



Burroway Solar Farm Scoping Report

Burroway, NSW

Request for Secretary's Environmental Assessment Requirements (SEARs)

February 2023



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Abbreviations

ACHA	Aboriginal Cultural Heritage Assessment
AEMO	Australian Energy Market Operator
AHD	Australian Height Datum
AHIMS	Aboriginal Heritage Information Management System
ALC	Aboriginal Land Council
ARTC	Australian Rail Track Corporation
BC Act	<i>NSW Biodiversity Conservation Act 2016</i>
BDAR	Biodiversity Development Assessment Report
BSAL	Biophysical Strategic Agricultural Land
CLM Act	<i>NSW Crown Land Management Act 2016</i>
CMA	Catchment Management Authority
DA	Development Application
DIRN	Defined Interstate Rail Network
DoEE	Department of the Environment and Energy
DPE	NSW Department of Planning and Environment
DRC	NSW Department of Resource & Geoscience
DRE	NSW Department of Industry – Division of Resources and Energy
EMMP	Environmental Management and Monitoring Plan
EIS	Environmental Impact Statement
EMS	Environmental Management System
EP&A Act	<i>NSW Environmental Planning and Assessment Act 1979</i>
EPA	NSW Environment Protection Authority
EPBC Act	<i>Commonwealth Environment Protection and Biodiversity Conservation Act 1999</i>
ETL	Electricity Transmission Line
GW	Gigawatt
ICNG	Interim Construction Noise Guideline
LEP	Local Environmental Plan
LGA	Local Government Area
LLS	Local Land Services
LVIA	Landscape and Visual Impact Assessment
MDBA	Murray-Darling Basin Authority
MNES	Matters of National Environmental Significance
MW	Megawatt
MVA	Megavolts
MWh	Megawatt Hour
NSW	New South Wales
O&M	Operations and Management
OEH	NSW Office of Environment and Heritage
PAC	Planning Assessment Commission
PCT	Preliminary plant community type
POEO Act	<i>NSW Protection of the Environment Operations Act 1997</i>
PV	Photovoltaic
REAP	Renewable Energy Action Plan
RF Act	<i>NSW Rural Fires Act 1997</i>
RFS	Rural Fire Service
RMS	NSW Roads and Maritime Service
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
SIA Worksheet	Social Impact Assessment Worksheet
SPIC	State Power Investment Corporation
SSD	State Significant Development
TIA	Traffic Impact Assessment
TSR	Travelling Stock Reserve
WM Act	<i>NSW Water Management Act 2000</i>

1 Introduction

1.1 Project Overview

Edify Energy Pty Ltd (ABN 85 606 684 995; Level 1 34-35 South Steyne Manly 2095) proposes to develop a solar project in the township of Burroway, New South Wales, to be known as the Burroway Solar Farm (referred to as the Project). The objective of the Project is to generate new and dispatchable carbon-free electricity supply for NSW. Subject to necessary approvals, Edify Energy (Edify) anticipates construction to commence in 2025.

The Study Area equates to approximately 495 hectares (ha) of rural land currently used for agricultural purposes (cropping). The indicative Development Area (Impact Area) will occupy a portion of this area, with further refinement and micro-siting to occur as a result of future technical studies. The Project is expected to have a generation capacity up to 100 Megawatt (MW) alternating current (AC) and up to 100MW / 400MWh of energy storage. The site is located approximately 17.5 kilometres (km) north of Narromine and 27 km west of Dubbo, located within the Central West and Orana region. Figure 1 illustrates the Subject Land (Study Area) in relation to Narromine, Dubbo and the Central West and Orana Renewable Energy Zone (REZ) of New South Wales (NSW).

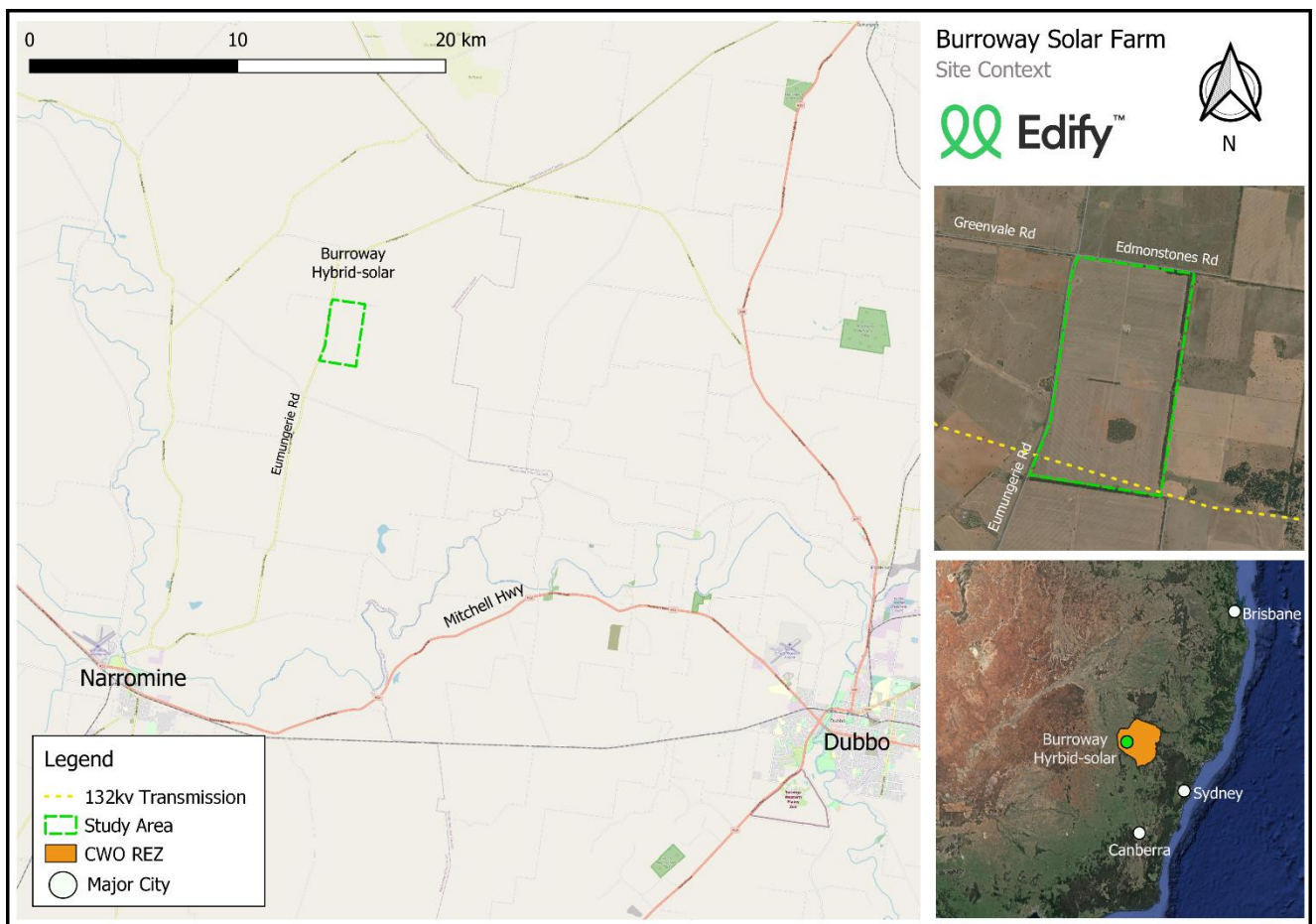


Figure 1 - Study Area in a regional setting

The Study Area involves one (1) lot, which has been secured under contract by Edify. The surveyed lot is Lot 70 in Deposit Plan 1251856, which is known as ‘Kookaburra’ 1955 Eumungerie Road, Burroway. The

proposed lot is also host to an existing 132 kilovolt (kV) distribution line which crosses east-west through the southern section of the Impact Area (Figure 2).

The overhead 132kV distribution line runs from Dubbo to Nevertire, with the distribution line owned and operated by Essential Energy.

The Project intends to connect into the existing distribution line (Line #94W/1). This will require a new T-connection into the existing distribution line, and the construction of a new step-down substation from 132kV to 33kV. This distribution line presents a suitable connection point for the Project due to its current network capacity, which requires no additional easements when establishing a new point-of-connection for the solar and battery assets.



Figure 2 - Essential Energy's 132kV line (#94W/1) within Study Area

The Project includes infrastructure such as solar panels, inverters, transformers, underground cabling, an integrated battery storage system (up to 100MW / 400MWh), site office and maintenance building, access tracks, road and electrical easement crossings, perimeter security fencing, and a substation to connect the Solar Farm to Essential Energy's existing 132kV transmission line.

The Project represents Edify's continued investment in renewable energy projects throughout regional NSW. Similar to Edify's prior success in the State, the development will be consistent with the *NSW Large-Scale Solar Energy Guideline for State Significant Development* (NSW Government, 2022) and is expected to deliver several benefits including:

- the creation of local employment opportunities, including approximately 250 full-time equivalent jobs during the peak construction period
- approximately five permanent jobs during the operation of the Project (>30 years)
- direct local investment via a Community Benefit Fund
- increased electricity generation capacity and grid support, via the solar asset

- increased dispatchable electricity, firming and system strength services, via the battery energy storage system; and
- a Voluntary Planning Contribution to be negotiated with the Narromine Shire Council

The Project will have a capital investment of greater than \$30 million and therefore is considered a State Significant Development (SSD) under the *State Environmental Planning Policy (State and Regional Development) 2021* (SRD SEPP). Edify will prepare a Development Application (DA) for the Project that is supported by an Environmental Impact Statement (EIS). This will be submitted in accordance with Part 4, Division 4.1 of the *NSW Environmental Planning and Assessment Act 1979* (EP&A Act). The NSW Minister for Planning or the Minister's delegate is the consent authority.

1.2 Purpose

The Federal Department of Climate Change, Energy, the Environment and Water and the NSW Government NSW State Significant Infrastructure Guidelines (Appendices A and B), detail the requirement for developments to follow an offset mitigation hierarchy. The hierarchy is characterised by the following three step process, in order of preference:

1. Avoid
2. Minimise and/or mitigate
3. Offset

This scoping report illustrates findings of preliminary social, economic and environmental investigations such as the Preliminary Ecological Assessment (Appendix J). Potential impacts identified from this scoping report and supporting technical studies allows Edify to begin to address the first step in this hierarchy by avoiding potential impact areas/matters. Detailed studies undertaken as part of the EIS will further refine Edify's understanding of the Study Area and continue to inform our application of the hierarchy.

The Scoping Report has been prepared to support a request to the Department of Planning and Environment (DPE) for the SEARs. The SEARs would guide the preparation of an Environmental Impact Statement (EIS) for the Project under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). It identifies the main issues and information requirements for the assessment, considering the values of the site, the nature and extent of potential impacts, planning and regulatory requirements and the results of early consultation. This allows the assessment to efficiently focus on the most important issues.

In achieving this propose, this Scoping Report intends to:

- Justify the development in relation to policy and market frameworks (Section 2)
- Describe the Project and the site (Section 3 and 4)
- Identify statutory approval requirements (Section 5)
- Provide a summary of consultation undertaken to date and proposed further engagement (Section 6)
- Identify key potential environmental issues associated with the Project (Section 7)
- Conclude with remarks and identification of key issues raised in preparation of the Scoping Report

1.3 Applicant – Edify Energy Pty Ltd

Edify Energy is a market leading, Australian-owned renewable energy company with significant experience in developing and project financing renewable projects across Australia. Edify has financed six large-scale solar generation projects (773MWp), an 84MVA synchronous condenser and two utility-scale battery energy storage systems (175MW / 350MWh) and is the leading developer of utility-scale renewable energy projects

in Australia. Edify has broad energy expertise, covering project development, project design and engineering, financing, asset management and construction management.

Edify's management team has in excess of 150 years' experience in the power and renewables sector internationally, raised and deployed around \$3 billion in capital bringing over 40 solar and wind projects into commercial operation, advised on over 10GW (around \$25 billion of projects during development, construction and operation and managed an operational portfolio of more than 1.7GW).

Edify supports the full life-cycle of renewable energy projects during development, construction and operation, including greenfield development, project structuring and financing, construction management and a full asset management offering, including trading and operations.

Edify's philosophy is to ensure that its interests are closely aligned with its investment partners and community stakeholders. In addition to providing long-term asset management services, Edify seeks to maintain a long-term equity interest in its projects, ensuring that Edify's long-term project view is aligned with that of its investors and host community, resulting in best-in-class assets. This long-term business model is a distinguishing feature of Edify and should further instil confidence that the community is entering into a credible, long-term partnership. This also makes an important difference in our community engagement approach, due to the fact that we are establishing relationships with various local stakeholders during the development phase. These relationships will endure for the lifetime of the Projects, with Edify acting as Asset Manager once the Project is operational.

2 Strategic Context

2.1 Strategic Justification

2.1.1 Technical Feasibility

The Study Area comprises flat and predominantly clear terrain, making it a suitable location for a utility-scale solar project.

The Project will utilise proven and mature solar and battery technologies. The Study Area is well suited to efficient and high-yielding output of solar generation. Battery storage would also aid in storing and managing energy flows to the grid during times of grid constraints (charging) and peak electricity demand (discharging). This dispatchable capability allows the Project to de-couple its output from typical, weather dependent generation profiles, for example by allowing the Project to service periods of high demand during the evening (post sunlight) hours.

Furthermore, the NSW electricity market is undergoing significant change, with a number of major energy generators scheduled to reach the end of their lifespan and are likely to be retired. The first of which large generators to be retired is located at the Liddell coal-fired power station which was shut down in April, 2022, with the final three turbines to be shut down by April 2023. This closure will likely be followed by Vales Point, Eraring and other major generating units later this decade. There is a risk that without new investment in sufficient generation capacity, these retirements have the potential to lead to interruptions in energy security.

The proposed investment's connection would be achieved by 'cutting' into the 132 kV line (Essential Energy owned) crossing the site, with the majority of generation likely exported east towards Dubbo. A substation would be constructed in the Impact Area. It is noteworthy that the electricity grid in New South Wales can present challenges in terms of having the capacity to connect utility scale renewable energy projects. The Project benefits from having good connection options within the site with sufficient capacity and system strength in the transmission network to allow power generated at Project to be exported to the regional NSW power system. The site also has relative proximity to Dubbo, a major regional load centre.

2.1.2 Contributions to Federal and State Climate Change Targets

Electricity generation is the largest individual contributor of greenhouse gas emissions in Australia, accounting for 47.6 per cent of emissions in the 2020-21 reporting year (Australian Government Clean Energy Regulator, 2023). This proposal contributes to the decarbonisation of this emissions intensive sector, with bulk supply of firmed and dispatchable renewable energy sources, all of which are required to replace traditional, thermal electricity generators that are approaching their intended design-life.

2.1.2.1 Renewable Energy Target

The Clean Energy Regulator (CER) introduced the Renewable Energy Target in 2001, 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.

In the context of this proposal, the Renewable Energy Target works by allowing large-scale generators to create large-scale generation certificates for every megawatt hour (MWh) of energy 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.

The COP21, also known as the 2015 Paris Climate Conference, achieved a legally binding and universal agreement on climate, with the aim of keeping global warming below 2°C, chiefly by reducing greenhouse gas emissions (Australian Government, Department of Industry, Science, Energy and Resources, 2020). The Project would form part of the Australian effort to help meet this binding, international target.

2.1.2.2 NSW Net Zero Plan Stage 1: 2020-2030

The NSW Department of Planning and Environment (NSW DPE) *Net Zero Plan Stage 1: 2020– 2030* is a commitment to taking decisive and responsible action on climate change. The *Plan* has the goal of reducing the State’s emissions by 35% by 2030, compared to 2005 levels, whilst supporting regional investments that total \$7 billion and create approximately 1700 regional employment opportunities (NSW Government 2020).

The NSW Government has also set a broader 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 Burroway Solar Farm proposal would contribute towards both the Renewable Energy Target and the *New South Wales Electricity Strategy* and *Net Zero Plan*, with the latter representing a State-based initiative designed to support the national target of achieving 33,000 gigawatt hours of renewable electricity generation (approximately 26-28%) renewable energy by 2030 (Clean Energy Regulator, 2018).

The Burroway Solar Farm proposal is also located within the Central West and Orana Renewable Energy Zone (Figure 3).

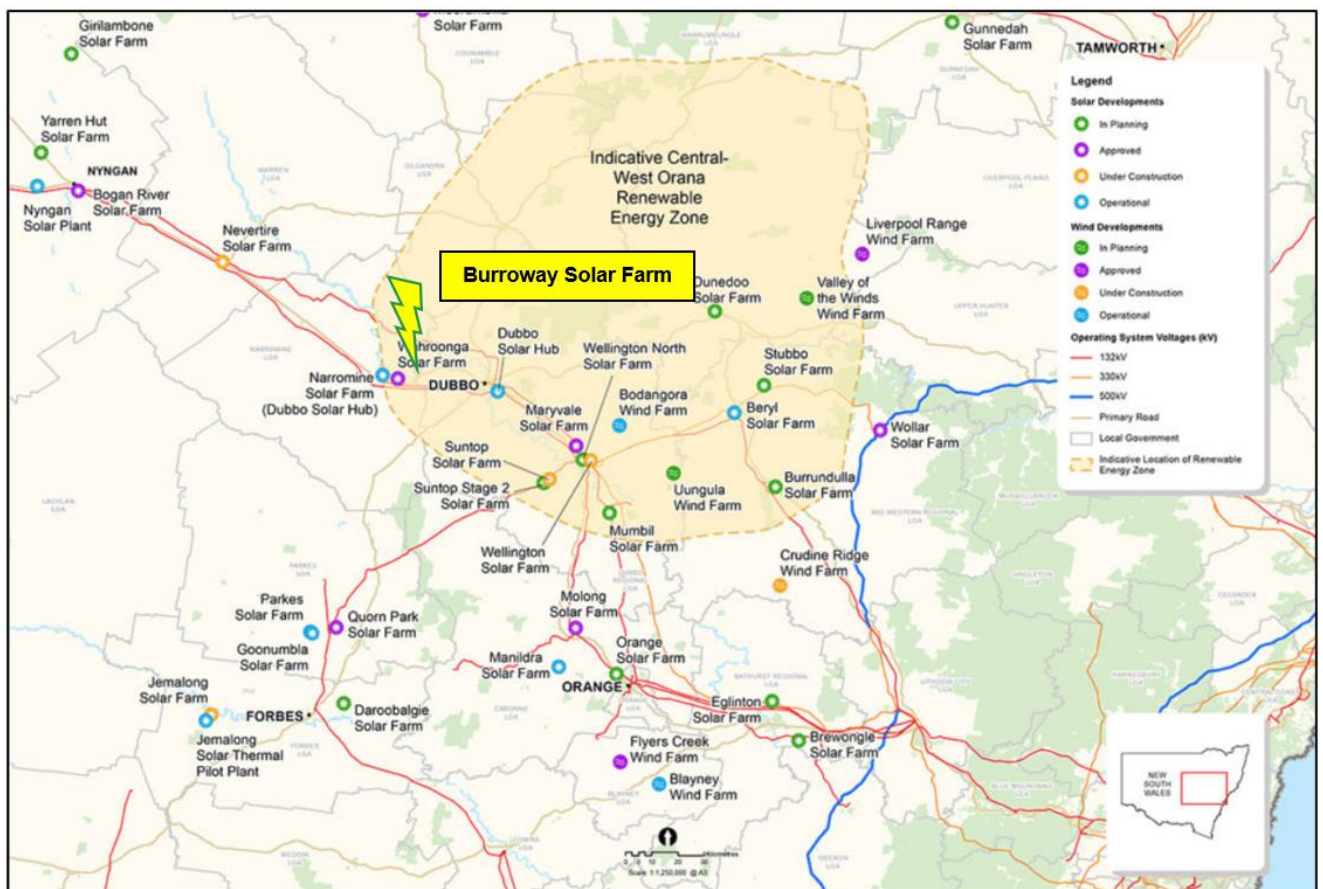


Figure 3 - Central West and Orana Renewable Energy Zone (NSW Energy Co, 2022) - Burroway Solar Farm

Due to the proximity of the Project to one of the priority Renewable Energy Zones in New South Wales, the Project will support the four goals of the NSW Electricity Strategy, which includes:

- delivering various Renewable Energy Zones;
- saving energy, especially for times of peak demand;
- supporting the development of new electricity generators; and
- setting a target to bolster the state's energy resilience.

2.1.3 Electricity Market Benefits

Australian Energy Market Operator (AEMO 2020) forecasts that grid-supplied electricity consumption will remain flat for the next 20 years, despite projected 30% growth in population. Although not required to meet projected electricity demand, the Project would benefit the network by shifting electricity production closer to local consumption and regulating inputs to the grid using a Battery Energy Storage System.

The electricity network was designed to deal with a small number of very large power generating stations. The increasing localisation of power generation helps the grid to cope with the supply from diversified renewable energy projects, such as intended via this proposal.

2.1.3.1 Electricity prices

According to Deloitte, Australian households will pay \$510 million more for power in 2020 without renewable growth through the RET and up to \$1.4 billion more per year beyond 2020.

Renewables increase competition in the wholesale energy market – and, as in any market, more competition means lower prices. This is particularly true in the case of the dispatchable capability provided by the battery energy storage system, which will increase competition and capacity to satisfy peak demands and place downward pressure on electricity prices.

2.1.4 Socio-economic Benefits

2.1.4.1 Employment

In 2018/19, 26,850 Australians were directly employed in the renewable energy sector with an additional 5,770 jobs created since the 2017/18 financial year (ABS 2020).

This proposal would generate a significant number of new jobs (up to approximately 250 full-time employees) during the peak construction phase in regional NSW, in addition to indirect employment opportunities supported from the ancillary supply chain.

The Project will create a range of permanent employment opportunities (approximately five employees) and indirect full time equivalent staff during the operation and maintenance phase (expected to be approximately 30 years).

The employment benefits for construction extend through the local supply chains to fuel supply, vehicle servicing, uniform suppliers, hotels/motels, cafés, pubs, catering and cleaning companies, tradespersons, tool and equipment suppliers and many other businesses.

Further extension of employment benefit extends through the operation of the Project, such as panel cleaning and maintenance, electrical maintenance, fence supplies and maintenance, road grading, plus the grazing and shearing of sheep.

2.1.4.2 Economic diversification

The Project would diversify the use of land in the area, with the predominant land use in the area being agricultural usage and industrial (mining) operations. The Project would add to that and provide both local land

holders and businesses in the broader area with an additional source of income and economic activity. The income created in the locality from the Project would be consistent and stable. This income will be of greater security being removed from the normal cycle and risks of agricultural activity (like flood and drought).

2.1.5 Land Use

It is also important to note that Solar Farms do not preclude the use of land for agriculture. Some agricultural activity is still possible whilst a Solar Farm is operating (e.g. grazing). The deliberate combination of solar and agricultural activities through design are referred to as Agri-Solar. Additionally, the degree of permanent land disturbance in the construction and operation of Solar Farms is small, and it is expected that agricultural activities that were occurring before the Solar Farm was constructed would be able to be continued once the Project is decommissioned and removed.

2.1.6 Site Suitability

Key considerations for site selection are detailed within the NSW Large-scale Solar Energy Guideline for State Significant Development (DPE 2022). The key site constraints with justification as to why the site is suitable is detailed in Table 2 below:

Table 1 - Key Site Constraints with Justification

Areas of constraint	Site justification
<p>Visibility and topography - Sites with high visibility, such as those on prominent or high ground positions, or sites which are located in a valley with residences with elevated views looking towards the site. This is particularly important in the context of significant scenic, historic or cultural landscapes.</p>	<p>The Study Area has been selected due to the relative isolation from residential clusters and townships. Notwithstanding, the nearest non-involved residential receiver is located approximately 1,795m west of the Impact Area. This is considered an appropriate setback distance that is unlikely to create impacts to this receiver, however measures will be considered to further reduce any potential visual impact, such as planting vegetation screening and other mitigation features.</p> <p>Edify have completed a Preliminary Visual Impact Assessment (Section 7.2.4) to identify viewpoints requiring further detailed assessment.</p> <p>Edify will prepare a detailed Visual Impact Assessment, Viewshed Analysis and Landscape Management Plan as a part of the EIS to illustrate the potential viewpoints of the Project from the proximate neighbours and other potential viewpoints for local motorists.</p>
<p>Biodiversity - Areas of native vegetation or habitat of threatened species or ecological communities within and adjacent to the site, including native forests, rainforests, woodlands, wetlands, heathlands, shrublands, grasslands and geological features.</p>	<p>The Subject Land has largely been used for current and historic cropping activities, with only small patches of natural and planted woodland occurring within the lot and surrounding the lot. The preliminary ecological assessment identified 4 PCT's on the subject land and surrounds, with one PCT potentially meeting the criteria of a CEEC. There are no watercourse or drainage features traversing the subject land. Natural and man-made habitat features are present on site.</p>

Areas of constraint	Site justification
	<p>The development footprint is currently designed to avoid clearing of any vegetation and disturbance to man-made structures acting as potential habitat.</p> <p>Two access locations will be investigated further during the Biodiversity Development Assessment Report (BDAR) to determine the location that will either avoid environmental impacts or have a minimised environmental impact.</p> <p>Edify will establish non-development zones to retain sections of mature and valuable biodiversity areas within the Impact Area with suitable buffers to ensure all native vegetation is avoided. Edify will prepare a Biodiversity Development Assessment Report as part of the EIS process to inform micro-siting of infrastructure.</p>
<p>Residences - Residential zones or urbanised areas.</p>	<p>The Project is not likely to generate land use conflicts with surrounding land uses and is compatible with land use zoning. The proposed Impact Area is within land zoned RU1, Primary Production under the Narromine Shire Council's Local Environmental Plan (LEP).</p> <p>Edify has prepared a register of all neighbours within 5km of the Project boundary, noting the closest residence is setback approximately 1,795m from the Impact Area. Many of these landholders have already been consulted via phone and/or email, and information packs have been provided (Appendix C).</p>
<p>Agriculture - Important agricultural lands, including Biophysical Strategic Agricultural Land (BSAL), irrigated cropping land, and land and soil capability classes 1, 2 and 3. Consideration should also be given to any significant fragmentation or displacement of existing agricultural industries and any cumulative impacts of multiple developments.</p>	<p>The Project is not mapped to be located on important agricultural land, including industry clusters and biophysical strategic agricultural land. The Project is mapped on land classed as Soil Capability Class 3 land. However, the Project:</p> <ul style="list-style-type: none"> • Is not expected to adversely affect the biophysical nature of the land. • Would positively affect soils by providing many of the benefits of long-term fallow, including increasing soil moisture, building soil carbon levels, allowing structural recovery and improving soil biota. • Will not result in the permanent removal of agricultural land. • Would not result in rural fragmentation given it will not alter the existing or surrounding environment. • Adjacent farming operations are compatible. • Strategic sheep grazing may be used within the Impact Area. Grazing would be used to reduce

Areas of constraint	Site justification
	<p>vegetation biomass and put grazing pressure on weeds adjacent to the solar panels.</p> <p>Edify has engaged a soil scientist consultant to undertake soil sampling and laboratory testing to verify the Soil Capability. Results will be presented, along with an Agricultural Impact Statement during the upcoming EIS phase of the Project.</p>
<p>Natural Hazards – Areas subject to natural hazards, such as flooding and land instability.</p>	<p>The site has not been identified as flood prone in the Narromine Shire Council’s LEP.</p> <p>The site has been identified as bushfire prone (refer to Appendix H). Edify will engage with Country Fire Authority and NSW Fire & Rescue when preparing the Preliminary Hazards Assessment to ensure the Project’s design and water supply infrastructure is located and installed in accordance with fire authority requirements.</p>
<p>Resources - Prospective resources developments, including areas covered by exploration licences and mining and petroleum production leases, Solar development applicants should seek advice from the Department of Planning, Division of Resources and Geoscience (GSNSW) about the coverage of resources related licences.</p>	<p>The Impact Area is covered by an exploration lease (#EL8961).</p> <p>Edify has made initial contact with Sunrise Energy to inform them of Edify’s interest in the land (Appendix C). Edify will maintain contact and meet reasonable requests/requirements throughout the planning process.</p>
<p>Crown Lands – If any part of the Project or associated transmission or distribution infrastructure will cross Crown Lands, it may be subject to legislative requirements that restrict access to the land.</p>	<p>No Crown Lands or Crown Roads are present within the proposed Impact area (See Appendix I).</p> <p>Edify will engage with Crown Lands following the Secretary Environmental Assessment Requirements to ensure suitable measures are implemented by the Project, as required.</p>

3 Project

3.1 Location

The Project is located within the NSW Central West and Orana region in the Narromine Shire Local Government Area (LGA), around 17.5 km north of Narromine and 27 km west of Dubbo. The Study Area is accessible via Eumungerie Road, via Dubbo-Burroway Road. The Project aims to connect to an existing Essential Energy 132 kV line crossing the site, via a new 132 kV substation.

The Study Area is located within the Narromine Shire Council Local Government Area and is within the Pilliga IBRA Subregion (Brigalow Belt South IBRA region).

3.2 The Impact Area

The Study Area equates to approximately 495 ha, encompassing Lot 70 in Deposit Plan 1251856. The final Impact Area will be decided during the EIS phase of the Project, and based partly on the conclusions of this report and the subsequent feedback from the SEARs.

Figure 4 demonstrates the high-level design of the Project, with the preferred access options off Eumungerie Road on the Western boundary of the Lot. During the Biodiversity Development Assessment Report (BDAR), Traffic Impact Assessment (TIA), and other technical studies undertaken as part of the EIS, potential access locations along the Western boundary will be investigated to identify the optimal siting with minimal impact.

The proposed Impact Area is agricultural land comprising a large agricultural property, which includes paddocks that are generally flat and largely cleared, primarily for agricultural (cropping) purposes (Figure 5 through Figure 8).

At the time of survey, Category 1– Exempt Land could not be determined as present, in accordance with the definitions provided in the LLS Act.

Based on the ecological survey findings, Edify has elected to refine the intended Impact Area to avoid developing the surveyed areas that contain PCT 202 (Regrowth Fuzzy Box Woodland) and PCT 55 (Belah dominant woodland in various condition states) within the Subject Land.

The identification of the majority of the native vegetation in areas surrounding the Subject Land lot or in a small number of distinct polygons within the lot will make it highly likely that all native vegetation, including individual paddock trees, will be avoided through micro-siting of the Project design. The full extent of final impacts, if any, will be assessed further as Edify prepares the Biodiversity Development Assessment Report (BDAR) and Environmental Impact Statement (EIS).

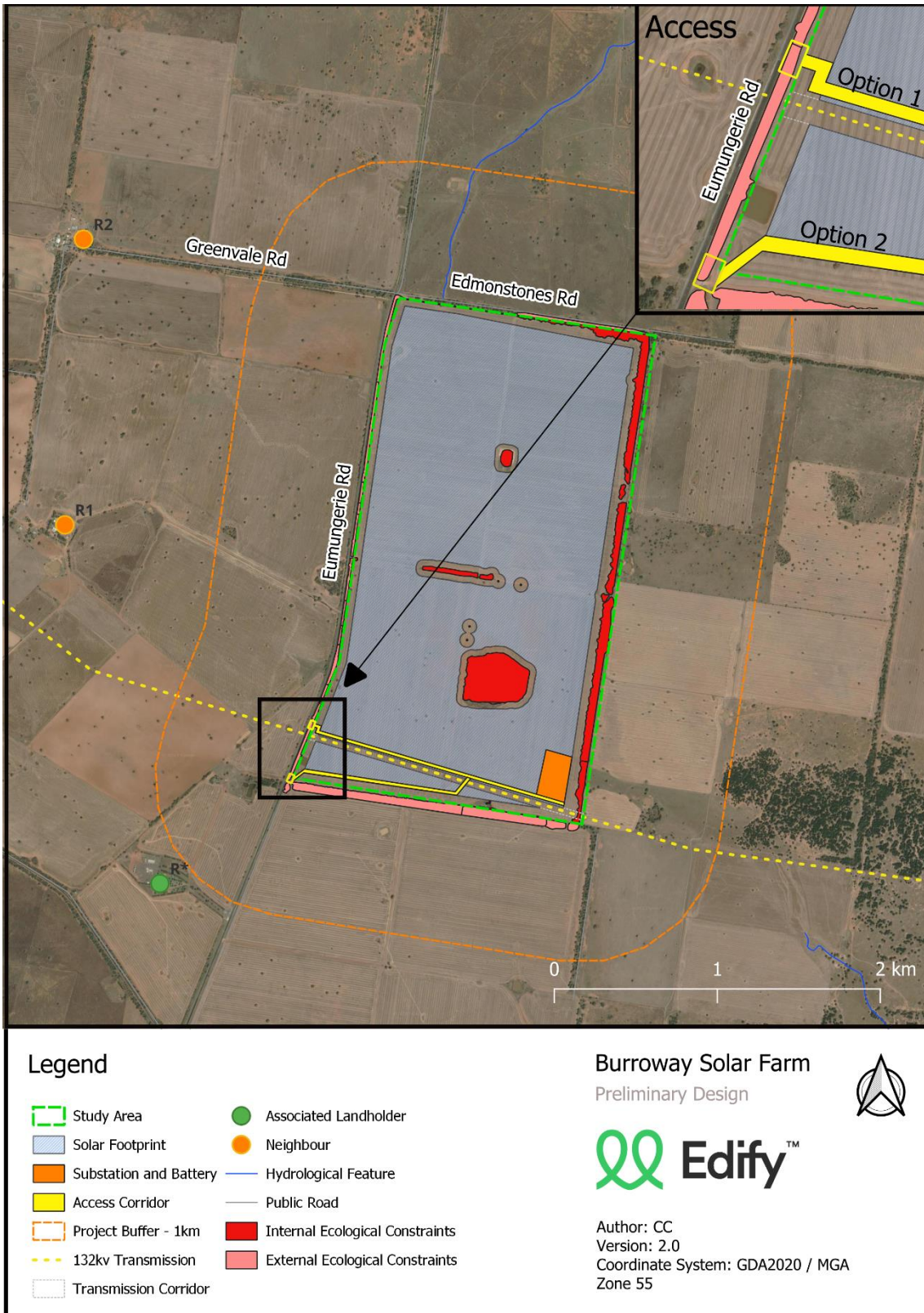


Figure 4 - Preliminary Site Layout Plan (Impact Area)



Figure 5 - View of typical impact area with electricity transmission line in view from Study Area



Figure 6 - View of farm dam within northern aspect of the Study Area



Figure 7 - View of typical Impact Area



Figure 8 - View of typical Impact Area

Within the Study Area, there are four (4) farm dams, with no creeks or tributaries. The largest of these dams will be avoided. The Impact Area is zoned RU1 - Primary Production under the *Narromine Shire Council's Local Environmental Plan (LEP)*¹, with a minimum lot size of 400 ha.

The Impact Area is identified as Class 3 Soil Capability Land under the Land and Soil Capability Assessment Scheme (Figure 9), which is defined as:

- Class 3 Land has limitations that must be managed to prevent soil and land degradation. However, the limitations can be overcome by a range of widely available and readily implemented land management practices. Also included are lands that can be subject to wind erosion when cultivated and left bare. It includes a large proportion of the major agricultural producing areas of the State.

This suggests that agricultural land use can be readily used for a range of crops including cereals, oilseeds and pulses, however productivity will vary with soil fertility (OEH 2012).

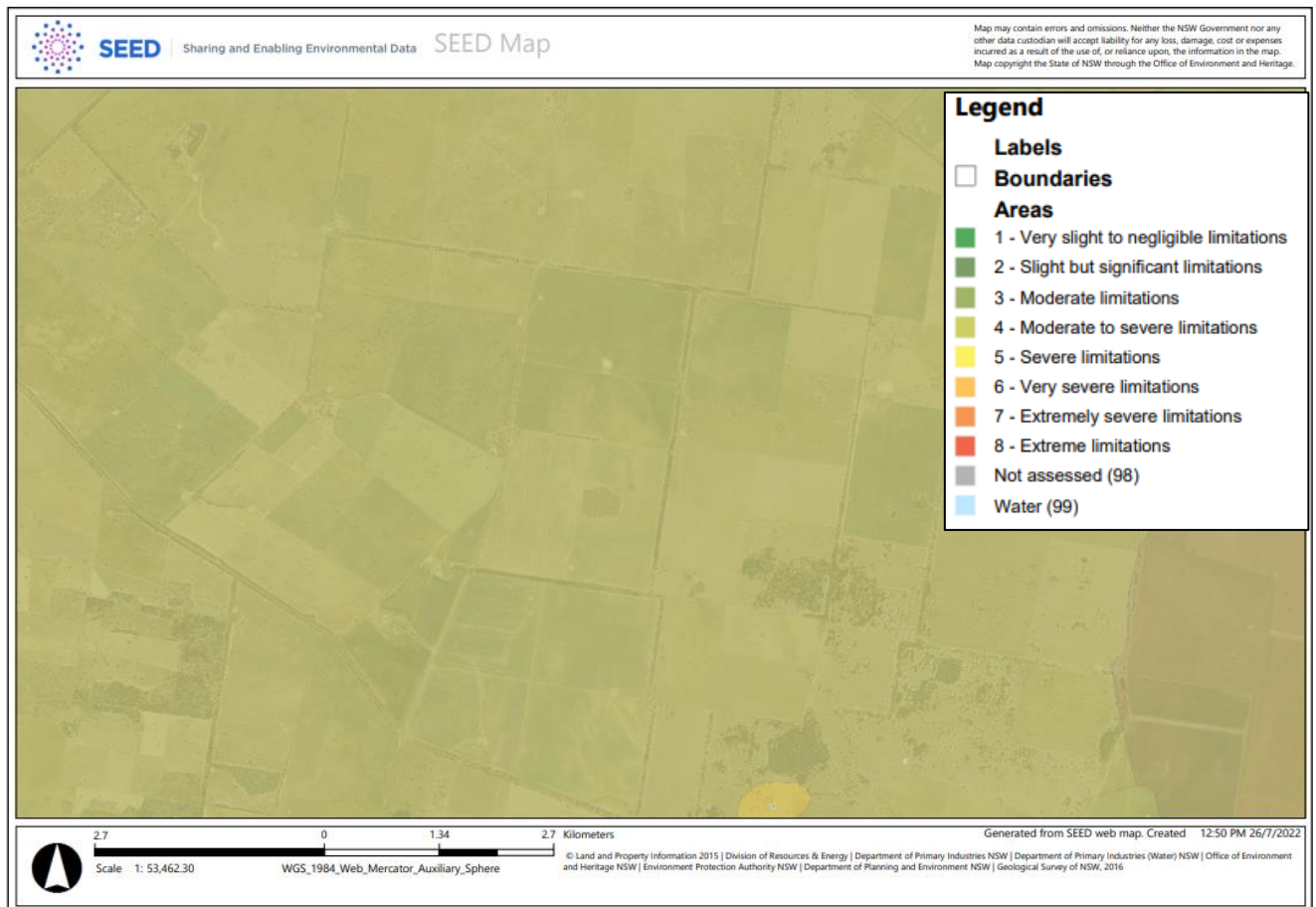


Figure 9 - Land and Soil Capability Mapping

The NSW Government introduced a range of measures designed to deliver greater protection to agricultural land from the impacts of developments. These measures included the safeguarding of 2.8 million hectares of Biophysical Strategic Agricultural Land (BSAL) across the state, and Critical Industry Clusters (CIC). BSAL is land identified with high quality soil and water resources capable of sustaining high levels of productivity, which is critical to sustaining the state's agricultural industry, while CIC are concentrations of highly productive industries within a region that are related to each other, contribute to the identity of that region, and provide

¹<https://www.planningportal.nsw.gov.au/publications/environmental-planning-instruments/narromine-local-environmental-plan-2011>

significant employment opportunities. The Impact Area is not mapped as being BSAL, therefore the Project would not impact on land critical for agriculture (DPE 2017).

The land is owned by one family group. The family resides proximate to the Study Area and continues to utilise the site for agricultural purposes. Regarding the adjacent community members, 16 non-associated dwellings, and no industry stakeholders are located within 5.0 km of the Impact Area (Table 2 and Figure 10).

Table 2 - Project Neighbouring Receivers

Receiver	Distance from Survey Area (m)	Receiver	Distance from Survey Area (m)
R1	1795	R2	1962
R3	2002	R4	2134
R5	2322	R6	2426
R7	2602	R8	3137
R9	3685	R10	3868
R11	4286	R12	4575
R13	4813	R14	4828
R15	4939	R16	5030
R*²	3487		

² R* is the Associated Landholder



Figure 10 – Impact Area in relation to nearby receivers (5km)

3.3 The Locality

The Project is located within the Narromine Shire Council LGA, in the Central West and Orana region of New South Wales, approximately 27km west of the major regional centre of Dubbo. The region has several small towns including Narromine, Trangie and Tomingley. The LGA is 5,264 km² with a population of 6,360 as at the 2021 Census (ABS 2021).

3.3.1 Dubbo

The major town of Dubbo is located approximately 27 km east of the proposed project, with a population of 38,943 as at the 2016 Census (ABS 2016). Mudgee’s major employment sectors include hospitality, education, food services and government administration. The distinct competitive advantages of Narromine, Dubbo and the surrounding regional Council includes the skilled workforce, adequate water supply and the central location between Sydney and Newcastle.

Figure 11 illustrates the Project site in red in relation to Narromine and the Narromine Shire Council’s Flood Planning Area (LEP, 2011).



Figure 11 – Narromine Shire Council’s Local Environmental Plan (LEP) with Flood Planning Area

3.3.2 Population

The median age of persons in Narromine Shire LGA is 41, which is higher than the Australian average of 38 (ABS 2021). The 2021 census records state that 18.7% of the population are Aboriginal and Torres Strait Islander people (ABS 2021). A large portion, 84.5% of the community were born in Australia. In addition, the community hosts a low unemployment rate, with median household incomes averaging \$1,341 per week.

3.3.3 Climate

The BOM (2021) climate records available from the nearest climate station at Dubbo (Station number 065012) consists of data recorded since 1870. The station indicates a mean summer maximum of 33°C (January) and a mean winter minimum of 2.6°C (July).

Rainfall records from the station show a mean annual rainfall of 587.6 mm, and that rainfall is generally greatest over summer and spring, with the mean number of days of rain being 76 (Figure 12).

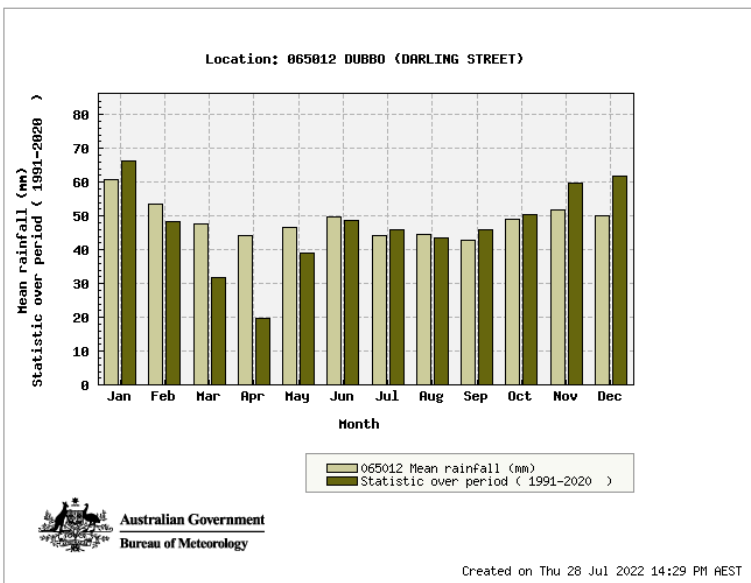


Figure 12 - 30 year rainfall statistics for Dubbo, NSW

3.3.4 Geology and Vegetation

The geological characteristics for the Pilliga subregion of the Brigalow Belt South Bioregion comprises stepped sandstone ridges with low cliff faces and high proportion of rock outcrop.

In addition, the typical vegetation can include White Box with White Cypress-pine and Kurrajong on the basalt hills; Blue-leaved Ironbark, White Gum, Black Cypress-pine, Whitewood, and Rough-barked Apple on stony sandstone plateau and streams; Narrow-leaved Ironbark, White Cypress-pine, Red Stringybark, patches of mallee and broom heath on gentler sandstone slopes and/or Pilliga Box with Grey Box, Poplar Box, Fuzzy Box, Bulloak, Rosewood, Wilga, and Budda on heavier soils in the west and north.

The subject land lacks significant geological features. No rock outcrops, areas of embedded rock, or substantial areas of loose surface rock were noted during the preliminary ecological assessment. The native vegetation cover within the study area included remnant woodland and both natural and derived grasslands.

4 Proposed Works

4.1 Site Selection

The site of the Project has been selected for the following reasons:

- Excellent solar exposure.
- Excellent access to local and major roads, plus regional city resources.
- Excellent access to the overhead grid transmission networks.
- Likely low level of environmental impact – the site has been largely cleared and heavily disturbed by agricultural grazing activities.
- Suitable topography, land size and land zoning, whereby the use of the site would be based on a lease agreement between Edify and the landowner for the life of the Project.

4.2 Project Components

4.2.1 Proposed Infrastructure

The Project involves the construction of a ground mounted photovoltaic solar array which would have capacity to generate up to 100MW (AC) of renewable energy. The Solar Farm proposes to connect into an existing 132 kV Essential Energy distribution line (line 94W/1) that traverses the Project. The Project would consist of the following components:

- Single axis tracker photovoltaic solar panels mounted on steel frames over most of the site (maximum tilt up to 4.5m in height).
- Battery energy storage systems with a rating of up to 100MW / 400MWh.
- Underground and overground electrical conduits and cabling to connect the arrays to the inverters and transformers.
- Systems of inverter units and voltage step-up throughout the arrays.
- On site substation, connecting to the existing 132 kV Essential Energy transmission line.
- Site office and maintenance building, vehicle parking areas, internal access tracks and perimeter security fencing.
- Site access track off Eumungerie Road.

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

The proposed infrastructure footprint is shown in Figure 4. This includes all land likely to be directly impacted by the construction, operation and decommissioning of the Project, including auxiliary construction facilities (site compound, laydown, stockpiling, etc.) and all considered options. It is noteworthy that the proposed footprint is indicative only and will be refined as part of the EIS process (considering environmental constraints and engineering studies), with project infrastructure layout to be detailed in the EIS.

4.2.1.1 Solar Array Areas

The development will consist of a number of solar array areas or blocks comprised of photovoltaic modules arranged in a series of long rows. The modules are mounted on frames with tracking systems which follow the sun to optimize energy generation. The frames are fixed to piles driven into the soil. The rows interconnect

to form a single array block of up to 4 MW (AC) or 8 MW (AC), depending on the MV enclosure design. In each block there will be a prefabricated, containerized inverter and integrated transformer to convert and step up the voltage level. Electrical connections will also be constructed between the PV arrays, as well as associated monitoring and protection equipment and central inverters via underground or frame secured cabling.

The solar module frames and inverter stations will be installed on piles and sit above ground level, with a maximum height of approximately 4.5m at full tilt. This ensures retention of existing grassland vegetation and habitats in situ with a minimal level of ground disturbance. Regrowth of vegetation will be enabled following temporary disturbance during installation/construction.

4.2.1.2 Medium Voltage Reticulation

Each inverter will be connected to the central 33kV switchboard by underground medium voltage cable reticulation. The cables will be installed in trenches not below 1m in depth and typically 1m in width. The excavation will comply with the Soil and Erosion Sediment Control Report and Regulations for construction within New South Wales. The medium voltage switchboard will be connected through a step-up transformer and connect to the overhead 132 kV distribution line, owned and operated by Essential Energy.

Temporary disturbances to vegetation from the underground installation of the cables will rehabilitate naturally.

4.2.1.3 Solar Substation

A high voltage substation will connect the Solar Farm to the national transmission network. The substation footprint will be approximately 100m x 80m. The substation will provide switching and protection of the electrical network and will be fenced separately from the Solar Farm for safety reasons. The T-connection into the existing transmission line will be owned and operated by the Network Operator, Essential Energy. This will form part of the National Electricity Network (NEM).

4.2.1.4 Battery Energy Storage System (BESS)

Based on an economic and technical assessment that will be undertaken during the Project's Connection Application phase with Essential Energy and the Australian Energy Market Operator (AEMO), the BESS would be located either:

- adjacent to the substation in the Impact Area; or
- dispersed in modular enclosures throughout the site, which is similar to the typical solar inverter enclosures.

The Project will utilise sealed lithium-ion batteries housed in a secure, climate-controlled Battery Energy Storage System (BESS). Subject to economic and technical considerations, the Project would include an approximate 100MW / 400MWh rated capacity battery storage system, with an enclosure design similar to Figure 13.



Figure 13 - Indicative battery storage system enclosures (Edify's Gannawarra Solar and Battery project)

4.2.1.5 Operation and Maintenance Facility

The proposed Operation and Maintenance (O&M) building will be a prefabricated design approx. 10m by 8m and single story. The facility will provide a working area for staff, ablutions and amenities including:

- Office
- Toilet
- Kitchen
- First Aid area
- Meeting room
- Reception area.

4.2.2 Construction

The Project is expected to operate for around 30 years. The construction phase of the Project is expected to take 12 – 18 months. During the peak construction period, a workforce of approximately 250 personnel will be required onsite.

Minor earthworks would be required for the preparation of the site, including minimal site levelling, laying of access track and site drainage works. Due to the relatively flat terrain of the Project area minimal site preparation and civil works are anticipated prior to construction. The PV arrays and site office components will largely be built off-site and transported to the site in modulated sections. Construction on-site will be limited to the unloading and joining together of the modulated sections and trenching electrical and control cabling to the electricity grid and control room. Construction activities are planned to occur during daylight hours only,

although there may be some works during the winter months where light/visibility will be poor during twilight. Access to the site will be from Cope Road.

4.2.3 Operation

During the operational phase of the Project, approximately four full-time jobs and a number of full-time equivalent roles that support the Project's operation will be required.

The primary activities conducted on site will include day-to-day routine operations, maintenance of infrastructure, and general site maintenance and security. Operation of the Solar Farm will also likely be supported by local contractors for tasks such as repairs, minor works, weed/vegetation management, fencing and cleaning.

The operational lifespan of the facility is expected to be circa 30 years, depending on the nature of solar PV and battery technology and energy markets.

4.2.4 End of Life

After the initial operating period, a decision will be made to either decommission or re-power the facility, subject to approval requirements.

If the Project is to be decommissioned, removing all above-ground infrastructure (and all infrastructure up to one metre below the surface of the Land) and return the site to its existing land capability. All above-ground structures built as part of the Project will be removed and the site rehabilitated generally to its pre-existing land use, as far as practicable. The disposal and recycling of project infrastructure will be completed in accordance with contemporary waste management legislation and practices at the time of decommissioning. As far as possible, efforts will be made to reduce wastes disposed to landfill, in line with best practice sustainability principles.

