STUBBO SOLAR FARM

Scoping Report

AU212000766
Stubbo Solar Farm Scoping Report
1.3
7 April 2020

rpsgroup.com

Document status

Version	Purpose of document	Authored by	Reviewed by	Approved by	Review date
0.1	First Draft	James Hugo / Jessie Strange	Lana Assaf/Simon Pollock	Simon Pollock	6/03/19
1.0	Second Draft	Lana Assaf/RPS Specialists	Lana Assaf/Simon Pollock	Simon Pollock	21/05/19
1.1	Updated with new solar layout and comments from UPC	Lana Assaf	Simon Pollock	Simon Pollock	23/03/20
1.2	Updated draft report following UPC comments	Lana Assaf	Simon Pollock	Simon Pollock	2/04/20
1.3	Updated draft report following UPC comments	Lana Assaf	Simon Pollock	Simon Pollock	7/04/20

Approval for issue

Simon Pollock	7 April 2020

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Front page photo source: NEXTracker

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ABBREVIATIONS

Abbreviation	Meaning
AHIMS	Aboriginal Heritage Information Management System
AEMO	Australian Energy Market Operator
APZ	Asset Protection Zone
AS2419-2005	Australian Standard – Fire Hydrant Installations
AS3959-2009	Australian Standard – Construction of Buildings in Bush Fire Prone Areas
BAL	Bush fire Attack Level
BC Act	Biodiversity Conservation Act 1995
BCA	Building Code of Australia
BESS	Battery and Energy Storage System
BRMC	Bushfire Risk Management Committee
BFRMP	Bush Fire Risk Management Plan
BGM DNG	Box Gum Woodlands Derived Native Grasslands
BPA	Bush Fire Prone Area (Also Bushfire Prone Land)
BPL	Bush Fire Prone Land
BPL Map	Bush Fire Prone Land Map
BPMs	Bush Fire Protection Measures
BFAR	Bush Fire Assessment Report
BFSA	Bush Fire Safety Authority
DPIE	Department of Planning, Industry & Environment
EIS	Environmental Impact Statement
EP&A Act	Environmental Planning and Assessment Act 1979
EPA Act	NSW Environmental Planning and Assessment Act 1979
EPBC Act	Commonwealth Environment Protection and Biodiversity Conservation Act 1997
LEP	Mid-Western Regional Local Environmental Plan 2012
LGA	Local Government Area
LLS Act	Local Land Services Act 2013
NP&W Act	National Parks and Wildlife Act 1974
NSW	New South Wales
PBP 2018	Planning for Bushfire Protection 2018
PMST	Protected Matters Search Tool (EPBC)
Proposal	Stubbo Solar Farm
PV	Photovoltaic
REZ	Renewable Energy Zone
RF Act	Rural Fires Act 1997
RF Regulation	Rural Fires Regulation 2013
SEPP	State Environmental Planning Policy
SEARs	Secretary's Environmental Assessment Requirements
SSD	State Significant Development
URA	Urban Release Area
UPC	UPC\AC Renewables Pty Ltd

1 INTRODUCTION

1.1 Background

UPC\AC Renewables Pty Ltd (UPC) proposes to develop the Stubbo Solar Farm (referred to as the proposal or the project), a grid-connected photovoltaic (PV) solar farm of up to 400 megawatts (MW) in the NSW Central West tablelands region, approximately 115 km east of Dubbo, NSW in the Mid-Western Regional Council Local Government Area (LGA).

The capital value of the Stubbo Solar Farm proposal would be in excess of $30 million. Accordingly, it is a State Significant Development (SSD) under the State Environmental Planning Policy (State and Regional Development) 2011 and Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

The project is proximate to an existing 330kV transmission line providing a strong connection point to the grid (Figure 1a and 1b). The 330kV Wellington to Wollar transmission line owned by TransGrid line crosses over the southern section of the proposal area. This transmission line presents a suitable connection point for the proposal due to its location and capacity.

The excellent potential of this area for renewable energy generation is recognised by the Australian Energy Market Operator (AEMO) in its Integrated System Plan (ISP) and TransGrid in its Annual Transmission Planning Report. This has resulted in the NSW Government declaring (in November 2019) the NSW Central-West region has been selected as the first pilot Renewable Energy Zone (REZ) for the State, with an initial target of 3 Gigawatts (3 GW) of new capacity to be developed in the region by the mid 2020s.

The Stubbo Solar Farm project aligns with the intent of the REZ and represents a significant investment into regional NSW, delivering several hundred jobs during construction, plus other indirect opportunities and boosting the regional economy.

1.2 Purpose of this report

This Scoping Report has been prepared to support UPC's request to the Department of Planning, Industry and Environment (DPIE) for the Secretary's Environmental Assessment Requirements (SEARs) for the proposal. The SEARs provide the requirements and guidance for the following stage in the SSD process, the Environmental Impact Statement (EIS).

This report will assist the DPI&E's development of the SEARs by providing:

- A description of the proposal (Section 2);
- The justification of the proposal and alternatives (Section 3);
- An overview of the planning and statutory framework (Section 4);
- A summary of consultation undertaken to date and proposed further engagement (Section 5);
- Highlight key potential environmental constraints and issues (Section 6); and
- Concluding remarks and identification of the most significant issues raised in the Scoping Report and UPC's considerations of the key environmental constraints for the preliminary layout within the proposed development footprint.

1.3 UPC\AC Renewables

UPC is a leading renewable energy development company that has been operating globally since the 1990s with experience in North America, Europe, Asia and Africa.

To date, UPC companies have developed more than 4,500 MW of operating wind and solar projects with an estimated investment value of over $6 billion. In recent years, UPC has demonstrated its ability to enter new markets with advanced technology and creative local business strategies, helping to accelerate renewable energy deployment around the world.

In Australia, UPC operates through its joint venture “UPC\AC Renewables” with AC Energy, the energy platform of Ayala, which is one of the largest business groups in the Philippines. UPC\AC Renewables is developing the Robbins Island Wind Farm and Jim’s Plain Wind Farm in Tasmania and in March 2020 obtained consent for the New England Solar Farm, east of Uralla, NSW.

UPC is focused on supplying renewable energy at the lowest possible price in a socially responsible way. UPC independently develops, builds, owns and operates its wind and solar assets as an Independent Power Producer (IPP). Within Australia, the UPC management team has extensive experience in the development, financing and construction of large-scale wind, solar and hydro projects both in Australia and overseas.

2 THE PROPOSAL

2.1 Definitions

The following terminology is used throughout this scoping report:

- **Study Area**: the entire area assessed within this scoping report. UPC will be seeking approval for the development of a Solar Farm consisting of photovoltaic (PV) arrays, inverters, a substation and ancillary infrastructure and a battery energy storage system (BESS) within the study area boundaries. The proposed Development Footprint will be located strictly within the Study Area.

- **Development Footprint**: the maximum extent of all proposed infrastructure, including everything within the fence line - PV arrays, inverters, substation, ancillary infrastructure and BESS plus the dedicated access road/s to access the site from the public road network. The proposed development footprint may be refined during the EIS stage.

- **Environmental exclusion zone**: higher environmental constraint areas within the Study Area that are not part of the Development Footprint. UPC commits to avoiding the development of PV arrays and other significant infrastructure within this area. Up to two access tracks and electrical connections (overhead or underground cables) may cross this area to link the two distinct areas of the proposed Development Footprint. This exclusion zone may also evolve during the EIS process.

Figure 1b shows the extent of these areas as a result of assessment undertaken for this scoping report.

2.2 Site description

The proposal site is located in the Central West region of NSW, approximately 85 km east of Dubbo and approximately 10 km north of Gulgong, NSW in the Mid-Western Regional Council Local Government Area (LGA) (Figure 1).

The Stubbo Solar Farm study area covers an area of 1,485 hectares encompassing 29 lots., As a result of the assessment undertaken for this scoping report, the proposed development footprint comprises 1,136 hectares. It excludes an environmental exclusion zone over 349 hectares. Both the study area and the proposed development footprint as shown on Figure 1b below involve (wholly or partly) the cadastral lots listed in Table 1 below.

Table 1: Cadastral lots intersecting with the study area

Lot	Deposited Plan	Lot	Deposited Plan
14	DP217391	60	DP750765
22	DP217391	80	DP750765
55	DP750765	11	DP217391
155	DP705247	1	DP525593
5	DP113406	67	DP750765
2	DP525593	24	DP750761
9	DP217381	68	DP750765
121	DP840082	1	DP1018333
120	DP840082	24	DP502960

4	DP113406	146	DP750765
20	DP217391	5	DP502956
19	DP217391	78	DP750765
8	DP217382	59	DP750765
4	DP502956	69	DP750765
10	DP217381		

Stubbo Solar Farm is located on flat/gently rolling, predominantly cleared agricultural land primarily used for livestock grazing and intermittent cropping which is consistent with the study area being zoned Primary Production (RU1) under Mid-Western Regional Local Environmental Plan 2012 (LEP).

Native vegetation remains in the form of scattered trees, vegetation along riparian corridors and isolated areas of remnant vegetation. Several watercourses and their tributaries run throughout the site, including the Merotherie, Pine, Stubbo and Gum creeks which are described as being non-perennial. The proposed development footprint has been designed to avoid or minimise impacting on these creeks to the extent practicable.

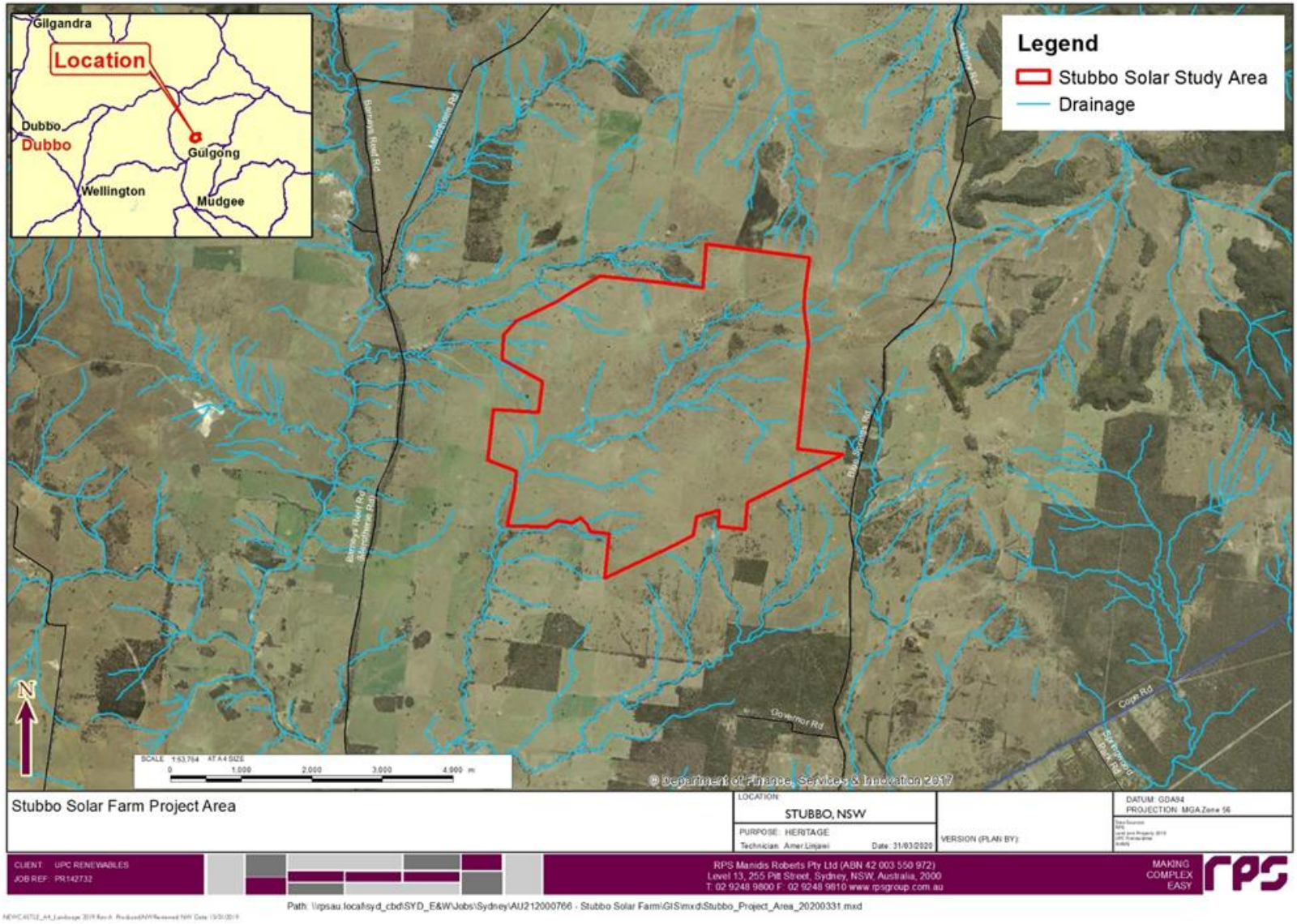

Figure 1a Stubbo Solar Farm Proposal Area

2.3 Description of the proposal

The Stubbo Solar Farm is located in the Central West of NSW near the locality known as Stubbo. There is no actual town of Stubbo. The nearest town is Gulgong, approximately 10km away. The proposed site area is accessed via the Barneys Reef, Blue Springs, and Merotherie roads. The proposed development footprint would then be accessed via up to two existing public and/or private tracks to be upgraded if required. The total of existing tracks to be upgraded would not exceed 4 kilometres.

The proposed Stubbo Solar Farm development footprint will cover an area of 1,136 hectares and comprises two (2) separated sections. This current extent of the proposed development footprint is a result of UPC's commitment to avoiding areas of ecological significance as determined in this scoping report. In this instance, the development footprint avoids most waterways, native vegetation of high significance and areas with known potential for cultural heritage finds.

The development footprint itself will consist of ground mounted single axis tracking PV solar panels at a height of up to 4.5 metres (refer to as PV arrays).

The north and south sections of the proposed development footprint will be connected via up to two internal access tracks that will avoid or minimise impact to potential areas of high ecological value. These access tracks will also accommodate the transmission connection that will link the sections into a single generating facility. The transmission connections may be overhead or underground. Indicative location of the access tracks and cable crossing are shown on Figure 1b. Options for substation locations along the existing 330kV transmission line are currently being considered (see Figure 1b) as part of the proposal.

Battery and Energy Storage System

UPC is investigating the option for a BESS to be installed within the Study Area, likely being located as close to the substation as possible to minimise energy loss.

The specific technology, MW rated capacity and megawatt hours (MWh) of storage of the proposed BESS will be determined during the detailed design stage of the project and will be dependent on a number of commercial and financial considerations during the development phase. At the time of this report, the following MW rated capacities are considered:

- 50MW x 4 hours;
- 100MW x 2 hours; or
- 200MW x 1 hour.

The sizing of the BESS is also likely to be driven by government policy, given the current focus on mechanisms to ensure reliability and dispatchability of renewable energy power generation. The BESS will either be housed in a secure compound adjacent to the electrical substation, either at location A or B as shown on Figure 1b, or distributed throughout the site adjacent to the inverters.

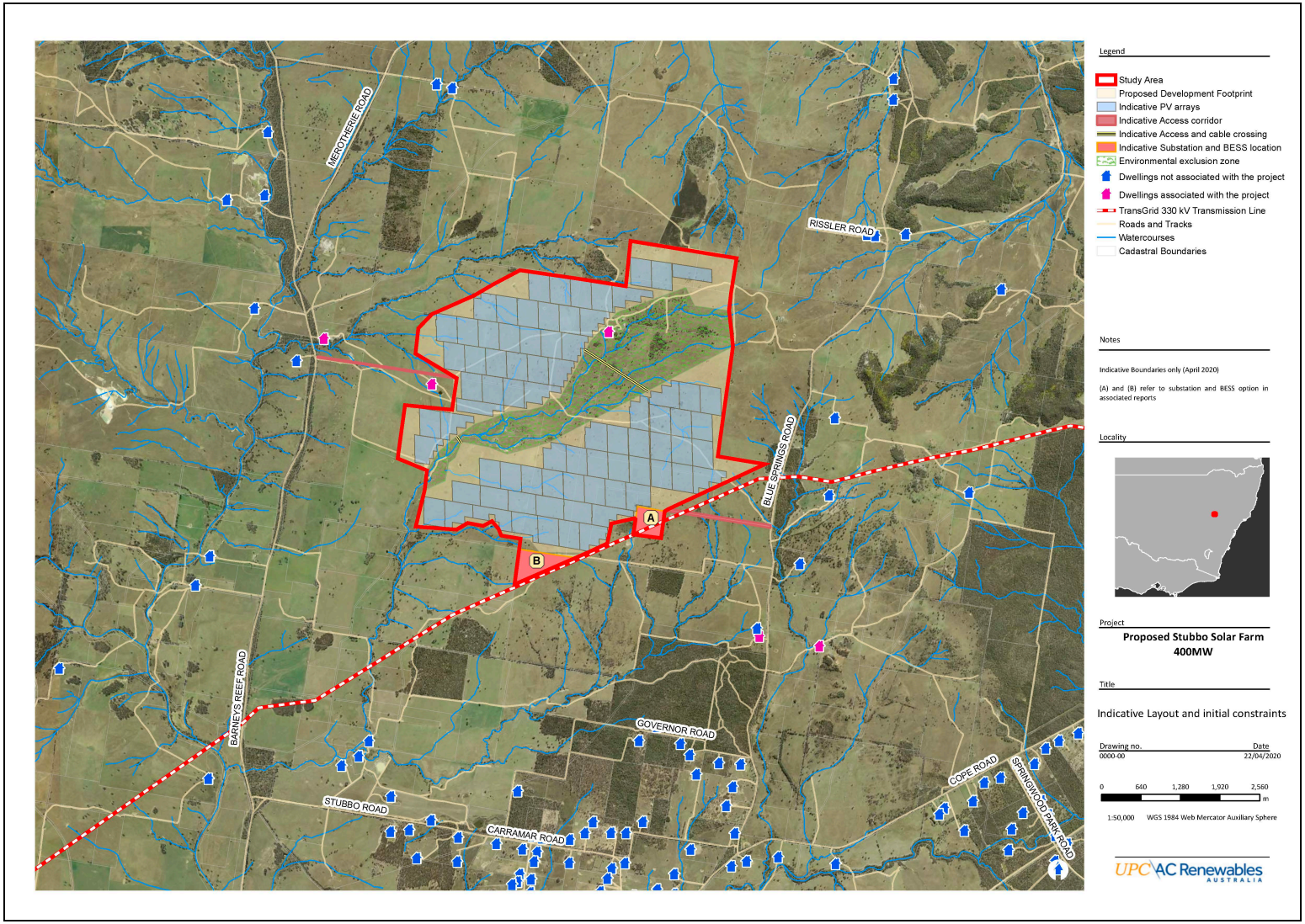

Figure 1b Proposed Stubbo Solar Farm Layout

3 PROPOSAL JUSTIFICATION AND ALTERNATIVES

3.1 Justifications

Over the coming decades, a number of major energy generators in NSW will reach the end of their lifespan and are likely to be retired starting with the Liddell coal-fired power station which is to be closed in 2022 and then followed by Vales Point, Eraring and other major plants. This has the potential to lead to interruptions in energy supply, particularly when the current network is already strained at peak demand times.

The development of Stubbo Solar Farm and BESS project aligns with the NSW and Federal Government's objectives for energy security and reliability, renewable energy targets, and would contribute to the continued growth of the region's renewable energy generation objectives in the NSW Government's Central-West Energy Zone. In addition, it would provide various regional, environmental, economic and social benefits.

3.1.1 Social benefits

The Stubbo Solar Farm is anticipated to provide the following social benefits:

- The proposal will create a significant number of jobs (up to approximately 400 full time employees during peak construction phase) in regional NSW during the construction period;
- The proposal will create a range permanent jobs (up to approximately 10 full time employees) during the operation and maintenance of the solar farm;
- Help drive lower electricity retail prices in the long term, due to the declining price of renewable energy, which can be passed on to all energy customers through the National Electricity Market;
- Generate passive income for rural landholders involved in the proposal and drought proofing farming operations, a primary cause of mental health issues and stress in rural communities;
- UPC aims to develop the proposal in a manner which allows landholders to continue selected farming operations within the solar farm footprint post-construction;
- Provide direct and indirect employment opportunities, economic boosts for small business in rural communities; and
- Contribute indirectly to the sustainability and resilience of the regional community more broadly, beyond the landholders directly associated with the proposal, as a result of the long-term financial stimulation.

3.1.2 Economic benefits

The Stubbo Solar Farm will provide a significant capital investment in the region as well as the following:

- Direct and indirect benefits to the local, state and national economies during the life of the proposal;
- Potential for significant employment opportunities, boosting the local economy;
- Stubbo Solar Farm will distribute a stable long term source of revenue per year into the regional economy via community benefit programs and lease payments.

