment Report* of the impacts on traffic and the adequacy of access arrangements has been carried out by Price Merrett Consulting Pty Ltd. The findings of the assessment are summarized below. Reference should be made to the *Traffic Impact Assessment Report* that is submitted with the development application for further information or clarification of any matter concerning the assessment and recommendations.

The traffic assessment includes a description of the existing road network and considers expected traffic generation during site construction and operation. Site access arrangements and intersection capacity are also considered.

5.6.2 Findings

During the three month construction period 45 heavy vehicles will access the site with an expected daily maximum of 4 trucks. Access to the site for heavy vehicles will be limited to between 10.00am and 2.00pm. A maximum of 50 construction workers are likely to generate around 40 vehicles entering the site in the morning between 6:30am and 8:00am and leaving at the afternoon peak between 4:00pm and 5:00pm. This is based on the number of vehicles being 80% of the workforce. These will be light vehicles and/or a shuttle bus service. 90% of movements are expected to be between Boorowa township and the site, therefore predominately left turn in to Meads Lane during the morning peak and right turn out of the site in the afternoon. Traffic including truck movements generated at the site are highly unlikely to impact the local traffic conditions.

Access to the site is to be by way of a new driveway off Meads Lane located at 105 metres from the intersection with Lachlan Valley Way. The road is a B-Double approved arterial road and the proposed access cab accommodate B-Double truck movements. In the vicinity of the site, Lachlan Valley Way comprises a single traffic lane in each direction. The road has a signed speed limit of 100km/h.

The access is located on a straight section of Meads Lane. Safe intersection site distances can be achieved in an easterly direction and proximity to Lachlan Valley Way would restrict speed for vehicles approaching the access from the west. The topography around the access point is relatively flat and there are no obstructions at the proposed access that would limit sight lines along Meads Lane. The proposed access will accommodate B-Double turning into and out of the site from the west. Fencing alterations would be required to ensure a B-Double can pull off the

road without blocking Meads Lane. The new access would not affect any native vegetation as exotic grasses occupy the space between the pavement and the property boundary.

5.6.3 Mitigation measures

It is recommended that:

- a new access entrance is to be designed and constructed along Meads Lane to a standard to accommodate the construction phase with B-Double truck movements in accordance with Drawing Nos. 6259 Sheets 1-4 in the Traffic Impact Assessment Report prepared by Price Merrett Consulting Pty Ltd dated 7 March 2021. The access is to include a new culvert with trafficable headwalls, a recessed gate and fencing, and W2-4 signage to notify motorists of trucks during the construction phase
- Investigate whether a permit is required for B-Double use of Meads Lane and obtain such a permit if necessary
- Carry out a dilapidation survey of Meads Lane prior to commencement of construction works

5.7 The community and economy

5.7.1 Population and accommodation

The population of Boorowa state suburb in 2016, as defined by the Australian Bureau of Statistics and which includes the development site, the town of Boorowa and rural land surrounding the settlement, was 1,641 persons. The total population of Hilltops local government area in 2016 was 18,498 persons. The median age of people in Boorowa state suburb in 2016 was 48 years compared to 44 for the LGA.

Unemployment at the time of the 2016 Census of Population and Housing was 4.8% of the labour force comprising persons aged 15 years and over in Boorowa state suburb which compared favourably to 5.5% for Hilltops LGA and 6.3% for NSW. The labour force participation rate in 2016 was 44.7% compared to 43.3% for the LGA and 48.2% for the state of NSW.

The top three occupations were managers, technicians and trade workers, and labourers. The top three industries of employment were specialized sheep farming, local government administration and beef cattle farming.

Occupied private dwellings accounted for 82.5% of dwellings in Boorowa state suburb and 17.5% or 141 dwellings were unoccupied. 92% of dwellings were separate houses and the remainder were medium density dwellings.

Table 7: Key demographic statistics. Source: ABS Census of Population and Housing 2016

Sector	Characteristic	Boorowa (state suburb)	Hilltops LGA	NSW
Population	Total persons	1,641	18,498	7,480,228
	Median age	48	44	38
Employment	Labour force participation rate	44.7%	43.3%	48.2%
	Unemployment rate	4.8%	5.5%	6.3%
Housing	Occupied private dwellings	82.5%	84.1%	90.1%
	Unoccupied private dwellings	17.5%	15.9%	9.9%
	Total private dwellings	807	8,900	2,889,061
	Average occupancy rate	2.3	2.4	2.6
	Median monthly mortgate repayments	$1,172	$1,200	$1,986
	Median weekly rent	$180	$200	$380
	Proportion separate houses	92.0%	89.7%	66.4%

There are only three establishments offering accommodation for visitors to Boorowa and the surrounding district listed on the NSW Government's VisitNSW website. These include a farm stay, motel and caravan park. There are a further 21 places to stay in the wider Hilltops district according to VisitNSW which includes the towns of Young and Harden-Murrumburrah which are half an hours drive from Boorowa, and Jugiong and surrounding rural areas. These comprise caravan parks, bed and breakfasts, motor inns and pubs. In addition to these establishments there are 141 unoccupied private dwellings in the state suburb of Boorowa some of which may be available as short term rentals, and unregulated accommodation places such as AirBnB and Stayz.

5.7.2 Agriculture and land capability

Boorowa is located in the Capital region of NSW as defined by the Commonwealth Department of Agriculture, Water and the Environment. The gross value of agricultural production in the region in 2018-2019 was $976 million, which was 8 per cent of the total gross value of agricultural production in New South Wales of $11.7 billion. Agricultural land in the region occupies 33,400 square kilometres, or 64 per cent of the region. The most common land use by area is grazing modified pastures, which occupies 25,200 square kilometres or 49 per cent of the Capital region (https://www.agriculture.gov.au/abares/research-topics/aboutmyregion/nsw-central#regional-overview).

The region has a diverse agricultural sector. The most important commodities in the region based on the gross value of agricultural production were cattle and calves ($268 million), followed by wool ($224 million) and sheep and lambs ($207 million). These commodities together contributed

72 per cent of the total value of agricultural production in the region. ABS data indicates that in 2018–2019 there were 2,603 farms in the Capital region with an estimated value of operations of $40,000 or more. The region contains 11 percent of all farm businesses in NSW (https://www.agriculture.gov.au/abares/research-topics/aboutmyregion/nsw-central#agricultural-sector).

DPI Agriculture uses the land and soil capability mapping scheme as the preferred methodology for the classification of agricultural land. Eight classes of rural land are mapped plus flood irrigation, and mining and quarrying land. Figure 6 below shows land capability mapping for the development site and surrounding land. The development site has a land capability of class 4 which is moderate capability land: Land that has moderate to high limitations for high-impact land uses, which restricts land management options for regular high-impact land uses such as cropping, high intensity grazing and horticulture. These limitations can only be managed by specialised management practices with a high level of knowledge, expertise, inputs, investment and technology (*The land and soil capability assessment scheme – A general rural land evaluation scheme for NSW, 2nd Approximation*, OEH).