Alternatively, the Project may be upgraded and re-powered with new PV equipment. If re-powering the Project is agreed, an appropriate stakeholder consultation process will be undertaken, and all necessary approvals will be sought and aligned with relevant legislation at such time.

4.2.5 Capital Investment

The Project would have an estimated capital investment in excess of \$30 million, identifying the Project as a State Significant Development under Part 4 of the EP&A Act. The actual value of the Project will be in excess of \$250 million, with the total investment value largely determined by the duration of the battery energy storage system, which will be determined during the EIS stage of the development. A quantity surveyor's report would be prepared during the EIS process as part of the Project which would confirm the capital investment cost.

4.2.6 Subdivision

Engagements with Essential Energy are ongoing with respect to how the switchyard infrastructure is to be owned and operated. The area of land to be subdivided at the switchyard site is yet to be finalised, however initial plans contemplate the south-eastern aspect of Lot 70 in DP1251856. The land is zoned RU1 Primary Production with a minimum lot size of 400 ha therefore any proposed subdivision will require the approval of the Minister for Planning under the provisions of section 4.38 of the EP&A Act.

When land is leased from a landowner and the lease affects part of a lot or lots in a current plan, a subdivision under s.7A *Conveyancing Act 1919* (formerly s.327AA *Local Government Act 1919*, which is now repealed) is required when the total of the original term of the lease, together with any option for renewal, is more than five years. When the lease affects the whole lot in a current plan, the body of the lease identifies the area by lot and DP number with a subdivision not required.

As the Project will be executed via a long-term lease arrangement, subdivision for the purpose of the internal substation and battery facility may be required. Narromine Shire Council have indicated their support of subdivision in initial consultation with Edify. An easement may be created by means of an appropriate dealing registered in the NSW Land Registry Service or by the inclusion in a Section 88B instrument lodged with a new deposited plan.

4.3 Alternatives to the Project

4.3.1 Alternative Sites

Edify has reviewed the solar generation potential of many areas in NSW using a combination of computer modelling and analysis, on the ground surveying and observation, and experience of Edify in successfully developing projects in NSW and across Australia. The site was selected because it provides the optimal combination of:

- Low environmental constraints (predominantly cleared cropping land);
- Level terrain for cost-effective construction;
- High quality solar resource;
- Low density population and limited neighbouring properties;
- Suitable planning context;
- Acceptable flood risk;
- Road access;
- Access to the transmission network; and
- Available capacity on the grid transmission system.

The site is of a scale that allows for flexibility in design, allowing Edify to avoid ecological and other constraints that may be identified during the EIS process. The factors that determine the final design area would be detailed in the EIS.

4.3.2 Alternative Technologies

Photovoltaic solar technology was chosen because it is cost effective, low profile, durable and flexible regarding layout and siting. It is a proven and mature technology that is readily available for broad scale deployment at the site. Battery technology was selected over mechanical or physical storage methods because it enables modular installation without major infrastructure or specialised landform features. Batteries also generally have lower weight and physical volume and better scalability compared to other technologies.

4.3.3 The 'Do Nothing' Option

Not proceeding with the Project would forgo the benefits of the Project, resulting in:

- The loss of a source of renewable energy that would assist the Australian and NSW Governments to reach their targets;
- The loss of cleaner energy and reduced greenhouse gas emission;
- The loss of additional electricity generation and supply into the grid; and
- Loss of social and economic benefit through the provision of direct and indirect employment.

The 'do nothing' option may avoid any potential impact. However, the likelihood of significant negative impacts is low. It is considered the benefit of the proposed Solar Farm outweighs any potential impact whilst contributing to ecologically sustainable development.

5 Statutory Context

5.1 NSW Legislation

The relevant statutory requirements for the Project are summarised in Table 3. This table has been set out in accordance with the Scoping Report Guidelines and *State Significant Development - preparing an environmental impact statement - Appendix B* to the state significant development guidelines (DPIE 2021d) (EIS Guidelines). The following matters are considered:

- Power to grant consent (i.e., approval pathway);
- Permissibility;
- Other approvals consistent with the Project;
- Commonwealth approvals;
- Approvals not required (pursuant to Section 4.41 of the EP&A Act); and
- Mandatory matters for consideration.

Table 3 - Statutory Requirements

Approval	Requirement
Power to grant approval	
State Environmental Planning Policy (Planning Systems) 2021 (Planning Systems EPP) <i>Environmental Planning and Assessment Act 1979 (EP&A Act).</i>	Section 20 of Schedule 1 of the Planning Systems SEPP states that the following is considered a SSD: <i>Development for the purpose of electricity generating works or heat or their co-generation (using any energy source, including gas, coal, biofuel, distillate, waste, hydro, wave, solar or wind power) that:</i> <i>(a) has a capital investment value of more than \$30 million, or</i> <i>(b) has a capital investment value of more than \$10 million and is located in an environmentally sensitive area of State significance.'</i> The Project would have a capital investment cost estimate of more than \$30 million. Therefore, the Project is classified as "State Significant Development" under division 4.7 of the EP&A Act. The Minister for Planning and Public Spaces is the consent authority for SSD, and SSD applications are assessed by DPE (unless specific conditions occur e.g., where 50 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, whereby the Independent Planning Commission (IPC) would be the consent authority.
Permissibility	
<i>State Environmental Planning Policy (Transport and Infrastructure) 2021</i>	Division 4, Section 2.35 and 2.36(1)(b) of the TISEPP states development for the purpose of electricity generating works may be carried out by any person with consent on any land in a prescribed rural, industrial or special use zone. Therefore, the Project is permissible with consent.

Approval	Requirement
(TISEPP)	
<i>Other State and Environmental Planning Policies that may be relevant</i>	<p>State environmental planning policy provisions will take precedence over the local provisions. However, local provisions will be considered by Edify during the EIS. Other relevant State and Environmental Planning Policies that may be relevant include:</p> <ul style="list-style-type: none"> – SEPP (Primary Production) 2021 (Part 2.2 addresses State Significant – Agricultural Land, not yet confirmed in Schedule 1 of the SEPP) – SEPP No. 33 – Hazardous and Offensive Development – SEPP No. 55 – Remediation of Land.
<i>Electricity Infrastructure Investment Act (2020)</i>	<p>The Survey Area is within the Central West and Orana Renewable Energy Zone, which is expected to be declared a REZ under Section 23 of the <i>Electricity Infrastructure Statement Act (2020)</i>.</p> <p>Edify has strategically located the Project within a region that AEMO and the NSW Government deems to be the priority region for new generation to connect. Edify will work with AEMO and NSW Energy Corporation to register the Project for future Long Term Service Agreements (LTESAs) and access rights, with auctions recently commenced in Q4 2022.</p>
Consistent approvals	
Overview	Section 4.42 of the EP&A Act outlines that the approvals listed below cannot be refused if necessary for carrying out an approved SSD and are to be consistent with the terms of the development consent for the SSD.
An environment protection licence under Part 3 of the NSW Protection of the Environment Operations Act 1997	<p>Section 48 of the <i>Protection of the Environment Operations Act 1997</i> requires an environment protection licence to undertake scheduled activities at any premises. Scheduled activities are defined in Schedule 1 of the <i>Protection of the Environment Operations Act 1997</i> and include the following premise-based activities that apply to the Project:</p> <p><i>17 Electricity generation</i></p> <p>(1) ...general electricity works, meaning the generation of electricity by means of electricity plant that, wherever situated, is based on, or uses, any energy source other than wind power or solar power. (2) Each activity referred to in Column 1 of the Table to this clause is declared to be a scheduled activity if it meets the criteria set out in Column 2 of that Table.</p> <p>The table referred to in Schedule 1, Clause 17 specifies 'general electricity works' with 'capacity to generate more than 30 megawatts of electrical power'. The Project will have a capacity that is greater than 30 MW and will therefore require an environment protection licence.</p>
An approval under Section 138 of the NSW Roads Act 1993	Under Section 138 or Part 9, Division 3 of the <i>Roads Act 1993</i> , a person must not undertake any works that impact on a road, including connecting a road (whether public or private) to a classified road, without approval of the relevant authority, being either Transport for NSW or local council, depending upon the classification of the road.

Approval	Requirement
	The interaction of the Project with the local and regional road network will be addressed in the EIS.
Commonwealth approvals	
<i>Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)</i>	<p>The EPBC Act aims to protect matters of national environmental significance (MNES). If an action will, or is likely to, have a significant impact on any MNES, it is deemed to be a 'controlled action' and requires approval from the Commonwealth Environment Minister or the Minister's delegate.</p> <p>A search of the Commonwealth Protected Matters Search Tool indicates that there are no World Heritage Properties or National heritage places within the vicinity of the site (refer Appendix J- Preliminary Biodiversity Assessment).</p> <p>The preliminary biodiversity assessment indicates there is potential for listed threatened species and listed migratory species to occur within the Study Area, and as such targeted surveys will be undertaken. Preliminary field surveys have indicated one PCT identified on site has potential to be representative of a threatened ecological community (TECs) listed under the EPBC Act, and a referral to the Commonwealth Department of Agriculture, Water and the Environment may be required following BDAR surveys.</p>
<i>Native Title Act 1993</i>	<p>The Commonwealth <i>Native Title Act 1993</i> recognises and protects native title rights in Australia. It allows a native title determination application (native title claim) to be made for land or waters where native title has not been validly extinguished, for example, extinguished by the grant of freehold title to land.</p> <p>Claimants whose native title claims have been registered have the right to negotiate about some future acts, including mining and granting of a mining lease over the land covered by their native title claim. Where a native title claim is not registered, a development can proceed through mediation and determination processes, though claimants will not be able to participate in future act negotiations.</p> <p>There are currently no native title determinations over the Study Area.</p>
Approvals not required	
Overview	Section 4.41 of the EP&A outlines the following approvals, permits etc are not required for an approved SSD.
<i>Fisheries Management Act 1994</i>	<p>A permit under the <i>Fisheries Management Act 1994</i> to block fish passage or dredge or carry out reclamation work on water land will not be required pursuant to Section 4.41 of the EP&A Act.</p> <p>The Project may require work in water land to facilitate the upgrade of road crossings or establish new crossings of watercourse within the Study Area. These works will be undertaken in accordance with NSW DPI <i>Policies and Guidelines on Fish-Friendly Waterway Crossings</i> (undated), <i>Policy and Guidelines for Fish Habitat Conservation and Management</i> (DPI 2013), and NSW <i>Guidelines for Controlled Activities</i>.</p>

Approval	Requirement
<i>Heritage Act 1977</i>	<p>An approval under Part 4, or an excavation permit under Section 139, of the <i>Heritage Act 1977</i> will not be required pursuant to Section 4.41 of the EP&A Act.</p> <p>Further, there are no listed heritage items within the Study Area.</p>
<i>National Parks and Wildlife Act 1979</i>	<p>An Aboriginal heritage impact permit under Section 90 of the <i>National Parks and Wildlife Act 1974</i> will not be required pursuant to Section 4.41 of the EP&A Act.</p> <p>There is potential for Aboriginal sites to occur within the Study Area. Any Aboriginal heritage sites identified within the Study Area will be avoided as far as practicable through the design process.</p>
<i>Rural Fires Act 1997</i>	<p>A bushfire safety authority under Section 100B of the <i>Rural Fires Act 1997</i> will not be required pursuant to Section 4.41 of the EP&A Act. However, a bushfire assessment in accordance with NSW Rural Fire Service <i>Planning for Bushfire Protection 2019</i> will be carried out to inform the EIS.</p>
<i>Water Management Act 2000</i>	<p>A water use approval under Section 89, a water management work approval under Section 90 or an activity approval (other than an aquifer interference approval) under Section 91 of the <i>Water Management Act 2000</i> pursuant to Section 4.41 of the EP&A Act.</p> <p>There are no watercourses occurring within the Impact Area, and as such construction works in or near a watercourse is not likely. Any works near or within the watercourses identified outside of the Impact Area will be carried out in accordance with DPIE's various guidelines for controlled activities.</p>
Other NSW approvals	
<i>Conveyancing Act 1919</i>	<p>The final Impact Area will require a separate lease from the owner of the affected land. Lease of a solar farm site is treated as a lease of premises, regardless of whether the lease will be for more or less than 25 years. The plan, which illustrates the Impact Area (Figure 4) will not constitute a 'current plan' within the meaning of Section 7A of the <i>Conveyancing Act 1919</i> and therefore will not require subdivision consent under Section 23G Conveyancing Act.</p> <p>Section 23G of the Conveyancing Act may also apply if subdivision for the purpose of construction, operation and maintenance of a substation is required.</p>
Section 1.3 of the EP&A Act	<p>Relevant objectives of the EP&A Act are:</p> <p><i>(a) to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources,</i></p> <p><i>(b) to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment,</i></p>

Approval	Requirement
	<p><i>(c) to promote the orderly and economic use and development of land,</i></p> <p><i>(e) to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats,</i></p> <p><i>(f) to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage),</i></p> <p><i>(g) to promote good design and amenity of the built environment,</i></p> <p><i>(j) to provide increased opportunity for community participation in environmental planning and assessment.</i></p>
Section 4.15 of the EP&A Act	<p>Pursuant to Section 4.15 of the EP&A Act the consent authority must consider the following relevant matters for consideration:</p> <ul style="list-style-type: none"> • Relevant environmental planning instruments for the Project including: <ul style="list-style-type: none"> – State Environmental Planning Policy No. 33 Hazardous and Offensive Development; – State Environmental Planning Policy No 55 Remediation of land; – State Environmental Planning Policy (Infrastructure) 2007; – State Environmental Planning Policy (Koala Habitat Protection) 2020; and – Narromine Regional Local Environmental Plan 2011 (LEP). • Relevant development control plans for the Project including: <ul style="list-style-type: none"> – Narromine Regional Development Control Plan 2011 • the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality; the suitability of the site for the development; and • the public interest. <p>The above will all be considered in the EIS.</p>
Mandatory considerations - Considerations under other legislation	
Biodiversity Conservation Act 2016	<p>The likely impact of the Project on biodiversity values as assessed in the biodiversity development assessment report. The Minister for Planning and Public Spaces may (but is not required to) further consider under that Act the likely impact of the Project on biodiversity values.</p>
Mandatory considerations - Environmental planning instruments	

Approval	Requirement
State Environmental Planning Policy No 55 – Remediation of Land, Clause 7	As the development will involve a change of use on land on which development for a purpose referred to in Table 1 to the contaminated land planning guidelines (agriculture) is being, or is known to have been, carried out, a report specifying the findings of a preliminary investigation of the land concerned carried out in accordance with the Managing Land Contamination Planning Guidelines (<i>DUAP 1998</i>).
State Environmental Planning Policy No 33 – Hazardous and Offensive Development, Clause 8	The EIS will consider the following relevant departmental guidelines: <ul style="list-style-type: none"> • Applying State Environmental Planning Policy No. 33 Hazardous and Offensive Development • HIPAP No. 3 – Risk Assessment • HIPAP No. 12 – Hazards
Narromine Local Environmental Plan (LEP) (2011)	The EIS will consider: <ul style="list-style-type: none"> • the relevant objectives and land uses for RU1 zone • Part 4 and relevant details for minimum lot sizes for subdivisions in Zone RU1 • Clause 6.1 Earthworks • Clause 6.6 Groundwater vulnerability • Clause 6.8 Essential Services, relating to the supply of electricity and suitable road access

5.2 Local Government

5.2.1 Narromine Shire Council's Local Environmental Plan 2011

The Project is in the Narromine Shire Council's LGA and is subject to the Narromine Shire Council's Local Environmental Plan 2011 (LEP). The aims of the LEP are:

- (a) to protect and promote the use and development of land for arts and cultural activity, including music and other performance arts,
- (b) to encourage economic development through tourism activities, business, employment initiatives and fostering industry growth,
- (c) to protect and conserve the natural environment including surface and ground water, soil, air and native vegetation by encouraging sustainable development,
- (d) to encourage sustainable agricultural practices, including intensive agriculture, by minimising land use conflicts and facilitating farm adjustments.

The proposed development is classified as electricity generating works and is located on land zoned RU1 – Primary Production under the LEP 2011.

While solar farm developments are not specifically referenced as a development permitted with consent, solar developments are not inconsistent with the objectives and principles of the LEP. Whilst the development will impact the availability of the land for primary production, it will sustainably harness a natural resource, namely solar energy, and will provide for a diversified economic stimulus and support to rural communities.

It is noteworthy that in accordance with Part 2.2 of SRD SEPP (2021), local Development Control Plans are not applicable to State Significant Developments. Notwithstanding, consideration will also be given to Narromine Shire Council's Development Control Plan (2011), particularly aspects listed in Chapter 5c (Solar Power in RU1 Zones).

5.3 Commonwealth Legislation

5.3.1 Environmental Protection and Biodiversity Conservation Act 1999

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

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

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

A search of the Commonwealth Protected Matters Search Tool (refer to Preliminary Biodiversity Assessment in Appendix J) indicated six threatened ecological communities, 38 threatened species and 15 migratory species in the search area (50km buffer). Studies to determine the presence and likelihood of impact to these species/communities would be undertaken during the preparation of the EIS.

A summary of the EPBC Act search report is provided in Table 4 and the full search results can be found in the OzArk's Preliminary Biodiversity Assessment in Appendix J.

Table 4 - Summary of EPBC Protected Matters Search Report

Protected Matter	Entities within the search area
World Heritage Properties	None
National Heritage Places	None
Wetlands of International Significance (Ramsar)	4
Threatened Ecological Communities	6
Threatened Species	32
Migratory Species	9

Protected Matter	Entities within the search area
Listed Marine Species	16
Commonwealth lands	1
Commonwealth Heritage places	None
Critical habitats	None
Commonwealth reserves (terrestrial)	None
State and Territory reserves	None
Regional Forest Agreements	None
Nationally Important Wetlands	None
EPBC Act Referrals	1
Bioregional Assessments	1

5.3.2 Native Title Act 1993

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

People who hold native title have a right to consult or continue to practise their law and customs over traditional lands and waters while respecting other Australian laws. This could include visiting to protect important places, making decisions about the future use of the land or waters, hunting, gathering and collecting bush medicines.

Further, when a native title claimant application is registered by the National Native Title Tribunal, the people seeking native title recognition gain a right to consult or negotiate with anyone who wants to undertake a project on the area claimed. Where native title does exist in relation to the Project site, Edify will comply with the provisions of the *Native Title Act 1993*. A search of the National Native Title Tribunal website (NNTT 2018) indicates no native title claims, land use agreements, applications or determinations within the Impact Area.

6 Engagement

Edify is a long-term owner and operator of projects. This makes an important difference in our community engagement approach since we are establishing relationships with communities during the development phase that will endure for the lifetime of the Projects.

Community and stakeholder consultation will be integral to the Project. Edify has begun consultation with a wide range of relevant Local Government and State government agencies, neighbours, local businesses, community groups and other interested parties.

In accordance with the Social Impact Assessment Guidelines (2021), Edify has conducted the first phase of the SIA, which involves scoping an initial assessment, refining and planning for further engagements with local stakeholders. The SIA Worksheet is provided in Appendix B.

Refer to Appendix C for copies of correspondence with stakeholders. In addition, Table 5 summarises Edify's consultation and community engagement commitments.

Table 5 - Consultation and Community Engagement

Consultation Guide		
Phase	Actions/Tools	Stakeholders
Pre-lodgement and development of EIS	<ul style="list-style-type: none"> • FAQ's • Meetings – one on one Presentations • Local Contractor Presentation and EOI Register • Drop in session • Project email address • Project Website • Letterbox drop • Feedback collation and mitigation options 	<ul style="list-style-type: none"> • Community • Landowners • Council • Government departments • Neighbours • Local businesses • Media
EIS public exhibition and determination	<ul style="list-style-type: none"> • FAQ's • Drop in session • Letters • Letterbox drop status update 	<ul style="list-style-type: none"> • Community • Neighbours • Landowners
Post approval (assuming approval granted)	<ul style="list-style-type: none"> • Letters • Letterbox drop status update Local Contractor Presentation and EOI Register 	<ul style="list-style-type: none"> • Community • Local businesses • Neighbours • Landowners Council
Construction and commissioning	<ul style="list-style-type: none"> • Local consultation with landowners and neighbours • Local Council Presentations • FAQ's • Drop in session • Letters • Letterbox drop status update Support to landowner team 	<ul style="list-style-type: none"> • Community • Neighbours • Landowners • Council

Edify is preparing a Community Engagement Plan (CEP) to provide a framework to further engage with the community and stakeholders about the Project and ensure opportunities to provide input into the assessment and development process are understood. Stakeholders were identified as those potentially being impacted by the Solar Farm or having an interest in the Project itself. The CEP will set out the Project's community engagement approach and minimum requirements with interested parties including representative bodies (e.g. Narromine Shire Council, community groups, and neighbours to the site).

As the CEP is implemented, the following activities will occur:

- Keep the Burroway residents and broader community informed in all stages of the Project through media avenues including advertisements in local radio, television and newspaper.
- Face to Face meetings with adjacent landholders, stakeholders and concerned local residents as required.
- A project website including a 'News Room' that will be updated at each project milestone and email address to inform the broader community.
- Preparation and dissemination of a feedback form to better understand the community's sentiment toward solar development and the development of the Burroway Solar Farm proposal. This will be made available at meetings and on Edify's project website.
- Hold an information session during the Project stage providing access to specialists and project information.
- Develop and implement a benefit sharing scheme in consultation with the community.
- A public open day on the site would occur when the approved project commences operation.
- Establishment of a register to record contact with stakeholders including potentially affected landholders.

The CEP would aim 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 Project. Agency consultation would also take place in accordance with any requirements of the SEARs.

6.1 Aboriginal Community Consultation

Edify Energy recognises the Wiradjuri People as the original custodians of the lands throughout Burroway and as such will be invited to undertake an Aboriginal cultural heritage assessment as part of this proposal's EIS.

The NSW DPE, 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 (OEH 2011:2). Edify Energy considers that proactive engagement and consultation with the local Aboriginal community is regarded as an integral part of the process of investigating and assessing Aboriginal cultural heritage.

As the Project's SEARs are being requested to inform the forthcoming EIS process, 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.

6.2 Consultation to date

6.2.1 Adjacent Landholders

At the Associated Landholders request, the adjacent landowners within 5.0 km of the Study Area were initially contacted by the Associated Landholder to inform them of Edify's intentions. Edify then attempted to phone each of the 16 neighbours to provide preliminary details on the Project and offer them the opportunity to discuss further. Of the 16, Edify were able to speak to nine (9) on the phone, with a further one (1) having been indirectly communicated with through the Associated Landholder. The eight (8) non-associated receivers who nominated to receive an email then received an information pack containing the following information:

- Introduction to the company and the proposed project;
- Presentation of the design and development process of a solar and battery project in NSW;
- Potential land considered for the development;
- Frequently Asked Questions; and
- The contact email address and phone number of Edify's Project Manager.

During subsequent phone calls with Edify, R1, R2, R3, R4, R5, R6, R8, R13 and R14 indicated that they had no problem with the Project progressing and are happy to continue to receive updates throughout the planning phase. During the various phone discussions with adjacent neighbours, Edify's development team proactively provided information on common community concerns associated with similar projects, with key areas of discussion including:

- Visual amenity changes to the region and how they will be addressed in the Landscape and Visual Impact Assessment (LVIA);
- Site access roads and their usage;
- Potential noise and dust impacts on adjacent properties during construction;
- General health and wellbeing matters concerning the construction period; and
- Weed and vegetation management.

Other specific comments that came out of the discussions included:

- One neighbour has been in discussions with another developer and wanted to understand how projects and developers interact. This neighbour requested an in-person discussion, which was accommodated by Edify during their site visit on 16 February 2023.
 - The relevant project is still in early stages and will be considered during a cumulative impact assessment once more information is available.
- Two landholders flagged the proximity of the Inland Rail project, and queried Edify's knowledge of the timing of that project.
 - Inland Rail is a prominent project in the area and will be considered as a potential cumulative impact on transport infrastructure and accommodation during the EIS.

Additional meetings have been proposed as required or requested, tentatively scheduled for H1-2023, with broader community engagement to occur once the technical studies have progressed sufficiently and a suitable level of detail regarding impacts is available.

In order to plan further early-stage consultation, attempts will continue to be made to all neighbours that have been unable to be contacted within 5km (six non-associated receivers) to introduce the Project, with letters being mailed as a last resort to encouraged landholders to contact Edify for further discussion. During the EIS phase, Edify plans to meet with all neighbours within 5km of the Project and will maintain regular emails, calls and letters with non-associated receivers within 3km of the Project. Furthermore, Edify will identify and maintain regular contact with any non-associated receiver or community group that wishes to be updated on

a regular basis. All stakeholders will be encouraged to visit Edify's dedicated project website, to receive regular updates once the website is established during the EIS phase.

6.2.2 Essential Energy

Discussions with Essential Energy started in mid-2022 through the submission of a Preliminary Connection Enquiry. Confirmation was given of the available capacity on the transmission line for the connection of an additional generator subject to further precise studies. Discussions are ongoing between Edify and Essential Energy.

6.2.3 Narromine Shire Council

Edify met with Narromine Shire Council representatives on 23 January 2023 and has shared correspondence as the planning process matures. The main points discussed have been:

1. Ongoing development boundary refinement efforts to determine extend of impact area;
2. Consultation with neighbours;
3. Subdivision requirements;
4. Traffic volumes and access routes (Council directed Edify to the Roads Management Strategy (2022) for initial guidance on locally managed roads and noted the TIA will suitably inform upgrades required);
5. Potential upgrades to roads and intersections;
6. Potential visual impact from adjacent neighbours; and
7. Potential cumulative impacts from nearby developments.

6.2.4 State and Federal Members

In conjunction with community member engagements, a letter of information was sent on 10 January 2023 to the office of the Federal Member for the Parkes Electorate as well as the Member of Parliament of NSW for the Dubbo electorate (See Appendix C). Subsequent conference calls were held with the Federal Member for the Parkes Electorate on the 24 January 2023, and the NSW Member for Dubbo on 31 January 2023.

Both discussions were positive, with additional insight provided on other projects occurring within the region. There were no issues raised during discussions, however continued engagement was requested. The Edify Project Manager's contact details have been provided to be forwarded to any constituents who may be seeking further information.

6.2.5 Narromine Local Aboriginal Land Council (LALC)

In advance of the submission of this Scoping Report, Edify have consulted with the Narromine LALC and provided information on the proposed Project. Details of this communication are provided in Appendix C.

6.2.6 Industry

There are no identified industrial operations existing on the lands proximate to the Impact Area.

There is an exploration lease over the Study Area, with Sunrise Energy as the tenement holder. Edify corresponded with Sunrise Energy in January 2023 to understand Sunrise Energy's position on Edify's interest in the land (See Appendix C).

6.2.7 NSW Department of Planning and Environment (DPIE)

On 10 February 2023 Edify held a pre-lodgement meeting with NSW DPIE to discuss the draft Burroway Solar Farm Scoping Report. DPIE's comments regarding the submission were in relation to the following topics:

- Further commentary of community and local government consultation;
- Clarification of biodiversity impact;
- Investigations of access routes off Eumungerie Road;
- The inclusion of the outcomes of Preliminary Visual Assessment Tool provided in the Large-scale Solar Guidelines (2022);
- Commitments for soil and agricultural surveys; and
- Accommodation planning.
-
- Appendix C provides more details on each of the comments from DPIE and where they have been addressed in this report.

6.3 Community Investment

As a leading renewable energy developer, Edify Energy is committed to supporting the communities that host our clean energy projects with positive and lasting social, environmental and economic benefits.

During early consultation with Narromine Shire Council, Edify has acknowledged the need for a voluntary planning agreement which may establish an appropriate committee to oversee the delivery of a portion of revenue from the proposed Burroway Solar Farm back into the local community each year, for the life of the Solar Farm. These conversations will progress as the Project moves through the EIS process.

A Community Engagement Plan will also be created to support the EIS phase of the Project's development.

7 Preliminary Biodiversity Assessment

7.1 Methodology

A preliminary environmental risk assessment has been conducted to assist in the identification of key environmental matters that would require detailed assessment within the EIS. Risks were identified for both the construction and operation phase of the Project and analysed in relation to their possible consequence and likelihood of occurrence. From this analysis, some environmental matters were deemed to be key issues on the basis that they had the potential, without suitable mitigation, to have a significant impact on the environment.

The assessment is based on a desktop review and preliminary site inspection (involving initial flora and fauna surveys) to identify potential high-level constraints and major risks to the Project. A preliminary constraints map is provided in Figure 14, showing vegetation zones and Vegetation Integrity Plots in the Subject Land. This will be used to guide further detailed investigations and ultimately the site infrastructure layout. Constraints mapping will also be refined based on these investigations prior to submission of the EIS.

A summary of the key environmental impacts is provided in Section 7.2. The intent of the discussion is to demonstrate an understanding of the issues that require further environmental assessment and likely mitigation measures for these key issues. The potential impacts and management of other (less significant) issues are discussed in Section 7.3.

7.2 Proposed Assessment of Impacts

7.2.1 Biodiversity

The preliminary Ecology Survey Report (OzArk 2022) highlighted the ecological values of the Study Area. Based on the results of the Preliminary Ecology Survey Report, the Impact Area has been selected on the basis that it avoids native vegetation, refining the footprint to areas that have been extensively cleared and used for agricultural purposes, such as cropping, over a long period of time.

The primary constraint identified within the Study Area is associated with the vegetation zones surrounding the Subject Land and encroaching into the land in various sections, as well as the two areas of vegetation in the centre and Southern section of the lot (Figure 14). Any areas that contain mature vegetation or habitat features have had a 40m buffer applied to them been excluded from the development footprint. The only remaining impact to biodiversity is associated with the need for suitable access to be established off Eumungerie Rd. The establishment of this access may require some minor impacts to derived vegetation within the road reserve, however the access option with the least environmental impact will be selected as priority. Further survey of the area is anticipated as part of the EIS, and a full assessment of the impact to potential habitat and species in these areas would be conducted by a specialist 3rd party consulting group.

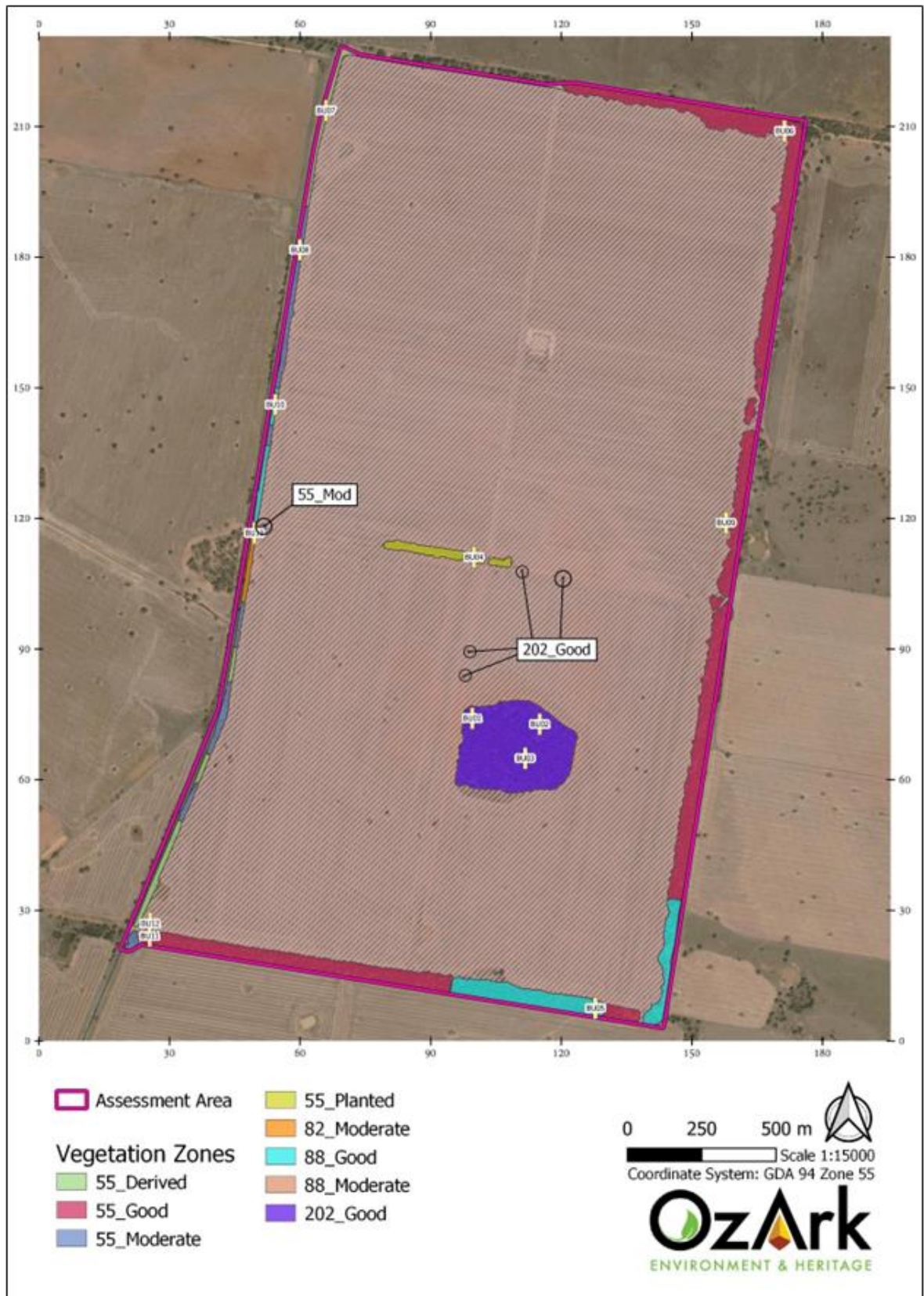


Figure 14 - Vegetation Zones present within the Impact Area

7.2.1.1 Methodology

Edify Energy has undertaken a preliminary constraints assessment of the Project to identify potential high-level constraints and major risks to the Project. Edify engaged OzArk Environment & Heritage (OzArk) to undertake a Preliminary Biodiversity Assessment of the Subject Land, inclusive of a 1500m buffer to establish a wider Study Area. In addition, OzArk was also commissioned to undertake a Land Category Assessment, to distinguish Category 1-exempt land within the Subject Land. OzArk completed these reports by undertaking desktop database searches, in addition to conducting a preliminary field assessment across two days, including 27 and 28 October 2022. A copy of the Preliminary Biodiversity Assessment inclusive of the Land Category Assessment can be found in Appendix J.

A Biodiversity Development Assessment Report (BDAR) will be completed after the SEARs have been received and a final Impact Area is determined.

The following is a summary of the desktop and field surveys completed to-date, features key biodiversity matters that may pose constraints within the Survey Area include:

- Plant Community Types listed as threatened under the NSW *Biodiversity Conservation Act 2016* (BC Act) or Commonwealth *Environment Protection and Biodiversity Act 1999* (EPBC Act).
- Threatened species listed under the BC or EPBC Act.
- Habitat for threatened species listed under the BC or EPBC Act.
- Prescribed biodiversity impacts under the Biodiversity Assessment Methodology (BAM).
- Biodiversity Values mapped under the BC Act.
- Serious or Irreversible Impacts (SAIL).
- Riparian and/or terrestrial corridors and connectivity and wetland inundation areas
- Groundwater Dependent Ecosystems

7.2.1.2 Flora

Plant Community Types

Under the NSW Department of Planning and Environment (DPE) Biodiversity Conservation and Sciences (BCS) Plant Community Type's (PCTs) are the lowest level of classification and the accepted standard for describing plant communities. Four PCTs were determined to occur within the Study Area, categorised into eight Vegetation Zones (Figure 14). The four (4) PCTs present within the impact area are present in varying broad condition states (such as good, moderate, derived and planted), which is likely a result of current and historical agricultural land-use.

Threatened Ecological Communities

The EPBC Act Protected Matters Search undertaken indicated six listed threatened ecological communities (TEC) had potential to occur within the 10km of the Subject Land (refer to Appendix of Preliminary Biodiversity Assessment in Appendix J):

- Coolibah – Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions
- Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-Eastern Australia
- Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland
- Poplar Box Grassy Woodland on Alluvial Plains
- Weeping Myall Woodlands
- White Box- Yellow Box- Blakely's Red Gum Grassy Woodland and Derived Native Grassland

Only portions of PCT 202 within the Subject Land could potentially meet criteria of the White Box- Yellow Box- Blakely's Red Gum Grassy Woodland and Derived Native Grassland TEC, which is also listed as a Critically Endangered Ecological Community under the BC Act. A preliminary assessment is provided in OzArk's Preliminary Biodiversity Assessment – Appendix B (Appendix J), which recommends fine-scale survey and mapping as part of the BDAR surveys to confirm the suitability.

EPBC guidelines recommend implementing a 30m protection buffer around each instance of the CEEC. In order to maintain the integrity of the CEEC, clearing activities should not be undertaken within this buffer.

If the vegetation zone potentially corresponding to the above TEC is confirmed suitable during further ecological surveys, a 30m protection buffer will be adopted by Edify as the Impact Area and infrastructure siting is progressed.

Threatened Flora Species

The EPBC Act search indicated 10 threatened flora species occur within 10km of the Subject Land. Whilst it is noted that no Threatened Flora Species have been identified within the Study Area, additional species may be identified during the BAM assessment and survey process.

Targeted Survey Requirements

Targeted surveys for threatened flora must be undertaken during the EIS phase, in accordance with the DPIE *Surveying threatened plants and their habitats. NSW survey guide for the Biodiversity Assessment Method (2020)*.

Survey methodology and timing for candidate flora species is presented in Appendix J. To cover survey requirements for all candidate species, three (3) survey periods would be required in September, October and January. Note, however, that if the final footprint omits certain PCTs, associated candidate flora species may also be eliminated and no longer require survey.

7.2.1.3 Fauna

Matters of National Environmental Significance

The EPBC Act search indicated 11 threatened bird species, 2 threatened reptile species, 1 threatened amphibian species, 3 threatened fish species and 5 threatened mammal species within a 10km radius from the Study Area. No threatened fauna species were recorded during the preliminary field survey.

The Preliminary Biodiversity Assessment completed by OzArk concluded all 3 threatened fish species and 1 threatened reptile species are not likely to occur on site due to the absence of close records and suitable aquatic habitat. These species are listed below:

- Trout Cod (*Maccullochella macquariensis*);
- Macquarie Perch (*Macquaria australasica*);
- Murray Cod (*Maccullochella peelii*); and
- Grey Snake (*Hemiaspis damelii*)

New South Wales Preliminary BAM-C Outputs

In total, the BAM-C generated 26 predicted ecosystem credit species for the identified PCTs. One of these, the White-bellied Sea-eagle (*Haliaeetus leucogaster*) could be discounted as an Ecosystem Credit species because of habitat constraints for foraging (the site is more than 1 km from a suitably large waterbody). The

remaining 25 species could not be ruled out on the basis of habitat constraints and cannot be ruled out by targeted surveys.

In total, 24 species credit species were generated by the BAM-C, with six species being ruled out due to key habitat constraints being absent from the Study Area, as listed below:

- Black-breasted Buzzard (*Hamirostra melanosternon*) – Subject land is not within 40 m of riparian woodland.
- Grey-headed Flying-fox (*Pteropus poliocephalus*) – No breeding camps recorded on site.
- Large Bent-winged Bat (*Miniopterus orianae oceanensis*) – No caves, tunnels, mines or other potential breeding structures on site.
- Regent Honeyeater (*Anthochaera phrygia*) – Subject land is not included in important habitat mapping.
- Swift Parrot (*Lathamus discolor*) – Subject land is not included in important habitat mapping.
- White-bellied Sea-eagle (*Haliaeetus leucogaster*) – No potential nesting trees occur within 1 km of a suitable waterbody.

Only two woodland areas corresponding with PCT 55 and PCT 202 (one remnant, one planted) occur inside the boundaries of the Subject Land, along with a small number of isolated paddock trees or shrubs. These are separated from the surrounding corridors by distances exceeding 300 m and are unlikely to contribute significantly to local connectivity.

The majority of the estimated final credit obligation is associated with PCT 55 and PCT 202. Edify are proposing to avoid impacts to these PCTs to mitigate impacts associated with these vegetation zones and their corresponding credit species.

7.2.1.4 SEPP (Koala Habitat Protection) 2020

The subject land is zoned RU1 within the Narromine LGA; consequently, Chapter 3 of the SEPP applies. No Koala Plan of Management exists for this region. The subject land possesses at least three known Koala food trees – Blakely's Red Gum (*Eucalyptus blakelyi*), Fuzzy Box (*Eucalyptus conica*), and Grey Box (*Eucalyptus microcarpa*). There are no records of the species within 10 km.

For these reasons, use of the subject land by Koalas is likely to be limited and the subject land is unlikely to constitute core Koala habitat.

7.2.1.5 Groundwater Dependent Ecosystems (GDEs)

The Bureau of Meteorology Atlas of Groundwater Dependent Ecosystems identified a single low-potential terrestrial GDE within the Survey Area.

There is a low potential for groundwater to be encountered during excavations and earthwork for the construction. This is likely to be highly localised and no inception of groundwater is considered. The Project does not include the extraction of groundwater; however, contamination from construction operations, could impact on the quality of groundwater if adequate mitigation measures are not taken.

7.2.1.6 Potential Impacts

The following impacts upon biodiversity have been considered as having potential to occur during the construction and operation of the Project:

- Clearing, removal and disturbance of vegetation, in particular paddock trees for accesses;
- Introduction and spread of invasive species and weeds;
- Increased risk of competition with regenerating native plants;
- Disturbance or displacement of fauna;

- Microclimate impacts due to shading, water availability, temperature, etc.; and
- Movement barrier and collision hazard by perimeter fencing.

7.2.1.7 Further assessment

A preliminary Biodiversity Assessment Methodology (BAM) Calculator was run in October 2022, to predict the credit species that may occur at the Subject Land if all areas within the property were to be impacted. It is notable that the Impact Area has been adjusted since this was undertaken to avoid the majority of the ecological values of the Study Area which will significantly reduce this calculation. A list of the species that will require surveys and the specified survey period to confirm presence/absence and for the purpose of quantifying credits has been developed by the ecologists. Additional species may be identified during the BAM assessment and targeted survey process. Further detailed information on the existing fauna values and potential impacts associated with the proposed development will be contained in the BDAR that will accompany the EIS.

A full floristic plot survey is required to determine the floristic composition, condition and EEC status of native vegetation at the Project site. Fauna survey and habitat assessment is also required to determine the potential for the presence of threatened fauna species and further habitat features such as tree hollows or stick nests. These surveys and assessments would be undertaken as part of the EIS, under the BAM. This would include the calculation of any biodiversity offset required for the Project.

7.2.2 Aboriginal Heritage

The Project area is within the Wiradjuri Region, whose people are the largest Aboriginal Nation in NSW. Wiradjuri people are originally from the land that spans a vast area in central New South Wales, on the plains running north and south to the west of the Blue Mountains Snowy Mountains.

A search of the Aboriginal Heritage Information Management System (AHIMS) on 28 July 2022 identified no Aboriginal sites and no Aboriginal places within the Survey Area and 1km buffer area. Refer to AHIMS search results in Appendix D.

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

7.2.2.1 Aboriginal consultation

Edify's Project Manager engaged with the Narromine Local Aboriginal Land Council, introducing the company and proposed project, whilst seeking further engagement and collaboration. This was initiated by emails sent 10th January 2022, in addition to subsequent phone calls and a visit to the Land Councils offices. Evidence of this engagement is included in Appendix C.

During the EIS phase, additional consultation with Aboriginal stakeholders would be undertaken in accordance with clause 80C of the *National Parks and Wildlife Amendment (Aboriginal Objects and Aboriginal Places) Regulation 2010* following the consultation steps outlined in the Aboriginal Cultural Heritage Consultation Requirements for Proponents provided by OEH/NSW Heritage. A summary of the consultation process includes:

1. Registration of and initial consultation with Aboriginal community members.
2. Review of survey methodology by Registered Aboriginal Parties (RAPs).

3. Completion of field work and reporting.
4. Review of report by RAPs.
5. Report finalisation.

7.2.2.2 Potential impacts and Further Assessment

Construction has the potential to disturb unknown sites of Aboriginal cultural heritage significance. Impacts during operation and decommissioning are expected to be minimal.

An Aboriginal cultural heritage assessment (ACHA) and associated stakeholder consultation will be completed as part of the EIS. This would include further consultation with the Wiradjuri people (Narromine Local Aboriginal Land Council) as well as any other relevant stakeholders in accordance with the *Aboriginal Cultural Heritage Requirements for Proponents* (DECC 2010). Should any Aboriginal heritage sites be identified that may be potentially affected by the Project, mitigation measures will be determined in accordance with the *Guide to Investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW* (OEH 2011).

The required mitigation measures will be implemented during construction activities through a specific Cultural Heritage Management Plan as part of the Construction and Environmental Management Plan (CEMP) that would be prepared for the Project. Similarly, any ongoing management and mitigation measures would be implemented through an Operational Environmental Management Plan (OEMP).

7.2.3 Access, Traffic and Transport

The preferred access route to the Study Area is via Eumungerie Road, which is a designated Regional Road Council asset. Further technical studies completed as part of the EIS will investigate two potential locations along Eumungerie Road to identify the preferred access location. Figure 4 describes the areas currently being investigated for access.

During consultation, Narromine Shire Council commented that a high level of detail provided in the Traffic Impact Assessment (TIA) of the EIS would be required to inform any road upgrades, however, directed Edify to the Roads Management Strategy (2022) for initial guidance on locally managed roads.

For additional intrastate logistics, which illustrate the approved highway networks between Dubbo and the Study Area, see Appendix E for the NSW Combined Higher Mass Limits (HML) and Restricted Access Vehicle (RAV) maps.

7.2.3.1 Potential impacts and Further Assessment

During construction there will be a temporary increase in traffic along Dubbo-Burroway Road and Eumungerie Road and the local road network as components are brought to site and construction workers travel to/from the site. This will indirectly lead to some increase in localised noise levels during the main construction period. Traffic management during construction will also need to consider activities during key agricultural activities such as harvesting periods, peak tourism seasons and the associated vehicle movements and their timing. In addition, site access may require widening of existing access tracks, or the establishment of new access tracks to accommodate the delivery of materials to site.

Traffic impacts during operations will be minimal, with approximately four full-time staff at the Solar Farm. Traffic is predicted to be limited to employee vehicle movements for full-time staff, plus a small number of daily vehicle movements associated with ongoing maintenance and associated activities performed by local contractors/consultants.

During the decommissioning phase, a temporary increase in construction traffic would be expected as infrastructure is removed.



Figure 15 - View from Cope Road and Proposed Access (Option A)

A detailed Traffic Impact Assessment (TIA) will be included as part of the EIS, implementing the SEARs requirements provided by Narromine Shire Council and Transport for NSW Department. The TIA will identify the impacts and assess the significance of any impacts on the road network and community during construction, operation and decommissioning phases. The TIA will also consider the requirement for road upgrades, including turn treatments for main access/es off Eumungerie Road. The required mitigation measures would be implemented during construction and operational activities through implementation of detailed Traffic Management Plan (TMP) that would be prepared for the Project for each relevant phase.

7.2.4 Visual Amenity and Landscape Character

The Project has potential to result in visual impacts to neighbouring houses and traffic accessing Eumungerie Road. However, the Project infrastructure is unlikely to be visible to road users accessing Dubbo-Burroway Road. The site is located within a rural area with large rural-homestead lots and lots for agricultural production.

There are sixteen (16) potentially sensitive receivers within 5 km of the Study Area (see Figure 10). The closest sensitive receivers are located 1,795m south (R1) from the Study Area. The intermittent tree cover will act to limit long range views in the locality, in addition to the flat terrain.

It is noted that solar panels are designed to absorb as much sunlight as possible, with the use of anti-reflective coating boosting energy yield whilst decreasing normal incidence reflectance to less than 1% (generally 4% per Fresnel's equation, when anti-reflective coating is not used). They therefore reflect a very low percentage of the light and are not considered likely to result in glare or reflections that would affect traffic or nearby receivers.

7.2.4.1 Preliminary Visual Assessment

The Study Area ranges in elevation (AHD) from 266m to 276m, with the elevation within 4km ranging up to 288m. Table 6 and Figure 16 describe the outcomes of the preliminary visual assessment undertaken of all public and private (sensitive receiver) viewpoints within 2.5km and 4km of the Study Area as per the method described in the Section 3.1 of the NSW Technical Supplement - Landscape and Visual Impact Assessment.

Public Viewpoints (PV) one and three were selected at representative points on public roads within the vicinity of the Study Area, and PV1 was selected to be representative of the highest point of the proposed Inland Rail corridor. Private viewpoints (R) are based on known residences.