3.1.3 Environmental benefits

The Stubbo Solar Farm is anticipated to provide the following environmental benefits:

- The proposal would also contribute to the Commonwealth Government's objective to achieve an additional 33 GW from renewable sources by 2020 under the Renewable Energy Target (RET).
- Annual greenhouse gas reduction of over 600,000 tonnes per annum of CO2 emissions contributing to meeting federal and state targets (refer to section 3.1.4);
- Management of noxious weed spread and bushfire mitigation measures;
- Increased knowledge and management with of areas of high ecological and cultural significance.
- Agricultural activity may be possible while the solar farm is operating (e.g. grazing). Additionally, the degree of permanent land disturbance in the construction and operation of the solar farm would be small (limited to the substation / switchyard),

3.1.4 Contribution to Federal and State environmental targets

The Stubbo Solar Farm will contribute to meeting the targets of the following policies:

Renewable Energy Target

The Clean Energy Regulator introduced the Renewable Energy Target, which is an Australian Government scheme designed to reduce emissions of greenhouse gases in the electricity sector and encourage the additional generation of electricity from sustainable and renewable sources. The Renewable Energy Target works by allowing both large-scale generators and the owners of small-scale systems to create large-scale generation certificates and small-scale technology certificates for every megawatt hour of power they generate. Certificates are then purchased by electricity retailers (who supply electricity to householders and businesses) and submitted to the Clean Energy Regulator to meet the retailers' legal obligations under the Renewable Energy Target. This creates a market which provides financial incentives to both large-scale renewable energy generators and the owners of small-scale renewable energy systems.

Electricity generation is the largest individual contributor of greenhouse gas emissions in Australia (Department of Environment 2016). The proposal would contribute to the New South Wales Renewable Energy Action Plan (NSW Government 2013), which supports the national target of 20 percent renewable energy by 2020. The proposal would 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.

NSW Net Zero Plan Stage 1: 2020-2030

The NSW Department of Planning, Industry and Environment (NSW DPIE) Net Zero Plan Stage 1: 2020–2030 is a commitment to taking decisive and responsible action on climate change. The NSW Government has set a goal of net zero emissions by 2050 and has released these policies to fast-track emissions reduction over the next decade and prepare the State to take further action in the decades to follow.

The Stubbo Solar Farm is in accordance with *Priority one; Drive uptake of proven emissions reduction technologies that grow the economy, create new jobs or reduce the cost of living.* This project will create new jobs and will increase the uptake of emissions reduction technologies that grow the economy (see section 3.1.3).

NSW 2021: A Plan to Make NSW Number One

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.

In order to achieve these goals a shift from traditional energy generation methods is essential and solar provides a suitable, clean energy option for reducing emissions whilst also having the benefit of a lesser environmental impact over traditional methods such as coal in the construction and operation phases.

3.2 Alternatives

The proponent identified the proposed location for a solar farm due to its optimal renewable potential (being within the NSW Government's Central-West Energy Zone) and proximity to a suitable transmission line. Alternative locations for a project of this magnitude are quite limited due to the requirements of surface area, topography and not only proximity to energy infrastructure but also available network capacity.

Alternatives to the proposed location were considered by UPC as part of the site identification process, including in its investigation of other potential sites in the State and the Central Highlands region. The proposed site was primarily selected due to the capacity available in the existing electricity network for a utility-scale solar PV project, the relatively low level of environmental constraints presented by the site, the relatively few neighbours living within close proximity of the site and the willingness of the landholders to be involved.

Alternative power generation options are also limited from a practical and economic point of view. Along with wind, solar PV power generation has become the lowest cost form of new power generation globally, especially in high solar irradiance countries such as Australia. There is no prospect for the private sector to invest in other technologies due to their relatively higher costs and higher risks. Replacing the retiring coal plants with anything other than wind farms, solar farms, and some combination of battery storage, pumped hydro and/or gas peaking generation is the most economic option for the foreseeable future. Hence the Stubbo Solar Farm and BESS proposal is entirely consistent with this outlook.

3.2.1 'Do nothing' option

The 'do nothing' approach would represent a missed opportunity for a number of benefits of the proposal as listed in the previous sections, including:

- A new renewable energy project that would contribute to the energy security and emission reduction goals of the Australian and NSW Governments;
- A clean energy solution resulting in lower greenhouse gas emissions;
- Further electricity generation and supply to the grid in a critical location, at a time where older generation projects are retiring; and
- Additional local and regional economic growth and social benefits.

4 PLANNING CONTEXT

4.1 Commonwealth legislation

Environmental Protection and Biodiversity Conservation Act 1999

The *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) provides the legislation to protect the environment, particularly the matters of national environmental significance (MNES) and promote ecologically sustainable development. The MNES include:

- World Heritage;
- National Heritage places;
- Wetlands of international importance;
- Threatened species and communities;
- Listed migratory species;
- Protection of the environment from nuclear actions;
- Commonwealth marine areas;
- Great Barrier Reef Marine Park; and
- Impact of water resources relating to coal seam gas and large coal mining development.

An approval from the Commonwealth Minister for the Environment is necessary if the proposal is likely to have a significant impact on any of the above MNES or on the environment of Commonwealth land. The Significant Impact Guidelines 1.1 released by the Department of the Environment (now Department of the Environment and Energy, DoEE) 2013 provide guidance on whether or not a referral should be submitted.

A search of protected matters under the EPBC Act for the proposal was undertaken in 31 March 2020 using the EPBC Act Protected Matters Search Tool (PMST) with a 10 km radius. A summary of the results is provided in Table 2 and the complete report is provided in Appendix A. Further discussion of potential impacts on threatened ecological communities, species and migratory species is provided in Section 6.2.

If investigations at the EIS stage find that the proposal will or is likely to have a significant impact on a MNES, a referral will be submitted to the DoEE. The DoEE and the Australian Government environment minister would consider the matter and determine whether the proposal is considered a ‘controlled action’ and an approval is required under the EPBC Act.

Table 2: Summary of EPBC Act Protected Matters Search

World Heritage Properties	None
National Heritage Places	None
Wetlands of National Importance (Ramsar)	5 (the nearest Ramsar wetland is located approximately 200 – 300 km upstream)
Great Barrier Reef Marine Park	None
Commonwealth Marine Area	None
Listed Threatened Ecological Communities	4
Listed Threatened Species	32
Listed Migratory Species	11
Other Matters Protected by the EPBC Act	
Commonwealth Land	1 (Commonwealth Land is not located within the proposal site)
Commonwealth Heritage Places	None
Listed Marine Species	18 (the proposal is located inland; no marine environments are in the vicinity)
Whales and Other Cetaceans	None
Critical Habitats	None
Commonwealth Reserves Terrestrial	None
Australian Marine Parks	None

Native Title Act 1993

The Commonwealth Government enacted the *Native Title Act 1993* (the Native Title Act) to formally recognise and protect native title rights in Australia following the decision of the High Court of Australia in *Mabo and Ors v Queensland [No 2] (1992) 175 CLR 1* (Mabo). Native title refers to the recognition that Indigenous people, through their traditional laws and customs, continue to hold rights to their land with the exception of land where native title has been 'extinguished' by previous Acts. The Native Title Act establishes processes to determine where native title exists, how future activity affecting upon native title may be undertaken, and to provide compensation where native title is impaired or extinguished.

Where a native title claimant application is made with the National Native Title Tribunal, the Federal Court or High Court of Australia make a determination of whether native title does or does not exist in relation to the claim. The Native Title Act provides Aboriginal people who hold native title rights and interests, or who have made a native title claim, the right to be consulted and in some cases, to participate in decision about activities proposed to be undertaken on the land.

A search of the National Native Title Tribunal identifies that the proposal site is within a native title claim area (Tribunal file no. NC2018/002). As the claim has not yet been determined the claim applicants will be invited to participate in the Aboriginal community consultation undertaken for the EIS as the Consultation Requirements.

Commonwealth Aboriginal and Torres Strait Islander Heritage Protection Act 1984

The purpose of this Act is to preserve and protect all heritage places of particular significance to Aboriginal and Torres Strait Islander people in accordance with Aboriginal and Torres Strait Islander tradition. This Act applies to all sites and objects across Australia and in Australian waters (s4). It would appear that the intention of this Act is to provide national baseline protection for Aboriginal places and objects where State legislation is absent. It is not to exclude or limit State laws (s7(1)). Should State legislation cover a matter already covered in the Commonwealth legislation, and a person contravenes that matter, that person may be prosecuted under either Act, but not both (s7(3)). The Act provides for the preservation and protection of all Aboriginal objects and places from injury and/or desecration. A place is construed to be injured or desecrated if it is not treated consistently with the manner of Aboriginal tradition or is or likely to be adversely affected (s3)

The Act would be referred to in any circumstances where the *National Parks and Wildlife Act 1974* does not cover the legislative requirements for the project during the EIS stage.

The National Electricity Rules and Australian Energy Market Operator Draft 2020 Integrated System Plan (ISP)

From mid-2020, the development and implementation of the ISP will be a regulated requirement under the National Electricity Rules. Australia's energy sector faces a profound, complex and accelerating transition. As its traditional generators retire, Australia must invest in a modern energy system with significant consumer-led distributed energy resources (DER) and utility-scale variable renewable energy (VRE), supported by sufficient dispatchable resources. These opportunities will take advantage of additional network capability provided by new interconnectors where possible, as this is often the least cost way of establishing Renewable Energy Zones (REZ). However, some opportunities also require specific augmentation of the transmission network. The Draft ISP considers 35 possible REZ candidates after assessing their resource, technical and economic parameters during the scenario and assumptions consultation process. Stubbo Solar Farm falls within the identified Zone N3 Central West NSW, Renewable Energy Zone.

4.2 New South Wales legislation

Environmental Planning and Assessment Act

The *Environmental Planning and Assessment Act 1979* (EP&A Act) and *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation) provide the framework for environmental assessment and approvals in NSW. Part 4 of the EP&A Act provides the process for development assessment and consent conditions.

Assessment documents prepared to meet the requirements of the EP&A Act (including Reviews of Environmental Factors, Environmental Impact Statements and Environmental Impact Assessments) should address heritage matters, and planning documents such as LEPs and Regional and / or State Environmental Plans typically contain provisions for heritage, including Aboriginal and non-Aboriginal heritage. Additionally, local government authorities are required to maintain a register of all local items of heritage significance recorded within their LGA.

This proposal would be assessed under Part 4, Division 4.7 of the EP&A Act, as development consent is required and is considered to be State significant development (SSD) according to Schedule 1 of the State Environment Planning Policy (State and Regional Development) 2011.

State Environment Planning Policy (State and Regional Development) 2011

The State Environment Planning Policy (State and Regional Development) 2011 (SRD SEPP) identifies development and infrastructure that is regionally and state significant. Schedule 1 identifies general criteria to be met for a project to be considered as State significant development. Clause 20 of Schedule 1 outlines the requirements for electricity generating works and heat or co-generation as follows:

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

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

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

The proposal is expected to have a capital investment in excess of $30 million, therefore classifying the proposal as SSD and is to be assessed and determined under Part 4 of the EP&A Act. The consent authority for SSD projects is the Minister or their delegate. In accordance with the NSW Large-Scale Solar Energy Guideline for State Significant Development (December 2018) the Independent Planning Commission is the consent authority for State significant development in the following circumstances:

- 25 or more people have objected to the application
- the local council has objected to the application; and/or
- the applicant has disclosed a reportable political donation.

Where those circumstances are not present, the Minister for Planning is the consent authority (and a delegate may exercise the Minister's consent authority functions).

In this case as UPC (the Applicant) is not the owner of the land to which the development application relates (or is not the only owner), the applicant must provide evidence that all the relevant landowners consent to the application. If access to Crown Land is required, the proponent should contact Crown Lands, NSW Department of Industry.

State Environmental Planning Policy (Infrastructure) 2007

The State Environmental Planning Policy (Infrastructure) 2007 (ISEPP) aims to provide the framework to effectively deliver infrastructure projects throughout NSW. Relevant to this proposal, Clause 34(7) of the ISEPP provides that development for the purpose of a solar energy system may be carried out by any person with consent on any land providing it is not within a prescribed residential zone. The proposal is located within land zoned Primary Production (RU1). Primary Production (RU1) is not a prescribed residential zone and is therefore permissible with consent pursuant to Clause 34(7).

State Environmental Planning Policy No 55 – Remediation of Land

The State Environmental Planning Policy No 55 – Remediation of Land (remediation of land SEPP) provides a Statewide planning approach to the remediation of contaminated land. Clause 7 of the remediation of land SEPP requires a consent authority to consider whether the land is contaminated before providing development consent.

The proposal site is located in an area where agricultural activities are likely to have occurred or are currently ongoing. Agricultural activities are a potential source of contamination according to Managing Land Contamination Planning Guidelines: SEPP 55 – Remediation of Land (DUAP 1998), therefore there is potential for contaminants to be present within the proposal site. Contamination risk is discussed in Section 6.7.

State Environmental Planning Policy No 33 – Hazardous and Offensive Development

The EIS will include a preliminary risk screening in accordance with State Environmental Planning Policy No. 33 – Hazardous and Offensive Development and Applying SEPP 33 (DoP 2011a), and if the preliminary risk screening indicates the development is "potentially hazardous", a preliminary hazard analysis (PHA) will be prepared in accordance with Hazard Industry Planning Advisory Paper No. 6 – Guidelines for Hazard Analysis (DoP 2011b) and Multi-Level Risk Assessment (DoP 2011c).

The EIS will also include an assessment of all potential hazards and risks including but not limited to bushfires, spontaneous ignition, electromagnetic fields or the proposed grid connection infrastructure (including the proposed internal solar array and central substations) against relevant guidelines.

State Environment Planning Policy No. 44 – Koala Habitat Protection

The State Environmental Planning Policy No 44 – Koala Habitat Protection aims to 'encourage the proper conservation and management of areas of natural vegetation that provide habitat for koalas to ensure a permanent free-living population over their present range and reverse the current trend of koala population decline.' The SEPP requires a plan of management for areas of more than one hectare that contain koala habitat and for which a development application has been lodged. The EIS will consider the presence of Koala habitat and include an assessment of the project's compliance with the aims and objectives of this SEPP.

Biodiversity Conservation Act 2016

The *Biodiversity Conservation Act 2016* (BC Act) aims to maintain a healthy, productive and resilient environment for the greatest well-being of the community, now and into the future, consistent with the principles of ecologically sustainable development. Part 7.9 of the BC Act relates to the biodiversity assessment requirements of SSD projects.

An application for development consent under Part 4 of the EP&A Act for SSD must be accompanied by a biodiversity development assessment report unless the Planning Agency Head and the Environment Agency Head determine that the proposed development is not likely to have any significant impact on biodiversity values.

Local Land Services Act 2013

The *Local Land Services Act 2013* (LLS Act) regulates the clearing of native vegetation on land in rural areas (generally being, land other than urban areas as defined in State Environmental Planning Policy (Vegetation in Non-Rural Area) 2017). Section 60O of the LLS Act provides that the clearing of native vegetation is authorised for the purposes of the LLS Act if that clearing was authorised by a development consent under Part 4 of the EP&A Act. As such, any clearing which forms part of the approved proposal does not require further approval or authorisation under the LLS Act.

Protection of the Environment Operations Act 1997

The *Protection of the Environment Operations Act 1997* (POEO Act) provides the legislation regarding pollution and harm of the environment and is administered by the NSW Environment Protection Authority (EPA). The POEO Act specifies pollution offences relating to land, water, air and noise and the accountability and duty of polluters to notify the EPA of any such incident. An Environment Protection Licence (EPL) is also required for a number of scheduled activities. Although electricity generation is listed under Schedule 1 of the POEO, generation by solar power is not included in this definition and therefore is unlikely to require an EPL.

Biosecurity Act 2015 and Biosecurity Amendment Act 2017

The *Biosecurity Act 2015* and Regulation provides the framework for managing diseases and pests that may cause harm to human, animal or plant health or the environment, From 1 July 2017, biosecurity reforms were switched on in NSW as the Biosecurity Act 2015 commenced. The amended Act replaced 14 outdated Acts with a modern, cohesive framework for protecting the State from the threat of animal, plant, pests, diseases, weeds and contaminants. UPC is currently in discussions with a number of the landholders to enable sheep grazing to resume on portions of the areas following the completion of the construction of the project. A detailed protocol will be developed to ensure biosecurity is maintained and that grazing does not impact on the safe and efficient operation of the project or result in injury to farm workers or OM staff.

Roads Act 1993

The *Roads Act 1993* (Roads Act) provides the framework for undertaking various activities on public roads and provides for the declaration of RMS and other public authorities as roads authorities for both classified and unclassified roads. The requirement for road upgrade works would be further investigated during the EIS stage of the proposal. If required, an approval would be sought from the relevant roads authority under Section 138 of the Roads Act.

National Parks and Wildlife Act 1974

Under the *National Parks and Wildlife Act 1974* (NP&W Act), 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. Protection of Aboriginal heritage is outlined in Section 86 of the NPW Act, as follows:

"A person must not harm or desecrate an object that the person knows is an Aboriginal objects" s86(1).
"A person must not harm an Aboriginal object" s86(2).
"A person must not harm or desecrate an Aboriginal place" s86(4).

Penalties apply for harming an Aboriginal object or place. The penalty for knowingly harming an Aboriginal object (s86[1]) and / or an Aboriginal place (s86[4]) is up to $550,000 for an individual and / or imprisonment for two years; and in the case of a corporation the penalty is up to $1.1 million. The penalty for a strict liability offence (s86[2]) is up to $110,000 for an individual and $220,000 for a corporation.

Harm under the NPW Act is defined as any act that; destroys, defaces or damages the object, moves the object from the land on which it has been situated, causes or permits the object to be harmed. However, it is a defence from prosecution if the proponent can demonstrate 1) that harm was authorised under Section 90 of the NPW Act i.e. an AHIP (and that the works complied with the requirements of the AHIP) or 2) that the proponent exercised due diligence in respect to Aboriginal heritage. The 'due diligence' defence (s87[2]), states that if a person or company has exercised due diligence to ascertain that no Aboriginal objects was likely to be harmed as a result of the activities proposed for the study area then liability from prosecution under the NPW Act will be removed or mitigated if it later transpires that an Aboriginal object was harmed. If any Aboriginal objects are identified during the activity, then works should case in that area and OEH notified (DECCW 2010: 13). The due diligence defence does not authorise continuing harm.

The Director-General is also responsible for the protection and care of native fauna and flora and Aboriginal places and objects throughout NSW. Under Section 4.41 of the EP&A Act, an Aboriginal Heritage Impact Permit under Section 90 of the NP&W Act is not required for SSD projects, however consent conditions generally require that Aboriginal heritage be addressed.

Part 6 of the *National Parks and Wildlife Act 1974* includes Aboriginal cultural heritage consultation requirements for proponents. Informed input made by registered Aboriginal parties relating to the significance of Aboriginal objects and/or places will usually require the collective input of a number of knowledge holders and therefore consultation should be designed to allow the internal decision-making processes of Aboriginal people to function effectively. When undertaking consultation, proponents should use the services of people who are skilled and experienced in consultation and, in particular, consultation with Aboriginal people. The NSW Aboriginal Land Council (NSWALC) and Local Aboriginal Land Councils (LALCs) have statutory functions relevant to the protection of Aboriginal culture and heritage under the NSW Aboriginal Land Rights Act 1983. These requirements do not extend the role of NSWALC and LALCs in the significance assessment process. That is, these requirements do not provide NSWALC and/or LALCs any additional or specific decision-making role in the assessment of significance of Aboriginal object(s) and/or place(s) that are subject to an AHIP application under Part 6 of the NPW Act. LALCs may choose to register an interest to be involved in the consultation process, or may assist registered Aboriginal parties to participate in the consultation process established by these requirements. In order to ensure effective consultation and the subsequent informed heritage assessment, LALCs are encouraged to identify and make contact with Aboriginal people who hold cultural knowledge in their area.

Heritage Act 1977

The *Heritage Act 1977* (Heritage Act) provides protection for environmental heritage including historic places, structures, relics, moveable objects, archaeological deposits and features and landscapes of significance. The Heritage Act also affords protection to Aboriginal sites and places which are of State heritage significance, which are either listed on the State Heritage Register (SHR) or subject to an Interim Heritage Order. Where Aboriginal sites or places are listed on the SHR or subject to an active Interim Heritage Order, these may require approvals or excavation permits from the NSW Heritage Branch.

In addition, under the Heritage Act, NSW State Agencies are required to maintain a register of all items of heritage significance located within lands that they are responsible for.

Under Section 4.41 of the EP&A Act, an approval under Part 4, or an excavation permit under Section 139 of the Heritage Act is not required for SSD projects. The proposal is not anticipated to affect any items of heritage significance and is further discussed in Sections 6.3 and 6.4.

Crown Lands Act 1989

The objects of *Crown Lands Act* 1989 (Crown Lands 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 that 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.

Any Crown land, including paper roads or residual road corridors potentially impacted by the proposal would be further investigated in the EIS and the Department of Industries (Lands) would be consulted during the assessment process.

Conveyancing Act 1919

Section 7A for Solar farm leases (lease of premises) - The proponent will lease the development footprint from the owners of the affected land. Due to the size and number of solar farms required to generate sufficient electricity, the solar panels usually extend over many adjoining properties each of which require a separate lease. Lease of a solar farm site will be treated as a lease of premises, regardless of whether the lease will be for more or less than 25 years, The plan defining 'premises' (being the development footprint) will not constitute a 'current plan' within the meaning of section 7A Conveyancing Act 1919 and therefore will not require subdivision consent under section 23G Conveyancing Act 1919.

Potentially section 23G of this Conveyancing Act may also apply if the relevant Authorised Network Operator for this project (likely to be TransGrid) requires subdivision for the purpose of construction, operation and maintenance of the substation.