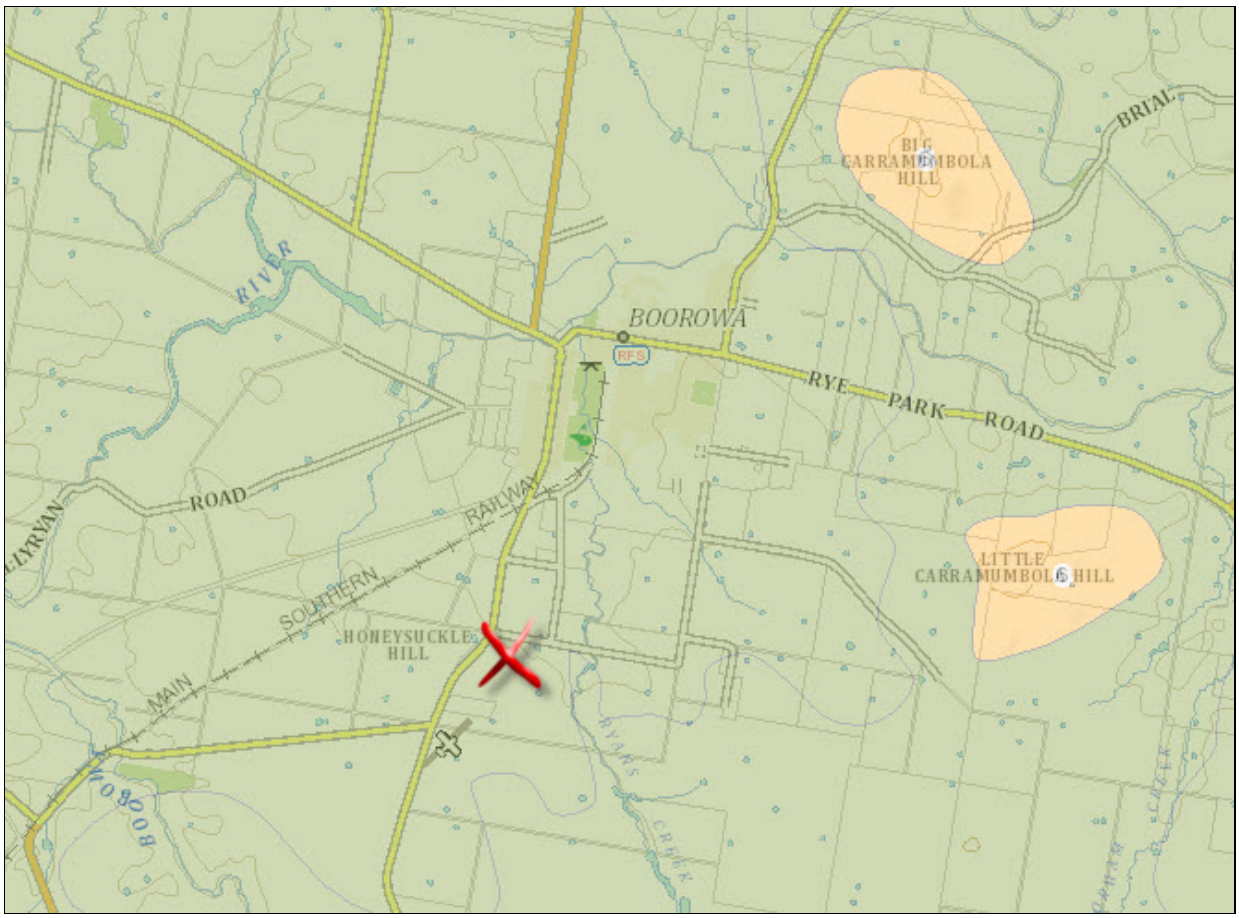


Figure 6: Land capability mapping. Source: OEH 2021

5.7.3 Potential socio-economic impacts

The benefit to the community of the solar farm will be through an increased understanding of sustainable development and by gaining a commitment to greater reliance on renewable energy. Similarly, the clustering of solar power generation would bring regional economic development benefits to the Capital region as the area gains a reputation as a suitable location for renewable energy and linked industries, implementing the *South East and Tablelands Regional Plan 2036*.

It is anticipated that there will be 50 personnel directly involved in construction on site which is expected to take approximately three months. Varying levels of expertise will be required ranging from labourers to qualified electricians and project managers. In addition, personnel would be involved in transport and delivery of materials to the site. Some of this employment is to be sourced locally. Once operational the site will be unmanned, however, two to three personnel will be necessary to carry out maintenance every quarter or as required. The skills required to be involved in the construction and ongoing maintenance of the solar farm may require some personnel to undergo further training and education, leading to an upskilling of the local workforce and enhanced employment opportunities generally.

Employment and education will bring direct economic benefits to the local economy through wages and salaries and indirect benefits through the need for accommodation and sustenance in the area for non-local employees. Restaurants, cafes, bakeries, supermarkets, pubs and newsagents would all benefit from the additional custom this will bring.

During the initial planning phase ITP (Development) Pty Ltd commissioned local professionals to carry out the land survey of the development site. This initial expenditure generates flow on effects throughout the local economy through income and employment. If necessary, sites officers employed by the Local Aboriginal Land Council will be engaged to carry out a cultural survey prior to commencement of works to identify any Indigenous items or places present on the development site.

It is considered that there is adequate accommodation available to cater to the 50 construction workers given the number of visitor accommodation establishments in the area plus short term rentals and unregulated accommodation providers. It is important therefore to ensure that the timing of construction of the solar farm does not coincide with the period of construction of other infrastructure to avoid additional pressure on visitor accommodation.

There is likely to be negligible effects on the availability of affordable rental over the short construction period as it is not expected that landlords would evict long-term tenants in preference of short term workers for a period of only three months. Workers coming to the area

would be likely to take up tourist accommodation similar to mine workers across country NSW, however, construction may be limited to the off-peak tourist season if necessary.

The loss of agricultural land due to the development of the solar farm would be minimal – less than a quarter of the entire property and a fraction of agricultural land in the region. The loss of agricultural land would be offset by the contribution that the solar farm will make to the local economy through direct and indirect employment and expenditure over the short term and through the benefits that renewable energy power supply will bring to the region. The landowner may also choose to continue to graze livestock within and around the array, activities that do not require consent, and the additional lease income may be put to improvements elsewhere on the property.

If necessary and practical in terms of security, the land surrounding panel arrays can continue to be used for farming purposes such as the cultivation of vegetables or flowers, or potentially livestock grazing during the operation of the solar farm. The arrays of panels can be removed once the facility is decommissioned and the land can be returned to agricultural use.

It is considered that the impact in terms of loss of productive agricultural land should be seen in the context of the impacts on farmland of other forms of power generation, for example, fracking for coal seam gas, and mining for coal and uranium as well as the infrastructure to support the processing of coal and gas. The loss of agricultural land would be offset by the contribution that the solar farm will make to the local economy through direct and indirect employment and expenditure over the short term and through the benefits that renewable energy power supply will bring to the region.

In summary:

- The solar farm will generate community economic benefits through local employment opportunities during the planning and construction phases as well as limited maintenance and inspection jobs once operational. The development of a solar farm will create a new market for local contractors and expand diversity of income for the land holder

- The loss of productive agricultural land is minimal and temporary. The array of panels can be removed once the facility is decommissioned and the land can be fully returned to agricultural use

- If necessary and practical in terms of security, the land can continue to be used for farming purposes such as the cultivation of vegetables or flowers, or the grazing of sheep during the operation of the solar farm

Plate 2: Sheep grazing amongst a PV array. Source: Sydney Morning Herald 17 February 2021

5.7.6 Mitigation measures

It is recommended that labour to construct the solar farm and for ongoing maintenance be sourced from within Hilltops LGA wherever possible. Where labour needs to be brought into the area, it is considered that there would be sufficient accommodation options for employees in the LGA for the estimated 50 workers engaged during the three month construction phase. However, it is necessary to ensure that the timing of construction of the solar farm does not coincide with the construction of major infrastructure projects to avoid a shortage of visitor accommodation. It is recommended that advertising be placed in local media and to approach local businesses to determine whether there is the capacity and expertise available in Hilltops and surrounding districts to participate in the construction and ongoing maintenance activities.

