Scoping report

GREGADOO SOLAR FARM

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ABBREVIATIONS AND ACRONYMS

ABS	Australian Bureau of Statistics
AHIMS	Aboriginal Heritage Information Management System
CCP	Community Consultation Plan
CEMP	Construction Environmental Management Plan
Cwth	Commonwealth
DPE	Department of Planning and Environment (NSW)
EEC	Endangered Ecological Community (listed under NSW BC Act)
EIS	Environmental Impact Statement
EPBC Act	*Environmental Protection and Biodiversity Conservation Act 1999* (Cwth)
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW)
ha	hectares
Heritage Act	*Heritage Act 1977* (NSW)
ISEPP	*State Environmental Planning Policy (Infrastructure) 2007 (NSW)*
km	kilometres
kV	kilovolt
LEP	Local Environment Plan
LGA	Local Government Area
m	metres
MNES	Matters of National Environmental Significance under the EPBC Act (*c.f.*)
MW	megawatts
NPW Act	*National Parks and Wildlife Act 1974* (NSW)
NSW	New South Wales
NV Act	*Native Vegetation Act 2003* (NSW)
OEH	(NSW) Office of Environment and Heritage, formerly Department of Environment, Climate Change and Water
RET	Renewable Energy Target
RMS	Roads and Maritime Services
SEARs	Secretary's Environmental Assessment Requirements (issued by DPE)
SEPP	State Environmental Planning Policy (NSW)
SSD	State Significant Development, defined in the ISEPP
TEC	Threatened Ecological Community (listed under Commonwealth EPBC Act)
TSC Act	*Threatened Species Conservation Act 1995* (NSW)

1 INTRODUCTION

1.1 PROPOSAL OVERVIEW

Gregadoo Solar Farm Australia Pty Ltd proposes to develop a solar farm at Gregadoo, south-east of Wagga Wagga, New South Wales. The solar farm would occupy around 90 hectares of rural land currently used for agriculture. The proposal infrastructure includes solar arrays, trackers, modules, invertors a substation and a cable run to connect the solar farm to TransGrid's Gregadoo substation.

1.2 THIS REPORT

Scoping is a key stage in the environmental impact assessment process. It identifies the main issues and information requirements for the assessment, considering the values of the site, the nature and extent of potential impacts, planning and regulatory requirements and the results of early consultations. This allows the assessment to efficiently focus on the most important issues.

This Scoping Report:

- Describes the proposal and the site
- Identifies statutory approval requirements
- Identifies key potential environmental issues associated with the proposal.

The report has been prepared to support a request to the Department of Planning and Environment (DPE) for the Secretary's Environmental Assessment Requirements (SEARs). The SEARs would guide the preparation of an Environmental Impact Statement (EIS) for the proposal under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

1.3 GREGADOO SOLAR FARM PTY LTD

Gregadoo Solar Farm Pty Ltd was established in Australia in 2017. The company specialises in the development of utility scale solar infrastructure. The company seeks to create solar generating facilities to contribute to the replacement of fossil fuel energy generation with clean renewable sourced energy. Gregadoo Solar Farm Pty Ltd is owned by Hanwha Energy Corp.

Green Switch Australia (GSA) are the project managers to Gregadoo Solar Farm Pty Ltd. Green Switch Australia is a business founded in providing Development Management Services to our customers and partners in the Australian solar market. We provide services to help our partners to develop and build out their utility scale projects and to help them to manage their investments. GSA has ongoing operations based around New South Wales and Victoria. GSA are continuing to expand their operations through organic growth and by seeking alliances with partners and clients.

2 PROPOSAL AREA DESCRIPTION

2.1 LOCATION

The Gregadoo Solar Farm proposal area is located in the Wagga Wagga Local Government Area approximately 13 kilometres south-east of Wagga Wagga CBD, as shown in Figure 2-1. Redbank Road runs along the western boundary and Boiling Down Road runs along the southern boundary of the property. The proposal is located within the Murrumbidgee River catchment. Local land use is primarily agricultural, including cropping and grazing. Farm dwellings are located to the east and west of the proposal area. A large-lot residential area is located about 600 metres north of the proposal site.

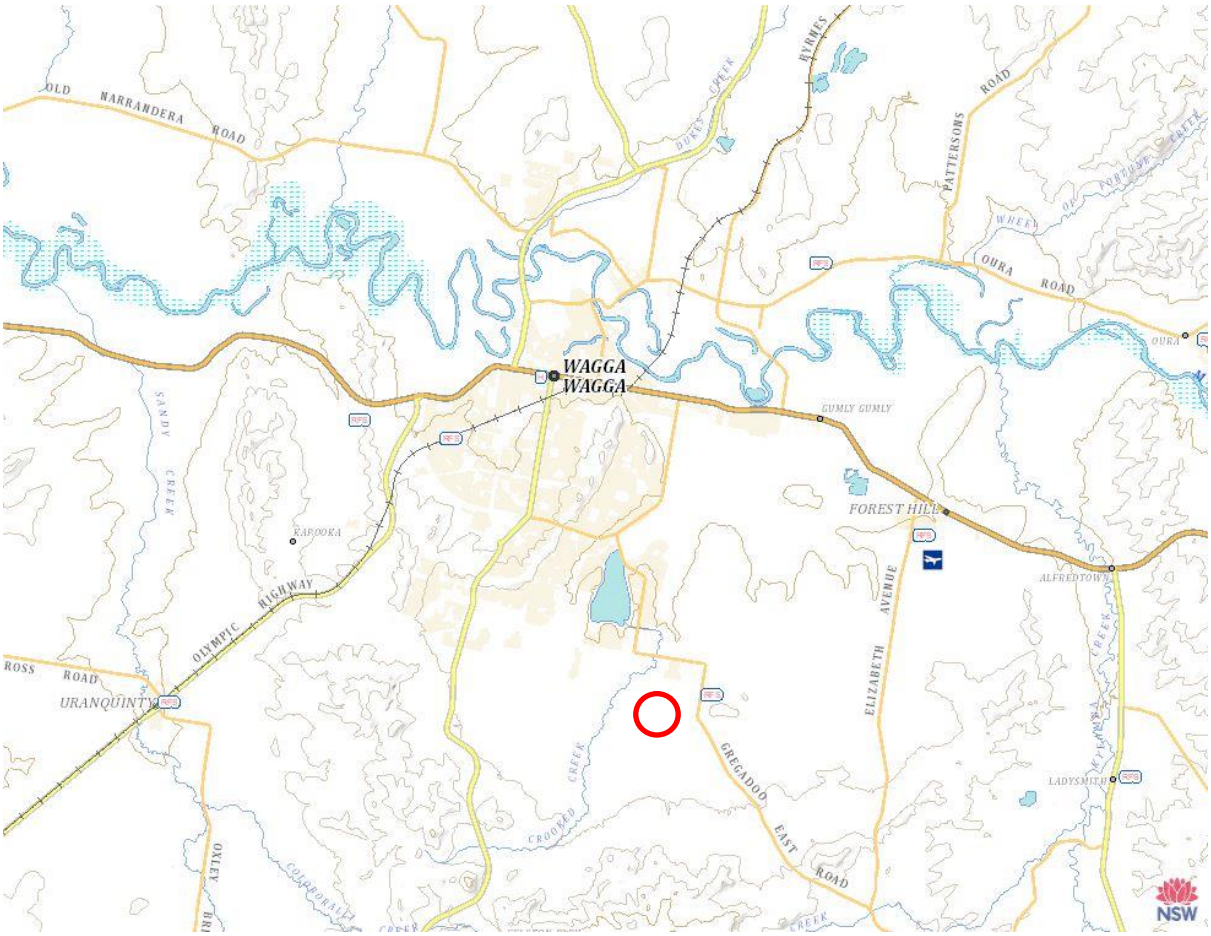

Figure 2-1 Location of the proposal area (Six Maps)

2.2 THE PROPOSAL AREA

The Gregadoo Solar Farm proposal would occupy approximately 90 hectares of Lot 11 DP 1043022, Gregadoo. The proposal area is agricultural land comprising several large paddocks which are generally flat and largely cleared and cultivated for pastures and grazing.

The property holds several farm dams along unnamed drainage lines. Boiling Down Creek traverses the eastern part of the property flowing from the south to the north.

A residence is in the north-western corner of the property, which is accessed from Redbank Road. Adjoining land uses include the Gregadoo Waste Management Centre to the south, grazing land to the west and north and a tree plantation and major substation to the east.

The property holds remnant native vegetation in the form of paddock trees. Scattered trees occur along Boiling Down Creek. Planted vegetation is located between paddocks, along the southern boundary and Boiling Down Creek.

The proposal area is shown in Figure 2-2 with photographs of the proposal area provided in Appendix A.

A 132kV transmission line and associated easement runs east-west across the southern part of the proposal area.