Mining Act 1992 and Petroleum (Onshore) Act 1991

There are a number of clauses related to access requirements and leases for land that falls under these Acts. Discussions with the landowners/respective mine sites will be undertaken at the EIS stage to establish access requirements for land that falls under this jurisdiction. For example, Division 4 Rights and duties under a mining lease

4.3 Local Government

Mid-Western Regional Council Local Environmental Plan 2012

The proposal is located within the Mid-Western Regional Council Local Government Area. The Council's Local Environmental Plan (LEP) provides the framework for planning and development of land within the relevant Local Government Area (LGA). The aims of the LEP include:

a) to promote growth and provide for a range of living opportunities throughout Mid-Western Regional LGA,

b) to encourage the proper management, development and conservation of resources within Mid-Western Regional LGA by protecting, enhancing and conserving:

   i. land of significance to agricultural production, and

   ii. soil, water, minerals, and other natural resources, and

   iii. native plants and animals, and

   iv. places and buildings of heritage significance, and

   v. scenic values,

c) to provide a secure future for agriculture through the protection of agricultural land capability and by maximising opportunities for sustainable rural and primary production pursuits,

d) to foster a sustainable and vibrant economy that supports and celebrates the Mid-Western Regional LGA's rural, natural and heritage attributes,

e) to protect the settings of Mudgee, Gulgong, Kandos and Rylstone by:

   i. managing the urban and rural interface, and

   ii. preserving land that has been identified for future long- term urban development, and

   iii. promoting urban and rural uses that minimise land use conflict and adverse impacts on amenity, and

   iv. conserving the significant visual elements that contribute to the character of the towns, such as elevated land and the rural character of the main entry corridors into the towns,

f) to match residential development opportunities with the availability of, and equity of access to, urban and community services and infrastructure,

g) to promote development that minimises the impact of salinity on infrastructure, buildings and the landscape.

Permissibility

The proposal is located within land zoned as Primary Production (RU1) under the Mid-Western Regional LEP and is not explicitly prohibited in this zone as electricity generating works is not within the list of prohibited land uses. More specifically, development permitted with consent specifies that any development that is not listed as permitted with consent or prohibited may be permitted with consent. It Is also noted that the ISEPP prevails in this circumstance and permits solar energy systems with consent in Primary Production (RU1).

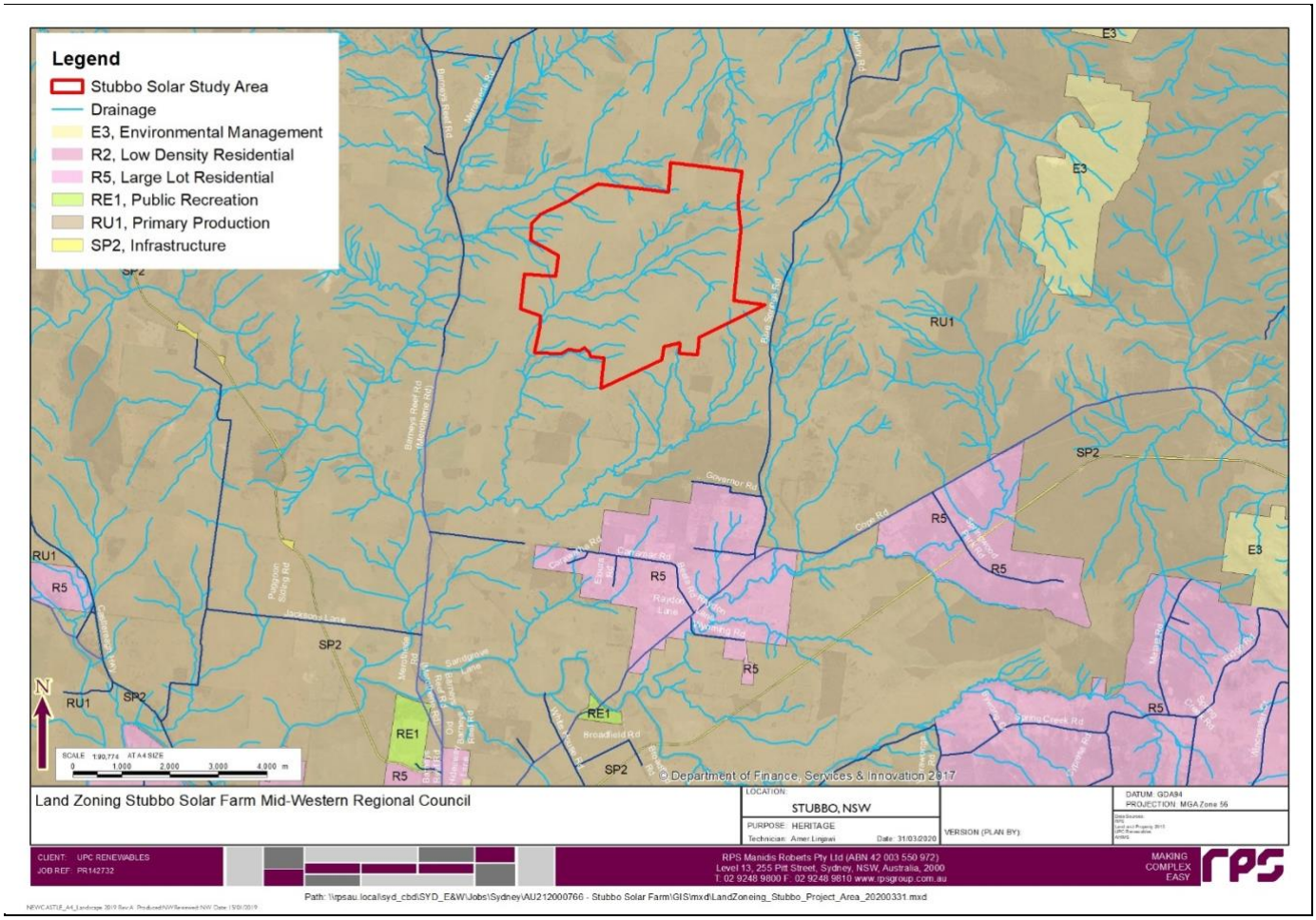

Figure 2: Land Zoning Mid-Western Regional Council

Additional provisions

The Mid-Western Regional LEP contains a number of additional local provisions relating to matters such as salinity, flood planning, groundwater vulnerability, terrestrial biodiversity, etc. These will be considered further during the EIS process.

Subdivision

The proposed site is located within zones AD for subdivision. Section 4.1 of the LEP states that the size of any lot resulting from a subdivision of land to which this clause applies is not to be less than 100 hectares in zone AD. No exemption exists at Council level, so subdivision, if required in zone AD, may not comply with the LEP and would have to fall under the SSD application process for the Stubbo Solar Farm. UPC will be consulting with Mid-Western Regional Council and relevant stakeholders (including Authorised Network Operators) regarding the potential need for subdivision and the implications for project approvals. This will be considered further during the EIS process.

4.4 Planning Pathway

Under Schedule 1, Part 20 of the State Environmental Planning Policy (State and Regional Development) 2011 electricity generating works with a capital investment value of more than $30million, or a capital investment of more than $10million and located in an environmentally sensitive area of State significance, are deemed State Significant Developments (SSDs). If the proposed solar farm exceeds a $30million capital investment value, it would be declared SSD.

The proposal to construct and operate a large-scale solar farm requires development consent under Part 4 of the EP&A Act. In accordance with section 4.12(8) of the EP&A Act, an SSD requires an EIS to be submitted in tandem with the development application. A Scoping Report (this document) must first be submitted along with a request to the Secretary for the Secretary's Environmental Assessment Requirements (SEARs), as required by Clause 3 of Schedule 2 of the EP&A Act Regulations 2000. The report provides a summary of the proposed project and identifies key environmental risks. This document is used by relevant public authorities and agencies to understand the proposal and raise any environmental concerns. Responses from public authorities and agencies are used to form the SEARs.

Part 4, Section 4.37 of the EP&A Act designates the Minister for Planning and Infrastructure as the approval authority for SSD however section 2.4 of the EP&A Act enables the Minister to delegate the consent authority function to the Independent Planning Commission (IPC), the Secretary or to any other public authority.

The NSW Government Large Scale Solar Energy Guidelines 2018 highlights some of the common key assessment issues for large-scale solar energy development. The Department and consent authority assess State significant solar energy development applications in accordance with the considerations set out in section 4.15 of the EP&A Act. Scoping is the first phase of the State significant development assessment process. It involves preparing a scoping report, the applicant identifies the matters that are likely to be impacted by the proposed project and engages with the community and other stakeholders to get their views on the issues that are important to them. The outcomes of this process are documented in a scoping report (this report).

5 CONSULTATION AND ENGAGEMENT

5.1 Background

Community and stakeholder engagement with the affected community and stakeholders (interested and affected parties (I&APs)) is integral to development of this proposal. The following stakeholders have been identified for engagement in accordance with the requirements of the formerly called NSW Department of Planning and Environment (now NSW DPIE) Draft Environmental Impact Assessment Guidelines Series – Community and Stakeholder Engagement (June 2017):

- The community – associated neighbours surrounding the proposed development footprint.
- Other stakeholders – special interest groups, broader community, etc.
- Government departments and consent authorities – NSW DPIE and local Councils.

Although there are numerous benefits to pro-active community engagement for such a project, the following are considered key for meaningful engagement:

- An ongoing opportunity for I&APs to gain an understanding of the proposal from the early scoping phase through to the impact assessment. This creates greater project awareness and encourages transparency, on the behalf of the proponent, throughout the process.
- An opportunity for I&APs to provide input to possible mitigation measures for identified specific-, local- or regional project impacts. This not only empowers I&APs to have input into developing mitigations for impacts that could directly affect them but also assists the proponent to develop flexible and tailored solutions as part of the project's design is preparing a Stakeholder Engagement Management Plan.

The ongoing Community and Stakeholder Engagement Plan for the proposal 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.

5.2 Consultation and engagement strategy

UPC has developed an extensive and comprehensive stakeholder list of 300 organisations and individuals, with stakeholders categorised into subgroups based on organisation or individual type, as well as interest in, or influence over, the project.

UPC has used an assessment tool to gain a comprehensive understanding of the level of interest and influence of each stakeholders and has articulated this in its stakeholder database.

It has then identified priority stakeholders who are members of each of the subgroups who have a high level of interest and influence.

This priority list of 84 stakeholders, includes government departments, Councils, local government, energy industry regulators, landowners, neighbours, peak associations and media.

RPS has applied its stakeholder assessment tool to also assess each of the stakeholders identified by UPC in their database and endorses the interest and influence levels that UPC has ascribed to its stakeholders. This assessment will form the basis of UPC's stakeholder consultation approach during the planning approvals, construction and operations phase of the solar farm.

UPC is developing a comprehensive consultation and engagement strategy which is aligned to project milestones.

Important note: at the time of lodgement of this scoping report (April 2020), the Covid-19 pandemic in Australia and in world considerably restricts consultation and engagement strategies. UPC and its consultants will provide DPIE with a proposed communication strategy involving recent updates on the project website, mail out to neighbours, online tools for the community to address their concerns. UPC will resume standard engagement activities (one-on-one meetings, community information sessions) as soon as practicable.

Refer to the table below which outlines the suggested approach.

Table 3: Consultation and Engagement Guide

Consultation guide		
Phase	**Action/tools**	**Stakeholders**
EIS development -pre-lodgement	FAQ's Meetings – one on one Presentations Drop in session Media release and liaison Project email address Website Letterbox drop Feedback collation and mitigation options	Community Landowners Council Government depts Neighbours Media
EIS public exhibition and determination	FAQ's Drop in session Letters Letterbox drop status update	Community Neighbours Landowners
Post approval (assuming approval granted)	Letters Letterbox drop status update Support to landowner team Presentations	Community Neighbours Landowners Council
Construction and commissioning	Local consultation with landowners and neighbours Local liaison Council FAQ's Drop in session Letters Letterbox drop status update Support to landowner team	Community Neighbours Landowners Council

5.3 Government and other agencies

There has been considerable consultation with representatives of government departments, agencies, regulators and organisations, focussed on gaining support for the Stubbo Solar Farm. UPC also met with Mid-Western Regional Council, to provide a general update on project timelines on 4 February 2020 in Mudgee.

Once the Stakeholder and community engagement assessment and summary document is finalised the list of agencies engaged will be placed in the Stakeholder Management Plan to be attached to the EIS.

During scoping and before commencing the formal development assessment process, UPC (the applicant) met with the NSW Department of Planning and Environment on 13 February 2020 to discuss the proposed project. As a result of this meeting, the Department provided preliminary feedback about site selection and

potential constraints that has been addressed in this final scoping report. UPC also met with Mid Western Regional Council on 4 February 2020 to provide general updates on the proposed development.

5.4 Community

Consultation and engagement with the local community has involved two main workstreams to date: firstly, engagement with landowners during the project site identification and selection stage, some of whom UPC has progressed commercial discussions with, and secondly, engagement with other neighbouring landowners who live in proximity to the selected project site but are not directly involved.

Discussions with the involved landowners focussed initially on the commercial aspects of the solar farm, in particular land security. There are 7 dwellings within 2 kilometres of the Study Area, 3 of them are associated with the project, 4 of them are not associated with the project. However, UPC has taken the approach of engaging with a wider number of landholders in the area, beyond the 2 kilometre radius, giving the opportunity for a broader landowner group, rather than just the study area landowners, to engage directly with the company from an early stage.

UPC has also contacted some neighbouring landowners to test the local community sentiment toward the solar farm. While UPC have engaged with most of the adjoining landholders not associated with the proposal prior to lodgement of this Scoping Report, it is recognised that not all neighbouring landowners have been contacted as of the date of this Scoping Report, and that this work will be ongoing during the preparation of the EIS.

These interactions with stakeholders have been based on the inform and consult levels of the International Association of Public Participation (IAP2) spectrum. RPS believes that these levels are appropriate in the conceptual stage of a project, which requires early consultation with landowners.

Starting in the second half of 2018, UPC commenced conversations with landowners in the area regarding the potential for a solar farm project potentially involving their land. A series of letters, phone calls and face to face meetings were held, as well as two group meetings involving landholder that were interested in progressing discussions with the company. A brief summary of consultation activities is provided below:

- Initial contact with landholders in the Stubbo area via letter and phone call in the second half on 2018;
- Initial discussion (email, phone and face-to-face meetings) regarding a solar farm project and associated infrastructure in the Stubbo area with Ulan mine, Wilpinjong mine and Moolarben mine in the second half of 2018;
- Follow up discussions via phone and face to face in the second half of 2018;
- Meeting at Gulgong RSL 29th August 2018, 43 attendees;
- Meeting at Gulgong RSL 6th of December 2018, 37 attendees;
- Ongoing engagement with surrounding landowners.

5.5 Aboriginal Community Consultation

The NSW DPIE, Office of Environment, Energy and Science (formerly OEH), acknowledges that Aboriginal people are the primary determinants of the significance of their heritage. It is acknowledged that Aboriginal people should be involved in the Aboriginal heritage planning process and are the primary source of information about the value of their heritage. This includes the best management and conservation measures for Aboriginal heritage and the way in which their cultural information (particularly sensitive information) is used. Aboriginal community consultation is regarded as an integral part of the process of investigating and assessing Aboriginal cultural heritage (OEH 2011:2).

Now that the proposed project site has been identified and UPC is ready to request the SEARs to inform the EIS, consultation with the Aboriginal community will be commenced under the due legislative process and

accordingly undertaken as part of EIS studies. Aboriginal community consultation undertaken for this project will follow the Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW 2010) (Consultation Requirements). The Consultation Requirements outline a four stage Aboriginal consultation process and mandate specific timeframes for each stage.

5.6 Outcomes

The consultation and engagement that has taken place to date has been largely with government stakeholders and landowners, further consultation would be required in the EIS phase of the project.

- UPC has focussed on two areas of stakeholder consultation; government engagement to inform, advocate and gain feedback, and landowner consultation to gain interest in leasing agricultural land for the solar asset. During these consultations UPC took an opportunistic approach to consulting on issues and concerns. This stakeholder engagement was done on the inform and consult level of the IAP2 public participation spectrum a standard used by RPS and others, including the NSW government, in best practice engagement.

- In RPS' considered view these levels are appropriate for the Stubbo Solar Farm engagement which is in the concept and early development phases.

- UPC has indicated that it will broaden its consultation to wider groups within the community in the next phase of its environmental assessment, including residents located further away such as residents living between the site and Gulgong town itself (note: Gulgong is located approximately 10km from site as the crow flies). These will be on the inform and consult levels of the IAP2 spectrum.

- UPC has collated an extensive list of stakeholders and has categorised these according to influence and interest levels. Best practice community engagement and consultation provides for assessing stakeholders on their interest in a project and their ability to influence a project. UPC has done this and has indicated that it will use this categorisation to develop its future consultation i.e. prioritising consultation where it is needed and valued most but stakeholders, in order to accurately capture views in order to address them if possible.

6 PRELIMINARY ENVIRONMENTAL ASSESSMENT

6.1 Methodology

A preliminary environmental assessment has been undertaken to identify the key environmental risks to the proposal. These key environmental risks will require detailed assessment during the Environmental Impact Statement (EIS) process. This assessment is based on desktop review and preliminary site investigation for the construction, operation and decommissioning phases of the proposal.

6.2 Biodiversity

6.2.1 Desktop assessment

The following database searches were undertaken:

- A search of matters protected by the EPBC Act was undertaken on the 31/03/2020 using the EPBC Act Protected Matters Search Tool (PMST) (Department of Environment and Energy, 2020). A search radius of 10 km was applied. Refer to Appendix A for further details.

- A search of the Atlas of NSW Wildlife (NSW Bionet database administered by NSW OEH) was undertaken on the 31/03/2020. The minimum search extent of 10 km X 10 km was used. The NSW Bionet databases include species and communities listed under the EPBC Act as well as the BC Act.

The PMST identified that the following threatened ecological community is likely to occur in the 10 km search area:

- Central Hunter Valley eucalypt forest and woodland

- Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia

- Weeping Myall Woodlands

- White box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland

- The PMST identified 32 threatened species as potentially occurring in the 10 km search area. NSW Bionet returned 26 records of threatened species within the 10 km x 10 km search area. The threatened ecological communities and species identified through the PMST are described below.

Central Hunter Valley eucalypt forest and woodland

The ecological community is a eucalypt woodland/open forest. It occurs in the Hunter River catchment (including the Goulburn Valley)—commonly known as the Hunter Valley, or Hunter Region—in north-eastern New South Wales. Across the range of the ecological community, one or more of, a complex of four eucalypt tree species usually dominate the canopy (narrow-leaved ironbark (*Eucalyptus crebra*), spotted gum (*Corymbia maculata* (syn. *Eucalyptus maculata*)), slaty gum (*Eucalyptus dawsonii*) and grey box (*Eucalyptus moluccana*).Under certain circumstances a fifth species, *Allocasuarina luehmannii* (bulloak or buloke), may be part of the mix of dominants—i.e. in sites previously dominated by one or more of the four eucalypt species). Typically, the woodland has a sparse mid layer of native flowering shrubs and a ground layer of grasses, daisies, lilies, orchids and other flowers.

Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia

The Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia is an endangered ecological community (EEC) listed under the EPBC Act. This community is potentially commensurate with Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions which is listed as an EEC under the BC Act. It mostly occurs from central NSW, through northern/central Victoria into eastern South Australia. Both the Grey Box grassy woodland and derived native grassland provide vital support to a diverse range of native plants and animals that are important for maintaining regional, state and national biodiversity. In particular this ecological community supports bird species found in the wetter forest and woodland ecosystems further east and south, as well as species from the drier semi-arid environments to the west and north.

Weeping Myall Woodlands

Weeping Myall Woodlands occur in a range of forms from open woodlands to woodlands, in which weeping myall (Acacia pendula) trees are the sole or dominant overstorey species. Although weeping myall trees are often the only tree species in these woodlands, other trees can occur in the overstorey of the ecological community. The understorey of Weeping Myall Woodlands often includes an open layer of shrubs above an open ground layer of grasses and herbs, though the ecological community can exist naturally as either a shrubby, or grassy woodland.

The Weeping Myall Woodlands occurs on the inland alluvial plains west of the Great Dividing Range in NSW and QLD. It occurs in the Riverina, NSW South Western Slopes, Darling Riverine Plains, Brigalow Belt South, Murray-Darling Depression, Nandewar and Cobar Peneplain Interim Biogeographic Regionalisation for Australia (IBRA) bioregions. The ecological community generally occurs on flat areas, shallow depressions or gilgais on raised alluvial plains. These areas are not associated with active drainage channels and are rarely, if ever, flooded. The ecological community occurs on black, brown, red-brown or grey clay or clay loam soils. Most areas remaining in the best condition are in lightly-grazed, uncropped sites such as road reserves and Travelling Stock Routes and Reserves. There may be considerable variation in the composition of individual stands of the listed community within any given bioregion.

White Box, Yellow Box, Blakely's Red Gum, Grassy Woodland and Derived Native Grassland

White Box (*Eucalyptus albens*), Yellow Box (*E. melliodora*), Blakely's Red Gum (*E. blakelyi*) Grassy Woodland and Derived Native Grassland is listed as a critically endangered ecological community (CEEC) under the EPBC Act. This community is potentially commensurate with White Box Yellow Box Blakely's Red Gum Woodland which is listed as an EEC under the BC Act. For the purposes of this report the above listed communities are hereafter collectively referred to as Box-Gum Woodland (BGW).

BGW can occur as either a woodland or a derived grassland with a ground layer of native tussock grasses and herbs and a sparse, scattered shrub later.

BGW dominate the ecological community where a tree layer still occurs. This ecological community provides important habitat for a large number of plants and animals including rare and threatened species such as Superb Parrots, Regent Honeyeaters and Squirrel Gliders.

Threatened species identified in the EPBC Protected Matters Search Tool

The threatened species identified through the EPBC PMST are listed in Table 4.