Table 6 - Preliminary Assessment of Public or Private Viewpoints

Receiver	Horizontal Field of View	Vertical Field of View	Classification of Impact
Within 2.5km			
PV1	130 °+	4°	Assessment required
PV2	41°-50°	1°	No assessment required
PV3	21-30°	1°	No assessment required
PV4	41°-50°	1°	No assessment required
R1	41°-50°	1°	No assessment required
R2	11-20°	0°	No assessment required
R3	11-20°	0°	No assessment required
R4	11-20°	0°	No assessment required
R5	11-20°	0°	No assessment required
R6	21-30°	0°	No assessment required
Within 4km			
R7	21- 30°	0°	No assessment required
R8	21- 30°	0°	No assessment required
R9	21-30°	0°	No assessment required
R10	11-20°	0°	No assessment required

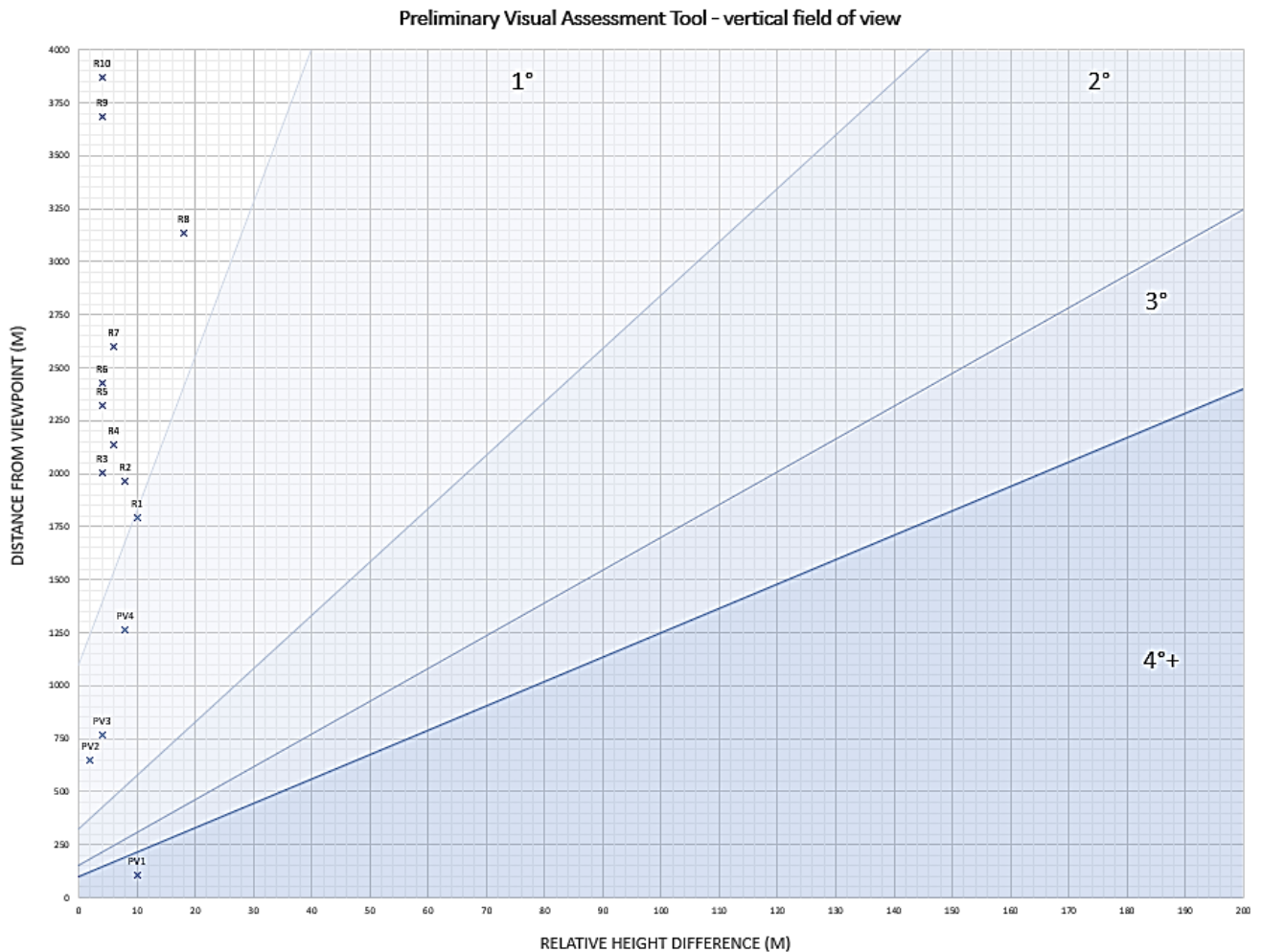


Figure 16 - Preliminary Visual Impact Assessment Tool

7.2.4.2 Further assessment

A complete landscape and visual impact assessment, including photo montages and community consultation, will be prepared as part of the EIS to investigate visual impacts and mitigation options. Particular consideration will be given to the heightened risk of potential visual impact viewpoints identified in the preliminary assessment. Additional consultation with specific affected residences would be undertaken to identify the nature and significance of impacts and the need for mitigation measures. The level terrain improves the potential effectiveness of vegetation plantings as screening around the site.

7.2.5 Noise

Existing background noise levels within and surrounding the Impact Area are likely to be low and typical of the rural setting. Sources of background noise would include vehicle use along Dubbo-Burroway Road and Eumungerie Road, in addition to equipment used on adjacent rural landholdings.

There are 16 potentially sensitive receivers within 5 km of the Impact Area (Figure 10). Noise impacts, for the most part, only occur during construction (generated by construction vehicles and machinery), with minimal noise likely to be generated during operation. Edify and the construction contractor will adopt best practice mitigation measures during construction such as standard work hours and regular vehicle and machinery maintenance to reduce the risk of adverse noise impacts.

During the operation of the Project, low level noise would be potentially produced by the solar tracking system, the substation and switchgear, battery, and any maintenance works undertaken at the site. Noise impacts during operation of the Solar Farm are expected to be very low or, in any case, not expected to be discernibly different than those existing in the surrounding rural environment.

7.2.5.1 Further assessment

A construction and operational noise assessment would be undertaken as part of the EIS to assess potential noise impacts. The assessment would be undertaken in accordance with the *Interim Construction Noise Guideline* (DECC 2009) and *NSW Noise Policy for Industry* (NSW EPA 2017).

7.2.6 Land Use and Resources

The rural land within the region is used primarily for agricultural grazing and homesteads. The Impact Area comprises one large rural paddock which has been largely cleared for pastures and grazing. Land and agricultural activities like those of the Study Area are widespread in the region.

The *Mining, Petroleum, Production and Extractive Industries State Environmental Planning Policy 2007* (the Mining SEPP) extends across the Project. The land is not classed as BSAL or CIC in the Mining SEPP Strategic Agricultural Land Map; BSAL has been described as land with high quality soil and water resources capable of sustaining high levels of productivity, while CIC are concentrations of highly productive industries within a region that are related to each other, contribute to the identity of that region, and provide significant employment opportunities.

The land and soils are defined as Class 3 under the *Land and Soil Capability Assessment Scheme* (OEH 2012), which has moderate limitations for high impact land uses. Limitations can be managed by specialised management practices with a high level of knowledge, expertise, inputs, investments and technology.

There is an Exploration Lease for minerals over the Study Area indicated in the NSW Planning Portal (DPIE 2023). Sunrise Energy, the holder of EL8961, will continue to be engaged through the Project's development.

7.2.6.1 Further assessment

For the construction period, there would be a complete reduction in agricultural activities within the Impact Area. During the operational phase, not all agricultural activities would be precluded, and it is highly likely that limited production such as occasional grazing could continue. This would be further explored in the EIS.

The Project would be decommissioned at the end of its operational life, removing all above and below-ground infrastructure up to one-meter below ground. It is expected that the land would be returned to its prior production uses, as Solar Farms and battery projects typically do not have significant permanent impacts to soil and landform. Overall, the adverse impacts related to alienation of resources are expected to be low and restricted only to the period of operation.

A soils and agricultural study has been pre-emptively commissioned by Edify as per the *Large-Scale Solar Energy Guideline* (2022), with any potential impact on agricultural production in the locality and region to be provided in detail in the EIS.

7.2.7 Cumulative Impacts

Cumulative impacts, for the purpose of this assessment, relate to the combined potential effects of different types of impacts (e.g. traffic combined with noise, reduction in available accommodation, etc.) as well as the potential for combined impacts with other significant projects either under construction or already established land uses in the local area.

A review of the NSW Major Project database for the Narromine LGA and surrounding region was undertaken and identified the following major projects that may be relevant to the proposed Burroway Solar Farm.

Ongoing energy related proposals:

1. The proposed 100MW Narromine BESS, proposed by Edify Energy, has received SEARs and is currently preparing the EIS (SSD-50701505). The project is ~30km south of the Study Area. Edify will develop these projects in parallel and will consider cumulative efficiencies and impacts.
2. The proposed 28 MW Yarren Hut Solar Farm, proposed by BaywaRe, received an approved EIS in January 2021 [SSD-10415]. The Project is located approximately 139km to the west of the Study Area. Edify will continue to monitor and consider this project for potential cumulative impacts to the Project.
3. The proposed Project Constellation (Tritton Copper Operation), proposed by Tritton Resources, lodged a Scoping Report in May 2022 [SSD- 41579871]. The Project is to expand the resource deposit and mining opportunities associated with the existing mining activities, which is located approximately 170km west of the Study Area. Edify will continue to monitor and consider this project for potential cumulative impacts to the Project.
4. The proposed 110 MW Forest Glen Solar Farm, proposed by X-Elio, submitted an EIS and associated material in early 2022 as part of SSD- 9451258. The Project is located approximately 22km south of from the Study Area. Edify will continue to monitor and consider this project for potential cumulative impacts to the Project.
5. The proposed 300 MW Wellington North Solar Farm, proposed by Lightsource BP, received an approved EIS in April 2021 [SSD-8895]. The Project is located 73km south-east from the Study Area. Edify will continue to monitor and consider this project for potential cumulative impacts to the Project.
6. The proposed 500 MW Wellington South Battery Energy Storage System, proposed by Ampyr Australia, submitted a Scoping Report in September 2021 (SSD- 27014706). The Project is located 75km south-east from the Study Area.
7. The proposed Dubbo Gas Energy Storage System, proposed by Energy Transition Solutions, submitted a Scoping Report in September 2021 (SSD- 28088034). The Project is located 29km east from the Study Area.
8. The proposed 200 MW Orana Battery Energy Storage System, proposed by Akaysha, submitted a Scoping Report in June 2022 (SSD- 45242780). The Project is located 75km south-east from the Study Area.
9. The proposed 120 MW Apsley Energy Storage System, proposed by ACEnergy, received SEARs in March 2022 (SSD-35160796) and is considered an early-stage development consideration. The Project is located approximately 83 km south-east from the Study Area.
10. The proposed 750 MW Sandy Creek Solar Farm, proposed by Lightsource BP, submitted a Scoping Report in April 2022 (SSD- 41287735). The Project is located 84km east of the Study Area.
11. The proposed 125 MW Maryvale Solar Farm, proposed by Wirsol, received an approved EIS in December 2019 (SSD-8777). The Project is located approximately 64km south-east from the Study Area. Edify will continue to monitor and consider this project for potential cumulative impacts to the Project.

12. The proposed Tomingley Mine, proposed by Alkane Resources, submitted an EIS and associated material in early 2022 as part of SSD-9176045. The Project is located approximately 52km south from the Study Area.
13. The proposed 600 MW Birriwa Solar Farm, proposed by UPC/AC, submitted an EIS in September 2022 (SSD-29508870) and is considered an early-stage development consideration. The Project is located approximately 110 km east from the Study Area.
14. The proposed 500 MW Tallawang Solar Farm, proposed by RES, submitted an EIS in August 2022 (SSD-23700028) and is considered an early-stage development consideration. The Project is located approximately 110 km east from the Study Area.

It is unlikely that all projects will eventuate and/or enter the same construction period. Notwithstanding, Edify will continue to monitor and consider these projects for potential cumulative impacts to the Project.

Ongoing non-energy related proposals include several large projects located near the Study Area. These include the operational Dubbo Quarry (located approximately 33 km south-east of the Project Area) and the CWO REZ transmission infrastructure, proposed by TransGrid, which is currently in the planning phase, and will be located east of the Project.

7.3 Other Environmental Issues

There are a range of potential environmental issues associated with the Project which are not considered to be key issues. These are considered secondary issues for investigation, given the characteristics of the Project and the availability of appropriate safeguards for mitigation. These issues are outlined in Table 7 below. The impacts and any required mitigation relating to these issues would be addressed at an appropriate level of detail in the EIS, and in response to relevant requirements outlined in the SEARs.

Table 7 - Other Environmental Issues

Existing Environment	Potential Impacts	Management and Mitigation
Soils		
<p>The nearest eSpade soils profiles (OEH, 2023) are off the Dubbo-Burroway Road, approximately 2km south of the Impact Area (Survey Number: 1000565). This notes a soil type of 'Haplic eutrophic red chromosol and Red-brown earth soils'. The soil hydrology profile is slowly permeable and imperfectly draining.</p> <p>Layer 1 to Layer 3 soils are classified from coarse sandy loam to fine medium sandy clay, respectively. The structure is massive to moderate pedality.</p>	<p>Construction activities would include minor excavations and vegetation removal which have the potential to cause soil erosion, sedimentation and dust issues.</p>	<p>The design would provide all weather access at the site during construction and operation to avoid erosion/sedimentation impacts and tracking of soil, in particular after rain events.</p> <p>Soil surveys are currently underway, and the EIS will provide thorough consideration of soil impacts, runoff and potential for erosion and proposed mitigation measures during construction and operation.</p>
Historic Heritage		
<p>A search of the Australian Heritage Database on 27 January 2023 identified 6 records in the Narromine LGA (Appendix F). The closest listed heritage items are in the township of Narromine, including the Butcher's Shop and Railway Station. <i>There are 4 registered Indigenous Places, which do not include a specific location.</i></p>	<p>Edify considers there to be a low risk of impact to heritage items.</p>	<p>The heritage status of the site would be assessed during fieldwork undertaken as part of the archaeological assessment. Appropriate management measures would be implemented if required.</p>
Contamination		
<p>The EPA contaminated land register identified no contaminated sites within the Narromine LGA (Appendix G).</p>	<p>There is potential that contaminants may be uncovered during excavation activities at the site.</p>	<p>Risks associated with contamination at the site are considered low and therefore no detailed investigation is likely to be required within the EIS. The mitigation measures would require a</p>

Existing Environment	Potential Impacts	Management and Mitigation
<p>Contamination associated with agricultural activities (e.g. pesticides, petrochemicals) or asbestos construction or insulation materials may still be present on the site.</p>		<p>CEMP to be prepared to manage any contamination identified during site construction.</p>
<p>Air quality</p>		
<p>The air quality in the Study Area is expected to be good and typical of rural settings in NSW with low population density and few industrial pollution sources. Existing sources of air pollution are expected to include vehicle emissions, dust from industrial (mining) practices and smoke from seasonal stubble burning. During colder months, solid fuel heating may result in a localised reduction in air quality, particularly if temperature inversions operate overnight.</p>	<p>The construction of the Project is not anticipated to have a significant impact on air quality and would mostly be related to dust during dry periods and vegetation removal. Impacts to air quality during operation would be negligible.</p>	<p>The mitigation measures would require a CEMP to be prepared to manage air quality impacts during the construction phase. There is an opportunity to improve local air quality by maintaining ground cover vegetation under the panels. Water tanks will also be utilised during the Project's construction phase, in order to suppress potential dust impacts.</p>
<p>Hazard and risk – electric and magnetic fields (EMF)</p>		
<p>Existing powerlines produce EMF at the site. Additional infrastructure which forms part of the Project such as connecting powerlines and substation would produce additional electromagnetic emissions at the site.</p>	<p>The substation, battery storage and network connection would be located on the Project site. The powerlines constructed as part of the Project would not pass through any neighbouring properties. The EMF that would be generated by the proposed powerlines, battery storage and substation is expected to be below the guideline for public exposure and would not be expected to have an adverse impact on human health.</p>	<p>The EMF levels of the proposed powerlines, battery storage and substation would be assessed as part of the EIS.</p>

Existing Environment	Potential Impacts	Management and Mitigation
<p>Battery storage is proposed to integrate with the Solar Farm's solar PV generator</p>	<p>Batteries pose a potential fire or contamination risk to the site.</p>	<p>An assessment of hazard and risk would be assessed in the EIS as per SEPP 33 – Hazardous and Offensive Development. A Preliminary Hazards Assessment would be undertaken to assess SEPP 33 requirements.</p> <p>Proactive engagement with both Rural Fire Service NSW and NSW Fire & Rescue will be undertaken during the EIS preparation phase.</p>
Hazard and risk - bushfire		
<p>The Impact Area has been predominantly cleared for agriculture. The site has however been identified as being within a bushfire prone area on NSW Rural Fire Service mapping (Appendix H).</p>	<p>The Project is unlikely to be affected by bushfire or pose a significant bushfire risk.</p>	<p>In addition to the Preliminary Hazards Assessment described above, the impacts and risks of a bushfire, gas explosion or leak would be assessed in the EIS.</p>
Social and economic impacts		
<p>The Project is located within the Narromine Council's LGA.</p> <p>In September 2022 the Narromine LGA had a population of 6,488. The region supports 2,188 jobs with the main industries of employment include agriculture, construction, retail and tourism. The unemployment rate in September 2022 was 3.9%.</p> <p>Narromine has a number of other major projects occurring within the region which may contribute to cumulative impacts including Inland Rail.</p>	<p>The Project may reduce the availability of agricultural land, but would generate economic benefits during construction and operation, including local direct and indirect employment opportunities outside of agricultural activities. Other socio-economic impacts would include traffic and access, noise, air quality and visual impacts.</p> <p>Workforce accommodation would be required for approximately 250 workers during peak construction periods. A large majority of these</p>	<p>The EIS would assess the full suite of potential social and economic impacts of the Project, engaging with stakeholders across the region to understand the full suite of risks.</p> <p>Edify will monitor and engage with hospitality and accommodation facilities and monitor if the timing of other projects within the region may cause cumulative stressors. This will include the development of a preliminary workforce accommodation plan as part of the EIS, and</p>

Existing Environment	Potential Impacts	Management and Mitigation
	<p>would already reside locally. For visiting workers, accommodation can be sought from Dubbo, Narromine or other towns within a 100 km radius. There is a moderate probability for a shortage in accommodation for construction workforces.</p>	<p>the refinement of this plan during the construction scheduling phase of the Project.</p>
<p>Utilities</p>		
<p>Transmission Network Service Provider (TNSP) TransGrid and Distribution Network Service Provider (DNSP) Essential Energy, manage and operate the high voltage electricity network in this region of NSW.</p> <p>Both TransGrid and Essential Energy have restrictions on development within powerline easements. For example, TransGrid guidelines state that activities and encroachments are prohibited within a transmission line easement, including ‘the installation of fixed plant or equipment’, and ‘the placing of obstructions within 30 metres of any part of a transmission line structure or supporting guy wire’.</p> <p>Roads or tracks within 20 metres of the centre-line of a transmission line 132 kV are prohibited, although roads that cross the transmission line as a thoroughfare may be permitted.</p>	<p>The proposed works would involve works adjacent to the Transgrid utility. One of the access options may also require crossing the transmission corridor. The Solar Farm proposes to connect to the Essential Energy electricity network.</p>	<p>The EIS would assess the Project against the setback and approval requirements of TransGrid and Essential energy. The Solar Farm would be designed to comply with required setback, approval and consultation requirements of both network operators.</p>

Existing Environment	Potential Impacts	Management and Mitigation
<p>Waste Management</p> <p>The Project would generate several waste streams and utilise a variety of materials during the construction phase.</p>	<p>During construction, excavated material and green waste would be generated as waste. Packaging from panels and other components would require disposal. Limited operational waste would be associated with the Project.</p>	<p>A Waste Management Plan would be incorporated into the CEMP, applying the principles to avoid, re-use and recycle to minimise wastes. Whilst efforts have been taken to limit the quantity of vegetation disturbance, any cleared trees would be repurposed as fauna habitat where possible.</p>
<p>Watercourses and Hydrology</p> <p>No watercourses are mapped as occurring on the subject land. Three watercourses occur within the survey area. All are Strahler 1st order minor, non-perennial streams.</p> <p>No streams mapped as Key Fish Habitat by the Department of Primary Industries – Fisheries occur within the study area.</p> <p>Artificial dams occur within the subject land. These were not observed to possess native flanking vegetation and are likely to offer only limited wetland habitat.</p> <p>The Bureau of Meteorology Atlas of Groundwater Dependent Ecosystems identifies a single low-potential terrestrial GDE within the subject land. No moderate- or high-potential GDEs are predicted to occur within the site.</p>	<p>The Project does not include the extraction of groundwater; however, contamination from construction operations could impact on the quality of groundwater if adequate mitigation measures are not taken</p>	<p>The EIS would assess the impacts to hydrology during construction and operation and include a flood impact assessment and appropriate mitigation measures as required.</p> <p>The largest dam within the site will be retained.</p>

8 CONCLUSION

The Preliminary Environmental Assessment has outlined the proposed Burroway Solar Farm and established the environmental and planning context of the Project. The Project would be assessed under State Environmental Planning Policy (Planning Systems) 2021 (Planning Systems EPP).

The report has been prepared to assist the development of the SEARs for the Project, which will guide the preparation of the EIS. The report identifies the following key environmental issues associated with the Project, based on the preliminary investigations:

- Biodiversity
- Aboriginal Heritage
- Access, Traffic and Transport
- Visual amenity & Landscape Character
- Noise
- Agricultural Impact Assessment
- Land use and Resources; and
- Cumulative Impacts

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

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Appendix A Scoping Summary Table

Level of Assessment	Matter	CIA	Engagement	Relevant government plans, policies, and guidelines	Scoping report reference
Detailed					
	Biodiversity	Y	General	<ul style="list-style-type: none"> Biodiversity Assessment Method (DPIE 2020) Commonwealth EPBC 1.1 Significant Impact Guidelines – Matters of National Environmental Significance (Commonwealth of Australia, 2013); Commonwealth EPBC 1.2 Significant Impact Guidelines – Actions on, or Impacting upon Commonwealth Land and Actions by Commonwealth Agencies (Commonwealth of Australia, 2013); Commonwealth Department of the Environment – Survey Guidelines for Nationally Threatened Species (various); 	Section 7.2.1
	Heritage – Aboriginal	Y	Specific	<ul style="list-style-type: none"> Guide to investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH 2011); Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW 2010); Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW 2010); 	Section 7.2.2
	Traffic	Y	Specific	<ul style="list-style-type: none"> <i>Guide to Traffic Management – Part 3 Traffic Studies and Analysis</i> (Austroads, 2013) 	Section 7.2.3

Level of Assessment	Matter	CIA	Engagement	Relevant government plans, policies, and guidelines	Scoping report reference
	Amenity - Visual	N	Specific	<ul style="list-style-type: none"> • <i>Guidelines for Landscape and Visual Impact Assessment</i> (United Kingdom Landscape Institute of Environmental Management and Assessment 2013); • <i>Wind Energy: Visual Assessment Bulletin AB 01 For State Significant Wind Energy Development</i> (DPE 2016); and • <i>Guidance Note for Landscape and Visual Assessment</i> (Australian Institute of Landscape Architects 2018). 	Section 7.2.4
	Hazards and risks	No	Specific	<ul style="list-style-type: none"> • Hazardous Industry Planning Advisory Paper No. 6 – <i>Guideline for Hazard Analysis</i> (DoP, 2011a); • <i>Multi-Level Risk Assessment</i> (DoP, 2011b); • <i>Hazardous and Offensive Development Application Guidelines: Applying SEPP 33</i> (DoP 2011); 	Section 7.3
Standard					
	Amenity – Noise and vibration	Yes	General	<ul style="list-style-type: none"> • <i>NSW Interim Construction Noise Guideline</i> (DECC 2009); • <i>NSW Noise Policy for Industry</i> (EPA 2017); • <i>NSW Road Noise Policy</i> (DECCW 2011); and • <i>Assessing Vibration: A Technical Guideline</i> (DECC 2006) 	Section 7.2.4
	Social	Yes	Specific	<ul style="list-style-type: none"> • <i>Social Impact Assessment Guideline for State Significant Projects 2021</i> (DPIE 2021) 	Section 6.0
	Heritage – Historical	Yes	General	<ul style="list-style-type: none"> • <i>Historical Archaeology Code of Practice</i> (Heritage Council 2006) 	Section 7.3

Level of Assessment	Matter	CIA	Engagement	Relevant government plans, policies, and guidelines	Scoping report reference
	Land resources	No	General	<ul style="list-style-type: none"> Land Use Conflict Risk Assessment Guideline (DPI 2011) Managing Land Contamination: Planning Guidelines State Environmental Planning Policy No 55 Remediation of land (Department of Urban Affairs and Planning and Environment Protection Authority, 1998) 	Section 7.2.6
	Water resources	No	General	<ul style="list-style-type: none"> Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom, 2004) Managing Urban Stormwater: Soils and Construction Volume 2 (Department of Environment and Climate Change, 2008); Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC / ARMCANZ, 2000); Guidelines for instream works on waterfront land (NOW 2012) Guidelines for riparian corridors on waterfront land (NOW 2012) Guidelines for watercourse crossings on waterfront land (NOW 2012) 	Section 7.2.7
	Air quality	No	General	<ul style="list-style-type: none"> N/A 	Section 7.3

Appendix B Social Impact Assessment (SIA) Scoping Worksheet

PROJECT ACTIVITIES	CATEGORIES OF SOCIAL IMPACTS	POTENTIAL IMPACTS ON PEOPLE		PREVIOUS INVESTIGATION OF IMPACT	CUMULATIVE IMPACTS	ELEMENTS OF IMPACTS - Based on preliminary investigation					ASSESSMENT LEVEL FOR EACH IMPACT			
Which project activity / activities could produce social impacts?	what social impact categories could be affected by the project activities	What impacts are likely, and what concerns/aspirations have people expressed about the impact? Summarise how each relevant stakeholder group might experience the impact. NB. Where there are multiple stakeholder groups affected differently by an impact, or more than one impact from the activity, please add an additional row.	Is the impact expected to be positive or negative	Has this impact previously been investigated (on this or other project/s)?	If "yes - this project," briefly describe the previous investigation. If "yes - other project," identify the other project and investigation	Will this impact combine with others from this project (think about when and where), and/or with impacts from other projects (cumulative)?	If yes, identify which other impacts and/or projects	Will the project activity (without mitigation or enhancement) cause a material social impact in terms of its: You can also consider the various magnitudes of these characteristics					Level of assessment for each social impact	What methods and data
		extent i.e. number of people potentially affected?						duration of expected impacts? (i.e. construction vs operational phase)	intensity of expected impacts i.e. scale or degree of change?	sensitivity or vulnerability of people potentially affected?	level of concern/interest of people potentially affected?	Secondary data		
Community Engagement	community	Stakeholders are unable to make informed decisions; do not have influence on project design or decisions; and are unable to access enquiry and complaint processes.	Negative	Yes - other project	Other Project: Peninsula Solar Farm (NSW); whereby Edify ensures first impressions of project are established with community by Edify (the Developer) to ensure accurate information is conveyed to community members	No	Other energy and transmission projects in the area, such as: - Narromine Battery (SSD-50701505) - Yarren Hut SF (SSD-10415) - Nevertire SF (SSD-8072-Mod-4) - Wellington North SF (SSD-8895) - Wellington South BESS (SSD-27014706) - other SSD projects, proximate to	Unknown	No	No	Unknown	No	Detailed assessment of the impact	Required
Public Exhibition of Environmental Impact Statement	community	Potential impacts on social cohesion between community members (for/against renewable energy and/or the project).	Negative	Yes - other project	These impacts are well understood from other projects.	No	Not required	Yes	Yes	No	Unknown	Yes	Detailed assessment of the impact	Required
Construction	health and wellbeing	Potential impacts on host landowners and nearby neighbours from increased traffic flow or construction works.	Negative	Yes - other project	These impacts are well understood from other projects.	No	Not required	Yes	Yes	Yes	Unknown	Yes	Detailed assessment of the impact	Required
Construction	livelihoods	Additional income for host landowner will provide an alternative income stream to agriculture, which will in turn provide flow on economic benefits for the surrounding community.	Positive	Yes - other project	Other projects have demonstrated benefits for land use and income.	No	Not required	Yes	Yes	Yes	Yes	Unknown	Detailed assessment of the impact	Required
Construction	access	Potential upgrades to local road network to facilitate the project may improve the condition of the local road network.	Positive	Yes - other project	Positive impacts as a result of road upgrades have been demonstrated on other projects.	Yes	Other energy and transmission projects in the area.	Yes	Yes	Yes	Unknown	Unknown	Detailed assessment of the impact	Required
Construction	access	Potential impacts from increased traffic and over sized loads during construction could include disruption to local roads, cause damage to roads and increased risk of accidents, particularly in light of vehicle movements associated with Inland Rail. Topic was raised during initial consultation.	Negative	No		Yes	Other energy and transmission projects in the area, such as: - Narromine Battery (SSD-50701505) - Yarren Hut SF (SSD-10415) - Nevertire SF (SSD-8072-Mod-4) - Wellington North SF (SSD-8895) - Wellington South BESS (SSD-27014706) - other SSD projects, proximate to	Yes	Yes	Yes	Unknown	Yes	Detailed assessment of the impact	Required
Construction	surroundings	Potential impacts in relation to change in the natural environment and visual amenity may lead to impacts on the perceived quality, use and aesthetics of the landscape. Topic was raised during initial consultation.	Negative	Yes - this project	Preliminary Landscape and Visual Impact Assessment	Yes	Other energy and transmission projects in the area, such as: - Narromine Battery (SSD-50701505) - Yarren Hut SF (SSD-10415) - Nevertire SF (SSD-8072-Mod-4) - Wellington North SF (SSD-8895) - Wellington South BESS (SSD-27014706) - other SSD projects, proximate to	Yes	Yes	Yes	Unknown	Yes	Detailed assessment of the impact	Required
Construction	way of life	Potential for increased pressure on limited local accommodation from construction and operational work force. Potential for increased pressure on local work force, negatively impacting local businesses with labour competition and wage increases. Topic was raised during initial consultation.	Negative	Yes - other project	Other projects have investigated accommodation camps for workers and collaborated with local councils for long term accommodation opportunities.	Yes	Other energy and transmission projects in the area, such as: - Narromine Battery (SSD-50701505) - Yarren Hut SF (SSD-10415) - Nevertire SF (SSD-8072-Mod-4) - Wellington North SF (SSD-8895) - Wellington South BESS (SSD-27014706) - other SSD projects, proximate to	Yes	Yes	Yes	Yes	Yes	Detailed assessment of the impact	Required
Construction and Demobilising construction	health and wellbeing	Potential impacts during construction from dust and noise may affect the host landowners and nearby neighbours.	Negative	No		No	Not required	Yes	Yes	Yes	Unknown	Unknown	Detailed assessment of the impact	Required
Construction and Operation	Way of life	Broader Community - employment and contracting opportunities during the construction and operation period. Also flow on economic benefits for regional community. Topic was raised during initial consultation.	Positive	Yes - other project	Other projects have demonstrated significant local and regional economic benefits.	Yes	Other energy and transmission projects in the area, such as: - Narromine Battery (SSD-50701505) - Yarren Hut SF (SSD-10415) - Nevertire SF (SSD-8072-Mod-4) - Wellington North SF (SSD-8895) - Wellington South BESS (SSD-	Yes	Yes	Yes	Yes	Yes	Detailed assessment of the impact	Required
Decommissioning project at end-of-life	surroundings	Potential impacts during deconstruction from dust and noise may affect the host landowners and nearby neighbours.	Negative	No		No	Not required	Yes	Yes	Yes	Unknown	Unknown	Standard	Required

CATEGORIES OF SOCIAL IMPACTS		PROJECT REFINEMENT		MITIGATION / ENHANCEMENT MEASURES
what social impact categories could be affected by the project activities	Data sources will be used to investigate this impact?		Has the project been refined in response to preliminary impact evaluation or stakeholder feedback?	What mitigation / enhancement measures are being considered?
	Primary Data - Consultation	Primary Data - Research		
community	Broad consultation	Targeted research	Yes	Edify has selected a relatively secluded development area that maintains setback distances from the closest sensitive receiver (>1795m) and is sited in historically impacted land adjacent to an existing high-voltage electrical transmission easement that hosts little to no biodiversity significance. In addition, Edify has prepared and maintains a Community Stakeholder Register, with phone/postal/email contact details, to ensure proactive advice is shared when Planning Milestones for the project are achieved.
community	Broad consultation	Targeted research	No	Edify to continue conducting timely and detailed community engagement. Ensure community concerns are listened to and information to address concerns is provided to the community. Work with local community stakeholders to identify needs in the community that can be supported via the Project's Community Benefit Fund / Voluntary Planning Agreement.
health and wellbeing	Broad consultation	Targeted research	No	Project boundary and noise generating infrastructure (substation, inverters, batteries) are positioned minimum 1795m from nearest non-associated sensitive receiver. A detailed noise impact assessment will be completed as part of the EIS.
livelihoods	Broad consultation	Targeted research	No	Conduct timely and appropriate community engagement and implement measures to maximise benefits for the local and regional economy.
access	Broad consultation	Targeted research	No	Consultation with landholder and local Council, Crown Roads and community on transport routes, local roads, private roads and potential upgrades to ensure benefits are delivered for landholder and local community wherever possible.
access	Broad consultation	Targeted research	No	Consultation with local Council and community on transport routes, local roads and services. During the EIA stage a detailed Traffic Impact Assessment will be conducted. Edify will implement measures to repair road damage, minimise impacts and delays to local road users/residents during construction. Conduct timely and appropriate community engagement so neighbours are aware of construction schedules and avenues for raising and resolving concerns or complaints.
surroundings	Broad consultation	Targeted research	No	Appropriate set back from native vegetation will be incorporated into project design, layout will continue to be revised during EIS stage to minimise impacts where possible. Consideration of neighbouring residences will be considered during the LVIA and mitigation strategies for any residual impact, including landscape screening, will be considered.
way of life	Broad consultation	Targeted research	No	Explore possibility for accommodation camp on site during construction or the use of camps associated with other, larger projects in the region. Consultation with local business groups and Councils to understand existing constraints and opportunities to deliver local economic benefits.
health and wellbeing	Broad consultation	Targeted research	No	Conduct timely and appropriate dust suppression watering of site, so impacts can be minimised wherever possible through project design. Ensure construction activities are carried out in accordance with the relevant legislation, including as outlined in a CEMP.
Way of life	Broad consultation	Targeted research	No	Develop project opportunities for local businesses e.g. working with local business networks and using ICN Gateway for business registration. Facilitating local employment opportunities through promoting on website and through local media.
surroundings	Broad consultation	Targeted research	No	Conduct timely and appropriate dust suppression watering of site, so impacts can be minimised wherever possible through project decommissioning. Ensure deconstruction activities are carried out in accordance with the relevant legislation, including as outlined in the EMP, with a strong emphasis on recycling project materials.

Appendix C Consultation Records

Neighbouring Landholders (5km)

Corey Callahan

From: Corey Callahan
Sent: Tuesday, 24 January 2023 11:14 AM
To: *****@hotmail.com
Subject: Burroway Hybrid-Solar Power Station
Attachments: Burroway FAQs.pdf; Burroway Indicative Design.png; Burroway Solar Power Station - Stakeholder Introductory Letter.pdf

Hi Allana,

Thanks for your time on the phone with Patrick last week. As discussed, I have attached an information pack for the Burroway Hybrid-Solar Power Station which includes an introductory letter, some frequently asked questions (FAQs), and an initial project layout. We are currently preparing the Scoping Report for the project which will include the results of the preliminary technical studies and look forward to communicating more details as we progress through the approvals process.

Please feel free to contact me to discuss any of the details contained within.

Regards,

Corey Callahan

M +61 426 400 793



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Turrbal Country

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Narromine Local Aboriginal Land Council

Corey Callahan

From: Patrick Dale <Patrick.dale@edifyenergy.com>
Sent: Monday, 30 January 2023 11:59 AM
To: ceo@narrominelalc.com
Cc: Corey Callahan
Subject: FW: Burroway Solar Farm - Edify Energy's Project Introductions
Attachments: Edify Energy - Burroway Solar Farm - Pre-Lodgement Meeting - Jan 2023.pdf; AHIMS Search Result - 10 Jan 2023.pdf

Hi Shelly,

Thanks for your time on the phone this morning. Please let me know if you receive this email and I'm sorry there may have been an issue when attempting to send the below email on 10th Jan.

We'll be sure to continue proactive engagements with you and the LALC as we prepare for the cultural and heritage surveys in the coming months, targeting Q2 2023.

Please see the below and attached details and feel free to contact me if you have any questions regarding the Burroway Solar Farm proposal, which is located at 1955 Eumungerie Road, Burroway.

Best wishes for 2023,

Patrick Dale

D +61 2 8790 4044
M +61 487 177 136



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From: Patrick Dale <Patrick.dale@edifyenergy.com>
Sent: Tuesday, 10 January 2023 4:57 PM
To: ceo@narrominelalc.com
Cc: Claire Driessen <claire.driessen@edifyenergy.com>; Corey Callahan <corey.callahan@edifyenergy.com>
Subject: Burroway Solar Farm - Edify Energy's Project Introductions

Good afternoon Shelly,

I hope you and the Narromine LALC team enjoyed a relaxing end to the year.

We last spoke in August regarding the Narromine Battery Energy Storage System. I'm pleased to advise we have lodged the Scoping Report with the Dept. of Planning (DPE) and will continue to advance this battery development throughout 2023 ([State Significant Development-50701505](#)). During the battery's next planning phase in mid-2023, we aim to undertake the Aboriginal Cultural & Heritage surveys (ACHAR) and plan to engage with you and all Registered Aboriginal Parties to assist our archaeologists and cultural heritage specialists undertake this assessment. Perhaps we can discuss this separately.

In addition, I am now writing to advise that Edify has also commenced planning efforts for an additional solar farm project, located proximate to Narromine and specifically in the region of Burroway, NSW. Whilst separate projects, this *Burroway Solar Farm* development is located at 1955 Eumungerie Road, Burroway - approximately 20km north of our *Narromine Energy Storage System* proposal. To underpin the development, we recently secured around 470 hectares of land under an Option to Lease, with the extensively cleared land currently used for broadacre cropping.

I have included an overview of the Burroway Solar Farm in **Attachment 1**, which includes some brief details from the Scoping Report. **Attachment 2** also includes the Aboriginal Heritage Information Management System's (AHIMS) search results, which also helped inform our site selection considerations.

Similar to the Narromine Energy Storage System project, later this year we hope to also receive the LALC's assistance in undertaking the ACHAR surveys for the Burroway Solar Farm site, which we will organise with the assistance of an archaeologist and cultural & heritage expert.

Please let me know if you would like to share another call to discuss the proposed Solar Farm – perhaps next week if you're available. We are happy to be flexible and align with your availabilities over the coming weeks.

I look forward to hearing from you and wish you all the best for 2023.

Sincerely,

Patrick Dale

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Dugald Saunders MP

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From: ElectorateOffice Dubbo <ElectorateOffice.Dubbo@parliament.nsw.gov.au>
Sent: Tuesday, 24 January 2023 8:54 PM
To: Patrick Dale <Patrick.dale@edifyenergy.com>
Subject: RE: Burroway Solar Farm - Edify Energy's New Project Introductions - State Significant Development

Hi Patrick

Please see the link below for the teams meeting

You're invited to join a Microsoft Teams meeting

Title: Edify Energy
Time: Tuesday, 31 January 2023 2:00:00 pm Australian Eastern Daylight Time

Join on your computer or mobile app
[Click here to join the meeting](#)

Kind Regards
Jane



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From: Patrick Dale <Patrick.dale@edifyenergy.com>
Sent: Tuesday, 24 January 2023 10:57 AM
To: ElectorateOffice Dubbo <ElectorateOffice.Dubbo@parliament.nsw.gov.au>
Subject: RE: Burroway Solar Farm - Edify Energy's New Project Introductions - State Significant Development

Good morning Jane,

We'd be very pleased to speak with Dugald on Tuesday 31st Jan.

Feel free to send an invitation.

Have a great day,

Patrick Dale

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From: ElectorateOffice Dubbo <ElectorateOffice.Dubbo@parliament.nsw.gov.au>
Sent: Monday, 23 January 2023 7:21 PM
To: Patrick Dale <Patrick.dale@edifyenergy.com>
Subject: RE: Burroway Solar Farm - Edify Energy's New Project Introductions - State Significant Development

Hi Patrick

Apologies that I had not responded before this.

Dugald is available for a video call next Tuesday the 31st January at 2.00pm.

If you could please let me know if that works at your earliest convenience it would be greatly appreciated.

Kind Regards
Jane



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From: Patrick Dale <Patrick.dale@edifyenergy.com>
Sent: Tuesday, 10 January 2023 5:12 PM
To: ElectorateOffice Dubbo <ElectorateOffice.Dubbo@parliament.nsw.gov.au>

Cc: Claire Driessen <claire.driessen@edifyenergy.com>; Corey Callahan <corey.callahan@edifyenergy.com>

Subject: Burroway Solar Farm - Edify Energy's New Project Introductions - State Significant Development

To the Honourable Dugland Saunders,

I hope you and your office enjoyed a relaxing end to the year.

We last spoke in September regarding Edify Energy's *Narromine Energy Storage System*. I'm pleased to advise we have lodged the Scoping Report with the Dept. of Planning (DPE) and will continue to advance this large battery development throughout 2023 ([State Significant Development-50701505](#)).

In addition, I am now writing to advise that Edify has also commenced planning efforts for an additional solar farm project, located in your electorate and specifically in the region of Burroway, NSW. Whilst separate projects, this *Burroway Solar Farm* development is located approximately 20km north of our *Narromine Energy Storage System* proposal. Both State Significant Developments will provide significant and complementary benefits to regional NSW.

By February 2023, we aim to lodge the *Burroway Solar Farm's* Scoping Report with NSW DPE, which is located in the *Central West & Orana Renewable Energy Zone*. This Scoping Report helps to inform the preparation of our Planning Application throughout 2023, as we aim to commence construction around 2025.

In summary, the *Burroway Solar Farm* project will have the technical ability to:

- Improve the resilience of regional NSW power system
- Expand the flexible and dispatchable electricity supply with 100MW^{ac} solar generation and storage capacity
- Decrease the risk of blackouts around Narromine, Dubbo and western NSW electricity customers; and
- Support the NSW State Government's Electricity Strategy

From a commercial and community standpoint, the hybrid solar + battery project aims to:

- Invest approx. \$250m in Capital Expenditure
- Employ approx. 250 direct and indirect staff during construction
- Employ approx. 8 direct and indirect staff during operation
- Support and finance Narromine Council initiatives each year, via a Voluntary Planning Agreement; and
- Establish a Community Benefit Fund that supports local initiatives each year

To underpin the development, we recently secured around 470 hectares of land under an Option to Lease, with the extensively cleared land currently used for broadacre cropping. The property also hosts Essential Energy's 132kV transmission network (see **attached** slide 9). We believe the site is well suited to comply with the *2022 NSW Large Scale Solar Energy Guidelines* and expect the growing electricity demands in regional NSW will be supportive of this generation and storage investment.

We'd be happy to share a video call with you later this month to introduce you to further project specifics. We also welcome the opportunity to hear from your latest experiences with the Renewable Energy Zone and will incorporate any specific details you wish for us to consider as we prepare the project's Planning Application later this year.

If you could suggest a few availabilities this month, we'd be pleased to share a video call with you. In addition, we will also be presenting to key stakeholders such as Mrs Bayliss at the Narromine Aboriginal Land Council, Narromine Shire Council and Hon. Mark Coulton (MP).

We look forward to hearing from you and best wishes for 2023.

Sincerely,

Patrick Dale

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Hon Mark Coulton MP

From: Whitelaw, Jodie (M. Coulton, MP) <Jodie.Whitelaw@aph.gov.au>
Sent: Friday, 13 January 2023 11:53 AM
To: Patrick Dale <Patrick.dale@edifyenergy.com>
Subject: FW: Burroway Solar Farm - Edify Energy's New Project Introductions - State Significant Development

Good afternoon, Patrick.

Thank you for your email and request to meet with Mark.

Would **Tuesday 17th January at 12 noon** (Eastern Daylight Savings Time) suit you for a Zoom meeting? The other option would be **Tuesday 24th January at 3.30pm** (Eastern).

Please advise your preference and I will send you the Zoom link.

Regards
Jodie

Jodie Whitelaw | Diary Manager (Maternity Relief)
Office of the Hon Mark Coulton MP
The Nationals' Federal Member for Parkes

T 08 8087 7649 | **E** Jodie.Whitelaw@aph.gov.au
275 Argent Street | Broken Hill NSW 2880

From: Patrick Dale <Patrick.dale@edifyenergy.com>

Sent: Tuesday, 10 January 2023 4:47 PM

To: Coulton, Mark (MP) <Mark.Coulton.MP@aph.gov.au>; Whitelaw, Jodie (M. Coulton, MP) <Jodie.Whitelaw@aph.gov.au>

Cc: Claire Driessen <claire.driessen@edifyenergy.com>; Corey Callahan <corey.callahan@edifyenergy.com>

Subject: Burroway Solar Farm - Edify Energy's New Project Introductions - State Significant Development

To the Honourable Mark Coulton,

I hope you, Jodie and your office enjoyed a relaxing end to the year.

We last spoke in September regarding Edify Energy's *Narromine Energy Storage System*. I'm pleased to advise we have lodged the Scoping Report with the Dept. of Planning (DPE) and will continue to advance this large battery development throughout 2023 ([State Significant Development-50701505](#)).

In addition, I am now writing to advise that Edify has also commenced planning efforts for an additional solar farm project, located in your electorate and specifically in the region of Burroway, NSW. Whilst separate projects, this *Burroway Solar Farm* development is located approximately 20km north of our *Narromine Energy Storage System* proposal. Both State Significant Developments will provide significant and complementary benefits to regional NSW.

By February 2023, we aim to lodge the *Burroway Solar Farm's* Scoping Report with NSW DPE, which is located in the *Central West & Orana Renewable Energy Zone*. This Scoping Report helps to inform the preparation of our Planning Application throughout 2023, as we aim to commence construction around 2025.

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- Support and finance Narromine Council initiatives each year, via a Voluntary Planning Agreement; and
- Establish a Community Benefit Fund that supports local initiatives each year

To underpin the development, we recently secured around 470 hectares of land under an Option to Lease, with the extensively cleared land currently used for broadacre cropping. The property also hosts Essential Energy's 132kV transmission network (see **attached** slide 9). We believe the site is well suited to comply with the *2022 NSW Large Scale Solar Energy Guidelines* and expect the growing electricity demands in regional NSW will be supportive of this generation and storage investment.

We'd be happy to share a video call with you later this month to introduce you to further project specifics. We also welcome the opportunity to hear from your latest experiences with the Renewable Energy Zone and will incorporate any specific details you wish for us to consider as we prepare the project's Planning Application later this year.

If you could suggest a few availabilities this month, we'd be pleased to share a video call with you. In addition, we will also be presenting to key stakeholders such as Mrs Bayliss at the Narromine Aboriginal Land Council, Narromine Shire Council and Hon. Dugland Saunders (MP).

We look forward to hearing from you and best wishes for 2023.

Sincerely,

Patrick Dale

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Sunrise Energy

Corey Callahan

From: Corey Callahan
Sent: Friday, 27 January 2023 3:50 PM
To: rsmith@sunriseem.com
Subject: Edify Energy Projects - Engagement re EL8961 and EL9031
Attachments: Attachment 2.png; Attachment 1.png

Hi Rachel,

Thanks for your time on the phone this morning. As discussed, in doing our due diligence on two projects we are developing near Narromine, N.S.W, Edify Energy have identified that the land is associated with EL exploration licenses EL9031 and EL8961, referred to by Sunrise Energy Metals (Sunrise) as the Minore Project. As such, I wanted to engage with Sunrise and let you know a little about our proposed projects. Please refer this enquiry to a suitable person.

The Lots included in Edify's project development plans are:

- DP 1251856 – Lot 70: Proposed Burroway Hybrid Solar and Battery Project (EL8961)
- DP 1151292 – Lot 542: Proposed Narromine Battery Project (EL9031)

We recognise that your Exploration and Mining Titles are registered in Minview (NSW), which may impact on the development of Edify's Burroway and Narromine Projects. However, we are confident that Minview represents an administrative overview of your ELA, and that our respective plans will not pose consequence for either company's development intentions. Please see **Attachment 1 (Burroway)** and **Attachment 2 (Narromine)**, which illustrate the Development Area of Edify's Burroway and Narromine projects in relation to your Exploration License. Once you have had a chance to review the information it would be good to engage with you to understand the status of your Exploration License and development plans.

Project Status

Burroway

Through Edify's efforts to develop this utility-scale solar and battery project, Edify has completed environmental surveys of the subject site and intends to submit a Scoping Report to the NSW Department of Planning and Environment in early February 2022 as part of the Development Application and Environmental Impact Statement process.

Narromine

Edify have submitted our scoping report for the Project and have received our SEARs. We are currently preparing to assign consultants to undertake technical studies to progress our EIS for submission in late 2023/early 2024.

My contact details are in my email signature and we look forward to receiving your advice in relation to the two subject exploration licences. As Edify feel that these projects are complimentary with your own, we aim to co-locate rather than encroach on your exploration intentions.

Regards,

Corey Callahan

M +61 426 400 793



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NSW Department of Planning and Environment

Comment	Section of Report	How it was addressed
<p><u>Community engagement</u></p> <p>Further commentary required around outcomes of engagement activities with local community and the level of community interest surrounding the project.</p>	<ul style="list-style-type: none"> Section 6.2 	<p>At the Associated Landholders request, the adjacent landowners within 5.0 km of the Study Area were initially contacted by the Associated Landholder to inform them of Edify's intentions. Edify then attempted to phone each of the 16 neighbours to provide preliminary details on the Project and offer them the opportunity to discuss further. Of the 16, Edify were able to speak to nine (9) on the phone, with a further one (1) having been indirectly communicated with through the Associated Landholder. The eight (8) non-associated receivers who nominated to receive an email then received an information pack containing the following information:</p> <ul style="list-style-type: none"> Introduction to the company and the proposed project; Presentation of the design and development process of a solar and battery project in NSW; Potential land considered for the development; Frequently Asked Questions; and The contact email address and phone number of Edify's Project Manager. <p>During subsequent phone calls with Edify, R1, R2, R3, R4, R5, R6, R8, R13 and R14 indicated that they had no problem with the Project progressing and are happy to continue to receive updates throughout the planning phase. During the various phone discussions with adjacent neighbours, Edify's development team proactively provided information on common community concerns associated with similar projects, with key areas of discussion including:</p> <ul style="list-style-type: none"> Visual amenity changes to the region and how they will be addressed in the Landscape and Visual Impact Assessment (LVIA); Site access roads and their usage; Potential noise and dust impacts on adjacent properties during construction; General health and wellbeing matters concerning the construction period; and Weed and vegetation management.

Other specific comments that came out of the discussions included:

- One neighbour has been in discussions with another developer and wanted to understand how projects and developers interact. This neighbour requested an in-person discussion, which was accommodated by Edify during their site visit on 16 February 2023.
 - The relevant project is still in early stages and will be considered during a cumulative impact assessment once more information is available.
- Two landholders flagged the proximity of the Inland Rail project, and queried Edify's knowledge of the timing of that project.
 - Inland Rail is a prominent project in the area and will be considered as a potential cumulative impact on transport infrastructure and accommodation during the EIS.

Additional meetings have been proposed as required or requested, tentatively scheduled for H1-2023, with broader community engagement to occur once the technical studies have progressed sufficiently and a suitable level of detail regarding impacts is available.

In order to plan further early-stage consultation, attempts will continue to be made to all neighbours that have been unable to be contacted within 5km (six non-associated receivers) to introduce the Project, with letters being mailed as a last resort to encouraged landholders to contact Edify for further discussion. During the EIS phase, Edify plans to meet with all neighbours within 5km of the Project and will maintain regular emails, calls and letters with non-associated receivers within 3km of the Project. Furthermore, Edify will identify and maintain regular contact with any non-associated receiver or community group that wishes to be updated on a regular basis. All stakeholders will be encouraged to visit Edify's dedicated project website, to receive regular updates once the website is established during the EIS phase.