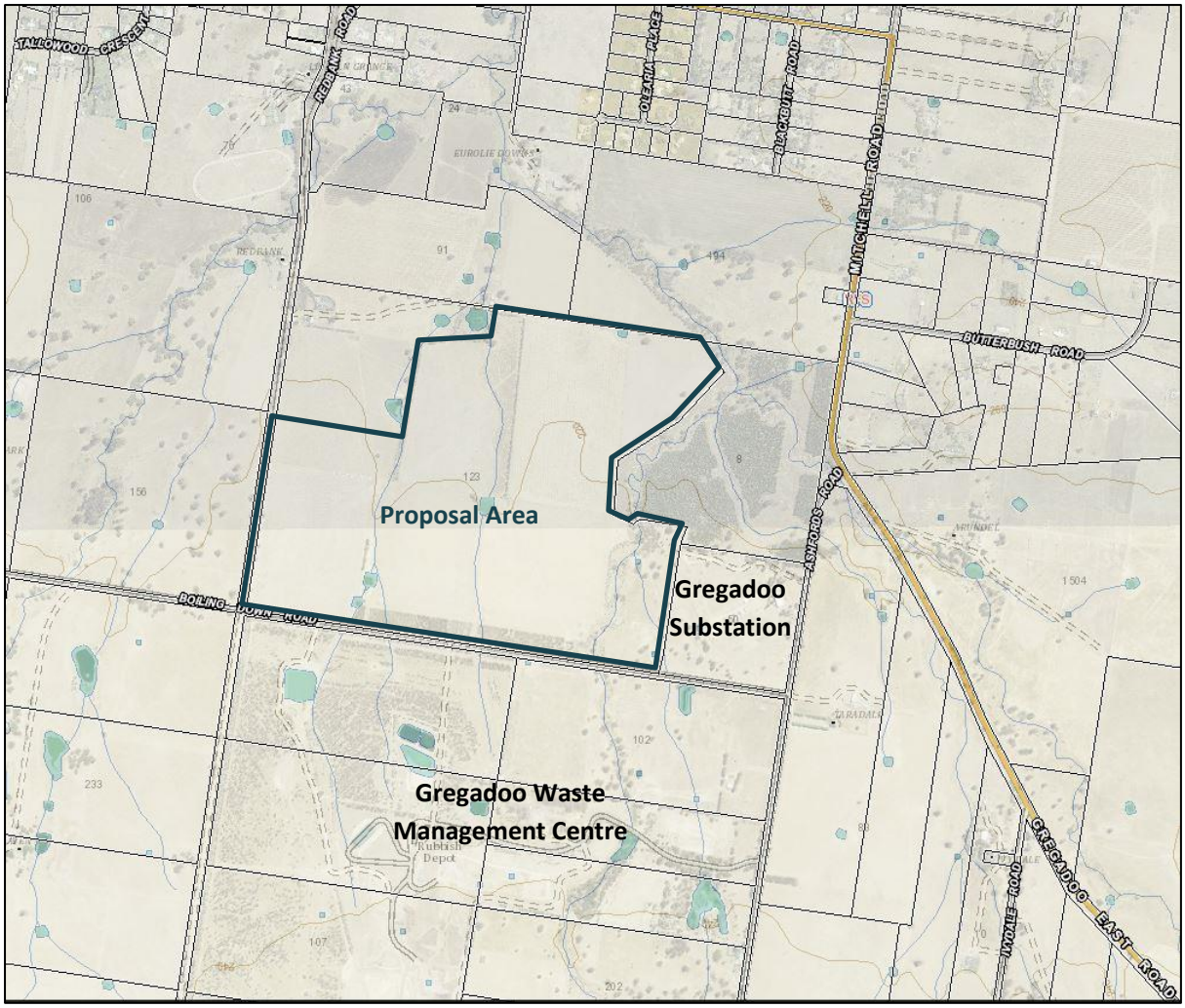

Figure 2-2 Gregadoo Solar Farm proposal area

3 THE PROPOSAL

3.1 SITE SELECTION

The Gregadoo Solar Farm site has been selected for the following reasons:

- Excellent solar exposure
- Excellent access to local and major roads
- Excellent access to the grid transmission network
- Likely low level of environmental impact – the site has been largely cleared and heavily disturbed by cultivation and cropping.

The use of the site would be based on a lease agreement between Gregadoo Solar Farm Pty Ltd and the landowners.

3.2 PROPOSED WORKS

3.2.1 Proposed infrastructure

The proposal involves the construction of a ground-mounted photovoltaic solar array which will generate approximately 45MW of renewable energy. The solar farm would connect into TransGrid's Gregadoo substation.

The solar farm arrangement is flexible and adaptable and would be designed to avoid impacts where feasible and minimise and mitigate environmental impacts if avoidance is not possible. The design would consider the results of this scoping report, consultation with relevant stakeholders and the EIS to be prepared. The EIS will detail how these studies have been used to produce the final proposal design.

The proposal will consist of the following components:

- Around 122,000 solar panels mounted on tracking system
- Operations and maintenance building with associated car parking
- Upgrade existing farm access point from Boiling Down Road for operational access
- Possible construction of new access points from Boiling Down Road and Redbank Road for construction access
- Internal access tracks
- Inverter units
- An electrical substation
- Overhead and underground electrical cable reticulation
- Grid connection to the Gregadoo Substation. Three options will be investigated:
    1. Connection directly into the nearby 132kV line
    2. An overland connection across Boiling Down Creek
    3. An underground connection underneath Boiling Down Creek
- Security fencing and CCTV
- Native vegetation planting to provide visual screening

- Filling in two farm dams and realigning first and second order drainage lines.

The proposal will potentially require the subdivision of the property.

The proposed infrastructure footprint is shown in Figure 3-1. This includes all land likely to be directly impacted by the proposal, including the grid connection options.

3.2.2 Construction, operation and decommissioning

The Gregadoo Solar Farm is expected to operate for around 30 years. The construction phase of the proposal is expected to take six to nine months. After the initial operating period, the solar farm would either be decommissioned, removing all above ground infrastructure and returning the site to its existing land capability, or upgraded with new PV equipment.

3.2.3 Capital investment

The Gregadoo Solar Farm proposal would have an estimated capital investment of $61.5 million. A quantity surveyor's report would be prepared during the EIS process as part of the proposal which would confirm the capital investment cost.

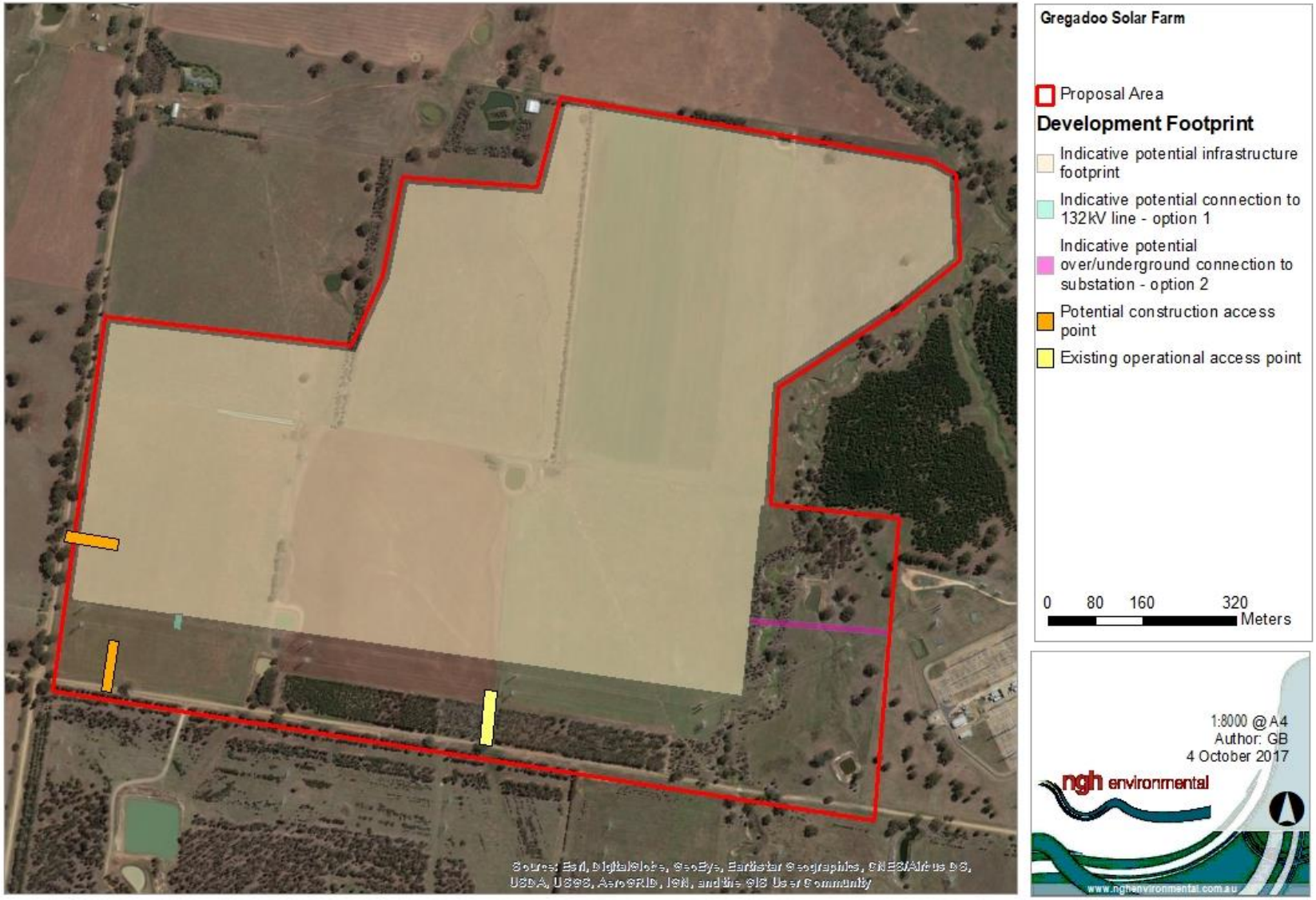

Figure 3-1 Proposed infrastructure footprint

4 JUSTIFICATION AND ALTERNATIVES

4.1 STRATEGIC JUSTIFICATION

4.1.1 Technical feasibility

The proposal would employ proven and mature solar technology. The solar resource at the site is highly suited to efficient, high-output generation.

The site is flat and predominantly clear, making it an ideal location for a utility scale solar project.

A TransGrid easement passes over the southern part of the property. It may be possible to connect to this transmission line. The major Transgrid operated Gregadoo Substation is also located directly adjacent to the site, providing a second option to connect the facility to the electricity transmission grid. The proponent has commenced discussions with Transgrid to establish that there is sufficient capacity in the network and at the substation to receive the proposed generation output.

It is worth noting that the electricity grid in New South Wales can present challenges in terms of having the capacity to connect utility scale renewable energy projects. The Gregadoo project benefits from having such good connection options located on and directly adjacent to the site with, moreover, sufficient spare capacity in the transmission network to allow power generated at Gregadoo to be exported into the wider NSW grid.