Table 4: PMST Threatened Species

Listed Threatened Species	Status
Fauna	
Anthochaera Phrygia (Regent Honeyeater)	Critically Endangered
Botaurus poiciloptilus (Australasian Bittern)	Endangered
Calidris ferruginea (Curley Sandpiper)	Critically Endangered
Grantiella picta (Painted Honeyeater)	Vulnerable
Hirundapus caudacutus (White-throated Needletail)	Vulnerable
Lathamus discolour (Swift Parrot)	Critically Endangered
Leipoa ocellate (Malleefowl)	Vulnerable
Numenius madagascariensis (Eastern Curlew)	Critically Endangered
Polytelis swainsonii (Superb Parrot)	Vulnerable
Rostratula australis (Australian Painted Snipe)	Endangered
Galaxias rostratus (Flathead Galaxias, Beaked Minnow, Flat-headed Galaxias, Flat-headed Jollytail, Flat-headed Minnow)	Critically Endangered
Macquaria australasica (Macquarie Perch)	Endangered
Chalinolobus dwyeri (Large-eared Pied Bat)	Vulnerable
Dasyurus maculatus (Spotted-tail Quoll)	Endangered
Nyctophilus corbeni (Corben's Long-eared Bat, South-eastern Long-eared Bat)	Vulnerable
Petrogale penicillate (Brush-tailed Rock-wallaby)	Vulnerable
Phascolarctos cinereus (Koala)	Vulnerable
Pseudomys novaehollandiae (New Holland Mouse)	Vulnerable
Pteropus poliocephalus (Grey-headed Flying-fox)	Vulnerable
Aprasia parapulchella (Pink-tailed Worm-lizard)	Vulnerable
Delma impar (Striped Legless Lizard)	Vulnerable
Flora	
Androcalva procumbens	Vulnerable
Cryptostylis hunteriana (Leafless Tongue-orchid)	Vulnerable
Dichanthium setosum (Bluegrass)	Vulnerable
Euphrasia arguta	Critically Endangered
Homoranthus darwinioides	Vulnerable
Leucochrysum albicans var. tricolor (Hoary Sunray, Grassland Paper-daisy)	Endangered
Prasophyllum petilum (Tarengo Leek Orchid)	Endangered
Prasophyllum sp. Wybong (a leek-orchid)	Critically Endangered
Swainsona recta (Small Purple-pea, Mountain Swainson-pea, Small Purple Pea)	Endangered
Thesium australe (Austral Toadflax)	Vulnerable
Tylophora linearis	Endangered

Plate 1 Areas of potential Box Gum Woodland (BGW) and BGW Derived Native Grassland within the Study Area

6.2.2 Preliminary site investigation

RPS undertook a preliminary site investigation on 12 February 2019. The site investigation was initially undertaken on a larger area encompassing the Study Area and other areas of interest for the project. The results of the preliminary site investigation resulted in the identification of the study area currently proposed in this scoping report.

Native Vegetation and Plant Community Types

A preliminary review of vegetation mapping has identified 15 Plant Community Types (PCTs) that occur on the larger study area. This data was then entered into the BAM calculator tool and has predicted the presence of candidate species and mandatory survey timing for each species (refer to Appendix B). Figure 3 below displays 4 plant community types (PCTs) within the proposed solar development site, according to the State vegetation mapping research.

Field assessment undertaken within the broader investigation area found there are some patches of intact vegetation potentially commensurate with Box Gum Woodland (BGW) and the adjoining grasslands potentially commensurate with the Derived Native Grassland (DNG) variant of BGW.

At this preliminary stage, RPS identified high constraint areas within the study area:

- Areas mapped as *PCT 266 White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion*; and

- Areas mapped as *PCT 281 Rough-Barked Apple-Red Gum-Yellow Box woodland on alluvial clay to loam soils on valley flats in the northern NSW South Western Slopes Bioregion and Brigalow Belt South Bioregion.*

These areas are located within the study area and are likely to be commensurate as BGW under the BC Act and the EPBC Act;

Threatened Species

Potential Habitat for Threatened Flora Species such as *Diuris tricolor* (Vulnerable under the BC Act) and *Prasophyllum petilum* (Endangered under the BC Act and EPBC Act) was observed in the broader investigation area. Suitable habitat for other threatened species may be identified within the Study Area during more detailed field surveys at EIS stage. Common bird species (not listed as threatened under the EPBC or BC Act) observed within the DNG in the broader investigation area at the time of inspection included; Zebra Finches, White-throated Gerygone, Rainbow Lorikeets, Australasian Pipits, Choughs, Apostle Birds, Nankeen Kestrels and Wedge-tailed Eagles. The above listed species are typical of open grassland habitats in the region. Bird species typical of BGW on site included White-throated Treecreepers, Grey Fantail, Noisy Miners, Pied Butcherbird, Magpie, Rufous Whistler. There was also potential for Glossy Black-cockatoo habitat (loose stands of *Allocasuarina sp*.). Occurrences of mistletoe provide potential foraging habitat for the threatened species such as Painted Honeyeater. Other threatened avifauna species which are likely to occur include, but not limited to: Square-tailed Kites, Speckled Warblers, Grey-crowned Babblers (eastern subspecies), Brown Treecreepers (eastern subspecies) Little Lorikeets and Varied Sittellas.

6.2.3 Recommendations

It is recommended that the development footprint avoids areas that are commensurate with BGW DNG.

Based on this recommendation, UPC commits to avoiding the areas mapped as PCT 266 & 281 located along the waterways within the Study Area. These areas are located within the environmental exclusion zone as defined by UPC and shown on Figure 1b.

6.2.4 Further assessment

A detailed assessment of potential impacts to biodiversity will be undertaken as part of the environmental assessment for the EIS, in accordance with the Biodiversity Assessment Method, as established under the BC Act. Additional assessments will be conducted with reference to federal legislation and guidelines in order to address requirements under the EPBC Act. This will include characterisation of the plant community types within the proposal site, assessment of the presence or potential presence of threatened species and communities, assessment of whether the proposal has the potential for significant, serious or irreversible impacts, and identification of measures to avoid, minimise or offset impacts. More specifically, areas of potential Derived Native Grassland will require further surveys during the EIS stage to discern if they are commensurate under the BC Act and the EPBC Act listings for this community.

UPC Renewables has already engaged ecological consultants to conduct further Ecological Assessment. The aim of this assessment is to address the requirements of the *Biodiversity Offset Scheme* (BOS) in accordance with the *Biodiversity Conservation Act 2016* (BC Act) and the *Biodiversity Conservation Regulation 2017* (BC Regulation) through the application of the Biodiversity Assessment Methodology (BAM). The Biodiversity Development Assessment Report (BDAR) will be finalised upon completion of all field surveys, will also include the assessment requirements of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), the full report will be included in the EIS.

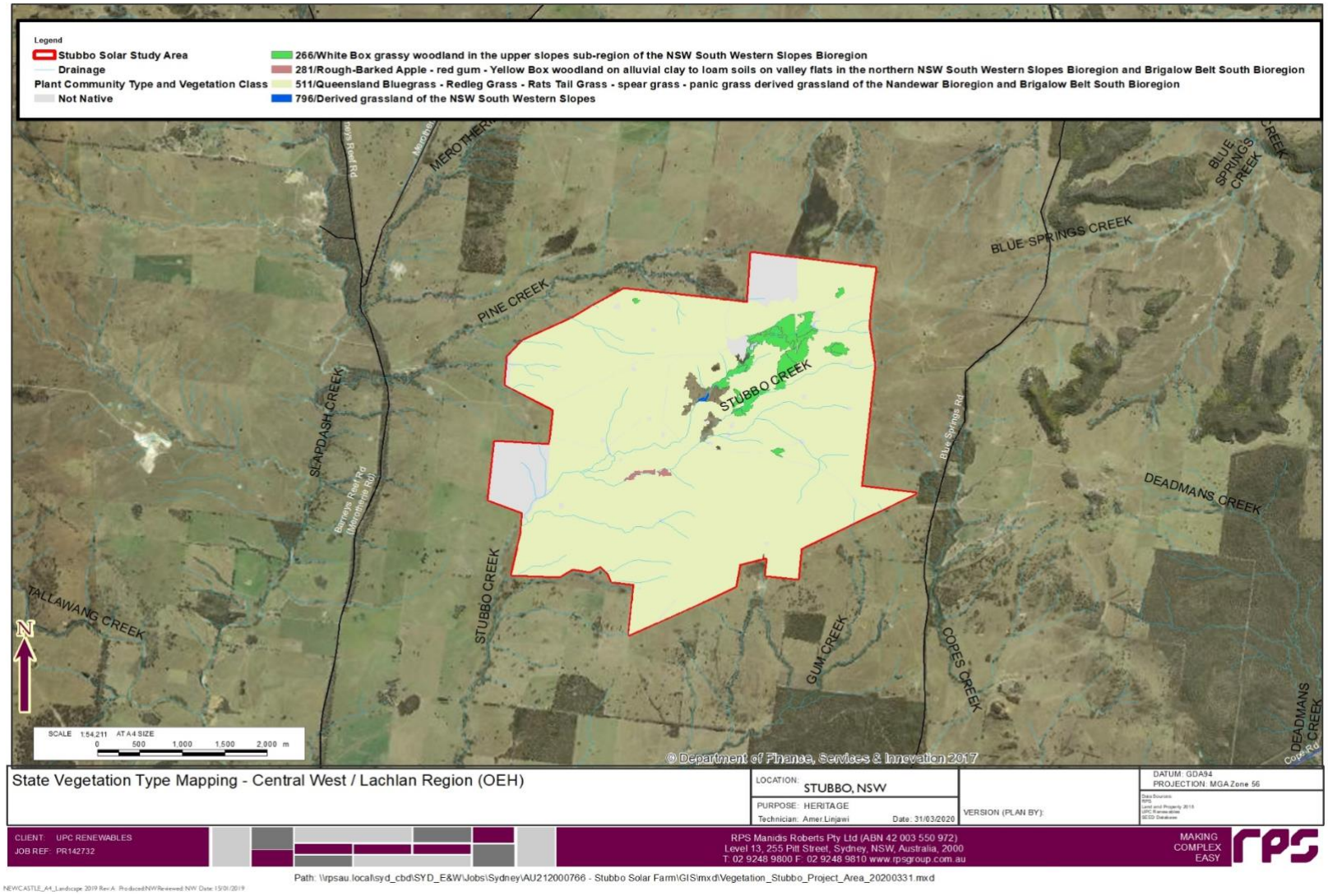

Figure 3 State Vegetation Type Mapping - Central West / Lachlan Region (OEH)

6.3 Aboriginal cultural heritage

This chapter provides baseline and detailed information on the existing environment with regard to Aboriginal cultural heritage and archaeological potential within the study area. The information herein is based on desktop assessment and a preliminary targeted site inspection.

6.3.1 Scope and limitations

This chapter contains a high-level Aboriginal heritage study that is required to inform the Scoping Report for the development of Stubbo Solar Farm. A preliminary targeted site inspection was undertaken for the study on a broader area surrounding the study area as shown on Figure 1b.

Aboriginal community consultation and assessments of potential heritage constraints have not been conducted for this scoping report. It is anticipated that comprehensive archaeological survey, consultation with the Aboriginal community and assessments of potential heritage values will form part of EIS studies. Archaeological survey and community consultation should be undertaken in accordance with the Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (2010 DECCW/OEH [now NSW DPIE, Office of Environment, Energy and Science]) (Code of Practice) and the Aboriginal Cultural Heritage Consultation Requirements for Proponents (2010 DECCW [now]) (Consultation Requirements).

No assessment of archaeological potential has been undertaken for the scoping report.

6.3.2 Environmental context

The Study Area is located within the Central Tablelands region of NSW, within the north-western margin of the Sydney Basin. Geological formations of Illawarra Coal Measures and Narrabean Group sandstones are known to have provided exploitable quartz conglomerates across the region (Niche 2015:23). Exposed veins and outcrops of tuff and cherts within the Illawarra Coal Measures and Narrabeen Group sandstone may have also provided raw materials for the manufacture of stone artefacts.

The Rouse soil landscape comprises the majority of the Study Area. Small portions in the north of the Study Area comprise the Home Rule and Turill soil landscape. The Home Rule soil landscape is also found in a small portion of the Study Area to the south. A small portion in the east of the Study Area comprises the Turill soil landscape.

The Rouse soil landscape is characterised by undulating hills and low hills with granite outcropping as tors and sloping pavements. Topography associated with the Rouse soil landscape is gently undulating hills and low hills with granite outcropping as tors and sloping pavements. The implication of the Rouse soil landscape is that the nature and extent of archaeological features and materials may have changed or been removed through erosion.

Slapdash Creek is located between the southern and western solar farm areas. A number of minor ephemeral creeks extend through the Study Area, most of which are tributaries of Slapdash Creek such as Stubbo Creek, Pine Creek and Merotherie Creek. Smaller secondary tributaries extend from these dominant watercourses. The Study Area is situated within the mapped extent of the Western Slopes Grassy Woodlands vegetation class. This vegetation class comprises an extensive group of assemblages with diverse groundcover, showing variation with latitude, rainfall and soils. Tableland Grassy Woodlands are noted at higher elevations and Western Slopes Dry Sclerophyll Forest on less fertile soils or more rugged terrain. These vegetation communities would have provided habitats for a variety of animals, as well as potential food and raw material sources for Aboriginal peoples.

6.3.2.1 Aboriginal Heritage Information Management System

A search of the Aboriginal Heritage Information Management System (AHIMS) found 27 registered Aboriginal sites located within the broader investigation area (Figure 4). Of these, 2 registered Aboriginal sites are located within the Study Area (Figure 5, Figure 6) but outside the proposed development footprint (see discussion below). They consist of artefacts, Potential Archaeological Deposits (PADs) and a scar tree. Registered Aboriginal sites located within the broader investigation area include shelters, water holes and grinding grooves.

6.3.2.2 Native Title

There are no registered Native Title Determinations intersecting the Study Area. There is one registered Native Title Claim over the Study Area (Warrabinga-Wiradjuri #7: NC2018/002). The claim is classified as active and was registered in November 2018. The details of the claim are included in Table 5.

Table 5: Native Title claim

Name	Tribunal No	Fed Court No	Type	Status	Lodged
Warrabinga-Wiradjuri #7	NC2018/002	NSD857/2017	Claimant	Active	31 August 2018

The Warrabinga-Wiradjuri #7 claimants should be involved in any further Aboriginal cultural heritage assessments. These assessments should be undertaken in accordance with the Code of Practice, the Guide and the Consultation Requirements. It is advised that the status of the Native Title claim is monitored in case a determination is made during the life of the project.