5.8 Heritage

5.8.1 Indigenous heritage

The generic due diligence process outlined in the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* was implemented to ensure that an adequate due diligence process

that addresses Aboriginal cultural heritage issues has been carried out. This process follows the following five steps:

1. Will the activity disturb the ground surface?

Earthworks will involve trenching which is required for cabling of each PV array/module to inverters and a substation. Other earthworks would be pile-driving to support module frames, and to enable the placement of concrete slabs and gravel accessways. Most of the infrastructure would be pre-fabricated off-site, delivered and assembled on-site.

2a. Search the AHIMS database

In accordance with the code, an on-line search was carried out of the *Aboriginal Heritage Information Management Service (AHIMS)* that is maintained by Heritage NSW. The search is part of the due diligence process and remains valid for 12 months.

A search of Lots 130-133 and 136-139 DP 2493 was performed on 31 May 2021. The search results are:

- There are no Aboriginal sites recorded in or near the selected location, and
- There are no Aboriginal places that have been declared in or near the selected location.

It is noted that surveys for Aboriginal objects have not been carried out in all parts of NSW and Aboriginal objects may exist on a parcel of land even though they have not been recorded in *AHIMS*. Further, not all known Aboriginal sites are registered on the *AHIMS* database and not all sites consist of physical evidence or remains, e.g. dreaming and ceremonial sites.

2b. Activities in areas where landscape features indicate the presence of Aboriginal objects

The development area does not possess landscape features that indicate the presence of Aboriginal objects. The vast majority of the site has been sown with crops.

3. Can you avoid harm to the object or disturbance of the landscape features

Not applicable as the development area has been disturbed and farmed, does not possess significant landscape features and no known Aboriginal objects are listed in *AHIMS*.

4. Desktop assessment and visual inspection

The desktop assessment found that no known Aboriginal objects are listed in *AHIMS*. A site inspection was made in November 2020 and there was no obvious evidence of any artefacts or items of cultural significance on the surface of the land.

5. Further investigations and impact assessment

An extensive search of *AHIMS* records is not necessary given that there are no Aboriginal sites or places that have been recorded on the development site.

The property lies within the area managed by Onerwal Local Aboriginal Lands Council. The LALC has been advised of the plans to develop the solar farm by email. As not all culturally significant items or places are made public and listed on AHIMS, a request was forwarded to the LALC enquiring as to whether the organization has any knowledge of Indigenous items or places of significance on the property and whether a site survey should be carried out prior to commencement of works. A response from Onerwal LALC has not been received, however, it is expected that a site survey will be required to be conducted prior to commencement of works.

It is acknowledged that a condition of consent may be imposed to require a site survey to be carried out by an LALC sites officer either before any work commences or prior to the issue of a construction certificate. Council may also recommend a condition of consent to comply with provisions of the *National Parks and Wildlife Act 1974* should any evidence of Aboriginal occupation be found during site works. An *Aboriginal Heritage Impact Permit* may be required to be obtained if indigenous heritage objects are found during ground disturbance.

5.8.2 Non-indigenous heritage

There are no properties listed in *Schedule 5 Environmental heritage* of *Boorowa LEP 2012*. It is considered that a heritage management document is not required.

5.8.3 Mitigation measures

Council may recommend that a condition of consent be imposed to require a site survey be carried out by an LALC sites officer either before any work commences or prior to the issue of a construction certificate. Council may also recommend a condition of consent to comply with provisions of the *National Parks and Wildlife Act 1974* should any evidence of Aboriginal occupation be found during site works. An *Aboriginal Heritage Impact Permit* may be required to be obtained if indigenous heritage objects are found during ground disturbance.

There are no recommendations in relation to non-Indigenous heritage.

5.9 Glare and glint

5.9.1 Assessment of impacts

A *Glint and Glare Assessment* has been carried out using the Solar Glare Hazard Analysis Tool by ITP Renewables. The findings of the assessment are summarized below. Reference should be made to the *Glint and Glare Assessment* that is submitted with the development application for further information or clarification of any matter concerning the assessment and recommendations.

The assessment is based on identifying the potential sensitive receptors in close proximity to the development site having regard to the elevation of the site relative to surrounding land and structures or vegetation that would act as visual barriers. Potential glare and glint impacts are assessed and if necessary mitigation measure are recommended to reduce potential impacts to an acceptable level.

5.9.2 Findings

A total of 50 residential and commercial premises and 11 road routes were identified as potential visual receptors. While there was a greater number of residential/commercial properties considered, some were discounted based on large stands of trees and other structures acting as visual barriers.

The results of the analysis indicate that persons occupying the selected properties are unlikely to be affected as a result of the proposed solar farm. Many residences will also not have a direct view of the solar farm due to visual obstruction from trees and other structures.

The proposed landscape screening around the array is expected to provide a physical obstruction between the solar farm and road users. However, it is noted that the site itself is fully cleared and there are no structures and only little vegetation in the road reserve or within the property.

5.9.2 Mitigation measures

No mitigation measures are necessary in relation to glare and glint.

5.10 Landscape character and visual amenity

5.10.1 Assessment of impacts

Impacts on landscape character and visual amenity of the proposed solar farm have been assessed by Zenith Town Planning Pty Ltd using the RMS guideline *Environmental Impact Assessment Practice Note – Guideline for Landscape Character and Visual Impact Assessment* (EIA-N04 Version 2-0 released on 14 December 2018). The findings of the assessment are summarized below. Reference should be made to the *Landscape Character and Visual Amenity Impact Assessment* that is submitted with the development application for further information or clarification of any matter concerning the assessment and recommendations.

The assessment estimates the likely impacts on landscape character and viewpoints based on the sensitivity to physical change and the magnitude, or relative size and scale, of the works and then applies an impact ranking.

The methodology included a site inspection of the location of the proposed works and the surrounding area to identify potential visual receivers and the visual catchment, land uses and characteristics of the surrounding area. The greater the distance from the development site the less clear is the view of the solar farm. The ability to distinguish the type of land use and the actual composition of materials diminishes with distance.

Planning principles established by the NSW Land and Environment Court were also considered as a check on the findings of the landscape character and visual assessment. The potential visual receivers located within the visual catchment of the site of the proposed solar farm are shown in Figure 7 below.

5.10.2 Findings

The character of the landscape near the site of the Boorowa Solar Farm has been significantly modified since European settlement for the purposes of agriculture. Very little native vegetation remains with patches on the low hills near the town and along creek lines and boundaries. There are expansive views across farmland and towards these low hills in most directions from the township.

The landscape in the immediate vicinity of the development site is generally flat and cleared of vegetation although some remnant/regrowth vegetation exists along the creek line to the east of the site. Structures within the vicinity of the site comprise rural farm buildings and large lot residential development to the north.