4.1.2 Climate change

Electricity generation is the largest individual contributor of greenhouse gas emissions in Australia (Department of Environment 2016). The solar farm proposal would generate around 94,000 MWh per year, which represents the power consumption of approximately 15,000 homes (assuming an average household consumption of 5,920kWh pa). Generation figures may change subject to final site design and technology selection. This is enough power to supply 60% of homes in Wagga.

The proposal would save approximately 31,000 tonnes of carbon dioxide per year, assuming generation would otherwise be made by brown coal with a carbon factor of 0.33372 tonnes per MWh (Department of the Environment National Inventory Report).

The Gregadoo Solar Farm would contribute to the New South Wales Renewable Energy Action Plan (NSW Government 2013), which supports the national target of 20% renewable energy by 2020. The proposal will also further the three goals of the Action Plan:

1. Attract renewable energy investment and projects
2. Build community support for renewable energy
3. Attract and grow expertise in renewable energy.

The NSW 2021: A plan to Make NSW Number One (NSW Government 2011) has the following goal:

- *Contribute to the national renewable energy target … by promoting energy security through a more diverse energy mix, reducing coal dependence, increasing energy efficiency and moving to lower emission energy sources*.

The proposal would also contribute to the Commonwealth Government's objective to achieve an additional 33GW of electricity from renewable sources by 2020 under the Renewable Energy Target or RET.

The COP21, also known as the 2015 Paris Climate Conference, achieved a legally binding and universal agreement on climate, with the aim of keeping global warming below 2°C, chiefly by reducing greenhouse gas emissions. The Gregadoo Solar Farm would form part of the Australian effort to help meet this target.

4.1.3 Electricity supply

AEMO (2016) forecasts that grid-supplied electricity consumption will remain flat for the next 20 years, despite projected 30% growth in population. Although not required to meet projected electricity demand, the proposal would benefit the network by shifting electricity production closer to local consumption. The electricity network was designed to deal with a small number of very large power generating stations. The localisation of power generation helps the grid to cope with supply from diversified renewable energy projects.

4.1.4 Socio-economic benefits

Employment

The proposal will generate around 200 direct jobs during construction and plus indirect supply chain jobs. In addition, it will employ approximately two full time staff and up to six service contractors during the operation and maintenance phase (expected to be approximately 30 years).

The employment benefits extend through the local supply chains to fuel supply, vehicle servicing, uniform suppliers, hotels/motels, B&B's, cafés, pubs, catering and cleaning companies, tradespersons, tool and equipment suppliers and many other businesses. In 2012, 24,000 Australians were employed in the renewable energy sector and the industry is set to generate an additional new 18,400 jobs by 2020 (CEC 2015).

4.2 ALTERNATIVES TO THE PROPOSAL

4.2.1 Alternative sites

Gregadoo Solar Farm Pty Ltd has reviewed the solar generation potential of many areas in NSW using a combination of computer modelling and analysis, on the ground surveying and observation and experience of the proponent. The site was selected because it provides the optimal combination of:

- Low environmental constraints (predominantly cleared cropping land)
- Level terrain for cost effective construction
- High quality solar resource
- Compatible land use zoning of the land
- Low flood risk
- Road access
- On-site or good access to the transmission network
- High levels of available capacity on the grid transmission system.
- Land availability.

The proposal area is of a scale that allows for flexibility in the design, allowing ecological and other constraints to be avoided. These would be identified and the factors that determine the final design would be detailed in the EIS.

4.2.2 Alternative technologies

Photovoltaic solar technology was chosen because it is cost-effective, low profile, durable and flexible regarding layout and siting. It is a proven and mature technology which is readily available for broad scale deployment at the site.

5 PLANNING CONTEXT

5.1 NSW LEGISLATION

5.1.1 Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (EP&A Act) and its associated regulations and instruments set the framework for development assessment in NSW. The Gregadoo Solar Farm proposal would be assessed under Part 4 of the EP&A Act.

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

Clause 20 of Schedule 1 of *State Environmental Planning Policy (State and Regional Development) 2011* defines 'State Significant Development' as including:

Development for the purpose of electricity generating works or heat or their co-generation (using any energy source, including gas, coal, biofuel, distillate, waste, hydro, wave, solar or wind power) that has a:

(a) capital investment value of more than $30 million, or

(b) capital investment value of more than $10 million and is located in an environmentally sensitive area of State significance.'

The Gregadoo Solar Farm would have an estimated capital investment cost greater than $30 million. The proposal is therefore classified as 'State Significant Development' under Part 4 of the EP&A Act.

State Significant Developments (SSD) are major projects which require approval from the Minister for Planning and Environment. While the Minister for Planning and Environment is the consent authority for SSD, the Minister may delegate the consent authority function to the Planning Assessment Commission (PAC), the Secretary or to any other public authority.

An Environment Impact Statement (EIS) is prepared in accordance with environmental assessment requirements issued by the Secretary of the Department of Planning and Environment (SEARs). In determining the SEARs, the Secretary must consult with relevant public authorities and would have regard to the need to assess key issues raised by those public authorities. A scoping study is required to be submitted with the request for the SEARs.

5.1.3 State Environmental Planning Policy (Infrastructure) 2007

Clause 34(7) of *State Environmental Planning Policy (Infrastructure) 2007* (ISEPP) provides that development for the purpose of a 'solar energy system' may be carried out by any person with consent on any land (except land in a prescribed residential zone). The Gregadoo proposal is located within a rural zone and is permissible with consent under the ISEPP.

5.1.4 State Environmental Planning Policy (Rural Lands) 2008

The aims of the *State Environmental Planning Policy (Rural Lands) 2008* (Rural Lands SEPP) are:

(a) to facilitate the orderly and economic use and development of rural lands for rural and related purposes,

(b) to identify the Rural Planning Principles and the Rural Subdivision Principles so as to assist in the proper management, development and protection of rural lands for the purpose of promoting the social, economic and environmental welfare of the State,

(c) to implement measures designed to reduce land use conflicts,

(d) 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,

(e) to amend provisions of other environmental planning instruments relating to concessional lots in rural subdivisions.

The Rural Lands SEPP rural planning principles, listed under clause 7, are:

(a) the promotion and protection of opportunities for current and potential productive and sustainable economic activities in rural areas,

(b) recognition of the importance of rural lands and agriculture and the changing nature of agriculture and of trends, demands and issues in agriculture in the area, region or State,

(c) recognition of the significance of rural land uses to the State and rural communities, including the social and economic benefits of rural land use and development,

(d) in planning for rural lands, to balance the social, economic and environmental interests of the community,

(e) the identification and protection of natural resources, having regard to maintaining biodiversity, the protection of native vegetation, the importance of water resources and avoiding constrained land,

(f) the provision of opportunities for rural lifestyle, settlement and housing that contribute to the social and economic welfare of rural communities,

(g) the consideration of impacts on services and infrastructure and appropriate location when providing for rural housing,

(h) ensuring consistency with any applicable regional strategy of the Department of Planning or any applicable local strategy endorsed by the Director-General.

It is considered that the proposal is consistent with the aims and planning principles of the Rural Lands SEPP. Part 4 of the Rural Lands SEPP relates to state significant agricultural land. Given the proposal area is not identified in schedule 2, it is not identified as state significant agricultural land and Part 4 does not apply.

5.1.5 Roads Act 1993

The *Roads Act 1993* (Roads Act) provides for the classification of roads and for the declaration of the Roads and Maritime Services (RMS) and other public authorities as roads authorities for both classified and unclassified roads. It also regulates the carrying out of various activities in, on and over public roads. The need for upgrade works on local roads would be considered as part of the traffic assessment conducted for the proposal. If required, approval from the roads authority (RMS and/or Council) would be sought under section 138 of the Roads Act. Wagga City Council, and RMS if required, would be consulted during the design and preparation of the EIS.

5.1.6 Biodiversity Conservation Act 2016

The NSW government introduced new biodiversity legislation for the consideration and assessment of biodiversity impacts. The *Biodiversity Conservation Act 2016* (BC Act) and *Local Land Services Act 2013* (LLS Act) commenced on the 25th August 2017 and has replaced the *Threatened Species Conservation Act 1995*.

The proposal would require assessment under Section 7.9 of the BC Act. A preliminary assessment of potential impacts has been conducted in section 7 of this report.

5.1.7 National Parks and Wildlife Act 1974

Under the *National Parks and Wildlife Act 1974*, the Director-General of the National Parks and Wildlife Service is responsible for the care, control and management of all national parks, historic sites, nature reserves, Aboriginal areas and state game reserves. The Director-General is also responsible under this legislation for the protection and care of native fauna and flora, and Aboriginal places and objects throughout NSW. Under Section 89J of the EP&A Act, an Aboriginal Heritage Impact Permit under Section 90 of the *National Parks and Wildlife Act 1974* would not be required for a State Significant Development. The potential impacts to Aboriginal heritage and native fauna and flora are discussed in section 7 of this report.

5.1.8 Heritage Act 1977

This Act aims to conserve heritage values. The Act defines 'environmental heritage' as those places, buildings, works, relics, moveable objects and precincts listed in the Local or State Heritage Significance. Heritage items are listed in the environmental heritage schedule of the local Council's Local Environmental Plan or listed on the State Heritage Register, a register of places and items of particular importance to the people of NSW. Under Section 89J of the EP&A Act, an approval under Part 4 or a permit under Section 139 of the *Heritage Act 1977* would not be required for a State Significant Development. The proposal is unlikely to directly or indirectly affect any items of heritage significance (refer to section 7).

5.1.9 Crown Lands Act 1989

The objects of this Act are to ensure that Crown land is managed for the benefit of the people of New South Wales. Under Part 3 of the Act, the Minister for Lands must be satisfied that the land has been assessed prior to any allocation action, i.e. reservation, dedication, sale, lease, licence or permit. The purpose of a land assessment is to ensure decisions made in relation to Crown land are in accordance with the principles of Crown land management by (amongst other matters) including an assessment of the capabilities of Crown land and the identification of suitable land uses.