Biodiversity

- All Maps
- Section 7.2.1

Section 7.2.1:

<p>Ensure biodiversity areas are shown consistently between maps in biodiversity report and main scoping report figures.</p> <p>Note high possible number of credits / possibility of SAI – need to discuss with BCD as early as possible in preparation of EIS.</p> <p>Remove track changes from Ecology Report</p>	<ul style="list-style-type: none"> • Section 7.2.1.7 	<p>The preliminary Ecology Survey Report (OzArk 2022) highlighted the ecological values of the Study Area. Based on the results of the Preliminary Ecology Survey Report, the Impact Area has been selected on the basis that it avoids native vegetation, refining the footprint to areas that have been extensively cleared and used for agricultural purposes, such as cropping, over a long period of time.</p> <p><u>Section 7.2.1.7:</u></p> <p>A preliminary Biodiversity Assessment Methodology (BAM) Calculator was run in October 2022, to predict the credit species that may occur at the Subject Land if all areas within the property were to be impacted. It is notable that the Impact Area has been adjusted since this was undertaken to avoid the majority of the ecological values of the Study Area which will significantly reduce this calculation.</p>
--	---	--

<p><u>Traffic</u></p> <p>Clarify (including all figures) that options are still being investigated in relation to primary site access. Include as much detail as possible as to where these options are (e.g all contained within western boundary towards south of the site – possibly show as a zone on figure).</p>	<ul style="list-style-type: none"> • Figure 4 • Section 6.2 • Section 7.2.3 	<p>Figure 4 now shows two access options being investigated.</p> <p><u>Section 6.2:</u></p> <p>Edify met with Narromine Shire Council representatives on 23 January 2023 and has shared correspondence as the planning process matures. The main points discussed have been:</p> <ol style="list-style-type: none"> 1. Ongoing development boundary refinement efforts to determine extend of impact area; 2. Consultation with neighbours; 3. Subdivision requirements; 4. Traffic volumes and access routes; 5. Potential upgrades to roads and intersections; 6. Potential visual impact from adjacent neighbours; and 7. Potential cumulative impacts from nearby developments. <p><u>Section 7.2.3:</u></p>
--	--	---

During consultation, Narromine Shire Council commented that the level of detail provided in the Traffic Impact Assessment (TIA) of the EIS would be required to inform any road upgrades, however, directed Edify to the Roads Management Strategy (2022) for initial guidance on locally managed roads.

Visual

Include a preliminary visual assessment undertaken in accordance with the Technical Supplement – Landscape and Visual Impact Assessment 2022.

- Section 7.2.4.1

Section 7.2.4.1:

The Study Area ranges in elevation (AHD) from 266m to 276m, with the elevation within 4km ranging up to 288m. Table 6 and Figure 16 describe the outcomes of the preliminary visual assessment undertaken of all public and private (sensitive receiver) viewpoints within 2.5km and 4km of the Study Area as per the method described in the Section 3.1 of the NSW Technical Supplement - Landscape and Visual Impact Assessment. Public Viewpoints (VP) 1 and three were selected at representative points on public roads within the vicinity of the Study Area, and VP1 was selected to be representative of the highest point of the proposed Inland Rail corridor. Private viewpoints (R) are based on known residences.

Receiver	Horizontal Field of View	Vertical Field of View	Classification of Impact
Within 2.5km			
PV1	130°+	4°	Assessment required
PV2	41°-50°	1°	No assessment required
PV3	21-30°	1°	No assessment required
PV4	41°-50°	1°	No assessment required

R1	41°-50°	1°	No assessment required
R2	11-20°	0°	No assessment required
R3	11-20°	0°	No assessment required
R4	11-20°	0°	No assessment required
R5	11-20°	0°	No assessment required
R6	21-30°	0°	No assessment required
Within 4km			
R7	21- 30°	0°	No assessment required
R8	21- 30°	0°	No assessment required
R9	21-30°	0°	No assessment required
R10	11-20 °	0°	No assessment required

Land

- Section 7.2.6.1

Commit to examining the workforce accommodation issue in detail, given location within the REZ and

Section 7.2.6.1:

A soils and agricultural study has been pre-emptively commissioned by Edify as per the Large-Scale Solar Energy Guideline (2022), with any potential impact on agricultural production in the locality and region to be provided in detail in the EIS.

significant potential cumulative impacts.

Social

- Table 7

Table 7:

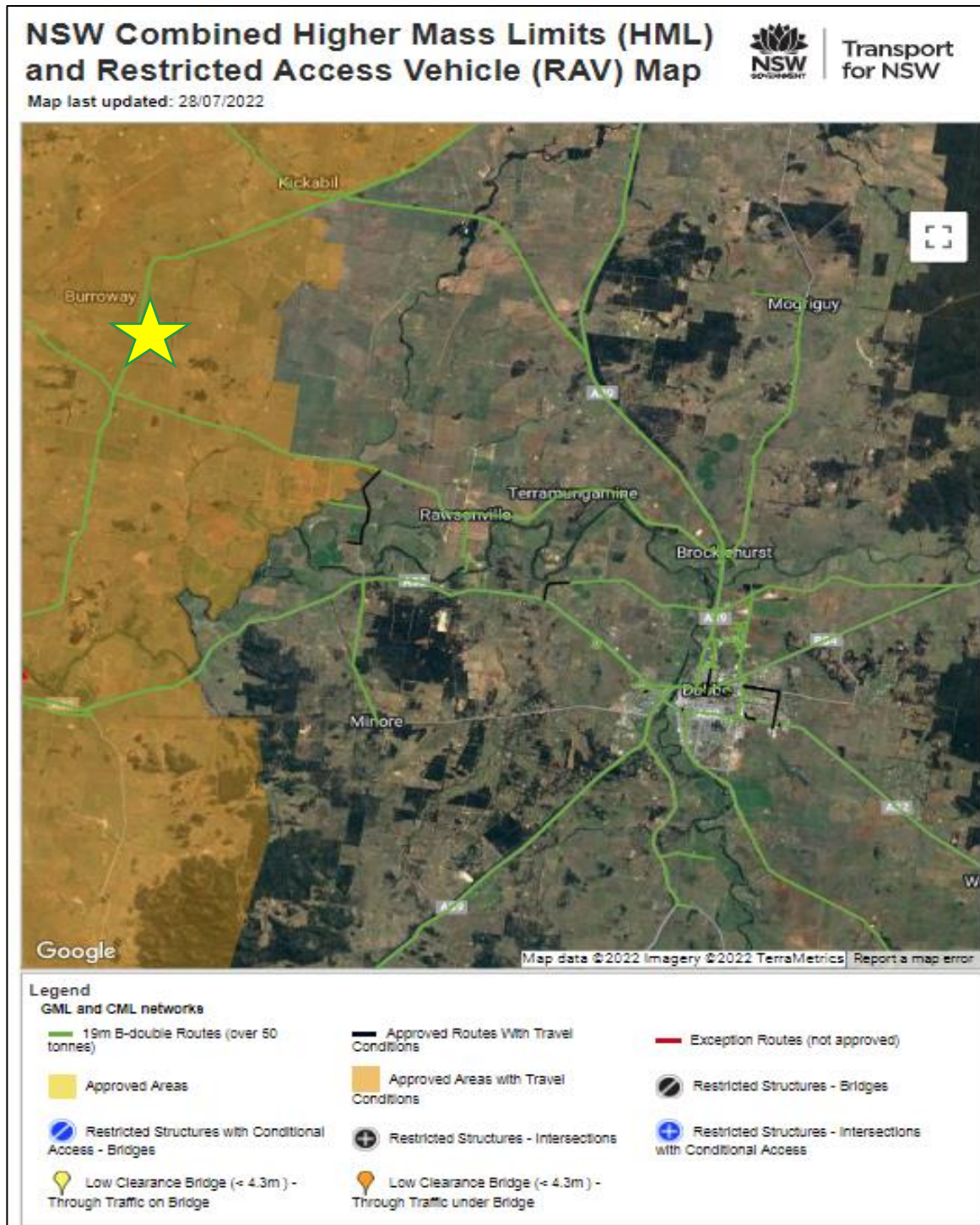
Commit to examining the workforce accommodation issue in detail, given location within the REZ and significant potential cumulative impacts.

Edify will monitor and engage with hospitality and accommodation facilities and monitor if the timing of other projects within the region may cause cumulative stressors. This will include the development of a preliminary workforce accommodation plan as part of the EIS, and the refinement of this plan during the construction scheduling phase of the Project.


Appendix D AHIMS Searches


 AHIMS Web Services (AWS) Search Result	Your Ref/PO Number : Burroway Client Service ID : 703977				
Patrick Dale Date: 28 July 2022 Charlotte Street Brisbane Brisbane Queensland 4000 Attention: Patrick Dale Email: patrick.dale@edifyenergy.com Dear Sir or Madam:					
<p><u>AHIMS Web Service search for the following area at Lot : 70, DP:DP1251856, Section : - with a Buffer of 1000 meters, conducted by Patrick Dale on 28 July 2022.</u></p> <p>The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.</p>					
					
A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:					
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">0</td> <td>Aboriginal sites are recorded in or near the above location.</td> </tr> <tr> <td style="width: 20px; text-align: center;">0</td> <td>Aboriginal places have been declared in or near the above location. *</td> </tr> </table>		0	Aboriginal sites are recorded in or near the above location.	0	Aboriginal places have been declared in or near the above location. *
0	Aboriginal sites are recorded in or near the above location.				
0	Aboriginal places have been declared in or near the above location. *				

Appendix E NSW Transport map – for potential access route/s to site



Appendix F Historic Heritage database search result


 Australian Government
 Department of Climate Change, Energy, the Environment and Water

Heritage
 Australian Heritage Database
 

You are here: [Environment home](#) > [Heritage](#) > [Australian Heritage Database](#)

Search Results


[new search](#) [edit search](#)

6 results found.

Butchers Shop 15 Burroway St	Narromine, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Indigenous Place	Albert, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Indigenous Place	Narromine, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Indigenous Place	Narromine, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Indigenous Place	Narromine, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)
Railway Station Burroway St	Narromine, NSW, Australia	(Registered) Register of the National Estate (Non-statutory archive)

Report Produced: Fri Jan 27 10:27:27 2023

Appendix G Contaminated Land Register search result



[Your environment](#) [Reporting, incidents and recovery programs](#) [Licensing and Regulation](#) [Working together](#) [About us](#)

Public registers

- + POEO Public Register
- Contaminated land record of notices
- About the record of notices
- List of notified sites
- Tips for searching
- Disclaimer
- Dangerous goods licences
- Pesticide licences
- Radiation licences

[Home](#) [Public registers](#) [Contaminated land record of notices](#)

Search results

Your search for: LGA: NARROMINE SHIRE COUNCIL

did not find any records in our database.

If a site does not appear on the record it may still be affected by contamination. For example:

- Contamination may be present but the site has not been regulated by the EPA under the Contaminated Land Management Act 1997 or the Environmentally Hazardous Chemicals Act 1985.
- The EPA may be regulating contamination at the site through a licence or notice under the Protection of the Environment Operations Act 1997 (POEO Act).
- Contamination at the site may be being managed under the [planning process](#).

More information about particular sites may be available from:

Search TIP

To search for a specific site, search by LGA (local government area) and carefully review all sites listed.

... [more search tips](#)

Appendix H NSW Rural Fire Service – Bushfire prone land search result

7/28/22, 1:19 PM Check if you're in bush fire prone land - NSW Rural Fire Service




NSW RURAL FIRE SERVICE

Check if you're in bush fire prone land
Your Property



Your search result

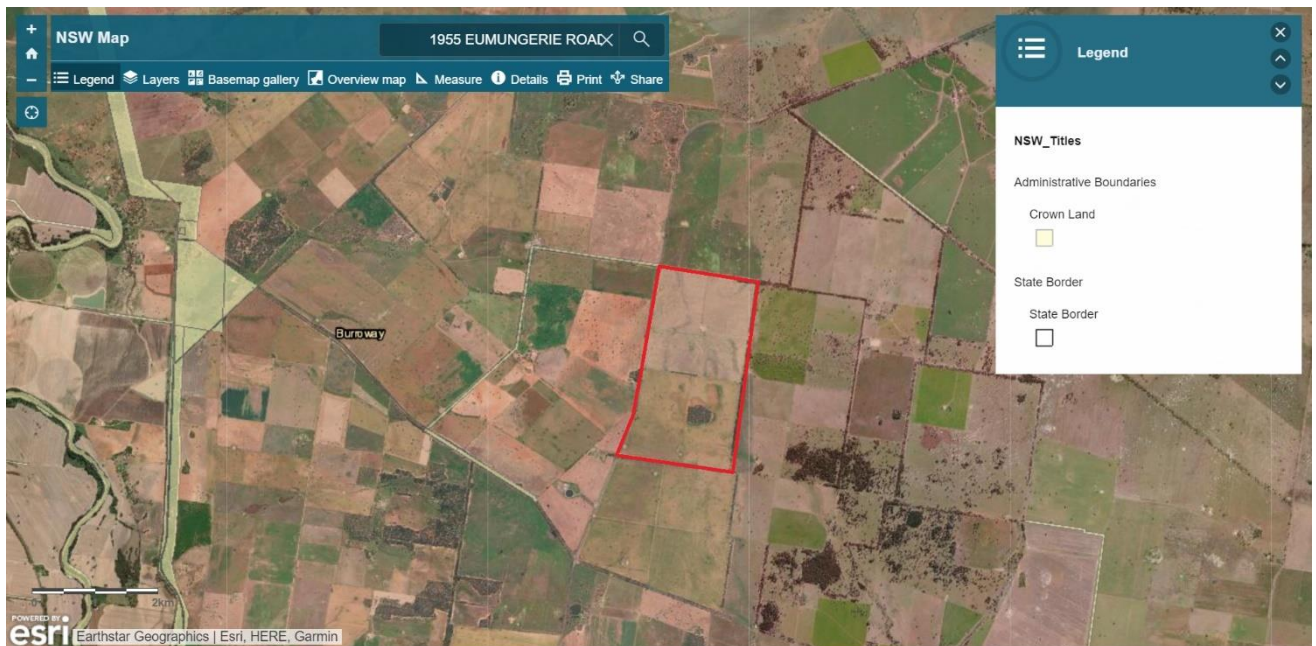
You have conducted a search of the online bush fire prone land tool for the land in the map above. This search result is valid for the date the search was conducted. If you have any questions about the Bush Fire Prone Land Tool please contact bushfireprone.mapping@rfs.nsw.gov.au

 The parcel of land you have selected is within a designated bush fire prone area.

Make sure you have completed the four simple steps to prepare for bush fires

In a bush or grass fire, minutes can matter. You need to take action now. Getting ready for a bush fire is easier than you think. By taking 20 minutes with your family to discuss what you'll do during a fire, you could save their lives, as well as your home.

Appendix I Crown Roads within Proximity to Impact Area



Appendix J Preliminary Biodiversity Assessment, OzArk Environment and Heritage



SCOPING REPORT – PRELIMINARY ECOLOGICAL ASSESSMENT

Burroway Solar Power Station

Narromine Shire Council Local Government Area, NSW

NOVEMBER 2022

Report prepared by
OzArk Environment & Heritage
for Edify Energy Pty Ltd



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OzArk and staff acknowledge Traditional Owners and Custodians of the country on which we work

DOCUMENT CONTROLS

Proponent	Edify Energy Pty Ltd		
Client	Edify Energy Pty Ltd		
Purchase order number			
Document description	Burroway Solar Power Station – Scoping Report – Preliminary Ecological Assessment		
	Name	Signed	Date
Clients reviewing officer			
Client’s representative managing this document	OzArk representative managing this document		
	Dr David Orchard (DO)		
Location	OzArk job number		
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Final Report	V3.0		
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Enquiries would be addressed to OzArk Environment & Heritage.			

Executive summary

Edify Energy Pty Ltd (Edify; the proponent) proposes to construct a hybrid solar-plus-battery power station at Burroway, in the Central West and Orana region of New South Wales. OzArk Environment & Heritage (OzArk) was engaged by Edify to conduct a preliminary ecological assessment of the proposal according to the requirements of the Biodiversity Assessment Method 2020 (BAM) and to prepare this report to accompany a Scoping Report to be compiled by Edify.

The proposal site is located approximately 18 kilometres (km) northeast of Narromine and 29 km northwest of Dubbo. An area of approximately 512 hectares (ha; the subject land) was included in this preliminary assessment. It is not anticipated that all of this area would be required for the final proposal, and it is likely that most, or all, impacts to native vegetation would be avoided. The subject land is identified as Lot 70 DP1251856. As the proposal would be a State Significant Development (SSD), it would automatically trigger entry into the NSW Biodiversity Offsets Scheme (BOS). For this reason, a Biodiversity Development Application Report (BDAR) will be required, and the proponent would be required to offset all impacts to native vegetation.

The field assessment identified four Plant Community Types (PCTs) on the subject land:

- 55 - Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions.
- 82 - Western Grey Box - Poplar Box - White Cypress Pine tall woodland on red loams mainly of the eastern Cobar Peneplain Bioregion.
- 88 - Pilliga Box - White Cypress Pine - Buloke shrubby woodland in the Brigalow Belt South Bioregion.
- 202 - Fuzzy Box woodland on colluvium and alluvial flats in the Brigalow Belt South Bioregion (including Pilliga) and Nandewar Bioregion

PCT 55 occurred in four distinct condition states and was divided into four vegetation zones (55_Good, 55_Moderate, 55_Derived, and 55_Planted) accordingly. The remaining PCTs each occurred in a single condition state (82_Moderate, 88_Good, and 202_Good).

No vegetation zone in its entirety met the criteria to be considered an example of any listed Threatened Ecological Community (TEC); however, sections of zone 202_Good may meet the threshold conditions for the *Biodiversity Conservation Act 2016* (BC Act)-listed Critically Endangered Ecological Community (CEEC) *White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions* and the equivalent *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)-listed CEEC *White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland*. Areas of this zone in which Blakely's Red Gum (*Eucalyptus blakelyi*) is dominant and in which the understorey is predominantly grassy are likely to represent examples of the former CEEC, and may additionally represent examples of the latter CEEC. Owing to the relatively short duration of the survey and the complexity of the mapping effort required to delineate these

areas, this has not been attempted. If impacts to this zone would likely result from this proposal, additional survey may be required to define TEC extents.

A land category assessment was conducted in order to determine whether any part of the subject land constitutes Category 1 – exempt land, which is not subject to the requirements of the BAM. This proposal could not determine whether any part of the subject land constitutes Category 1 land owing to evidence in aerial photographs of clearing subsequent to the January 1, 1990 cut-off date. As most of the subject land was found to be non-native, however, this may not ultimately be of importance.

Offset calculations using the BAM Calculator (BAM-C) generated a total of 1792 ecosystem credits and 19,195 species credits. However, this figure assumes that all c. 512 ha of the assessed area will be cleared and that no targeted surveys are conducted to determine whether species credit species are present. These calculations were used primarily to identify the most significant constraints to the proposal. These are:

- The generation of 1792 ecosystem credits. Most of these credits were associated with PCTs 55 (1198) and 202 (416).
- The possible occurrence of the *White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland* CEECs.
- The generation of 19,195 species credits. Targeted surveys or expert reports may be used to reduce or eliminate this offset obligation, with the most productive months for survey being September-November.
- Potential impacts to fauna habitat associated with hollow-bearing trees, as well as less significant impacts to human-made structures and dams.
- The potential occurrence of a species considered to be at risk of a Serious and Irreversible Impact (SAII), namely the leek orchid *Prasophyllum* sp. Wybong. This species is associated with 202_Good.

Note that if impacts to native vegetation are entirely avoided by the proposal, the above potential impacts will be averted.

Thirteen vegetation integrity plots (i.e., BAM plots) were completed during the site assessment. If the proposal entails a greater impact to native vegetation than currently anticipated, or if the consent authority requires stronger proof that the subject land is predominantly non-native, additional plots may be required.

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1 Introduction

1.1 Background

Edify Energy Pty Ltd (Edify) proposes to develop a hybrid solar power station and battery energy storage system at Burroway, in the Central West and Orana region of New South Wales. The proposal site is located approximately 18 km northeast of Narromine and 29 km northwest of Dubbo. The proposal will occupy up to 470 ha on Lot 70 DP1251856. The relevant property has a minimum lot size of 400 ha. The assessed area and cadastral boundaries are mapped in **Figure 1-1**.

OzArk Environment & Heritage (OzArk) was engaged by Edify (the proponent) to conduct a preliminary biodiversity assessment for the proposal. This assessment will support a scoping report to be prepared by Edify. As the development is to be assessed as a State Significant Development (SSD), it will automatically trigger entry into the NSW Biodiversity Offsets Scheme (BOS). In accordance with the NSW *Biodiversity Conservation Act 2016* (BC Act), it will require the preparation of a Biodiversity Development Assessment Report (BDAR). For this reason, the preliminary assessment was conducted according to the requirements of the Biodiversity Assessment Method (BAM) 2020.

This report documents the results of this assessment and details the proponent's biodiversity offset requirement (number of ecosystem and species credits), with the understanding that this requirement will change as the final development footprint is refined.

1.2 The Proposal

The subject land is located approximately 18 km northeast of Narromine on the eastern side of Eumungerie Road. The assessment area includes all of Lot 70 DP1251856, with the final footprint to be decided at a later stage. At present, the site is utilised almost entirely for cropping. The entirety of the subject land is zoned RU1 – Primary Production.

Final details of the proposal will be determined as planning continues. At present, the project is anticipated to have a rating of approximately 100 MW generating capacity, coupled with an integrated battery energy storage system 100 MW / 400 MWh energy storage capacity. The footprint will include the following elements:

- Solar farm consisting of 'array blocks,' typically of 3 MVA and 6 MVA;
- Battery Energy Storage System(s) (BESS);
- Site office and car park;
- Access and perimeter tracks;
- Security fence surrounding boundary of development area;
- Site buildings, including Operation and Maintenance;
- High-voltage Substation.

The project will connect into the existing Essential Energy 132kV Dubbo to Nevertire transmission line. The substation is expected to be located on the southern boundary of Lot 70 DP 1251856.

1.3 Aims

The purpose of this report is to provide the following:

- Mapping of Plant Community Types (PCTs) present on the Subject Land
- Mapping of any identified Threatened Ecological Communities (TECs)
- Identification of candidate species requiring survey according to the BAM
- Results of database searches, including review of the BioNet Atlas
- Assessment of potential impacts to waterways and Groundwater Dependent Ecosystems (GDEs)
- Preliminary BAM calculator outputs
- Results of a land category assessment.

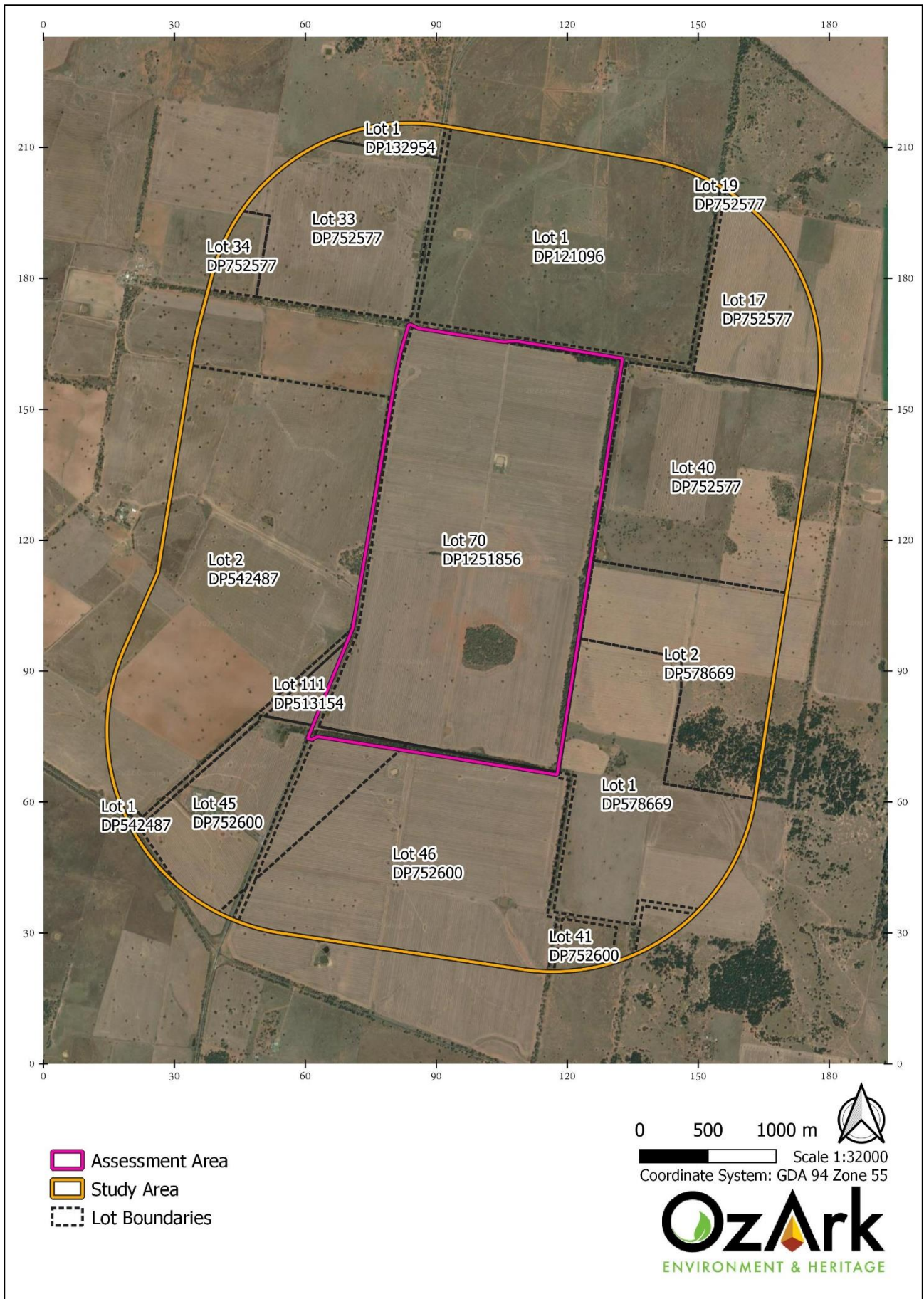


Figure 1-1. Proposal area, including cadastral boundaries.

1.4 Relevant Terms

The following terms and definitions are used to describe the land assessed in this study.

Subject land – The area of land that is directly impacted by the proposed development (including building footprints and associated infrastructure). While it is understood that native vegetation in two blocks within the subject land will be retained, as will vegetation in corridors surrounding the site, this preliminary study assumes that all vegetation within the subject land will be cleared. This is to allow for flexibility in the final design and to identify the key constraints associated with the proposal.

Study area – Land within a 1,500 m buffer from the outside edge of the subject land. The study area is assessed for the purpose of establishing landscape context including native vegetation cover and associated threatened species.

10 km search area – The area within a 10 km radius of the subject land. This 10 km buffer has been used to search information sources, including the Protected Matters Search Tool (PMST) (Department of Agriculture, Water and the Environment 2022) and BioNet Atlas (DPIE, 2022) threatened species sightings.

1.5 Site Details

The site is identified under the *Narromine Local Environment Plan 2011* and on the NSW Planning Portal as follows.

- **Lot/Section/Plan No:** Lot 70 DP1251856.
- **Land Zoning:** RU1 – Primary Production
- **Minimum Lot Size:** 400 ha
- **Terrestrial Biodiversity:** The assessed area includes areas mapped as having high terrestrial biodiversity value (**Appendix A**); however, it is understood that these areas, corresponding to the larger of two remnants within the lot and the surrounding vegetation corridors, will be excluded from the final design.

The location of the proposal is shown on the site map (**Figure 1-1**).

1.6 Regulatory Context

The Proposal will be assessed as a State Significant Development (SSD). Under the BC Act and associated regulations, all SSDs trigger entry into the BOS and require the preparation of a BDAR. Consequently, it is expected that the BOS will apply to this proposal.

The subject land has been identified as bushfire-prone land, according to mapping provided by the NSW Rural Fire Service, and as such, under Section 4.15 of the EP&A Act, the proponent will be required to address the relevant bushfire protection requirements of the Rural Fire Service Document *Planning for Bush Fire Protection*. It is assumed that Asset Protection Zones (APZ) will be included in the development footprint supplied by the proponent for the purposes of this report.

1.7 Purpose

The purpose of this preliminary biodiversity assessment is to determine the biodiversity assets, including flora, fauna, threatened species, threatened communities and habitat values, of the subject land.

This report also identifies any constraints on the proposal according to relevant Federal and NSW environmental legislations and includes the calculation of ecosystem and/or species credits requiring offset.

1.8 Legislation

1.8.1 International legislation

- Japan-Australia Migratory Bird Agreement (JAMBA)
- China-Australia Migratory Bird Agreement (CAMBA)
- Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA)
- Ramsar Convention on Wetlands (Ramsar).

1.8.2 Commonwealth legislation

- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), including EPBC Act Environmental Offsets Policy and Significant Impact Guidelines Version 1.1, 2013.

1.8.3 NSW legislation

Environmental Planning and Assessment Act 1979 (EP&A Act)

The EP&A Act provides the legal framework for the assessment and approval of the proposed activities. Part 4 of the EP&A Act requires the proponent to examine and consider to the fullest extent possible all matters affecting or likely to affect the environment by reason of that activity.

Biodiversity Conservation Act 2016 (BC Act)

Under the BC Act, the proponent has an obligation to consider impacts to all threatened species, populations and ecological communities listed in NSW, as well as ensuring the proposal does not exacerbate a Key Threatening Process (KTP). Entry to the BOS is triggered automatically in the case of an SSD.

Biodiversity Conservation Regulation 2017 (BCR)

The BCR defines the triggers and entry thresholds for the BOS. It also provides the rules for meeting offset obligations, triggers for authorities to refuse development applications and compliance provisions.

Biosecurity Act 2015

From 1 July 2017, the *Biosecurity Act 2015* and its subordinate legislation commenced. The *Noxious Weeds Act 1993* and part of the *Local Land Services Act 2013* (Part 10 Pests), among other acts, have been repealed under the new *Biosecurity Act 2015*. Schedule 1 of the *Biosecurity Act 2015* contains the special provisions relating to weeds and duty to control weeds which pose a biosecurity risk.

The Department of Primary Industries (DPI) maintains a list of 'Priority Weeds' (previously referred to as noxious weeds) in NSW for the State and each region which impose an obligation on landholders to prevent, eliminate or minimise, so far as is reasonably practicable, any biosecurity risk they may pose. In addition, Local Government Areas may include their own priority weeds.

Fisheries Management Act 1994 (FM Act)

The objects of the FM Act are to:

- Conserve fish stocks and key fish habitats.
- Conserve threatened species, populations and ecological communities of fish and marine vegetation.
- Promote ecologically sustainable development, including the conservation of biological diversity.

Consistently with those objectives, the FM Act aims to:

- Promote viable commercial fishing and aquaculture industries.
- Promote quality recreational fishing opportunities.
- Appropriately share fisheries resources between the users of those resources.
- Provide social and economic benefits for the wider community of NSW.
- Recognise the spiritual, social and customary significance to Aboriginal persons of fisheries resources and to protect, and promote the continuation of, Aboriginal cultural fishing.

Section 201 of the FM Act states that a person other than a government authority must seek a permit from NSW Department of Primary Industries – Fisheries (DPI – Fisheries) for dredging or reclamation in a waterway. Dredging work means any work that involves excavating water land. Reclamation work means any work that involves depositing any material on water land.

Water Management Act 2000 (WM Act)

The WM Act aims to provide for the ‘sustainable and integrated management of the water sources of the state for the benefit of both present and future generations.’

The WM Act provides for the granting of various licenses and approvals, including for the use of water and water supply work. Additionally, the WM Act identifies provisions relating to ‘controlled activities’ which includes (among other definitions):

The erection of a building or the carrying out of a work (within the meaning of the EPA Act)

The removal of material (whether or not extractive material) or vegetation from land, whether by way of excavation or otherwise.

It includes laying pipes and cables.

Approval (via a ‘controlled activity’ approval) is required from the Minister for Primary Industries under the WM Act if it is on ‘waterfront land’. ‘*Waterfront land*’ means the bed of any river, lake or estuary, and the land within 40 m of the riverbanks, lake shore or estuary mean high water mark.

State Environmental Planning Policy (Biodiversity and Conservation) 2021

The SEPP (Biodiversity and Conservation) 2021 is the collation of biodiversity and conservation related SEPPs. Chapters 3 (formerly the SEPP – Koala Habitat Protection 2020) and 4 (formerly the SEPP – Koala Habitat Protection 2021) aim 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’.

Chapter 3 applies to land zoned RU1, RU2 and RU3, excluding 9 LGAs within the Sydney basin. Chapter 4 applies to all other zoned land within the additional 74 LGAs. The subject land is zoned as RU1 within the Narromine LGA; therefore, Chapter 3 applies to the present proposal.

A formal assessment of possible impacts to the Koala under both the SEPP (Biodiversity and Conservation) 2021 and the EPBC Act should be included in a BDAR. Considering the lack of nearby Koala records, it is unlikely that the proposal will impact critical habitat for this species.

2 Land Category Assessment

According to section 6.8(3) of the BC Act, land defined as Category 1 – exempt land (within the meaning of Part 5A of the *Local Land Services Act 2013*) is to be excluded from assessment under the BAM. For this reason, impacts to Category 1 land do not contribute to the clearing threshold for entry into the NSW BOS. Category 1 exemption applies to rural land (zoned RU1, RU2, or RU3) that was cleared of native vegetation as of 1 January 1990 or lawfully cleared of vegetation between 1 January 1990 and 25 August 2017. At present, complete public mapping of Category 1 land is not available; however, an assessment of the likely categorisation of the subject land can be conducted by consulting the following sources of information:

- Land zoning maps in the applicable Local Environment Plan (Narromine LEP 2011).
- Public land use mapping (DPIE, 2017).
- NSW woody vegetation extent mapping (DPIE, 2011).
- Transitional Native Vegetation Regulatory Map (DPE, 2022).
- Historical aerial photographs accessed via the NSW Government Spatial Services platform (Spatial Services, 2022).
- Vegetation surveys conducted during the field assessment.

2.1 Land Zoning

The subject land is zoned as RU1 – Primary Production. This zoning is compatible with Category 1 classification.

2.2 Land Use

Two land use types have been mapped within the subject land. Of these, one is compatible with Category 1 listing and one incompatible, according to the classification outlined in the Native Vegetation Regulatory Map method statement (OEH, 2017). These are:

Compatible

- 3.3.0 Cropping.

Incompatible

- 2.1.0 Grazing native vegetation

With the exception of two stands of remnant or planted native vegetation within the paddock and the vegetation corridors surrounding the site, the assessment area is mapped to landuse 3.3.0.

2.3 Historical aerial photography

Historical aerial imagery shows that the site appeared to host significantly more woody vegetation in 1995 (**Figure 2-1** and **Figure 2-2**). Category 1 exemption applies to land that was cleared prior to 1990 or lawfully cleared between 1 January 1990 and 25 August 2017. It is uncertain when the vegetation visible on the aerial photographs was cleared and under what circumstances. If the landholder is able to provide clarity on this point, it may be possible to map areas of Category 1 land within the site.

2.4 Woody Vegetation Extent

Woody vegetation is largely confined to the surrounding vegetation corridors and to two major patches within the paddock. While aerial imagery shows significant number of paddock trees within the lot,

these are no longer present. Areas possessing woody vegetation are assumed to be ineligible for Category 1 listing.

2.5 Transitional Native Vegetation Regulatory Map

The most recent version of the Transitional Native Vegetation Regulatory Map (TNVRM) does not identify any regulated land within the assessed area.

2.6 Vegetation surveys

Much of the site is now used for cropping and only minor occurrences of native plant species – typically ‘weedy’ native annuals – were noted within the cropped areas. Larger remnants and the surrounding corridors possessed significantly greater native vegetation cover and are ineligible for Category 1 listing.

2.7 Conclusion

Owing to uncertainty concerning the date and legality of past clearing on the subject land, it is not clear whether the subject land constitutes Category 1 – Exempt Land. However, the cropped land is considered non-native here and will not attract an offset obligation.

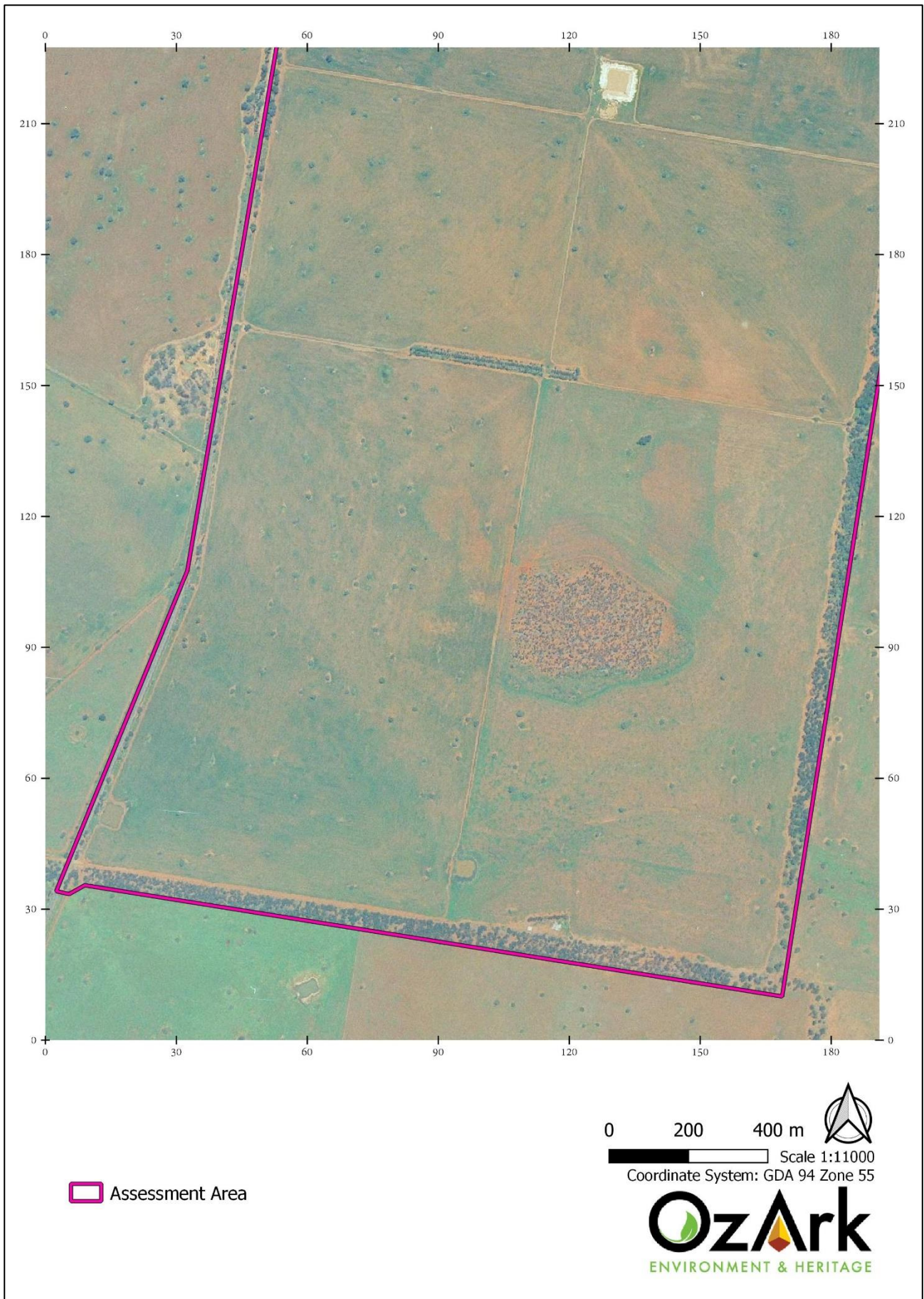


Figure 2-1. Aerial view of the subject land (south), 1995.

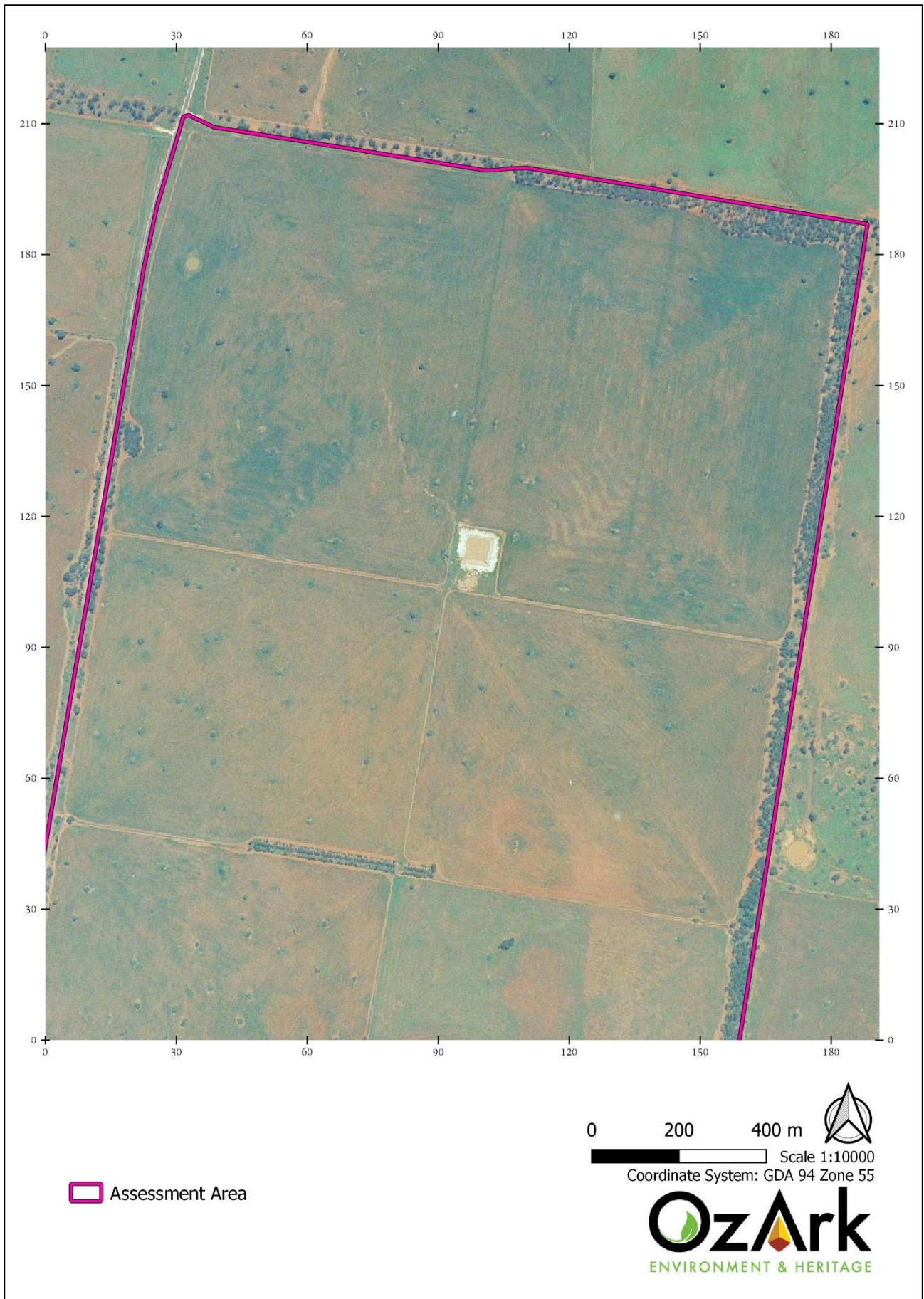


Figure 2-2. Aerial view of the subject land (north), 1995.

3 Methods

The ecological assessment was carried out in three stages:

1. Desktop searches and review of ecological databases and information to identify threatened species, populations or ecological communities listed in the BC Act, FM Act or the EPBC Act that have the potential to occur in the study area.
2. Field survey of the subject land to conduct BAM plots, identify vegetation communities and habitat features present and target predicted threatened species and ecological communities. Where a threatened species or community or habitat feature is identified, document the nature and extent of the protected matter, and describe its 'viable local population' or occurrence.
3. Preparation of a biodiversity chapter, for the overarching Scoping Report, that describes the impacts of the proposed activity on native vegetation and threatened species, populations and ecological communities, and provides recommendations to avoid, minimise and mitigate these impacts. This chapter also includes a biodiversity credit summary that identifies the number of ecosystem credits and species credits required to offset the development.

3.1 Personnel

OzArk Environment & Heritage Pty Ltd (OzArk) operates under NSW Scientific Research License 101908, and NSW Department of Primary Industries (DPI) Accreditation of a corporation as an animal research establishment Ref No. AW2022/012. The role and key details of personnel involved in the project are provided in **Table 3-1**.

Table 3-1. Summary of OzArk personnel qualifications and roles in the assessment.

Name	Position	Role	CV Details
Dr David Orchard	Ecologist	Vegetation integrity plots (BAM plots), vegetation mapping, preliminary BAM-C calculations, reporting	<ul style="list-style-type: none"> • Accredited BAM assessor – Accreditation #BAAS21028 • Doctor of Philosophy – Charles Sturt University • Graduate Diploma in Science (Botany) – University of New England • Bachelor of Arts – Australian National University • First aid training • WH&S Induction Training for Construction Work
Dr Crystal Graham	Senior Ecologist	Quality control, technical review	<ul style="list-style-type: none"> • Accredited BAM assessor – Accreditation #BAAS22024 • Postdoctoral Fellow – Smithsonian Tropical Research Institute • Doctor of Philosophy – Biology – University of Sydney • Honours 1 – Biology – University of Sydney • Bachelor of Advanced Science – University of Sydney • 4WD Training • WH&S Induction Training for Construction Work

			<ul style="list-style-type: none"> • BAM training 2021
Lucca Brozler	Ecologist	Fieldwork, including assisting with BAM plots	<ul style="list-style-type: none"> • Masters in Conservation Biology – The University of Queensland • Bachelor of Biological Science – The University of Queensland • WH&S Induction Training for Construction Work

3.2 Desktop review

Existing information sources were reviewed to contextualise the study area, identify entities for targeted surveys, predict possible constraints, refine field survey methodology and assist with assessing the impacts of the proposal. Information sources consulted included:

- NSW Government Web Map Service (WMS) layers for NSW Imagery (compiled imagery, NSW Property, NSW Base Map and NSW Topographic Map) (<http://spatialservices.finance.nsw.gov.au>).
- EPBC Protected Matters Search Tool (<https://www.environment.gov.au/epbc/protected-matters-search-tool>)
- NSW DPI threatened fish indicative distribution maps (www.dpi.nsw.gov.au/fishing/species-protection/threatened-species-distributions-in-nsw/freshwater-threatened-species-distribution-maps)
- NSW BioNet Wildlife Atlas Vegetation classification (<https://www.environment.nsw.gov.au/research/Visclassification.htm>)
- NSW BioNet Threatened Biodiversity Data Collection (www.bionet.nsw.gov.au/)
- NSW BioNet Atlas (www.bionet.nsw.gov.au/)
- Register of Declared Areas of Outstanding Biodiversity Value (www.environment.nsw.gov.au/topics/animals-and-plants/threatened-species/about-threatened-species/critical-habitats)
- PlantNET, NSW Flora Online (www.plantnet.rbgsyd.nsw.gov.au/)
- Department of Environment and Planning *Biodiversity Values Map* (<https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=BOSETMap>)
- Mapping of Vulnerable Lands – Steep and Highly Erodible (NSW Office of Environment and Heritage, 2011)
- Acid Sulphate Soils Risk mapping (NSW Office of Environment and Heritage, 1998)
- Directory of Important Wetlands of Australia (DIWA) (<https://www.environment.gov.au/water/wetlands/australian-wetlands-database/directory-important-wetlands>)
- NSW wetlands mapping (NSW Office of Environment and Heritage, 2010)

- Important area mapping for Regent Honeyeater and draft important area mapping for Swift Parrot available from the Biodiversity Offsets and Agreement Management System (BOAMs).

All databases were searched prior to conducting initial fieldwork in October 2022 and reviewed (and updated where applicable) in November 2022 prior to final submission.

Results of the database searches are provided in **Appendix A**.

3.3 Field survey

3.3.1 *BAM survey methodology*

Vegetation communities are identified in accordance with the online NSW Master Plant Community Type Classification (OEH, 2018b), which is the current state-wide vegetation classification system for Plant Community Types (PCTs). This classification system is used for vegetation mapping, development assessment and site planning purposes. It describes over 1,500 PCTs across the state, and groups the vegetation communities into vegetation Class and Formation / Sub-formation as per Keith (2004).

In this study, PCTs were identified on the basis of the following inputs:

- Professional ecological knowledge about locally occurring vegetation types and landscape, soil and topographic patterns, including transitions from one community to another and potential for intergrades between plant communities.
- Field survey results to confirm the flora species present, vegetation structure, landscape position and soil type on the subject land and the extent and condition of native vegetation.
- The BioNet Vegetation Classification database, this being used to identify the candidate vegetation communities likely to be present based on the site conditions (flora species present, vegetation structure, bioregion, and landscape position and soil type) and the relevant published PCT descriptions.

If any of the PCTs were identified as having potential to be part of a Threatened Ecological Community (TEC), the relevant identification guidelines (NSW Scientific Committee listing criteria and Commonwealth identification guides) were consulted to determine the status of the vegetation community present. These guidelines provide the identification criteria used to positively identify the community as being part of the TEC. The criteria include location, species present, overstory species, weed cover, number and type of native species including whether certain 'important' native species are present.

Plant identification followed nomenclature in the Royal Botanic Gardens PlantNet online database (Royal Botanic Gardens and Domain Trust, 2022).

In total, thirteen BAM plots were completed between 27 and 28 October 2022 (see **Figure 5-1**).

The plot locations were randomly selected whilst ensuring adequate survey effort within each vegetation zone (

Table 3-2). Note that, if the impacts of the final proposal are larger than anticipated, additional plots may be required.

Table 3-2. Minimum number of plots and transects required per zone area (DPIE, 2020a).

Vegetation zone area (ha)	Minimum number of plots/transects
<2	1 plot/transect
>2 – 5	2 plots/transects
>5 – 20	3 plots/transects
>20 – 50	4 plots/transects
>50 – 100	5 plots/transects
>100 – 250	6 plots/transects
>250 – 1000	7 plots/transects; more plots may be needed if the condition of the vegetation is variable across the zone
>1000	8 plots/transects; more plots may be needed if the condition of the vegetation is variable across the zone

Plots were surveyed according to the BAM (2020) as follows:

- The survey plots consisted of nested 20 m × 50 m and 20 m × 20 m plots
 - Where conditions did not allow for the use of plots of this size, alternative plot sizes were used. For example, roadside plots were reduced in width to 10 m × 50 m.
- Species composition and structure (species and percent cover) data collected from within 20 m × 20 m (or 10 m × 40 m where necessary) plot.
- Vegetation function data (size and number of trees, presence of hollow-bearing trees and woody debris) collected from within the full plot.
- Percent of litter cover data collected within five 1 m × 1 m squares positioned at 5 m, 15 m, 25 m, 35 m and 45 m points of the 50 m plot.
- The plots were positioned within the subject land and their GPS locations were recorded (GDA 94 / MGA Zone 55).

The remainder of the subject land was traversed by foot or by vehicle to confirm the nature of vegetation (i.e. native or non-native) and search for habitat features such as hollow bearing trees, rock outcrops, and nests.