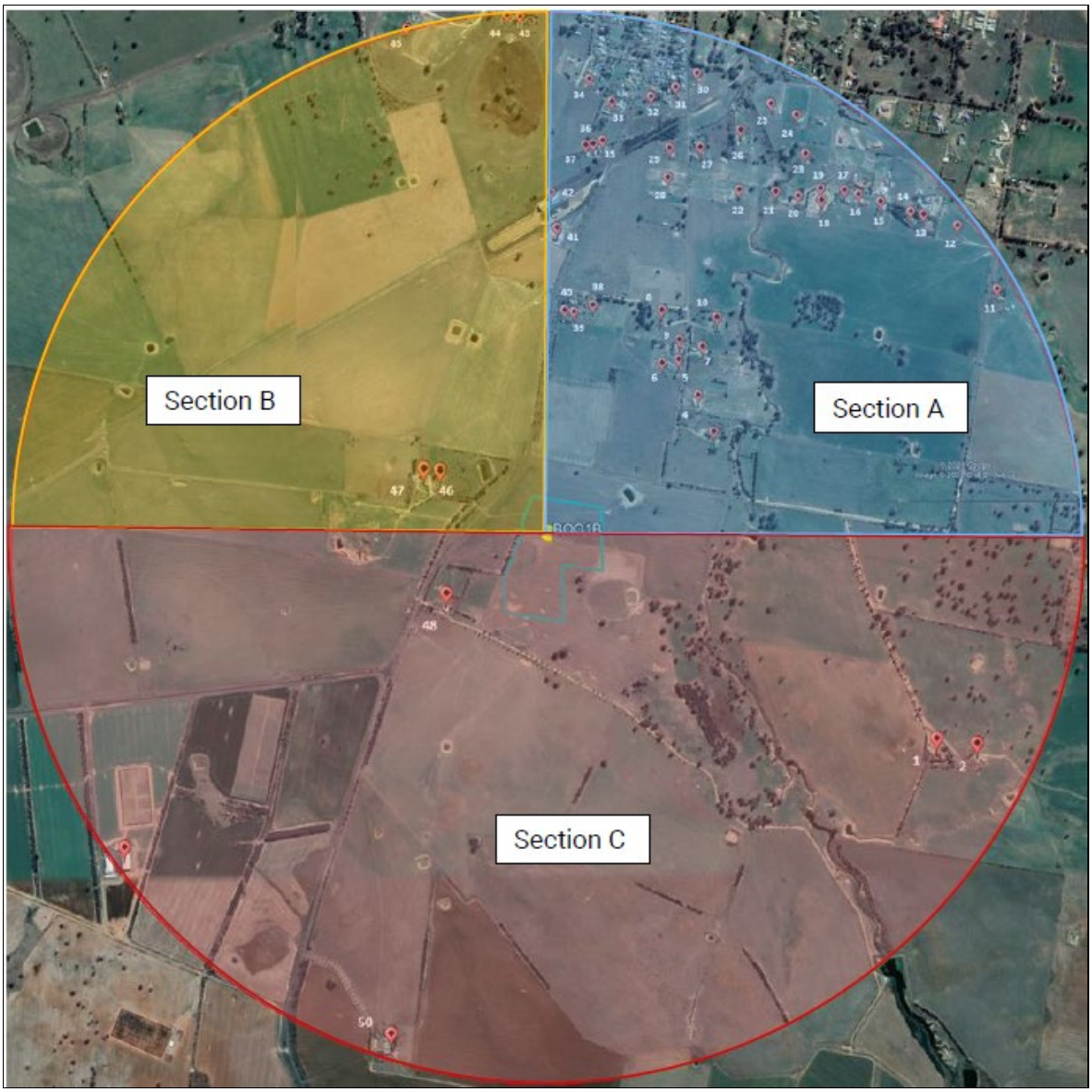


Figure 7: Potential visual receivers located in the visual catchment. Source: ITP Renewables

The size and scale, or magnitude, of the project and impact on landscape character is considered to be high due to the introduction of a new type of development that is substantial in size and scale, and will change the nature of the rural landscape to the south of Boorowa township. The sensitivity of private property to landscape change is considered moderate given the existing open modified agricultural landscape. The sensitivity of Lachlan Valley Way to landscape change would be moderate and low for local roads. The overall impact on landscape character is assessed to be moderate-high. However, distance and topography temper influence on landscape character from most surrounding land.

The presence of a solar farm in the rural landscape will eventually be accepted without question as the need for alternative sources of energy becomes greater and apparent. Over time, solar farms will become a common component of rural landscapes as they are less intrusive than all other forms of electricity generation and the visual impact can be managed through appropriate screening.

The visual impact of the proposed works is variable depending upon the sector within the visual catchment. Dwellings in close proximity to the facility and those in elevated locations above the development site are likely to be more affected. The proposed landscaping on the outer side of the security fence will provide effective screening for occupants of dwellings on flat land and distance separation will temper the effects for elevated dwellings. Elsewhere the relatively flat landscape coupled with vegetation and structures on intervening land will interrupt views towards the site. The location of the BESS and inverters at the centre of the array ensures minimal visual intrusion by these components.

The security fence surrounding the array is setback 117.2 metres from Meads Lane and a minimum of 146.4 metres from Lachlan Valley Way ranging up to 313.1 metres. The development would be visible from Meads Lane, the southern end of Market Street, the unnamed track that runs through the property, from Cunningar Road near the intersection with Lachlan Valley Way and from Lachlan Valley Way near the intersection with Meads Lane and on approach from the south whilst heading downhill.

Impacts are assessed to be high for motorists using Lachlan Valley Way due to the slope of the land and lack of roadside vegetation. Landscaping along the western boundary of the array will provide some screening to the edges of the array once mature, however, the development will remain visible when travelling downslope and elevated above the site. The impact on users of Meads Lane is assessed to be high-moderate. The development will be of significant bulk and scale however the impact is tempered by the moderate sensitivity of a road that carries a relatively low volume of traffic. Roadside vegetation is minimal, however, screening is likely to mitigate views of the development once mature noting that the array is setback more than 100 metres from this public road. Impacts are similar on the southern end of Market Street, particularly for motorists, cyclists and pedestrians heading south towards the development. A moderate-low impact is also expected at the intersection of Cunningar Road and Lachlan Valley way.

The findings of the assessment acknowledge that there will be impacts on the landscape and visual amenity as there are with any type of development. However, there is no view loss; the impact is a change to the view – a new element within the landscape. Impacts are greatest in close proximity to the solar farm as the further the distance a viewpoint is from the site the less the overall visual impact as the development occupies a lesser proportion of the total view.

Residential and commercial/industrial development in the Boorowa South growth precinct is anticipated to occur over the next two decades. Although indicative at this stage and yet to be formally planned and endorsed, urban development of this land will bring substantial and irreversible change to the rural landscape.

As it is intended to carry out landscape planting on all sides of the solar array including along the northern boundary to the growth precinct, the impact on the landscape will gradually soften as vegetation matures and provides an effective screen. This landscaping will shield visibility not just to the array from each viewpoint but will also screen ancillary items including the inverters, the BESS and the kiosk which are all beneath 3 metres in height. The solar farm is expected to have an operational life of about 35 years after which time decommissioning will take place and all panels and ancillary works will be removed, returning the development site to unoccupied rural land.

To mitigate impacts on the landscape and visual amenity, it is recommended that a vegetation screen be planted around all sides of the array. Native plants that grow to a maximum height of 2.5 to 3 metres should be selected. It is recommended that Hilltops Council be consulted to determine appropriate plant species.

On balance and having regard to other matters for consideration under section *4.15 Evaluation* of the *Environmental Planning and Assessment Act 1979*, the impacts are considered acceptable given that:

- the solar farm will contribute to renewable energy generation and provide a source of electricity for local domestic and commercial use whilst at the same time assisting to reduce greenhouse gas emissions and our reliance on fossil fuels,

- It will also generate employment opportunities during the construction phase and once operational will provide employment for maintenance crews,

- The placement of the array within the property downslope has been chosen to maximise distance separation from neighbouring dwellings,

- Existing vegetation along road reserves and property boundaries is to be maintained,

- The proposed landscaping will grow to a height that will screen the facility from observation points including public roads that are on level ground with the development site and elsewhere will soften the visual impact from land that is slightly elevated above the development site.