Preliminary searches do not indicate Crown land to be present within the proposed solar farm site. This would be further investigated in the EIS and the Department of Industries (Lands) would be consulted during the assessment process.

5.2 LOCAL GOVERNMENT

5.2.1 Wagga Wagga Local Environmental Plan 2010

The proposal is in the Wagga Wagga Local Government Area (LGA) and is subject to the *Wagga Wagga Local Environmental Plan 2010* (Wagga LEP).

The proposal area is zoned RU1 - Primary Production under the Wagga LEP, as shown in Figure 5-1. Electrical generation is not listed among developments that are prohibited within the zone. Notwithstanding this, the ISEPP takes precedence over an LEP and permits solar energy systems with consent in the RU1 zone.

Land Use Zone Objectives

The Wagga LEP states that the consent authority must have regard to the objectives for development in a zone when determining a development application. The objectives of the RU1 zone are to:

- 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 foster strong, sustainable rural community lifestyles.
- To maintain the rural landscape character of the land.
- To allow tourist and visitor accommodation only where it is in association with agricultural activities.

Subdivision

A lease of land creates a subdivision under *s*.7A *Conveyancing Act 1919* (formerly s.327AA *Local Government Act 1919* now repealed) when the total of the original term of the lease, together with any option of renewal, is more than five years. Development consent is required for such a subdivision.

Furthermore, land subdivision that affects land containing a dwelling will be subject to the provisions of the *State Environmental Planning Policy (Rural Lands) 2008* and the matters that must be considered in determining development applications for rural subdivisions or rural dwellings.

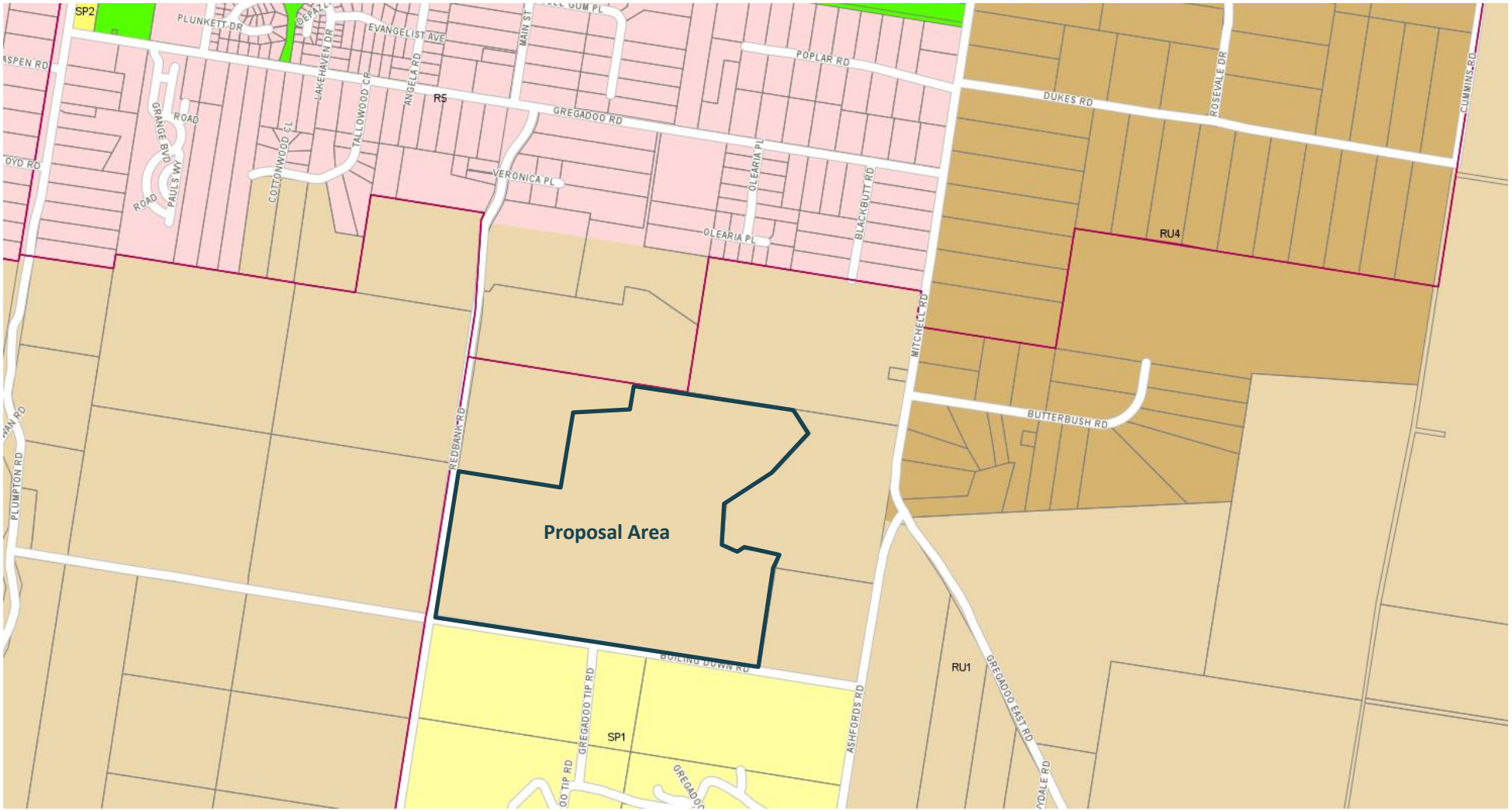

Figure 5-1 Zoning in vicinity of proposal area

5.3 COMMONWEALTH LEGISLATION

5.3.1 Environmental Protection and Biodiversity Conservation Act 1999

The EPBC Act provides an assessment and approval process for actions likely to cause a significant impact on Matters of National Environmental Significance (MNES). These include:

- World Heritage properties
- National Heritage places
- Wetlands of international importance (listed under the Ramsar Convention)
- Listed threatened species and ecological communities
- Migratory species protected under international agreements
- Nuclear actions (including uranium mines)
- Commonwealth marine areas
- The Great Barrier Reef Marine Park
- A water resource, in relation to coal seam gas development and large coal mining development.

Approval by the Commonwealth Environment Minister is required if an action is likely to have a significant impact on a MNES. Assessments of significance based on criteria listed in Significant Impact Guidelines 1.1 issued by the Commonwealth (Commonwealth of Australia 2013) are used to determine whether the proposed action is likely to have a significant impact (ie is likely to be considered a 'controlled action').

A search of the Commonwealth Protected Matters Search Tool (10 kilometre buffer, undertaken on 29th September 2017) indicated three threatened ecological communities, 20 threatened species and 10 migratory species within the search area. Surveys to determine the presence and likelihood of impact to these entities would be undertaken during the preparation of the EIS. The search also indicated 4 wetlands of international importance, all located greater than 400 metres upstream.

A summary of the EPBC Act search report is provided in Table 7-3.

5.3.2 Native Title Act 1993

The *Native Title Act 1993* provides a legislative framework for the recognition and protection of common law native title rights. Native title is the recognition by Australian law that Indigenous people had a system of law and ownership of their lands before European settlement. Where that traditional connection to land and waters has been maintained and where government acts have not removed it, the law recognises this as native title.

People who hold native title have a right to consult or continue to practise their law and customs over traditional lands and waters while respecting other Australian laws. This could include visiting to protect important places, making decisions about the future use of the land or waters, hunting, gathering and collecting bush medicines. Further, when a native title claimant application is registered by the National Native Title Tribunal, the people seeking native title recognition gain a right to consult or negotiate with anyone who wants to undertake a project on the area claimed.

Where native title does exist in relation to the proposal area, the proponent would comply with the provisions of the *Native Title Act 1993*.

6 CONSULTATION

Community and stakeholder consultation will be integral to the proposal. A Community Consultation Plan (CCP) has been prepared to provide a framework to engage with the community and stakeholders about the proposal and ensure opportunities to provide input into the assessment and development process are understood. Stakeholders were identified as those potentially being impacted by the solar farm proposal or having an interest in the proposal.

The CCP has set out consultation requirements with interested parties including adjacent neighbours, near neighbours, local businesses, any special interest groups and representative bodies. The plan also includes strategies for consultation for the local community and the broader community within the region.

The CCP aims to ensure that there is effective, ongoing liaison with the community. Measures to reduce adverse impacts and promote positive impacts would be identified in the EIS and appropriate management plans developed for the proposal.

Agency consultation would also be undertaken in accordance with any requirements of the SEARs.

Formal consultation with representatives from Wagga Wagga City Council took place at a meeting on 1 November 2017. This meeting included discussion of the requirement for subdivision and creation of lots under minimum lot size.

It is anticipated that one on one meetings with sensitive receivers located within the immediate vicinity of the proposal area, as shown in Figure 6-1, will be carried out by the end of November 2017.