3.3.2 Incidental surveys

Incidental flora and fauna sightings were recorded while undertaking the BAM plots and searching the subject land for hollow-bearing trees and other potential habitat features. Potential habitat such as rock, loose bark and coarse woody debris was recorded and examined for signs of cryptic species. Tracks and other areas of suitable substrate were searched for animal tracks. Other evidence of fauna presence on the subject land, such as scats, feathers and sloughed skins were also recorded.

3.4 Limitations

This study is based upon the species data available at the time of the study, and the environmental conditions, season, and time constraints imposed by the project for the field survey. Specific limitations on this study include the following:

- The survey was undertaken in late October, during which time certain flora and fauna species may have been absent, difficult to detect, or difficult to identify.
- Formal targeted surveys for relevant species credit species have not been undertaken.

The above-mentioned constraints were also considered when preparing the recommendations of avoiding, minimising and mitigating potential impacts.

4 Landscape Features

4.1 Overview

A series of background searches were performed to comply with legal standards (**Table 4-1**).

Table 4-1. Environmental protection areas within the study area.

Environmental Protection Areas	Presence in the Study Area
Land identified on the Biodiversity Values Map under the <i>NSW BC Act 2016</i>	No (Appendix A).
Area of Outstanding Biodiversity Value (AOBV) under the <i>NSW BC Act 2016</i>	No.
Watercourse mapped as Key Fish Habitat (KFH) and/or within the extent of an aquatic Endangered Ecological Community, listed under the <i>Fisheries Management Act 1994</i> .	No.
An area reserved or dedicated under the <i>National Parks and Wildlife Act 1974</i> or <i>Wilderness Act 1987</i> .	No.
Is the proposal located within land reserved or dedicated within the meaning of the <i>Crown Lands Act 1989</i> for preservation of other environmental protection purposes.	No.
A World Heritage Area.	No.
Environmental Protection Zones in environmental planning instruments.	Yes. Terrestrial biodiversity mapping, Narromine LEP 2011.
Lands protected under the <i>State Environmental Planning Policy (Biodiversity and Conservation) 2021</i>	Yes. All lands zoned RU1, RU2, or RU3 within the Narromine LGA are protected under Chapter 3 of the SEPP. The subject land is zoned RU1.
Aquatic reserves dedicated under the <i>Fisheries Management Act 1994</i> .	No.
Wetland areas dedicated under the Ramsar Wetlands Convention.	No.
Land subject to a conservation agreement under the <i>National Parks and Wildlife Act 1974</i> .	No.
Land identified as State Forest under the <i>Forestry Act 1916</i> .	No.
Acid sulphate area.	No.

4.2 Bioregion

The study area is situated in the Pilliga subregion of the Brigalow Belt South Bioregion, as per the Interim Biogeographic Regionalisation of Australia (IBRA) (Thackway & Cresswell, 1995). The 10 km search area also extends into the Bogan-Macquarie subregion of the Darling Riverine Plains Bioregion. These subregions are characterised by geology, landforms, soil types and vegetation as described in **Table 4-2** and **Table 4-3**.

Table 4-2. Description of the Pilliga IBRA subregion (NSW NPWS 2003).

Bioregion	Brigalow Belt South
Subregion	Pilliga
Geology	Horizontal Jurassic quartz sandstones, limited shales, Tertiary basalt caps and plugs plus the sediments derived from these rocks.
Landforms	Stepped sandstone ridges with low cliff faces and high proportion of rock outcrop. Long gentle outwash slopes intersected by sandy stream beds and prior stream channels. A few patches of heavy clay. Includes the spectacular mountain landscape of volcanic domes, plugs and dykes in the Warrumbungles.
Soils	Shallow black earths and red loams on basalts. Extensive harsh texture contrast soils, linear patterns of deep yellow sand, stony red brown earths.
Vegetation	White Box with White Cypress-pine and Kurrajong on the basalt hills. Blue-leaved Ironbark, White Gum, Black Cypress-pine, Whitewood, and Rough-barked Apple on stony sandstone plateau and streams. Narrow-leaved Ironbark, White Cypress-pine, Red Stringybark, patches of mallee and broom heath on gentler sandstone slopes. Pilliga Box with Grey Box, Poplar Box, Fuzzy Box, Bulloak, Rosewood, Wilga, and Budda on heavier soils in the west and north. River Red Gum lines all streams.

Table 4-3. Description of the Bogan-Macquarie IBRA subregion (NSW NPWS 2003).

Bioregion	Darling Riverine Plains
Subregion	Bogan-Macquarie
Geology	Bogan and Macquarie River alluvial fans of Quaternary age. Western margin is bedrock of the Cobar bioregion. Alluvial sediments from mixed Palaeozoic bedrock bury basement rock to 100 m. Underlying sediments of Cretaceous and Jurassic age form part of the Great Artesian Basin.
Landforms	Channels, floodplains, and through-flow swamps of past and present river systems.
Soils	Grey and brown clays on the plains and depressions with texture contrast soils on the low rises of former levees and channels.
Vegetation	River Red Gum and River Cooba on the channels. White Cypress-pine and Poplar Box on coarser levees. Black Box, Belah, Myall and Lignum on floodplains. Complex patterns of Common Reed, Cumbungi, and Water Couch depending on water levels in marshes. Poplar Box woodland with Wilga, Budda, White Cypress-pine, Grey Box, Yellow Box, and Blakely's Red Gum on red soils on fan margins.

4.3 NSW (Mitchell) Landscapes

Landscapes with relatively homogenous geomorphology, soils and broad vegetation types in NSW have been classified and mapped at a 1:250, 000 scale. These landscapes are referred to as NSW (or Mitchell) Landscapes (Mitchell, 2002).

The subject land spans the Goonoo Slopes and Macquarie Alluvial Plains landscapes (**Figure 4-1**). The characteristics of these landscapes are described below.

Goonoo Slopes

Extensive undulating to stepped low hills with long slopes on sub-horizontal Triassic/Jurassic quartz sandstone, conglomerates, siltstone, shale and some coal. General elevation 300 to 500 m with

overall westerly slope, poorly defined drainage network, local relief to 30 m. Stony yellow earths with sandstone outcrop on ridgelines to yellow harsh texture-contrast soils in shallow valleys.

Red Ironbark (*Eucalyptus fibrosa*) and Black Cypress-pine (*Callitris endlicheri*) on ridges, Red Ironbark, Narrow-leaved Ironbark (*Eucalyptus crebra*), Mugga Ironbark (*Eucalyptus sideroxylon*), Common Fringe-myrtle (*Calytrix tetragona*), Spur-wing Wattle (*Acacia triptera*), Club-leaved Phebalium (*Phebalium obcordatum*), Daphne Heath (*Brachyloma daphnoides*) on slopes with patches of Green Mallee (*Eucalyptus viridis*), Dwyer's Red Gum (*Eucalyptus dwyeri*) and Broombush (*Melaleuca uncinata*). Grey Box (*Eucalyptus microcarpa*), Mugga Ironbark, Red Stringybark (*Eucalyptus macrorhyncha*), Fuzzy Box (*Eucalyptus conica*) and Blakely's Red Gum (*Eucalyptus blakelyi*) with Knob Sedge (*Carex inversa*), and Tall Sedge (*Carex appressa*) along streams.

Clearing status: Not overcleared (66% cleared).

Macquarie Alluvial Plains

Holocene fluvial sediments of backplain facies of the Marra Creek Formation associated with the Macquarie River main alluvial fan and distributary stream system, relief 1 to 3 m. Dark yellow-brown silty clay with patches of sand and carbonate nodules deposited from suspended sediments in floodwater, often with gilgai. Slightly elevated areas with red-brown texture-contrast soils.

Open grasslands with scattered Coolibah (*Eucalyptus coolabah*), Black Box (*Eucalyptus largiflorens*), River Cooba (*Acacia stenophylla*), Bimble Box (*Eucalyptus populnea*), Belah (*Casuarina cristata*), Lignum (*Duma florulenta*) and Myall (*Acacia pendula*).

Clearing status: Overcleared (78% cleared).

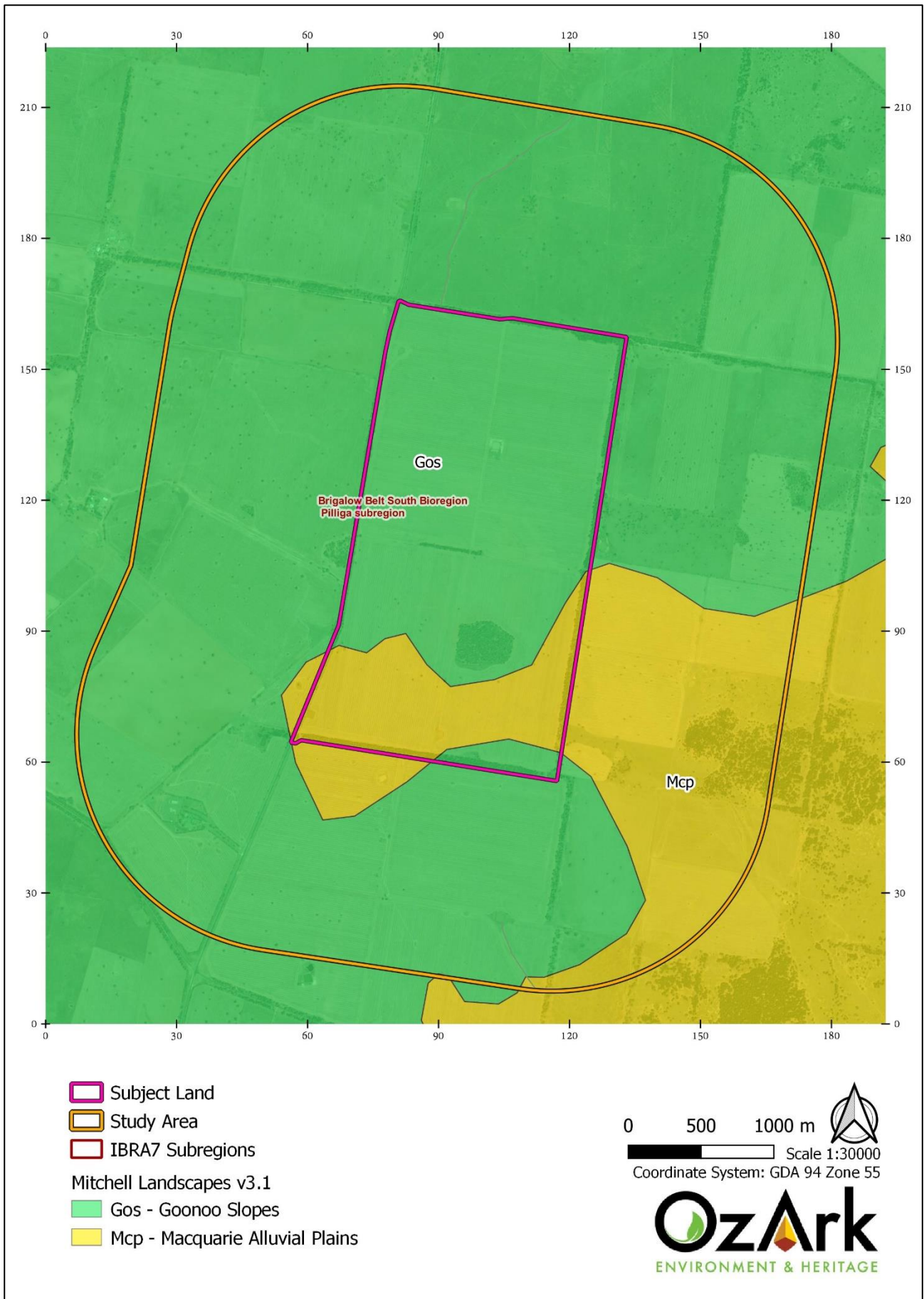


Figure 4-1. IBRA subregions and NSW (Mitchell) Landscapes within the subject land.

4.4 Geology, Cave, Karst and Soil Features

The underlying geology and soil typical of the wider study area are described in **Sections 4-2** and **4-3**. The subject land lacks significant geological features. No rock outcrops, areas of embedded rock, or substantial areas of loose surface rock were noted during the assessment.

4.5 Climate and Weather Data

The closest weather station to the subject land to provide current rainfall and temperature data is Dubbo Airport Automatic Weather Station (Station ID 065070) approximately 24 km south of the subject land (Bureau of Meteorology [BOM], 2022).

The study area generally experiences warm to hot summers, with the highest mean maximum temperature of 33.6°C experienced in January. Winters are mild, with temperatures in the coldest month (July) ranging from a mean minimum of 3.0°C to a mean maximum of 15.7°C (BOM, 2022; **Figure 4-2**).

The field assessment was conducted on October 27 and 28, 2022. Weather conditions at the time of the survey were mild, reaching a maximum of 23.7°C, with 2.0 mm of rain recorded at Dubbo Airport during this time.

An average of 569.6 mm of rainfall is recorded annually at Dubbo Airport. Rainfall is generally summer led, with the five wettest months being October to January and March (BOM, 2022). In the period prior to and during the field survey, the region experienced rainfall well above the monthly average for three consecutive months (August-October 2022). Total rainfall for this period was 412.8 mm, against an average of 132.1 mm (**Figure 4-2**).

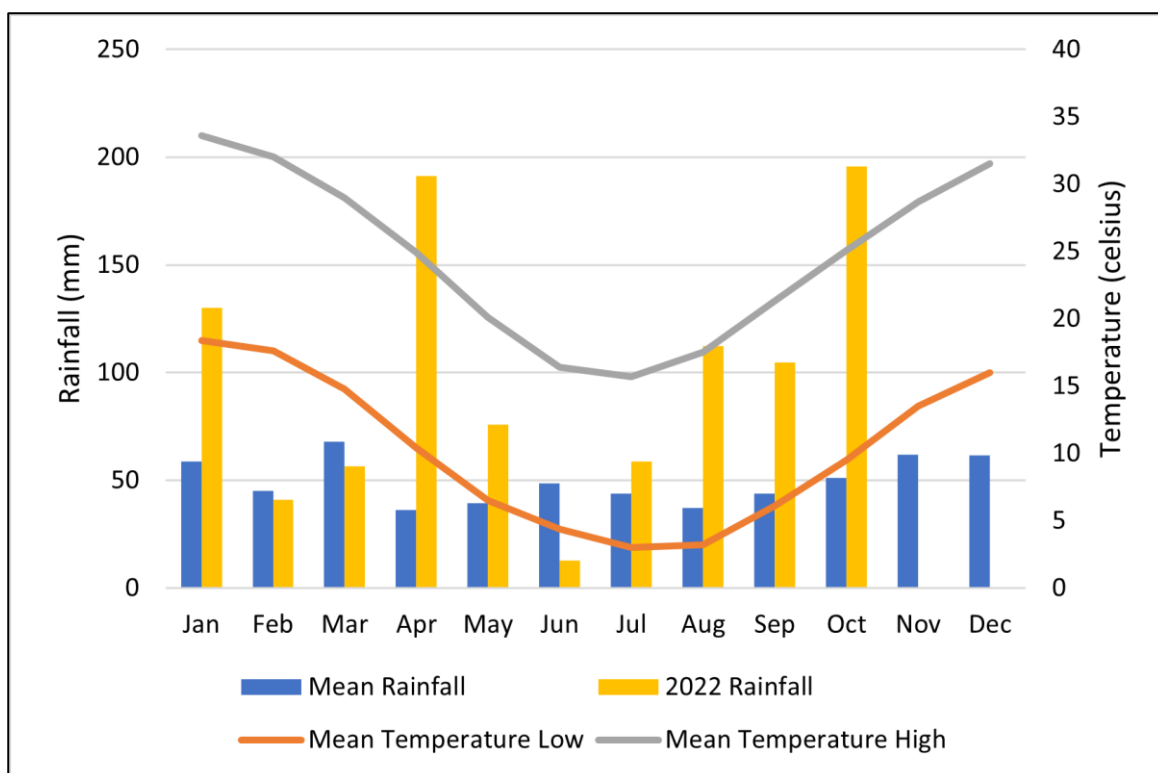


Figure 4-2. Climate data for Dubbo Airport (Station ID 065070).

4.6 Biodiversity Values Map

The Biodiversity Values Map (BV Map) identifies land with high biodiversity value, as defined by the BCR 2017. Impacts to areas included on the BV Map will trigger entry into the NSW BOS and the requirement to prepare a BDAR.

The subject land does not contain any areas mapped on the BV Map (**Appendix A**).

4.7 Areas of Outstanding Biodiversity Value

The site does not contain any currently listed Areas of Outstanding Biodiversity Value (AOBV).

4.8 SEPP (Biodiversity and Conservation) 2021

The subject land is zoned RU1 within the Narromine LGA; consequently, Chapter 3 of the SEPP applies. No Koala Plan of Management exists for this region. The subject land possesses at least three known Koala food trees – Blakely's Red Gum (*Eucalyptus blakelyi*), Fuzzy Box (*Eucalyptus conica*), and Grey Box (*Eucalyptus microcarpa*). There are no records of the species within 10 km. For these reasons, use of the subject land by Koalas is likely to be limited and the subject land is unlikely to constitute core Koala habitat.

4.9 Native vegetation cover

Native vegetation cover (woody vegetation, including regrowth and plantations comprised of plants native to New South Wales and non-woody vegetation with no apparent signs of cultivation) was assessed within the study area and the subject land. Native cover was estimated as the proportion of the study area retaining native vegetation. A summary of the vegetation cover estimate is provided in **Table 4-4**. For the purposes of the BAM, the native vegetation cover class has been determined as <10%.

Table 4-4. Native vegetation cover estimates in the study area.

Vegetation Cover Type	Description	Cover Within Study Area (ha)	Total area of Study Area (ha)	Native Cover within Study Area (%)
Native vegetation	Remnant woodland and both natural and derived grassland.	244.30	2596.70	9.41

4.10 Rivers, Streams, Wetlands and Key Fish Habitat

No watercourses are mapped as occurring on the subject land. Three watercourses occur within the study area (**Figure 4-3**). All are Strahler 1st order minor, non-perennial streams. No streams mapped as Key Fish Habitat by the Department of Primary Industries – Fisheries occur within the study area.

Artificial dams occur within the subject land. These were not observed to possess native flanking vegetation and are likely to offer only limited wetland habitat.

4.11 Groundwater Dependent Ecosystems

Groundwater plays an important ecological role in directly and indirectly supporting terrestrial and aquatic ecosystems. Groundwater sustains terrestrial and aquatic ecosystems by supporting vegetation and providing discharge to channels, lacustrine and palustrine wetlands, and both the estuarine and marine environment.

The degree of groundwater dependence of ecosystems can be categorised into three broad categories:

- Non-dependent ecosystems that occur mostly in recharge areas and have no connection with groundwater
- Facultative GDEs that require groundwater in some locations but not in others, particularly where an alternative source of water can be accessed to maintain ecological function. Minor changes to the groundwater regime in facultative GDEs with proportional or opportunistic groundwater dependence may not have any adverse impacts but these ecosystems can be damaged or destroyed if a lack of access to groundwater is prolonged
- Obligate GDEs that are restricted to locations of groundwater discharge and ecosystems located within aquifers (e.g. subterranean cave and stygofauna communities (Kuginis *et al.* 2012). Aquifer ecosystems are inherently groundwater dependent.

Groundwater dependent ecosystems have been classified into seven types under two broad categories as follows (Kuginis *et al.* 2012):

- Subsurface ecosystems – Underground ecosystems
- Karst systems and caves (limestone geology)
- Subsurface aquifer (phreatic) ecosystems
- Baseflow streams (hyporheic or subsurface component)
- Surface ecosystems – Above ground ecosystems
- Groundwater dependent wetlands
- Baseflow surface streams (surface/free-water component)
- Estuarine and near shore marine ecosystems
- Groundwater dependent terrestrial ecosystems; dependent on subsurface groundwater (phreatophytic).

The Bureau of Meteorology Atlas of Groundwater Dependent Ecosystems identifies a single low-potential terrestrial GDE within the subject land (**Figure 4-3**; BOM, 2017). No moderate- or high-potential GDEs are predicted to occur within the site.

The proposal does not include the extraction of groundwater; however, contamination from construction operations could impact on the quality of groundwater if adequate mitigation measures are not taken.

4.12 Connectivity Features

Vegetation corridors surrounding the subject land form part of a network of similar linear remnants that together provide connectivity across the landscape. This connectivity appears to extend to nearby waterways and to larger woodland remnants, including the Goonoo forests. Linear remnants such as those that border the subject land are likely to be extremely important for the movement of nomadic species and for maintaining gene flow in the local landscape.

Only two woodland areas (one remnant, one planted) occur inside the boundaries of the relevant lot, along with a small number of isolated paddock trees or shrubs. These are separated from the surrounding corridors by distances exceeding 300 m and are unlikely to contribute significantly to local connectivity.

5 Ecological Assessment Results

5.1 Plant Community Types

Plant Community Types (PCTs) are the basic units of vegetation mapping in New South Wales. A primary objective of the field survey was to identify the PCTs present within the subject land and to map the boundaries of each community. Vegetation within the subject land was found to consist largely of non-native crops, with remnants of native vegetation confined to one large natural patch, one planted shelter belt, a small number of isolated trees, and the surrounding road corridor and fenced remnants. Remnant vegetation was observed to belong to the following four PCTs:

- 55 - Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions.
- 82 - Western Grey Box - Poplar Box - White Cypress Pine tall woodland on red loams mainly of the eastern Cobar Penneplain Bioregion.
- 88 - Pilliga Box - White Cypress Pine - Buloke shrubby woodland in the Brigalow Belt South Bioregion.
- 202 - Fuzzy Box woodland on colluvium and alluvial flats in the Brigalow Belt South Bioregion (including Pilliga) and Nandewar Bioregion

In keeping with the requirements of the BAM, PCTs were further stratified into vegetation zones based on observed condition. Most PCTs occurred in only one condition state; however, PCT 55 varied more substantially in condition and composition, with four distinct condition states being recognised:

- Good: A high to very high-quality woodland possessing a dense canopy cover, mature trees, and a diverse native understorey.
- Moderate: A moderate- to high-quality woodland with a sparser canopy and exhibiting clearer signs of historical disturbance.
- Derived: A grassland community in which Belah (*Casuarina cristata*) is thought to have formerly been dominant but now occurs only as scattered trees.
- Planted: A planted community containing a mixture of canopy species, including Belah, and retaining a native understorey.

A description of each PCT as it occurs within the boundaries of the subject land is given in **Table 5-1**. The area of each PCT mapped within the assessed area is also given in **Table 5-1**. PCTs are mapped in **Figure 5-1**.

In total, thirteen Vegetation Integrity Plots (i.e., BAM plots) were conducted during the site assessment. The locations of these plots are given in **Figure 5-1**. Additional plot details, including photographs, are given in **Appendix B**.

Table 5-1. Plant Community Types (PCTs) within the subject land

PCT	Condition State	Vegetation Zone	Description	Area ¹	Plots	Location
55	Good	55_Good	<ul style="list-style-type: none"> A tall closed woodland community in which Belah (<i>Casuarina cristata</i>) is the dominant canopy species, with localised occurrences of Grey Box (<i>Eucalyptus microcarpa</i>), Pilliga Box (<i>Eucalyptus pilligaensis</i>), and Poplar Box (<i>Eucalyptus populnea</i> subsp. <i>bimbil</i>). The tall shrub Wilga (<i>Geijera parviflora</i>) is common, as are the smaller chenopod shrubs Spiny Saltbush (<i>Rhagodia spinescens</i>) and Black Rolpoly (<i>Sclerolaena muricata</i>). The understorey is composed of a mixture of small shrubs, forbs, grasses, and sedges. Native plant species diversity is high (average 29.5 native species per 0.04 ha floristic plot). 	21.72 ha	BU06 BU11	Accounts for most of the vegetation in remnant corridors to the north, east, and south of the lot.
55	Moderate	55_Moderate	<ul style="list-style-type: none"> A tall woodland community in which Belah (<i>Casuarina cristata</i>) is the dominant canopy species, with localised occurrences of Pilliga Box (<i>Eucalyptus pilligaensis</i>), and Poplar Box (<i>Eucalyptus populnea</i> subsp. <i>bimbil</i>). White Cypress-pine (<i>Callitris glaucophylla</i>) and Kurrajong (<i>Brachychiton populneus</i>) occur where the community grades into PCTs 82 or 88. Canopy cover is moderately dense but interrupted by treeless patches. The tall shrub Wilga (<i>Geijera parviflora</i>) is present but typically less abundant than in 55_Good. Small shrubs are present, the most common of which are Western Boobialla (<i>Myoporum montanum</i>) and the low-growing species Grey Copperburr (<i>Sclerolaena diacantha</i>). The understorey is dominated by grasses, most notably Plump Windmill Grass (<i>Chloris ventricosa</i>), speargrasses (<i>Austrostipa</i> spp.), and wallaby grasses (<i>Rytidosperma</i> spp.). Native plant species diversity is moderately high (19 native species per 0.04 ha floristic plot). 	2.26 ha	BU08	Excepting a single paddock tree, confined to the roadside corridor, where it grades into PCTs 82 and 88.
55	Derived	55_Derived	<ul style="list-style-type: none"> A grassland community with sparse remnant or regrowth individuals of Belah (<i>Casuarina cristata</i>). 	2.38 ha	BU07	Confined to the roadside corridor, most obviously at the northern and

			<ul style="list-style-type: none"> • Shrubs are generally scarce, with the exception of the low-growing chenopod shrub Grey Copperburr (<i>Sclerolaena diacantha</i>). • The understorey is dominated by grasses – e.g. Plump Windmill Grass (<i>Chloris ventricosa</i>) and Speargrasses (<i>Austrostipa scabra</i>) – with a range of forbs, rushes, and sedges. • Native plant species diversity is moderately high (21 native species per 0.04 ha floristic plot). 			southern extents of the property.
55	Planted	55_Planted	<ul style="list-style-type: none"> • A planted shelterbelt with a remnant native understorey, in which the canopy includes a range of <i>Eucalyptus</i> species, together with Belah (<i>Casuarina cristata</i>) and Kurrajong (<i>Brachychiton populneus</i>). • Shrubs are generally scarce. Minor occurrences of Wilga (<i>Geijera parviflora</i>), Western Boobialla (<i>Myoporum montanum</i>), and the chenopod shrubs Spiny Saltbush (<i>Rhagodia spinescens</i>), Ruby Saltbush (<i>Enchylaena tomentosa</i>), Black Rolypoly (<i>Sclerolaena muricata</i>), Galvanized Burr (<i>Sclerolaena birchii</i>), and Small-leaf Bluebush (<i>Maireana microphylla</i>) were noted. • The understorey is dominated by grasses – e.g. Plump Windmill Grass (<i>Chloris ventricosa</i>) and Speargrasses (<i>Austrostipa scabra</i>) – with a range of forbs, rushes, and sedges. • Weeds are common, particularly exotic grasses (e.g. <i>Lolium rigidum</i> and <i>Hordeum</i> sp.) • Native plant species diversity remains moderately high (25 native species per 0.04 ha floristic plot). 	1.20 ha	BU04	Confined to a single shelterbelt in the middle of the lot.
82	Moderate	82_Moderate	<ul style="list-style-type: none"> • An open woodland community in which Poplar Box (<i>Eucalyptus populnea</i> subsp. <i>bimbi</i>) and White Cypress-pine (<i>Callitris glaucophylla</i>) dominate. • A moderately dense tall shrub layer is present, dominated by Wilga (<i>Geijera parviflora</i>). • Common smaller shrubs include Western Boobialla (<i>Myoporum montanum</i>), Sticky Hop-bush (<i>Dodonaea viscosa</i> subsp. <i>spatulata</i>), Spiny Saltbush (<i>Rhagodia spinescens</i>), Butterbush (<i>Pittosporum angustifolium</i>), and Grey Copperburr (<i>Sclerolaena diacantha</i>). 	0.40 ha	BU13	Confined to the roadside corridor, where it grades into PCTs 55 and 88.

			<ul style="list-style-type: none"> The zone possessed high cover and diversity of native grasses and forbs. Speargrasses (<i>Austrostipa</i> spp.), Burr-daisies (<i>Calotis</i> spp.), and Plump Windmill Grass (<i>Chloris ventricosa</i>) dominate the understorey. Native plant species diversity is high (37 native species per 0.04 ha floristic plot). 			
88	Good	88_Good	<ul style="list-style-type: none"> Woodland or open woodland in which Pilliga Box (<i>Eucalyptus pilligaensis</i>) is the dominant tree, with minor occurrences of Belah (<i>Casuarina cristata</i>) where the community grades into PCT 55. A patchy tall shrub layer is present, containing Wilga (<i>Geijera parviflora</i>) and sometimes Budda (<i>Eremophila mitchellii</i>) or Warrior Bush (<i>Apophyllum anomalum</i>). Small shrub cover and diversity is high, with the dominant species being the chenopods Grey Copperburr (<i>Sclerolaena diacantha</i>), Black Rolypoly (<i>Sclerolaena muricata</i>), Spiny Saltbush (<i>Rhagodia spinescens</i>), and Ruby Saltbush (<i>Enchylaena tomentosa</i>), and the non-chenopod shrub Western Boobialla (<i>Myoporum montanum</i>). Speargrasses (<i>Austrostipa</i> spp.) and small forbs dominate the understorey. Native plant species diversity is high (average 36 native species per 0.04 ha floristic plot). 	5.21 ha	BU05 BU10	Found in the road corridor and in remnant vegetation at the south-eastern boundary of the lot.
202	Good	202_Good	<ul style="list-style-type: none"> A woodland composed largely of relatively recent regrowth, in which Fuzzy Box (<i>Eucalyptus conica</i>) co-occurs with a large number of other tree species, including Blakely's Red Gum (<i>Eucalyptus blakelyi</i>), Dirty Gum (<i>Eucalyptus chloroclada</i>), Grey Box (<i>Eucalyptus microcarpa</i>), Pilliga Box (<i>Eucalyptus pilligaensis</i>), White Cypress-pine (<i>Callitris glaucophylla</i>), and Buloke (<i>Allocasuarina luehmannii</i>). This community includes plants that could not be assigned to Grey Box or Pilliga Box based on published keys and may represent intermediate forms or hybrids ("<i>Eucalyptus woollsiana</i>"). Red gums possessing ambiguous features were also noted. The dominant tree varies across the extent of the patch, with Fuzzy Box only a minor component of the canopy. The prevalence of relatively juvenile trees precluded identification of the dominant species in certain areas. The patch contains both shrubby and grassy sections. A dense tall shrub layer dominated by Wilga (<i>Geijera parviflora</i>) is present in some areas. The wattles 	10.30 ha	BU01 BU02 BU03	Occurs as a single large patch in the southern half of the lot. A small number of outlying isolated trees have been assigned to this PCT.

			<p><i>Acacia deanei</i> and <i>Acacia spectabilis</i> are common throughout, and localised patches of Cough Bush (<i>Cassinia laevis</i>) were also noted.</p> <ul style="list-style-type: none"> • Foxtail Speargrass (<i>Austrostipa densiflora</i>) is common throughout, with Mulga Grasses (<i>Thyridolepis</i> spp.), other speargrasses (<i>Austrostipa</i> spp.), and Purple Wiregrass (<i>Aristida ramosa</i>) locally common. • Native plant species diversity is relatively high (average 25.67 native species per 0.04 ha floristic plot). 			
0	Non-native	Non-native	<ul style="list-style-type: none"> • Areas in which native vegetation is absent or extremely scarce. This includes cleared tracks, dam surfaces, cropping paddocks, bare ground, and human-made structures. • Minor occurrences of short-lived native species were noted in some locations. Species included the Tall Annual Bluebell (<i>Wahlenbergia gracilenta</i>) and “weedy” species such as Common Cotula (<i>Cotula australis</i>) and Jersey Cudweed (<i>Pseudognaphalium luteoalbum</i>). The annual plant Hyssop Loosestrife (<i>Lythrum hyssopifolia</i>) occurs in wet depressions. • Total native cover varied from 0 to 0.2% in survey plots. • Includes many areas that appear on arials to contain remnant trees or shrubs. The field survey determined that few of these plants still remain. 	464.67	BU09 BU12	Accounts for the majority of the lot, with the exception of zones 202_Good and 55_Planted, isolated paddock trees, and the surrounding remnant corridors.

¹“Area” refers to extent within the full assessment area, not within the paddock. This includes roadsides and remnant woodland corridors.

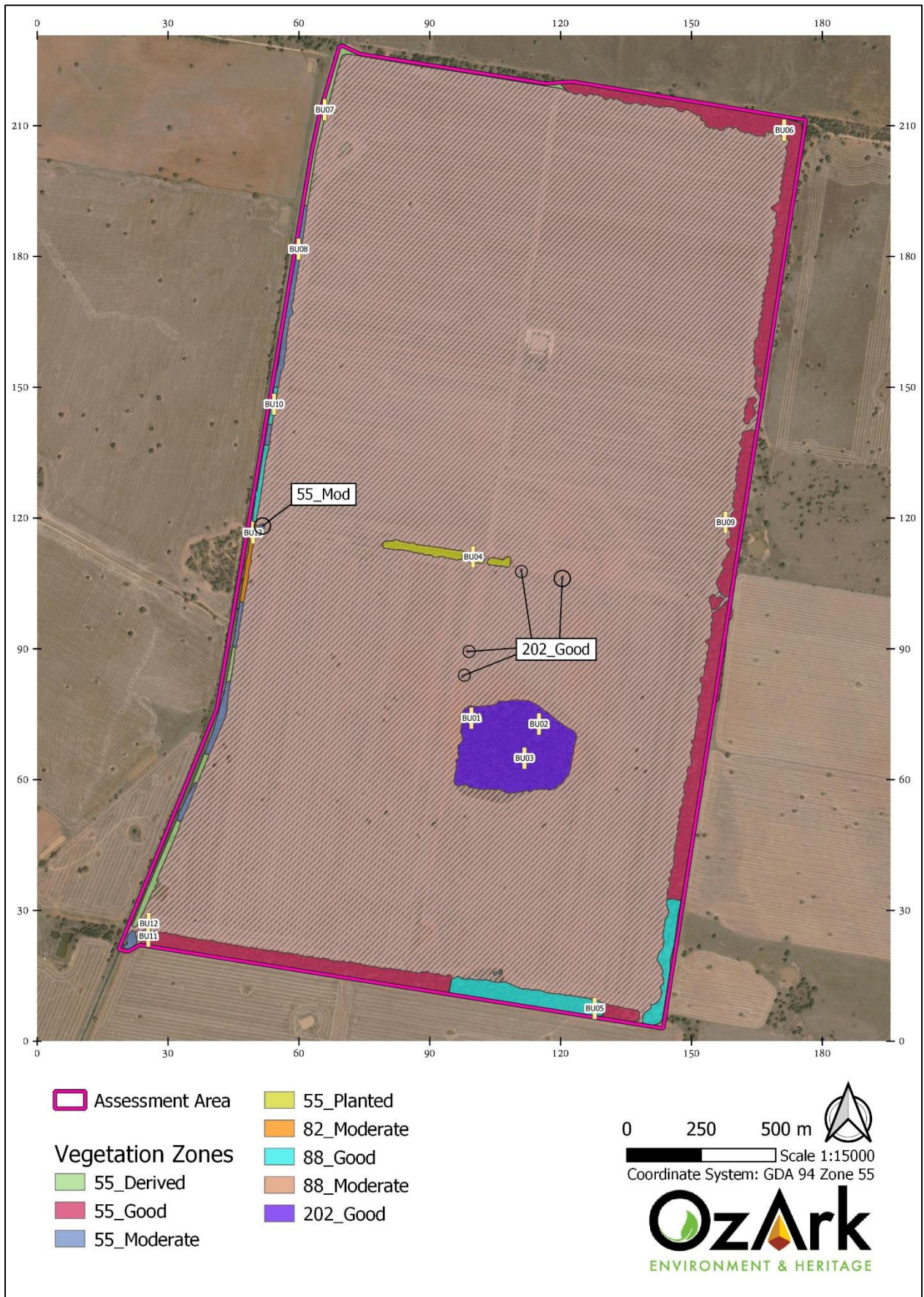


Figure 5-1. Vegetation Zones recorded within the subject land.

5.2 Flora Species Observed

The field survey identified a total of 180 flora species within the subject land (**Appendix C**). Of these, 130 species (72.22%) were native and 50 (27.88%) were exotic.

No threatened plant species were recorded during the field survey.

Six species listed as High Threat Exotic weeds (HTE) under the BAM were recorded within the subject land (**Table 5-2**). One of these species – African Boxthorn (*Lycium ferocissimum*) – is also listed as a statewide Priority Weed (PW) and as a Weed of National Significance (WoNS).

Table 5-2. Significant weeds recorded on the subject land.

Growth Form	Scientific Name	Common Name	HTE	PW	WoNS
SG	<i>Lycium ferocissimum</i>	African Boxthorn	Y	Y	Y
GG	<i>Bromus diandrus</i>	Great Brome	Y	N	N
GG	<i>Chloris gayana</i>	Rhodes Grass	Y	N	N
GG	<i>Cyperus eragrostis</i>	Umbrella Sedge	Y	N	N
GG	<i>Eragrostis curvula</i>	African Lovegrass	Y	N	N
FG	<i>Carthamus lanatus</i>	Saffron Thistle	Y	N	N

Plot data, plot photographs and a list of all flora species observed during the field assessment are provided in **Appendices B** and **C**.

5.3 Fauna Species Observed

The field survey identified a total of 25 fauna species within the subject land (**Appendix C**), comprising 18 birds, three mammals, two reptiles, and one amphibian. Of these, 22 species (88%) were native and three (12%) were exotic.

No threatened fauna species were recorded during the field survey.

5.4 Threatened Species

No threatened flora or fauna species or populations were recorded during the field survey.

Threatened species which may potentially make use of the subject land are given in **Appendix A**.

5.5 Threatened Ecological Communities

All four of the PCTs recorded within the subject land are associated with Threatened Ecological Communities (TECs). These are identified in

Table 5-3. The occurrence of each PCT within the subject land was assessed against the relevant composition and condition criteria for each TEC to determine whether that TEC is present. Note that PCT 202 is not conventionally associated with the BC Act- or EPBC Act-listed White Box-Yellow Box-Blakely's Red Gum TECs; however, owing to the variable composition of this PCT, in which Blakely's Red Gum (*Eucalyptus blakelyi*) or Yellow Box (*Eucalyptus melliodora*) may be dominant or co-dominant, it was considered appropriate to assess the occurrence of this PCT against the threshold criteria for these threatened communities.

Table 5-3. Threatened Ecological Communities associated with each PCT recorded within the subject land.

PCT ID	TEC	Meets Criteria	Justification
55	<u>BC Act, Endangered</u> Semi-evergreen Vine Thicket in the Brigalow Belt South and Nandewar Bioregions	No	Associated vegetation (low, dry rainforest with vines) absent from subject land.
	<u>BC Act, Endangered</u> Coolibah-Black Box Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Penepplain and Mulga Lands Bioregions	No	Coolibah (<i>Eucalyptus coolabah</i>) and Black Box (<i>Eucalyptus largiflorens</i>) absent from subject land.
	<u>BC Act, Endangered</u> Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Penepplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	No	Myall (<i>Acacia pendula</i>) absent from subject land.
	<u>BC Act, Endangered</u> Native Vegetation on Cracking Clay Soils of the Liverpool Plains	No	Subject land not within the Liverpool Plains region.
82	<u>BC Act, Endangered</u> Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Penepplain, Nandewar and Brigalow Belt South Bioregions	No	Canopy is dominated by Poplar Box (<i>Eucalyptus populnea</i> subsp. <i>bimbil</i>), not Grey Box (<i>Eucalyptus microcarpa</i>).
	<u>EPBC Act, Endangered</u> Grey Box (<i>Eucalyptus microcarpa</i>) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	No	Canopy is dominated by Poplar Box (<i>Eucalyptus populnea</i> subsp. <i>bimbil</i>), not Grey Box (<i>Eucalyptus microcarpa</i>).
88	<u>EPBC Act, Endangered</u> Poplar Box Grassy Woodland on Alluvial Plains	No	Canopy is dominated by Pilliga Box (<i>Eucalyptus pilligaensis</i>), not Poplar Box.
202	<u>BC, Endangered:</u> Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	No	Fuzzy Box (<i>Eucalyptus conica</i>) is a minor component of this occurrence of PCT 202.
	<u>BC, Critically Endangered:</u> White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions	Partly	Portions of this PCT in which Blakely's Red Gum (<i>Eucalyptus blakelyi</i>) is dominant and in which the understorey is grassy are likely to belong to this CEEC.
	<u>EPBC, Critically Endangered:</u> White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Partly	Portions of this PCT in which Blakely's Red Gum (<i>Eucalyptus blakelyi</i>) is dominant and in which the understorey is grassy may belong to this CEEC.

Assessment of the recorded PCTs against the relevant condition and composition thresholds for each community determined that, with the exception of portions of PCT 202, none of the mapped communities belong to any TEC. Within the recorded occurrence of PCT 202 there is considerable variation in canopy composition and shrub cover. It is likely that fine-scale survey and mapping would identify occurrences of the BC Act-listed Critically Endangered Ecological Community (CEEC) *White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions*. This listing would apply only to areas in which *Eucalyptus blakelyi* was dominant or co-dominant and in which shrub cover was <30%. An example of a potential occurrence of these CEECs is given in **Figure 5-2**. Certain of these areas may also meet the thresholds for the equivalent listing under the EPBC Act, though the minimum size threshold imposed by that listing may exclude some or all of these areas. As it is understood that no impacts to this area are proposed, this fine-scale mapping has not been attempted.



Figure 5-2. Regrowth grassy woodland within PCT 202 in which red gums, including Blakely's Red Gum (*Eucalyptus blakelyi*), are dominant. Patches such as this may represent examples of the BC Act- and/or EPBC Act-listed White Box-Yellow Box-Blakely's Red Gum CEECs.

5.6 Habitat Features

The subject land was assessed for its potential to provide habitat for threatened flora and fauna known or predicted to occur in the study area. Habitat features including but not limited to rock outcrops, caves, hollow-bearing trees, nests, wetlands (including dams), and watercourses were searched for and recorded, if present.

Geological habitat features (caves, crevices, outcrops and similar) are discussed in **Section 4.4**. Wetlands and watercourses are discussed in **Section 4.10**.

Human-made structures are also regarded as potential habitat for fauna species, including bats and reptiles. Two such structures occur near the southern limit of the subject land. Impacts to these structures may be considered prescribed impacts (see **Section 5.7**).

Forty-four hollow-bearing trees were recorded within the subject site, comprising 39 live trees and five standing dead trees (stags). Most trees (n=35) were found to possess only small hollows (diameter <20 cm). Nine trees were recorded with at least one large hollow (diameter >20 cm). Note that searches for hollow-bearing trees were confined to vegetation within the paddock remnants and parts of the roadside and woodland corridors, particularly those parts closest to the paddocks. It is highly likely that additional unmapped hollow-bearing trees occur within the surrounding vegetation.

Habitat features are mapped in **Figure 5-3**.



Figure 5-3. Habitat features recorded within the subject land.

5.7 Prescribed Impacts

The subject land was searched for habitat features associated with prescribed impacts identified under the BAM. These are detailed in **Table 5-4**.

Table 5-4. Potential prescribed impacts of the proposal.

Prescribed Impacts	Site Assessment
Impacts on the habitat of threatened species or ecological communities associated with karst, caves, crevices, cliffs and other features of geological significance.	No relevant features were recorded during the site assessment.
Impacts of development on the habitat of threatened species or ecological communities associated with rocks.	No relevant features were recorded during the site assessment.
Impacts of development on the habitat of threatened species or ecological communities associated with human made structures.	Small human-made structures occur within the footprint (Figure 5-3).
Impacts of development on the habitat of threatened species or ecological communities associated with non-native vegetation.	Non-native vegetation on the subject land may still provide habitat for species or ecosystem credit species. These impacts may require consideration of mitigation strategies. As much of this vegetation consists of monocultural stands of crop plants, it is unlikely to provide significant habitat.
Impacts of development on the connectivity of different areas of habitat of threatened species that facilitates the movement of those species across their range.	Remnant vegetation corridors surrounding the subject land are likely to contribute significantly to landscape connectivity (see Section 4.12). It is understood that no impacts are proposed to these areas; consequently, impacts to connectivity are unlikely.
Impacts of the development on movement of threatened species that maintains their life cycle.	Impacts to connectivity features (see above and Section 4.12) may have adverse effects on the movement of threatened species. As no such impacts are proposed, no adverse effects are anticipated.
Impacts of development on water quality, water bodies and hydrological processes that sustain threatened species and threatened ecological communities.	As there are no watercourses or significant waterbodies within the area proposed for development, no impacts of this kind are anticipated.
Impacts of wind turbine strikes on protected animals.	None associated with the proposal.
Impact of vehicle strikes on threatened species of animals or on animals that are part of a TEC.	An increase in overall traffic movement is anticipated due to the construction and ongoing operation of the proposal. Maintaining suitably low speed limits on site will help to mitigate impacts that arise from this increase.

5.8 Matters of National Environmental Significance

Under the environmental assessment provisions of the EPBC Act, Matters of National Environmental Significance (MNES) and impacts on Commonwealth land must be considered to assist in determining whether the proposal should be referred to the Australian Government Department of Climate Change, Energy, the Environment and Water (DCCEEW).

The EPBC Act protected matters search has identified four Wetlands of International Importance, six TECs, 32 threatened species, nine listed migratory species and 16 listed marine species with the potential to occur within the 10 km search area (**Appendix A**). The likelihood of the proposal causing a significant impact to any of these listed entities will depend on the final construction footprint. These impacts must be assessed as part of a BDAR.

One MNES entity may be present within site (namely parts of PCT 202):

- TEC:
 - Critically Endangered: *White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland*.

Impacts to this entity may require referral to DCCEEW. It is understood that the proponent intends to avoid impacts to PCT 202; consequently, it is unlikely that this entity would be impacted by the proposal and similarly unlikely that referral to DCCEEW would be required.

The Protected Matters Search Tool identified four EPBC Act-listed threatened species with the potential to occur within the impact area that are either not listed under the BC Act or were not identified by BioNet as occurring in the relevant IBRA subregions. These are listed in **Table 5-5**. None are considered likely to occur on the subject land.

Table 5-5. MNES entities not identified by BioNet searches

Class	Scientific Name	Common Name	*Comm. status	Likelihood of Occurrence
Actinopterygii	<i>Maccullochella macquariensis</i>	Trout Cod	E	Unlikely. The site lacks appropriate aquatic habitat.
Actinopterygii	<i>Macquaria australasica</i>	Macquarie Perch	E	Unlikely. The site lacks appropriate aquatic habitat.
Actinopterygii	<i>Maccullochella peelii</i>	Murray Cod	V	Unlikely. The site lacks appropriate aquatic habitat.
Reptilia	<i>Hemiaspis damelii</i>	Grey Snake	E	Unlikely. Not known to occur within 100 km.

*Comm. Status: V = Vulnerable, E = Endangered

6 Preliminary BAM-C Outputs

Data derived from the 13 BAM plots conducted during the site assessment were entered into the BAM Calculator (BAM-C) to determine the offset cost associated with each vegetation zone. As the likely footprint of the proposal is presently unknown, this assessment assumes that all vegetation within the c. 512 ha assessment area will be cleared. While this will significantly overstate the credit obligation likely to be generated by the proposal, it will allow for the identification of areas with a greater credit price. This should aid in project planning.

The BAM-C generates two classes of credit:

- Ecosystem credits account for direct impacts to PCTs, TECs, and habitat for threatened species that can be reliably predicted to occur within each PCT. Ecosystem credit species cannot be ruled out by targeted surveys (DPIE, 2020a). Ecosystem credit costs can be reduced only by reducing the area of impact or eliminating PCTs from the impact area.
- Species credits account for species whose likelihood of occurrence cannot be predicted by vegetation surrogates and/or landscape features and can be reliably detected by survey. A targeted survey or expert report is required to confirm presence/absence of these species (DPIE, 2020a). Alternatively, species credit species can be assumed present; however, this approach is likely to result in extremely high offset costs and may not be approved by the consent authority.

Credit outputs and indicative costings from this preliminary analysis are provided in **Appendix D** and **Appendix E** and discussed in **Section 6.1** and **Section 6.2**. Strategies to reduce the offset obligation generated by the proposal are given in **Section 7.2**.

6.1 Ecosystem Credits

Ecosystem credits account for direct impacts to PCTs, TECs, and habitat for threatened species that can be reliably predicted to occur within each PCT. In total, the BAM-C generated 26 predicted species for the identified PCTs (

Table 6-1). One of these, the White-bellied Sea-eagle (*Haliaeetus leucogaster*) could be discounted as an Ecosystem Credit species because of habitat constraints for foraging (the site is more than 1 km from a suitably large waterbody). The remaining 25 species could not be ruled out on the basis of habitat constraints and cannot be ruled out by targeted surveys. Ecosystem credits can only be reduced by reducing the area of impact to associated PCTs.

Note that the habitat requirements for a species may differ depending on whether it is being assessed as an ecosystem credit species or a species credit species. This typically reflects the differences in habitat requirements for foraging activity (ecosystem credits) and breeding activity (species credits). A site may contain suitable habitat for foraging while lacking key features required for breeding. In cases like this, a species may be assumed present as an ecosystem credit species (for foraging) while being ruled out as a species credit species (for breeding). In general, few species can be ruled out as ecosystem credit species. Almost all ecosystem credit species must be assumed present.

Table 6-1. Ecosystem credit species predicted to occur and the nature of their presence within, or absence from, the subject land.