5.10.3 Mitigation measures

The proposed vegetation screen surrounding the array as shown on the general arrangement plan is supported to mitigate impacts on the landscape and visual amenity.

Native plants that grow to a maximum height of 2.5 to 3 metres should be selected. It is recommended that Hilltops Council be consulted to determine appropriate plant species.

6. CONCLUSION

6.1 Findings

Suitability of the site

The site is considered suitable for the proposed development of Boorowa Solar Farm. A connection is available to the Essential Energy Boorowa zone substation to transfer power generated by the solar panels to the township and on to the grid.

The development area is relatively flat, is free of constraints and is accessible to large delivery vehicles during the construction phase and for utility vehicles for ongoing maintenance.

Likely impacts

The likely impacts of the development have been considered in this Statement and supporting documents. Considerations include impacts on biodiversity, natural hazards, visual and scenic amenity, glare and glint, traffic, noise, air quality, water resources, indigenous and non-indigenous heritage, the community and the local economy. Any impacts on these interests have been found to be acceptable and mitigation measures have been recommended where necessary.

According to the Australian Radiation Protection and Nuclear Safety Agency, which maintains continual oversight of emerging research into the potential health effects of the EMF exposure, there is no established evidence of health effects from exposure to electric and magnetic fields from powerlines, substations, transformers or other electrical sources, regardless of the proximity, causes any health effects. The location of the solar farm and the distance separation between nearby dwellings and the site mean that any potential impacts on health are mitigated.

Cumulative impacts

The cumulative impacts of the proposed development are minor and the local community is supportive of renewable energy projects. Construction of three approved windfarms is about to commence which connect to Transgrid substations and a roof solar system has been installed on the Hilltops Council building in Boorowa. There have been no other large scale solar farm proposals other than a 1MW facility on Galong Road associated with the Sibelco quarry. There is sufficient capacity in the electricity grid system to accommodate Boorowa Solar Farm as evidenced by prior arrangements made by ITP Development Pty Ltd to connect to Essential Energy infrastructure.

Consistency with planning framework

The proposed development is consistent with the strategic planning framework that applies to the local government area, the site itself and to the development of electricity generating works. The solar farm is permissible with consent under provisions of *Boorowa LEP 2012* and *SEPP (Infrastructure) 2007*. It is satisfactory to other applicable SEPPs. The use is suited to a rural location due to the need for a large land area as evidenced by permissibility. The addition of a solar farm to the rural area of Boorowa would not detract unreasonably from local amenity or the natural environment.

Land use conflict

The proposed rural location implements the planning priorities, goals and actions of the *South East and Tablelands Regional Plan 2036*, the *Hilltops Local Strategic Planning Statement 2040* and the *NSW Renewable Energy Action Plan*. These objectives seek to capitalize on solar energy resources to increase the provision of renewable energy using rural land in locations that are compatible with existing rural development.

It is considered that the solar farm can co-exist with future residential development north of Meads Lane. The array is to be setback 117.2 metres from the road reserve and is to be screened with 3 metre high shrubs which will ensure visual amenity for future residences is maintained. Noise impacts once operational have been assessed to be within noise management levels and therefore are not expected to interfere with future inhabitants of the residential zone. Given the supply of residential land in Boorowa the development of the R2 zone is considered long term. The development of the solar farm would therefore not impede the outward spread of the township beyond the 35 year operational lifespan.

Government targets

Electricity generated by the system will be directed to the settlement of Boorowa via existing electrical infrastructure to contribute to the supply of electricity for use by households and businesses. Any surplus electricity will be sent to the grid and any deficit will be drawn from the grid. As well as the potential to utilize local contractors to construct the facility, the township will benefit through the ability to use clean energy that is generated adjacent the settlement.

The development of the solar farm will assist the transition of our economy from reliance on fossil fuels to renewable sources. It will assist Commonwealth and NSW Governments to achieve targets and objectives relating to emissions to address climate change.

Given the local, regional and national benefits of renewable energy generation and based on implementation of the recommended mitigation measures to avoid, minimize or mitigate impacts to the existing natural and built environment, the development is considered to be in the public interest.

6.2 Summary of mitigation measures

Table 8 provides a summary of mitigation measures. It is recommended that an environmental management plan be prepared to cover the construction and operational phases. Where necessary Table 8 includes a recommendation as to whether the mitigation measure should be included in the management plan. In addition to the mitigation measures detailed below, it is recommended that a waste management plan be prepared for inclusion in an environmental management plan.

Table 8: Summary of mitigation measures

Consideration	Mitigation measures	Environmental Management Plan
Fire assessment	• Install a reliable, automated monitoring and control systems, with an alarm and shutdown response capability • Take reasonable and safe measures to prevent the risks of external heat effects in the event of a bushfire • Design appropriate separation and isolation between battery cubicles, and between the BESS and other infrastructure, in accordance with the manufacturers' recommendations, and including gravel set-off areas around the facility • Comply with all applicable Australian codes and standards • Prepare a BESS-specific fire response plan, in conjunction with the NSW Rural Fire Service • Install an adequate automatic fire suppression system integrated into the detection and control system • Dispose (and where possible, recycle) of any potentially hazardous material in accordance with the best international practices available at that time • Fuels and pesticides/herbicides in use at the site will be stored at the laydown area in appropriately bunded areas designed in accordance with AS1940-2004 In terms of fire safety including the threat of bushfire, the report recommends that the facility with battery storage can be made safer through the integration of safety in design principles from bushfire standards including APZ clearances, internal protection areas, comprehensive system fault monitoring, automated fire detection and suppression systems and safety procedures built into WHS policies and procedures to ensure these farm assets	Yes, for operational phases

	and the surrounding area are protected from the risk of fire.	
Biodiversity	By way of a clearing process that minimizes the risk to threatened species that may be opportunistically using the site, it is recommended that: I. Construction limits and exclusion zones clearly identified prior to work; II. A visual inspection is conducted by environmental staff before construction commences to identify any areas of site that might be supporting native fauna; III. Vehicle movements around the site will be restricted to the construction footprint and away from any existing planted trees and flagging exclusion fencing to be installed. IV. Soil disturbance by vehicle and pedestrian access is to be kept to a minimum outside the construction footprint. V. Any weeds removed (particularly those bearing seeds) are to be disposed of appropriately at the nearest waste management facility.	Yes, with reference to ongoing site access during both construction and operational phases, and to the storage of materials within the site
Natural hazards	Prepare a fire emergency management plan and include that plan in the environmental management plan	Yes, for construction and operational phases
Water resources	Design – site drainage and water quality controls: • Undertake hydrological assessment of the sites catchment in accordance with relevant methods outlined in Australian Rainfall and Runoff. • Determine sediment management targets and drainage control standards in accordance with Managing Urban Stormwater: Soils and Construction Vol 1 (Blue Book) (DECC, 2008). • Develop a site erosion and sediment control plan in accordance with the Blue Book. • Develop site drainage design incorporating detention basins and sedimentation management structures where relevant. • Permanent site drainage should coincide with temporary arrangements where possible	Yes, for construction and operational phases. Include an erosion & sediment control plan or soil and water management plan
	Construction and/or demolition – site drainage and water quality controls: • Catch drains to be located downslope of any proposed road works. • Install location appropriate sediment fences or other applicable control measures depending on whether the feature is upstream or downstream of a disturbed part of the site or will need to be trafficable. • All stormwater collection points need to have appropriate sedimentation and erosion controls. • Undertake ongoing inspections of stormwater facilities and water control measures to assess their effectiveness.	