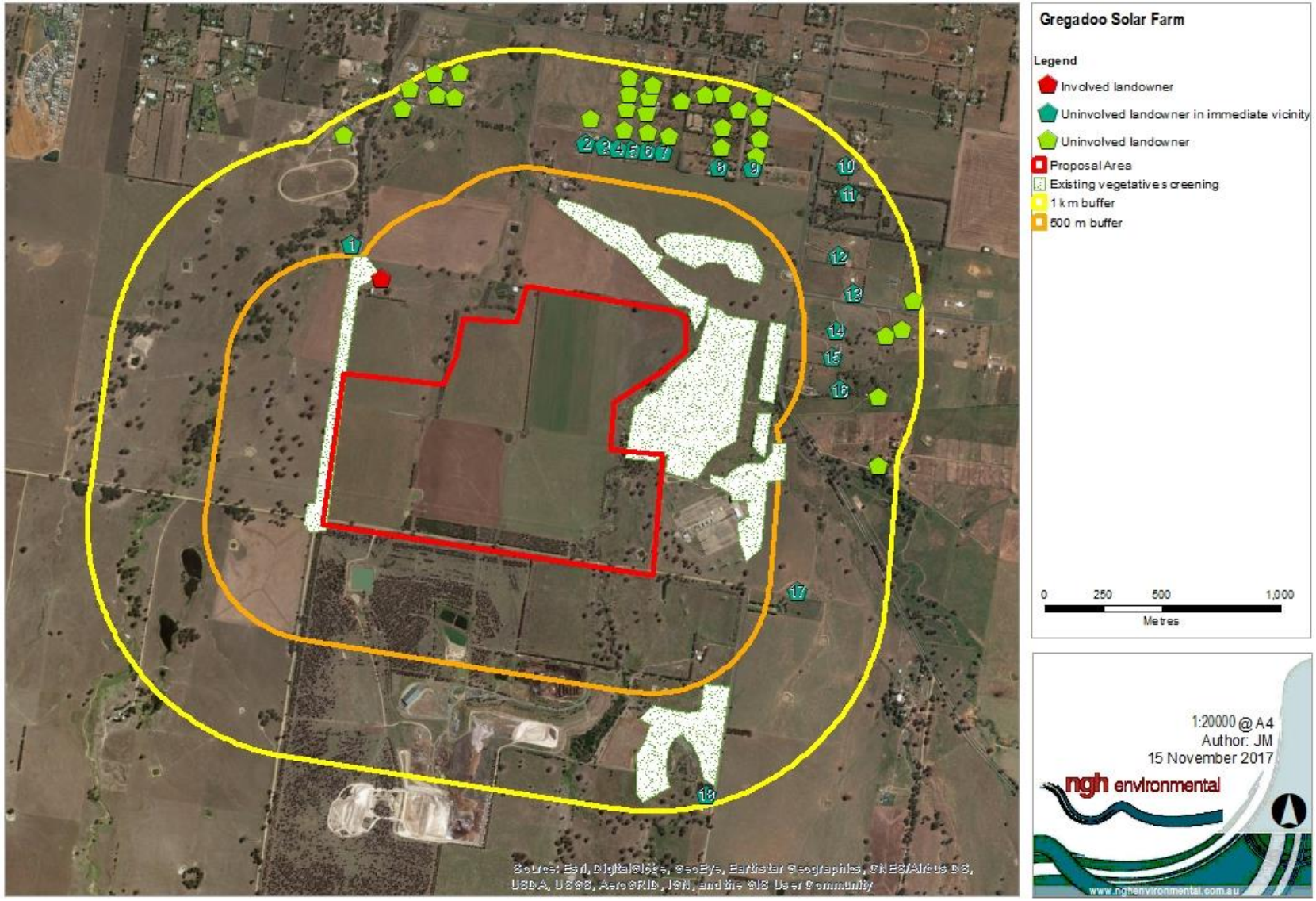

Figure 6-1 Sensitive receivers map

7 PRELIMINARY ENVIRONMENTAL ASSESSMENT

7.1 METHODOLOGY

NGH Environmental has undertaken a preliminary constraints assessment of the Gregadoo Solar Farm proposal area. The assessment was based on a desktop review and preliminary site inspection undertaken on 20 September 2017 to identify potential high level constraints and major risks to the proposal.

The risk rating is a factor of the **likelihood** of the impact occurring and the **consequence** of the impact. Depending on the combination of consequence and likelihood, the overall risk rating could be low to extreme (refer Table 7-1). High to extreme risks (termed 'key risks') would warrant a higher level of investigation. Low to Medium risks would be discussed in less detail. Where uncertainty exists, a higher rating was applied. This will be used to guide further detailed investigations and ultimately the site infrastructure layout.

A summary of the key environmental aspects is provided in section 7.2. The intent of the discussion is to demonstrate an understanding of the aspects that require further environmental assessment and proposed investigation strategies for these key issues. The potential impacts of other (less significant) aspects are discussed in section 7.3.

Table 7-1 Risk assessment rating matrix

Likelihood	Consequence				
	Negligible	**Minor**	**Moderate**	**Major**	**Catastrophic**
Remote	Low	Low	Low	Medium	Medium
Unlikely	Low	Low	Medium	High	High
Possible	Low	Medium	High	Very High	Very High
Likely	Medium	High	Very High	Very High	Extreme
Almost certain/ inevitable	Medium	High	Very High	Extreme	Extreme

Table 7-2 summarises the results of the preliminary risk assessment. Fourteen environmental risks were investigated. The unmitigated risk rating is the risk rating prior to assessment and is therefore precautionary. It considers a 'worst case' in the absence of specific information.

Table 7-2 Risk assessment of environmental aspects

Environmental risk	Likelihood	Consequence	Risk rating (unmitigated)
Biodiversity	Likely	Moderate	Very High
Aboriginal heritage	Possible	Moderate	High
Land use and resources	Likely	Minor	High
Noise (Construction)	Likely	Minor	High
Watercourses and hydrology	Likely	Minor	High
Access and traffic	Possible	Minor	Medium
Visual amenity and landscape character	Unlikely	Moderate	Medium
Soils and landforms	Possible	Minor	Medium
Air quality (construction)	Possible	Minor	Medium
Utilities	Possible	Minor	Medium
Historic heritage	Unlikely	Minor	Low
Contamination	Unlikely	Minor	Low
Hazards and risks	Unlikely	Minor	Low
Socio and economic impacts	Unlikely	Minor	Low
Resource use and waste generation	Unlikely	Minor	Low
Noise (Operation)	Unlikely	Negligible	Low
Air Quality (Operation)	Unlikely	Negligible	Low

The following environmental risks were considered to be key aspects:

- Biodiversity
- Aboriginal heritage
- Land use and resources
- Noise
- Watercourses and hydrology.

7.2 ASSESSMENT OF KEY ENVIRONMENTAL MATTERS

7.2.1 Biodiversity

The potential ecological constraints within the study area have been identified based on the following information sources:

- Threatened species and community listings under the TSC Act and EPBC Act
- Commonwealth EPBC Act Protected Matters Search Tool, using a 10 kilometre search radius
- Threatened species and communities records in the Bionet Database (OEH), using a 10 kilometre search radius
- Areas of outstanding biodiversity value declared under the Biodiversity Conservation Act 2016.
- OEH VIS Mapping
- A preliminary site inspection by an ecologist.

Overview

The proposal site has been selected on the basis that it supports very little native vegetation and is therefore ideal for a solar farm. The land has been extensively farmed, including cropped, over a long period of time. It supports very limited flora and fauna features of significance.

The primary constraint is associated with Boiling Down Creek, to the east of the proposal site. Whilst this area is not proposed for installation of solar panels, it may need to be crossed to provide grid connection to the substation. Several options are being investigated including avoidance.

Figure 7-1 provides an overview of the ecological characteristics of the site.

Figure 7-2 provides a biodiversity constraints map.