Common Name	Scientific Name	Presence
Black Falcon	<i>Falco subniger</i>	Assumed Present (PCTs 55, 82, 88)
Black-breasted Buzzard	<i>Hamirostra melanosternon</i>	Assumed Present (PCTs 55, 88)
Brolga	<i>Grus rubicunda</i>	Assumed Present (PCT 82)
Brown Treecreeper (eastern subspecies)	<i>Climacteris picumnus victoriae</i>	Assumed Present (PCTs 88, 202)
Diamond Firetail	<i>Stagonopleura guttata</i>	Assumed Present (PCTs 55, 82, 88, 202)
Dusky Woodswallow	<i>Artamus cyanopterus cyanopterus</i>	Assumed Present (PCTs 55, 82, 88, 202)
Flame Robin	<i>Petroica phoenicea</i>	Assumed Present (PCT 82)
Glossy Black-cockatoo	<i>Calyptorhynchus lathami</i>	Assumed Present (PCTs 55, 82, 88, 202)
Grey Falcon	<i>Falco hypoleucos</i>	Assumed Present (PCTs 55, 82)
Grey-crowned Babbler (eastern subspecies)	<i>Pomatostomus temporalis temporalis</i>	Assumed Present (PCTs 55, 82, 88, 202)
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	Assumed Present (PCTs 55, 202)
Hooded Robin (southeastern form)	<i>Melanodryas cucullata cucullata</i>	Assumed Present (PCTs 55, 82, 88, 202)
Large Bent-winged Bat	<i>Miniopterus orianae oceanensis</i>	Assumed Present (PCTs 55, 88, 202)
Little Lorikeet	<i>Glossopsitta pusilla</i>	Assumed Present (PCT 202)
Major Mitchell's Cockatoo	<i>Lophochroa leadbeateri</i>	Assumed Present (PCTs 55, 82, 88)
Pilliga Mouse	<i>Pseudomys pilligaensis</i>	Assumed Present (PCT 88)
Regent Honeyeater	<i>Anthochaera phrygia</i>	Assumed Present (PCT 202)
Scarlet Robin	<i>Petroica boodang</i>	Assumed Present (PCTs 82, 88, 202)
Speckled Warbler	<i>Chthonicola sagittata</i>	Assumed Present (PCTs 55, 82, 88, 202)
Spotted-tailed Quoll	<i>Dasyurus maculatus</i>	Assumed Present (PCT 202)
Superb Parrot	<i>Polytelis swainsonii</i>	Assumed Present (PCTs 55, 82, 88, 202)
Swift Parrot	<i>Lathamus discolor</i>	Assumed Present (PCTs 82, 88, 202)
White-throated Needletail	<i>Hirundapus caudacutus</i>	Assumed Present (PCTs 55, 82, 88, 202)
White-bellied Sea-eagle	<i>Haliaeetus leucogaster</i>	Absent (habitat constraint)

Ecosystem credit outputs are given in **Table 6-2**. The majority of the estimated final credit obligation is associated with PCT 55 and PCT 202. Avoiding impacts to these PCTs would significantly reduce the total ecosystem credit obligation.

Table 6-2. Ecosystem credits for PCTs, TECS, and threatened species habitat.

Zone	TEC	VI Score	Change in VI Score	Area (ha)	Sensitivity to Loss	Sensitivity to Gain Class	Biodiversity Risk Weighting	SAll	Ecosystem Credits
55_Good	No.	93.8	-93.8	21.7	PCT Cleared - 83%	High Sensitivity to Potential Gain	2.00	False	1018
55_Moderate	No.	77.9	-77.9	2.3	PCT Cleared - 83%	High Sensitivity to Potential Gain	2.00	False	88
55_Derived	No.	37.9	-37.9	2.4	PCT Cleared - 83%	High Sensitivity to Potential Gain	2.00	False	47
55_Planted	No.	77.9	-77.9	1.2	PCT Cleared - 83%	High Sensitivity to Potential Gain	2.00	False	45
82_Moderate	No.	75.9	-75.9	0.4	PCT Cleared - 75%	High Sensitivity to Potential Gain	2.00	False	15
88_Good	No.	83.5	-83.5	5.2	PCT Cleared - 38%	High Sensitivity to Potential Gain	1.50	False	163
202_Good	Partly (see Section 5.5). Note that the figures provided here assume that this patch as a whole does not constitute a TEC. If all or part of this patch were to be considered a TEC, the associated credit obligation would increase.	80.8	-80.8	10.3	PCT Cleared - 75%	High Sensitivity to Potential Gain	2.00	False	416
TOTAL									1792

6.2 Species Credits

In total, 24 species credit species were generated by the BAM-C (

Table 6-3). According to the BAM, if suitable habitat for these species occurs on the subject land, they must be the subject of targeted survey according to recommended guidelines, or else assumed present. For the purposes of this preliminary assessment, all species have been assumed present within their appropriate vegetation zones unless specific geographic limitations were identified or required habitat features were absent; six species were ruled out in this way:

- Black-breasted Buzzard (*Hamirostra melanosternon*) – Subject land is not within 40 m of riparian woodland.
- Grey-headed Flying-fox (*Pteropus poliocephalus*) – No breeding camps recorded on site.
- Large Bent-winged Bat (*Miniopterus oriana oceanensis*) – No caves, tunnels, mines or other potential breeding structures on site.
- Regent Honeyeater (*Anthochaera phrygia*) – Subject land is not included in important habitat mapping.
- Swift Parrot (*Lathamus discolor*) – Subject land is not included in important habitat mapping.
- White-bellied Sea-eagle (*Haliaeetus leucogaster*) – No potential nesting trees occur within 1 km of a suitable waterbody.

The remaining 18 species were assumed present. These estimates are necessarily imprecise and may be subsequently refined, which would alter the credit output.

Table 6-3. Species credit species predicted to occur and the nature of their presence within, or absence from, the subject land.

Common Name	Scientific Name	Presence
Australian Bustard	<i>Ardeotis australis</i>	Assumed Present
Glossy Black-cockatoo	<i>Calyptorhynchus lathami</i>	Assumed Present
Commersonia procumbens	<i>Commersonia procumbens</i>	Assumed Present
Sloane's Froglet	<i>Crinia sloanei</i>	Assumed Present
Bluegrass	<i>Dichanthium setosum</i>	Assumed Present
Finger Panic Grass	<i>Digitaria porrecta</i>	Assumed Present
Pine Donkey Orchid	<i>Diuris tricolor</i>	Assumed Present
Spiny Peppergrass	<i>Lepidium aschersonii</i>	Assumed Present
Major Mitchell's Cockatoo	<i>Lophochroa leadbeateri</i>	Assumed Present
Squirrel Glider	<i>Petaurus norfolcensis</i>	Assumed Present
Koala	<i>Phascolarctos cinereus</i>	Assumed Present
Native Milkwort	<i>Polygala linariifolia</i>	Assumed Present
Superb Parrot	<i>Polytelis swainsonii</i>	Assumed Present
Prasophyllum sp. Wybong	<i>Prasophyllum</i> sp. Wybong	Assumed Present
Greenhood Orchid	<i>Pterostylis cobarensis</i>	Assumed Present
Slender Darling Pea	<i>Swainsona murrayana</i>	Assumed Present
Silky Swainson-pea	<i>Swainsona sericea</i>	Assumed Present
Tylophora linearis	<i>Tylophora linearis</i>	Assumed Present
Black-breasted Buzzard	<i>Diuris aequalis</i>	Absent (habitat constraint)
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	Absent (habitat constraint)
Large Bent-winged Bat	<i>Miniopterus orianae oceanensis</i>	Absent (habitat constraint)
Regent Honeyeater	<i>Anthochaera phrygia</i>	Absent (habitat constraint)
Swift Parrot	<i>Lathamus discolor</i>	Absent (habitat constraint)
White-bellied Sea-eagle	<i>Haliaeetus leucogaster</i>	Absent (habitat constraint)

Species credit outputs are given in **Table 6-4**, which also identifies the vegetation zones associated with each species credit species. Reducing or avoiding impacts to these zones will reduce or eliminate this credit obligation. Where impacts cannot be avoided, targeted surveys or expert reports may be used to determine whether a species is present or absent. Where targeted surveys determine that a species is absent, the associated credit obligation is eliminated.

Targeted surveys must be carried out using an approved methodology and in the appropriate month. Targeted survey requirements for the species credit species generated by this proposal are given in **Section 6.3**.

A significant caveat in this assessment is that the BAM-C is unable to generate credit outputs for entities that are listed under the Commonwealth EPBC Act but not the NSW BC Act. This applies to *Pterostylis* sp. Wybong, a species listed as threatened under the EPBC Act but not listed as threatened in NSW. If the associated PCTs are to be impacted, and the species is not ruled out by a targeted survey or an expert report, consultation with the DAWE is required.

Table 6-4. Species credits for threatened species assumed present.

Species	Associated Vegetation Zones	BC Act Status	No. Credits
<i>Ardeotis australis</i> / Australian Bustard	55_Derived, 55_Planted, 55_Moderate, 55_Good, 82_Moderate, 202_Good	Endangered	1629
<i>Calyptorhynchus lathami</i> / Glossy Black-Cockatoo	55_Derived, 55_Planted, 55_Moderate, 55_Good, 82_Moderate, 88_Good, 202_Good	Vulnerable	1847
<i>Commersonia procumbens</i>	88_Good, 202_Good	Vulnerable	634
<i>Crinia sloanei</i> / Sloane's Froglet	82_Moderate	Vulnerable	11
<i>Dichanthium setosum</i> / Bluegrass	55_Derived, 55_Planted, 55_Moderate, 55_Good, 202_Good	Vulnerable	1614
<i>Digitaria porrecta</i> / Finger Panic Grass	55_Derived, 55_Planted, 55_Moderate, 55_Good, 202_Good	Endangered	1614
<i>Diuris tricolor</i> / Pine Donkey Orchid	82_Moderate, 88_Good, 202_Good	Vulnerable	486
<i>Lepidium aschersonii</i> / Spiny Peppergrass	55_Derived, 55_Planted, 55_Moderate, 55_Good, 88_Good	Vulnerable	1416
<i>Lophochroa leadbeateri</i> / Major Mitchell's Cockatoo	55_Derived, 55_Planted, 55_Moderate, 55_Good, 82_Moderate, 88_Good	Vulnerable	1431
<i>Petaurus norfolcensis</i> / Squirrel Glider	82_Moderate, 88_Good, 202_Good	Vulnerable	649
<i>Phascolarctos cinereus</i> / Koala	55_Derived, 55_Planted, 55_Moderate, 55_Good, 82_Moderate, 88_Good, 202_Good	Endangered	1847
<i>Polygala linariifolia</i> / Native Milkwort	88_Good	Endangered	218
<i>Polytelis swainsonii</i> / Superb Parrot	55_Derived, 55_Planted, 55_Moderate, 55_Good, 82_Moderate, 88_Good, 202_Good	Vulnerable	1847
<i>Prasophyllum</i> sp. Wybong	202_Good	EPBC Only (Critically endangered)	624
<i>Pterostylis cobarensis</i> / Greenhood Orchid	88_Good, 202_Good	Vulnerable	634
<i>Swainsona murrayana</i> / Slender Darling Pea	55_Derived, 55_Planted, 55_Moderate, 55_Good, 82_Moderate, 202_Good	Vulnerable	1629
<i>Swainsona sericea</i> / Silky Swainson-pea	82_Moderate, 202_Good	Vulnerable	431
<i>Tylophora linearis</i>	88_Good, 202_Good	Vulnerable	634
TOTAL			19,195

6.3 Targeted Surveys

Targeted surveys may be carried out to determine whether a threatened species is present on the subject land. Where a species credit species is determined by survey to be absent, the credit obligation associated with that species is eliminated. Survey requirements vary depending on the nature of the threatened entity – e.g. threatened plants have different requirements to threatened birds – and a targeted survey plan, if required, can be tailored to the species credit species associated with the final impact footprint. Surveys must also be carried out at the appropriate time of the year. **Table 6-5** identifies the appropriate time period for each species credit species generated by the proposal. The most productive period for survey is likely to be October (12 species). Note, however, that if the final footprint omits certain PCTs, associated species credit species may also be eliminated and no longer require survey. If only non-native vegetation is impacted, there would be no requirement for targeted surveys. A list of threatened species recorded within 10 km of the subject land is given in

Table 6-6. This provides an indication of the likelihood that targeted surveys may detect the presence of a species credit species within the impact area.

Table 6-5. Species credit species predicted to occur and the nature of their presence within, or absence from, the subject land.

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<i>Ardeotis australis</i> / Australian Bustard	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
<i>Calyptorhynchus lathamii</i> / Glossy Black-Cockatoo	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N
<i>Commersonia procumbens</i>	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y
<i>Crinia sloanei</i> / Sloane's Froglet	N	N	N	N	N	N	Y	Y	N	N	N	N
<i>Dichanthium setosum</i> / Bluegrass	Y	Y	Y	Y	Y	N	N	N	N	N	Y	Y
<i>Digitaria porrecta</i> / Finger Panic Grass	Y	Y	N	N	N	N	N	N	N	N	N	N
<i>Diuris tricolor</i> / Pine Donkey Orchid	N	N	N	N	N	N	N	N	Y	Y	N	N
<i>Lepidium aschersonii</i> / Spiny Peppergrass	Y	Y	Y	Y	N	N	N	N	N	N	Y	Y
<i>Lophochroa leadbeateri</i> / Major Mitchell's Cockatoo	N	N	N	N	N	N	N	N	Y	Y	Y	Y
<i>Petaurus norfolcensis</i> / Squirrel Glider	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
<i>Phascolarctos cinereus</i> / Koala	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
<i>Polygala linariifolia</i> / Native Milkwort	Y	Y	N	N	N	N	N	N	N	Y	Y	Y
<i>Polytelis swainsonii</i> / Superb Parrot	N	N	N	N	N	N	N	N	Y	Y	Y	N
<i>Prasophyllum</i> sp. Wybong	N	N	N	N	N	N	N	N	Y	Y	N	N

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<i>Pterostylis cobarensis</i> / Greenhood Orchid	N	N	N	N	N	N	N	N	N	Y	N	N
<i>Swainsona murrayana</i> / Slender Darling Pea	N	N	N	N	N	N	N	N	Y	N	N	N
<i>Swainsona sericea</i> / Silky Swainson-pea	N	N	N	N	N	N	N	N	Y	Y	Y	N
<i>Tylophora linearis</i>	Y	Y	Y	Y	Y	N	N	N	N	Y	Y	Y
Total no. species available for survey	10	10	8	8	7	4	5	6	11	12	11	9

Table 6-6. BioNet species records from within 10 km of the subject land.

Scientific Name	Common Name	*NSW Status	+Comm. Status	No. Records
<i>Chalinolobus picatus</i>	Little Pied Bat	V		2
<i>Climacteris picumnus victoriae</i>	Brown Treecreeper (eastern subspecies)	V		9
<i>Commersonia procumbens</i>		V	V	1
<i>Daphoenositta chrysoptera</i>	Varied Sittella	V		3
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	V		1
<i>Hieraaetus morphnoides</i>	Little Eagle	V		2
<i>Polytelis swainsonii</i>	Superb Parrot	V,3	V	2
<i>Pomatostomus temporalis temporalis</i>	Grey-crowned Babbler (eastern subspecies)	V		5
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	V		1
<i>Tylophora linearis</i>		V	E	1

*NSW Status: V = Vulnerable, 3 = Category 3 Sensitive Species. +Comm. Status: V = Vulnerable, E – Endangered.

6.4 Serious and Irreversible Impacts

Threatened entities are considered to be at risk of serious and irreversible impacts (SAILs) if those impacts are “likely to contribute significantly to the risk of a threatened species or ecological community becoming extinct” (BAM 2020). The BAM-C identified one entity as being at risk of an SAIL:

- *Prasophyllum* sp. Wybong (202_Good)

7 Constraints and Recommendations

7.1 Summary of Constraints

The following constraints were identified during the preliminary ecological assessment:

- Threatened Ecological Communities:
 - Portions of PCT 202 may represent occurrences of the EPBC Act-listed CEEC *White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland*.
 - Portions of PCT 202 are likely to represent occurrences of the BC Act-listed CEEC *White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions*.
- Threatened Species:
 - No threatened species were recorded on site. Threatened species with the potential to occur in the impact footprint are discussed in **Section 5.4**, **Section 6.2**, and **Appendix A**.
- Serious and Irreversible Impacts:
 - One entity – the orchid *Prasophyllum* sp. Wybong – is regarded as being at risk of an SAIL. It is associated with zone 202_Good.
- Ecosystem Credits:
 - Potential impacts to vegetation within the subject land generated 1792 ecosystem credits, most of which is accounted for by zones 55_Good (1018) and 202_Good (416).
- Species Credits:
 - Potential impacts to threatened species generated 19,195 species credits.
- Fauna Habitat:
 - Fauna habitat associated with hollow-bearing trees and existing nests occurs on the subject land.
- Groundwater-dependent Ecosystems:
 - Vegetation zone 202_Good is mapped as having low potential for groundwater interaction. No other GDEs are mapped on the subject land.
- Prescribed Impacts:
 - Impacts to human-made structures may result from this proposal.
 - Impacts to non-native vegetation may also impact habitat for threatened species and must be considered in any ecological assessment.

7.2 Avoidance, Minimisation and Mitigation Recommendations

It is understood that the proponent intends to avoid all impacts to remnant vegetation. Confining the impacts of the proposal to non-native vegetation would effectively avoid most of the ecological constraints identified during the site assessment. In the event that some impacts to vegetation are required, the following guidance is offered to avert the most significant impacts:

- Avoid impacts to vegetation zones 55_Good and 202_Good. These zones account for most of the ecosystem credit obligation and the sole SAI species associated with the proposal. Zone 202_Good also likely contains patches of the BC Act-listed CEEC *White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions*.
- Avoid or minimise impacts to zones 88_Good, 55_Moderate, and 55_Planted. If impacts to vegetation in the road corridor are required, confining these impacts to zone 55_Derived would result in the smallest offset obligation.
- Maintain a suitable buffer between development activities and woodland remnants where possible.
- Retain any remnant paddock trees where possible. In particular, avoid impacts to the active Wedge-tailed Eagle (*Aquila audax*) nest tree located towards the eastern edge of the paddock.
- While dams within the site offer only very limited habitat value, it is preferable to minimise impacts to these areas.
- If impacts to vegetation are required, conduct targeted surveys for threatened species within the impact areas. September, October and November are likely to be the most productive months for these surveys.
- Biosecurity measures should be implemented to reduce the spread of significant weeds. There may be opportunities to implement control measures for these weeds during construction activities.

Note that as estimated offset costs are no longer published via the BAM Calculator, it is not possible to identify the species that are likely to result in the greatest financial obligation.

8 Conclusion

The following summary of findings is provided to aid in ongoing project planning. It should be read in concert with the detailed summary of constraints and recommendations provided in **Section 7**.

The proposal for a hybrid solar-plus-battery power station at Burroway, in the Central West and Orana region of New South Wales, will automatically trigger entry into the NSW Biodiversity Offset Scheme by virtue of being a State Significant Development. This will necessitate the production of a BDAR and require the proponent to offset any impacts to native vegetation resulting from the proposal. As currently conceived, however, the proposal is unlikely to result in any such impacts, as the proponent intends to situate the development within an area of non-native vegetation, namely a cropping paddock. If the final design avoids impacts to mapped areas of native vegetation, the development will not attract an offset obligation.

Despite the above, this preliminary assessment assumes that all vegetation within the c. 512 ha assessed area would be cleared by proposal activities. This is intended to provide flexibility in the final design and to allow the proponent to correctly implement avoidance and minimisation strategies in the event that some impacts are required.

Land category assessment could not determine whether any part of the subject land constitutes Category 1 – exempt land. This is due to evidence in aerial photographs of clearing subsequent to the January 1, 1990 cut-off date.

Four PCTs were recorded within the subject land:

- 55 - Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions.
- 82 - Western Grey Box - Poplar Box - White Cypress Pine tall woodland on red loams mainly of the eastern Cobar Penplain Bioregion.
- 88 - Pilliga Box - White Cypress Pine - Buloke shrubby woodland in the Brigalow Belt South Bioregion.
- 202 - Fuzzy Box woodland on colluvium and alluvial flats in the Brigalow Belt South Bioregion (including Pilliga) and Nandewar Bioregion

Parts of the subject land mapped to PCT 202 are likely to constitute examples of the BC Act-listed CEEC *White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions* and may constitute examples of the EPBC Act-listed CEEC *White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland*.

The most significant constraints to the proposal were as follows:

- The generation of 1792 ecosystem credits. Most of these credits were associated with PCTs 55 (1198) and 202 (416).
- The possible occurrence of the *White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland* CEECs.

- The generation of 19,195 species credits. Targeted surveys or expert reports may be used to reduce or eliminate this offset obligation, with the most productive months for survey being September-November.
- Potential impacts to fauna habitat associated with hollow-bearing trees, as well as less significant impacts human-made structures and dams.
- The potential occurrence of an SAll species (*Prasophyllum* sp. Wybong) within zone 202_Good.

Note that the credit figures above assume total clearance of the 512-ha assessed area. It is not anticipated that the proposal will entail total clearance in this manner. This calculation has been carried out to allow for the identification of constraints to project planning.

Thirteen vegetation integrity plots (i.e., BAM plots) were completed during the site assessment. If the proposal entails a greater impact to native vegetation than currently anticipated, or if the consent authority requires stronger proof that the subject land is predominantly non-native, additional plots may be required.

Assessments of significance to BC Act and EPBC Act entities should be completed once the final impact footprint is known.

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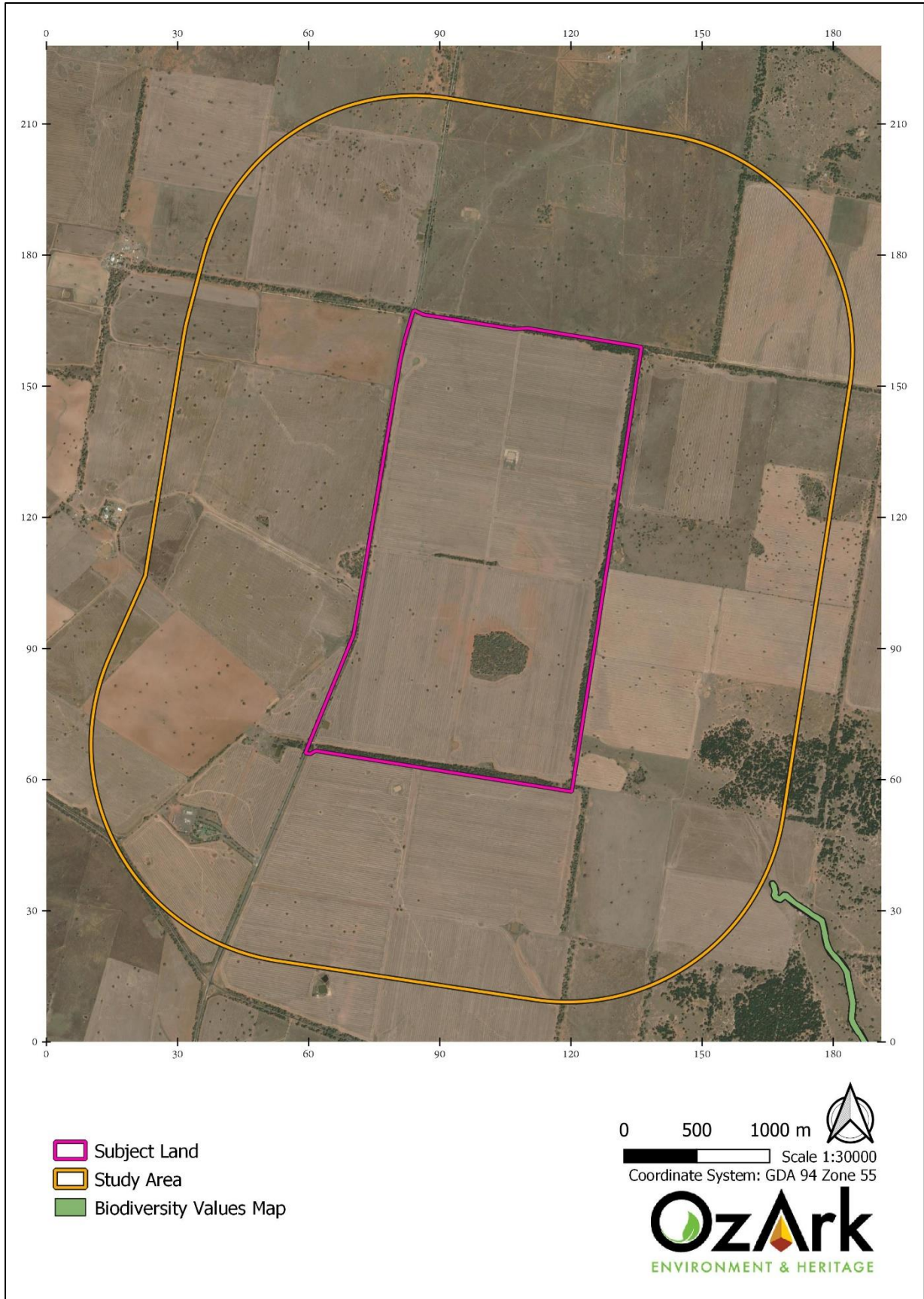
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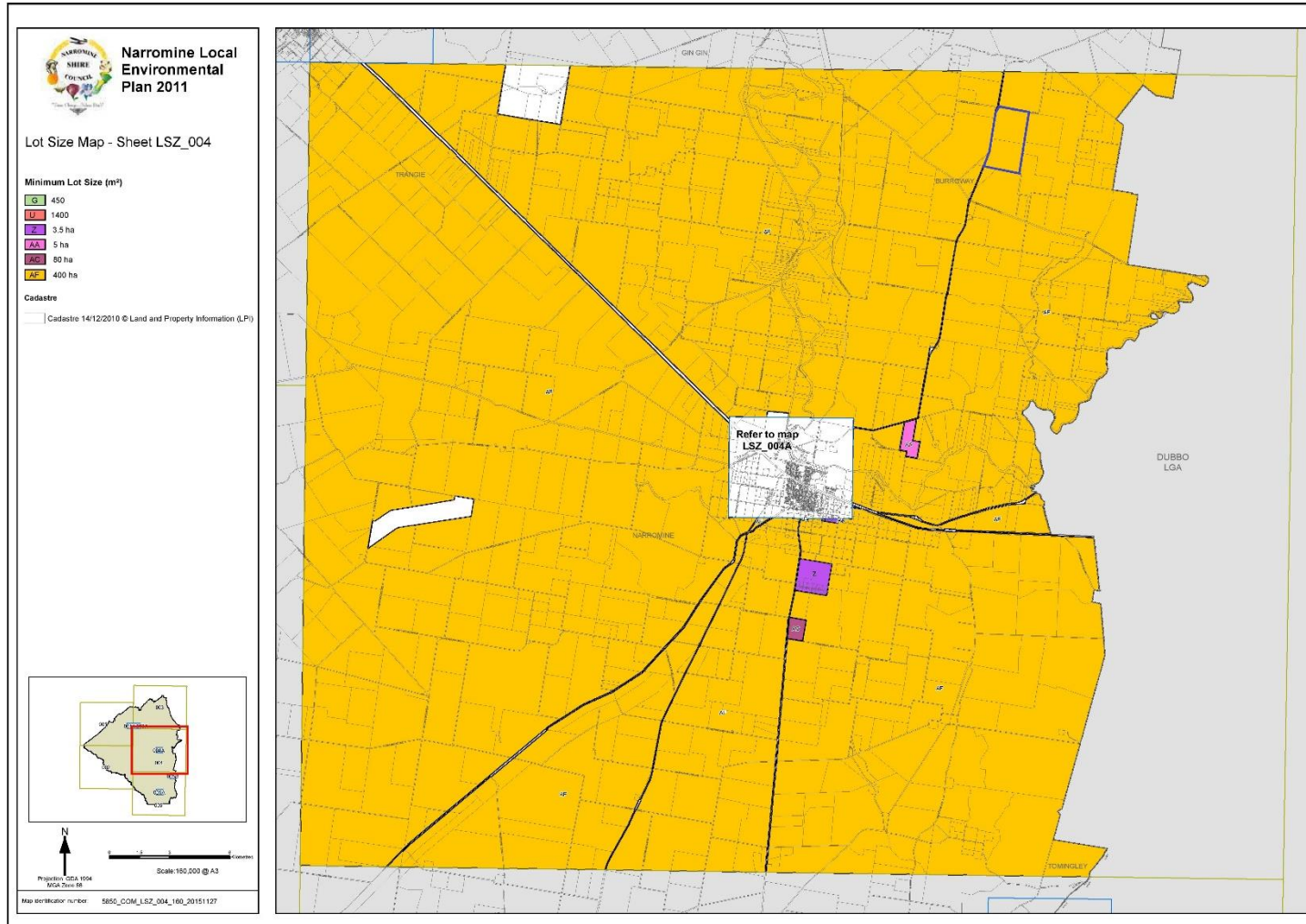
Appendix A: Database search results

Biodiversity Values Map



Minimum Lot Size and Area Clearing Threshold

Lots relevant to the present proposal are outlined in blue. All lots have been assigned a minimum lot size of 400 ha and hence the area clearing threshold is 1 ha.



Narromine Local Environmental Plan 2011 – Terrestrial Biodiversity Values Mapping.

The location of the subject land is indicated in blue.



EPBC Act Protected Matters Report



Australian Government
Department of Climate Change, Energy,
the Environment and Water

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. Please see the caveat for interpretation of information provided here.

Report created: 21-Nov-2022

[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

Summary

Matters of National Environment 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 (Ramsar)	4
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	6
Listed Threatened Species:	32
Listed Migratory Species:	9

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 <https://www.dceew.gov.au/parks-heritage/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 Lands:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	16
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	None
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	1
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	1
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands) [Resource Information]

Ramsar Site Name	Proximity	Buffer Status
Banrock station wetland complex	700 - 800km upstream from Ramsar site	In feature area
Riverland	700 - 800km upstream from Ramsar site	In feature area
The coorong, and lakes alexandrina and albert wetland	800 - 900km upstream from Ramsar site	In feature area
The macquarie marshes	100 - 150km upstream from Ramsar site	In feature area

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.

Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions	Endangered	Community may occur within area	In feature area
Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Endangered	Community likely to occur within area	In feature area
Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland	Critically Endangered	Community may occur within area	In feature area
Poplar Box Grassy Woodland on Alluvial Plains	Endangered	Community likely to occur within area	In feature area
Weeping Myall Woodlands	Endangered	Community likely to occur within area	In feature area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community may occur within area	In feature area

Community Name	Threatened Category	Presence Text	Buffer Status
Listed Threatened Species			[Resource Information]
Status of Conservation Dependent and Extinct are not MNES under the EPBC Act. Number is the current name ID.			
Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area	In buffer area only
Leipoa ocellata Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Polytelis swainsonii Superb Parrot [738]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
FISH			
Maccullochella macquariensis Trout Cod [26171]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Maccullochella peelii Murray Cod [66633]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Macquaria australasica Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area	In feature area
FROG			
Crinia sloanei Sloane's Froglet [59151]	Endangered	Species or species habitat may occur within area	In feature area
MAMMAL			
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat may occur within area	In feature area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat may occur within area	In feature area
Nyctophilus corbeni Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat likely to occur within area	In feature 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]	Endangered	Species or species habitat likely to occur within area	In feature area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour may occur within area	In feature area
PLANT			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Androcalva procumbens [87153]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Austrostipa wakoolica [66623]	Endangered	Species or species habitat may occur within area	In buffer area only
Homoranthus darwinioides [12974]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Lepidium aschersonii Spiny Pepper-cress [10976]	Vulnerable	Species or species habitat may occur within area	In feature area
Lepidium monoplocoides Winged Pepper-cress [9190]	Endangered	Species or species habitat may occur within area	In feature area
Prasophyllum sp. Wybong (C.Phelps ORG 5269) a leek-orchid [81964]	Critically Endangered	Species or species habitat may occur within area	In feature area
Swainsona murrayana Slender Darling-pea, Slender Swainson, Murray Swainson-pea [6765]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Swainsona recta Small Purple-pea, Mountain Swainson-pea, Small Purple Pea [7580]	Endangered	Species or species habitat may occur within area	In buffer area only
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area	In feature area
Vincetoxicum forsteri listed as Tylophora linearis [92384]	Endangered	Species or species habitat may occur within area	In feature area
REPTILE			
Aprasia parapulchella Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Hemiaspis damelii Grey Snake [1179]	Endangered	Species or species habitat may occur within area	In feature area
Listed Migratory Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area	In feature area

Other Matters Protected by the EPBC Act

Commonwealth Lands

[\[Resource Information \]](#)

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.

Commonwealth Land Name	State	Buffer Status
Communications, Information Technology and the Arts - Telstra Corporation Limited		
Commonwealth Land - Australian Telecommunications Commission [14060]NSW		In buffer area only

Listed Marine Species

[\[Resource Information \]](#)

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis			
Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata			
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
Calidris melanotos			
Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Chalcites osculans as Chrysococcyx osculans			
Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area	In buffer area only
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat may occur within area overfly marine area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]		Species or species habitat may occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area

Extra Information

EPBC Act Referrals			[Resource Information]	
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area

Bioregional Assessments			
SubRegion	BioRegion	Website	Buffer Status
Central West	Northern Inland Catchments	BA website	In feature area

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and 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

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

Where little information is available for a 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 detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

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

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

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

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

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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BioNET Atlas search – threatened species predicted to occur within Pilliga subregion of the Brigalow Belt South bioregion and the Bogan-Macquarie subregion of the Darling Riverine Plains bioregion

*NSW Status: P=Protected, P13=Protected native plant, V=Vulnerable, E1=Endangered, E2=Endangered population, E4=Extinct, E4A=Critically endangered, 2=Category 2 sensitive species, 3=Category 3 sensitive species.
+Comm. Status: C=CAMBA, J=JAMBA, K=ROKAMBA, CE=Critically endangered, E=Endangered, V=Vulnerable.

'Records: Number of records, P = predicted to occur, K = known to occur.

Clade	Scientific Name	Common Name	*NSW status	+Comm. status	'Records
Amphibia	<i>Crinia sloanei</i>	Sloane's Froglet	V,P	E	157
Amphibia	<i>Litoria booroolongensis</i>	Booroolong Frog	E1,P	E	34
Amphibia	<i>Litoria raniformis</i>	Southern Bell Frog	E1,P	V	12
Aves	<i>^Calyptorhynchus banksii samueli</i>	Red-tailed Black-Cockatoo (inland subspecies)	V,P,2		5
Aves	<i>^Calyptorhynchus lathami</i>	Glossy Black-Cockatoo	V,P,2		1093
Aves	<i>^Falco hypoleucos</i>	Grey Falcon	E1,P,2		8
Aves	<i>^Lophochroa leadbeateri</i>	Major Mitchell's Cockatoo	V,P,2		57
Aves	<i>Actitis hypoleucos</i>	Common Sandpiper	P	C,J,K	8
Aves	<i>Anseranas semipalmata</i>	Magpie Goose	V,P		167
Aves	<i>Anthochaera phrygia</i>	Regent Honeyeater	E4A,P	CE	229
Aves	<i>Apus pacificus</i>	Fork-tailed Swift	P	C,J,K	56
Aves	<i>Ardeotis australis</i>	Australian Bustard	E1,P		24
Aves	<i>Artamus cyanopterus cyanopterus</i>	Dusky Woodswallow	V,P		2803
Aves	<i>Botaurus poiciloptilus</i>	Australasian Bittern	E1,P	E	68
Aves	<i>Burhinus grallarius</i>	Bush Stone-curlew	E1,P		27
Aves	<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	P	C,J,K	102
Aves	<i>Calidris ferruginea</i>	Curlew Sandpiper	E1,P	CE,C,J,K	6
Aves	<i>Calidris ruficollis</i>	Red-necked Stint	P	C,J,K	7
Aves	<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	V,P,3	E	376
Aves	<i>Certhionyx variegatus</i>	Pied Honeyeater	V,P		9
Aves	<i>Chthonicola sagittata</i>	Speckled Warbler	V,P		2553
Aves	<i>Circus assimilis</i>	Spotted Harrier	V,P		209
Aves	<i>Climacteris picumnus victoriae</i>	Brown Treecreeper (eastern subspecies)	V,P		6078
Aves	<i>Cuculus optatus</i>	Oriental Cuckoo	P	C,J,K	1
Aves	<i>Daphoenositta chrysoptera</i>	Varied Sittella	V,P		846
Aves	<i>Ephippiorhynchus asiaticus</i>	Black-necked Stork	E1,P		12
Aves	<i>Epthianura albifrons</i>	White-fronted Chat	V,P		148
Aves	<i>Falco subniger</i>	Black Falcon	V,P		155
Aves	<i>Gallinago hardwickii</i>	Latham's Snipe	P	J,K	176

Clade	Scientific Name	Common Name	*NSW status	+Comm. status	'Records
Aves	<i>Gelochelidon nilotica</i>	Gull-billed Tern	P	C	11
Aves	<i>Glossopsitta porphyrocephala</i>	Purple-crowned Lorikeet	V,P,3		9
Aves	<i>Glossopsitta pusilla</i>	Little Lorikeet	V,P		743
Aves	<i>Grantiella picta</i>	Painted Honeyeater	V,P	V	136
Aves	<i>Grus rubicunda</i>	Brolga	V,P		218
Aves	<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	V,P		257
Aves	<i>Hamirostra melanosternon</i>	Black-breasted Buzzard	V,P,3		6
Aves	<i>Hieraaetus morphnoides</i>	Little Eagle	V,P		521
Aves	<i>Hirundapus caudacutus</i>	White-throated Needletail	P	V,C,J,K	191
Aves	<i>Hydroprogne caspia</i>	Caspian Tern	P	J	23
Aves	<i>Ixobrychus flavicollis</i>	Black Bittern	V,P		2
Aves	<i>Lathamus discolor</i>	Swift Parrot	E1,P,3	CE	239
Aves	<i>Leipoa ocellata</i>	Malleefowl	E1,P	V	72
Aves	<i>Limosa lapponica</i>	Bar-tailed Godwit	P	C,J,K	1
Aves	<i>Limosa limosa</i>	Black-tailed Godwit	V,P	C,J,K	2
Aves	<i>Lophoictinia isura</i>	Square-tailed Kite	V,P,3		87
Aves	<i>Melanodryas cucullata cucullata</i>	Hooded Robin (south-eastern form)	V,P		912
Aves	<i>Melithreptus gularis gularis</i>	Black-chinned Honeyeater (eastern subspecies)	V,P		683
Aves	<i>Neophema pulchella</i>	Turquoise Parrot	V,P,3		927
Aves	<i>Nettapus coromandelianus</i>	Cotton Pygmy-Goose	E1,P		2
Aves	<i>Ninox connivens</i>	Barking Owl	V,P,3		232
Aves	<i>Ninox strenua</i>	Powerful Owl	V,P,3		26
Aves	<i>Oxyura australis</i>	Blue-billed Duck	V,P		60
Aves	<i>Pachycephala inornata</i>	Gilbert's Whistler	V,P		147
Aves	<i>Pandion cristatus</i>	Eastern Osprey	V,P,3		2
Aves	<i>Petroica boodang</i>	Scarlet Robin	V,P		778
Aves	<i>Petroica phoenicea</i>	Flame Robin	V,P		710
Aves	<i>Petroica rodinogaster</i>	Pink Robin	V,P		2
Aves	<i>Phaethon rubricauda</i>	Red-tailed Tropicbird	V,P	C,J	1
Aves	<i>Polytelis swainsonii</i>	Superb Parrot	V,P,3	V	4653
Aves	<i>Pomatostomus halli</i>	Hall's Babbler	V,P		1
Aves	<i>Pomatostomus temporalis temporalis</i>	Grey-crowned Babbler (eastern subspecies)	V,P		3093
Aves	<i>Pycnoptilus floccosus</i>	Pilotbird	P	V	1
Aves	<i>Rostratula australis</i>	Australian Painted Snipe	E1,P	E	21

Clade	Scientific Name	Common Name	*NSW status	+Comm. status	'Records
Aves	<i>Stagonopleura guttata</i>	Diamond Firetail	V,P		1851
Aves	<i>Stictonetta naevosa</i>	Freckled Duck	V,P		80
Aves	<i>Thalasseus bergii</i>	Crested Tern	P	J	1
Aves	<i>Tringa glareola</i>	Wood Sandpiper	P	C,J,K	5
Aves	<i>Tringa nebularia</i>	Common Greenshank	P	C,J,K	68
Aves	<i>Tringa stagnatilis</i>	Marsh Sandpiper	P	C,J,K	20
Aves	<i>Turnix maculosus</i>	Red-backed Button-quail	V,P		P
Aves	<i>Tyto longimembris</i>	Eastern Grass Owl	V,P,3		1
Aves	<i>Tyto novaehollandiae</i>	Masked Owl	V,P,3		19
Mammalia	<i>Aepyprymnus rufescens</i>	Rufous Bettong	V,P		2
Mammalia	<i>Antechinomys laniger</i>	Kultarr	E1,P		2
Mammalia	<i>Bettongia lesueur graii</i>	Boodie, Burrowing Bettong (mainland)	E4,P	X	2
Mammalia	<i>Cercartetus nanus</i>	Eastern Pygmy-possum	V,P		45
Mammalia	<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	V,P	V	46
Mammalia	<i>Chalinolobus picatus</i>	Little Pied Bat	V,P		76
Mammalia	<i>Conilurus albipes</i>	White-footed Tree-rat	E4,P	X	2
Mammalia	<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	V,P	E	53
Mammalia	<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	V,P		20
Mammalia	<i>Leporillus apicalis</i>	Lesser Stick-nest Rat	E4,P	X	1
Mammalia	<i>Leporillus conditor</i>	Greater Stick-nest Rat	E4,P	V	2
Mammalia	<i>Macropus dorsalis</i>	Black-striped Wallaby	E1,P		676
Mammalia	<i>Macrotis lagotis</i>	Bilby	E4,P	V	3
Mammalia	<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	V,P		118
Mammalia	<i>Myotis macropus</i>	Southern Myotis	V,P		20
Mammalia	<i>Nyctophilus corbeni</i>	Corben's Long-eared Bat	V,P	V	107
Mammalia	<i>Petauroides volans</i>	Greater Glider	P	E	97
Mammalia	<i>Petaurus australis</i>	Yellow-bellied Glider	V,P	V	2
Mammalia	<i>Petaurus norfolcensis</i>	Squirrel Glider	V,P		1818
Mammalia	<i>Petrogale penicillata</i>	Brush-tailed Rock-wallaby	E1,P	V	56
Mammalia	<i>Phascogale tapoatafa</i>	Brush-tailed Phascogale	V,P		K
Mammalia	<i>Phascolarctos cinereus</i>	Koala	E1,P	E	486
Mammalia	<i>Pseudomys novaehollandiae</i>	New Holland Mouse	P	V	8
Mammalia	<i>Pseudomys oralis</i>	Hastings River Mouse	E1,P	E	1
Mammalia	<i>Pseudomys pilligaensis</i>	Pilliga Mouse	V,P	V	173

Clade	Scientific Name	Common Name	*NSW status	+Comm. status	'Records
Mammalia	<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V,P	V	269
Mammalia	<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	V,P		166
Mammalia	<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	V,P		P
Mammalia	<i>Sminthopsis macroura</i>	Stripe-faced Dunnart	V,P		1
Mammalia	<i>Vespadelus troughtoni</i>	Eastern Cave Bat	V,P		15
Reptilia	<i>Aprasia parapulchella</i>	Pink-tailed Legless Lizard	V,P	V	152
Reptilia	<i>Aspidites ramsayi</i>	Woma	V,P		P
Reptilia	<i>Delma impar</i>	Striped Legless Lizard	V,P	V	4
Reptilia	<i>Hoplocephalus bitorquatus</i>	Pale-headed Snake	V,P		3
Reptilia	<i>Tympanocryptis lineata</i>	Canberra Grassland Earless Dragon	E4A,P	E	4
Reptilia	<i>Varanus rosenbergi</i>	Rosenberg's Goanna	V,P		6
Insecta	<i>Keyacris scurra</i>	Key's Matchstick Grasshopper	E1		P
Insecta	<i>Synemon plana</i>	Golden Sun Moth	V	V	50
Flora	<i>Caladenia arenaria</i>	Sand-hill Spider Orchid	E1,P,2	E	6
Flora	<i>Caladenia concolor</i>	Crimson Spider Orchid	E1,P,2	V	504
Flora	<i>Caladenia rosella</i>	Rosella Spider Orchid	E4,P,2	E	1
Flora	<i>Caladenia tessellata</i>	Thick Lip Spider Orchid	E1,P,2	V	1
Flora	<i>Cymbidium canaliculatum</i>	Cymbidium canaliculatum population in the Hunter Catchment	E2,P,2		1
Flora	<i>Diuris tricolor</i>	Pine Donkey Orchid	V,P,2		80
Flora	<i>Myriophyllum implicatum</i>		E4A,2		P
Flora	<i>Prasophyllum petilum</i>	Tarengo Leek Orchid	E1,P,2	E	25
Flora	<i>Pterostylis cobarensis</i>	Greenhood Orchid	V,P,2		175
Flora	<i>Acacia ausfeldii</i>	Ausfeld's Wattle	V		3928
Flora	<i>Acacia meiantha</i>		E1	E	P
Flora	<i>Acacia pendula</i>	Acacia pendula population in the Hunter catchment	E2		P
Flora	<i>Acacia phasmoides</i>	Phantom Wattle	V	V	91
Flora	<i>Ammobium craspedioides</i>	Yass Daisy	V	V	823
Flora	<i>Amphibromus fluitans</i>	Floating Swamp Wallaby-grass	V	V	30
Flora	<i>Atriplex infrequens</i>	A saltbush	V	V	1
Flora	<i>Austrostipa wakoolica</i>	A spear-grass	E1	E	P
Flora	<i>Bertya opposens</i>	Coolabah Bertya	V	V	234

Clade	Scientific Name	Common Name	*NSW status	+Comm. status	'Records
Flora	<i>Boronia granitica</i>	Granite Boronia	V,P	E	1
Flora	<i>Bossiaea fragrans</i>		E4A	CE	55
Flora	<i>Brachyscome muelleroides</i>	Claypan Daisy	V	V	1
Flora	<i>Caesia parviflora</i> var. <i>minor</i>	Small Pale Grass-lily	E1		3
Flora	<i>Carex raleighii</i>	Raleigh Sedge	E1		1
Flora	<i>Cheilanthes sieberi</i> subsp. <i>pseudovellea</i>		E1,3		22
Flora	<i>Commersonia procumbens</i>		V	V	181
Flora	<i>Cullen parvum</i>	Small Scurf-pea	E1		7
Flora	<i>Cynanchum elegans</i>	White-flowered Wax Plant	E1	E	P
Flora	<i>Dichanthium setosum</i>	Bluegrass	V	V	11
Flora	<i>Digitaria porrecta</i>	Finger Panic Grass	E1		18
Flora	<i>Eriocaulon australasicum</i>	Austral Pipewort	E1	E	P
Flora	<i>Eucalyptus aggregata</i>	Black Gum	V	V	1
Flora	<i>Eucalyptus alligatrix</i> subsp. <i>alligatrix</i>		V	V	2
Flora	<i>Eucalyptus camaldulensis</i>	Eucalyptus camaldulensis population in the Hunter catchment	E2		P
Flora	<i>Eucalyptus cannonii</i>	Capertee Stringybark	V		8
Flora	<i>Eucalyptus robertsonii</i> subsp. <i>hemisphaerica</i>	Robertson's Peppermint	V	V	P
Flora	<i>Euphrasia arguta</i>		E4A	CE	1
Flora	<i>Euphrasia collina</i> subsp. <i>muelleri</i>	Mueller's Eyebright	E1	E	P
Flora	<i>Grevillea wilkinsonii</i>	Tumut Grevillea	E4A	E	17
Flora	<i>Homoranthus darwinioides</i>	Fairy Bells	V	V	161
Flora	<i>Homoranthus prolixus</i>	Granite Homoranthus	V	V	1
Flora	<i>Indigofera efoliata</i>	Leafless Indigo	E1,3	E	6
Flora	<i>Lepidium aschersonii</i>	Spiny Peppercross	V	V	3
Flora	<i>Lepidium monoplacoides</i>	Winged Peppercross	E1	E	P
Flora	<i>Leucochrysum albicans</i> var. <i>tricolor</i>	Hoary Sunray		E	33
Flora	<i>Monotaxis macrophylla</i>	Large-leafed Monotaxis	E1		2
Flora	<i>Muehlenbeckia</i> sp. <i>Mt Norman</i>	Scrambling Lignum	V		1
Flora	<i>Persoonia marginata</i>	Clandulla Geebung	V,P	V	P
Flora	<i>Pilularia novae-hollandiae</i>	Austral Pillwort	E1,3		5
Flora	<i>Pimelea bracteata</i>		E4A		1
Flora	<i>Polygala linariifolia</i>	Native Milkwort	E1		14
Flora	<i>Pomaderris cotoneaster</i>	Cotoneaster Pomaderris	E1	E	P

Clade	Scientific Name	Common Name	*NSW status	+Comm. status	'Records
Flora	<i>Pomaderris queenslandica</i>	Scant Pomaderris	E1		44
Flora	<i>Prasophyllum sp. Wybong</i>		P	CE	P
Flora	<i>Pultenaea humilis</i>	Dwarf Bush-pea	V		8
Flora	<i>Senecio garlandii</i>	Woolly Ragwort	V		72
Flora	<i>Swainsona murrayana</i>	Slender Darling Pea	V	V	5
Flora	<i>Swainsona plagiotropis</i>	Red Darling Pea	V	V	4
Flora	<i>Swainsona recta</i>	Small Purple-pea	E1	E	736
Flora	<i>Swainsona sericea</i>	Silky Swainson-pea	V		233
Flora	<i>Thesium australe</i>	Austral Toadflax	V	V	2
Flora	<i>Tylophora linearis</i>		V	E	199
Flora	<i>Zieria ingramii</i>	Keith's Zieria	E1	E	312
Flora	<i>Zieria obcordata</i>	Granite Zieria	E1	E	26

BioNET Atlas search – threatened ecological communities predicted to occur within the Pilliga subregion of the Brigalow Belt South bioregion and the Bogan-Macquarie subregion of the Darling Riverine Plains bioregion

*NSW Status: E3=Endangered Ecological Community, E4B= Critically Endangered Ecological Community

+Comm. Status: CE=Critically Endangered, E=Endangered.

'Records: K = known, P= predicted.