	• Vibration grids or wash bays at all construction exits. • Level spreaders at locations where concentrated flow is discharged offsite to ensure sheet flow like conditions are maintained. • Flat land erosion control options include erosion control blankets, gravelling, mulching, soil binder, turfing and revegetation	
	Construction and/or demolition – stormwater point source control: In the event of concrete works: • Do not undertake works if chance of heavy rain. • Store rinsate5 water, if applicable, separately to other water on site and dispose of offsite as appropriate. • Block on site drains in the area of the works and remove any contaminated runoff. In the event that dewatering practices are required: • Pump hose intakes for withdrawing water from excavations will be elevated to minimise sediment pumping and directed to a containment area for settling prior to discharge. • Limit direct discharge off site (consistent with the design requirements for sediment pond discharge). • Stormwater collected on site should be reused where possible. Controls should be inspected and maintained on a regular basis. All water released from sediment basins should be clear or disposed off site by vehicle. • Material and waste storage areas should be designed and operated to minimise interaction with surface waters. • Vehicle washdown areas should be located away from water courses	
Air quality	During construction: • Limit vehicle movements to areas necessary to deliver panels, ancillary structures and equipment • Suppress dust emissions using watering and cease works during dry and windy conditions • Ensure ground disturbance is limited to areas necessary to place footings or to be used for access • Ensure minimal handling of excavated materials • Ensure stockpiles of excavated material is bunded and protected from wind and vehicle movements During operation: • Grade and add road base to internal accessways • Revegetate the site with suitable groundcover immediately construction works are completed • Ensure all plant and equipment operates in accordance with specifications	Yes, for construction and operational phases

Noise	The following mitigation measures are recommended to address noise emissions during the construction phase: • a construction noise management protocol to minimise noise emissions, manage out of hours (minor) works to be inaudible, and to respond to potential concerns from the community, • where possible use localised mobile screens or construction hoarding around piling rig/plant to act as barriers between construction works and receivers, particularly where equipment is near the site boundary and/or a residential receiver including areas in constant or regular use (e.g. unloading and laydown areas), • operating plant in a conservative manner (no over-revving), shutdown when not in use, and be parked/started at farthest point from relevant assessment locations, • selection of the quietest suitable machinery available for each activity, • minimise noise plant/machinery working simultaneously where practicable, • minimise impact noise wherever possible, • utilise a broadband reverse alarm in lieu of the traditional high frequency type reverse alarm, • provide toolbox meetings, training and education to drivers and contractors visiting the site during construction so they are aware of the location of noise sensitive receivers and to be cognisant of any noise generating activities, • signage is to be placed at the front entrance advising truck drivers of their requirement to minimise noise both on and off-site, and • utilise project related community consultation forums to notify residences within proximity of the site with project progress, proposed/upcoming potentially noise generating works, its duration and nature and complaint procedure. It is recommended that the noise emissions from the solar farm be minimised when operational. To assist in noise management, it is recommended that a one-off noise validation monitoring assessment be completed to quantify emissions from site and to confirm emissions relevant criteria are satisfied.	Yes, for construction and operational phases
Traffic	• a new access entrance is to be designed and constructed along Meads Lane to a standard to accommodate the construction phase with B-Double truck movements in accordance with Drawing Nos. 6259 Sheets 1-4 in the Traffic Impact Assessment Report prepared by Price Merrett Consulting Pty Ltd dated 7 March 2021. The access is to include a new culvert with trafficable headwalls, a recessed gate and fencing, and W2-4 signage to notify motorists of trucks during the construction phase	Yes, with reference to site access during the construction phase

	• Investigate whether a permit is required for B-Double use of Meads Lane and obtain such a permit if necessary • Carry out a dilapidation survey of Meads Lane prior to commencement of construction works	
The community & local economy	• labour to construct and maintain the solar farm be sourced from within the Hilltops local government area wherever possible • advertising be placed in local media and local businesses contacted to determine whether there is the capacity and expertise available to participate in the construction and ongoing maintenance activities • Ensure that the timing of construction of the solar farm does not coincide with the construction of major infrastructure projects to avoid a shortage of visitor accommodation	n/a
Heritage	Council may recommend that a condition of consent be imposed to require a site survey be carried out by an LALC sites officer either before any work commences or prior to the issue of a construction certificate. Council may also recommend a condition of consent to comply with provisions of the *National Parks and Wildlife Act 1974* should any evidence of Aboriginal occupation be found during site works. An *Aboriginal Heritage Impact Permit* may be required to be obtained if indigenous heritage objects are found during ground disturbance. There are no recommendations in relation to non-Indigenous heritage.	n/a
Landscape character & visual amenity	The proposed vegetation screen surrounding the array as shown on the general arrangement plan is supported to mitigate impacts on the landscape and visual amenity. Native plants that grow to a maximum height of 2.5 to 3 metres should be selected. It is recommended that Hilltops Council be consulted to determine appropriate plant species.	n/a
Glare and glint	No mitigation measures are proposed	n/a