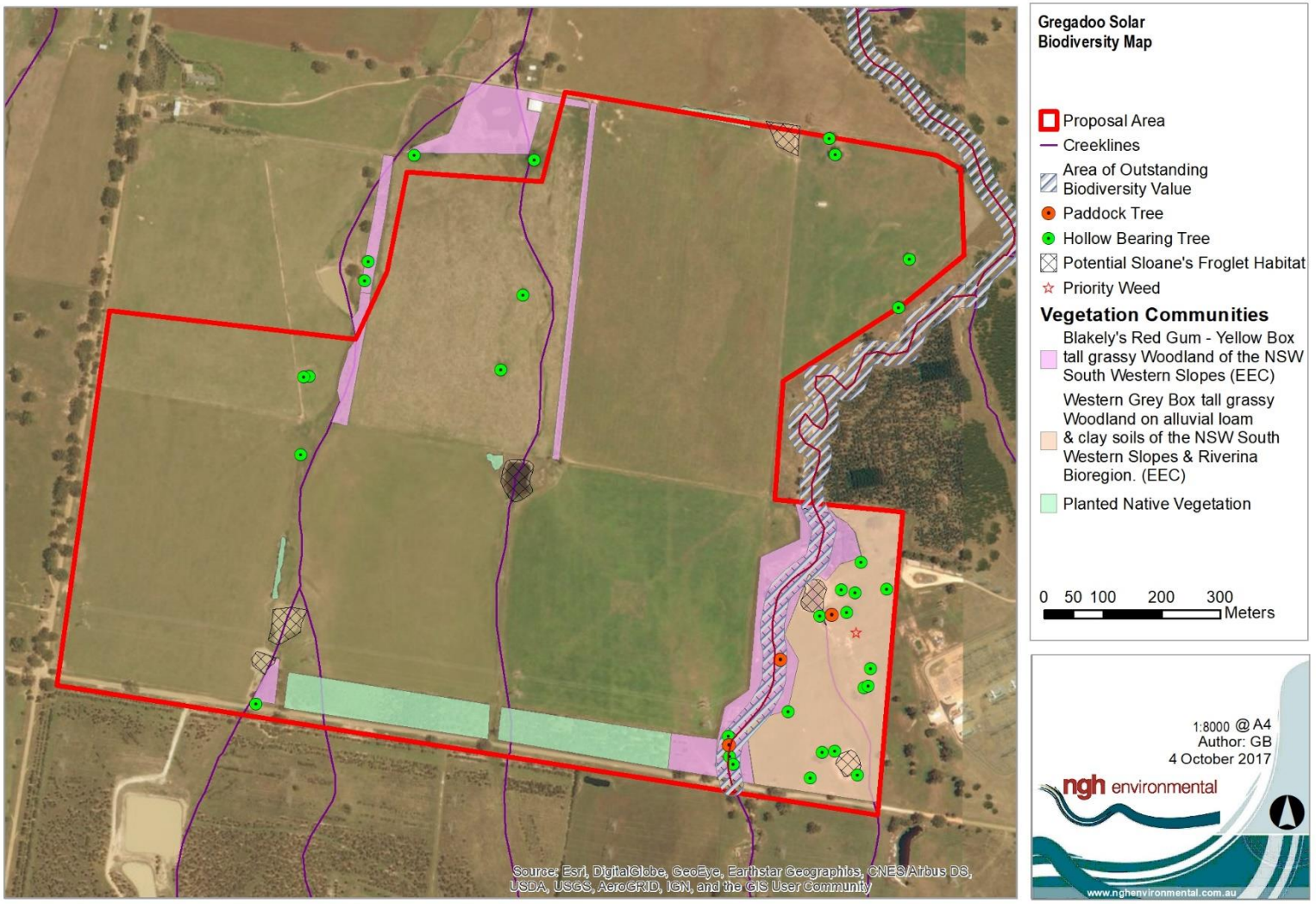

Figure 7-1 Biodiversity Map

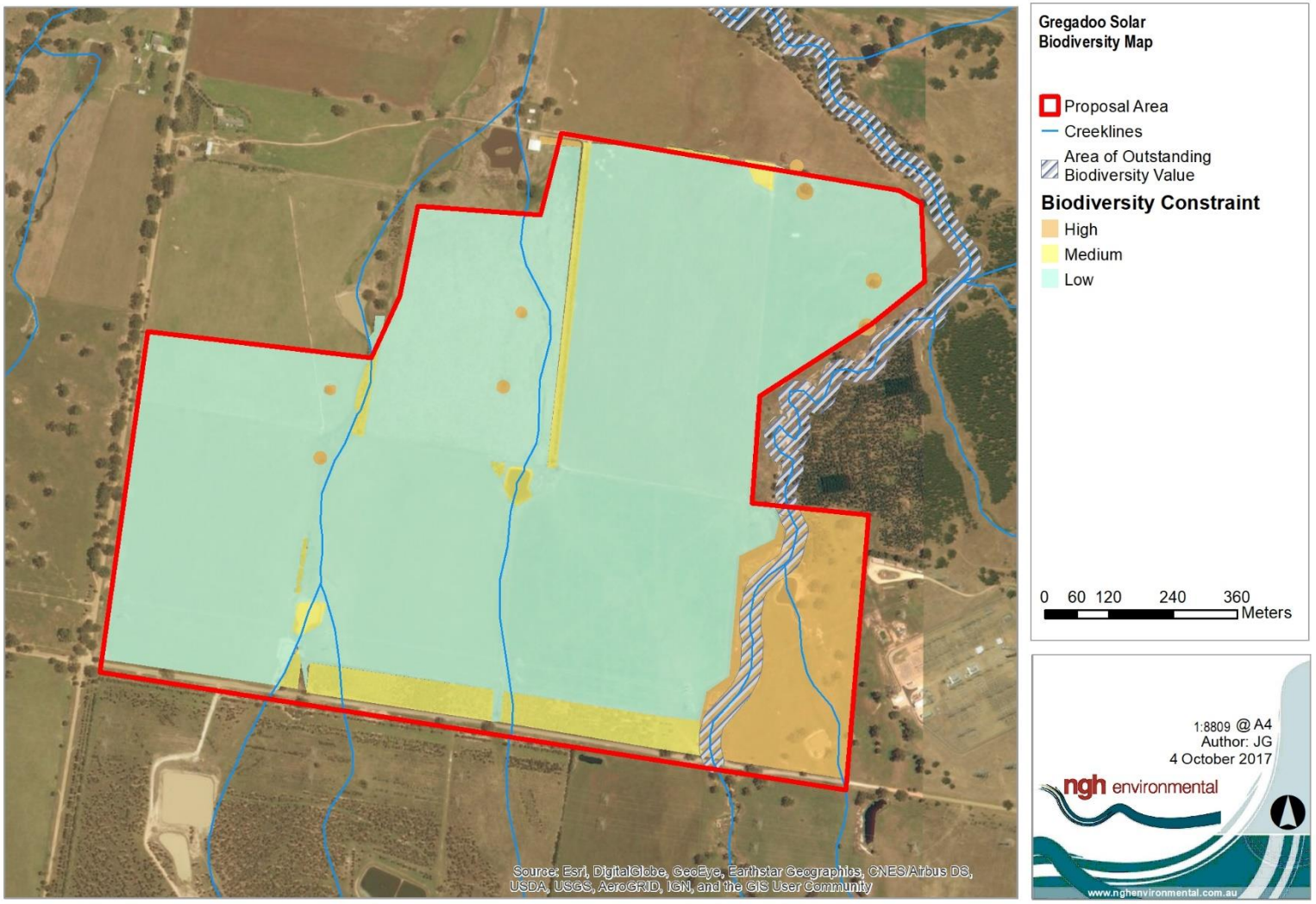

Figure 7-2 Ecological Constraints Map

Database searches

The EPBC Act search undertaken on 29th September 2017 indicated three Endangered Ecological Communities, two threatened flora species and fifteen threatened fauna species (excluding fish) that have the potential to occur at the site. A summary of the search results is provided in Table 7-3.

Table 7-3 Summary of EPBC Act Protected Matters Report search results

Protected Matter	Entities within the search area
World Heritage Properties	0
National Heritage	0
Wetlands of International Significance (Ramsar)	4
Threatened Ecological Communities	3
Threatened Species	20
Migratory Species	10
Listed Marine Species	16
Commonwealth land	12
Commonwealth Heritage places	0
Critical habitats	0
Commonwealth reserves (terrestrial)	0
State and territory reserves	0
Regional Forest Agreements	0
Invasive species	30
Nationally Important Wetlands	0
Key Ecological Features (marine)	0

A search of the threatened species occurring within the NSW South Western Slopes – Inland Slopes IBRA Subregion identified five Endangered Ecological Communities, 38 threatened flora species and 73 threatened flora species comprising of one insect, three amphibians, 48 bird species, four reptiles, nine marsupial species and eight mammal species. No threatened species have been recorded within the proposal area. Within 10 kilometres of the proposal area the following 14 species have been recorded.

- Black Falcon (*Falco subniger*)
- Koala (*Phascolarctos cinereus*)
- Little Eagle (*Hieraaetus morphnoides*)
- Speckled Warbler (*Chthonicola sagittata*)
- Superb parrot (*Polytelis swainsonii*)
- Spotted Harrier (*Circus assimillis*)
- Bush Stone Curlew (*Burhinus grallarius*)
- Curlew Sandpiper (*Callidris ferruginea*)
- Gang-gang Cockatoo (*Callocephalon fimbriatum*)
- White-fronted Chat (*Epthianura albifrons*)
- Dusky Woodswallos (*Artamus cyanopterus cyanopterus*)
- Scarlet Robin (*Petroica boodang*)
- Flame Robin (*Petroica phoenicea*)
- Spotted-tailed Quoll (*Dasyurus maculatus*)

Vegetation Mapping

An assessment was undertaken of existing vegetation mapping for the proposal area. Boiling Down Creek is listed as an area of outstanding biodiversity value under the Biodiversity Conservation Act.

OEH VIS mapping for the locality shows the proposal area mapped as non-native vegetation or planted woody vegetation. Small patches of Yellow Box Woodland, Blakely's Red Gum – Yellow Box woodland, River Red Gum - Yellow Box Woodland and Grey Box woodland are mapped as occurring in the surrounding locality.

Site inspection

A field survey was undertaken on the 20th September 2017. The results of the field survey are shown in Figure 7-1.

Farmed Land

The majority of the proposal area is used for cropping and grazing and has lost native tree cover and understorey. The paddocks have been deep ripped and cultivated in past management practices. Scattered remnant trees of Grey Box (*Eucalyptus microcarpa*) are present within the paddocks with the understory comprised entirely of exotic species.

Planted windbreaks in various locations throughout the site are comprised of local native vegetation such as Yellow Box (*Eucalyptus mellliodora*), River Red Gum (*Eucalyptus camaldulensis*), Blakely's Red Gum (*Eucalytpus blakelyi*), Apple Box (*Eucalyptus bridgesiana*), Red Box (*Eucalyptus polyanthomos*) and various Wattle species such as *Acacia pendula, A. cultriformis, A.implexa, A.linearifolia and A. buxifolia.* Groundcover is mainly exotic dominated. These planted vegetation windbreaks are approximately 8 -10 years old.

A farm forestry woodlot occurs in the south of the proposal area. This area is comprised of rows of trees planted approximately 20 years ago. Species of trees include Manna Gum (*Eucalyptus viminalis*), Southern Blue Gum (*Eucalyptus globulus*), Spotted Gum (*Eucalyptus maculata*), Mugga Ironbark (*Eucalyptus sideroxylon*), River Sheoak (*Casuarina cunninghamiana*) and Blakely's Red Gum. Some of these species are not endemic to the NSW south western slopes.

Boiling Down Creek

Boiling Down Creek runs through the eastern part of the proposal area. This area has been fenced and revegetated to provide stabilisation to the creekbanks. The creekline is heavily eroded with steep banks and exposed tree roots. Remnant Blakelys Red Gum and White Box (*Eucalyptus albens*) are present along the creekline. Planted vegetation includes local species of Blakely's Red Gum, Red Box, Yellow Box, Western Silver Wattle (*Acacia decora*), Hickory Wattle (*Acacia implexa*), *Acacia buxiflora* and A*cacia verniciflua.* Native grasses, forbs and sedges are present on the creek banks and creekline providing good understory diversity.

Boiling Down Creek provides aquatic habitat and fauna movement corridors. Small pools, fallen timber and fringing vegetation within the creekline could provide habitat for the threatened Sloane's Froglet (*Crinia sloanei)*. The farm dams with fringing vegetation within the proposal area could also provide habitat for the threatened Sloane's Froglet. Two frog species, the Plains Froglet (*Crinia parainsignifera*) and the spotted marsh frog (*Limnodynastes tasmaniensis*), were heard within the creeklines and farm dams.