TEC	*NSW status	+Comm. status	'Records
Alpine Sphagnum Bogs and Associated Fens		E	K
Artesian Springs Ecological Community in the Great Artesian Basin	E4B		K
Brigalow within the Brigalow Belt South, Nandewar and Darling Riverine Plains Bioregions	E3		K
Brigalow-Gidgee woodland/shrubland in the Mulga Lands and Darling Riverine Plains Bioregions	E3		P
Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions		E	K
Carex Sedgeland of the New England Tableland, Nandewar, Brigalow Belt South and NSW North Coast Bioregions	E3		K
Central Hunter Valley eucalypt forest and woodland		CE	K
Coolac-Tumut Serpentine Shrubby Woodland in the NSW South Western Slopes and South Eastern Highlands Bioregions	E3		K
Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions		E	K
Coolibah-Black Box Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Penepplain and Mulga Lands Bioregions	E3		K
Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions	E3		K
Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia		E	K
Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Penepplain, Nandewar and Brigalow Belt South Bioregions	E3		K
Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Penepplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	E3		K
Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland		CE	K
Pilliga Outwash Ephemeral Wetlands in the Brigalow Belt South Bioregion	E3		K
Poplar Box Grassy Woodland on Alluvial Plains		E	K
The community of native species dependent on natural discharge of groundwater from the Great Artesian Basin		E	K
Upland Basalt Eucalypt Forests of the Sydney Basin Bioregion		E	K
Weeping Myall Woodlands		E	K
White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and	E4B		K
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland		CE	K

BioNET Atlas search – key threatening processes (KTPs) predicted to occur within the within the Pilliga subregion of the Brigalow Belt South bioregion and the Bogan-Macquarie subregion of the Darling Riverine Plains bioregion



Common Name	NSW status	Comm status	Records
Aggressive exclusion of birds from woodland and forest habitat by abundant Noisy Miners, <i>Manorina melanocephala</i> (Latham, 1802)	KTP	KTP	P
Alteration of habitat following subsidence due to longwall mining	KTP		P
Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands	KTP		P
Anthropogenic Climate Change	KTP	KTP	P
Bushrock removal	KTP		P
Clearing of native vegetation	KTP	KTP	P
Competition and grazing by the feral European Rabbit, <i>Oryctolagus cuniculus</i> (L.)	KTP	KTP	P
Competition and habitat degradation by Feral Goats, <i>Capra hircus</i> Linnaeus 1758	KTP	KTP	P
Competition from feral honey bees, <i>Apis mellifera</i> L.	KTP		P
Forest eucalypt dieback associated with over-abundant psyllids and Bell Miners	KTP		P
Habitat degradation and loss by Feral Horses (brumbies, wild horses), <i>Equus caballus</i> Linnaeus 1758	KTP		P
Herbivory and environmental degradation caused by feral deer	KTP		P
High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition	KTP		P
Importation of Red Imported Fire Ants <i>Solenopsis invicta</i> Buren 1972	KTP	KTP	P
Infection by Psittacine Circoviral (beak and feather) Disease affecting endangered psittacine species and populations	KTP	KTP	P
Infection of frogs by amphibian chytrid causing the disease chytridiomycosis	KTP	KTP	P
Infection of native plants by <i>Phytophthora cinnamomi</i>	KTP	KTP	P
Introduction of the Large Earth Bumblebee <i>Bombus terrestris</i> (L.)	KTP		P
Invasion and establishment of exotic vines and scramblers	KTP		P
Invasion and establishment of Scotch Broom (<i>Cytisus scoparius</i>)	KTP		P
Invasion and establishment of the Cane Toad (<i>Bufo marinus</i>)	KTP	KTP	P
Invasion of native plant communities by African Olive <i>Olea europaea</i> subsp. <i>cuspidata</i> (Wall. ex G. Don) Cif.	KTP		P
Invasion of native plant communities by <i>Chrysanthemoides monilifera</i>	KTP		P
Invasion of native plant communities by exotic perennial grasses	KTP		P
Invasion of the Yellow Crazy Ant, <i>Anoplolepis gracilipes</i> (Fr. Smith) into NSW	KTP		P
Invasion, establishment and spread of Lantana (<i>Lantana camara</i> L. sens. Lat)	KTP		P
Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants	KTP	KTP	P
Loss of Hollow-bearing Trees	KTP		P
Loss or degradation (or both) of sites used for hill-topping by butterflies	KTP		P
Predation and hybridisation by Feral Dogs, <i>Canis lupus familiaris</i>	KTP		P
Predation by <i>Gambusia holbrooki</i> Girard, 1859 (Plague Minnow or Mosquito Fish)	KTP		P
Predation by the European Red Fox <i>Vulpes vulpes</i> (Linnaeus, 1758)	KTP	KTP	P

Common Name	NSW status	Comm status	Records
Predation by the Feral Cat <i>Felis catus</i> (Linnaeus, 1758)	KTP	KTP	P
Predation, habitat degradation, competition and disease transmission by Feral Pigs, <i>Sus scrofa</i> Linnaeus 1758	KTP	KTP	P
Removal of dead wood and dead trees	KTP		P

Appendix B: Vegetation plot locations



Plot Name	PCT	Condition	Easting (Zone 55)	Northing (Zone 55)	Photographs
BU01	202	Good	627343	6449227	 The 'Photographs' column contains two side-by-side photographs of a wooded area. The left photograph shows a dense stand of trees with green foliage and a grassy undergrowth. The right photograph shows a similar scene, but with a prominent white vertical marker or stake in the foreground, likely used for field identification or measurement.

BU02	202	Good	627570	6449208		
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<p>BU03</p>	<p>202</p>	<p>Good</p>	<p>627521</p>	<p>6449093</p>		
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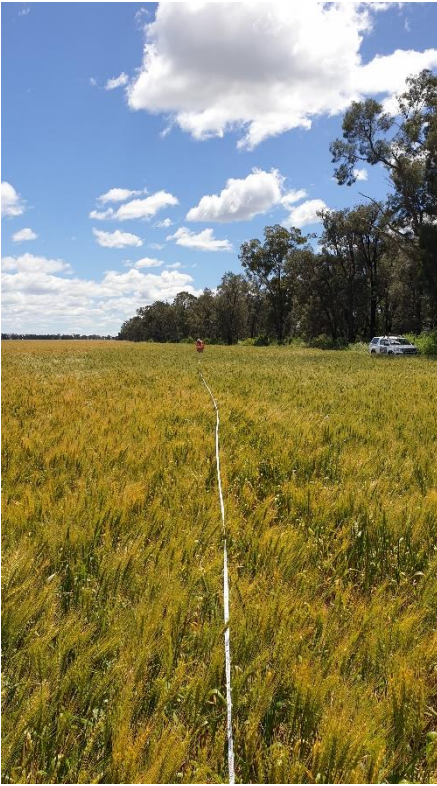
<p>BU04</p>	<p>55</p>	<p>Planted</p>	<p>627405</p>	<p>6449769</p>		
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BU05	88	Good	627757	6448252		
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<p>BU06</p>	<p>55</p>	<p>Good</p>	<p>628394</p>	<p>6451203</p>		
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BU07	55	Derived	626851	6451271		
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BU08	55	Moderate	626763	6450803		
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<p>BU09</p>	<p>0</p>	<p>Non-native</p>	<p>628197</p>	<p>6449885</p>		
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BU10	88	Good	626680	6450282		
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BU11	55	Good	626258	6448495		
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BU12	0	Non-native	626259	6448537		
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BU13	82	Moderate	626610	6449850		
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Appendix C: Field survey results

BAM Data Sheets

BAM Plot - Field Survey Sheet

Date	27/10/2022	Survey Name	Burroway Solar Power Station			
Recorders	David Orchard (DO), Lucca Brozler (LB)		Plot ID #	BU01	Zone ID	202_Good
Photo #			Plot dimensions	20 x 50 m		
Datum	GDA94	Zone	55	Plot bearing along midline	188	
Easting	627343	Northing	6449227	Record magnetic bearing along midline from 0 m point		

Record easting, northing at plot marker (0 m point), Photos taken vertically and horizontally at 0m point and 50 m point, looking into plot

IBRA region	Brigalow Belt South		
Subregion	Pilliga		
Likely Vegetation Class	Western Slopes Grassy Woodlands		
Plant Community Type	202	Condition state	Good

Floristics plot is centred on the midline, at 0 m point, 10 m either side

Function plot is an extension of floristics plot out to 50 m along midline (or equiv. area)

BAM Composition / Structure plot (400m²)		
Dimensions (circle applicable size)		
20 x 20 m	10 x 40 m	Sum values*
Native Richness (count of native species)	Trees	5
	Shrubs	4
	Grasses etc	5
	Forbs	9
	Ferns	0
Cover (sum of cover of natives species)	Trees	28.2
	Shrubs	15.3
	Grasses etc	55.2
	Forbs	25.7
	Ferns	0
	Other	0.2
High threat weed cover		0

*These values summarise the floristic data for input into BAM calculator

BAM Function plot (1000m²)		
Dimensions (circle applicable size)		
20 x 50 m	10 x 100 m	
Tree stem DBH (cm) Notes on function attributes:		
>80	0	Stem size class records # large trees (cf. benchmark)
50 - 79	0	Record stems for living trees only, and for all species
30 - 49	+	For multistemmed trees, record only the largest stem
20 - 29	+	Presence of <5cm stems records regeneration
10 - 19	+	Record # trees with hollows, not number of hollows
5 - 9	+	Count as one stem where tree is multistemmed
< 5	+	Hollow bearing stem may be a dead stem (incl. stag)
# Trees with hollows	<20cm	0
	>20cm**	0
Length of logs		Total (m)
		52

Measure length of logs >10cm, fully or partly in contact with the ground, and within the plot.

**Hollows of >20cm are recorded for habitat for some threatened species

BAM Litter/ Groundcover (1 x 1 m plots)							
Litter cover is used for BAM, other attributes are useful for recording site condition in general							
		1	2	3	4	5	Average
Sub-plot score (% cover)	Litter	80	70	90	90	60	78
	Bare ground						
	Cryptogam						
	Rock						

Litter / groundcover plots are located at 5, 15, 25, 35, 45 m (alternating sides) along the midline of Function plot

Other plot information (not essential for BAM)

Disturbance	Severity	Timing	Landform
Clearing (incl. logging)			Microrelief
Cultivation			Slope
Grazing (native / stock)			Aspect
Soil erosion			Soil surface texture
Firewood removal			Soil colour
Fire (ground stratum, mid, canopy burnt?)			Site drainage
Storm damage			Distance to nearest water
Weediness			Distance to nearest rock outcrop /cave

Severity code: 0=no evidence, 1=slight, 2=moderate, 3= severe

Timing code: R = recent (<3y), NR = not recent, O = old/historic

Notes

BAM Plot - Field Survey Sheet

Date	27/10/2022	Survey Name	Burroway Solar Power Station
Recorders	David Orchard (DO), Lucca Brozler (LB)	Plot ID #	BU02
Photo #		Zone ID	202_Good
Datum	GDA94	Plot dimensions	20 x 50 m
Easting	627570	Zone	55
Northing	6449208	Plot bearing along midline	224

Record easting, northing at plot marker (0 m point), Photos taken vertically and horizontally at 0m point and 50 m point, looking into plot

IBRA region	Brigalow Belt South
Subregion	Pilliga
Likely Vegetation Class	Western Slopes Grassy Woodlands
Plant Community Type	202
Condition state	Good

Floristics plot is centred on the midline, at 0 m point, 10 m either side

Function plot is an extension of floristics plot out to 50 m along midline (or equiv. area)

BAM Composition / Structure plot (400m²)

Dimensions (circle applicable size)		
20 x 20 m	10 x 40 m	Sum values*
Native Richness (count of native species)	Trees	4
	Shrubs	5
	Grasses etc	7
	Forbs	8
	Ferns	0
Cover (sum of cover of natives species)	Trees	27.1
	Shrubs	2.8
	Grasses etc	51.3
	Forbs	3.6
	Ferns	0
Other	0	
High threat weed cover	0	

*These values summarise the floristic data for input into BAM calculator

BAM Function plot (1000m²)

Dimensions (circle applicable size)		
20 x 50 m	10 x 100 m	
Tree stem DBH (cm)		
>80	0	Notes on function attributes: Stem size class records # large trees (cf. benchmark)
50 - 79	0	Record stems for living trees only, and for all species
30 - 49	+	For multistemmed trees, record only the largest stem
20 - 29	+	Presence of <5cm stems records regeneration
10 - 19	+	Record # trees with hollows, not number of hollows
5 - 9	+	Count as one stem where tree is multistemmed
< 5	+	Hollow bearing stem may be a dead stem (incl. stag)
# Trees with hollows	<20cm	0
	>20cm**	0
Length of logs		Total (m)
		225

Measure length of logs >10cm, fully or partly in contact with the ground, and within the plot.

**Hollows of >20cm are recorded for habitat for some threatened species

BAM Litter/ Groundcover (1 x 1 m plots)

Litter cover is used for BAM, other attributes are useful for recording site condition in general

Sub-plot score (% cover)	Litter	70	70	100	60	60	Average	72
	Bare ground							
	Cryptogam							
	Rock							

Litter / groundcover plots are located at 5, 15, 25, 35, 45 m (alternating sides) along the midline of Function plot

Other plot information (not essential for BAM)

Disturbance	Severity	Timing	Landform
Clearing (incl. logging)			Microrelief
Cultivation			Slope
Grazing (native / stock)			Aspect
Soil erosion			Soil surface texture
Firewood removal			Soil colour
Fire (ground stratum, mid, canopy burnt?)			Site drainage
Storm damage			Distance to nearest water
Weediness			Distance to nearest rock outcrop /cave

Severity code: 0=no evidence, 1=slight, 2=moderate, 3= severe

Timing code: R = recent (<3y), NR = not recent, O = old/historic

Notes

BAM Plot - Field Survey Sheet

Page 1 of (2)

Date	27/10/2022	Survey Name	Burroway Solar Power Station			
Recorders	David Orchard (DO), Lucca Brozler (LB)		Plot ID #	BU03	Zone ID	202_Good
Photo #			Plot dimensions	20 x 50 m		
Datum	GDA94	Zone	55	Plot bearing along midline	108	
Easting	627521	Northing	6449093	Record magnetic bearing along midline from 0 m point		

Record easting, northing at plot marker (0 m point), Photos taken vertically and horizontally at 0m point and 50 m point, looking into plot

IBRA region	Brigalow Belt South		
Subregion	Pilliga		
Likely Vegetation Class	Western Slopes Grassy Woodlands		
Plant Community Type	202	Condition state	Good

Floristics plot is centred on the midline, at 0 m point, 10 m either side

Function plot is an extension of floristics plot out to 50 m along midline (or equiv. area)

BAM Composition / Structure plot (400m ²)		
Dimensions (circle applicable size)		
20 x 20 m	10 x 40 m	Sum values*
Native Richness (count of native species)	Trees	3
	Shrubs	8
	Grasses etc	7
	Forbs	11
	Ferns	0
Cover (sum of cover of natives species)	Other	0
	Trees	12
	Shrubs	4.8
	Grasses etc	28.3
	Forbs	15.9
	Ferns	0
	Other	0
High threat weed cover	0	

*These values summarise the floristic data for input into BAM calculator

BAM Function plot (1000m ²)		
Dimensions (circle applicable size)		
20 x 50 m	10 x 100 m	
Tree stem DBH (cm)	Notes on function attributes:	
>80	0	Stem size class records # large trees (cf. benchmark)
50 - 79	0	Record stems for living trees only, and for all species
30 - 49	+	For multistemmed trees, record only the largest stem
20 - 29	+	Presence of <5cm stems records regeneration
10 - 19	+	Record # trees with hollows, not number of hollows
5 - 9	+	Count as one stem where tree is multistemmed
< 5	+	Hollow bearing stem may be a dead stem (incl. stag)
# Trees with hollows	<20cm 0	Total #
	>20cm** 0	0
Length of logs	Total (m)	
	167	

Measure length of logs >10cm, fully or partly in contact with the ground, and within the plot.

**Hollows of >20cm are recorded for habitat for some threatened species

BAM Litter/ Groundcover (1 x 1 m plots)							
Litter cover is used for BAM, other attributes are useful for recording site condition in general							
		1	2	3	4	5	Average
Sub-plot score (% cover)	Litter	90	70	80	90	80	82
	Bare ground						
	Cryptogam						
	Rock						

Litter / groundcover plots are located at 5, 15, 25, 35, 45 m (alternating sides) along the midline of Function plot

Other plot information (not essential for BAM)

Disturbance	Severity	Timing	Landform
Clearing (incl. logging)			Microrelief
Cultivation			Slope
Grazing (native / stock)			Aspect
Soil erosion			Soil surface texture
Firewood removal			Soil colour
Fire (ground stratum, mid, canopy burnt?)			Site drainage
Storm damage			Distance to nearest water
Weediness			Distance to nearest rock outcrop /cave

Severity code: 0=no evidence, 1=slight, 2=moderate, 3= severe

Timing code: R = recent (<3y), NR = not recent, O = old/historic

Notes

BAM Plot - Field Survey Sheet

Date	27/10/2022	Survey Name	Burroway Solar Power Station
Recorders	David Orchard (DO), Lucca Brozler (LB)	Plot ID #	BU04
Photo #		Zone ID	55_Planted
Datum	GDA94	Plot dimensions	20 x 50 m
Easting	627349	Plot bearing along midline	276
Northing	6449769	Record magnetic bearing along midline from 0m point	

Record easting, northing at plot marker (0 m point), Photos taken vertically and horizontally at 0m point and 50 m point, looking into plot

IBRA region	Brigalow Belt South
Subregion	Pilliga
Likely Vegetation Class	North-west Floodplain Woodlands
Plant Community Type	55
Condition state	Planted

Floristics plot is centred on the midline, at 0 m point, 10 m either side

Function plot is an extension of floristics plot out to 50 m along midline (or equiv. area)

BAM Composition / Structure plot (400m ²)		
Dimensions (circle applicable size)		
20 x 20 m	10 x 40 m	Sum values*
Native Richness (count of native species)	Trees	5
	Shrubs	7
	Grasses etc	6
	Forbs	7
	Ferns	0
Cover (sum of cover of natives species)	Other	0
	Trees	40.1
	Shrubs	2.8
	Grasses etc	16.4
	Forbs	1.6
	Ferns	0
	Other	0
High threat weed cover		0.3

*These values summarise the floristic data for input into BAM calculator

BAM Function plot (1000m ²)		
Dimensions (circle applicable size)		
20 x 50 m	10 x 100 m	
Tree stem DBH (cm)		
>80	0	Notes on function attributes: Stem size class records # large trees (cf. benchmark) Record stems for living trees only, and for all species For multistemmed trees, record only the largest stem Presence of <5cm stems records regeneration Record # trees with hollows, not number of hollows Count as one stem where tree is multistemmed Hollow bearing stem may be a dead stem (incl. stag)
50 - 79	1	
30 - 49	10	
20 - 29	+	
10 - 19	+	
5 - 9	-	
< 5	+	
# Trees with hollows	<20cm	0
	>20cm**	0
Total #		0
Length of logs		Total (m)
		52.9

Measure length of logs >10cm, fully or partly in contact with the ground, and within the plot.

**Hollows of >20cm are recorded for habitat for some threatened species

BAM Litter/ Groundcover (1 x 1 m plots)							
Litter cover is used for BAM, other attributes are useful for recording site condition in general							
		1	2	3	4	5	Average
Sub-plot score (% cover)	Litter	30	70	30	15	25	34
	Bare ground						
	Cryptogam						
	Rock						

Litter / groundcover plots are located at 5, 15, 25, 35, 45 m (alternating sides) along the midline of Function plot

Other plot information (not essential for BAM)

Disturbance	Severity	Timing	Landform
Clearing (incl. logging)			Microrelief
Cultivation			Slope
Grazing (native / stock)			Aspect
Soil erosion			Soil surface texture
Firewood removal			Soil colour
Fire (ground stratum, mid, canopy burnt?)			Site drainage
Storm damage			Distance to nearest water
Weediness			Distance to nearest rock outcrop /cave

Severity code: 0=no evidence, 1=slight, 2=moderate, 3= severe

Timing code: R = recent (<3y), NR = not recent, O = old/historic

Notes

BAM Plot - Field Survey Sheet

Page 1 of (2)

Date	27/10/2022	Survey Name	Burroway Solar Power Station			
Recorders	David Orchard (DO), Lucca Brozler (LB)		Plot ID #	BU05	Zone ID	88_Good
Photo #			Plot dimensions	20 x 50 m		
Datum	GDA94	Zone	55	Plot bearing along midline	276	
Easting	627757	Northing	6448252	Record magnetic bearing along midline from 0 m point		

Record easting, northing at plot marker (0 m point). Photos taken vertically and horizontally at 0m point and 50 m point, looking into plot

IBRA region	Brigalow Belt South		
Subregion	Pilliga		
Likely Vegetation Class	Pilliga Outwash Dry Sclerophyll Forests		
Plant Community Type	88	Condition state	Good

Floristics plot is centred on the midline, at 0 m point, 10 m either side

Function plot is an extension of floristics plot out to 50 m along midline (or equiv. area)

BAM Composition / Structure plot (400m²)		
Dimensions (circle applicable size)		
20 x 20 m	10 x 40 m	Sum values*
Native Richness (count of native species)	Trees	2
	Shrubs	11
	Grasses etc	5
	Forbs	11
	Ferns	0
	Other	1
Cover (sum of cover of natives species)	Trees	36
	Shrubs	53.3
	Grasses etc	30.1
	Forbs	7.1
	Other	0.1
High threat weed cover	5	

*These values summarise the floristic data for input into BAM calculator

BAM Function plot (1000m²)		
Dimensions (circle applicable size)		
20 x 50 m	10 x 100 m	
Tree stem DBH (cm) Notes on function attributes:		
>80	0	Stem size class records # large trees (cf. benchmark)
50 - 79	2	Record stems for living trees only, and for all species
30 - 49	+	For multistemmed trees, record only the largest stem
20 - 29	+	Presence of <5cm stems records regeneration
10 - 19	-	Record # trees with hollows, not number of hollows
5 - 9	-	Count as one stem where tree is multistemmed
< 5	+	Hollow bearing stem may be a dead stem (incl. stag)
# Trees with hollows	<20cm	Total #
	>20cm**	6
Length of logs		Total (m)
		19.6

Measure length of logs >10cm, fully or partly in contact with the ground, and within the plot.
**Hollows of >20cm are recorded for habitat for some threatened species

BAM Litter/ Groundcover (1 x 1 m plots)							
Litter cover is used for BAM, other attributes are useful for recording site condition in general							
		1	2	3	4	5	Average
Sub-plot score (% cover)	Litter	80	70	90	90	60	78
	Bare ground						
	Cryptogam						
	Rock						

Litter / groundcover plots are located at 5, 15, 25, 35, 45 m (alternating sides) along the midline of Function plot

Other plot information (not essential for BAM)

Disturbance	Severity	Timing	Landform
Clearing (incl. logging)			Microrelief
Cultivation			Slope
Grazing (native / stock)			Aspect
Soil erosion			Soil surface texture
Firewood removal			Soil colour
Fire (ground stratum, mid, canopy burnt?)			Site drainage
Storm damage			Distance to nearest water
Weediness			Distance to nearest rock outcrop /cave

Severity code: 0=no evidence, 1=slight, 2=moderate, 3= severe
Timing code: R = recent (<3y), NR = not recent, O = old/historic

Notes

BAM Plot - Field Survey Sheet

Page 1 of (3)

Date	27/10/2022	Survey Name	Burroway Solar Power Station			
Recorders	David Orchard (DO), Lucca Brozler (LB)		Plot ID #	BU06	Zone ID	55_Good
Photo #			Plot dimensions	20 x 50 m		
Datum	GDA94	Zone	55	Plot bearing along midline	290	
Easting	628394	Northing	6451203	Record magnetic bearing along midline from 0 m point		

Record easting, northing at plot marker (0 m point). Photos taken vertically and horizontally at 0m point and 50 m point, looking into plot

IBRA region	Brigalow Belt South				
Subregion	Pilliga				
Likely Vegetation Class	North-west Floodplain Woodlands				
Plant Community Type	55	Condition state	Good		

Floristics plot is centred on the midline, at 0 m point, 10 m either side

Function plot is an extension of floristics plot out to 50 m along midline (or equiv. area)

BAM Composition / Structure plot (400m ²)		
Dimensions (circle applicable size)		
20 x 20 m	10 x 40 m	Sum values*
Native Richness (count of native species)	Trees	3
	Shrubs	7
	Grasses etc	7
	Forbs	14
	Ferns	0
Cover (sum of cover of natives species)	Trees	40.5
	Shrubs	33.3
	Grasses etc	55.4
	Forbs	7.2
	Ferns	0
Other	0.3	
High threat weed cover	5.1	

*These values summarise the floristic data for input into BAM calculator

BAM Function plot (1000m ²)		
Dimensions (circle applicable size)		
20 x 50 m	10 x 100 m	
Tree stem DBH (cm)		Notes on function attributes:
>80	0	Stem size class records # large trees (cf. benchmark)
50 - 79	1	Record stems for living trees only, and for all species
30 - 49	7	For multistemmed trees, record only the largest stem
20 - 29	+	Presence of <5cm stems records regeneration
10 - 19	-	Record # trees with hollows, not number of hollows
5 - 9	-	Count as one stem where tree is multistemmed
< 5	+	Hollow bearing stem may be a dead stem (incl. stag)
# Trees with hollows	<20cm	Total #
	>20cm**	3
Length of logs	Total (m)	
	124.2	

Measure length of logs >10cm, fully or partly in contact with the ground, and within the plot.

**Hollows of >20cm are recorded for habitat for some threatened species

BAM Litter/ Groundcover (1 x 1 m plots)							
Litter cover is used for BAM, other attributes are useful for recording site condition in general							
		1	2	3	4	5	Average
Sub-plot score (% cover)	Litter	50	30	60	70	60	54
	Bare ground						
	Cryptogam						
	Rock						

Litter / groundcover plots are located at 5, 15, 25, 35, 45 m (alternating sides) along the midline of Function plot

Other plot information (not essential for BAM)

Disturbance	Severity	Timing	Landform
Clearing (incl. logging)			Microrelief
Cultivation			Slope
Grazing (native / stock)			Aspect
Soil erosion			Soil surface texture
Firewood removal			Soil colour
Fire (ground stratum, mid, canopy burnt?)			Site drainage
Storm damage			Distance to nearest water
Weediness			Distance to nearest rock outcrop /cave

Severity code: 0=no evidence, 1=slight, 2=moderate, 3= severe

Timing code: R = recent (<3y), NR = not recent, O = old/historic

Notes

BAM Plot - Field Survey Sheet

Page 2 of (3)

Date	27/10/2022	Survey Name	Burroway Solar Power Station			
Recorders	David Orchard (DO), Lucca Brozler (LB)		Plot ID #	BU06	Zone ID	55_Good
GF code	Genus species	(tick if photographed or sample taken)	Cover %	Abund (count)	N, E, HTE	Stratum
TG	<i>Casuarina cristata</i>		35		N	
TG	<i>Eucalyptus pilligaensis</i>		5		N	
SG	<i>Eremophila mitchellii</i>		10		N	
TG	<i>Alectryon oleifolius</i>		0.5	1	N	
SG	<i>Geijera parviflora</i>		15		N	
NN	<i>Lycium ferocissimum</i>		5		HTE	
GG	<i>Austrostipa blackii</i>		30		N	
GG	<i>Austrostipa verticillata</i>		20		N	
FG	<i>Verbena gaudichaudii</i>		0.1	10	N	
FG	<i>Abutilon fraseri</i>		2		N	
FG	<i>Sida corrugata</i>		0.1	10	N	
GG	<i>Enteropogon acicularis</i>		0.1	10	N	
GG	<i>Rytidosperma caespitosum</i>		5		N	
FG	<i>Parietaria debilis</i>		2		N	
NN	<i>Lolium rigidum</i>		20		E	
NN	<i>Sonchus oleraceus</i>		1		E	
NN	<i>Medicago polymorpha</i>		2		E	
FG	<i>Dichondra repens</i>		1		N	
SG	<i>Rhagodia spinescens</i>		5		N	
FG	<i>Oxalis perennans</i>		0.1	20	N	
FG	<i>Calotis lappulacea</i>		0.1	20	N	
NN	<i>Conyza bonariensis</i>		0.1	10	E	
FG	<i>Bulbine semibarbata</i>		0.1	20	N	
SG	<i>Maireana microphylla</i>		0.2	2	N	
SG	<i>Sclerolaena muricata</i>		2		N	
FG	<i>Einadia polygonoides</i>		0.2	50	N	
FG	<i>Sida trichopoda</i>		0.2	40	N	
SG	<i>Atriplex leptocarpa</i>		0.1	2	N	
NN	<i>Sisymbrium orientale</i>		0.1	7	E	
OG	<i>Convolvulus angustissimus</i>		0.1	1	N	
NN	<i>Lactuca saligna</i>		0.1	1	E	
NN	<i>Hypochoeris radicata</i>		2		E	
FG	<i>Wahlenbergia communis</i>		0.1	10	N	
FG	<i>Oxytes brachypoda</i>		0.1	1	N	
NN	<i>Carthamus lanatus</i>		0.1	1	HTE	
NN	<i>Sisymbrium erysimoides</i>		0.1	20	E	
FG	<i>Einadia trigonos</i>		1		N	
SG	<i>Sclerolaena diacantha</i>		1		N	
NN	<i>Cirsium vulgare</i>		0.1	2	E	
FG	<i>Brunoniella australis</i>		0.1	5	N	
NN	<i>Sonchus asper</i>		0.1	10	E	

Growth Form (see BAM Appendix 4) - Tree (TG), Shrub (SG), Grass & grasslike (GG), Forb (FG), Fern (EG), Other (OG)
Cover: 0.1, 0.2, 0.3, ... 1, 2, 3, ... 10, 15, 20, 25, ... 100% (incl. leaf, branch, stem cover per species).
Abundance for each species with ≤5% cover: 1, 2, 3, 4, ... 10, 20, 30, ... 100, 500, 1000, 1500, 2000 stems
N=native, E=exotic, HTE=high threat exotic
 All species in a plot must be recorded. If you can only ID to genus, separate different species by unique identifier e.g. *Genus* sp1, *Genus* sp2 etc
 Identify top 3 dominants in each stratum (use own stratum definitions) Cover area examples: 0.1% = 63x63cm, 0.5% = 1.4x1.4m, 1% = 2x2 m, 5%=4x5m, 25%=10x10m

KH - Version 1.1 - Date 1/12/2017

BAM Plot - Field Survey Sheet

Date	28/10/2022	Survey Name	Burroway Solar Power Station			
Recorders	David Orchard (DO), Lucca Brozler (LB)		Plot ID #	BU07	Zone ID	55_Derived
Photo #			Plot dimensions	20 x 50 m		
Datum	GDA94	Zone	55	Plot bearing along midline	196	
Easting	626851	Northing	6451271	Record magnetic bearing along midline from 0 m point		

Record easting, northing at plot marker (0 m point), Photos taken vertically and horizontally at 0m point and 50 m point, looking into plot

IBRA region	Brigalow Belt South		
Subregion	Pilliga		
Likely Vegetation Class	North-west Floodplain Woodlands		
Plant Community Type	55	Condition state	Derived

Floristics plot is centred on the midline, at 0 m point, 10 m either side

Function plot is an extension of floristics plot out to 50 m along midline (or equiv. area)

BAM Composition / Structure plot (400m²)		
Dimensions (circle applicable size)		
20 x 20 m	10 x 40 m	Sum values*
Native Richness (count of native species)	Trees	1
	Shrubs	1
	Grasses etc	7
	Forbs	11
	Ferns	1
Cover (sum of cover of natives species)	Trees	5
	Shrubs	2
	Grasses etc	51.3
	Forbs	1.1
	Ferns	0.1
Other	0	
High threat weed cover		0.2

*These values summarise the floristic data for input into BAM calculator

BAM Function plot (1000m²)		
Dimensions (circle applicable size)		
20 x 50 m	10 x 100 m	
Tree stem DBH (cm) Notes on function attributes:		
>80	0	Stem size class records # large trees (cf. benchmark)
50 - 79	0	Record stems for living trees only, and for all species
30 - 49	1	For multistemmed trees, record only the largest stem
20 - 29	-	Presence of <5cm stems records regeneration
10 - 19	-	Record # trees with hollows, not number of hollows
5 - 9	-	Count as one stem where tree is multistemmed
< 5	+	Hollow bearing stem may be a dead stem (incl. stag)
# Trees with hollows	<20cm	Total #
	>20cm**	0
Length of logs		Total (m)
		0

Measure length of logs >10cm, fully or partly in contact with the ground, and within the plot.

**Hollows of >20cm are recorded for habitat for some threatened species

BAM Litter/ Groundcover (1 x 1 m plots)							
		1	2	3	4	5	Average
Sub-plot score (% cover)	Litter	30	5	2	5	5	9.4
	Bare ground						
	Cryptogam						
	Rock						

Litter / groundcover plots are located at 5, 15, 25, 35, 45 m (alternating sides) along the midline of Function plot

Other plot information (not essential for BAM)

Disturbance	Severity	Timing	Landform
Clearing (incl. logging)			Microrelief
Cultivation			Slope
Grazing (native / stock)			Aspect
Soil erosion			Soil surface texture
Firewood removal			Soil colour
Fire (ground stratum, mid, canopy burnt?)			Site drainage
Storm damage			Distance to nearest water
Weediness			Distance to nearest rock outcrop /cave

Severity code: 0=no evidence, 1=slight, 2=moderate, 3= severe

Timing code: R = recent (<3y), NR = not recent, O = old/historic

Notes

BAM Plot - Field Survey Sheet

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Date	28/10/2022	Survey Name	Burroway Solar Power Station			
Recorders	David Orchard (DO), Lucca Brozler (LB)		Plot ID #	BU07	Zone ID	55_Derived
GF code	Genus species	Cover %	Abund (count)	N, E, HTE	Stratum	
TG	<i>Casuarina cristata</i>	5		N		
FG	<i>Sonchus oleraceus</i>	1		E		
FG	<i>Goodenia pinnatifida</i>	0.1	20	N		
FG	<i>Lepidium bonariense</i>	0.2	100	E		
FG	<i>Lepidium africanum</i>	0.1	20	E		
GG	<i>Avena fatua</i>	10		E		
FG	<i>Crassula sieberiana</i>	0.1		N		
GG	<i>Lolium rigidum</i>	25		E		
FG	<i>Wahlenbergia communis</i>	0.1	100	N		
GG	<i>Chloris ventricosa</i>	30		N		
FG	<i>Lysimachia arvensis</i>	0.1	20	E		
FG	<i>Trifolium glomeratum</i>	1		E		
EG	<i>Cheilanthes sieberi</i>	0.1	3	N		
FG	<i>Leontodon rhagadioloides</i>	0.1	20	E		
FG	<i>Einadia polygonoides</i>	0.1	10	N		
FG	<i>Conyza bonariensis</i>	0.1	30	E		
GG	<i>Carex inversa</i>	1		N		
FG	<i>Oxalis perennans</i>	0.1	20	N		
FG	<i>Dichondra repens</i>	0.1	20	N		
FG	<i>Gamochaeta</i> sp.	0.1	7	E		
GG	<i>Enteropogon acicularis</i>	0.1	10	N		
GG	<i>Austrostipa blackii</i>	18		N		
SG	<i>Sclerolaena diacantha</i>	2		N		
FG	<i>Vittadinia cervicalis</i>	0.1	20	N		
FG	<i>Trifolium arvense</i>	1		E		
FG	<i>Velleia paradoxa</i>	0.1	7	N		
FG	<i>Trifolium angustifolium</i>	1		E		
FG	<i>Carthamus lanatus</i>	0.1	1	HTE		
FG	<i>Leiocarpa panaetioides</i>	0.1	10	N		
GG	<i>Rytidosperma caespitosum</i>	0.1	10	N		
GG	<i>Juncus subsecundus</i>	2		N		
FG	<i>Verbena gaudichaudii</i>	0.1	2	N		
FG	<i>Wahlenbergia gracilentia</i>	0.1	30	N		
FG	<i>Rumex crispus</i>	0.2	20	E		
GG	<i>Bromus diandrus</i>	0.1	20	HTE		
FG	<i>Cyclosporum leptophyllum</i>	0.1	1	E		
GG	<i>Dichanthium sericeum</i>	0.1	5	N		
GG	<i>Vulpia</i> sp.	0.1	10	E		
GG	<i>Bromus hordeaceus</i>	0.1	3	E		

Growth Form (see BAM Appendix 4) - Tree (TG), Shrub (SG), Grass & grasslike (GG), Forb (FG), Fern (EG), Other (OG)
Cover: 0.1, 0.2, 0.3, ... 1, 2, 3, ...10, 15, 20, 25, ...100% (incl. leaf, branch, stem cover per species).
Abundance for each species with ≤5% cover: 1, 2, 3, 4, ... 10, 20, 30, ... 100, 500, 1000, 1500, 2000 stems
N=native, E=exotic, HTE=high threat exotic
 All species in a plot must be recorded. If you can only ID to genus, separate different species by unique identifier e.g. *Genus* sp1, *Genus* sp2 etc
 Identify top 3 dominants in each stratum (use own stratum definitions) Cover area examples: 0.1% = 63x63cm, 0.5% = 1.4x1.4m, 1% = 2x2 m, 5% = 4x5m, 25% = 10x10m

KH - Version 1.1 - Date 1/12/2017

BAM Plot - Field Survey Sheet

Date	28/10/2022	Survey Name	Burroway Solar Power Station
Recorders	David Orchard (DO), Lucca Brozler (LB)	Plot ID #	BU08
Photo #		Zone ID	55_Moder.
Datum	GDA94	Plot dimensions	10 x 50 m
Easting	626763	Zone	55
Northing	6450803	Plot bearing along midline	190

Record easting, northing at plot marker (0 m point), Photos taken vertically and horizontally at 0m point and 50 m point, looking into plot

IBRA region	Brigalow Belt South
Subregion	Pilliga
Likely Vegetation Class	North-west Floodplain Woodlands
Plant Community Type	55
Condition state	Moderate

Floristics plot is centred on the midline, at 0 m point, 10 m either side

Function plot is an extension of floristics plot out to 50 m along midline (or equiv. area)

BAM Composition / Structure plot (400m²)

Dimensions (circle applicable size)		
10 x 40 m	10 x 40 m	Sum values*
Native Richness (count of native species)	Trees	1
	Shrubs	6
	Grasses etc	7
	Forbs	6
	Ferns	0
Cover (sum of cover of natives species)	Trees	50
	Shrubs	4.2
	Grasses etc	41.2
	Forbs	0.6
	Ferns	0
Other	0	
High threat weed cover		1

*These values summarise the floristic data for input into BAM calculator

BAM Function plot (1000m²)

Dimensions (circle applicable size)		
10 x 50 m	10 x 100 m	
Tree stem DBH (cm)		
>80	0	Notes on function attributes: Stem size class records # large trees (cf. benchmark)
50 - 79	1	Record stems for living trees only, and for all species
30 - 49	5	For multistemmed trees, record only the largest stem
20 - 29	+	Presence of <5cm stems records regeneration
10 - 19	-	Record # trees with hollows, not number of hollows
5 - 9	-	Count as one stem where tree is multistemmed
< 5	+	Hollow bearing stem may be a dead stem (incl. stag)
# Trees with hollows	<20cm	Total #
	>20cm**	0
Length of logs		Total (m)
		103.7

Measure length of logs >10cm, fully or partly in contact with the ground, and within the plot.

**Hollows of >20cm are recorded for habitat for some threatened species

BAM Litter/ Groundcover (1 x 1 m plots)

Litter cover is used for BAM, other attributes are useful for recording site condition in general

		1	2	3	4	5	Average
Sub-plot score (% cover)	Litter	100	100	5	20	100	65
	Bare ground						
	Cryptogam						
	Rock						

Litter / groundcover plots are located at 5, 15, 25, 35, 45 m (alternating sides) along the midline of Function plot

Other plot information (not essential for BAM)

Disturbance	Severity	Timing	Landform
Clearing (incl. logging)			Microrelief
Cultivation			Slope
Grazing (native / stock)			Aspect
Soil erosion			Soil surface texture
Firewood removal			Soil colour
Fire (ground stratum, mid, canopy burnt?)			Site drainage
Storm damage			Distance to nearest water
Weediness			Distance to nearest rock outcrop /cave

Severity code: 0=no evidence, 1=slight, 2=moderate, 3= severe

Timing code: R = recent (<3y), NR = not recent, O = old/historic

Notes

BAM Plot - Field Survey Sheet

Page 1 of (2)

Date	28/10/2022	Survey Name	Burroway Solar Power Station			
Recorders	David Orchard (DO), Lucca Brozler (LB)		Plot ID #	BU09	Zone ID	Non-native
Photo #			Plot dimensions	20 x 50 m		
Datum	GDA94	Zone	55	Plot bearing along midline	192	
Easting	628197	Northing	6449885	Record magnetic bearing along midline from 0 m point		

Record easting, northing at plot marker (0 m point), Photos taken vertically and horizontally at 0m point and 50 m point, looking into plot

IBRA region	Brigalow Belt South		
Subregion	Pilliga		
Likely Vegetation Class	Non-native		
Plant Community Type	0	Condition state	Non-native

Floristics plot is centred on the midline, at 0 m point, 10 m either side

Function plot is an extension of floristics plot out to 50 m along midline (or equiv. area)

BAM Composition / Structure plot (400m ²)		
Dimensions (circle applicable size)		
20 x 20 m	10 x 40 m	Sum values*
Native Richness (count of native species)	Trees	0
	Shrubs	0
	Grasses etc	0
	Forbs	2
	Ferns	0
Cover (sum of cover of natives species)	Other	0
	Trees	0
	Shrubs	0
	Grasses etc	0
	Forbs	0.2
	Ferns	0
	Other	0
High threat weed cover	0	

*These values summarise the floristic data for input into BAM calculator

BAM Function plot (1000m ²)		
Dimensions (circle applicable size)		
20 x 50 m	10 x 100 m	
Tree stem DBH (cm)	Notes on function attributes:	
>80	0	Stem size class records # large trees (cf. benchmark)
50 - 79	0	Record stems for living trees only, and for all species
30 - 49	-	For multistemmed trees, record only the largest stem
20 - 29	-	Presence of <5cm stems records regeneration
10 - 19	-	Record # trees with hollows, not number of hollows
5 - 9	-	Count as one stem where tree is multistemmed
< 5	-	Hollow bearing stem may be a dead stem (incl. stag)
# Trees with hollows	<20cm	Total #
	>20cm**	0
Length of logs	Total (m)	
	0	

Measure length of logs >10cm, fully or partly in contact with the ground, and within the plot.

**Hollows of >20cm are recorded for habitat for some threatened species

BAM Litter/ Groundcover (1 x 1 m plots)							
Litter cover is used for BAM, other attributes are useful for recording site condition in general							
		1	2	3	4	5	Average
Sub-plot score (% cover)	Litter	1	1	2	1	5	2
	Bare ground						
	Cryptogam						
	Rock						

Litter / groundcover plots are located at 5, 15, 25, 35, 45 m (alternating sides) along the midline of Function plot

Other plot information (not essential for BAM)

Disturbance	Severity	Timing	Landform
Clearing (incl. logging)			Microrelief
Cultivation			Slope
Grazing (native / stock)			Aspect
Soil erosion			Soil surface texture
Firewood removal			Soil colour
Fire (ground stratum, mid, canopy burnt?)			Site drainage
Storm damage			Distance to nearest water
Weediness			Distance to nearest rock outcrop /cave

Severity code: 0=no evidence, 1=slight, 2=moderate, 3= severe

Timing code: R = recent (<3y), NR = not recent, O = old/historic

Notes

BAM Plot - Field Survey Sheet

Date	28/10/2022	Survey Name	Burroway Solar Power Station
Recorders	David Orchard (DO), Lucca Brozler (LB)	Plot ID #	BU10
Photo #		Zone ID	88_Good
Datum	GDA94	Plot dimensions	10 x 50 m
Easting	626680	Plot bearing along midline	191
Northing	6450282	Record magnetic bearing along midline from 0m point	

Record easting, northing at plot marker (0 m point), Photos taken vertically and horizontally at 0m point and 50 m point, looking into plot

IBRA region	Brigalow Belt South
Subregion	Pilliga
Likely Vegetation Class	Pilliga Outwash Dry Sclerophyll Forests
Plant Community Type	88
Condition state	Good

Floristics plot is centred on the midline, at 0 m point, 10 m either side

Function plot is an extension of floristics plot out to 50 m along midline (or equiv. area)

BAM Composition / Structure plot (400m ²)		
Dimensions (circle applicable size)		
10 x 40 m	10 x 40 m	Sum values*
Native Richness (count of native species)	Trees	1
	Shrubs	5
	Grasses etc	14
	Forbs	18
	Ferns	0
Cover (sum of cover of natives species)	Other	2
	Trees	35
	Shrubs	35.8
	Grasses etc	47.7
	Forbs	2
	Ferns	0
	Other	1.1
High threat weed cover		1.1

*These values summarise the floristic data for input into BAM calculator

BAM Function plot (1000m ²)		
Dimensions (circle applicable size)		
10 x 50 m	10 x 100 m	
Tree stem DBH (cm)		Notes on function attributes:
>80	2	Stem size class records # large trees (cf. benchmark)
50 - 79	0	Record stems for living trees only, and for all species
30 - 49	-	For multistemmed trees, record only the largest stem
20 - 29	-	Presence of <5cm stems records regeneration
10 - 19	+	Record # trees with hollows, not number of hollows
5 - 9	+	Count as one stem where tree is multistemmed
< 5	+	Hollow bearing stem may be a dead stem (incl. stag)
# Trees with hollows	<20cm	Total #
	>20cm**	2
Length of logs		Total (m)
		14.1

Measure length of logs >10cm, fully or partly in contact with the ground, and within the plot.

**Hollows of >20cm are recorded for habitat for some threatened species

BAM Litter/ Groundcover (1 x 1 m plots)							
Litter cover is used for BAM, other attributes are useful for recording site condition in general							
		1	2	3	4	5	Average
Sub-plot score (% cover)	Litter	100	80	100	90	5	75
	Bare ground						
	Cryptogam						
	Rock						

Litter / groundcover plots are located at 5, 15, 25, 35, 45 m (alternating sides) along the midline of Function plot

Other plot information (not essential for BAM)

Disturbance	Severity	Timing	Landform
Clearing (incl. logging)			Microrelief
Cultivation			Slope
Grazing (native / stock)			Aspect
Soil erosion			Soil surface texture
Firewood removal			Soil colour
Fire (ground stratum, mid, canopy burnt?)			Site drainage
Storm damage			Distance to nearest water
Weediness			Distance to nearest rock outcrop /cave

Severity code: 0=no evidence, 1=slight, 2=moderate, 3= severe

Timing code: R = recent (<3y), NR = not recent, O = old/historic

Notes

BAM Plot - Field Survey Sheet

Page 2 of (3)

Date	28/10/2022	Survey Name	Burroway Solar Power Station			
Recorders	David Orchard (DO), Lucca Brozler (LB)		Plot ID #	BU10	Zone ID	88_Good
GF code	Genus species	Cover %	Abund (count)	N, E, HTE	Stratum	
TG	<i>Eucalyptus pilligaensis</i>	35		N		
SG	<i>Geijera parviflora</i>	20		N		
FG	<i>Sisymbrium irio</i>	0.1	4	E		
GG	<i>Austrostipa verticillata</i>	0.2	10	N		
NN	<i>Sonchus oleraceus</i>	0.2	50	E		
NN	<i>Avena fatua</i>	2		E		
SG	<i>Myoporum montanum</i>	10		N		
FG	<i>Oxalis perennans</i>	0.1	30	N		
GG	<i>Lolium rigidum</i>	5		E		
FG	<i>Solanum nigrum</i>	0.1	2	E		
FG	<i>Einadia nutans</i>	0.2	10	N		
FG	<i>Hypochaeris radicata</i>	0.1	10	E		
FG	<i>Calotis lappulacea</i>	0.1	7	N		
FG	<i>Minuria leptophylla</i>	0.1	20	N		
GG	<i>Chloris ventricosa</i>	35		N		
FG	<i>Dichondra repens</i>	0.1	10	N		
FG	<i>Brachyscome chrysoglossa</i>	0.2	50	N		
FG	<i>Bulbine semibarbata</i>	0.1	20	N		
GG	<i>Eragrostis brownii</i>	0.1	20	N		
FG	<i>Dianella longifolia</i>	0.1	6	N		
FG	<i>Gamochaeta sp.</i>	0.1	20	E		
SG	<i>Sclerolaena diacantha</i>	5		N		
OG	<i>Jasminum lineare</i>	1		N		
FG	<i>Aster subulatus</i>	0.1	20	E		
OG	<i>Convolvulus angustissimus</i>	0.1	1	N		
GG	<i>Paspalidium constrictum</i>	1	1	N		
FG	<i>Arthropodium minus</i>	0.1	1	N		
FG	<i>Wahlenbergia stricta</i>	0.1	10	N		
GG	<i>Austrostipa blackii</i>	5		N		
GG	<i>Themeda triandra</i>	0.1	20	N		
GG	<i>Austrostipa elegantissima</i>	1		N		
GG	<i>Juncus bufonius</i>	0.1	10	N		
FG	<i>Spergularia brevifolia</i>	0.1	20	N		
GG	<i>Rytidosperma caespitosum</i>	2		N		
FG	<i>Wahlenbergia communis</i>	0.1	10	N		
FG	<i>Xerochrysum viscosum</i>	0.1	20	N		
FG	<i>Medicago polymorpha</i>	0.1	20	E		
FG	<i>Rhodanthe corymbiflora</i>	0.1	1	N		
SG	<i>Pittosporum angustifolium</i>	0.3	1	N		
FG	<i>Lactuca serriola</i>	0.1	1	E		
SG	<i>Lycium ferocissimum</i>	1		HTE		

Growth Form (see BAM Appendix 4) - Tree (TG), Shrub (SG), Grass & grasslike (GG), Forb (FG), Fern (EG), Other (OG)
Cover: 0.1, 0.2, 0.3, ... 1, 2, 3, ...10, 15, 20, 25, ...100% (incl. leaf, branch, stem cover per species).
Abundance for each species with ≤5% cover: 1, 2, 3, 4, ... 10, 20, 30, ... 100, 500, 1000, 1500, 2000 stems
N=native, E=exotic, HTE=high threat exotic
 All species in a plot must be recorded. If you can only ID to genus, separate different species by unique identifier e.g. *Genus* sp1, *Genus* sp2 etc
 Identify top 3 dominants in each stratum (use own stratum definitions) Cover area examples: 0.1% = 63x63cm, 0.5% = 1.4x1.4m, 1% = 2x2 m, 5%=4x5m, 25%=10x10m

KH - Version 1.1 - Date 1/12/2017

BAM Plot - Field Survey Sheet

Page 1 of (2)

Date	28/10/2022	Survey Name	Burroway Solar Power Station			
Recorders	David Orchard (DO), Lucca Brozler (LB)		Plot ID #	BU11	Zone ID	55_Good
Photo #			Plot dimensions	20 x 50 m		
Datum	GDA94	Zone	55	Plot bearing along midline	102	
Easting	626258	Northing	6448495	Record magnetic bearing along midline from 0 m point		

Record easting, northing at plot marker (0 m point). Photos taken vertically and horizontally at 0m point and 50 m point, looking into plot

IBRA region	Brigalow Belt South		
Subregion	Pilliga		
Likely Vegetation Class	North-west Floodplain Woodlands		
Plant Community Type	55	Condition state	Good

Floristics plot is centred on the midline, at 0 m point, 10 m either side

Function plot is an extension of floristics plot out to 50 m along midline (or equiv. area)

BAM Composition / Structure plot (400m²)		
Dimensions (circle applicable size)		
20 x 20 m	10 x 40 m	Sum values*
Native Richness (count of native species)	Trees	2
	Shrubs	5
	Grasses etc	6
	Forbs	11
	Ferns	0
	Other	0
Cover (sum of cover of natives species)	Trees	60
	Shrubs	25.2
	Grasses etc	26.2
	Forbs	2.9
	Other	0
High threat weed cover	0.2	

*These values summarise the floristic data for input into BAM calculator

BAM Function plot (1000m²)		
Dimensions (circle applicable size)		
20 x 50 m	10 x 100 m	
Tree stem DBH (cm)		Notes on function attributes:
>80	0	Stem size class records # large trees (cf. benchmark)
50 - 79	1	Record stems for living trees only, and for all species
30 - 49	13	For multistemmed trees, record only the largest stem
20 - 29	+	Presence of <5cm stems records regeneration
10 - 19	-	Record # trees with hollows, not number of hollows
5 - 9	-	Count as one stem where tree is multistemmed
< 5	+	Hollow bearing stem may be a dead stem (incl. stag)
# Trees with hollows	<20cm	Total #
	>20cm**	1
Length of logs		Total (m)
		17.1

Measure length of logs >10cm, fully or partly in contact with the ground, and within the plot.