Attachment A

AHIMS Web Services (AWS)
Search Result

Purchase Order/Reference : 2420a

Client Service ID : 594922

Zenith Town Planning

P O Box 591
Moruya New South Wales 2537
Attention: Allen Grimwood

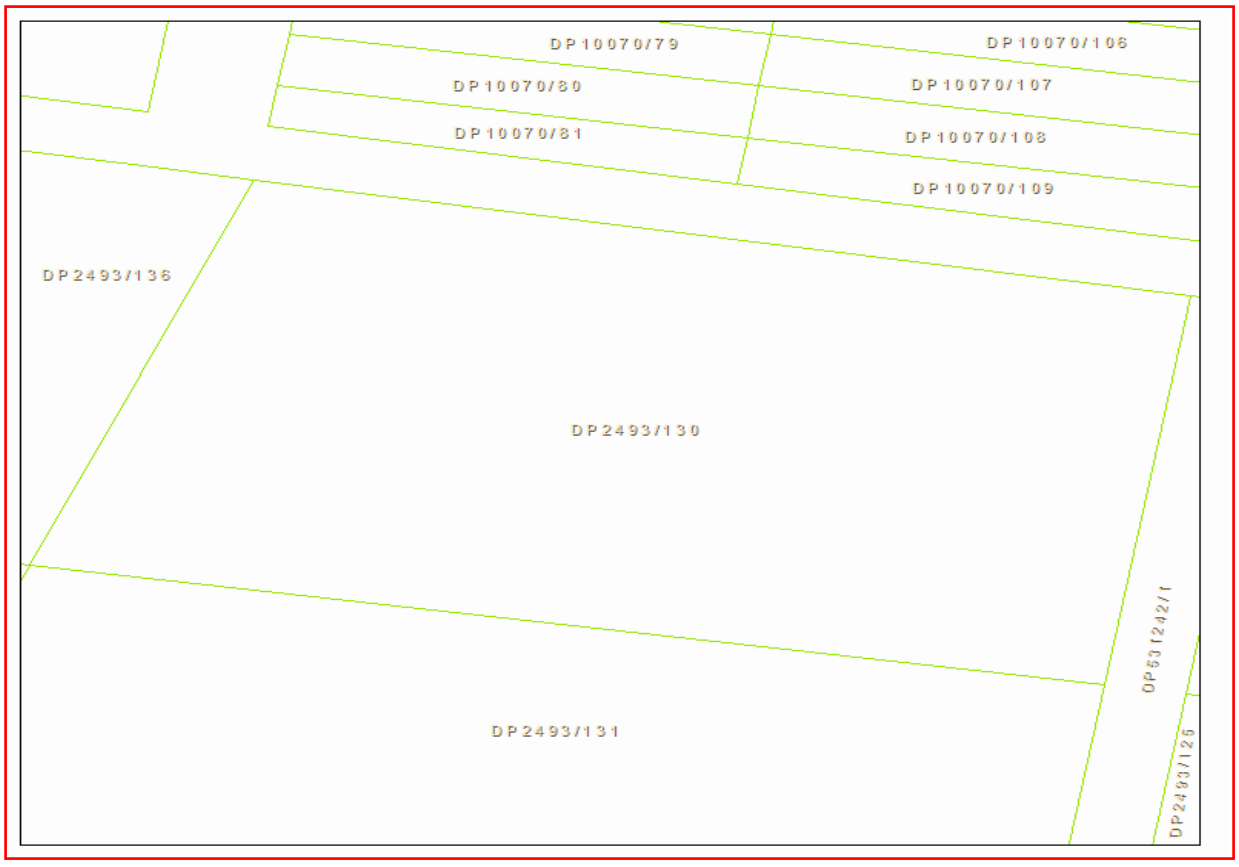
Email: zenithplan@bigpond.com

Date: 31 May 2021

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 130, DP:DP2493 with a Buffer of 0 meters, conducted by Allen Grimwood on 31 May 2021.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	**Aboriginal sites are recorded in or near the above location.**
0	**Aboriginal places have been declared in or near the above location. ***

AHIMS Web Services (AWS)
Search Result

Purchase Order/Reference : 2420b

Client Service ID : 594920

Zenith Town Planning

P O Box 591
Moruya New South Wales 2537

Attention: Allen Grimwood

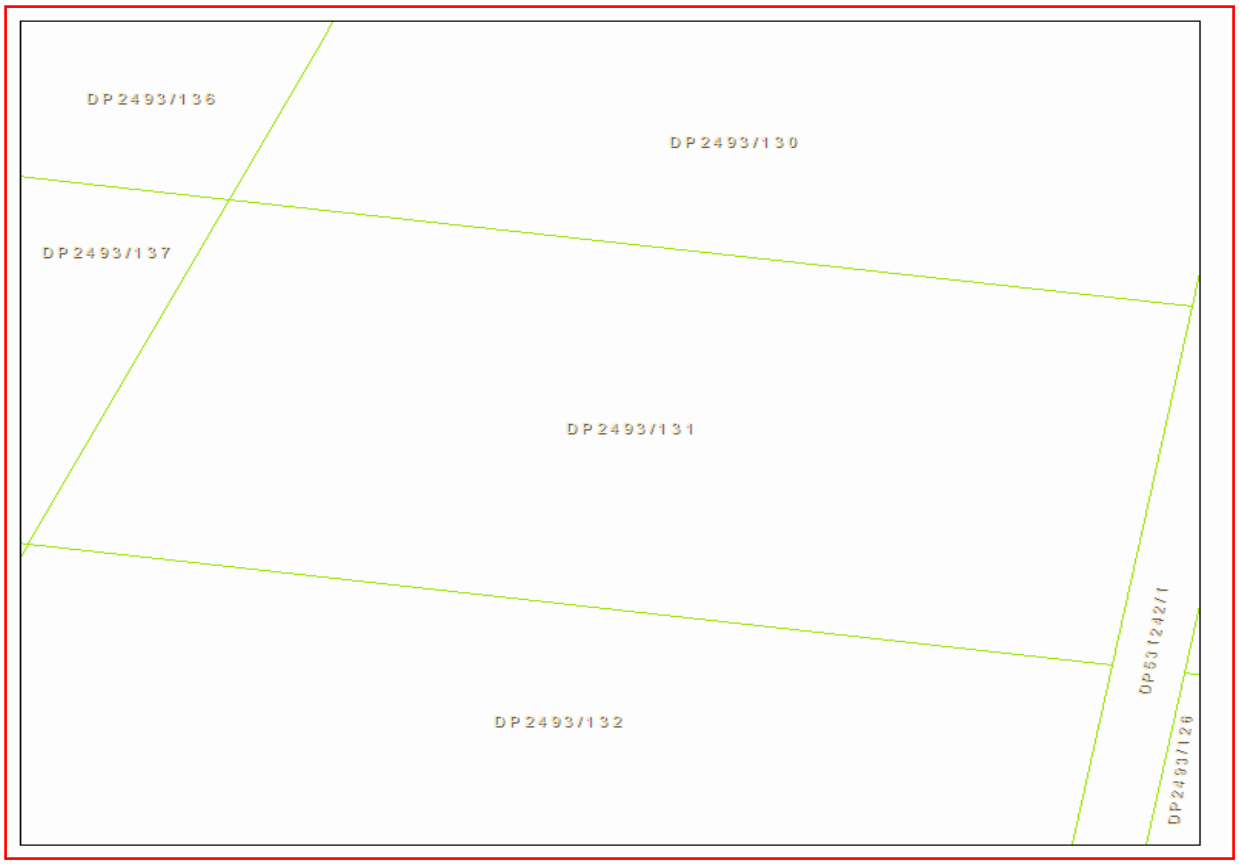
Email: zenithplan@bigpond.com

Date: 31 May 2021

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 131, DP:DP2493 with a Buffer of 0 meters, conducted by Allen Grimwood on 31 May 2021.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