The paddock on the eastern side of Boiling Down Creek still contains numerous remnant trees of predominantly Grey Box with some Blakely's Red Gum (*Eucalytpus blakelyi*) and Yellow Box (*Eucalyptus*

melliodora). This area has not been cultivated in the past. The understory is dominated by exotic weeds such as Capeweed, Horehound, Rye Grass and Barley Grass.

Plant Community Types and Endangered Ecological Communities

Based on existing vegetation mapping and the initial site inspection, vegetation within the proposal area was assigned to Plant Community Types (PCTs) in accordance with the Vegetation Information System Classification Database. PCTs were determined based on the presence of diagnostic species identified within the site survey. The results are preliminary in nature and will be refined following detailed vegetation survey of the site, and the undertaking of Floristic Plots in accordance with the Biodiversity Assessment Methodology (OEH, 2017).

PCTs identified within the proposal area are:

PCT277 - Blakely's Red Gum -Yellow Box tall grassy woodland of the NSW South Western Slopes

PCT 76 - Western Grey Box tall grassy woodland on alluvial loam and clay soils of the NSW South Western Slopes and Riverina Bioregion.

The isolated paddock trees within the proposal area are likely to be derived from PCT76 Western Grey Box tall grassy woodland

Subject to further assessment, the vegetation communities may be consistent with the following threatened ecological communities:

- Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions (TSC Act, Endangered);
- Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions (EPBC Act, Endangered);
- White Box – Yellow Box – Blakely's Red Gum Woodland (TSC Act, Endangered)
- White Box – Yellow Box– Blakely's Rd Gum Grassy Woodland and Derived native grassland (EPBC Act, Endangered)

Threatened Species

As the proposal will be assessed through the Biodiversity Assessment Methodology (OEH, 2017), a preliminary assessment using the Biodiversity Assessment Methodology Calculator has been undertaken to determine species-credit species requiring consideration. Based on the preliminary assessment, species that may require further surveys include:

Type	Species	Scientific Name	Survey Time
Flora	Ausfeld's Wattle	*Acacia ausfedlii*	All
Flora	Yass Daisy	*Ammobium Craspedioides*	Sept - Jan
Flora	A Spear Grass	*Austrostipa wakoolica*	Sept - Dec
Flora	Sand Hill Spider Orchid	*Caladenia arenaria*	Aug - Oct
Flora	Small Scurf Pea	*Cullen parvum*	Dec - Feb
Flora	Pine Donkey Orchid	*Diuris tricolor*	Sept - Oct
Flora	Euphrasia arguta	*Euphrasia arguta*	Any
Flora	Leafless Indigo	*Indigofera efoliata*	May - Dec
Flora	Small Purple-pea	*Swainsona recta*	Sept - Feb
Flora	Silky Swainson Pea	*Swainsona sericea*	Sept -Feb

Bird	Regent Honeyeater	*Anthochaera Phrygia*	Sept - Dec
Bird	Bush Stone Curlew	*Burhinus grallarius*	Any
Bird	Gang-Gang Cockatoo	*Callocaphalon fimbriatum*	Oct-Jan
Bird	Glossy Black-Cockatoo	*Calyptorhynchus lathami*	Mar-Aug
Bird	White Bellied Sea-Eagle	*Haliaeetus leucogaster*	July -Dec
Bird	Little Eagle	*Hieraaetus morphnoides*	Aug -Oct
Bird	Swift Parrot	*Lathamus discolour*	May - August
Bird	Major Mitchell's Cockatoo	*Lophochroa leadbeateri*	Sept -Dec
Bird	Square-Tailed Kite	*Lophoictinia isura*	Sept - Jan
Bird	Barking Owl	*Ninox connivens*	May -Dec
Bird	Superb Parrot	*Polytelis swainsonii*	Sept -Nov
Bird	Masked Owl	*Tyto novaehollandiae*	May - Aug
Marsupial	Eastern Pygmy Possum	*Cercarteus nanus*	Oct - Mar
Marsupial	Squirrel Glider	*Petaurus norfolcensis*	Any
Marsupial	Brush-tailed Phascogale	*Phascogale tapoatafa*	Any
Marsupial	Koala	*Phascolarctos*	Any
Mammal	Grey Headed Flying Fox	*Pteropus poliocephalus*	Oct - Dec
Mammal	Eastern Bentwing-bat	*Miniopterus screibersii oceanensis*	Nov - Feb
Amphibian	Sloane's Froglet	*Crinia sloanei*	July -August
Amphibian	Booroolong Frog	*Litoria booroolongensis*	Nov - Dec
Reptile	Striped Legless Lizard	*Delma impar*	Sept -Dec

Constraints mapping

Biodiversity features within the proposal area have been mapped to areas of High, Moderate, or Low constraints (Figure 7-2).

Remnant Grey Box Woodland and Blakely's Red Gum-Yellow Box Woodland along Boiling Down Creek have been mapped as a high constraint. These areas are potentially derived from a threatened ecological community and could also provide habitat for threatened species.

Mature paddock trees within the proposal contain hollows. Areas of planted vegetation have been mapped as areas of high constraints. These areas although planted still provide habitat for native fauna and threatened species.

Farm dams within the site could provide habitat for the threatened Sloane's Froglet. Surveys would be required for these species to determine if they are present. As it is not known if this species is present, these areas have been mapped as moderate constraints.

Areas of low constraint include the cropped paddocks where no native vegetation occurs. Minimal impacts are anticipated in these areas. These areas are most suitable for development.

7.2.2 Aboriginal heritage

A search of the Aboriginal Heritage Information Management System (AHIMS) on 29 September 2017 identified five Aboriginal places within one kilometre of the proposal area. No Aboriginal places were identified on the proposal area.

Landforms, vegetation and soils over much of the proposal area have been heavily disturbed by paddock levelling, cultivation, track formation and clearing for agriculture. This is likely to reduce the potential for Aboriginal heritage sites of significance in the affected areas. Conversely, unmodified areas with remnant woodlands are likely to have a higher potential for significance. It is noted that field assessment is required to confirm this and that any Aboriginal heritage sites/items/etc. identified would be a moderate to high constraint, requiring impact mitigation.

Consultation for the Aboriginal cultural heritage assessment process has commenced, including:

- An advertisement placed in the local paper on 19th September 2017.
- Consultation letters have been sent to relevant agencies and local groups.

Further assessment

An Aboriginal heritage assessment of the development footprint and stakeholder consultation process would be completed as part of the EIS. The significance of any Aboriginal heritage sites that may be affected by the proposal would be determined in accordance with the Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH 2011).

7.2.3 Watercourses and hydrology

Boiling Down Creek traverses the eastern part of the proposal area. This creek is a fourth order stream (Class 2 waterway) in accordance with Strahler stream classification system (Strahler, 1952). Boiling Down Creek flows into Crooked Creek, which discharges into Lake Albert, approximately two kilometres north-west of the proposal area.

Unnamed drainage lines traverse the western part of the proposal area. These drainage lines are first and second order streams (Class 4 waterways). Most of these drainage lines are involved in existing agricultural activities on the property and are periodically ploughed. The proposal area also holds six farm dams.

In accordance with Wagga LEP mapping, the proposal area is not subject to flooding or groundwater vulnerability.

There is a very low potential that groundwater would be encountered during excavations and earthwork for the construction and pole placements for the transmission lines. This is likely to be highly localised and no interception of ground water is likely to cause any impact on this resource.

Further assessment

The EIS would assess the impacts to waterways during construction and operation and include appropriate mitigation measures as required.

7.2.4 Noise

There are no sensitive receivers (unrelated to the proposal) located within 500 metres of the proposal area, with the nearest residence approximately 540 metres to the north-west. An RU4 Primary Production Small Lots land use zone is located approximately 490 metres to the east of the proposal area, as shown in Figure 5-1. This zone holds about 11 residences within one kilometre of the proposal area. An R5 Large Lot Residential land use zone is located approximately 570 metres north of the proposal area. This zone holds about 34 residences within one kilometre of the proposal area. Five residences are located on RU1 Primary Production land within one kilometre of the proposal area. Overall there are about 50 unrelated residences within one kilometre of the proposal area, illustrated in Figure 6-1.

Noise impacts would, for the most part, only occur during construction (generated by construction vehicles and machinery), with minimal noise likely to be generated during operation. Gregadoo Solar Farm Pty Ltd would adopt best practice mitigation measures during construction, such as standard working hours and regular vehicle and machinery maintenance to reduce the risk of adverse noise impacts.

During the operation of the solar farm, noise would potentially be produced by the solar tracking system (an optional feature which would operate for around half an hour per day), the substation and switchgear and any maintenance works undertaken at the site. Noise impacts during the operation of the solar farm are expected to be very low.

Further assessment

A construction noise assessment will be undertaken as part of the EIA to assess potential noise impacts. The assessment will be undertaken in accordance with the Interim Construction Noise Guideline (DECC 2009).

7.2.5 Land use and resources

The rural land in the study area is used primarily for agriculture including cropping and grazing. The Gregadoo property comprises several large paddocks which have been deep ripped and largely cleared for growing cereal crops including wheat and oats. Land and agricultural activities similar to the proposal area are widespread in the region.

Gregadoo Waste Management Centre occurs to the south of the proposal area.

There are no mineral titles or applications relevant to the proposal area indicated in the Minview database (DPE 2017).

Although the proposal has the potential to impact on agricultural use of the proposal area during construction and operation, the relatively small loss of productive land at a regional scale is not considered likely to have a significant impact on the overall agricultural productivity of the region.

There would be a loss of access to any resources that may be available at the proposal area for the life of the proposal. The solar farm would be decommissioned at the end of its operational life, removing all above ground infrastructure and returning the proposal area to its existing land capability.

Overall, the adverse impacts related to alienation of resources are expected to be low and restricted only to the period of operation.

Further assessment

The impact on agricultural production in the locality and region would be assessed in detail in the EIS

7.3 OTHER ENVIRONMENTAL MATTERS

There are a range of potential environmental matters associated with the proposed Gregadoo Solar Farm which are not considered to be key matters. These are considered secondary matters for investigation, given the characteristics of the proposal and the availability of appropriate safeguards for mitigation. These matters are outlined in Table 7-4. The impacts and any required mitigation relating to these matters would be addressed at an appropriate level of detail in the EIS.

Table 7-4 Other environmental matters

Existing environment	Potential impacts	Management and mitigation
Soils		
The proposal area lies on an alluvial plain with alluvium, clay and sand lithology. Local relief is generally very low. Drainage is imperfect, and erosion hazard is generally moderate.	Construction activities would include minor excavations and vegetation removal which have the potential to cause soil erosion and sedimentation and dust issues.	The design would provide all weather access at the proposal area during construction and operation to avoid erosion/sedimentation impacts and tracking of soil, in particular after rain events. The EIS would provide thorough consideration of soil impacts and proposed mitigation measures during construction and operation.
Visual amenity		
The solar farm has potential to result in visual impacts to neighbouring houses and road users adjacent to the proposal area. The proposal area is located on the outskirts of the suburb of Lake Albert, within a rural area with large lot agricultural production. An RU4 Primary Production Small Lots land use zone is located approximately 490 metres to the east of the proposal area. This zone holds about 15 residences within one kilometre of the proposal area. An R5 Large Lot Residential land use zone is located approximately 570 metres north of the proposal area. This zone holds about 39 residences within one kilometre of the proposal area. There are no residences not associated with the proposal within 500 metres of the proposal area. The Gregadoo Waste Management Centre occurs immediately south of the proposal area which is visually screened though planted vegetation.	The proposal has the potential to have low to moderate visual impacts. Existing vegetation, plus the potential for screening, limits the risk of substantial impacts.	An assessment of the level of visual impact would be undertaken as part of the EIS process. The EIS would also consider the potential for the solar farm to affect local landscape character. Additional consultation with specific affected residences would be undertaken to identify the nature and significance of impacts and the need for mitigation measures. The level terrain improves the potential effectiveness of vegetation planting around the proposal area.

Existing environment	Potential impacts	Management and mitigation
The gently sloping terrain and intermittent tree cover along roadsides limits long range views in the locality. The stand of pine trees immediately adjacent to the proposal area on the eastern side provides screening for the eastern residences.		It is noted that solar panels are designed to absorb as much sunlight as possible. They therefore reflect a very low percentage of the light and are not considered likely to result in glare or reflections that would affect traffic or nearby receivers.
Historic heritage		
A search of the NSW heritage Register on 11 October 2017 for the Wagga Wagga LGA identified 4 items under the NSW Heritage Act, 352 items listed under the Wagga LEP and by state agencies and 5 Aboriginal places. The closest listed heritage items are the "Ivydale" dwelling and woolshed located approximately one kilometre south-east of the proposal area. The site inspection did not identify any structures or items that potentially have historic significance.	There is considered to be a low risk of impact to heritage items.	The heritage status of the proposal area would be assessed during fieldwork undertaken as part of the archaeological assessment. Appropriate management measures would be implemented if required.
Access and traffic		
Access to the site from the Sturt Highway (nearest major transport route) is via sealed local roads, such as Kooringal Road, Mitchell Road, Gregadoo Road and Ashford's Road. These roads are all two-lane, single carriageway sealed roads with speed limits varying from 40 to 80km/h. Access from Ashfords Road to the site gate would be via the unsealed Boiling Down Road.	Construction traffic may impact traffic along local roads. Maintenance access tracks during operation would also be required across the proposal area and along the easement of the proposed transmission line.	Construction traffic impacts would be considered in the EIS and take into consideration existing traffic volumes and any requirements from RMS. Consultation would be undertaken before construction with RMS, the local council and road users regarding the works that may affect roads or traffic. The design would also consider any requirements from RMS and other relevant stakeholders on access arrangements to the proposal area,

Existing environment	Potential impacts	Management and mitigation
		including transmissions line, in particular if any modifications to the current access to the site is required. A Traffic Management Plan would be developed as part of the CEMP.
Contamination		
There are no contaminated sites for the Wagga Wagga LGA within 7.5 kilometres in the EPA contaminated land register (EPA 2017). Contamination associated with agricultural activities (eg pesticides, petrochemicals) or asbestos construction or insulation materials may still be present on the site.	There is potential that contaminants may be uncovered during excavation activities at the proposal area.	Risk associated with contamination at the proposal area are considered low and therefore no detailed investigation is likely to be required within the EIS. The mitigation measures would require a CEMP be prepared to manage any contamination identified during construction.
Air quality		
The air quality in the study area is expected to be good and typical of rural settings in NSW with low population density and few industrial pollution sources. Existing sources of air pollution are expected to include vehicle emissions, dust from agricultural practices and smoke from seasonal stubble burning. During colder months, solid fuel heating may result in a localised reduction in air quality, particularly if temperature inversions operate overnight.	The construction of the proposal is not anticipated to have a significant impact on air quality, and would mostly be related to dust during dry periods and vegetation removal. Impacts to air quality during operation would be negligible.	The mitigation measures would require a CEMP be prepared to manage air quality impacts during the construction phase. There is an opportunity to improve local air quality by maintaining ground cover vegetation under the panels.
Hazard and risk – electric and magnetic fields (EMF)		
Existing powerlines produce EMF at the site. Additional infrastructure which form part of the proposal such as connecting powerlines and substation would produce additional electromagnetic emissions.	The substation and network connection would be located within the proposal area. The powerlines constructed as part of the proposal would not pass through any neighbouring properties. The EMF that	The EMF levels of the proposed powerlines and substation would be assessed as part of the EIS.

Existing environment	Potential impacts	Management and mitigation
	would be generated by the proposed powerlines and substation is expected to be below the guideline for public exposure and would not be expected to have an adverse impact on human health.	
Hazard and risk - bushfire		
The proposal area has been predominantly cleared for agriculture, however a part of the property is identified as fire prone land under the WWCC LEP. This is likely to be due to the existing vegetation to the south.	The proposal is unlikely to be affected by bushfire, or pose a significant bushfire risk.	Bushfire impacts and risk would be assessed in the EIS.
Hazard and risk - Aviation		
The Wagga Wagga airport is located approximately 6.5 kilometres north-east of the proposal area.	It is noted that solar panels are designed to absorb as much sunlight as possible. They therefore reflect a very low percentage of the light they receive and are not considered likely to result in glare or reflections that would affect air traffic.	The EIS would investigate the potential for glare impacts related to aviation.
Social and economic impacts		
The proposal area is located within the Wagga Wagga LGA. In 2015 Wagga Wagga LGA had a population of 63,428. The main industry of employment in 2011 was health care and social assistance.	The proposal would reduce the availability of agricultural land but would generate economic benefits during construction and operation, including local employment opportunities. Other socio-economic impacts would include traffic and access, noise, air quality and visual impacts . Solar farms also pay higher local Council rates than farm land, providing an additional economic benefit.	The EIS would assess potential social and economic impacts of the proposal.
Utilities		

Existing environment	Potential impacts	Management and mitigation
Electricity network TransGrid manages and operates the high voltage electricity transmission network in NSW. Essential Energy is a NSW Government-owned corporation, with responsibility for building, operating and maintaining the electricity network in the proposal area. Both TransGrid and Essential Energy have restrictions on development within powerline easements. TransGrid guidelines state that activities and encroachments are prohibited within a transmission line easement, including 'the installation of fixed plant or equipment', and 'the placing of obstructions within 20 metres of any part of a transmission line structure or supporting guy wire'. Roads or tracks within 10 metres of the centre-line of a transmission line 132kV are prohibited although roads that cross the transmission line as a thoroughfare may be permitted. Essential Energy's (2013) easement requirements specify a 40 metre wide easement for 132kV single pole powerlines (long span), and 45 metre wide easements for H-pole powerlines (long span). 66kV powerlines have 30 metre wide easements and 22kV line easements are 20 metres wide (long span).	The proposed works would involve works adjacent to these utilities. The solar farm would need to connect to the TransGrid electricity network.	The EIS would assess the proposal against the setback and approval requirements of TransGrid/Essential Energy. The solar farm would be designed to comply with required setback, approval and consultation requirements of TransGrid and Essential Energy.
Waste management		
The proposal would generate several waste streams and utilise a variety of materials during the construction phase.	During construction, excavated material and green waste would be generated as waste. Packaging from panels and other components would require disposal. Limited operational waste would be associated with the proposal.	A Waste Management Plan would be incorporated into the CEMP, applying the principles to avoid, re-use and recycle to minimise wastes. Cleared trees would be recycled as fauna habitat where possible.

8 CONCLUSION

This Scoping Report has outlined the proposed Gregadoo Solar Farm and established the environmental and planning context of the proposal. The proposal would be assessed under Part 4 of the EP&A Act and classed as State Significant Development under *State Environmental Planning Policy (State and Regional Development) 2011.*

The report has been prepared to assist the development of Secretary's Environmental Assessment Requirements (SEARs) for the proposal, which will guide the preparation of the Environmental Impact Statement (EIS).

The report identifies the following key environmental aspects associated with the proposal, based on preliminary investigations:

- Biodiversity
- Aboriginal heritage
- Noise (construction)
- Land use and resources
- Watercourses and hydrology.

These matters will be assessed in detail in the EIS. It is likely that other matters such as soil and water values, traffic impacts and natural hazards can be readily addressed by appropriate standard mitigation and management measures. The relevance and importance of matters would be reviewed throughout the EIS process.

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Transgrid (undated) TransGrid Easement Guidelines - Third Party Development <https://www.transgrid.com.au/being-responsible/public-safety/living-and-working-with-powerlines/Documents/Easement%20guidelines%20for%20third%20party%20developers.pdf>

APPENDIX A PROPOSAL AREA PHOTOGRAPHS