**Hollows of >20cm are recorded for habitat for some threatened species

BAM Litter/ Groundcover (1 x 1 m plots)							
Litter cover is used for BAM, other attributes are useful for recording site condition in general							
		1	2	3	4	5	Average
Sub-plot score (% cover)	Litter	30	90	100	30	100	70
	Bare ground						
	Cryptogam						
	Rock						

Litter / groundcover plots are located at 5, 15, 25, 35, 45 m (alternating sides) along the midline of Function plot

Other plot information (not essential for BAM)

Disturbance	Severity	Timing	Landform
Clearing (incl. logging)			Microrelief
Cultivation			Slope
Grazing (native / stock)			Aspect
Soil erosion			Soil surface texture
Firewood removal			Soil colour
Fire (ground stratum, mid, canopy burnt?)			Site drainage
Storm damage			Distance to nearest water
Weediness			Distance to nearest rock outcrop /cave

Severity code: 0=no evidence, 1=slight, 2=moderate, 3= severe
Timing code: R = recent (<3y), NR = not recent, O = old/historic

Notes

BAM Plot - Field Survey Sheet

Page 1 of (2)

Date	28/10/2022	Survey Name	Burroway Solar Power Station			
Recorders	David Orchard (DO), Lucca Brozler (LB)		Plot ID #	BU12	Zone ID	Non-native
Photo #			Plot dimensions	20 x 50 m		
Datum	GDA94	Zone	55	Plot bearing along midline	77	
Easting	626259	Northing	6448537	Record magnetic bearing along midline from 0 m point		

Record easting, northing at plot marker (0 m point). Photos taken vertically and horizontally at 0m point and 50 m point, looking into plot

IBRA region	Brigalow Belt South				
Subregion	Pilliga				
Likely Vegetation Class	Non-native				
Plant Community Type	0	Condition state	Non-native		

Floristics plot is centred on the midline, at 0 m point, 10 m either side

Function plot is an extension of floristics plot out to 50 m along midline (or equiv. area)

BAM Composition / Structure plot (400m ²)		
Dimensions (circle applicable size)		
20 x 20 m	10 x 40 m	Sum values*
Native Richness (count of native species)	Trees	0
	Shrubs	0
	Grasses etc	0
	Forbs	0
	Ferns	0
Cover (sum of cover of natives species)	Trees	0
	Shrubs	0
	Grasses etc	0
	Forbs	0
	Ferns	0
Other	0	
High threat weed cover	0	

*These values summarise the floristic data for input into BAM calculator

BAM Function plot (1000m ²)		
Dimensions (circle applicable size)		
20 x 50 m	10 x 100 m	
Tree stem DBH (cm)		Notes on function attributes:
>80	0	Stem size class records # large trees (cf. benchmark)
50 - 79	0	Record stems for living trees only, and for all species
30 - 49	-	For multistemmed trees, record only the largest stem
20 - 29	-	Presence of <5cm stems records regeneration
10 - 19	-	Record # trees with hollows, not number of hollows
5 - 9	-	Count as one stem where tree is multistemmed
< 5	-	Hollow bearing stem may be a dead stem (incl. stag)
# Trees with hollows	<20cm	Total #
	>20cm**	0
Length of logs		Total (m)
		0

Measure length of logs >10cm, fully or partly in contact with the ground, and within the plot.

**Hollows of >20cm are recorded for habitat for some threatened species

BAM Litter/ Groundcover (1 x 1 m plots)							
Litter cover is used for BAM, other attributes are useful for recording site condition in general							
		1	2	3	4	5	Average
Sub-plot score (% cover)	Litter	1	0	2	1	1	1
	Bare ground						
	Cryptogam						
	Rock						

Litter / groundcover plots are located at 5, 15, 25, 35, 45 m (alternating sides) along the midline of Function plot

Other plot information (not essential for BAM)

Disturbance	Severity	Timing	Landform
Clearing (incl. logging)			Microrelief
Cultivation			Slope
Grazing (native / stock)			Aspect
Soil erosion			Soil surface texture
Firewood removal			Soil colour
Fire (ground stratum, mid, canopy burnt?)			Site drainage
Storm damage			Distance to nearest water
Weediness			Distance to nearest rock outcrop /cave

Severity code: 0=no evidence, 1=slight, 2=moderate, 3= severe

Timing code: R = recent (<3y), NR = not recent, O = old/historic

Notes

BAM Plot - Field Survey Sheet

Date	28/10/2022	Survey Name	Burroway Solar Power Station			
Recorders	David Orchard (DO), Lucca Brozler (LB)		Plot ID #	BU13	Zone ID	82_Moder.
Photo #			Plot dimensions	10 x 50 m		
Datum	GDA94	Zone	55	Plot bearing along midline	188	
Easting	626610	Northing	6449850	Record magnetic bearing along midline from 0 m point		

Record easting, northing at plot marker (0 m point), Photos taken vertically and horizontally at 0m point and 50 m point, looking into plot

IBRA region	Brigalow Belt South		
Subregion	Pilliga		
Likely Vegetation Class	Floodplain Transition Woodlands		
Plant Community Type	82	Condition state	Moderate

Floristics plot is centred on the midline, at 0 m point, 10 m either side

Function plot is an extension of floristics plot out to 50 m along midline (or equiv. area)

BAM Composition / Structure plot (400m²)		
Dimensions (circle applicable size)		
10 x 40 m	10 x 40 m	Sum values*
Native Richness (count of native species)	Trees	2
	Shrubs	9
	Grasses etc	9
	Forbs	14
	Ferns	1
Cover (sum of cover of natives species)	Trees	20
	Shrubs	23.1
	Grasses etc	48.4
	Forbs	22.5
	Ferns	0.1
Other	0.2	
High threat weed cover	1	

*These values summarise the floristic data for input into BAM calculator

BAM Function plot (1000m²)		
Dimensions (circle applicable size)		
10 x 50 m	10 x 100 m	
Tree stem DBH (cm) Notes on function attributes:		
>80	0	Stem size class records # large trees (cf. benchmark)
50 - 79	0	Record stems for living trees only, and for all species
30 - 49	+	For multistemmed trees, record only the largest stem
20 - 29	+	Presence of <5cm stems records regeneration
10 - 19	+	Record # trees with hollows, not number of hollows
5 - 9	+	Count as one stem where tree is multistemmed
< 5	+	Hollow bearing stem may be a dead stem (incl. stag)
# Trees with hollows	<20cm	Total #
	>20cm**	0
Length of logs		Total (m)
		14.9

Measure length of logs >10cm, fully or partly in contact with the ground, and within the plot.

**Hollows of >20cm are recorded for habitat for some threatened species

BAM Litter/ Groundcover (1 x 1 m plots)							
Litter cover is used for BAM, other attributes are useful for recording site condition in general							
		1	2	3	4	5	Average
Sub-plot score (% cover)	Litter	100	90	20	70	100	76
	Bare ground						
	Cryptogam						
	Rock						

Litter / groundcover plots are located at 5, 15, 25, 35, 45 m (alternating sides) along the midline of Function plot

Other plot information (not essential for BAM)

Disturbance	Severity	Timing	Landform
Clearing (incl. logging)			Microrelief
Cultivation			Slope
Grazing (native / stock)			Aspect
Soil erosion			Soil surface texture
Firewood removal			Soil colour
Fire (ground stratum, mid, canopy burnt?)			Site drainage
Storm damage			Distance to nearest water
Weediness			Distance to nearest rock outcrop /cave

Severity code: 0=no evidence, 1=slight, 2=moderate, 3= severe

Timing code: R = recent (<3y), NR = not recent, O = old/historic

Notes

BAM Plot - Field Survey Sheet

Page 2 of (3)

Date	28/10/2022	Survey Name	Burroway Solar Power Station			
Recorders	David Orchard (DO), Lucca Brozler (LB)		Plot ID #	BU13	Zone ID	82_Moder.
GF code	Genus species	Cover %	Abund (count)	N, E, HTE	Stratum	
TG	<i>Eucalyptus populnea</i> subsp. <i>bimbil</i>	12		N		
TG	<i>Callitris glaucophylla</i>	8		N		
SG	<i>Geijera parviflora</i>	20		N		
SG	<i>Myoporum montanum</i>	1		N		
FG	<i>Calotis lappulacea</i>	8		N		
FG	<i>Calotis cuneifolia</i>	8		N		
GG	<i>Chloris ventricosa</i>	20		N		
FG	<i>Wahlenbergia gracilentia</i>	0.1	80	N		
FG	<i>Xerochrysum viscosum</i>	0.5	200	N		
GG	<i>Austrostipa aristiglumis</i>	1		N		
NN	<i>Hypochaeris radicata</i>	0.2	200	E		
GG	<i>Rytidosperma caespitosum</i>	0.1	30	N		
GG	<i>Austrostipa scabra</i>	25		N		
NN	<i>Conyza bonariensis</i>	0.1	50	E		
NN	<i>Sonchus oleraceus</i>	0.1	30	E		
FG	<i>Einadia nutans</i>	5		N		
NN	<i>Lycium ferocissimum</i>	1		HTE		
GG	<i>Panicum effusum</i>	1		N		
OG	<i>Glycine clandestina</i>	0.1	2	N		
FG	<i>Arthropodium minus</i>	0.1	10	N		
EG	<i>Cheilanthes sieberi</i>	0.1	8	N		
NN	<i>Avena fatua</i>	2		E		
SG	<i>Enchylaena tomentosa</i>	0.1	2	N		
FG	<i>Dianella longifolia</i>	0.1	1	N		
NN	<i>Lactuca serriola</i>	0.1	10	E		
NN	<i>Hordeum</i> sp.	0.1	20	E		
FG	<i>Bulbine semibarbata</i>	0.1	10	N		
NN	<i>Aster subulatus</i>	0.1	3	E		
SG	<i>Acacia deanei</i>	0.2	4	N		
FG	<i>Wahlenbergia communis</i>	0.1	20	N		
GG	<i>Austrostipa nodosa</i>	1		N		
SG	<i>Dodonaea viscosa</i> subsp. <i>spatulata</i>	0.3	10	N		
SG	<i>Rhagodia spinescens</i>	0.3	10	N		
FG	<i>Triptilodiscus pygmaeus</i>	0.1	80	N		
GG	<i>Lomandra multiflora</i>	0.1	1	N		
FG	<i>Pseudognaphalium luteoalbum</i>	0.1	1	N		
FG	<i>Goodenia cycloptera</i>	0.1	20	N		
SG	<i>Pittosporum angustifolium</i>	0.1	3	N		
FG	<i>Erodium crinitum</i>	0.1	1	N		
OG	<i>Jasminum lineare</i>	0.1	2	N		
SG	<i>Sclerolaena birchii</i>	0.1	1	N		

Growth Form (see BAM Appendix 4) - Tree (TG), Shrub (SG), Grass & grasslike (GG), Forb (FG), Fern (EG), Other (OG)
Cover: 0.1, 0.2, 0.3, ... 1, 2, 3, ...10, 15, 20, 25, ...100% (incl. leaf, branch, stem cover per species).
Abundance for each species with ≤5% cover: 1, 2, 3, 4, ... 10, 20, 30, ... 100, 500, 1000, 1500, 2000 stems
N=native, E=exotic, HTE=high threat exotic
 All species in a plot must be recorded. If you can only ID to genus, separate different species by unique identifier e.g. *Genus* sp1, *Genus* sp2 etc
 Identify top 3 dominants in each stratum (use own stratum definitions) Cover area examples: 0.1% = 63x63cm, 0.5% = 1.4x1.4m, 1% = 2x2 m, 5%=4x5m, 25%=10x10m

KH - Version 1.1 - Date 1/12/2017

Flora species list

In total, 180 flora species were recorded during the biodiversity survey in January, of which 130 (72.22%) were native and 50 (27.78%) introduced. The following table should not be regarded as a comprehensive listing of all species occurring on the subject land.

¹Growth form: TG = Tree, SG = Shrub, FG = Forb, GG = Grass and Grass-like, EG = Fern, OG = Other

²Status: N = Native, I = Introduced.

³HTE = High Threat Exotic.

⁴WoNS = Weed of National Significance.

⁵PW = Priority weed for NSW or for the Narromine LGA.

¹ Growth Form	Scientific name	Common name	² Status	³ HTE	⁴ WoNS	⁵ PW
TG	<i>Alectryon oleifolius</i>	Western Rosewood	N	No	No	No
TG	<i>Allocasuarina luehmannii</i>	Buloke	N	No	No	No
TG	<i>Brachychiton populneus</i>	Kurrajong	N	No	No	No
TG	<i>Callitris glaucophylla</i>	White Cypress Pine	N	No	No	No
TG	<i>Casuarina cristata</i>	Belah	N	No	No	No
TG	<i>Eucalyptus blakelyi</i>	Blakely's Red Gum	N	No	No	No
TG	<i>Eucalyptus camaldulensis</i>	River Red Gum	N	No	No	No
TG	<i>Eucalyptus chloroclada</i>	Dirty Gum	N	No	No	No
TG	<i>Eucalyptus conica</i>	Fuzzy Box	N	No	No	No
TG	<i>Eucalyptus microcarpa</i>	Grey Box	N	No	No	No
TG	<i>Eucalyptus pilligaensis</i>	Narrow-Leaved Grey Box	N	No	No	No
TG	<i>Eucalyptus polyanthemus</i>	Red Box	N	No	No	No
TG	<i>Eucalyptus populnea</i> subsp. <i>bimbil</i>	Poplar Box	N	No	No	No
TG	<i>Melia azedarach</i>	White Cedar	N	No	No	No
SG	<i>Acacia deanei</i>	Green Wattle	N	No	No	No
SG	<i>Acacia ixodes</i>	Motherumbung	N	No	No	No
SG	<i>Acacia lanigera</i>	Woolly Wattle	N	No	No	No
SG	<i>Acacia spectabilis</i>	Mudgee Wattle	N	No	No	No
SG	<i>Apophyllum anomalum</i>	Warrior Bush	N	No	No	No
SG	<i>Atriplex leptocarpa</i>	Slender-Fruit Saltbush	N	No	No	No
SG	<i>Cassinia laevis</i>	Cough Bush	N	No	No	No
SG	<i>Dodonaea viscosa</i> subsp. <i>spatulata</i>	Sticky Hopbush	N	No	No	No
SG	<i>Enchylaena tomentosa</i>	Ruby Saltbush	N	No	No	No
SG	<i>Eremophila mitchellii</i>	Budda	N	No	No	No
SG	<i>Geijera parviflora</i>	Wilga	N	No	No	No
SG	<i>Indigofera coronillifolia</i>	Native Indigo	N	No	No	No
SG	<i>Lissanthe strigosa</i>	Peach Heath	N	No	No	No

¹ Growth Form	Scientific name	Common name	² Status	³ HTE	⁴ WoNS	⁵ PW
SG	<i>Maireana microphylla</i>	Small-Leaf Bluebush	N	No	No	No
SG	<i>Myoporum montanum</i>	Western Boobiolla	N	No	No	No
SG	<i>Pittosporum angustifolium</i>	Butterbush	N	No	No	No
SG	<i>Pultenaea cinerascens</i>	Grey Bush-pea	N	No	No	No
SG	<i>Rhagodia spinescens</i>	Spiny Saltbush	N	No	No	No
SG	<i>Sclerolaena birchii</i>	Galvanized Burr	N	No	No	No
SG	<i>Sclerolaena diacantha</i>	Grey Copperburr	N	No	No	No
SG	<i>Sclerolaena muricata</i>	Black Rolypoly	N	No	No	No
SG	<i>Senna artemisioides</i>	Silver Cassia	N	No	No	No
SG	<i>Solanum cinereum</i>	Narrawa Burr	N	No	No	No
SG	<i>Solanum ferocissimum</i>	Spiny Potato Bush	N	No	No	No
GG	<i>Anthosachne scabra</i>	Common Wheatgrass	N	No	No	No
GG	<i>Aristida leichhardtiana</i>	Wiregrass	N	No	No	No
GG	<i>Aristida ramosa</i>	Purple Wiregrass	N	No	No	No
GG	<i>Austrostipa aristiglumis</i>	Plains Grass	N	No	No	No
GG	<i>Austrostipa blackii</i>	Speargrass	N	No	No	No
GG	<i>Austrostipa densiflora</i>	Foxtail Speargrass	N	No	No	No
GG	<i>Austrostipa elegantissima</i>	Feather Speargrass	N	No	No	No
GG	<i>Austrostipa nodosa</i>	Speargrass	N	No	No	No
GG	<i>Austrostipa scabra</i>	Speargrass	N	No	No	No
GG	<i>Austrostipa verticillata</i>	Slender Bamboo Grass	N	No	No	No
GG	<i>Bromus arenarius</i>	Sand Brome	N	No	No	No
GG	<i>Carex inversa</i>	Inverse Grass	N	No	No	No
GG	<i>Chloris truncata</i>	Windmill Grass	N	No	No	No
GG	<i>Chloris ventricosa</i>	Plump Windmill Grass	N	No	No	No
GG	<i>Dichanthium sericeum</i>	Queensland Bluegrass	N	No	No	No
GG	<i>Digitaria divaricatissima</i>	Umbrella Grass	N	No	No	No
GG	<i>Enteropogon acicularis</i>	Curly Windmill Grass	N	No	No	No
GG	<i>Eragrostis brownii</i>	Brown's Lovegrass	N	No	No	No
GG	<i>Juncus bufonius</i>	Toad Rush	N	No	No	No
GG	<i>Juncus continuus</i>	Rush	N	No	No	No
GG	<i>Juncus subsecundus</i>	Rush	N	No	No	No
GG	<i>Lomandra multiflora</i>	Many-Flowered Mat-Rush	N	No	No	No
GG	<i>Microlaena stipoides</i>	Weeping Grass	N	No	No	No
GG	<i>Panicum effusum</i>	Hairy Panic	N	No	No	No
GG	<i>Paspalidium aversum</i>	Paspalidium	N	No	No	No
GG	<i>Paspalidium constrictum</i>	Knottybutt Grass	N	No	No	No
GG	<i>Rytidosperma caespitosum</i>	Ringed Wallaby Grass	N	No	No	No
GG	<i>Rytidosperma setaceum</i>	Smallflower Wallaby Grass	N	No	No	No

¹ Growth Form	Scientific name	Common name	² Status	³ HTE	⁴ WoNS	⁵ PW
GG	<i>Themeda triandra</i>	Kangaroo Grass	N	No	No	No
GG	<i>Thyridolepis xerophila</i>	Mulga Mitchell Grass	N	No	No	No
GG	<i>Walwhalleya subxerophila</i>	Gilgai Grass	N	No	No	No
FG	<i>Abutilon fraseri</i>	Dwarf Lantern-Flower	N	No	No	No
FG	<i>Arthropodium minus</i>	Small Vanilla-lily	N	No	No	No
FG	<i>Brachyscome chrysoglossa</i>	Yellow-Tongue Daisy	N	No	No	No
FG	<i>Brachyscome multifida</i>	Cut-Leaved Daisy	N	No	No	No
FG	<i>Brunonia australis</i>	Blue Pincushion	N	No	No	No
FG	<i>Brunoniella australis</i>	Blue Trumpet	N	No	No	No
FG	<i>Bulbine semibarbata</i>	Native Leek	N	No	No	No
FG	<i>Calotis cuneifolia</i>	Purple Burr-Daisy	N	No	No	No
FG	<i>Calotis lappulacea</i>	Yellow Burr-Daisy	N	No	No	No
FG	<i>Cotula australis</i>	Carrot Weed	N	No	No	No
FG	<i>Crassula sieberiana</i>	Australian Stonecrop	N	No	No	No
FG	<i>Damasonium minus</i>	Starfruit	N	No	No	No
FG	<i>Daucus glochidiatus</i>	Native Carrot	N	No	No	No
FG	<i>Dianella longifolia</i>	Blue Flax-Lily	N	No	No	No
FG	<i>Dichondra repens</i>	Kidney Weed	N	No	No	No
FG	<i>Einadia nutans</i>	Climbing Saltbush	N	No	No	No
FG	<i>Einadia polygonoides</i>	Climbing Saltbush	N	No	No	No
FG	<i>Einadia trigonos</i>	Fishweed	N	No	No	No
FG	<i>Erodium crinitum</i>	Blue Crowfoot	N	No	No	No
FG	<i>Euchiton sphaericus</i>	Star Cudweed	N	No	No	No
FG	<i>Gonocarpus elatus</i>	Hill Raspwort	N	No	No	No
FG	<i>Goodenia cycloptera</i>	Goodenia	N	No	No	No
FG	<i>Goodenia pinnatifida</i>	Scrambled Eggs	N	No	No	No
FG	<i>Leiocarpa panaetioides</i>	Wooly Buttons	N	No	No	No
FG	<i>Linum marginale</i>	Native Flax	N	No	No	No
FG	<i>Lythrum hyssopifolia</i>	Hyssop Loosestrife	N	No	No	No
FG	<i>Minuria leptophylla</i>	Minnie Daisy	N	No	No	No
FG	<i>Oxalis perennans</i>	Grassland Wood-sorrel	N	No	No	No
FG	<i>Oxytes brachypoda</i>	Large Tick-Trefoil	N	No	No	No
FG	<i>Parietaria debilis</i>	Native Pellitory	N	No	No	No
FG	<i>Portulaca oleracea</i>	Pigweed	N	No	No	No
FG	<i>Pseudognaphalium luteoalbum</i>	Jersey Cudweed	N	No	No	No
FG	<i>Rhodanthe corymbiflora</i>	Small White Sunray	N	No	No	No
FG	<i>Rumex brownii</i>	Swamp Dock	N	No	No	No
FG	<i>Rumex dumosus</i>	Wiry Dock	N	No	No	No
FG	<i>Rumex tenax</i>	Shiny Dock	N	No	No	No

¹ Growth Form	Scientific name	Common name	² Status	³ HTE	⁴ WoNS	⁵ PW
FG	<i>Schenkia australis</i>	Spike Centaury	N	No	No	No
FG	<i>Sida corrugata</i>	Corrugated Sida	N	No	No	No
FG	<i>Sida trichopoda</i>	Hairy Sida	N	No	No	No
FG	<i>Solanum eremophilum</i>	Nightshade	N	No	No	No
FG	<i>Solanum esuriale</i>	Quena	N	No	No	No
FG	<i>Spergularia brevifolia</i>	Lesser Sea-Spurrey	N	No	No	No
FG	<i>Stuartina muelleri</i>	Spoon Cudweed	N	No	No	No
FG	<i>Triptilodiscus pygmaeus</i>	Common Sunray	N	No	No	No
FG	<i>Velleia paradoxa</i>	Spur Velleia	N	No	No	No
FG	<i>Verbena gaudichaudii</i>	Native Vervain	N	No	No	No
FG	<i>Vittadinia cervicularis</i>	New Holland Daisy	N	No	No	No
FG	<i>Vittadinia cuneata</i>	Fuzzweed	N	No	No	No
FG	<i>Vittadinia pterochaeta</i>	Winged New Holland Daisy	N	No	No	No
FG	<i>Wahlenbergia communis</i>	Tufted Bluebell	N	No	No	No
FG	<i>Wahlenbergia gracilentia</i>	Annual Bluebell	N	No	No	No
FG	<i>Wahlenbergia stricta</i>	Tall Bluebell	N	No	No	No
FG	<i>Xerochrysum bracteatum</i>	Golden Everlasting	N	No	No	No
FG	<i>Xerochrysum viscosum</i>	Sticky Everlasting	N	No	No	No
EG	<i>Cheilanthes sieberi</i>	Poison Rock Fern	N	No	No	No
OG	<i>Convolvulus angustissimus</i>	Bindweed	N	No	No	No
OG	<i>Glycine clandestina</i>	Twining Glycine	N	No	No	No
OG	<i>Glycine tabacina</i>	Variable Glycine	N	No	No	No
OG	<i>Grona varians</i>	Slender Tick-Trefoil	N	No	No	No
OG	<i>Jasminum lineare</i>	Desert Jasmine	N	No	No	No
OG	<i>Parsonsia eucalyptophylla</i>	Gargaloo	N	No	No	No
SG	<i>Lycium ferocissimum</i>	African Boxthorn	I	Yes	Yes	Yes
GG	<i>Avena fatua</i>	Wild Oats	I	No	No	No
GG	<i>Avena sativa</i>	Oats	I	No	No	No
GG	<i>Bromus diandrus</i>	Great Brome	I	Yes	No	No
GG	<i>Bromus hordeaceus</i>	Soft Brome	I	No	No	No
GG	<i>Chloris gayana</i>	Rhodes Grass	I	Yes	No	No
GG	<i>Cyperus eragrostis</i>	Umbrella Sedge	I	Yes	No	No
GG	<i>Eragrostis curvula</i>	African Lovegrass	I	Yes	No	No
GG	<i>Hordeum sp.</i>	Barley Grass	I	No	No	No
GG	<i>Lolium rigidum</i>	Wimmera Ryegrass	I	No	No	No
GG	<i>Phalaris paradoxa</i>	Paradoxa Grass	I	No	No	No
GG	<i>Triticum aestivum</i>	Common Wheat	I	No	No	No
GG	<i>Vulpia bromoides</i>	Squirrel Tail Fescue	I	No	No	No
FG	<i>Arctotheca calendula</i>	Capeweed	I	No	No	No

¹ Growth Form	Scientific name	Common name	² Status	³ HTE	⁴ WoNS	⁵ PW
FG	<i>Aster subulatus</i>	Wild Aster	I	No	No	No
FG	<i>Brassica x napus</i>	Canola	I	No	No	No
FG	<i>Carthamus lanatus</i>	Saffron Thistle	I	Yes	No	No
FG	<i>Cerastium glomeratum</i>	Mouse-Ear Chickweed	I	No	No	No
FG	<i>Cirsium vulgare</i>	Spear Thistle	I	No	No	No
FG	<i>Conyza bonariensis</i>	Flaxleaf Fleabane	I	No	No	No
FG	<i>Conyza sumatrensis</i>	Tall Fleabane	I	No	No	No
FG	<i>Cyclosporum leptophyllum</i>	Slender Celery	I	No	No	No
FG	<i>Echium plantagineum</i>	Paterson's Curse	I	No	No	No
FG	<i>Gamochaeta</i> sp.	Cudweed	I	No	No	No
FG	<i>Hirschfeldia incana</i>	Buchan Weed	I	No	No	No
FG	<i>Hypochaeris radicata</i>	Flatweed	I	No	No	No
FG	<i>Lactuca saligna</i>	Willow-Leaved Lettuce	I	No	No	No
FG	<i>Lactuca serriola</i>	Prickly Lettuce	I	No	No	No
FG	<i>Leontodon rhagadioloides</i>	Cretan Weed	I	No	No	No
FG	<i>Lepidium africanum</i>	African Peppercross	I	No	No	No
FG	<i>Lepidium bonariense</i>	Argentine Peppercross	I	No	No	No
FG	<i>Lysimachia arvensis</i>	Scarlet Pimpernel, Blue Pimpernel	I	No	No	No
FG	<i>Medicago laciniata</i>	Cut-Leaved Medic	I	No	No	No
FG	<i>Medicago polymorpha</i>	Burr Medic	I	No	No	No
FG	<i>Polygonum arenastrum</i>	Wireweed	I	No	No	No
FG	<i>Raphanus raphanistrum</i>	Wild Radish	I	No	No	No
FG	<i>Rumex crispus</i>	Curled Dock	I	No	No	No
FG	<i>Salvia reflexa</i>	Mintweed	I	No	No	No
FG	<i>Silybum marianum</i>	Variegated Thistle	I	No	No	No
FG	<i>Sisymbrium erysimoides</i>	Smooth Mustard	I	No	No	No
FG	<i>Sisymbrium irio</i>	London Rocket	I	No	No	No
FG	<i>Sisymbrium orientale</i>	Indian Hedge Mustard	I	No	No	No
FG	<i>Solanum nigrum</i>	Black-Berry Nightshade	I	No	No	No
FG	<i>Soliva stolonifera</i>	Carpet Burweed	I	No	No	No
FG	<i>Sonchus asper</i>	Prickly Sowthistle	I	No	No	No
FG	<i>Sonchus oleraceus</i>	Common Sowthistle	I	No	No	No
FG	<i>Trifolium angustifolium</i>	Narrow-Leaved Clover	I	No	No	No
FG	<i>Trifolium arvense</i>	Haresfoot Clover	I	No	No	No
FG	<i>Trifolium glomeratum</i>	Clustered Clover	I	No	No	No
FG	<i>Verbena officinalis</i>	Vervain	I	No	No	No

Fauna species list

In total, 25 fauna species were recorded during the biodiversity survey, of which 22 (88.0%) were native and 3 (12.0%) introduced. None of the detected fauna species are listed under the BC or EPBC Act. The following table should not be regarded as a comprehensive listing of all species likely to make use of the subject land.

¹Status: N = Native, I = Introduced

Class	Species Name	Common Name	¹ Status
Amphibia	<i>Litoria latopalmata</i>	Broad-palmed Rocket Frog	N
Aves	<i>Acanthiza chrysorrhoa</i>	Yellow-rumped Thornbill	N
Aves	<i>Aquila audax</i>	Wedge-tailed Eagle	N
Aves	<i>Colluricincla harmonica</i>	Grey Shrike-thrush	N
Aves	<i>Coracina novaehollandiae</i>	Black-faced Cuckoo-shrike	N
Aves	<i>Corcorax melanorhamphos</i>	White-winged Chough	N
Aves	<i>Corvus coronoides</i>	Australian Raven	N
Aves	<i>Egretta novaehollandiae</i>	White-faced Heron	N
Aves	<i>Eolophus roseicapilla</i>	Galah	N
Aves	<i>Grallina cyanoleuca</i>	Magpie-lark	N
Aves	<i>Gymnorhina tibicen</i>	Australian Magpie	N
Aves	<i>Hirundo neoxena</i>	Welcome Swallow	N
Aves	<i>Manorina flavigula</i>	Yellow-throated Miner	N
Aves	<i>Manorina melanocephala</i>	Noisy Miner	N
Aves	<i>Ocyphaps lophotes</i>	Crested Pigeon	N
Aves	<i>Phaps chalcoptera</i>	Common Bronzewing	N
Aves	<i>Platycercus eximius</i>	Eastern Rosella	N
Aves	<i>Rhipidura leucophrys</i>	Willie Wagtail	N
Aves	<i>Struthidea cinerea</i>	Apostlebird	N
Aves	<i>Sturnus vulgaris</i>	Common Starling	I
Mammalia	<i>Capra hircus</i>	Feral Goat	I
Mammalia	<i>Macropus giganteus</i>	Eastern Grey Kangaroo	N
Mammalia	<i>Vulpes vulpes</i>	Red Fox	I
Reptilia	<i>Cryptoblepharus</i> sp.	Snake-eyed Skink	N
Reptilia	<i>Ctenotus robustus</i>	Robust Ctenotus	N

Appendix D: BAM Credit Summary Report



BAM Credit Summary Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00036365/BAAS21028/22/00036366	Burroway Solar Power Station - Preliminary	14/10/2022
Assessor Name	Report Created	BAM Data version *
David Orchard	01/11/2022	55
Assessor Number	BAM Case Status	Date Finalised
BAAS21028	Open	To be finalised
Assessment Revision	Assessment Type	
0	Major Projects	

* 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.

Ecosystem credits for plant communities types (PCT), ecological communities & threatened species habitat

Zone	Vegetation zone name	TEC name	Current Vegetation integrity score	Change in Vegetation integrity (loss / gain)	Area (ha)	Sensitivity to loss (Justification)	Species sensitivity to gain class	BC Act Listing status	EPBC Act listing status	Biodiversity risk weighting	Potential SAIL	Ecosystem credits
Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions.												
1	55_Derived	Not a TEC	37.9	37.9	2.4	PCT Cleared - 83%	High Sensitivity to Gain			2.00		45

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2	55_Planted	Not a TEC	77.9	77.9	1.2	PCT Cleared - 83%	High Sensitivity to Gain			2.00	47
3	55_Moderate	Not a TEC	77.9	77.9	2.3	PCT Cleared - 83%	High Sensitivity to Gain			2.00	88
4	55_Good	Not a TEC	93.8	93.8	21.7	PCT Cleared - 83%	High Sensitivity to Gain			2.00	1018
										Subtotal	1198
Fuzzy Box woodland on colluvium and alluvial flats in the Brigalow Belt South Bioregion (including Pilliga) and Nandewar Bioregion											
7	202_Good	Not a TEC	80.8	80.8	10.3	PCT Cleared - 75%	High Sensitivity to Gain			2.00	416
										Subtotal	416
Pilliga Box - White Cypress Pine - Buloke shrubby woodland in the Brigalow Belt South Bioregion											
6	88_Good	Not a TEC	83.5	83.5	5.2	PCT Cleared - 38%	High Sensitivity to Gain			1.50	163
										Subtotal	163

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Western Grey Box - Poplar Box - White Cypress Pine tall woodland on red loams mainly of the eastern Cobar Peneplain Bioregion

5	82_Moderate	Not a TEC	75.9	75.9	0.4	PCT Cleared - 75%	High Sensitivity to Gain			2.00		15
										Subtotal	15	
										Total	1792	

Species credits for threatened species

Vegetation zone name	Habitat condition (Vegetation Integrity)	Change in habitat condition	Area (ha)/Count (no. individuals)	Sensitivity to loss (Justification)	Sensitivity to gain (Justification)	BC Act Listing status	EPBC Act listing status	Potential SAI	Species credits	
Ardeotis australis / Australian Bustard (Fauna)										
55_Derived		37.9	37.9	2.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	45
55_Planted		77.9	77.9	1.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	47

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BAM Credit Summary Report

55_Moderate	77.9	77.9	2.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	88
55_Good	93.8	93.8	21.7	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	1018
82_Moderate	75.9	75.9	0.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	15
202_Good	80.8	80.8	10.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	416
								Subtotal	1629
<i>Calyptrorhynchus lathami / Glossy Black-Cockatoo (Fauna)</i>									
55_Derived	37.9	37.9	2.4	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	45

Assessment Id

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Proposal Name

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BAM Credit Summary Report

55_Planted	77.9	77.9	1.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	47
55_Moderate	77.9	77.9	2.3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	88
55_Good	93.8	93.8	21.7	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	1018
82_Moderate	75.9	75.9	0.4	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	15
88_Good	83.5	83.5	5.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	218
202_Good	80.8	80.8	10.3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	416
								Subtotal	1847

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<i>Commersonia procumbens / Commersonia procumbens (Flora)</i>									
88_Good	83.5	83.5	5.2	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	218
202_Good	80.8	80.8	10.3	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	416
Subtotal									634
<i>Crinia sloanei / Sloane's Froglet (Fauna)</i>									
82_Moderate	75.9	75.9	0.4	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Endangered	False	11
Subtotal									11
<i>Dichanthium setosum / Bluegrass (Flora)</i>									
55_Derived	37.9	37.9	2.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	45
55_Planted	77.9	77.9	1.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	47

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55_Moderate	77.9	77.9	2.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	88
55_Good	93.8	93.8	21.7	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	1018
202_Good	80.8	80.8	10.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Vulnerable	False	416
								Subtotal	1614
<i>Digitaria porrecta / Finger Panic Grass (Flora)</i>									
55_Derived	37.9	37.9	2.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	45
55_Planted	77.9	77.9	1.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	47

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55_Moderate	77.9	77.9	2.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	88
55_Good	93.8	93.8	21.7	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	1018
202_Good	80.8	80.8	10.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	416
								Subtotal	1614
<i>Diuris tricolor / Pine Donkey Orchid (Flora)</i>									
82_Moderate	75.9	75.9	0.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	11
88_Good	83.5	83.5	5.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	163

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202_Good	80.8	80.8	10.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	312
Subtotal									486
<i>Lepidium aschersonii / Spiny Peppergrass (Flora)</i>									
55_Derived	37.9	37.9	2.4	Geographic Distribution	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	45
55_Planted	77.9	77.9	1.2	Geographic Distribution	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	47
55_Moderate	77.9	77.9	2.3	Geographic Distribution	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	88
55_Good	93.8	93.8	21.7	Geographic Distribution	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	1018
88_Good	83.5	83.5	5.2	Geographic Distribution	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	218
Subtotal									1416

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Lophochroa leadbeateri / Major Mitchell's Cockatoo (Fauna)

55_Derived	37.9	37.9	2.4	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	45
55_Planted	77.9	77.9	1.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	47
55_Moderate	77.9	77.9	2.3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	88
55_Good	93.8	93.8	21.7	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	1018
82_Moderate	75.9	75.9	0.4	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	15
88_Good	83.5	83.5	5.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	218
								Subtotal	1431

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<i>Petaurus norfolcensis / Squirrel Glider (Fauna)</i>									
82_Moderate	75.9	75.9	0.4	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	15
88_Good	83.5	83.5	5.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	218
202_Good	80.8	80.8	10.3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	416
								Subtotal	649
<i>Phascolarctos cinereus / Koala (Fauna)</i>									
55_Derived	37.9	37.9	2.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	45
55_Planted	77.9	77.9	1.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	47

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55_Moderate	77.9	77.9	2.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	88
55_Good	93.8	93.8	21.7	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	1018
82_Moderate	75.9	75.9	0.4	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	15
88_Good	83.5	83.5	5.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	218
202_Good	80.8	80.8	10.3	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	416
								Subtotal	1847

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<i>Polygala linariifolia / Native Milkwort (Flora)</i>									
88_Good	83.5	83.5	5.2	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Not Listed	False	218
								Subtotal	218
<i>Polytelis swainsonii / Superb Parrot (Fauna)</i>									
55_Derived	37.9	37.9	2.4	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	45
55_Planted	77.9	77.9	1.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	47
55_Moderate	77.9	77.9	2.3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	88
55_Good	93.8	93.8	21.7	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	1018
82_Moderate	75.9	75.9	0.4	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	15

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88_Good	83.5	83.5	5.2	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	218
202_Good	80.8	80.8	10.3	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Vulnerable	False	416
Subtotal									1847
<i>Prasophyllum sp. Wybong / Prasophyllum sp. Wybong (Flora)</i>									
202_Good	80.8	80.8	10.3	Environment Protection and Conservation Act listing status	Effectiveness of management in controlling threats	Not Listed	Critically Endangered	True	624
Subtotal									624
<i>Pterostylis cobarensis / Greenhood Orchid (Flora)</i>									
88_Good	83.5	83.5	5.2	Geographic Distribution	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	218
202_Good	80.8	80.8	10.3	Geographic Distribution	Effectiveness of management in controlling threats	Vulnerable	Not Listed	False	416
Subtotal									634

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Swainsona murrayana / Slender Darling Pea (Flora)

55_Derived	37.9	37.9	2.4	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	45
55_Planted	77.9	77.9	1.2	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	47
55_Moderate	77.9	77.9	2.3	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	88
55_Good	93.8	93.8	21.7	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	1018
82_Moderate	75.9	75.9	0.4	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	15
202_Good	80.8	80.8	10.3	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Vulnerable	False	416
								Subtotal	1629

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<i>Swainsona sericea</i> / <i>Silky Swainson-pea</i> (Flora)									
82_Moderate	75.9	75.9	0.4	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	15
202_Good	80.8	80.8	10.3	Biodiversity Conservation Act listing status	Ability to colonise improved habitat	Vulnerable	Not Listed	False	416
								Subtotal	431
<i>Tylophora linearis</i> / <i>Tylophora linearis</i> (Flora)									
88_Good	83.5	83.5	5.2	Biodiversity Conservation Act listing status	Quantity class of viable seeds produced	Vulnerable	Endangered	False	218
202_Good	80.8	80.8	10.3	Biodiversity Conservation Act listing status	Quantity class of viable seeds produced	Vulnerable	Endangered	False	416
								Subtotal	634

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Appendix E: Terms and abbreviations

Terms and abbreviations used in this report

Abbreviation	Terminology	Description
BC Act	<i>Biodiversity Conservation Act 2016</i> (NSW)	The purpose of this Act is 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. This Act contains schedules relating to the listing of threatened species, populations and communities in NSW. It also outlines the framework regulating development impact assessments in relation to biodiversity.
	<i>Biosecurity Act 2015</i> (NSW)	The broad objectives for biosecurity in NSW are to manage biosecurity risks from animal and plant pests and diseases, weeds and contaminants by <ul style="list-style-type: none"> • Preventing their entry into NSW • Quickly finding, containing and eradicating any new entries • Effectively minimising the impacts of those pests, diseases, weeds and contaminants that cannot be eradicated through robust management arrangements. <p>The <i>Biosecurity Act 2015</i> provides a statutory framework to help achieve these objectives.</p>
CAMBA	China-Australia Migratory Bird Agreement	A bilateral migratory bird agreement with China entered into in 1986. It provides an important mechanism for pursuing conservation outcomes for migratory birds, including migratory waterbirds.
	Direct impacts	Directly affect the habitat and individuals. They include, but are not limited to, death through predation, trampling, poisoning of the animal/plant itself and the removal of suitable habitat. When applying each factor, consideration must be given to all of the likely direct impacts of the proposed activity or development.
DAWE	Australian Government Department of Agriculture, Water, and the Environment	DAWE designs and implements the Australian Government's policies and programmes to protect and conserve the environment, water and heritage and promote climate action.
DP	Deposited Plan	A plan of land deposited in Land and Property Information (part of the Land Management Authority) and used for legal identification purposes. They most commonly depict a subdivision of a parcel of land.
EEC	Endangered Ecological Community	An ecological community identified by relevant legislation likely to become extinct or is in immediate danger of extinction.
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i> (NSW).	Provides the legislative framework for land use planning and development assessment in NSW.
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Commonwealth).	Provides for the protection of the environment, especially matters of national environmental significance, and provides a national assessment and approvals process.
FM Act	<i>Fisheries Management Act 1994</i> (NSW)	The objects of this Act are to conserve, develop and share the fishery resources of the State for the benefit of present and future generations. This Act protects aquatic habitats and species which are not protected under the BC Act.
IBRA	Interim Biogeographic Regionalisation of Australia	The Interim Biogeographic Regionalisation for Australia (IBRA) is a biogeographic regionalisation of Australia developed by the Australian Government's Department of the Environment. Each region is a land area made up of a group of interacting ecosystems repeated in similar form across the landscape.

	Indirect impacts	Occur when project-related activities affect species, populations or ecological communities in a manner other than direct loss. Indirect impacts can include loss of individuals through starvation, exposure, predation by domestic and/or feral animals, loss of breeding opportunities, loss of shade/shelter, deleterious hydrological changes, increased soil salinity, erosion, inhibition of nitrogen fixation, weed invasion, fertiliser drift, or increased human activity within or directly adjacent to sensitive habitat areas. As with direct impacts, consideration must be given, when applying each factor, to all of the likely indirect impacts of the proposed activity or development.
JAMBA	Japan-Australia Migratory Bird Agreement	A bilateral migratory bird agreement with Japan entered into in 1974. It provides an important mechanism for pursuing conservation outcomes for migratory birds, including migratory waterbirds.
KTP	Key Threatening Process	A key threatening process is defined as a process that threatens, or may have the capability to threaten, the survival or evolutionary development of species, populations or ecological communities. A requirement of their listing on the TSC Act is that the process adversely affects two or more threatened species, populations or ecological communities, or may cause species, populations or ecological communities not threatened to become threatened.
	Native Vegetation	<p>1. For the purposes of this Part, native vegetation means any of the following types of plants native to New South Wales:</p> <ol style="list-style-type: none"> trees (including any sapling or shrub or any scrub), understorey plants, groundcover (being any type of herbaceous vegetation), plants occurring in a wetland. <p>2. A plant is native to New South Wales if it was established in New South Wales before European settlement. The regulations may authorise conclusive presumptions to be made of the species of plants native to New South Wales by adopting any relevant classification in an official database of plants that is publicly accessible.</p> <p>3. For the purposes of this Part, native vegetation extends to a plant that is dead or that is not native to New South Wales if:</p> <ol style="list-style-type: none"> the plant is situated on land that is shown on the native vegetation regulatory map as category 2-vulnerable regulated land, and it would be native vegetation for the purposes of this Part if it were native to New South Wales. <p>4. For the purposes of this Part, native vegetation does not extend to marine vegetation (being mangroves, seagrasses or any other species of plant that at any time in its life cycle must inhabit water other than fresh water). A declaration under Section 14.7 of the BC Act that specified vegetation is or is not marine vegetation also has effect for the purposes of this Part.</p>
	Local population (species)	<p>A local population of a threatened plant species comprises those individuals occurring in a defined area or a cluster of individuals extend into habitat adjoining and contiguous with the study area where the individuals could reasonably be expected to cross-pollinate.</p> <p>A local population of fauna species comprises those individuals known or likely to occur in in a defined area, as well as any individuals occurring in adjoining areas (contiguous or otherwise) that are known or likely to utilise habitats in the study area.</p> <p>The local population of migratory or nomadic fauna species comprises those individuals likely to occur in the study area from time to time.</p>
	Local occurrence (EEC)	The ecological community present within the study area. However, the local occurrence may include adjacent areas if the ecological community on the study area forms part of a larger contiguous area of the ecological community and the movement of individuals and exchange of genetic material across the boundary of the study area can be clearly demonstrated.

	Low condition (vegetation)	<p>Vegetation in low condition means:</p> <p>a) woody native vegetation with native over-storey percent foliage cover less than 50% of the lower value of the over-storey percent foliage cover benchmark for that vegetation type, and where either:</p> <ul style="list-style-type: none"> - less than 50% of ground cover vegetation is indigenous species, or - greater than 90% of ground cover vegetation is cleared <p>OR</p> <p>b) native grassland, wetland or herbfield where either:</p> <ul style="list-style-type: none"> - less than 50% of ground cover vegetation is indigenous species, or - more than 90% of ground cover vegetation is cleared <p>If native vegetation is not in low condition, it is in moderate to good condition. The percentages for the ground cover calculations must be made in a season when the proportion of native ground cover vegetation compared to non-native ground cover vegetation in the area is likely to be at its maximum.</p> <p>NOTE: Clearing the habitat of threatened species, populations or communities for the purposes of reducing its condition prior to assessment under the methodology may be a breach of environmental legislation, including sections 118A and 118D of the <i>National Parks and Wildlife Act 1974</i> (NPW Act), the <i>Native Vegetation Act 2003</i> (NV Act) and/or the <i>Environmental Planning and Assessment Act 1979</i> (EP&A Act).</p>
MNES	Matters of national environmental significance	Refers to the seven matters of national environmental significance outlined under the EPBC Act.
NPW Act	<i>National Parks and Wildlife Act 1974</i> (NSW)	<p>The objects of this Act are as follows:</p> <ul style="list-style-type: none"> • The conservation of nature, including, but not limited to, the conservation of: <ul style="list-style-type: none"> • habitat, ecosystems and ecosystem processes, and • biological diversity at the community, species and genetic levels, and • landforms of significance, including geological features and processes, and • landscapes and natural features of significance including wilderness and wild rivers, <p>The conservation of objects, places or features (including biological diversity) of cultural value within the landscape, including, but not limited to:</p> <ul style="list-style-type: none"> • places, objects and features of significance to Aboriginal people, and • places of social value to the people of New South Wales, and • places of historic, architectural or scientific significance, • Fostering public appreciation, understanding and enjoyment of nature and cultural heritage and their conservation, • Providing for the management of land reserved under this Act in accordance with the management principles applicable for each type of reservation. <p>The objects of this Act are to be achieved by applying the principles of ecologically sustainable development.</p>
PoEO Act	<i>Protection of the Environment Operations Act 1997</i>	<p>The objects of this Act are as follows:</p> <ul style="list-style-type: none"> • to protect, restore and enhance the quality of the environment in New South Wales, having regard to the need to maintain ecologically sustainable development, • to provide increased opportunities for public involvement and participation in environment protection, • to ensure the community has access to relevant and meaningful information about pollution, • to reduce risks to human health and prevent the degradation of the environment by the use of mechanisms promoting: <ul style="list-style-type: none"> • pollution prevention and cleaner production, • the reduction to harmless levels of the discharge of substances likely to cause harm to the environment, • the elimination of harmful wastes, • the reduction in the use of materials and the re-use, recovery or recycling of materials,

		<ul style="list-style-type: none"> • the making of progressive environmental improvements, including the reduction of pollution at source, • the monitoring and reporting of environmental quality on a regular basis, • to rationalise, simplify and strengthen the regulatory framework for environment protection, • to improve the efficiency of administration of the environment protection legislation, • to assist in the achievement of the objectives of the <i>Waste Avoidance and Resource Recovery Act 2001</i>.
RAMSAR	Convention on Wetlands of International Importance	The Ramsar Convention's broad aims are to halt the worldwide loss of wetlands and to conserve, through wise use and management, those remaining. This requires international cooperation, policy making, capacity building and technology transfer.
	Risk of extinction	The likelihood that the local population will become extinct either in the short-term or in the long-term as a result of direct or indirect impacts on the viability of that population.
ROKAMBA	Republic of Korea-Australia Migratory Bird Agreement	A bilateral migratory bird agreement with the Republic of Korea entered into in 2007. It provides an important mechanism for pursuing conservation outcomes for migratory birds, including migratory waterbirds.
RF Act	<i>Rural Fires Act 1997</i>	<p>The objects of this Act are to provide:</p> <ul style="list-style-type: none"> • for the prevention, mitigation and suppression of bush and other fires in local government areas (or parts of areas) and other parts of the State constituted as rural fire districts, and • for the co-ordination of bush firefighting and bush fire prevention throughout the State, and • for the protection of persons from injury or death, and property from damage, arising from fires, and • for the protection of infrastructure and environmental, economic, cultural, agricultural and community assets from damage arising from fires, and • for the protection of the environment by requiring certain activities referred to in paragraphs (a)-(c1) to be carried out having regard to the principles of ecologically sustainable development described in section 6 (2) of the <i>Protection of the Environment Administration Act 1991</i>.
Significant impact		A 'significant impact' is an impact which is important, notable, or of consequence, having regard to its context or intensity.
SIS	Species Impact Statement	<p>A document included with an Environmental Impact Statement which details a full description of the action proposed, including its nature, extent, location, timing and layout and, to the fullest extent reasonably practicable, the information referred to in this section.</p> <p>The requirements as to the contents of an SIS for different categories of protected species are given in section 110 of the TSC Act.</p>
Strahler stream order		<p>Strahler stream order and are used to define stream size based on a hierarchy of tributaries.</p> 