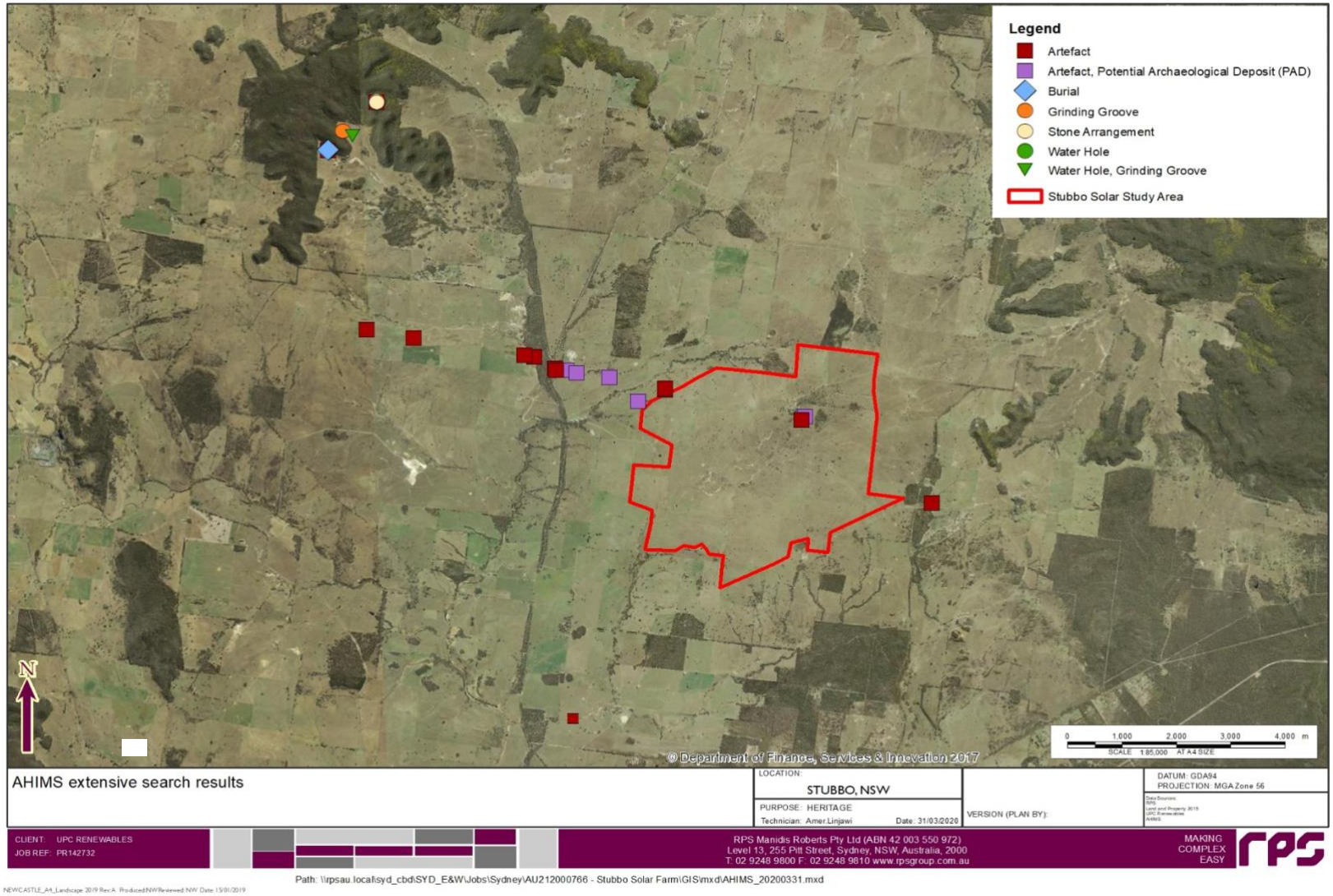

Figure 4: AHIMS

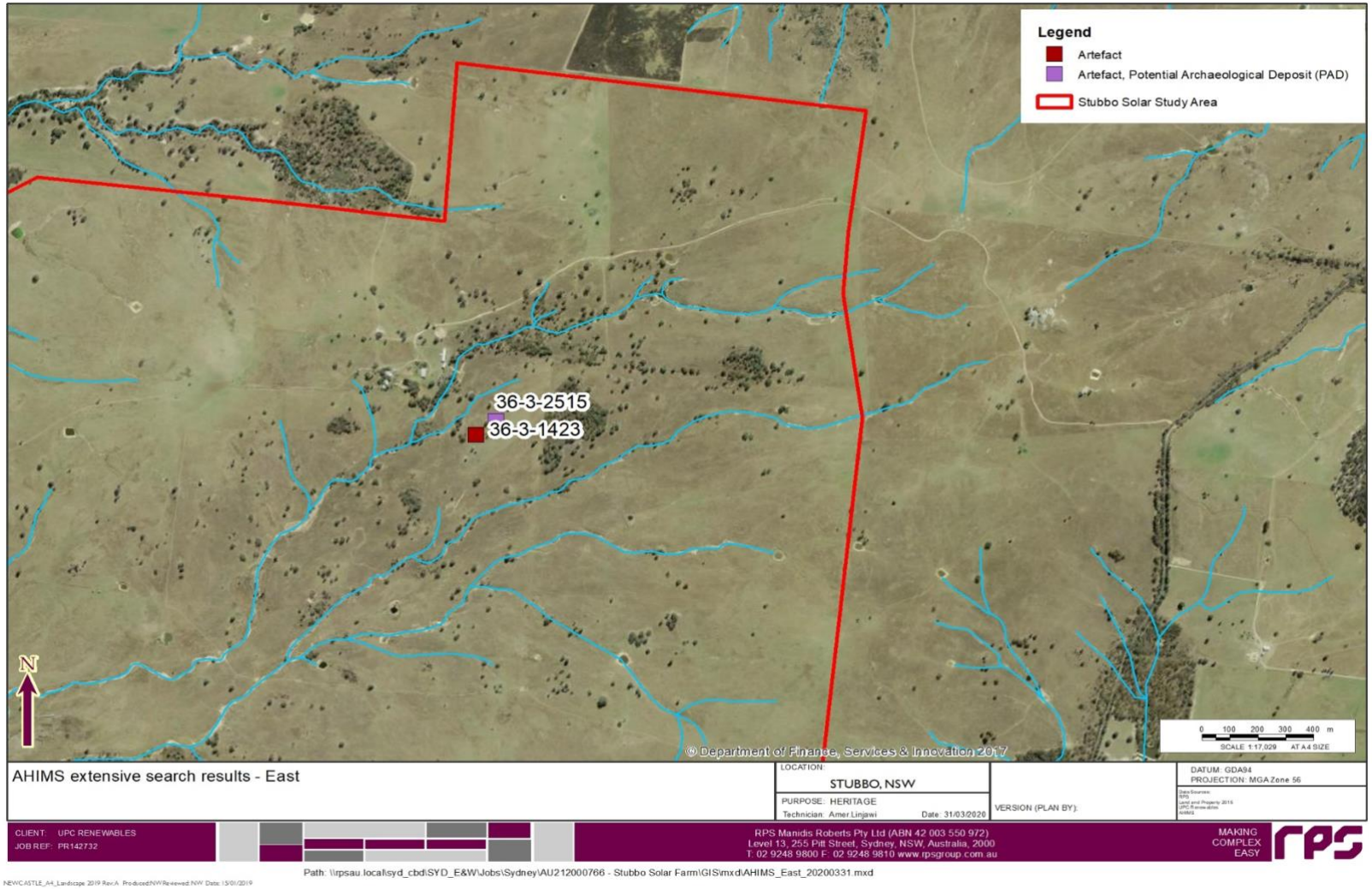

Figure 5: AHIMS Stubbo Solar Area South – East

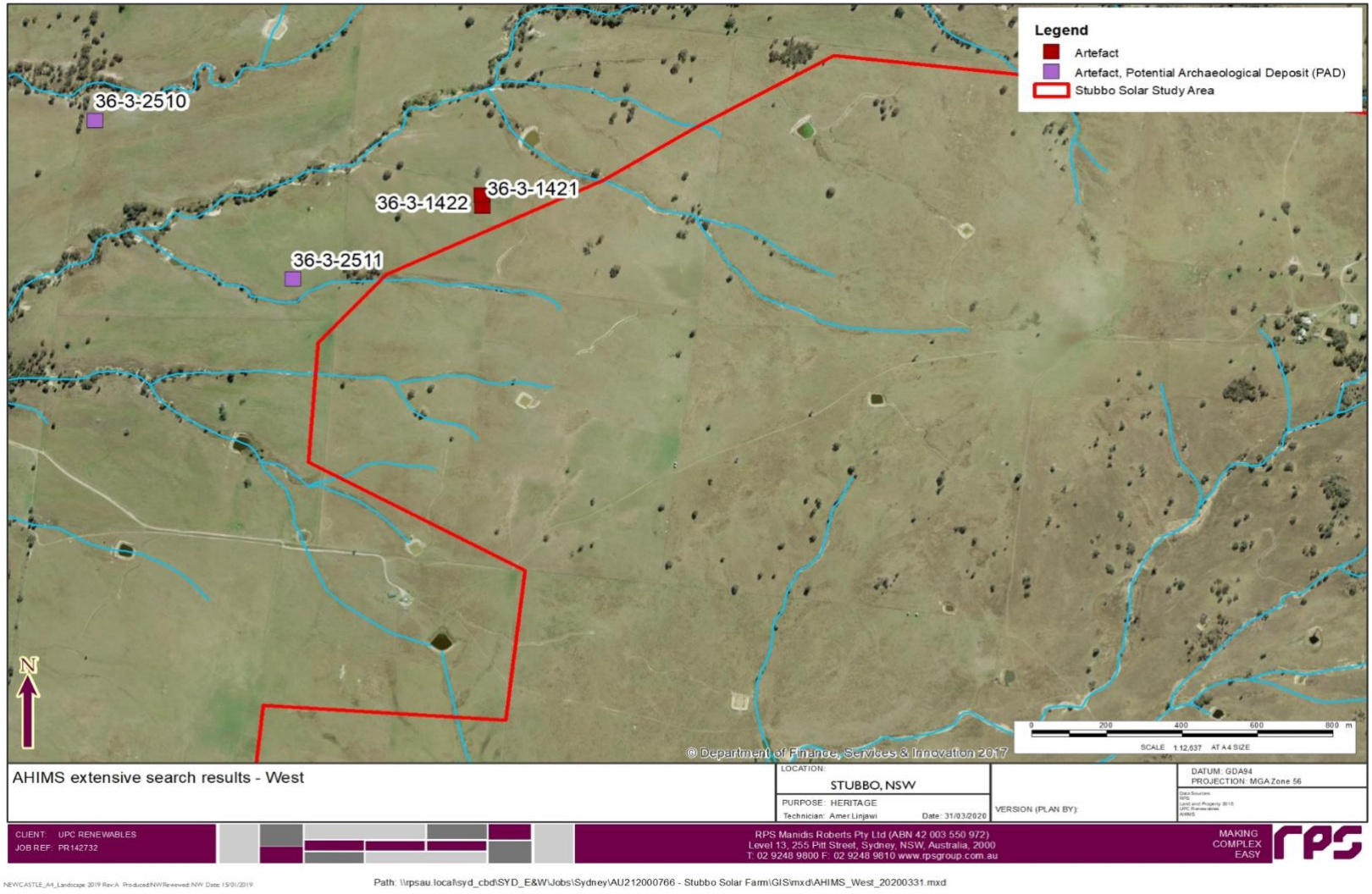

Figure 6 AHIMS Area 1 – West

6.3.3 Preliminary targeted inspection

A preliminary site inspection was undertaken of the Project Study Area on 12 February 2019. The purpose of the inspection was to ground truth desktop background information, identify registered Aboriginal sites where possible, and conduct a targeted inspection of the ground surface that sampled various landforms for levels of disturbance and potential unrecorded Aboriginal sites.

The preliminary targeted inspection was undertaken across portions that were believed of higher cultural significance within the Stubbo Solar Farm Study Area and its surroundings. Disturbance noted in the select areas inspected was generally low. However, localised examples of moderate to high disturbance were observed, generally associated with erosion or agricultural activity. Isolated native mature trees were identified, however much of the existing vegetation appears to be juvenile regrowth. Visibility was nil to low across the majority of the Study Area due to dense pasture cover. Areas of visibility were identified within areas which had been subject to previous ground disturbance, such as vehicle access tracks and quarries. No newly identified Aboriginal sites were identified during the targeted inspection, however comprehensive archaeological survey in accordance with the NSW Code of Practice would be required to build upon these findings.

Stubbo Solar Farm Study Area

Naturally occurring water sources have been formalised into springs and dams and creek lines were located across the inspected portions of study area and its surroundings. All creeks are perennial and did not contain any water at the time of heritage inspection. Topsoils appeared intact across much of the inspected area. Large outcrops of granite and natural materials including quartz were identified. A registered scar tree (AHIMS # 36-3-2515) was relocated approximately 100 metres south west of the registered coordinates, with the tree appearing to be in the same condition as its original recording.

6.3.4 Discussion/Recommendations

The larger study area contains two registered Aboriginal sites and has been subject to relatively low levels of disturbance. While ground disturbance may affect the intactness of an archaeological deposits, Aboriginal objects may be identified in a disturbed context. This initial study area was narrowed down to avoid as much as possible disturbance to existing registered Aboriginal sites, the proposed solar development footprint avoids large areas around the waterways and biodiversity value, refer to the exclusion zone shown on Figure 1b. In avoiding some patches of native vegetation, the development footprint also avoids the known aboriginal sites in the area.

Disturbance is only one factor considered in the assessment of Aboriginal archaeological potential. Landscape, landform and an understanding of the Aboriginal archaeological context are also considered. The *National Parks and Wildlife Act 1974* protects all Aboriginal objects, regardless of the context in which Aboriginal objects are identified.

Creeks and water sources are located across the Study Area, and naturally occurring materials which would be appropriate for the manufacture of stone tools were also identified. The Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales (DECCW [now NSW DPIE Office of Environment, Energy and Science] 2010) (Due Diligence Code) outlines landscape features that indicate the likely existence Aboriginal objects. This includes land within 200 metres of water. Areas visited during the targeted site inspection retained much of their topsoils.

There is potential for other, unlisted, places of Aboriginal archaeological or cultural heritage significance to be located throughout the Study Area. The preservation of intact Aboriginal sites and archaeological deposits are influenced by land use, disturbance and modification. Clearing for agriculture has destroyed many old growth native trees suitable for cultural modification and agricultural activities may have disturbed or destroyed many surface archaeological sites and archaeological deposits. However, the existence of registered sites indicates the potential for further Aboriginal sites to be located within the Study Area. Furthermore, all Aboriginal sites can be regarded as part of a larger cultural landscape. A cultural landscape is a mosaic consisting of natural elements, physical remnants of human activity, places and landscapes that shaped and were shaped by people and their lifestyles (Taylor 1989: 16-17, Read et al 1994:14).

6.3.5 Further Assessment

As registered Aboriginal sites are located within the Study Area, and there is potential for additional unlisted sites to be located within the Study Area, it is recommended that comprehensive Aboriginal cultural heritage and archaeological investigations are undertaken for the Stubbo Solar Farm proposal. This would include an Aboriginal Cultural Heritage Assessment. As the project has been assessed as SSD, an Aboriginal Heritage Impact Permit (AHIP) is not required. The Warrabinga-Wiradjuri #7 claimants should be involved in any further Aboriginal cultural heritage assessments. These assessments should be undertaken in accordance with the Code of Practice, the Guide and the Consultation Requirements. The status of the Native Title claim will be monitored in case a determination is made during the life of the project.

Consultation with the Aboriginal community as per the Consultation Requirements has not yet been undertaken for the Study Area. As per the Consultation Requirements, Aboriginal people are the primary determinants of the significance of their cultural heritage and how best to conserve it. As such, the Aboriginal community should have an active role in the heritage planning process and have input into decision making as to how their heritage should be managed. It is anticipated that consultation with the Aboriginal community will be undertaken as part of EIS studies.

6.4 Non-Aboriginal heritage

This chapter provides baseline and detailed information on the existing environment with regard to non-Aboriginal (historic) heritage and archaeological potential within Stubbo Solar Farm Study. The information herein is based on desktop assessment and a preliminary targeted site inspection.

This preliminary assessment has been conducted in line with the Environment Protection and Biodiversity Conservation Act 1999 (the EPBC Act), the *NSW Heritage Act 1977* (the Act) and The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance 2013 (Burra Charter).

6.4.1 Scope and limitations

This chapter contains a high-level non-Aboriginal heritage study that is required to inform the PEA for the development of Stubbo Solar Farm. A preliminary targeted site inspection was undertaken for the study.

The identified historical heritage values are associated with registered heritage items based on statutory heritage database searches. No assessment of potential unlisted heritage items or archaeological potential has been undertaken. As no detailed designs are currently available for the proposal, no impact assessments have been undertaken.

6.4.2 Register searches

A review of the following statutory and non-statutory heritage lists was undertaken to identify the locations of registered historic heritage items, conservation areas and archaeological sites in relation to the Study Area.

- World Heritage List (WHL)
- National Heritage List (NHL)
- Commonwealth Heritage List (CHL)
- State Heritage Register (SHR)
- Mid-Western Regional Local Environmental Plan 2012 (Mid-Western Regional LEP 2012)

No registered items are located within the Study Area. Two items listed on the SHR and one item listed on the Mid-Western Regional LEP 2012 are located within approximately 10 kilometres of the Study Area. The historic town of Gulgong is located approximately 10 kilometres south west of the Study Area. Much of the town is located within the Gulgong Heritage Conservation Area listed on the Mid-Western Regional LEP 2012 (#C2). These listings are included in the table below. Many Gulgong buildings, homesteads, and churches are also individually listed on the SHR and the Mid-Western Regional LEP 2012 including the Gulgong Railway Station and yard group (SHR #01158), Prince of Wales Opera House (LEP #I283), St Luke's Anglican Church (LEP #I198) and the Gulgong Pioneer Museum (LEP #I236).

Table 6: Heritage register results

Item name	Listing	Address	Approximate Distance to Proposed Project Footprint Boundary
Gulgong Railway Bridge over Wialdra Creek	State Heritage Register #01038	Wallerawang-Gwabegar railway, Gulgong	8.4 kilometres south west
The Lagoon Homestead	Mid-Western Regional LEP 2012 #I391	Castlereagh Highway, Parish of Guntawang	10.3 kilometres south west
Gulgong Heritage Conservation Area	Mid-Western Regional LEP 2012	Gulgong, NSW	9.8 kilometres south west

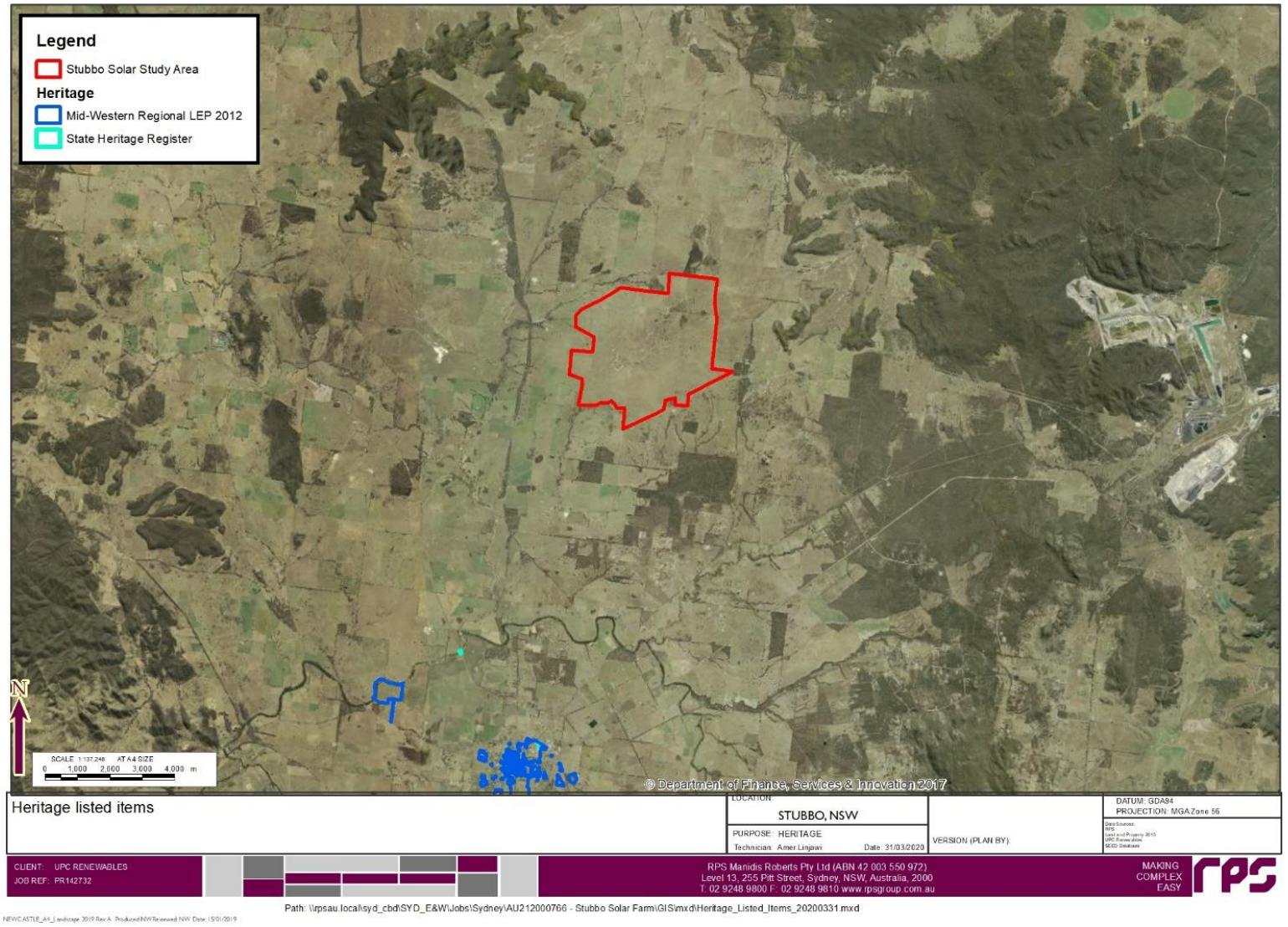

Figure 7 Heritage listed items

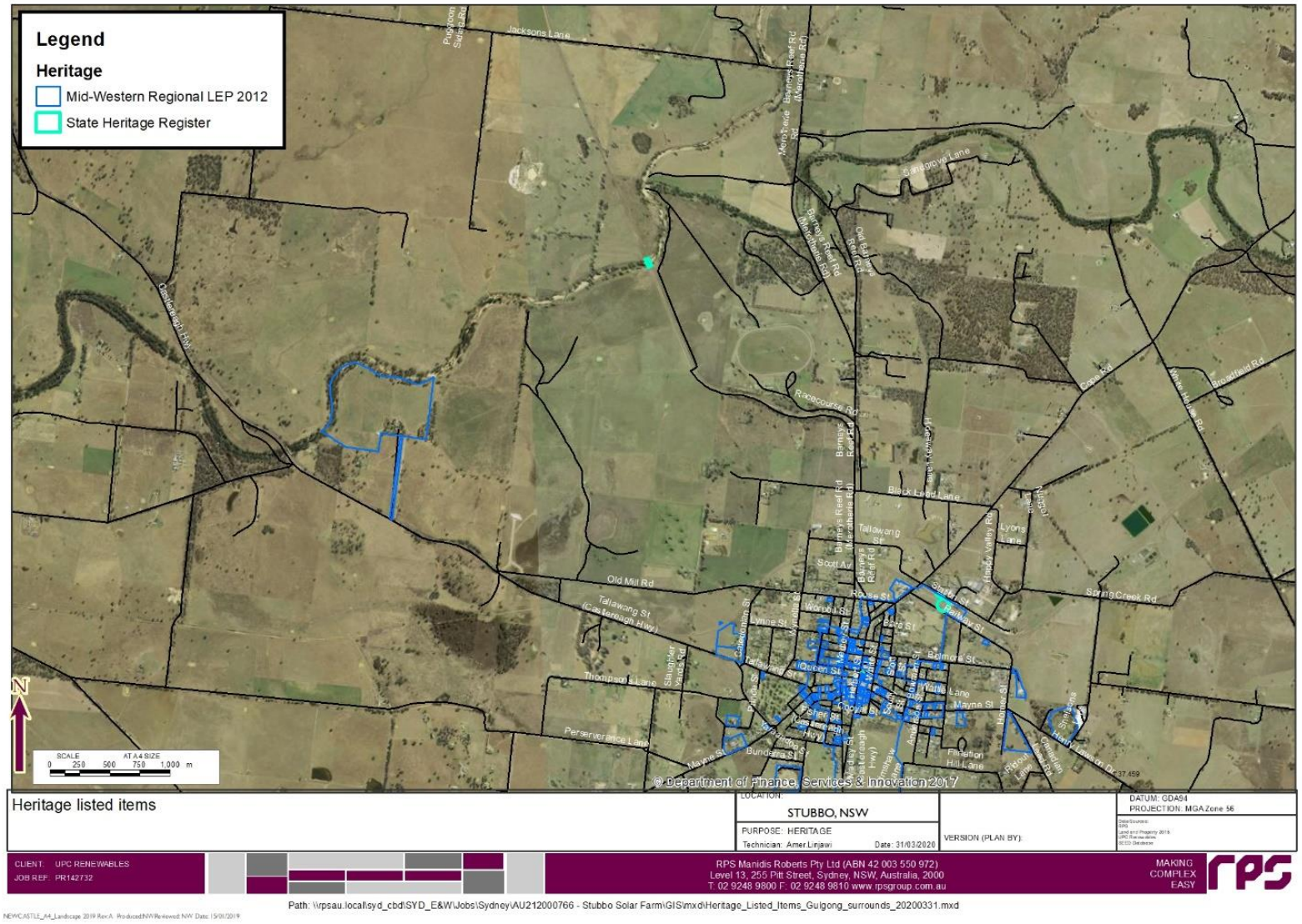

Figure 8 Heritage items Gulgong and surrounds

6.4.3 Historical background

The Study Area is located within the County of Bligh, named after William Bligh, Admiral and Governor of New South Wales from 1805 to 1808. The Study Area extends over three Parishes, the Parish of Stubbo, Parish of Tallawang and the Parish of Narragamba. Early European exploration of the region took place in the 1820s. Among the first land holdings in the area was land belonging to the sons of William Cox, who built the road across the Blue Mountains. The sons extended their Mudgee holdings into the Gulgong area. They established the 'Guntawang' cattle run, approximately eight kilometres south-west of the Gulgong township. European settlement in the region can be attributed to Gulgong's gold rush which began in 1870. The earlier discovery of gold saw the gazetting of the Gulgong goldfield in 1866. Within a year or so of the Gulgong find, the area had a population of more than 10,000 people. The town of Gulgong was gazetted in 1872 with a reputed population of 20,000. By 1880 the gold rush had ended, and the Gulgong population shrank (Geological sites of NSW). According to the 2016 census the current population of Gulgong is approximately 2,500.

By 1886 a large portion of the Study Area was owned by a J.W. Lee and Lee family members. The southern leg of the Study Area extends into the north extension of the Gulgong goldfield, however gold getting activities may have taken place on properties across the Study Area. The land holdings appear to have remained largely the same in size with little subdivision occurring in the region. The land has been utilised for rural and agricultural purposes, with development limited to the construction of rural dwellings and associated structures. The Study Area has been previously cleared of vegetation for agricultural pursuits including cultivation of crops and grazing of livestock.

6.4.4 Preliminary targeted inspection

A preliminary targeted inspection was undertaken of the Study Area 12 February 2019. The purpose of the inspection was to ground truth desktop background information and identify any potential non-Aboriginal heritage items or areas of archaeological sensitivity.

Development of the area has been limited to the construction of rural dwellings, associated agricultural infrastructure, services and formalisation of naturally occurring water sources. The majority of the properties remain undeveloped and have been used for agricultural purposes.

6.4.5 Discussion

There are no registered non-Aboriginal heritage sites located within the Study Area, however this may be indicative of the lack of heritage surveys having taken place in the area rather than a lack of heritage items. The Study Area is located 5.5 kilometres from the state significant Gulgong Railway Bridge over Wialdra Creek and 7.2 kilometres north of the historically significance town of Gulgong.