AHIMS Web Services (AWS)
Search Result

Purchase Order/Reference : 2420c

Client Service ID : 594925

Zenith Town Planning

Date: 31 May 2021

P O Box 591
Moruya New South Wales 2537

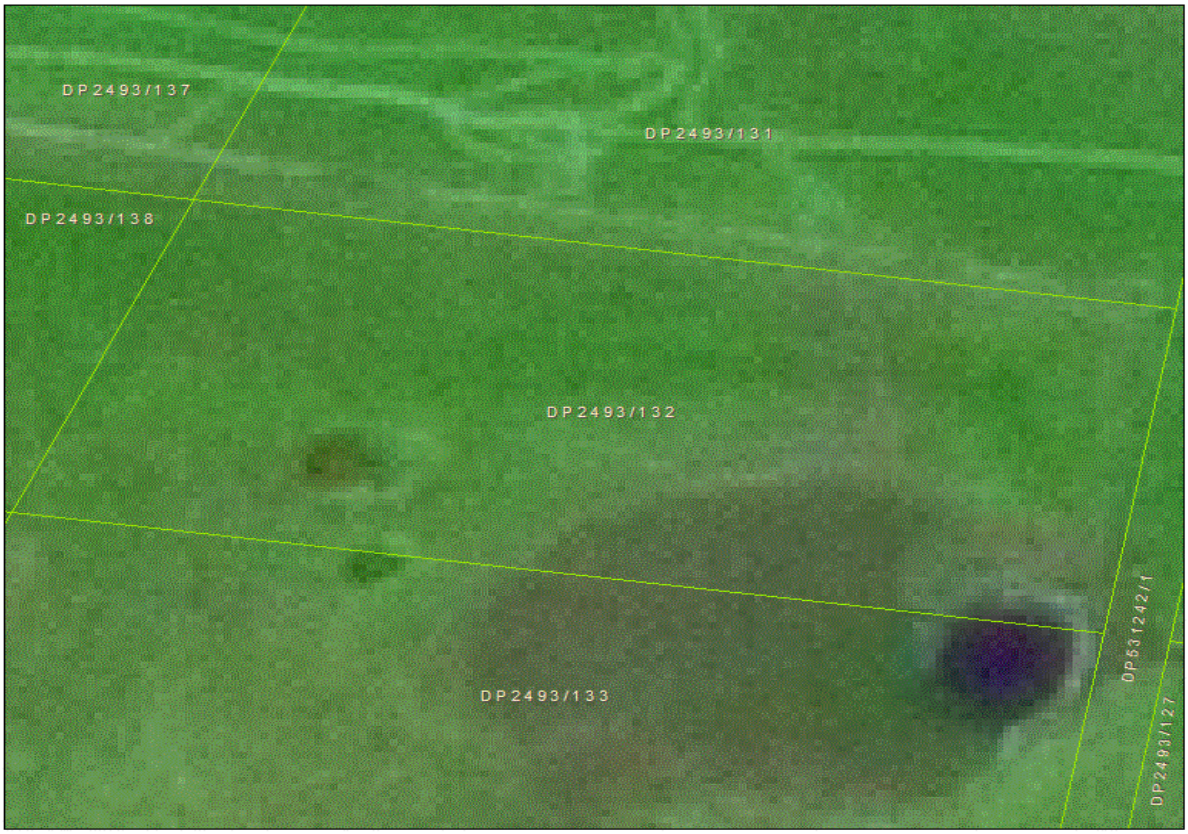
Attention: Allen Grimwood

Email: zenithplan@bigpond.com

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 132, DP:DP2493 with a Buffer of 0 meters, conducted by Allen Grimwood on 31 May 2021.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

AHIMS Web Services (AWS)
Search Result

Purchase Order/Reference : 2420d

Client Service ID : 594926

Zenith Town Planning

P O Box 591
Moruya New South Wales 2537

Attention: Allen Grimwood

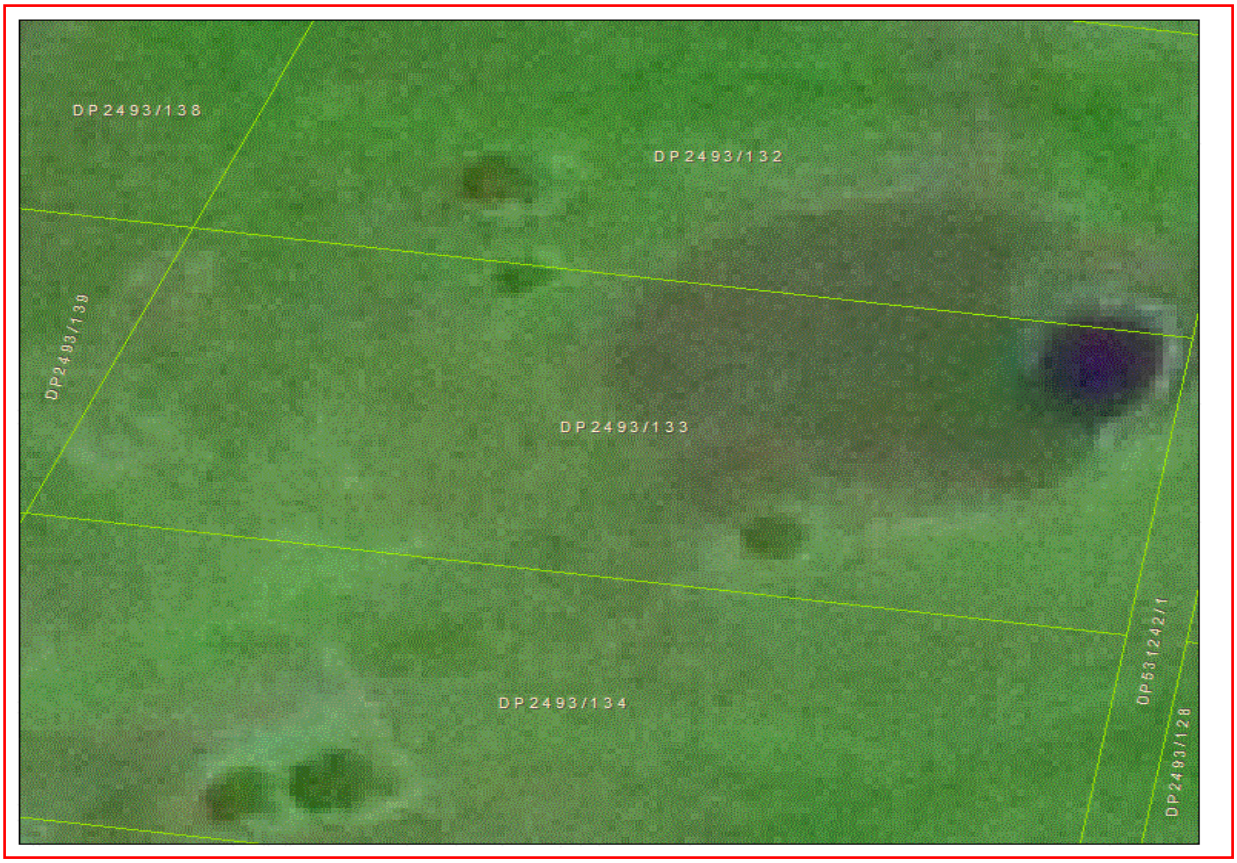
Email: zenithplan@bigpond.com

Date: 31 May 2021

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 133, DP:DP2493 with a Buffer of 0 meters, conducted by Allen Grimwood on 31 May 2021.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

AHIMS Web Services (AWS)
Search Result

Purchase Order/Reference : 2420e

Client Service ID : 594928

Zenith Town Planning

Date: 31 May 2021

P O Box 591
Moruya New South Wales 2537

Attention: Allen Grimwood

Email: zenithplan@bigpond.com

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 136, DP:DP2493 with a Buffer of 0 meters, conducted by Allen Grimwood on 31 May 2021.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.

A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	**Aboriginal sites are recorded in or near the above location.**
0	**Aboriginal places have been declared in or near the above location. ***

AHIMS Web Services (AWS)
Search Result

Purchase Order/Reference : 2420f

Client Service ID : 594929

Zenith Town Planning

Date: 31 May 2021

P O Box 591
Moruya New South Wales 2537

Attention: Allen Grimwood

Email: zenithplan@bigpond.com

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 137, DP:DP2493 with a Buffer of 0 meters, conducted by Allen Grimwood on 31 May 2021.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.

A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	**Aboriginal sites are recorded in or near the above location.**
0	**Aboriginal places have been declared in or near the above location. ***

AHIMS Web Services (AWS)
Search Result

Purchase Order/Reference : 2420g

Client Service ID : 594930

Zenith Town Planning

Date: 31 May 2021

P O Box 591
Moruya New South Wales 2537
Attention: Allen Grimwood

Email: zenithplan@bigpond.com

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 138, DP:DP2493 with a Buffer of 0 meters, conducted by Allen Grimwood on 31 May 2021.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.

A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

AHIMS Web Services (AWS)
Search Result

Purchase Order/Reference : 2420h

Client Service ID : 594931

Zenith Town Planning

Date: 31 May 2021

P O Box 591
Moruya New South Wales 2537
Attention: Allen Grimwood

Email: zenithplan@bigpond.com

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 139, DP:DP2493 with a Buffer of 0 meters, conducted by Allen Grimwood on 31 May 2021.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.

A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (http://www.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Office of Environment and Heritage's Aboriginal Heritage Information Unit upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Office of Environment and Heritage and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date .Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

3 Marist Place, Parramatta NSW 2150
Locked Bag 5020 Parramatta NSW 2220
Tel: (02) 9585 6380 Fax: (02) 9873 8599

ABN 30 841 387 271
Email: ahims@environment.nsw.gov.au
Web: www.environment.nsw.gov.au