Non-Aboriginal archaeological potential for the Study Area is largely unknown: detailed historical research including the analysis of archival information, plans and maps would be required to compile an assessment of the archaeological potential of the Study Area. Archaeological values in the Study Area are likely to be associated with agricultural practice or gold mining and may be of Local significance. The potential impacts to non-Aboriginal archaeology cannot be assessed prior to the completion of a detailed investigation and consideration should be given to the views and vistas to / from Gulgong and potential connections to the Gulgong gold fields.

6.4.6 Further Assessment

A comprehensive assessment of potential non-Aboriginal heritage items, and historical archaeological potential of the Study Area during EIS study would require detailed background research and heritage survey. Consideration should be given to contacting landowners directly regarding potential historical sources they may be aware of for their properties. If no potential heritage items and no historical archaeological potential is required, the assessment would advise that no further historical heritage investigation is required prior to the proposed works.

6.5 Bushfire threat

6.5.1 Existing environment

A preliminary Bushfire Due Diligence Threat Assessment was conducted by RPS to assess the requirements of the development to meet the six objectives listed in section 1.1 of Planning for Bushfire Protection 2018 (PBP) guide, which provide for the protection of human life and minimize impacts on property (this report will be provided with the EIS).

In accordance with PBP 2018, an assessment of the vegetation over a distance of 140m in all directions from the solar farm development was undertaken. Vegetation that may be considered a bushfire hazard was identified and classification based on Appendix 1 PBP 2018.

There is an inherent bushfire risk associated with the site, although none of it is designated as Bushfire prone land. In accordance with the provisions of PBP 2018, the recommendations outlined will act as appropriate actions to reduce the risk of damage and/or harm in the event of a bushfire event.

This Bushfire Threat Assessment found the land surrounding the proposed study area supports vegetation consistent with a grasslands and woodland. The vegetation that forms a bush fire threat exists in all direction on and surrounding the site.

In summary, the following key recommendations have been generated to guide development due diligence and design requirements:

- The siting of the development be placed to allow 20 to 28m Asset Protection Zone (APZ) to exist between the assets and bush fire hazard.
- Storage of hazardous materials away from the bush fire hazard wherever possible, preferably to the south or east of the built asset. This includes parked cars that can propagate fire behaviour towards built assets.
- The design and layout of road, trails, buildings and solar infrastructure should consider natural and cultural assets, as to avoid the placement of APZ over these areas.
- The design and location of any vegetation buffers/screens and other landscaping features around the perimeter and within the development shall consider the effects this vegetation has on the propagation of bush fire to neighbouring properties.
- Design should implement mitigation measures to reduce fire leaving the property, such as perimeter trail associated with a perimeter APZ.

A Bushfire Emergency Management and Evacuation Plan shall be prepared consistent with 'Development Planning A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan December 2014' and Australian Standard AS3745 2010 'Planning for Emergencies in Facilities'. Attention within this plan should focus on the procedure to evacuate and close the assemble area in the event of a bushfire attack.

A Bushfire Assessment Report (BFAR) should be completed when the final design layout has been determined. A Bush fire Management Plan (BMP) that illustrates the Bushfire Protection Measures (defendable space, access, water, and construction standards) should accompany the BFAR. The BMP can be used by the consent authority to guide bushfire development consent conditions of the proposed development.

6.6 Hydrology and flooding

6.6.1 Existing environment

The proposal site is located within the Macquarie-Bogan catchment, approximately 60 km north east of the Macquarie River. The Macquarie-Bogan catchment supports a diverse range of industry, primarily agriculture with over 80 per cent of the catchment utilised for grazing. This is consistent with observations of the proposal site, as it is predominantly cleared with few areas of scattered or remnant vegetation.

A number of ephemeral watercourses are located within the proposal site (Figure 1) which include 1st to 4th order streams under the Strahler Stream Classification System (DPI 2018). Despite the presence of these watercourses, the area is not defined as flood prone according to the Mid-Western LEP.

The proposal will involve the establishment of permanent and temporary structures, such as a substation, potential battery storage area and internal access roads resulting in a minor increase in impervious surface area. The rows of PV panels themselves have little impact in terms of changing the nature of rainfall run-off on the site, given the spacing between the rows. Depending on the configuration of the system installed, the spacing will allow a minimum of 3-8m between them, even when the panels are horizontal. The lower end of this range is for one panel in portrait mounted on the tracker tube, whereas the upper end is for two panels in portrait (or 4 in landscape). In either case, the water will be able to run off freely onto the ground which will be largely unchanged once groundcover vegetation has returned post-construction.

Areas of the proposal site are mapped as being groundwater vulnerable under the Mid-Western LEP. Clause 6.4(3) of the Mid-Western LEP 2012 states that before determining a development application the consent authority must consider:

- The likelihood of groundwater contamination from the development (including from any on-site storage or disposal of solid or liquid waste and chemicals),
- any adverse impacts the development may have on groundwater dependent ecosystems,
- the cumulative impact the development may have on groundwater (including impacts on nearby groundwater extraction for a potable water supply or stock water supply),
- any appropriate measures proposed to avoid, minimise or mitigate the impacts of the development.

6.6.2 Further Assessment

Water would be required for construction, operation and decommission of the solar farm. Operation would not require significant amounts of water. The proposal's water use would consist of water for purposes such as dust suppression, compaction, concrete works and site facilities during construction and water for solar array cleaning and staff amenities during operation. At this stage, it is expected that water will be sourced from water trucks, opportunistically from farm dams located on the site or from treated wastewater if available in the nearby region (primarily for dust suppression). However, all potential sources of water will be identified and assessed through the EIS process. The development footprint will avoid significant impacts to watercourses of a Strahler order of 3 or above within the environmental exclusion area, shown in Figure 1b. Only access tracks and cables are anticipated to impact the watercourses, and the location of these will be selected to mitigate impacts.

Impacts to watercourses and groundwater will be assessed during the EIS phase of the proposal and include appropriate mitigation or avoidance measures where required or appropriate.

6.7 Contamination

6.7.1 Existing environment

In March 2018 searches of the NSW EPA Contaminated Land Public Record and List of NSW Contaminated sites Notified to the EPA were undertaken. One result was returned for the suburb of Mudgee on the registered contaminated sites, relating to a Mobil Depot approximately 30km south of the proposal site.

Due to the proposal site's land use history, potential sources of contamination within the site are those associated with agricultural activities (e.g. pesticides, herbicides, cattle/sheep dips etc).

Due to the flat site terrain and therefore minimal earthworks required during construction, there is a low likelihood of encountering contamination during construction, if present.

6.7.2 Further assessment

Risks associated with contamination are considered low. The environmental assessment for the proposal will further consider contamination risk. The Construction Environmental Management Plan (CEMP) to be prepared for the proposal would include an unexpected finds protocol for the event that any contamination is discovered during construction works.

6.8 Noise and vibration

6.8.1 Existing environment

Existing noise levels are likely to be generally low at the proposal site due to the rural location. Existing noise sources would include road traffic on Merotherie Road, Barneys Reef Road, Blue Springs Road and smaller arterial roads. Intermittent use of farm equipment would also contribute to existing noise.

There are a number of sensitive receivers within and surrounding the proposal site, however due to the extent of the site it is possible that the receivers can be predominantly avoided.

The nearest mine is shown in Figure 11, labelled ML1466, which represents Sibelco Australia Limited, located approximately 3.8km from the western boundary of the project. Ulan coal mine is approximately 10km to the east. These mines may generate some background noise (potential blasting), which should be considered during noise and vibration assessments in the EIS phase.

6.8.2 Further assessment

Noise and vibration generated by the construction phase of the proposal has the potential to impact nearby receivers. During construction, noise and vibration is expected to be generated from sources including vehicle movements (including along access route), pile driving of posts for solar array support and machinery operation such as earthmoving equipment or tree removal.

During the operation phase of the proposal, noise generated is anticipated to be minimal consisting of noise associated with vehicle movements within the site and electrical infrastructure such as transformers and a substation. It is unlikely that the operation of the solar farm would produce any vibration impacts, and as such is considered to be negligible.

A noise and vibration assessment in accordance with the Interim Construction Noise Guideline (DECC 2009), NSW Noise Policy for Industry (EPA 2017), NSW Road Noise Policy (DECCW 2011) and Assessing Vibration: A Technical Guideline (DECC 2006) will be undertaken during the EIS phase of the proposal to determine the potential noise impacts and propose avoidance and mitigation measures.

For the construction phase, the Construction Environmental Management Plan (CEMP) will include a section for noise management including controls such as compliance with standard working hours, machinery operation hours, noise mitigation measures etc.

6.9 Traffic and transport

6.9.1 Existing environment

The proposal site is located approximately 5 km to the east of Castlereagh Highway and 5 km north of Cope Road, the two major roadways in the vicinity of the site. The southern site section can be accessed via Blue Springs Road which connects with Cope Road and the northern site cluster can be accessed via Barneys Reef Road which can be accessed via the township of Gulgong to the south of the site. Both of these access points would require an upgrading of existing farm tracks or construction of a brand new road to get to site.

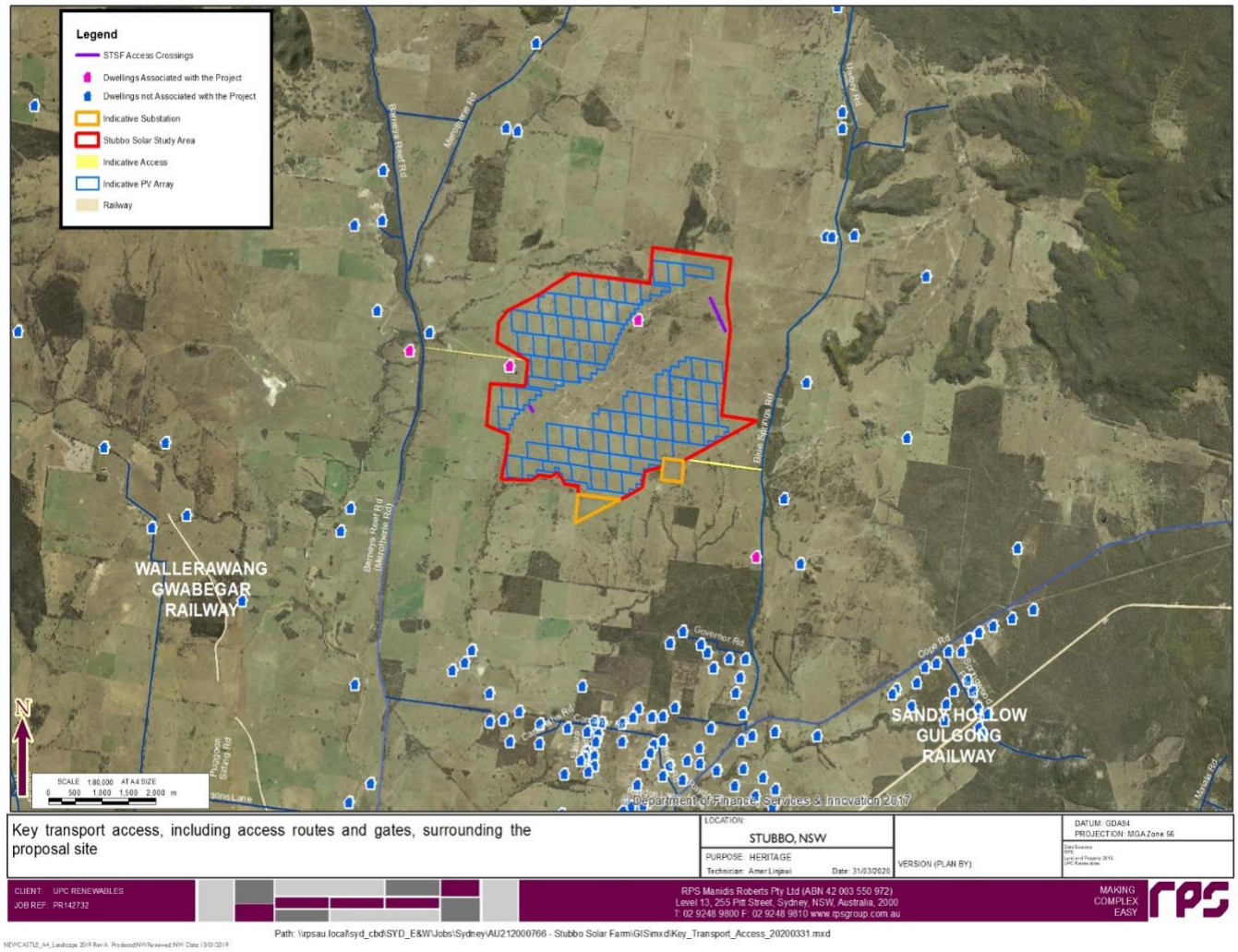

Figure 9 Key transport access, including access routes and gates, surrounding the proposal site

6.9.2 Further assessment

It is assumed these would be the primary methods of site access for the purpose of this report. The final transport route would be determined during the EIS phase.

Construction traffic is anticipated to travel to the site from the south via Barneys Reef Road and/or Blue Springs Road, dependant on the destination within the site and the final route(s) determined for the proposal, it is proposed that up to two access tracks will connect the two solar sections within the study area.

The main access to the site will be via local government roads that fall under the responsibility of Mid-Coast Council for management and maintenance. It is acknowledged that vehicles servicing the development will utilise state managed highways, such as the Castlereagh Highway, which fall within the responsibility of Road and Maritime Services.

During construction and decommissioning of the site there would be increased numbers of both heavy and light vehicles on the local and state road networks travelling to and from the site. This would include delivery vehicles transporting infrastructure components, machinery, water and equipment as well as light vehicles transporting workers and any smaller equipment. At the peak of construction and decommission there may be up to 400 workers travelling to and from the site each day. It is anticipated that they would travel in a combination of individual vehicles and buses.

Traffic generated during operation of the proposal would be minimal, consisting of operational staff travelling to and from the site each day. The operation phase workforce is not expected to be more than ten staff, therefore the traffic and impacts to the road network during operation would be negligible.

An assessment of the roads and traffic impact would be conducted during the EIS phase and assess the suitability of proposed access routes for the increase in vehicle movements, particularly during the construction and decommission of the proposal

6.10 Soils

6.10.1 Terrain

The proposal site consists of a gently rolling landscape typical of sheep grazing properties in the area. The elevation is approximately 500 metres above sea level across most of the site, increasing to approximately 550 metres in the eastern portion of the site and 450 to the southern and western portions of the site (Figure 10)

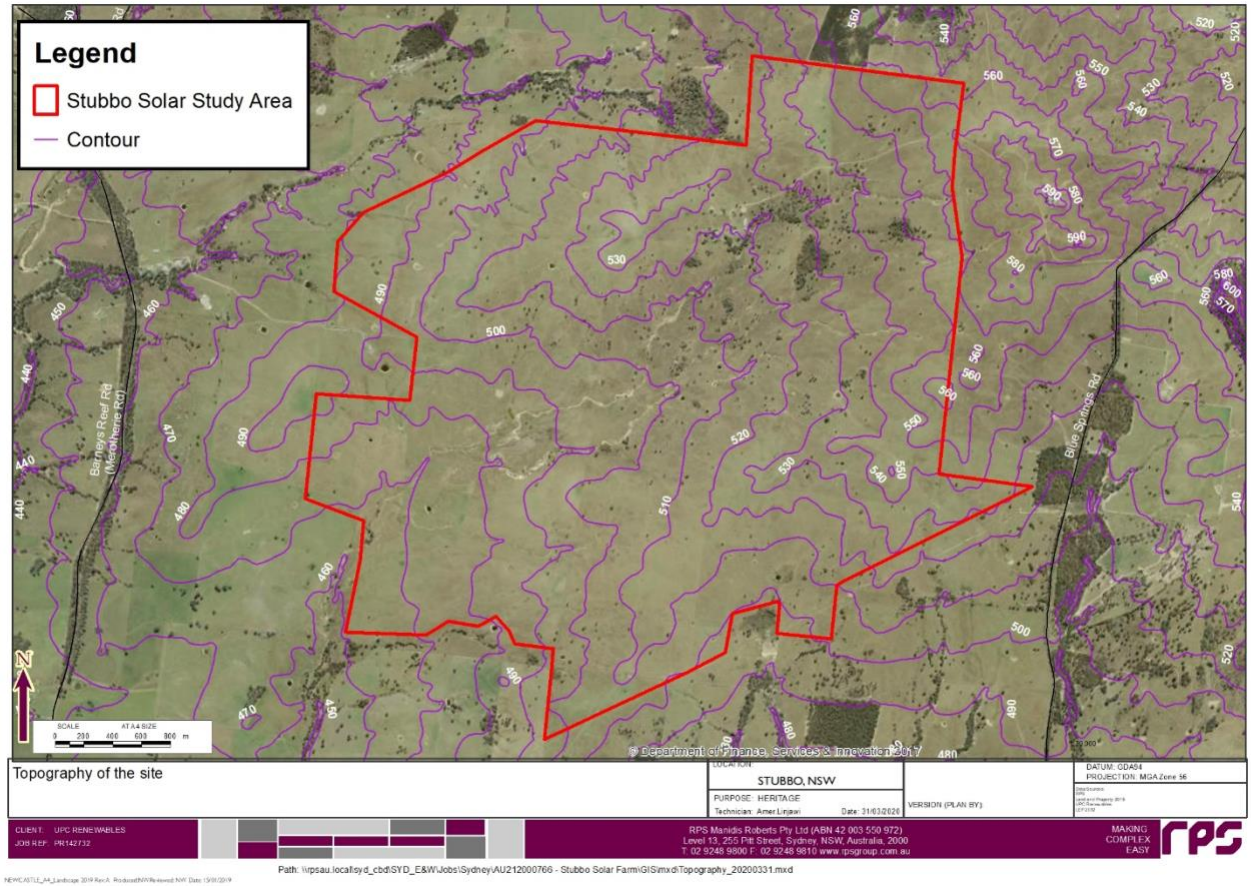

Figure 10: Topography of the site

6.10.2 Soil landscape and land capability

The soil classification for the site according to the Australian Soil Classification (ASC) Soil Type is Sodosols. Sodosols are texture-contrast soils with impermeable subsoils due to the concentration of sodium. Generally, Sodosols have a low-nutrient status and are very vulnerable to erosion and dryland salinity when vegetation is removed.

The majority of the proposal site has been rated Class 5 under the land and soil capability (LSC) assessment scheme established by NSW DPIE Office of Environment, Energy and Science. Class 5 and is land characterised as having severe limitations, not capable of sustaining high impact land uses except were resources allow for highlight specialised land management practices to overcome limitations (e.g. high value crops). Lower impact land uses (e.g. grazing) can be managed by readily available practices.

The proposal area has not been assessed for Acid Sulfate Soil Risk.

6.10.3 Further assessment

During construction, the proposal would disturb soils through minimal earthworks for the following activities:

- Potential grading and minimal levelling of ground in some areas to prepare it for solar array construction.
- Excavation for the construction of footings and foundations for the onsite substation, battery energy storage system, O&M building and power conversion stations.
- Excavation and grading for the construction of internal access roads
- Excavating cable trenches for onsite cabling.

These impacts would be further assessed through the development of the EIS, with appropriate measures to mitigate any risk to soil and erosion.

6.11 Social impact

6.11.1 Existing environment

The population of Mid-Western Regional Council LGA in 2017 was 24,815 people which has increased from 24,374 in 2015. The population of Stubbo in 2016 was 226 people,18.6% of which were youths between 0 and 15. The percentage of seniors (+65 years) in Stubbo in 24.3% which represents a much larger proportion of the population of Stubbo than of NSW as a whole (16.3%) (REMPLAN Community Profile, 2018).

The top industry of employment of Stubbo, being predominantly a small farming locality, is Agriculture, Forestry and Fishing. The top industry of employment in the Mid-Western LGA is mining. Within the mid-western LGA, there were 824 agriculture, forestry and fishing businesses in 2016 (Australian Bureau of Statistics, 2019).

In 2016, the unemployment rate of Stubbo was 2.6% which is lower than the unemployment rate of the Mid-Western LGA and the NSW unemployment rate of 4.6%.

6.11.2 Further assessment

There is considerable scope for mitigating the risks associated with a heavy dependence on agriculture and mining within the Mid-Western Regional Council LGA by diversifying the regional economy. The proposal would result in:

- The generation of up to 400 jobs in regional NSW during the construction period.
- The generation of permanent regional jobs will be indirectly enabled by the proposal
- Lower cost of energy through economies of scale and declining price of renewable energy, which can be passed on to all energy consumers through the National Energy Market.
- Significant secondary skills, direct and indirect employment opportunities, economic stimulus for small business and work opportunities in regional NSW during construction and operations.
- Direct and indirect benefits to the local, state and national economies during the life of the proposal.

Further assessment as part of the EIS will include consideration of the socio-economic impacts and benefits of the proposal including an assessment of the likely impacts on the local community and a consideration of the construction workforce (including cumulative impacts). The EIS will consider accommodation options in surrounding towns, assess conflicts with accommodation needs for other activities, such as mining and the need for a worker's camp site.

6.12 Visual impact

6.12.1 Existing environment

The proposal is located in a relatively flat/gently undulating agricultural landscape, with an elevation of approximately 500 metres above sea level (MASL). Higher elevations surrounding the proposal are predominantly associated with forested areas. There are limited visual receptors to the proposal site, only one dwelling is located within the study area and outside the development footprint. There is the potential for some elevated residences located further away (more than 2km) to have distant views of the site, and this will be further assessed during the EIS phase.

As the surrounding residences and roads are at a lower elevation than the proposed site, in this instance planting of vegetation as screening may not be needed nor an effective option for screening any visual impact, and this will be further considered in the EIS stage. Furthermore, solar panels are designed to absorb light and therefore are generally not highly reflective, and as such are not likely to cause glare that would impact traffic or nearby receivers.

Dark Sky Planning Guideline

The Siding Spring Observatory located on the edge of Warrumbungle National Park is Australia's premier visible-light observatory, sporting over 20 telescopes and is one of only a few in the world able to observe the entire southern-hemisphere sky. The observatory is a critical instrument for scientific endeavours both nationally and internationally.

The Dark Sky region in NSW is centred on the Siding Spring Observatory and aims to provide guidance on the use of lighting in development so that it does not impact the operation of the observatory. Lighting design is an important consideration as light pollution can inhibit the observatory's ability to engage in scientific observation.

The proposal is not anticipated to generate significant sources of light and where lighting is required, it would not be directed towards the sky or highly reflective surfaces. Lighting design such as shielded lights, asymmetric beams and lower colour temperatures should also be considered. Direction of light is also affected by dust in the atmosphere. Light is scattered by dust particles which can contribute to artificial increases in the sky brightness. During the construction phase of this proposal, dust generation and mitigation should be considered to reduce potential impacts.

Glare risk to aviation

Glare risk to aviation is anticipated to be negligible as solar panels are primarily designed to absorb light, not reflect it. The panels are designed to absorb as much solar energy as possible to generate greater amount of energy or heat. Therefore, solar panels typically will produce less glare than a building roof or other surface (Department of Planning 2010).

6.12.2 Further assessment

An assessment of the visual impact of the proposal will be included in the EIS phase of the proposal and include photomontages and consultation with affected landholders to identify the nature and significance of visual impact and determine the need for mitigation measures.

6.13 Air Quality

6.13.1 Existing environment

The site is in a rural setting approximately 6 km east of the township of Uralla within the Mid-Western Council LGA. The Mid-Western Council LGA is sparsely populated with a population density of approximately 2.8 persons/km2, which is significantly lower than the NSW average (ABS 2019).

Land use within the site and surrounds is primarily agricultural which is likely to influence local and regional air quality. Existing sources of air pollution within a local setting are limited and consist primarily of dust and vehicle and machinery exhaust emissions associated with agricultural production.

There are a number of involved-landholder residences in close proximity to the site boundaries. The nearest non-involved residential properties are approximately 1.1km to 1.2km away from the site boundary.

6.13.2 Further assessment

The proposal is not anticipated to generate significant air quality impacts during construction or operations. proposal related traffic on unsealed roads within the proposal boundary may contribute to localised dust generation primarily during the construction phase of the proposal. Mitigation measures determined in further environmental assessment will be determined to address these impacts. These will ensure that the proposal will not generate significant air quality impacts during construction and operation.

6.14 Hazards

Battery Storage

Batteries would most likely be of a lithium-ion technology type, given the dominance of that technology today globally for utility power generation applications. The configuration could either be AC-coupled, and logically located near the substation, or DC-coupled, and logically distributed throughout the solar farm next to the solar PV inverters, housed in secure steel containers/cabinets.

Batteries should be stored in line with the manufacturer's instructions by an accredited installer and serviced accordingly, at least every 12 months. Installing relevant signage – including the type of batteries installed, along with safety signage protocols will reduce risk of incidents. Product manuals should be adhered to, the battery system should be kept tidy and clear of obstructions, particularly conductive and flammable materials, such as solvents or spray paint. The EIS will assess battery storage hazards further.

Bushfire

An initial bushfire preliminary hazard assessment has been completed in accordance with DPE Hazardous Industry Planning and Assessment Paper N0. 3, 2011 to identify bushfire hazards, analyses the effects on people and the environment and their probability of occurrence.

The development may have staff office, amenities block, solar panel infrastructure and associated cabling, workshop, perimeter fencing CCTV, inverters and potentially lithium batteries. The hazard of these built assets is the potential to create fire (ignition sources) and for fire to travel off site onto neighbouring lands.

Fire hazards from the solar panels is limited because only a small portion of materials within the solar panels are flammable, and those components cannot self-support a significant fire. Flammable components of PV panels include the thin layers of polymer encapsulates surrounding the PV cells, polymer back sheets (framed panels only), plastic junction boxes on rear of panel, and insulation on wiring. The rest of the panel is composed of non-flammable components. Furthermore, the establishment of solar panels provides shadowing over the surface and near surface fire fuels which results in suppressing grass growth and reduces the amount of fire fuels available for consumption. This reduction in fire fuels will result in a suppression in the 'rate of spread' of a fire head within and under the solar panels.

The ignition sources of this development could be:

- Above ground powerlines and power sources;
- Arc flash from power sources;
- Build-up of dry fire fuels in areas (on solar panels) that generate heat;
- Location of inverters in relation to BPMs within the development;

The implementation of appropriate design and Bushfire Protection Measures (BPMs) will result in risk levels that do not preclude development approval from a bushfire management perspective. Appropriate design and regular maintenance of infrastructure, Fire Management Zones and fuel loads (Landscaping) shall be undertaken to verify the safety systems established to mitigate bushfire risk. Bushfire Protection Measures and suppression assets should be considered during the ground works and sub-structure construction phase of the project, a 50m Asset Protection Zone (APZ) within grassland hazards is recommended.

Electromagnetic fields and interference

Existing sources of electromagnetic fields (EMF) include the 330 kV TransGrid transmission line which passes through the southern area of the site as well as the adjacent 66kV Essential Energy line. There is no established evidence that the exposure to magnetic fields generated by powerlines, substations and other electrical sources cause adverse health effects (ARPANSA 2018). Generally, distances beyond 50 m from a high voltage powerline are not expected to have higher than typical magnetic fields and for substations magnetic field levels at distances of 5-10 m away are no higher than background levels in a typical home. EMF that is anticipated to be generated by the proposal is not expected to exceed guidelines for public exposure and would not cause adverse impacts for human health.

The EMF levels of the proposed solar infrastructure including powerlines, substation, inverters and any on-site batteries would be assessed as part of the EIS but are not considered to increase EMF levels in a material way above existing background environmental levels.

One nearby landholder that UPC has had initial discussions with has expressed some concerns about the potential for worsening of existing interference to radio transmissions caused by the existing TransGrid electricity infrastructure in the area. This issue will be considered further during the preparation of the EIS.

6.15 Land use

The study area is located within the Mid-Western Regional Council LGA on land zoned Primary Production (RU1) and is currently used for agricultural purposes, primarily grazing of sheep and cattle. Electricity generating developments such as solar farms are not explicitly prohibited in this zone. Development permitted with consent specifies that any development that is not listed as permitted with consent or prohibited may be permitted with consent.

The study area is not located on Biophysical Strategic Agricultural Land (BSAL land).

The study area intersects with ML1466 (Act 1992) granted to Sibelco Australia Ltd. for the mining of metallic minerals. The site also intersects with PEL456 (Act 1991) granted to Hunter Gas Pty Ltd and Santos QNT Pty Ltd for the exploration of petroleum and Authorisation 286 (Act 1973) granted to the Secretary of the Department of Planning and Environment for the exploration of coal and oil shale (Figure 11).

The study area contains minor corridors of Crown land within the site and a Crown road (Barneys Reef Road) and a Crown Waterway (Splash Creek) (Figure 12).

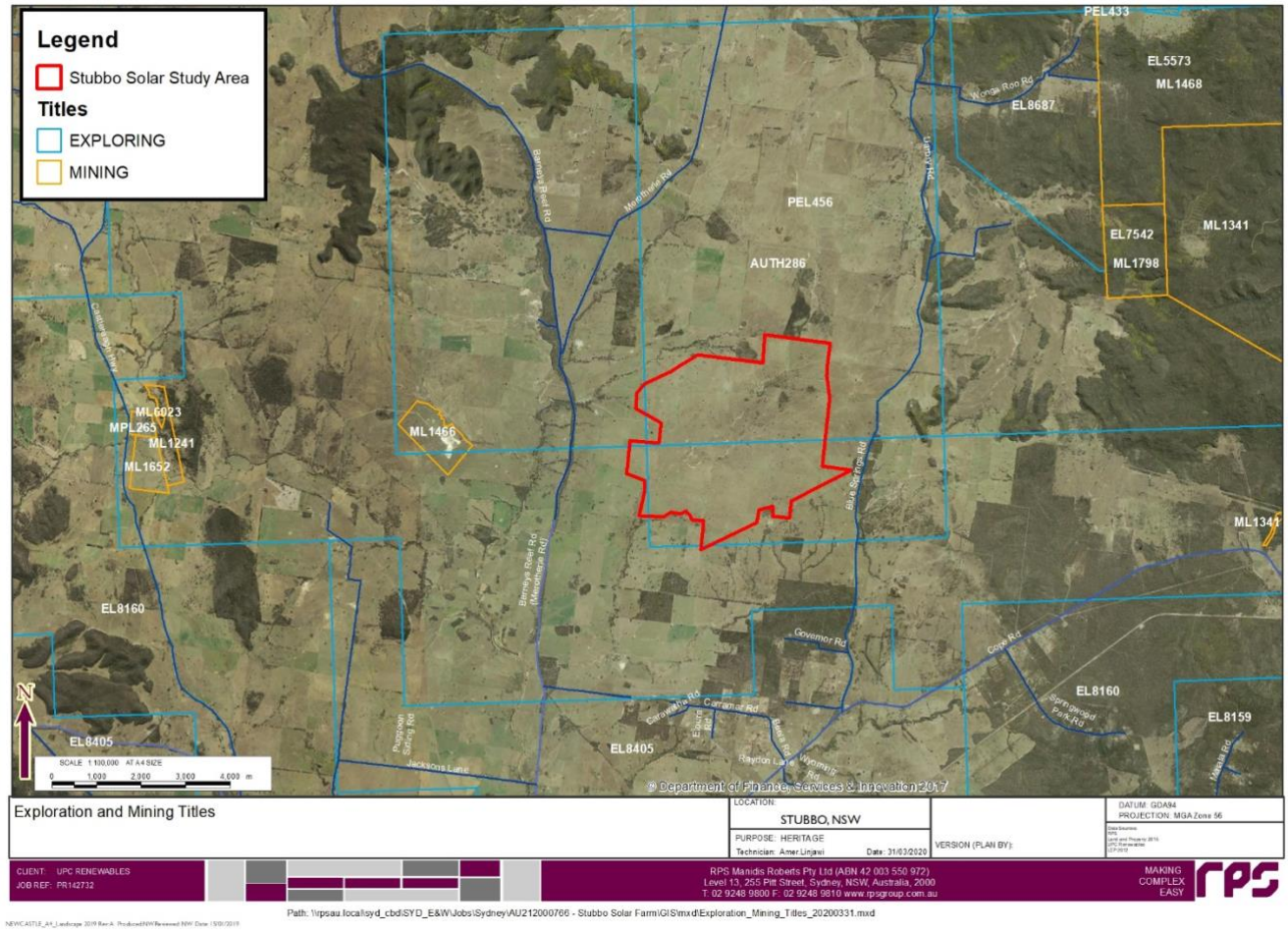

Figure 11: Exploration and mining titles covering the study area

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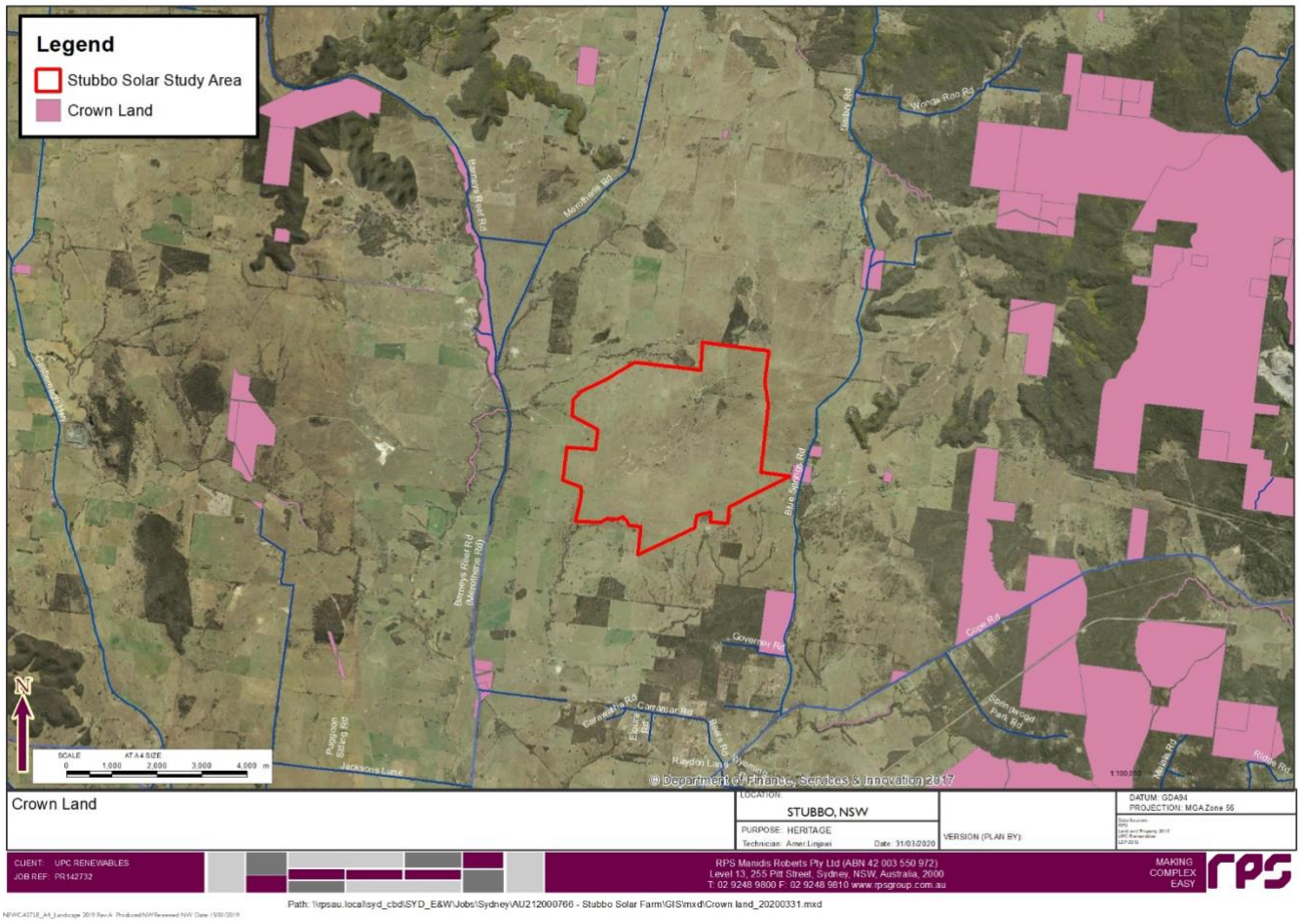

Figure 12: Crown land within the study area

6.16 Waste Management

The Waste Avoidance and Resource Recovery Act 2001 (WARR Act) introduces a scheme to promote extended producer responsibility for the life-cycle of a product. The WARR Act outlines the resource management hierarchy principles of priority as:

- avoidance of unnecessary resource consumption;

- resource recovery (including reuse, reprocessing, recycling and energy recovery); and

- disposal.

The proposal has the potential to generate the following wastes:

- surplus materials used during site establishment such as safety fencing and barriers which may include plastics and metal. The volume of waste is expected to be minimal as it is likely that prefabricated structures would be used.

- general construction waste such as excess concrete, timber, paper, plastic, metal and packaging materials.

- vegetation waste from the clearance of vegetation on site.

- domestic waste including food scraps, aluminium cans, glass bottles, plastic and paper containers, and putrescible waste generated by site construction personnel.

- surplus spoil from earthworks required on site. Any excess spoil is likely to be reused elsewhere on site.

- waste from onsite amenities. This waste would be collected by the supplier of any such systems in line with general practices.

- wastewater generated from the construction compounds.

All construction waste would be transported and disposed of in accordance with the 'Waste Classification Guidelines' (EPA 2014) and the Protection of the Environment Operations Act 1997.

During operation, the generation of wastes would be limited to maintenance activities and would include redundant equipment and general waste from maintenance workers. All waste during maintenance activities would be removed from site by appropriately licensed contractors.

Pilot programs for the recycling of solar PV panels are underway internationally and in Australia. Given the relatively young age of the industry, there is not a large volume of experience with this yet. It is noted that utility industry PV panels typically come with a 25 year manufacturer warranty. Recent findings by the International Energy Agency (IEA) suggest that end-of-life panels can be safely disposed in landfills.

6.17 Cumulative impacts

The proposed Stubbo Solar Farm will contribute to overall infrastructure development in the region.

A review of the State Significant Development register for the Mid-Western Regional Council LGA and surrounding LGA of was conducted on 12 April 2020. A number of the projects identified are the subject of several applications or determination and a listed in a summary provided in Table 7 and are also described below. A plan showing the location of projects in proximity to the study area is illustrated in Figure 13.

Beryl Solar Farm in Gulgong (approximately 10km from the proposal site), has a nominal capacity of 87MW, the 332-hectare solar farm site is located off Beryl Road, about five kilometres by road west of Gulgong and was determined in December 2017. The solar farm has been operating since June 2019.

Wilpinjong Coal Extension was determined on the 24/4/2017 which is to the east (approximately 30km) of the proposal site in the village of Wollar. This determination involves the continuation and extension of open cut mining operations at the Wilpinjong Coal Mine. The Land and Environment Court has upheld the NSW Planning Assessment Commission (PAC) decision to approve the extension to Wilpinjong open-cut coal mine, despite a challenge on climate change grounds from the Wollar Progress Association, represented by the Environmental Defenders Office (EDO NSW).

Renewable energy developer UPC\AC Renewables Australia, as part of a portfolio of clean energy projects across NSW, Victoria, South Australia and Tasmania is proposing **Valley of the Winds**, an 800-megawatt wind farm that is in the early stages of planning. The project will be situated south of the township of Coolah in the Warrumbungle Shire, extending towards the Golden Highway and located approximately 55 kilometres north-east from the Stubbo Solar Farm proposed site. The undulating terrain in that area the wind turbines and all allows for the wind turbines to be sited on ridgelines within cleared land that is currently being used for livestock grazing. Up to 175 wind turbines are being proposed across three clusters named Mount Hope, Girragulang Road and Leadville. These clusters will be linked electrically, allowing for approximately 2,500,000 megawatt hours of clean renewable energy to be generated each year. The wind turbines will have a maximum tip height of 250 metres with underground electricity cabling connecting each turbine to an electricity substation. Gravel access tracks will link ancillary infrastructure within private property. A high voltage transmission line will be required to connect the central substation to the National Electricity Market (NEM) allowing the electricity generated from Valley of the Winds to provide a secure and reliable supply of electricity to NSW, and beyond. An energy battery storage facility is also being considered for the project.

Ib vogt proposes to develop a large-scale solar farm approximately 2 kilometres north of Dunedoo in Central New South Wales, within the Warrumbungle Local Government Area. The proposed **Dunedoo Solar Farm** would have a capacity of approximately 66 MW, with a 66kV overhead powerline connecting either to the existing Dunedoo to Coonabarabran powerline to the south of the site, or the to the Dunedoo Substation. The site would be accessed from Allweather Road, that runs east to west across the site. Allweather Road meets the Castlereagh Highway to the west of the site, providing access to the region's transport network. The majority of heavy vehicle deliveries to the site would use the Golden Highway (via Bolaro Street), the Castlereagh Highway and Allweather Road. The solar farm is located approximately 42 kilometres north-east from the Stubbo site.

Wollar Solar Farm would involve the construction, operation and decommissioning of a photovoltaic (PV) solar array farm with a capacity of up to 400MW. The proposal site area is approximately 800ha with the area of PV panels and associated infrastructure likely to occupy around two thirds of this area. This would include a battery storage facility. The site is located on the western side of Barigan Road approximately 7 km south of Wollar Village. Wollar Village is about 55 km to north east of Mudgee, and about 316 km north west of Sydney. The proposal area is located within the Mid-Western Regional Local Government Area (LGA). The proposed solar farm would connect to an existing TransGrid substation approximately 900 m east of the proposal area via a loop into a nearby transmission line. This project is located 58 kilometres south-east from the Stubbo Site.

The **Liverpool Range Wind Farm** project is located approximately 370 km north-west of Sydney between the townships of Coolah and Cassilis in the Upper Hunter Region of New South Wales. Tilt Renewables acquired the project from Epuron in early 2019. 267 wind turbines are proposed within the Warrumbungle & Upper Hunter Shires, between the townships of Coolah and Cassilis, with a proposed capacity of up to 1000MW. The transmission line is proposed to connect to the south of the site located in the Mid-Western Regional Council area. This project is located 27 kilometres north from the Stubbo Site.

There are a number of other mining projects within Mid-Western LGA, however there are also a number of wind and solar farms, as shown in a search of NSW DPI&E Major Projects Portal on 2 April 2020, showed the following major projects were under assessment, or determined.

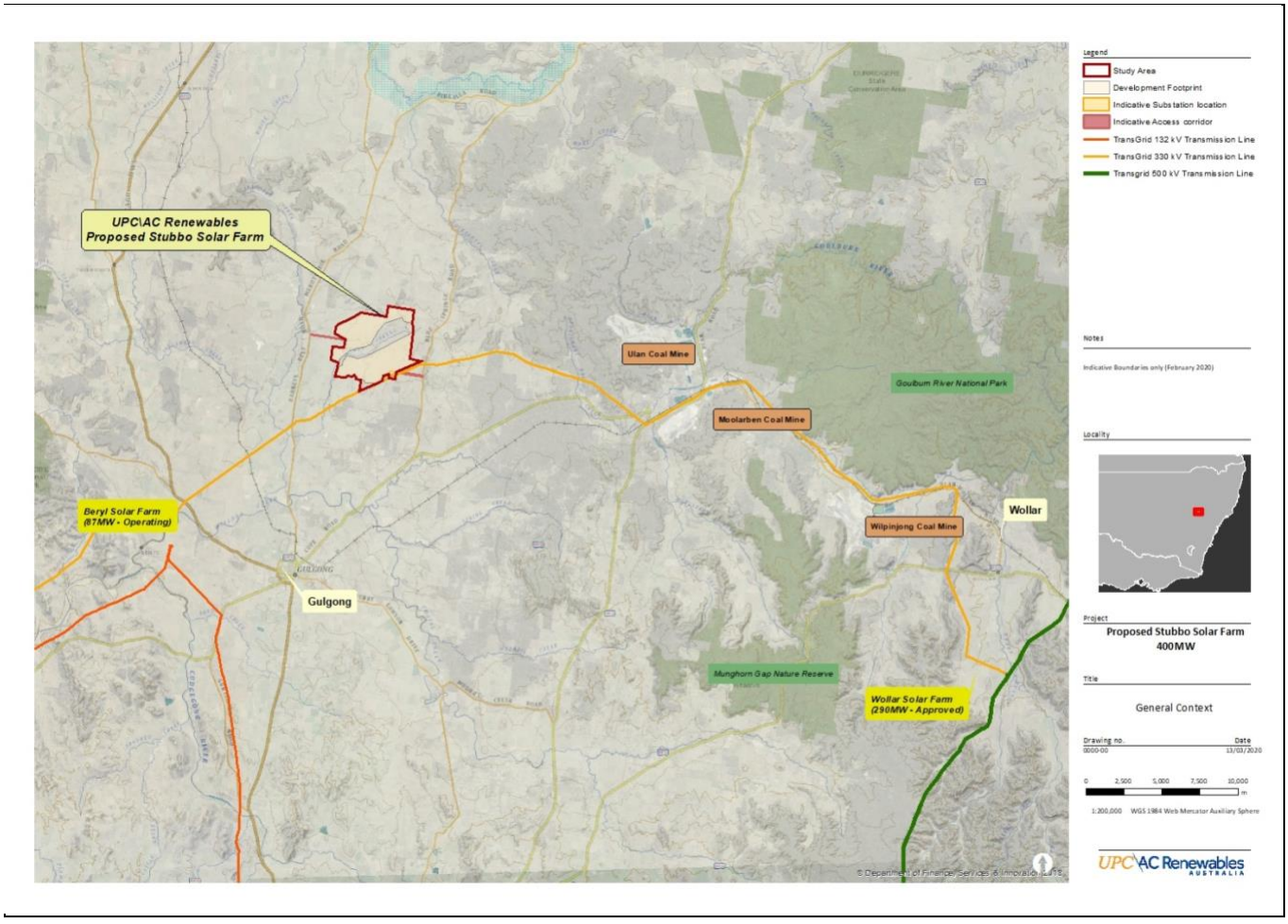

Figure 13: Surrounding projects within the Mid-Western LGA in relation to the Stubbo Site.

Table 7: Summary of Extract from NSW Planning Portal showing surrounding Mid-Western LGA major projects under assessment.

Major Projects – Search Results
Bylong Coal Mine
Ulan Coal Mine
Crudine Ridge Wind Farm
Moolarben Mine
Liverpool Range Wind
Beryl Solar
Wilpinjong Coal Mine
Moolarben Mine
Cobbora Coal Mine

Based on this preliminary assessment it does not appear that cumulative impacts will be a key consideration for the proposed Stubbo Solar Farm development. During construction and operation, key cumulative impacts that could be considered relevant include the potential for community complaints regarding stress on local business for supply and demand (in particular staff accommodation), waste management and traffic. Early consultation with the community regarding cumulative impacts should be conducted. Further assessment/investigation of cumulative impacts in the EIS will assess potential impact and risk. Potentially a Land Use Conflict Risk Assessment (LUCRA) could be utilised in the EIS stage if required.

7 CONCLUSION

The Scoping Report has outlined the proposed Stubbo 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. UPC have reduced the development footprint following initial biodiversity and heritage site investigations, as can be seen with the separation of the two development footprint areas in Figure 1b with the environmental exclusion zone thereby reducing the potential environmental impact within the study area.

The report has been prepared to assist the development of the SEARs for the proposal, which will guide the preparation of the EIS.

Based on this Scoping Report, the following key environmental issues associated with the proposal, were identified.

- Biodiversity.
- Aboriginal Heritage.
- Non-Aboriginal Heritage
- Hydrology and Flooding
- Noise and Vibration
- Traffic and Transport
- Social Impact
- Visual Impact
- Land Use
- Waste Management

These matters will be assessed in detail in the EIS. Based upon our preliminary investigations we submit that other matters such as air quality, soils, contamination, bushfire, natural hazards and cumulative impacts can be addressed through the adoption of typical mitigation and management measures. The relevance and importance of issues would be reviewed throughout the EIS process.

8 REFERENCES

Australian Bureau of Statistics (ABS) (2019) Mid-Western Regional Summary, accessed 4 March 2019 from, http://stat.abs.gov.au/itt/r.jsp?RegionSummary&region=15270&dataset=ABS_REGIONAL_LGA&geoconcept=REGION&datasetASGS=ABS_REGIONAL_ASGS&datasetLGA=ABS_REGIONAL_LGA&regionLGA=REGION&regionASGS=REGION

Australian Radiation and Protection and Nuclear Safety Agency 2018. https://www.arpansa.gov.au/understanding-radiation/radiation-sources/more-radiation-sources/electricity

REMPLAN Community Profile (2019) Mid-Western Regional Council Community Profile. Accessed4 March 2019, from https://www.communityprofile.com.au/midwestern

Department of Environment and Climate Change (DECC) (2009) Interim Construction Noise Guideline. Department of Environment and Climate Change NSW, July 2009.

Department of Environment Climate Change and Water (DECCW) (2010a) Aboriginal Cultural Heritage Consultation Requirements for Proponents. National Parks. Department of Environment, Climate Change and Water.

Department of Environment Climate Change and Water (DECCW) (2010b) Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales.

Department of Environment and Energy (DOEE) (Cmwlth) (2018) Protected Matters Search Tool, accessed 30 January 2019 from <http://www.environment.gov.au/epbc/protected-matters-search-tool>.

Department of Planning and Environment – Resources and Energy (2018) Minview Accessed 4 March 2019 from, http://www.resourcesandenergy.nsw.gov.au/miners-and-explorers/geoscience-information/services/online-services/minview

Environmental Protection Authority (EPA) (NSW) (2018a) Search the contaminated land record, accessed 4 March 2019 from, <http://www.epa.nsw.gov.au/prclmapp/searchregister.aspx>.

Environmental Protection Authority (EPA) (NSW) (2018b) List of NSW contaminated sites notified to EPA, accessed 4 March 2019 from <http://www.epa.nsw.gov.au/clm/publiclist.htm>.

NSW Large-Scale Solar Energy Guideline for State Significant Development (December 2018), NSW DPE, https://www.planning.nsw.gov.au/-/media/Files/DPE/Guidelines/large-scale-solar-energy-guideline- 2018-12-11.pdf?la=en

Office of Environment and Heritage (2019). NSW Bionet Atlas. Accessed January 2019 from, http://www.bionet.nsw.gov.au/

Office of Environment and Heritage (OEH) (2011), Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW. Office of Environment and Heritage.

Mid-Western Regional Council (2012) Mid-Western Regional Local Environment Plan.

Office of Environment and Heritage (OEH) (2016) NSW Climate Change Policy Framework. Office of Environment and Heritage, November 2016.

Office of Environment and Heritage (OEH) (2019) Aboriginal Heritage Information Management System (AHIMS), accessed February 2019

RPS (2019) Bushfire Due Diligence Threat Assessment Report Stubbo Solar Farm Rural Fire Service (RFS) (2018) Planning for Bushfire Protection.

Rural Fire Service (RFS) (2018) Check if you're in bush fire prone land, accessed 21 June 2018 from.

<http://www.rfs.nsw.gov.au/plan-and-prepare/building-in-a-bush-fire-area/planning-for-bush-fire-protection/bush-fire-prone-land/check-bfpl>.

NSW Government (2019) SEED Sharing and Enabling Environmental Data including Acid Sulfate Soil Risk, Australian Soil Classification (ASC) Soil Type map of NSW, Land and Soil Capability Mapping for NSW, and National Native Title Tribunal

Appendix A

EPBC Protected Matters Search

Australian Government
Department of the Environment and Energy

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

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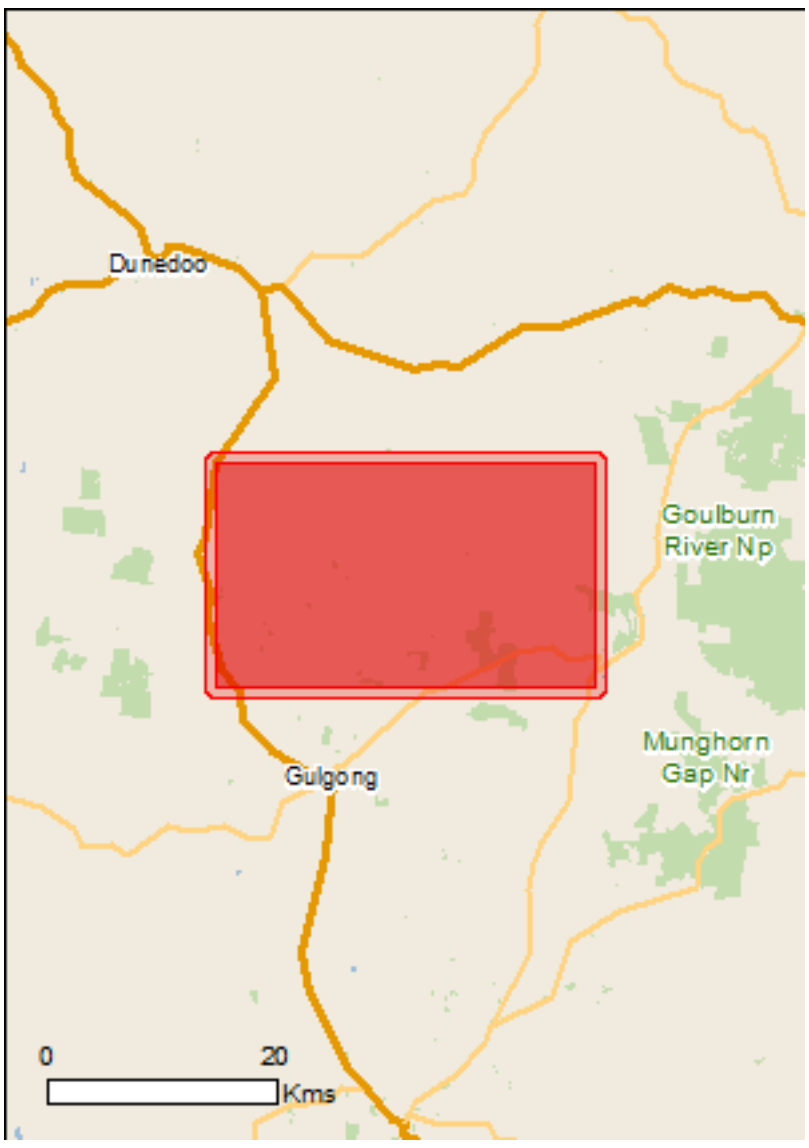

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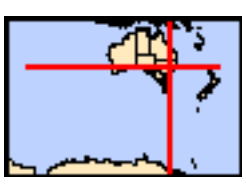

Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	5
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	4
Listed Threatened Species:	32
Listed Migratory Species:	11

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	18
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	None
Regional Forest Agreements:	None
Invasive Species:	32
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar)	[Resource Information]
Name	Proximity
Banrock station wetland complex	800 - 900km upstream
Hunter estuary wetlands	150 - 200km upstream
Riverland	800 - 900km upstream
The coorong, and lakes alexandrina and albert wetland	900 - 1000km upstream
The macquarie marshes	200 - 300km upstream

Listed Threatened Ecological Communities		[Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Name	Status	Type of Presence
Central Hunter Valley eucalypt forest and woodland	Critically Endangered	Community may occur within area
Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Endangered	Community likely to occur within area
Weeping Myall Woodlands	Endangered	Community may occur within area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area

Listed Threatened Species		[Resource Information]
Name	Status	Type of Presence
Birds		
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat known to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area

Name	Status	Type of Presence
Numenius madagascariensis		
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Polytelis swainsonii		
Superb Parrot [738]	Vulnerable	Species or species habitat may occur within area
Rostratula australis		
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Fish		
Galaxias rostratus		
Flathead Galaxias, Beaked Minnow, Flat-headed Galaxias, Flat-headed Jollytail, Flat-headed Minnow [84745]	Critically Endangered	Species or species habitat may occur within area
Macquaria australasica		
Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area
Mammals		
Chalinolobus dwyeri		
Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat known to occur within area
Dasyurus maculatus maculatus (SE mainland population)		
Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area
Nyctophilus corbeni		
Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat likely to occur within area
Petrogale penicillata		
Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat may occur within area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)		
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat known to occur within area
Pseudomys novaehollandiae		
New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat likely to occur within area
Pteropus poliocephalus		
Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Plants		
Androcalva procumbens		
[87153]	Vulnerable	Species or species habitat may occur within area
Cryptostylis hunteriana		
Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat may occur within area
Dichanthium setosum		
bluegrass [14159]	Vulnerable	Species or species habitat likely to occur within area
Euphrasia arguta		
[4325]	Critically Endangered	Species or species habitat may occur within area
Homoranthus darwinioides		
[12974]	Vulnerable	Species or species habitat known to occur within area
Leucochrysum albicans var. tricolor		
Hoary Sunray, Grassland Paper-daisy [56204]	Endangered	Species or species

Name	Status	Type of Presence
		habitat known to occur within area
Prasophyllum petilum Tarengo Leek Orchid [55144]	Endangered	Species or species habitat may occur within area
Prasophyllum sp. Wybong (C.Phelps ORG 5269) a leek-orchid [81964]	Critically Endangered	Species or species habitat may occur within area
Swainsona recta Small Purple-pea, Mountain Swainson-pea, Small Purple Pea [7580]	Endangered	Species or species habitat may occur within area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area
Tylophora linearis [55231]	Endangered	Species or species habitat may occur within area
Reptiles		
Aprasia parapulchella Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat likely to occur within area
Delma impar Striped Legless Lizard, Striped Snake-lizard [1649]	Vulnerable	Species or species habitat may occur within area

Listed Migratory Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species

Name	Threatened	Type of Presence
		habitat may occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Name
Commonwealth Land - Commonwealth Trading Bank of Australia

Listed Marine Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Chrysococcyx osculans Black-eared Cuckoo [705]		Species or species habitat known to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within

Name	Threatened	Type of Presence
		area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat may occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat may occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area

Extra Information

Invasive Species [Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Birds		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Lonchura punctulata Nutmeg Mannikin [399]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Pycnonotus jocosus Red-whiskered Bulbul [631]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Capra hircus Goat [2]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Feral deer Feral deer species in Australia [85733]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Asparagus plumosus Climbing Asparagus-fern [48993]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat may occur within

Name	Status	Type of Presence
		area
Genista sp. X Genista monspessulana Broom [67538]		Species or species habitat may occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Nassella trichotoma Serrated Tussock, Yass River Tussock, Yass Tussock, Nassella Tussock (NZ) [18884]		Species or species habitat likely to occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Solanum elaeagnifolium Silver Nightshade, Silver-leaved Nightshade, White Horse Nettle, Silver-leaf Nightshade, Tomato Weed, White Nightshade, Bull-nettle, Prairie-berry, Satansbos, Silver-leaf Bitter-apple, Silverleaf-nettle, Trompillo [12323]		Species or species habitat likely to occur within area
Tamarix aphylla Athel Pine, Athel Tree, Tamarisk, Athel Tamarisk, Athel Tamarix, Desert Tamarisk, Flowering Cypress, Salt Cedar [16018]		Species or species habitat likely to occur within area

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-32.1534 149.44049,-32.1534 149.73712,-32.3021 149.73712,-32.3021 149.44049,-32.1534 149.44049

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact Us page.

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Appendix B

Preliminary Candidate Species Report

BAM Candidate Species Report

Proposal Details

Assessment Id 00019807/BAAS18060/20/00019808	Proposal Name	BAM data last updated * 26/11/2019
Assessor Name	Report Created 01/04/2020	BAM Data version * 22
Assessor Number	Assessment Type Major Projects	BAM Case Status Open
	Assessment Revision 0	Date Finalised To be finalised

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

List of Species Requiring Survey

Name	Presence	Survey Months
Ammobium craspedioides Yass Daisy		Jan Feb Mar Apr May Jun Jul Aug **Sep** **Oct** **Nov** Dec
Aprasia parapulchella Pink-tailed Legless Lizard		Jan Feb Mar Apr May Jun Jul Aug **Sep** **Oct** **Nov** Dec
Austrostipa wakoolica A spear-grass		Jan Feb Mar Apr May Jun Jul Aug Sep **Oct** **Nov** **Dec**
Burhinus grallarius Bush Stone-curlew		**Jan** **Feb** **Mar** **Apr** **May** **Jun** **Jul** **Aug** **Sep** **Oct** **Nov** **Dec**
Lophochroa leadbeateri Major Mitchell's Cockatoo		Jan Feb Mar Apr May Jun Jul Aug **Sep** **Oct** **Nov** **Dec**

Calyptorhynchus lathami Glossy Black-Cockatoo		Jan Feb **Mar** **Apr** **May** **Jun** **Jul** **Aug** Sep Oct Nov Dec
Chalinolobus dwyeri Large-eared Pied Bat		**Jan** Feb Mar Apr May Jun Jul Aug Sep Oct **Nov** **Dec**
Cercartetus nanus Eastern Pygmy-possum		**Jan** **Feb** **Mar** Apr May Jun Jul Aug Sep **Oct** **Nov** **Dec**
Grevillea wilkinsonii Tumut Grevillea		Jan Feb Mar Apr May Jun Jul Aug Sep **Oct** Nov Dec
Dichanthium setosum Bluegrass		**Jan** **Feb** **Mar** **Apr** **May** Jun Jul Aug Sep Oct **Nov** **Dec**
Lathamus discolor Swift Parrot		Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Litoria booroolongensis Booroolong Frog		Jan Feb Mar Apr May Jun Jul Aug Sep Oct **Nov** **Dec**
Lophoictinia isura Square-tailed Kite		**Jan** Feb Mar Apr May Jun Jul Aug **Sep** **Oct** **Nov** **Dec**
Polytelis swainsonii Superb Parrot		Jan Feb Mar Apr May Jun Jul Aug **Sep** **Oct** **Nov** Dec
Miniopterus orianae oceanensis Large Bent-winged Bat		**Jan** **Feb** Mar Apr May Jun Jul Aug Sep Oct Nov **Dec**
Ninox strenua Powerful Owl		Jan Feb Mar Apr **May** **Jun** **Jul** **Aug** Sep Oct Nov Dec

Ninox connivens Barking Owl		Jan Feb Mar Apr **May** **Jun** **Jul** **Aug** **Sep** **Oct** **Nov** **Dec**
Petaurus norfolcensis Squirrel Glider		**Jan** **Feb** **Mar** **Apr** **May** **Jun** **Jul** **Aug** **Sep** **Oct** **Nov** **Dec**
Petrogale penicillata Brush-tailed Rock-wallaby		**Jan** **Feb** **Mar** **Apr** **May** **Jun** **Jul** **Aug** **Sep** **Oct** **Nov** **Dec**
Phascogale tapoatafa Brush-tailed Phascogale		**Jan** **Feb** **Mar** **Apr** **May** **Jun** **Jul** **Aug** **Sep** **Oct** **Nov** **Dec**
Phascolarctos cinereus Koala		**Jan** **Feb** **Mar** **Apr** **May** **Jun** **Jul** **Aug** **Sep** **Oct** **Nov** **Dec**
Pomaderris queenslandica Scant Pomaderris		**Jan** **Feb** **Mar** **Apr** **May** **Jun** **Jul** **Aug** **Sep** **Oct** **Nov** **Dec**
Prasophyllum petilum Tarengo Leek Orchid		Jan Feb Mar Apr May Jun Jul Aug **Sep** **Oct** **Nov** **Dec**
Pteropus poliocephalus Grey-headed Flying-fox		Jan Feb Mar Apr May Jun Jul Aug Sep **Oct** **Nov** **Dec**
Swainsona recta Small Purple-pea		Jan Feb Mar Apr May Jun Jul Aug **Sep** **Oct** **Nov** Dec
Swainsona sericea Silky Swainson-pea		Jan Feb Mar Apr May Jun Jul Aug **Sep** **Oct** **Nov** Dec
Synemon plana Golden Sun Moth		Jan Feb Mar Apr May Jun Jul Aug Sep **Oct** **Nov** **Dec**

Tylophora linearis Tylophora linearis		Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Tyto novaehollandiae Masked Owl		Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Anthochaera phrygia Regent Honeyeater		Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Zieria obcordata Zieria obcordata		Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Callocephalon fimbriatum Gang-gang Cockatoo		Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Acacia ausfeldii Ausfeld's Wattle		Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Euphrasia arguta Euphrasia arguta		Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Hieraaetus morphnoides Little Eagle		Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Haliaeetus leucogaster White-bellied Sea-Eagle		Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec