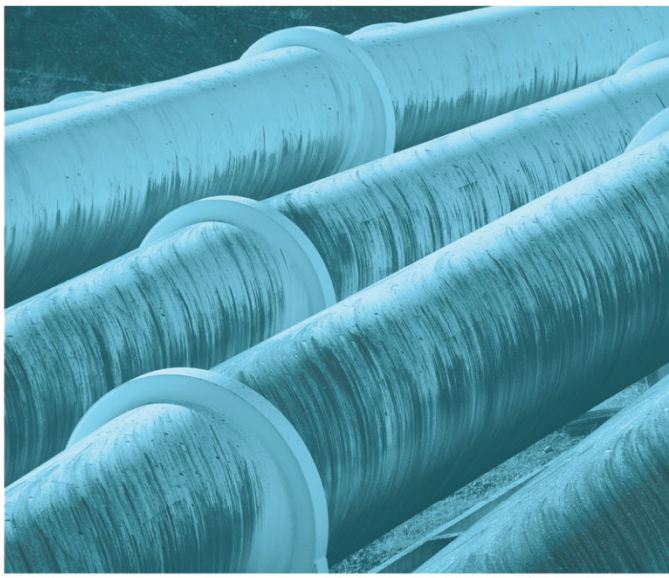



Wellington Battery Energy Storage System

Scoping Report

Prepared for AMPYR Australia Pty Ltd
September 2021

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Wellington Battery Energy Storage System

Scoping Report

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Client

AMPYR Australia Pty Ltd

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14 September 2021

Executive Summary

AMPYR Australia Pty Ltd (AMPYR) proposes to develop the Wellington Battery Energy Storage System along with associated infrastructure (the project) approximately 3 kilometres (km) north-east of the township of Wellington, in the Central West of New South Wales (NSW). The project is within the Dubbo Regional Council local government area (LGA).

The project will be developed within the project site area, which is approximately 28 hectares (ha), with project infrastructure anticipated to occupy approximately 8 ha (development footprint). Land within and surrounding the project site area is characterised by undulating cleared land used primarily for sheep and cattle grazing or dry land cropping with scattered rural residences. The project will be located immediately to the east of the Wellington TransGrid substation and south of the Wellington Solar Farm project.

The project will have a capacity of approximately 500 megawatts (MW) and up to 1,000 megawatt-hour (MWh) and connect to the adjoining Wellington TransGrid substation either by way of 330 kilovolt (kV) overhead or underground transmission lines. The project may be delivered in up to two stages.

The site and size of the project has been developed in consideration of several alternatives to minimise impacts to the environment and the community. The proposed site was selected due to its proximity to a potential connection point at the Transgrid Substation, due to the relatively low level of environmental constraints within the project site area, relatively few sensitive receptors within close proximity of the project site area, limited visibility from surrounding roads, and the willingness of the landholders to be involved.

The project is State significant development (SSD) pursuant to Schedule 1 of the State Environmental Planning Policy (State and Regional Development) 2011 (SRD SEPP). Accordingly, approval for the project is required under Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

This scoping report has been prepared to support a request for the Secretary's Environmental Assessment Requirements (SEARs) for the project. A preliminary environmental assessment has been carried out and is documented in this report to assist in the identification of matters that will require further assessment in the Environmental Impact Statement (EIS), and the level of assessment that should be carried out for each matter.

The aspects identified as requiring detailed assessment in the EIS (in accordance with the Department of Planning, Industry and Environment (DPIE) guidelines: *State significant development guidelines - preparing a scoping report: Appendix A to the state significant development guidelines* (DPIE 2021a)), include Aboriginal heritage, biodiversity and noise and vibration. Aspects requiring standard assessment include historic heritage, land resources, social, traffic and transport, water resources, visual, hazard and risk, and air quality.

The project will deliver improvements to the stability and reliability of the electricity network by storing energy during periods of low demand, and dispatching energy during periods of peak demand and providing system services if required by the Australian Energy Market Operator (AEMO) and/or the Transmission Network Service Provider (TNSP). It will also provide significant economic stimulus to the region through construction jobs and associated flow-on benefits.

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1 Introduction

1.1 Overview

AMPYR Australia Pty Ltd (AMPYR) proposes to develop the Wellington Battery Energy Storage System along with associated infrastructure (the project), approximately 3 kilometres (km) north-east of the township of Wellington, in the Central West of New South Wales (NSW). The project is within the Dubbo Regional Council local government area (LGA). The location and regional context of the project is shown in Figure 1.1.

The project will be developed within the project site area, which covers approximately 28 hectares (ha), with project infrastructure to occupy an area of approximately 8 ha (the development footprint). The project site area covers two landholdings (Lot 32 in Deposited Plan (DP) 622471 and Lot 1 in DP 1226751). Approval is also sought to subdivide the private landholding (Lot 32) to separate the project from the remainder of the landholding. The project is shown in its local context in Figure 1.2. An indicative project footprint is included to illustrate the potential size and potential siting of the BESS.

The project will have a capacity of up to 500 megawatts (MW) and 1,000 megawatt-hour (MWh) and connect to the adjoining Wellington TransGrid substation (Lot 1 in DP 1226751) either by way of 330 kilovolt (kV) overhead or underground transmission line(s). The project will improve the reliability of energy supply in the region by providing storage and firming capacity to the National Energy Market (NEM).

A description of the project is provided in Chapter 3.

1.2 The applicant

AMPYR is wholly owned by AGP Real Sustainable Assets (AGP), an asset management group that finances, develops and operates sustainable real assets with an aim to drive a net zero greenhouse gas emissions future. AMPYR has partnered with Shell Energy Australia to deliver the project.

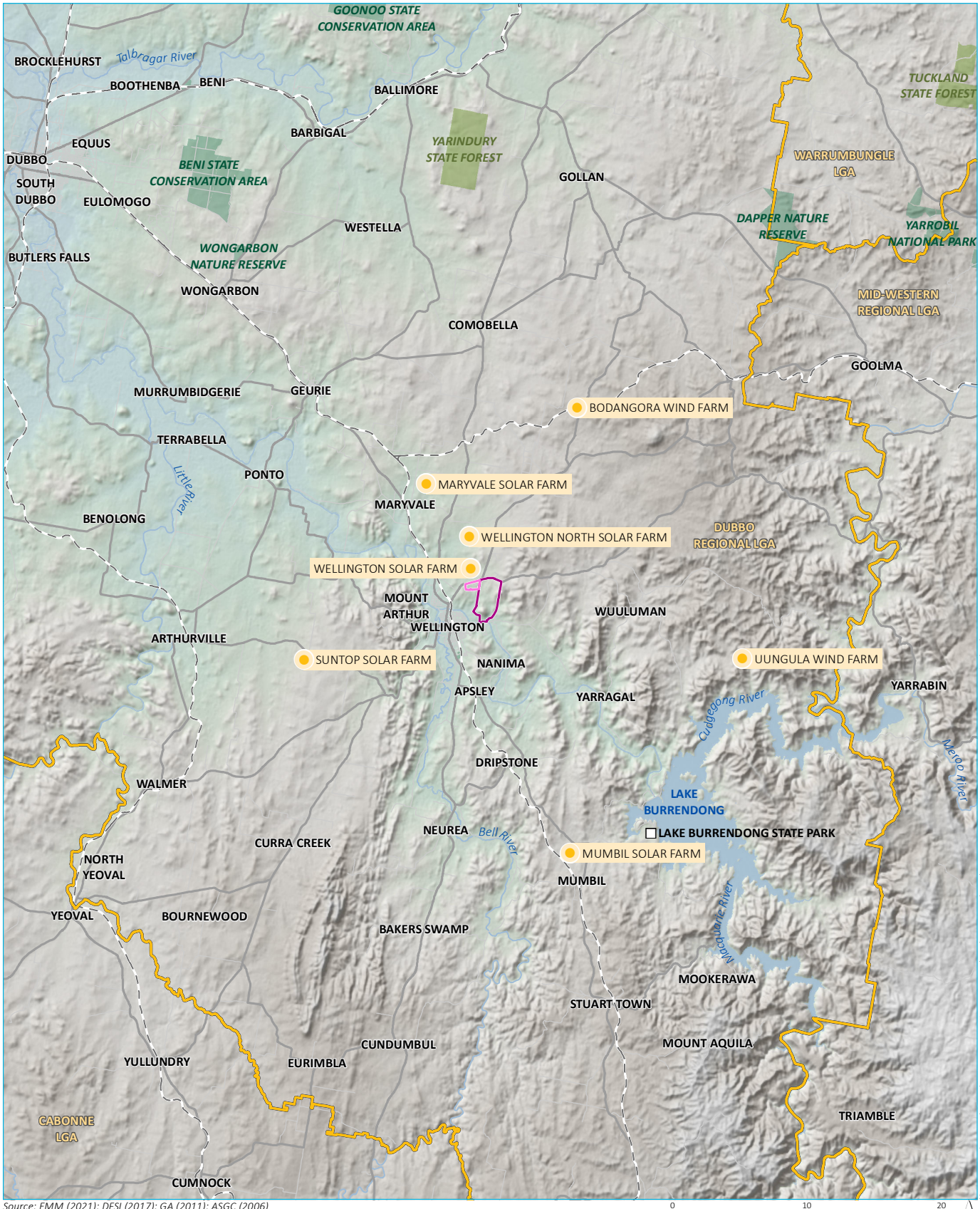
AMPYR's team has over 10 years' experience developing renewable energy projects, mostly large-scale on-shore wind and solar but also including battery storage and hydro. AMPYR is presently developing 5 battery storage facilities internationally with a combined capacity of up to 1190MW (AMPYR 2021). The Australian Business Number (ABN) of AMPYR is 68 630 312 015 and AMPYR's address is 36-38 Young Street, Sydney NSW 2000.

1.3 Purpose of this report

The project is State significant development (SSD) pursuant to Schedule 1 of the State Environmental Planning Policy (State and Regional Development) 2011 (SRD SEPP), as discussed further in section 4.1. Accordingly, approval for the project is required under Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

This scoping report has been prepared to support a request for the Secretary's Environmental Assessment Requirements (SEARs) for the project. The SEARs will identify the level of environmental assessment required to be carried out as part of the Environmental Impact Statement (EIS) for submission to the Department of Planning, Industry and Environment (DPIE) as part of a development application (DA) under Division 4.1 Part 4 of the EP&A Act.

This scoping report has been prepared by EMM Consulting Pty Limited (EMM) on behalf of AMPYR in accordance with the recently released DPIE guidelines: *State significant development guidelines - preparing a scoping report: Appendix A to the state significant development guidelines* (DPIE 2021a) (Scoping Report Guidelines).



Source: EMM (2021); DFSI (2017); GA (2011); ASGC (2006)

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GDA 1994 MGA Zone 55

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KEY

- Landholding
- Wellington substation site
- Renewable energy project
- Lake Burrendong State Park
- Rail line
- Major road
- Minor road
- River
- Named waterbody
- Local government area
- NPWS reserve
- State forest

Regional project location

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Figure 1.1

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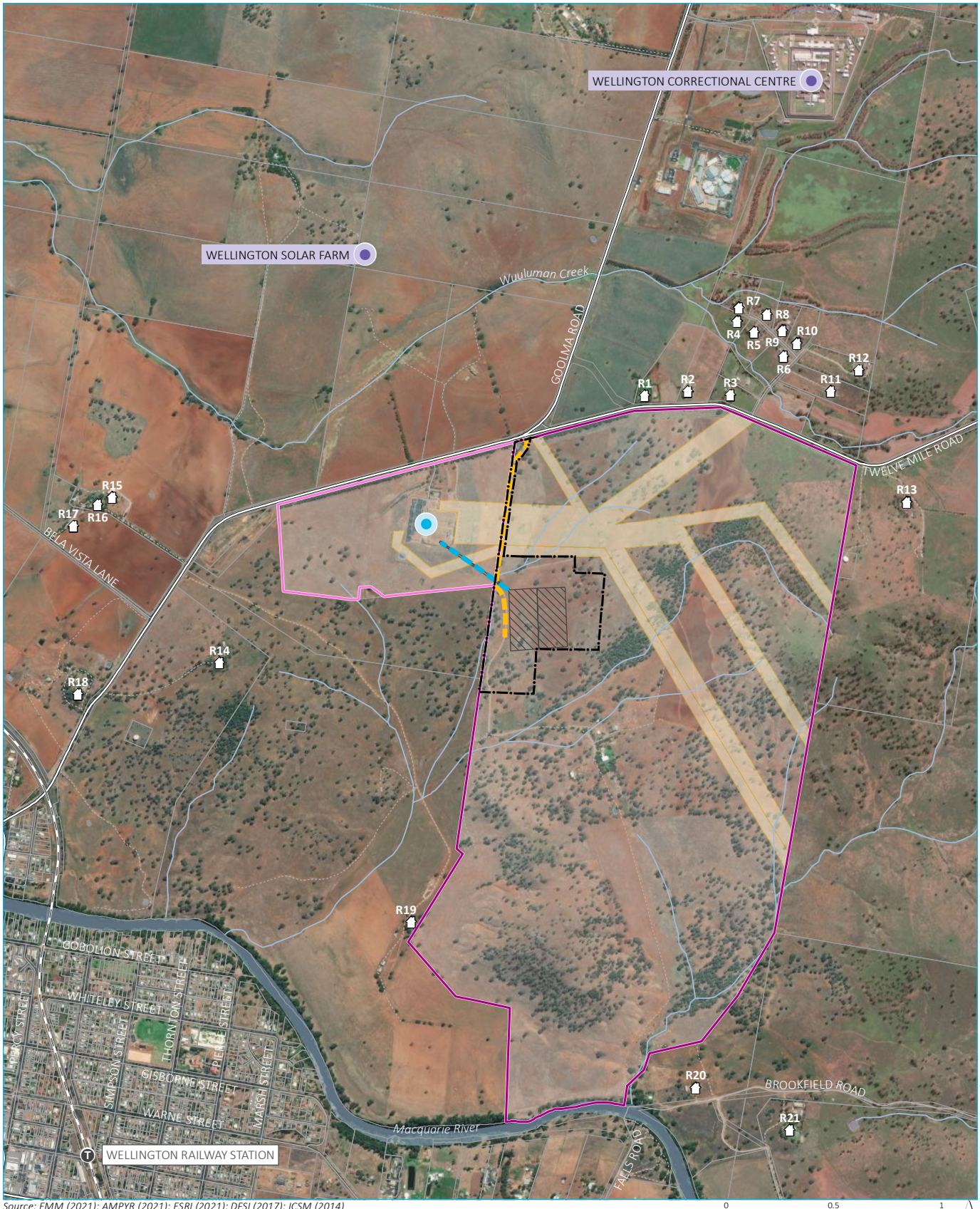

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KEY

Proposed project infrastructure
- Landholding
- Project site area
- Indicative development footprint
- Site access
- Preliminary connection

Existing infrastructure
- Wellington substation (TransGrid)
- Wellington substation site
- Freehold easement

Other site features
- Project point of interest
- Non-project residential receiver
- Train station
- Rail line
- Major road
- Minor road
- Vehicular track
- Watercourse/drainage line
- Waterbody

Cadastral boundary

Location of the project

Wellington Battery Energy Storage System
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Figure 1.2

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2 Strategic context

2.1 Site and surrounds

2.1.1 Regional context

The project site area is within the locality of Wellington in the former Wellington Council LGA, in the Central West Local Land Services Region (Central West Region) of NSW.

The nearest population centre to the project is the township of Wellington, approximately 2 km south-west of the project site area. Wellington has a population of 4,077 (ABS 2016). Other nearby population centres in the vicinity of the project include Dubbo (population 38,943), approximately 46 km north-west and Orange (population 38,097), approximately 84 km south-east of the project site area.

Lake Burrendong State Park is located approximately 20 km to the south-east and Goobang National Park is located approximately 55 km to the south-east. The Macquarie River traverses the township of Wellington and is adjacent to the southern boundary of the project site area.

The dominant land use in the surrounding locality is agriculture, comprising cropping and grazing activities, quarrying, production forestry and renewable energy development. Renewable energy development is a growing land use in the area, with a number of proposed, approved, under construction and operational renewable energy developments in the vicinity of the project as illustrated in Figure 1.2.

2.1.2 Local context

Land surrounding the project site area is characterised by undulating cleared land used primarily for sheep and cattle grazing or dry land cropping with scattered rural residences. Areas of vegetation is present within and surrounding the project site area in the form of paddock trees, vegetation along local roads, drainage lines, and windbreaks.

The closest residences in proximity to the project site area are situated along Twelve Mile Road and Cadonia Drive. The nearest-non-project related residence (59 Twelve Mile Rd) is located approximately 500 m north-east of the project site area, on the opposite side of Twelve Mile Rd. Additional residences are located to the west along Goolma Road, the closest of which is a distance greater than 1 km from the project site area. There are 20 non-project associated residential within 2 km of the project site area (refer Figure 1.2).

The closest non-residential receivers to the project site area include the TransGrid substation, located adjacent to the project site area to the west, the Macquarie Correctional Centre, located approximately 1.8 km to the north, and crop farm, located approximately 1.3 km to the west on the opposite side of Goolma Road.

The Wellington Solar Farm is immediately north of the project site area on the northern side of Goolma Road. Goolma Road intersects with Twelve Mile Road, north of the project site area. This intersection is earmarked for future upgrade and realignment to support the Uungula Wind Farm project. Other key land uses surrounding the project site area include the Wellington electrical substation adjacent to the western boundary; the Macquarie River, which traverses the township of Wellington; the Macquarie Correctional Centre, approximately 1.8 km north of the project site area; and Mt Arthur Reserve, approximately 5 km west of the project site area.

2.1.3 The site

The project site area covers an area of approximately 28 hectares (ha). During the preparation of the EIS, the development footprint within the project site area will be identified and refined based on stakeholder engagement, environmental assessment, constraints identification and project design requirements.

The project site area is zoned RU1 Primary Production and SP2 – Infrastructure (substation) under the Wellington Local Environmental Plan 2012 (Wellington LEP) and is on freehold land. Numerous existing easements traverse the project site area associated with existing transmission lines that connect to the adjacent Wellington Substation.

Remnant native vegetation is present across some portions of the project site area.

There are several first and second order tributaries of the Macquarie River which flow through the project site area, generally in a southerly direction.

The site is accessible at the intersection of Goolma Road and Twelve Mile Road. The intersection is subject to future relocation and a portion of Twelve Mile Road will be decommissioned.

There is a private dwelling within the landholding (Lot 32 in DP 622471), which will be retained by the current landowner.

2.2 Strategic planning framework

An overview of relevant key policies plans and strategies, and how the project aligns with these is provided in Table 2.1.

Table 2.1 Alignment with key strategic planning frameworks

Plan, policy or strategy	Description	Alignment with strategic framework
State context		
Transmission Infrastructure Strategy 2018	The NSW Transmission Infrastructure Strategy sets out the NSW Government's plan to unlock private sector investment in priority energy infrastructure projects, which can deliver least-cost energy to customers to 2040 and beyond. The Strategy forms part of the government's broader plan to make energy more affordable, secure investment in new power stations and network infrastructure and ensure new technologies deliver benefits for consumers.	The project will create additional capacity within the local electrical grid and in the process deliver energy reliability and cost benefits for consumers. The project is will also support regional economic growth and job opportunities, particularly during construction.
NSW Electricity Strategy 2019	The NSW Electricity Strategy is the NSW Government's plan for a reliable, affordable and sustainable electricity future that supports a growing economy. The strategy identifies batteries as an economic source of providing reliable electricity.	The project will support the strategy through delivering a commercial battery facility and assist in transition of the energy grid to a modern complex energy system.

Table 2.1 Alignment with key strategic planning frameworks

Plan, policy or strategy	Description	Alignment with strategic framework
Local and regional context		
Central West and Orana Regional Plan 2036	Central West and Orana Regional Plan 2036 (the Regional Plan) was released by DPIE to guide land use planning priorities and decision making in the CWO region for the next two decades.	The project is consistent with Goal 1 of the Regional Plan (ie "to become the most diverse regional economy of NSW") and will support renewable energy generation in the region.
Dubbo Local Strategic Planning Statement 2020	The Dubbo Local Strategic Planning Statement (LSPS) sets out the 20 year vision for land use planning in the Dubbo Regional Council LGA. The project is consistent with Planning Priority 3 (promote renewable energy generation) and Planning Priority 19 (create an energy, water and waste efficient city) of the LSPS.	The project will support Planning Priority 3 and 19 by creating additional capacity and improved energy reliability.

2.3 Project justification

2.3.1 Project benefits

Key benefits associated with the project include:

- improvements to network reliability by storing excess energy during periods of low demand and dispatching energy during periods of peak demand, and provision of system services;
- improvements to network stability by providing back-up power during network disruptions;
- support for surrounding renewable energy generating facilities during periods where intermittent resources (eg wind and solar) are more plentiful allowing for storage and efficient delivery of electricity to meet demand; and
- direct employment opportunities during construction and operation of the project and direct financial benefits to local businesses and the local community.

2.3.2 Site suitability

The site and the size of the project have been developed in consideration of several alternatives (refer Section 3.4). The project site area is considered suitable for development of the project due to:

- characteristics favourable for development of the project (such as low relief topography, and minimal tree cover);
- proximity to the adjacent TransGrid substation and other renewable energy projects, allowing for the co-location of energy infrastructure;
- the project being adjacent to agricultural land uses, which are compatible with large-scale battery projects;
- proximity to major transport links (eg Mitchell Highway);

- sufficient buffering to residential receivers, particularly those residents along Goolma Road and Twelve Mile Road; and
- development of the site for the purposes of a BESS is not anticipated to result in significant adverse biophysical, cultural, social or economic impacts.

At the end of project's investment and operational life, the study area will be returned to its pre-existing agricultural land use, or another land use as agreed by the project owner and the landholder at that time.

3 Project description

3.1 Overview

The project comprises a BESS along with associated infrastructure. Project infrastructure will occupy an area of approximately 8 ha (the development footprint). The project will have a design capacity of up to approximately 500 MW and up to 100 MWh that will store energy from the grid via the adjacent TransGrid substation.

A subdivision will be required and will be sought under the SSD application to excise the project area from the remainder of the land parcel, which will continue to be utilised for agricultural purposes.

The project will include batteries and associated enclosures. The BESS technology provider is yet to be determined; however, the batteries are likely to consist of modular lithium-ion type batteries. Other key elements include:

- power conversion systems (PCS) incorporating inverters to convert Direct Current (DC) to Alternating Current (AC) and to step up voltage;
- up to two onsite substations to covert voltages;
- cabling and collector units, internal access tracks, on-site parking, and security fencing and lighting and other ancillary infrastructure;
- a centralised control room, incorporating staff amenities and an ablutions facility; and
- an upgraded site access off Goolma Road providing access to the project and existing landholding.

Key design features of the battery are provided in Table 3.1.

Table 3.1 Key project design features

Feature	Parameter
Power output	500 MW
Energy storage capacity	1,000 MWh
Transmission voltage	330 kV
Charge and discharge cycle	365 days per year / one cycle per day
Design life	30 years (subject to component replacement)

The project will connect to the adjacent TransGrid substation by way of underground or overhead transmission lines, located approximately 400 m to the north-west of the project site area.

Proposed access arrangements including the design of site access are presently being considered. The project will either maintain connection to Goolma Road at its current location or be realigned to connect to Twelve Mile Road to the east of the existing intersection. The additional area required to facilitate connection to Twelve Mile Road (ie an additional access track length of up to approximately 140 m) will be subject to ecological surveys and other fieldworks.

3.2 Construction

The project is anticipated to take approximately 12 months to construct. Construction will involve the following activities:

- construction of an access track from Goolma Road to project site;
- clearing of vegetation and cut and fill to desired design levels;
- watercourse diversion;
- construction of concrete slabs to support battery modules, PCS and substations;
- installation of battery modules, PCS, transformers, and substations;
- installation of 330kV overhead/underground cabling from battery substation to TransGrid switchyard;
- minor works in TransGrid switchyard to facilitate connection;
- testing and commissioning; and
- removal of construction activities and equipment and site clean-up.

During the construction phase of the project, a peak workforce in the order of 50 full-time employees (FTEs). Construction activities would be undertaken during standard day time construction hours. AMPYR will hire local contractors and suppliers for the construction of the facility wherever feasible.

Construction is expected to commence in the beginning of 2023 subject to planning approval and other authorisations.

3.3 Operation

The operational lifespan of the project will be in the order 30 years unless batteries and components are replaced at the end of their technical life. The project would operate 24 hours a day, 7 days a week. It is expected that the project would contribute to the employment of one or two staff during operation. The BESS would be operated remotely and staffed as required during maintenance activities.

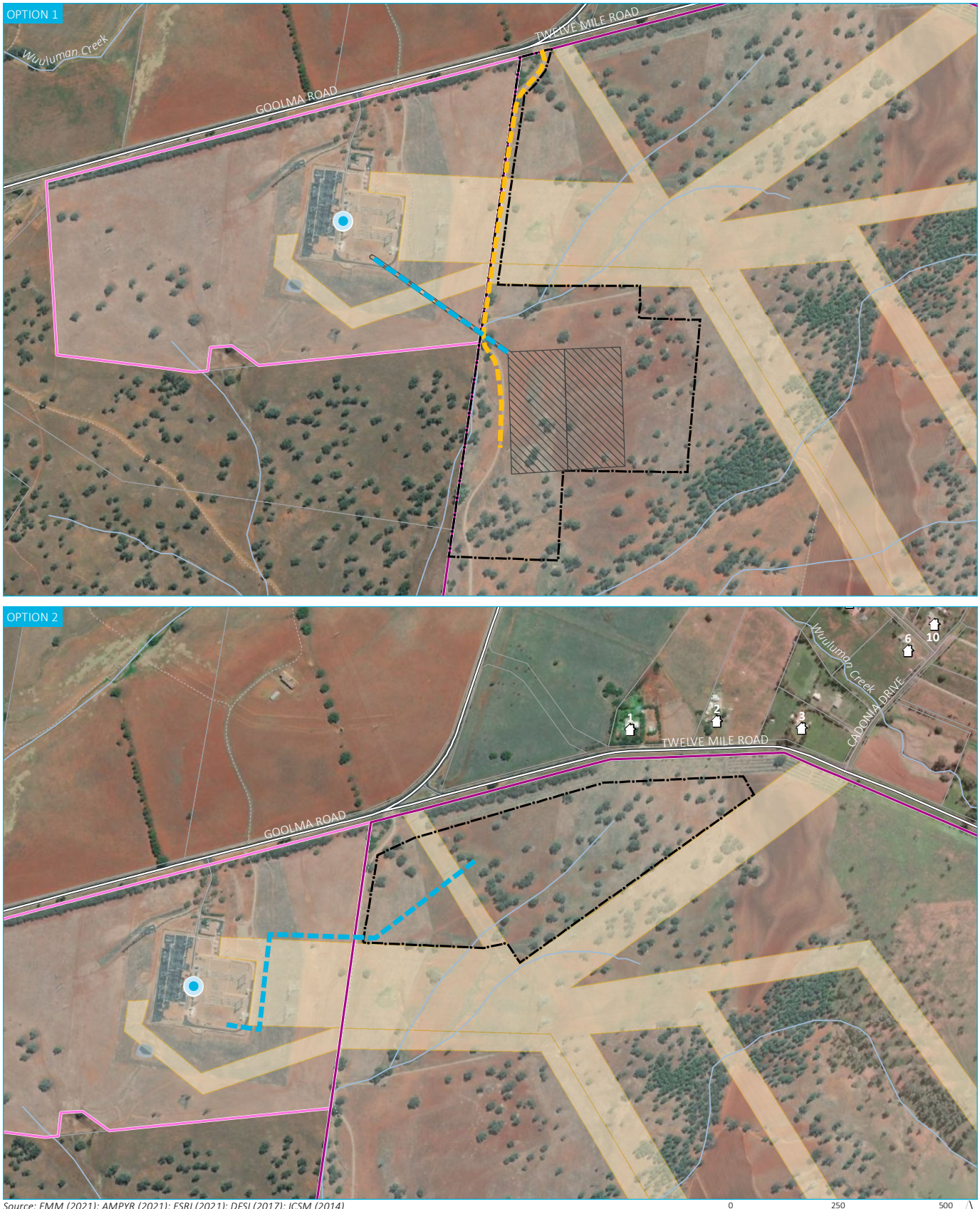
Regular maintenance activities will be required throughout the project's operational life. This maintenance may potentially include the replacement of BESS components. Light vehicles will access the site throughout the operations phase for maintenance activities. Heavy vehicles may also occasionally access the site to replace larger components as necessary.

Once the project reaches the end of its investment and operational life, the project infrastructure will be decommissioned and the project site area returned to its pre-existing land use, namely suitable for grazing of sheep and cattle, or another land use as agreed by the project owner and the landholder at that time.

3.4 Alternatives considered

AMPYR identified the project site area as a suitable location for the project. Alternative locations for a project of this nature are limited due to the requirements for a close connection point to a suitable regional substation, topography, avoidance of land-use conflicts, and proximity to existing and/or proposed energy infrastructure projects.

Alternatives to the proposed location were considered by AMPYR as part of the site identification process including other potential sites within region. The site was selected due to its favourable characteristics (including relatively low level of environmental constraints) and relatively few neighbours living within close proximity. Two options for the siting of project infrastructure within the land parcel were initially identified in consideration of the location of existing transmission line easements that traverse the lot, along with landowner requirements (see Figure 3.1). The preferred option (option 2) was selected due to relatively fewer environmental constraints (in particular watercourses and terrestrial biodiversity) and to provide the greatest buffer distance to the nearest non-project residences.



Source: EMM (2021); AMPYR (2021); ESRI (2021); DFSI (2017); ICSM (2014)

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KEY

Proposed project infrastructure
- Landholding
- Project site area
- Indicative development footprint
- Site access
- Preliminary connection

Existing infrastructure
- Wellington substation (TransGrid)
- Wellington substation site
- Freehold easement

Other site features
- Non-project residential receiver
- Major road
- Minor road
- Vehicular track
- Watercourse/drainage line
- Waterbody
- Cadastral boundary

Options considered

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Figure 3.1

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4 Statutory context

The key relevant statutory requirements for the project having regard to the EP&A Act, other NSW and Commonwealth legislation, and environmental planning instruments are summarised in Table 4.1. 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 2021b) (EIS Guidelines), to cover the following:

- power to grant approval (ie approval pathway);
- permissibility;
- consistent approvals;
- Commonwealth approvals;
- approvals not required (pursuant to Section 4.41 of the EP&A Act); and
- mandatory matters for consideration.

Detailed consideration of relevant statutory requirements will be provided in the EIS.

Table 4.1 Statutory context

Approval	Requirement
Power to grant approval	
EP&A Act and SRD SEPP	Part 4 of the EP&A Act relates to development assessment and consent; Part 4, Division 4.7 relates to the assessment of development deemed to be significant to the State (or SSD). Section 4.36(2) of the EP&A Act states that a: *…State environmental planning policy may declare any development, or any class or description of development, to be State significant development.* The SRD SEPP identifies development that is SSD. Clause 8 of the SRD SEPP states: *(1) Development is declared to be State significant development for the purposes of the Act if:* *(a) the development on the land concerned is, by the operation of an environmental planning instrument, not permissible without development consent under Part 4 of the Act, and* *(b) the development is specified in Schedule 1 and 2.* The project meets both these requirements; it requires development consent, and is a development specified in Schedule 1 of the SRD SEPP.

Table 4.1 Statutory context

Approval	Requirement
	Schedule 1 of the SRD SEPP defines the following as SSD: *Electricity generating works and heat or co-generation* *Development for the purpose of electricity generating works or heat or their co-generation (using any energy source, including gas, coal, biofuel, waste, hydro, wave, solar or wind power) that:* *has a capital investment value of more than $30 million.* The project meets the definition of 'electricity generating works' under the Standard Instrument – Principal Local Environmental Plan (Standard Instrument) as it is a building or place used for the purpose of electricity storage. The project will also have a capital investment value of more than $30 million. Consequently, the project is SSD.
Permissibility	
State Environmental Planning Policy (Infrastructure) 2007	Clause 34 (1) of State Environmental Planning Policy (Infrastructure) 2007 states that: *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.* As noted above, the project meets the definition of 'electricity generating works' and is wholly located in land zoned RU1 Primary Production and SP2 Infrastructure. Land zoned RU1 Primary Production and SP2 Infrastructure comprise a prescribed rural, industrial or special use zone for the purposes of Clause 34. Accordingly, the project may be carried out within the project site area with development consent.
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 approval under section 138 of the NSW *Roads Act 1993* (Roads Act)	Under Section 138 or Part 9, Division 3 of the Roads Act, 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 TfNSW or local council, depending upon the classification of the road. The project is located off Goolma Road, which is a State road managed by Dubbo Regional Council. The project involves the development of a formal site access which may involve works within the designated road corridor. Should the project obtain development consent, approval under the Roads Act cannot be refused and will be consistent with conditions of approval.
Commonwealth approvals	
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	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. 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. Further, no Commonwealth land is expected to be affected by the project. (refer Appendix B). The preliminary biodiversity assessment indicates there is potential for listed threatened species and listed migratory species to occur within the project site area. Further field surveys will be undertaken to determine whether the alignment of vegetation within the development footprint meets the EPBC Act determination for the White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland Critically Endangered Ecological Community. This would require vegetation plots to surmise vegetation thresholds to confirm whether a referral to the Commonwealth Department of Agriculture, Water and the Environment (DAWE) is required.

Table 4.1 Statutory context

Approval	Requirement
Approvals not required	
Overview	Section 4.41 of the EP&A Act outlines the following approvals, permits etc are not required for an approved SSD.
Fisheries Management Act 1994	A permit under the *Fisheries Management Act 1994* (FM Act) 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. The project may require work in water land to facilitate the upgrade of an access road that will cross the unnamed 2nd order watercourse within the project site area. These works will be undertaken in accordance with NSW DPI *Policies and Guidelines on Fish-Friendly Waterway Crossings* (undated), *Policy and Guidelines for Fish Habitat Conservation and Management* (DPI 2013), and NSW *Guidelines for Controlled Activities*.
Heritage Act 1977	An approval under Part 4, or an excavation permit under section 139, of the Heritage Act will not be required pursuant to Section 4.41 of the EP&A Act. Notwithstanding, there are no listed heritage items within the project site area.
National Parks and Wildlife Act 1979	An Aboriginal heritage impact permit under section 90 of the *National Parks and Wildlife Act 1974* (NPW Act) will not be required pursuant to Section 4.41 of the EP&A Act. There is potential for Aboriginal sites to occur within the project site area, primarily associated with the unnamed 2nd order watercourse. Any Aboriginal heritage sites identified within the project site area will be avoided as far as practicable through the design process.
Rural Fires Act 1997	A bushfire safety authority under section 100B of the *Rural Fires Act 1997* will not be required pursuant to Section 4.41 of the EP&A Act. An assessment of hazards and risks will be undertaken to assess hazardous scenarios and risks associated with the project including from bushfires. The project site area is land mapped in part as bushfire prone land, however the mapped area may not extend across or in close vicinity to the proposed infrastructure areas dependent on layout/design.
Water Management Act 2000	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 *Water Management Act 2000* pursuant to Section 4.41 of the EP&A Act. Construction work near or within watercourses within the project site area may be required. These works will be carried out in accordance with DPIE's various guidelines for controlled activities.
Mandatory considerations - Considerations under EP&A Act and EP&A Regulation	
Section 1.3	Relevant objectives of the EP&A Act are: 1. 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; 2. to facilitate ecologically sustainable development by integrating relevant economic environmental and social considerations in decision-making about environmental planning and assessment; 3. to promote the orderly and economic use and development of land; 4. to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats; 5. to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage); 6. to promote good design and amenity of the built environment; and 7. to provide increased opportunity for community participation in environmental planning and assessment.
Section 4.15	Pursuant to Section 4.15 of the EP&A Act the consent authority must consider the following relevant matters for consideration:

Table 4.1 Statutory context

Approval	Requirement
	• relevant environmental planning instruments for the project including: – State Environmental Planning Policy No 33-Hazardous and Offensive Development (SEPP 33); – State Environmental Planning Policy No 55-Remediation of land (SEPP 55); – State Environmental Planning Policy (Infrastructure) 2007 (ISEPP); – State Environmental Planning Policy (Koala Habitat Protection) 2020 (Koala SEPP); and – Wellington Local Environmental Plan 2012 (Wellington LEP). • relevant development control plans (DCPs) for the project including: – Wellington Development Control Plan 2013 (Wellington DCP) • 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. The above will all be considered in detail in the EIS.
Mandatory considerations - Considerations under other legislation	
Biodiversity Conservation Act 2016	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.
Mandatory considerations - Environmental planning instruments	
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 (DUAP 1998).
State Environmental Planning Policy No 33 – Hazardous and Offensive Development, Clause 8	The EIS will consider the following relevant departmental guidelines: • Applying SEPP 33 (DoP 2011a;) • Hazardous Industry Planning Advisory Paper No. 3 – Risk Assessment (DoP 2011b); and • Hazardous Industry Planning Advisory Paper No. 12 – Hazards (DoP 2011c).
Wellington LEP	The EIS will consider: • the relevant objectives for the RU1 and SP2 zone; • Clause 4.1 Minimum subdivision lot size; • Clause 6.3 Terrestrial biodiversity; • Clause 6.4 Groundwater vulnerability; and • Clause 6.5 Riparian land and watercourses.
Mandatory considerations Development control plans	
Wellington DCP	The EIS will consider the following: • Section B – Environmental requirements; • Section C – Hazard minimisation requirements; • Section D – Development design requirements; • Section E – Heritage conservation requirements; and • Section G – Erosion and sediment control plans.

5 Engagement

5.1 Overview

Shortly following a decision to commit funding to the project and in partnering with Shell Energy Australia, AMPYR commenced engagement activities to build a local presence in the region. The recent COVID-19 pandemic and associated Health Orders have limited the ability for AMPYR to conduct one-on-one consultation and group meetings with local landholders and neighbouring property owners. Accordingly, in order to introduce the project to local stakeholders and to facilitate future consultation during the preparation of the EIS, a project notification letter was distributed to local stakeholders located within the project's vicinity.

During the scoping phase of the project, AMPYR has consulted with Dubbo Regional Council and Transport for NSW (TfNSW) to introduce the project and seek advice as to what issues the agencies consider relevant in developing the concept design and preparing the EIS.

The project is considered likely to attract some degree of local and regional interest. Several renewable energy projects have been approved in the region over the past few years attracting differing levels of community interest. The project is unlikely to generate significant opposition due to it being of smaller scale than those approved projects and the relatively few neighbours living within close proximity of the project site area and limited visibility from surrounding roads.

5.2 Scoping engagement

A summary of engagement activities undertaken during the scoping phase are summarised in Table 5.1.

Table 5.1 Summary of stakeholder engagement activities

Stakeholder group	Method	Purpose of engagement
TfNSW	Via online meeting	A meeting was held with Alexandra Power on 4 August 2021 to introduce the project and to seek feedback as to what issues ought to be considered in developing the concept design and in undertaking environmental impact assessments. In this meeting TfNSW emphasised the requirement to consider cumulative traffic associated with nearby renewable energy projects.
	Via telephone call	A further call was held with Andrew McIntyre on 20 August 2021 regarding the project and the proposed access. TfNSW reinforced the need to consider construction scheduling together with nearby renewable energy projects. TfNSW further recommended that access be via Twelve Mile Road be considered rather than Goolma road as such an arrangement would possibly provide a safer connection to the roadway. Lastly, TfNSW recommended that further consultation be undertaken with Dubbo Regional Council, and the proponents of the Wellington Solar Farm and Uungula Wind Farm.

Table 5.1 Summary of stakeholder engagement activities

Stakeholder group	Method	Purpose of engagement
Dubbo Regional Council	Via online meeting	A meeting was held with Murray Wood, Natasha Comber, and Stephen Wallace on 17 August 2021 to introduce the project and to seek feedback as to what issues ought to be considered in developing the concept design and in undertaking environmental impact assessments. Council emphasised the need to consult closely with its traffic and planning team during preparation of the EIS and access design. Council further recommended that opportunities for local employment and employment of Aboriginal persons be pursued during construction and operation.
	Via online meeting	A further meeting was held with Julian Geddes on 26 August 2021 regarding the project and the proposed access. Council agreed with TfNSW's recommendation consult with the proponents of the Wellington Solar Farm and Uungula Wind Farm particularly with regards to construction scheduling.
NSW Farmers Association Wellington Branch	Via telephone call	A telephone call was held with Peter Carter, Chairman Wellington Branch, NSW Farmers Association on 13 September 2021 to introduce the project and to obtain early feedback concerning the project. The association did not have any immediate concerns regarding the project but sought to be kept informed when further design details are known.
Heritage NSW	Via notification letter	To seek information on relevant Aboriginal individuals and/or communities in the region, that may hold cultural knowledge and/or information about Aboriginal objects and sites in the vicinity.
Registered Aboriginal Parties	Via notification letter	To invite Aboriginal individuals and/or organisations who may hold relevant cultural knowledge for determining the Aboriginal cultural heritage of the area, and who wish to be involved in the Aboriginal cultural heritage assessment.
Nearby landholders	Letter	The letter was posted to nearby landholders on 6 August 2021. The purpose of the letter was to introduce the project and AMPYR, to inform about the development application process, and to invite recipients to provide feedback regarding the project. Nearby landholders have yet to respond to the letter or contact AMPYR regarding the project. Nearby landholders will be further consulted during the preparation of the EIS.
Local community	Dedicated project website: https://www.wellingtonbess.com/	The project website was launched on 6 August 2021. The website provides an overview of the project and AMPYR, to include relevant information regarding the development application process, and to provide a form allowing visitors to leave a comment or question. No feedback or responses have yet to be received via the 'Feedback & Questions' form or via the dedicated project phoneline or email address.

5.3 EIS phase consultation

Consultation undertaken during the preparation of the EIS will aim to:

- consult proactively with stakeholders using clear and consistent key messages;
- continue to engage with key stakeholders to identify potential issues and opportunities;
- communicate the progress of the project;
- enable stakeholders to have input into the preparation of the EIS and project planning; and
- implement response and feedback strategies to address stakeholder concerns and use these to inform the evolution of the project.

A summary of consultation methods to be used as the project develops, and their purpose, is provided in Table 5.2. It is noted that the ongoing COVID-19 pandemic and associated health orders may preclude the ability for face-to-face engagement. Alternative forms of engagement (such as project fact-sheets and online meetings on request) would be increased to account for this inability to engage in person.

Table 5.2 Proposed EIS consultation purpose and methods

Stakeholder	Purpose	Method
DPIE including: • Planning and Assessment • Environment, Energy and Science (EES) Group • Water Group	• informing DPIE of project progress • resolving of issues during EIS preparation • applying DPIE guidelines to engagement activities	• face to face/videoconference meetings • email and phone correspondence • briefing letters (to EES and Water Group)
TfNSW	• informing TfNSW of project progress • discuss access options for the project and confirm TfNSW requirements for connection with Goolma Road	• face to face/videoconference meetings • email and phone correspondence • briefing letters
Dubbo Regional Council	• informing Council of project progress • discuss access options for the project • consultation to inform the social impact assessment (SIA) • communicate outcomes of assessments	• face to face/videoconference meetings • email and phone correspondence • briefing letters
TransGrid	• informing TransGrid of project progress • project design and connection discussions	• face to face/videoconference meetings • email and phone correspondence
CWP Renewables (Uungula Wind Farm)	• informing CWP of project progress • project design and interaction discussions (in particular, the potential for construction traffic interactions, and the timing for the upgrade to the Goolma Road/Twelve Mile Road intersection)	• face to face/videoconference meetings • email and phone correspondence

Table 5.2 Proposed EIS consultation purpose and methods

Stakeholder	Purpose	Method
Lightsource bp (Wellington Solar Farm Project)	• informing CWP of project progress • project design and interaction discussions (in particular, the potential for construction traffic interactions)	• face to face/videoconference meetings • email and phone correspondence
NSW Environment Protection Authority (EPA)	• informing EPA of project progress • following EPA technical assessment guidelines	• email and phone correspondence • briefing letters
Relevant local and State MPs	• regular project updates • consultation to inform the social impact assessment (SIA)	• face to face/videoconference meetings • briefing letters
NSW Farmers Association Wellington Branch	• regular project updates • identification of key environmental and social concerns, in particular traffic and transport • communication regarding how environmental and social concerns will be mitigated • communication regarding opportunities to lodge a submission on the project	• face-to-face briefings, interviews and phone calls • newsletters and fact sheets • website feedback forms and project information line.
Associated landholders and non-project related nearby neighbours	• regular project updates • identification of key environmental and social concerns • communication regarding how environmental and social concerns will be mitigated • communication regarding opportunities to lodge a submission on the project	• face-to-face briefings, interviews and phone calls • newsletters and fact sheets • website feedback forms and project information line.
Wider community	• Regular project updates	• website feedback forms and project information line
Aboriginal community	• regular project updates • identify Aboriginal cultural heritage values of the project site area and connection to place	• consultation in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010a) • newsletters and fact sheets • website feedback forms and project information line
Local service providers	• regular project updates • identify key environmental, social and economic concerns • gain an understanding of the local economy and resource availability (ie availability of accommodation for the construction phase)	• face-to-face briefings, interviews and phone calls • website feedback forms and project information line.

6 Proposed assessment of impacts

6.1 Introduction

A preliminary environmental assessment has been carried out to assist in the identification of matters that will require further assessment in the EIS and the level of assessment that should be carried out for each matter. In accordance with the Scoping Report Guidelines (DPIE 2021a), the following factors have been considered in the identification of matters needing further assessment for the project:

- the scale and nature of the likely impact of the project and the sensitivity of the receiving environment;
- whether the project is likely to generate cumulative impacts with other relevant future projects in the area; and
- the ability to avoid, minimise and/or offset the impacts of the project, to the extent known at the scoping phase.

The following sections of this chapter present the identified matters requiring further assessment and the proposed approach to the respective assessments. Matters have been categorised as per the categories identified in the Scoping Report Guidelines (DPIE 2021a). A scoping summary table in accordance with the Scoping Report Guideline is included in Appendix A. Also, in accordance with the Scoping Report Guideline, the level of assessment identified for each aspect is as follows:

- Detailed:
  - Aboriginal heritage;
  - Biodiversity; and
  - Noise and vibration;
- Standard:
  - air quality;
  - historic heritage;
  - hazard and risk;
  - land, soil and erosion;
  - socio-economic;
  - traffic and transport;
  - visual; and
  - water resources.

6.2 Amenity

6.2.1 Visual

i Existing environment

The topography of the project site area and surrounding areas, together with remnant roadside vegetation, planted windbreaks and native trees, serve to provide a degree of screening of the project site area when viewed from surrounding residences, Goolma Road and adjacent agricultural land. Notwithstanding, there is potential for scattered rural residences to have views of proposed project infrastructure, particularly those residences and landholdings to the north and east which have elevated views to the project site area.

The nearest non-project related residence is located approximately 700 m north-east of the project site area, north of Twelve Mile Road. The closest items of heritage significance include the Keston Homestead (I50) and Nanima Homestead (I51) which are locally listed (Wellington LEP) and are setback approximately 1.3 km and 1.1 km from the project site, respectively.

ii Assessment approach

The visual impact assessment will include an assessment of the likely visual impacts of the project on surrounding residences, scenic or significant vistas, and road corridors in the public domain. A viewshed analysis will be undertaken using GIS tools and results from site inspections, and stakeholder engagement will be performed to identify locations within a local setting that may experience views of project infrastructure. Where relevant, the visual impact assessment and EIS will include mitigation measures to help reduce the project's impacts on visual amenity.

6.2.2 Noise and vibration

i Existing environment

Land use in the project site area and surrounds is predominantly agricultural. The Wellington Solar Farm and TransGrid substation are also near to the project site area. Given this setting, background noise at nearby sensitive receptors is likely to be moderate and characterised by plant and equipment associated with the nearby solar farm, agricultural equipment and machinery associated with agricultural production activities, and vehicle movements along the local and regional road.

ii Assessment approach

During the operational phase of the project, noise will be generated from project sources including substations, inverters, transformers, and air conditioning and ventilation units. The project would not generate significant traffic movements during operation, and it is unlikely that the project will produce any vibration impacts. The project will also generate noise during construction.

Noise and vibration will be assessed in the EIS in accordance with the:

- *NSW Interim Construction Noise Guideline* (ICNG) (DECC 2009);
- *NSW Noise Policy for Industry* (NPfI) (EPA 2017);
- *NSW Road Noise Policy* (RNP) (DECCW 2011); and
- *Assessing Vibration: A Technical Guideline* (DECC 2006).

A road traffic noise assessment will also be included in the EIS to assess noise impacts associated with project-related vehicle movements along the local road network during the construction phase of the project.

6.3 Biodiversity

6.3.1 Methodology

i Database searches

A desktop review was conducted on 21 July 2021 and involved a review of databases and relevant information, including:

- DAWE Protected Matters Search Tool (DAWE 2021) for matters protected by the EPBC Act;
- Biodiversity Conservation Division (BCD) BioNet Atlas of NSW Wildlife for threatened species and communities (OEH 2021) listed under the BC Act;
- a review of regional vegetation mapping including:
  - State Vegetation Type Map: Central West / Lachlan Region Version 1.4. VIS_ID 4468 (DPIE 2015);
- BCD NSW Vegetation Classification System to review plant community types (PCTs) that may occur (DPIE 2021); and
- aerial imagery for the proposal area and locality.

ii Field survey

The field survey was conducted over two days by two ecologists on the 29-30 July 2021 within the project site area (Figure 6.2). The intent of the field survey was to ground-truth and stratify regional vegetation mapping, identify potential threatened species habitat and outline any major constraints which would indicate the approval pathway required for the project.

An inspection of the Wellington substation adjacent to the project site area was also conducted along Goolma Rd and the access road within the project site area; however, the substation was not accessed at the time of survey and this limited the data that was collected for the substation.

Vegetation stratification and mapping was conducted using a handheld GPS and collector workspace to record plant community types (PCTs) and rapid data points such as potential habitat features including hollow-bearing trees.

6.3.2 Existing environment

The project site area is in NSW South Western Slopes Interim Biogeographic Regionalisation for Australia (IBRA) Bioregion and the Inland Slopes subregion (DoEE 2016a; 2016b). The Mullion slopes Mitchell Landscapes dominates the project site area with surrounding areas associated with the floodplain of the Macquarie River being characteristic of the Macquarie alluvial plains Mitchell Landscape (DPIE 2016).

i Plant Community Types and Threatened Ecological Communities

State Vegetation Type Map (DPIE 2015) has mapped the woodland within the project site area as PCT 266 - White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion.

The grassland areas of the project site area are mapped as PCT 511 - Queensland Bluegrass - Redleg Grass - Rats Tail Grass - spear grass - panic grass derived grassland of the Nandewar Bioregion and Brigalow Belt South Bioregion.

During the field survey it was determined that the woodland vegetation within the project site area is dominated by White Box (*Eucalyptus albens*) grassy woodland in varying conditions and is a characteristic of PCT 266.

Isolated patches of canopy species not characteristic of PCT 266 were also identified within the project site area and include Tumbledown Red Gum (*Eucalyptus dealbata*) and *Casuarina* sp. These patches will require further investigation in order to assign to an appropriate PCT and are shown as unclassified on Figure 6.2. Some candidate PCTs include:

- 461- Tumbledown Gum woodland on hills in the northern NSW South Western Slopes Bioregion and southern Brigalow Belt South Bioregion;
- 270- White Box - Tumbledown Red Gum - Long-leaved Box shrub/grass woodland on fine-grained sediments of the upper Macquarie River gorge, NSW central western slopes;
- 319- Tumbledown Red Gum - White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion;
- 332- Tumbledown Red Gum - Black Cypress Pine - Red Stringybark woodland on rocky hills in the NSW central western slopes; and
- 85- River Oak forest and woodland wetland of the NSW South Western Slopes and South Eastern Highlands Bioregion.

A preliminary assessment of the Wellington substation site was conducted along the roadside to the north and east of the substation (Figure 6.2). The substation features mixed native tree plantings over a predominantly native grassy understorey along the road frontage that includes canopy species characteristic of PCT 266 as well as other indigenous tree species to the region:

- White Box;
- Blakely's Red Gum (*Eucalyptus blakelyi*);
- Yellow Box (*Eucalyptus melliodora*);
- Silver-leaved Ironbark (*Eucalyptus melanophloia*);
- Narrow-leaved Ironbark (*Eucalyptus crebra*); and
- White Cypress Pine (*Callitris glaucophylla*).

The grassland vegetation within the project site area is highly variable due to land use history, with some areas dominated by native grassland species and others displaying varying degrees of pasture improvement. On a conservative basis, the grassland vegetation within the project site area has been classified as PCT 266 (Figure 6.2) and is treated as a grassland form of PCT 266 derived from the clearing of the original woodland community. Although the State Vegetation Type Map (DPIE 2015) classifies the grassland as PCT 511, the use of this PCT is not preferred as it is a derived vegetation type and its application would have implications on future biodiversity impact and offsetting assessments for development projects (eg use of appropriate benchmark values, consideration of credit matching rules etc).

PCT 511 is a highly variable derived tussock grassland that would have once supported a number of different woodland communities dominated by White Box, White Cypress Pine (*Callitris glaucophylla*), Weeping Myall (*Acacia pendula*) and Silver-leaved Ironbark (*Eucalyptus melanophloia*). Broadly, areas of PCT 511 would have once supported PCT 266 woodland in addition to other related woodland PCTs. In addition, PCT 511 is described as supporting native groundcover species that are also characteristic of PCT 266, including Red Grass (*Bothriochloa macra*), Purple Wiregrass (*Aristida ramosa*), Hairy Panic (*Panicum effusum*), Twining Glycine (*Glycine clandestina*), Slender Tick-trefoil (*Desmodium varians*) and Common Woodruff (*Asperula conferta*). Considering the distribution of PCT 266 (woodland form) across the project site area, it is likely that the grassland areas were derived from the clearing of PCT 266 woodland.

For these reasons, the classification of grassland areas within the project site areato PCT 266 (grassland form) is considered to be reasonable and appropriate.

a Stratification of PCT 266 within the project site area

The project site areais currently, and has historically been used for sheep grazing, with areas of improved pasture and crops. The condition of PCT 266 across the project site areais quite variable and is greatly affected by the current and historical land use and grazing management regimes.

Some woodland areas have typically been used as livestock camps for feeding and watering due to the provision of shade, and have higher exotic species cover and abundance. Other woodland areas are increasingly rocky on top of slopes or occur in areas which are harder for livestock to frequently access (west of the creek) and have higher native cover. Areas of derived grassland that appear to be fenced and not open to frequent grazing are dominated by native tussock grasses and support a higher native forb richness than areas that are open to grazing.

The preliminary stratification of woodland and grassland forms of PCT 266 within the project site area is summarised in Table 6.1 and illustrated in Figure 6.1.

Table 6.1 Vegetation stratification of the project site area

Vegetation zone	Description
PCT 266	
Woodland (good)	Intact woodland with canopy trees and high densities of native groundcover. Minimal shrub layer however minimal exotic species cover.
Woodland (moderate)	Intact woodland with canopy trees with moderate cover of native tussock grasses. Minor encroachment of exotic pasture grasses due to occurring adjacent to the patch.
Woodland (low)	Intact woodland with canopy trees and a low diversity of native tussock grasses and a moderate abundance of exotic pasture grasses.
Woodland (poor)	Intact woodland with canopy trees however the groundcover is dominated by exotic species. Current land management appears to include sheep camps surrounding watering troughs which has introduced a high cover of exotic herbaceous species and grasses within these zones.
Pasture (native)	Primarily dominated by native tussock grasses however has a low diversity. Low cover of introduced pasture grasses.
Pasture (improved)	A highly variable grassland dominated by native tussock grasses but has up to 50% cover of introduced pasture grasses
Derived native grassland	An area with a higher diversity of native grass and herbaceous species derived from PCT 266, with isolated occurrences of remnant trees. Relatively low exotic species cover, due to limited or no livestock grazing as area is fenced.

b Alignment with threatened ecological communities

PCT 266 is aligned with one threatened ecological community (TEC) listed under the *Biodiversity Conservation Act 2016* (BC Act) and one listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act):

- 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 Critically Endangered Ecological Community (CEEC) listed under the BC Act (referred to as Box-Gum CEEC); and

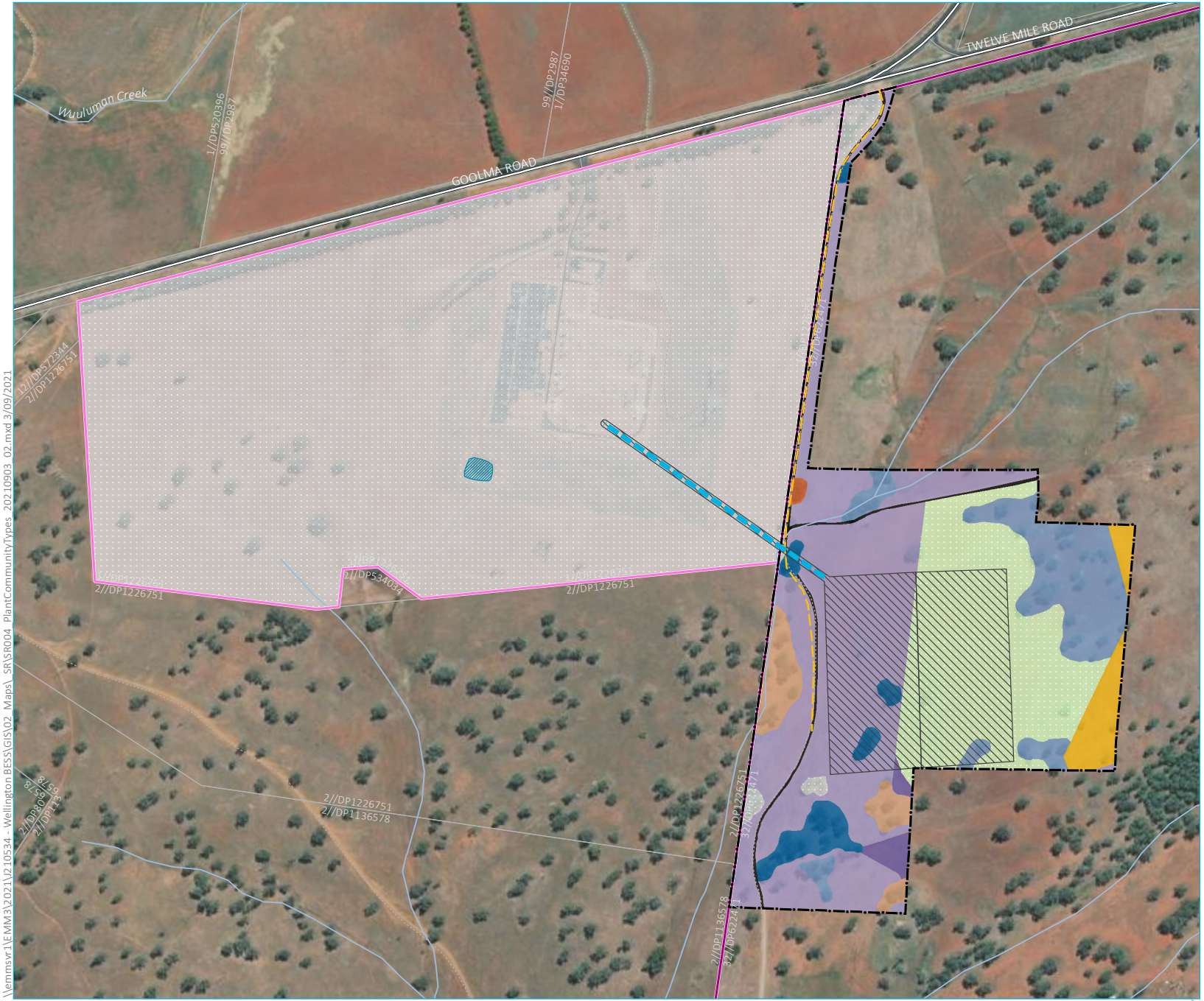
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland CEEC listed under the EPBC Act (also referred to as Box-Gum CEEC).

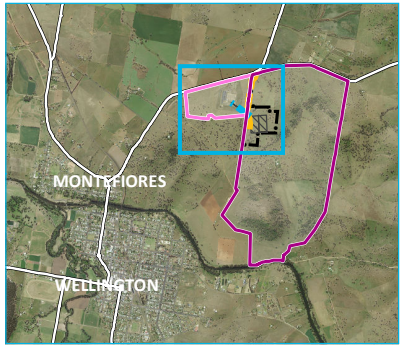
The BC Act listing for Box-Gum Woodland CEEC does not include prescriptive condition thresholds for the TEC; this means that areas of vegetation in the project site area that meet the description of the Box-Gum Woodland CEEC would likely be included as part of the listed community and would not be excluded on condition.

The EPBC Act listing for Box-Gum CEEC includes prescriptive condition thresholds (unlike the state listing). Further investigation would be required to determine alignment of vegetation within the project site area to the EPBC Act determination for Box-Gum CEEC. This would require vegetation plots to surmise vegetation thresholds outlined within the determination.

The Box-Gum CEEC is also a candidate for Serious and Irreversible Impacts (SAII) (BC Act). While the approval authority can approve a proposal which is likely to have serious and irreversible impacts, they must take those impacts into consideration and determine whether there are any additional and appropriate measures that will minimise those impacts if approval is to be granted.

The majority of candidate PCTs identified for the unclassified patches within the project site area do not have an associated TEC under the BC Act and EPBC Act. The one exception is PCT 270, which is also associated with the Box-Gum CEEC listed above.





KEY

- Landholding
- Wellington substation site
- Project site area
- Indicative development footprint
- Site access
- Preliminary connection
- Major road
- Minor road
- Vehicular track
- Watercourse/drainage line
- Waterbody
- Cadastral boundary
- Not vegetated
- Unclassified
- Cropped

PCT 266 | White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion

- Woodland (good)
- Woodland (moderate)
- Woodland (low)
- Woodland (poor)
- Pasture (native)
- Pasture (improved)
- Derived native grassland

Preliminary ecology constraints mapping

Wellington Battery Energy Storage System
Scoping Report
Figure 6.1

EMM
creating opportunities

Source: EMM (2021); AMPYR (2021); ESRI (2021); DFSI (2021, 2017)

0 250 500 m
GDA 1994 MGA Zone 55
N

\\emmsvr1\EMM3\2021\210534 - Wellington BESS\GIS\02_Maps_SR\SR004_PlantCommunityTypes_20210903_02.mxd 3/09/2021

ii Threatened species habitat

The desktop review included a search for threatened species that have the potential to occur in the project site area. A threatened species list was compiled from this database search and further refined based on the opportunistic habitat assessment during the field survey. The desktop search resulted in 80 terrestrial threatened species (excludes fish), comprising 47 birds, 19 flora, one insect, 12 mammals and one reptile, predicted or having potential to occur within the project site area.

During the field survey, a number of hollow-bearing trees were identified within the project site area, which may provide habitat for hollow-dependent species such as forest owls, arboreal mammals and microbats. These species require hollows of defined and varied sizes, which allows a detailed assessment of hollow size to exclude these species from further assessments. The woodland areas may also provide breeding and foraging habitat for a range of other species, including but not limited to, woodland bird species. The grassland within the project site area contains foraging and breeding habitat for grassland birds and areas of rocky outcrops hold potential breeding and foraging habitat for reptiles.

An unnamed second order stream runs through the project site area; however, did not appear to support a high diversity of aquatic flora species. The vegetation surrounding the stream is relatively disturbed by historical land management practices, with potential erosion occurring at some points. The disturbed nature of the stream reflects its status as not being mapped as key fish habitat or within freshwater threatened species fish distributions (DPI, 2016-2018), however these do occur downstream of the project site area and are associated with tributaries to the Macquarie River.

The grassland and woodland vegetation may also contain suitable habitat for threatened flora species. The variable condition may not be suitable habitat for species within the entire project site area, however those in higher condition may provide intact and optimal habitat for threatened flora species. Threatened flora may also occur within the lower condition areas, as some species regenerate after disturbance, however the historical management of the project site area may suggest that the likelihood of their occurrence is limited.

On review of the desktop searches and potential habitat within the project site area identified during field surveys, the number of threatened species with moderate to high likelihood of occurrence resulted in 41 terrestrial threatened species comprising of 25 birds, five flora, 10 mammals and one reptile.

6.3.3 Assessment pathway requirements

As the project is a is State significant development (SSD) (see section 4 and Table 4.1) a Biodiversity Development Assessment Report (BDAR) is required to accompany the EIS. The BC Act together with the *Biodiversity Conservation Regulation 2017* (BC Regulation), outlines the framework for addressing impacts on biodiversity from development within NSW. It establishes a framework to avoid, minimise and offset impacts on biodiversity from development through the Biodiversity Offsets Scheme (BOS).

The BOS includes the Biodiversity Assessment Method (BAM), for use by accredited persons in biodiversity assessment under the scheme. The purpose of the BAM is to assess the impact of actions on biodiversity, avoidance and mitigation measures used and to determine offset requirements. There are likely to be impacts on biodiversity values such as native vegetation and species habitat as a result of the proposal, therefore a BDAR waiver does not apply.

The vegetation within the project site area which have a higher ecological value are likely to yield greater offset costs due to occurring as PCTs with conditions which meet the described thresholds of the Box-Gum TEC under the BC Act and EPBC Act. Those with a lower ecological value, may not meet the thresholds of the Box-Gum TEC under the BC Act and EPBC Act and may require a smaller or no offset liability. Any offset liability and costings would need to be confirmed and would require further investigation.

Under the BAM, 'ecosystem credit' species are considered to be reliably predicted using vegetation types as surrogates and as such do not require targeted surveys to determine presence. In contrast, 'species credits' species cannot be confidently predicted by vegetation surrogates and must be subject to targeted survey. Several species are dual credit species, whereby they are assessed as ecosystem credit species and are assessed as a species credit species for a specific habitat or stage of their lifecycle.

To understand the likely targeted survey requirements for threatened species, a preliminary candidate species list has been compiled based on the likelihood of occurrence assessment outlined above. The targeted survey requirement for the project has been refined to exclude species which are confined to habitat constraints which do not occur within the project site area, or those that are distributed outside of the Wellington area and is limited to species credit and dual credit species (Table 6.2). Table 6.2 includes the seasonal survey timing requirements for each species. There are 21 candidate species identified using this approach. Four of these species credit species are also listed as candidates for SAII.

Table 6.2 Candidate species for target survey considerations

Scientific name	Common name	Credit Class	BC Act status	EPBC Act status	SAII	January	February	March	April	May	June	July	August	September	October	November	December
Birds																	
Burhinus grallarius	Bush Stone-curlew	S	E	-													
Callocephalon fimbriatum	Gang-gang Cockatoo	S/E	V	-													
Calyptorhynchus lathami	Glossy Black-Cockatoo	S/E	V	-													
Hieraaetus morphnoides	Little Eagle	S/E	V	-													
Lophochroa leadbeateri	Major Mitchell's Cockatoo	S/E	V	-													
Lophoictinia isura	Square-tailed Kite	S/E	V	-													
Ninox connivens	Barking Owl	S/E	V	-													
Polytelis swainsonii	Superb Parrot	S/E	V	V													
Tyto novaehollandiae	Masked Owl	S/E	V	-													

Table 6.2 Candidate species for target survey considerations

Scientific name	Common name	Credit Class	BC Act status	EPBC Act status	SAII	January	February	March	April	May	June	July	August	September	October	November	December
Flora																	
Acacia ausfeldii	Ausfeld's Wattle	S	V	-													
Dichanthium setosum	Bluegrass	S	V	V													
Euphrasia arguta	-	S	CE	CE	*												
Grevillea wilkinsonii	Tumut Grevillea	S	CE	E	*												
Prasophyllum sp. Wybong	Prasophyllum sp. Wybong	S	-	CE	*												
Swainsona recta	Small Purple-pea	S	E	E													
Swainsona sericea	Silky Swainson-pea	S	V	-													
Zieria obcordata	Granite Zieria	S	E	E	*												

Table 6.2 Candidate species for target survey considerations

Scientific name	Common name	Credit Class	BC Act status	EPBC Act status	SAII	January	February	March	April	May	June	July	August	September	October	November	December
Mammals																	
Petaurus norfolcensis	Squirrel Glider	S	V	-													
Phascogale tapoatafa	Brush-tailed Phascogale	S	V	-													
Phascolarctos cinereus	Koala	S/E	V	V													
Reptiles																	
Aprasia parapulchella	Pink-tailed Legless Lizard	S	V	V													

1. Credit class: S = species credit, S/E = dual species/ecosystem credit
2. EPBC and BC act Status: V = Vulnerable, E = Endangered and CE = Critically Endangered.
3. * denotes SAII species

6.3.4 Summary of key findings

The project site area is dominated by PCT 266 which is aligned with one TEC under the BC Act and one under EPBC Act, both listed as a CEEC. The vegetation within the project site area is highly variable and has been stratified based on the occurrence of canopy trees and condition of the mid and ground strata. Table 6.2 indicates that these stratified vegetation zones occur as variable conditions (Figure 6.1). The implication for impact to these areas requires further investigation upon confirmation of the project design. The stratification of these vegetation zones allows for the project design to be located in lower condition areas to reduce offsetting liability within the project site area.

6.3.5 Assessment approach

The potential biodiversity impacts of the project are required to be assessed in accordance with the BAM. The assessment is required to include the preparation of a BDAR which should include assessment of biodiversity values, consideration of prescribed impacts (those not quantified by ecosystem or species credits), presentation of mitigation and avoidance measures, quantification of the offsetting requirements and will present a strategy for offset delivery if required.

The BDAR is also required to include:

- refinement of vegetation stratification and stratify PCTs within the project area into broad condition states (vegetation zones) (the design should be refined to exclude any areas included in the project site area not intended to be impacted);
- habitat mapping with a focus on assessing habitat constraints for candidate species (including, but not limited to hollow sizes), which may allow several species to be excluded from requiring further assessment if features are absent or degraded;
- development of a refined list of candidate species requiring survey based on the outcomes of the habitat assessment;
- vegetation plots to measure vegetation integrity scores of different vegetation zones. Any vegetation above the vegetation integrity threshold that requires offsetting will be avoided through the design process or offset in accordance with the Biodiversity Offset Scheme (BOS);
- targeted species surveys for candidate species, with reference to appropriate methods and timing;
- assessment of any impacts to downstream key fish habitat and threatened aquatic species outside of the project site area; and
- potential matters of national environmental significance, including TECs and whether referral to the Commonwealth is required.

6.3.6 Measures to avoid/minimise potential for serious and irreversible impacts.

Further fieldworks will be undertaken to assess the potential for SAII as a result of developing the project. Procedural measures during construction and operation to avoid and or minimise the potential for SAII will be documented within the BDAR. These measures include pre-clearance surveys and establishing vegetation exclusion zones. There is further opportunity to avoid SAII through design, in particular the layout of the facility.

The 'indicative development footprint' (presented in Figure 6.1) has been selected in order to avoid higher condition grassland systems observed at site. Condition classes will be verified in future fieldworks to inform the siting of project infrastructure.

6.4 Heritage

6.4.1 Aboriginal cultural heritage

i Existing environment

An Aboriginal Heritage Information Management System (AHIMS) search over a 10 km^2 area centred on the project site area was carried out and returned no listed items.

However, the absence of registrations on AHIMS is most accurately considered a product of the level of prior assessment, as opposed to the absence of Aboriginal cultural values. There is considered a high potential for Aboriginal sites to occur, primarily associated with Macquarie River and its tributaries. Given the high level of land clearance, unobtrusive site types are the most likely to be identified such as isolated finds and artefact scatters; however, scarred trees are possible amongst mature vegetation. The site is highly modified due to agricultural land uses, which will have direct implications on archaeological preservation.

ii Assessment approach

Without appropriate Aboriginal cultural heritage assessment and implementation of avoidance measures, the project has the potential to impact on Aboriginal cultural heritage through the disturbance or destruction of Aboriginal heritage sites potentially present within the project site area.

An Aboriginal cultural heritage assessment (ACHA) will be prepared for the project in accordance with relevant regulations and guidelines, including:

- *Guide to investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH 2011);
- *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010a); and
- *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010b).

The approach to the ACHA is summarised below.

a Consultation

Consultation with the Aboriginal community is a requisite component of Aboriginal assessment in NSW in instances where Aboriginal objects or places are identified in an area and have the potential to be harmed. Aboriginal people that express an interest in being involved with the project then become registered and are referred to as registered Aboriginal parties (RAPs).

EMM has longstanding experience in undertaking Aboriginal consultation as part of the ACHA process in NSW (including as part of complex SSD projects).

Consultation must be in accordance with the consultation guidelines with the following stages:

- **Stage 1:** Notification and registration of RAPs (approximately one month to complete). This stage also requires that a media notice be placed in a local newspaper to advertise for interested Aboriginal groups.
- **Stage 2:** Presentation of the project and assessment methods (mandatory minimum 28 day review period).

- **Stage 3:** Gathering information about Aboriginal cultural heritage (from RAPs). This stage initiated upfront with Stage 2 so that it may guide the archaeological survey. Cultural information will also be welcomed throughout the ACHA phase.

- **Stage 4:** Aboriginal community review of draft ACHA (mandatory minimum 28 day review period). Depending on the complexity of the results and proposed management measures, a consultation meeting may be necessary during this stage, however it has not been costed for at this stage. Stage 4 also includes the additional task of responding to RAP comments/submissions in the final report.

Aboriginal consultation includes keeping a consultation register that records all relevant communication with RAPs and the outcomes of that communication. The consultation log is an essential part of the ACHA.

b Desktop assessment and predictive model

A desktop assessment will be carried out comprising:

- review of existing environment: the landscape context of the proposed area will be reviewed to identify the likelihood of Aboriginal objects to have been deposited and the likelihood of their preservation in light of historical and natural site disturbance processes; and

- literature review: relevant previous archaeological investigations and ethnographical records will be reviewed to determine if Aboriginal objects have been recorded on similar landscapes in the local area.

A predictive model of Aboriginal site locations will be prepared with the aid of GIS analysis and mapping. The results of the predictive model will form the basis of the archaeological survey. This information will be used to:

- target the survey towards areas of higher archaeological sensitivity;

- allow the inspection of specific cultural areas, if identified by the Aboriginal community; and

- gather a representative sample of areas of lower archaeological sensitivity to verify predictions and characterise the nature of archaeological record.

c Archaeological survey

An archaeological survey is required to meet the requirements of the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010). Survey will be undertaken once RAPs have been identified and provided with the opportunity to comment on the proposed assessment methods. The archaeological survey will aim to:

- identify previously unrecorded Aboriginal sites or identify Aboriginal places of cultural significance with the aid of local Aboriginal knowledge holders; and

- identify areas with subsurface archaeological potential.

Potential project constraints identified during the survey will inform refinement of the project development footprint (where possible) to minimise impacts to Aboriginal heritage values.

6.4.2 Historic heritage

i Existing environment

A search of the available historic heritage inventories was carried out including:

- Wellington LEP;
- Register of the National Estate; and
- State Heritage Register.

There are no National, State or Local listed heritage items identified within the project site area. The closest heritage item to the project site area is Nanima Homestead, located approximately 1 km west of the project site area.

The project site area is located within a smaller portion of the larger known Nanima Estate (also called Nanima Station). A field inspection was conducted by EMM Archaeologist Kerryn Armstrong on 27 and 28 July 2021. During this inspection the project area was traversed to attempt to locate or identify any possible heritage remnants. The visibility was low due to grass cover and no indication of archaeological resources were visible on the surface.

ii Assessment approach

The following key tasks will be undertaken as part of a baseline heritage constraints assessment to assess the potential impacts on historic heritage associated with the project:

- a review of the NSW State Heritage Inventory, the relevant LEPs and the Australian Heritage Database to determine if there is any additional information on place of heritage significance in or near to the project;
- additional research to better assess the level of potential of archaeological resources within the project footprint; and
- mapping of identified registered historic heritage items and additional historic heritage items (if found during site assessment) identified from these reviews.

6.5 Social

The project site area is within the Dubbo Regional Council LGA in the former Wellington Council LGA.

The population of the Dubbo Regional Council LGA in 2020 was 54,044 with a median age of 38 years. The largest employer in the LGA is health care and social assistance, employing 16.45% of the labour force; followed by retail trade, employing 11.32% of the labour force; and education and training, employing 9.61% of the labour force. Unemployment in the LGA was at 1.70% which is lower than the NSW unemployment rate of 6.2% (REMPLAN 2020). The township of Wellington, approximately 2 km south-west of the project site area, is the nearest population centre to the project with a population of 4,078 with a median age of 38 years.

6.5.1 Assessment approach

DPIE has recently finalised the new *Social Impact Assessment Guideline for State Significant Projects 2021* (SIA Guideline). The SIA Guideline will officially commence on 1 October 2021, meaning reference to the guideline will likely be included in the SEARs issued for the project.

An SIA will be prepared for the project in accordance with the SIA Guideline. The SIA will be proportional with the scale, complexity and likely impacts and benefits of the project. The SIA will consider the following aspects:

- How might the project affect the values/character that people associate with the community?
- Will the project materially change how people experience the landscape and nature values through perceived industrialisation?
- Will the project affect people's ability to sustain themselves through employment or business opportunities?
- Will the economic benefits and impacts be equally distributed, eg between local and regional communities?
- Will Aboriginal people have the ability to gain sustenance (spiritual or otherwise) from the land?
- Can affected people make informed decisions or feel they can influence project decisions, including elements of project design?

The SIA will involve completion of the following stages of assessment:

Stage 1 Social baseline study

A social baseline study will be prepared, including the following aspects of the local and extended area of social influence:

- the demography of the area of social influence;
- analysis of the community characteristics (community culture and values, community history, community well-being, land/property ownership and utilisation of natural resources);
- identification of vulnerable groups and the capacity of potentially affected community members to participate in the community and stakeholder engagement;
- an overview of land use and key industries in the region, and relevant local and state government plans;
- identification of the capacity and accessibility of infrastructure, facilities, and services, including education, health, and emergency services;
- analysis of the existing housing and accommodation market, including availability, capacity, and affordability;
- a profile of the local and regional labour market, including an assessment of available workforce with relevant skills to service the project; and
- a summary of other resource and infrastructure projects in the area of social influence, both planned and currently operating, based on publicly accessible information.

The social baseline will provide a comprehensive understanding of the communities that will be potentially directly and indirectly impacted by the project.

Stage 2 Consultation

Stage 2 will involve consultation with key stakeholders. The stakeholder consultation will be highly targeted and will focus on those stakeholders with the potential to be directly impacted. Stage 2 will include:

- discussions with local council representatives and directly impacted landholders, residents, businesses and/or service providers; and
- analysis and presentation of interview data.

This may include a combination of online surveys and in-depth interviews with key stakeholders.

This data, along with information collected during community and stakeholder consultation and engagement activities conducted as part of the preparation of the EIS, will assist in validation of data collected during the SIA and assist in determining perceptions of social impacts from those supported by findings from technical studies.

Stage 3 Social impact identification

The identification of potential social impacts and benefits from the project will be completed through triangulation of the findings from:

- social baseline study;
- SIA field study;
- EIS technical studies, eg noise, land and soil, heritage, biodiversity, traffic, and water;
- other similar projects and available literature to identify potential impacts; and
- community consultation conducted by the project engagement team.

This analysis will inform the socio-economic risk assessment outlined in Stage 4.

Stage 4 Socio-economic risk assessment

EMM will assess each of the potential social impacts identified to predict the nature and scale of potential impacts for the life of the project and post closure. A social risk and benefit approach will be adopted to assess the consequence and likelihood of potential negative social impacts without mitigation. If impacts are assessed as significant, a significance assessment will be undertaken to determine the residual risk (ie once mitigation measures are applied).

The results from the social risk assessment will be used to inform priorities and resource allocation for the implementation of impact mitigation and benefit enhancement measures (Stage 5).

Stage 5 Social impact management and monitoring

The social impact management and monitoring for the identified social impacts will consider:

- impact mitigation measures for construction and operations if required;
- potential benefit enhancement strategies from project construction and operations;
- workforce strategies (eg strategic hiring and training); and

- community investment programs to meet needs and aspirations of communities in the areas of social influence.

The findings from Stages 1 – Stage 5 to inform the development of the social impact management plan to form part of the SIA Report.

Stage 6 Reporting

An SIA Report will be prepared, including the findings from stages 1 to 5.

6.6 Traffic

6.6.1 Existing environment

The project site area is accessible via Goolma Road (via the Mitchell Highway or Castlereagh Highway). Goolma Road and the Mitchell Highway are both approved B-double transport routes. There is a school bus route that runs along its length. In the vicinity of the project site area and the Mitchell Highway, Goolma Road is a sealed single lane road. The proposed site access is near to the intersection of Goolma Road and Twelve Mile Road.

The intersection of Goolma Road and Twelve Mile Road is subject to future closure and realignment to a new location, approximately 400 m to the north. This work is to be undertaken by CWP Renewables as a condition of development consent prior to commencing construction of the Uungula Wind Farm (SSD 6687).

The local roads are unsealed Council-owned roads with minimal through traffic, and are used primarily to access the agricultural landholdings, scattered rural residences, and renewable energy facilities.

6.6.2 Assessment approach

A traffic impact assessment (TIA) will be carried out to investigate potential impacts associated with the project. The TIA will include the following key elements:

- projections of traffic volumes (both light and heavy vehicles) and transport routes during construction and operation;
- assessment of the potential traffic impacts of the project on road network function, including intersection performance, site access arrangements and road safety, including school bus routes and cyclist safety;
- consideration of traffic associated with nearby development projects with potential to have interactions with the project, including (but not limited to) the construction of the Wellington Solar Farm Project and Uungula Wind Farm;
- assessment of potential site access design options off either Twelve Mile Road or Goolma Road in consideration of the proposed realignment to be undertaken by CWP;
- assessment of the capacity and condition of the existing road network to accommodate the type and volume of traffic generated by the project (including over size vehicles, over mass vehicles and escorted deliveries) during construction and operation; and
- provide details of measures to manage potential impacts, including a schedule of required road upgrades, road maintenance contributions, and other traffic control measures, developed in consultation with the relevant road authority.

6.7 Hazards and risks

Potential hazardous scenarios and risks associated with the project include bushfires, dangerous goods and hazardous substances and exposure to electromagnetic fields (EMF).

Accordingly, the EIS will include the following:

- an assessment of potential hazards and risks including but not limited to bushfires, and EMF for the proposed grid connection infrastructure against the International Commission on Non-Ionizing Radiation Protection (ICNIRP) *Guidelines for limiting exposure to Time-varying Electric, Magnetic and Electromagnetic Fields;* and

- a Preliminary Hazard Analysis prepared in accordance with *Hazardous Industry Planning Advisory Paper No 6 Hazard Analysis* (DoP 2011c) and *Multi-Level Risk Assessment* (DoP 2011d).

There is no established evidence that the exposure to EMFs generated by powerlines, substations and other electrical sources can cause adverse health effects (ARPANSA 2018). Generally, distances beyond 50 m from a high voltage powerline are not expected to have higher than typical magnetic field, and for substations, magnetic field levels at distances of 5-10 m away are no higher than background levels in a typical home. EMF that is anticipated to be generated by the project is not expected to exceed guidelines for public exposure and will not cause adverse impacts for human health. The EMF levels of the project including substation, PCUs and transmission line will be assessed as part of the EIS but are not anticipated to increase EMF levels in a material way above existing background environmental levels.

6.8 Land resources

6.8.1 Existing environment

Soils across the project site area are mapped as ferrosols under the Australian Soil Classification system. Ferrosol soils are well-drained soils with clay-loam to clay textures with typically high agricultural potential. A review of the eSpade database confirmed that a small portion of the site (access road) is mapped Biophysical Strategic Agricultural Land (BSAL).

Modelled sheet and rill soil erosion potential for the project site area are based on bare soil and natural topography, expressed in tonnes per hectare per year of soil loss (t/ha/year) and is indicated within the eSPADE database. This modelled data indicates that erosion potential is variable across the project site area ranging from <20 t/ha/yr to 50 - <200 t/ha/yr (refer Figure 6.2).

The project site area is mapped as Class 6 under the land and soil capability (LSC) assessment scheme. Class 6 is characterised as possessing very severe limitations and suitable only for grazing with limitations and is not suitable for cultivation.

6.8.2 Assessment approach

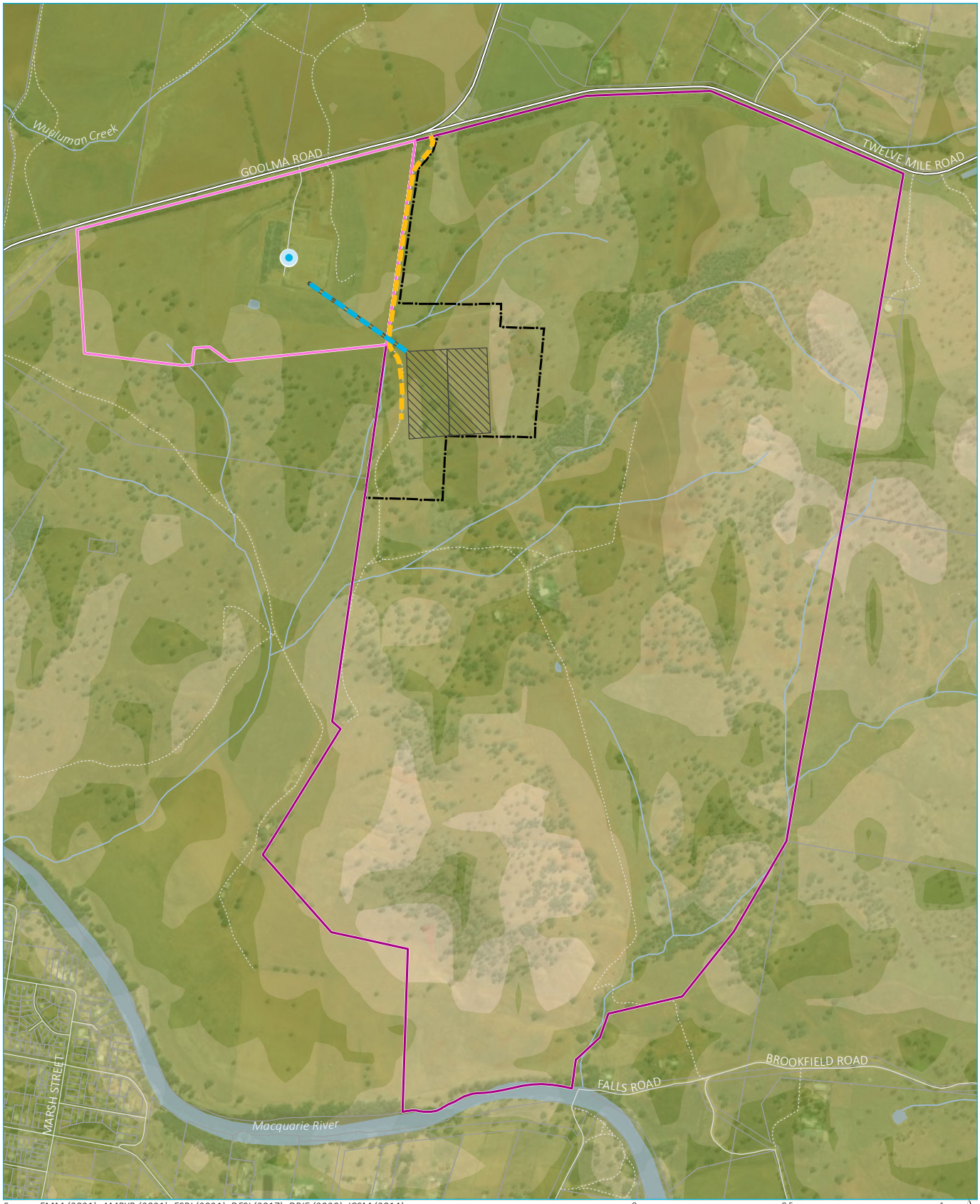
Consideration of impacts to land and the potential for erosion and sedimentation issues will be included in the EIS. The assessment will be supported by a visual field inspection to identify the locations for and types of erosion and sediment control measures potentially required.

6.9 Water resources

6.9.1 Existing environment

The project site area is located within the Macquarie-Bogan Catchment. The catchment covers an area of more than 74,800 m^2. The Fish and Campbells Rivers join to form the Macquarie River near Bathurst, then extends north-west to the Barwon River upstream of Bourke. At Burrendong Dam, the Macquarie River is joined by the Cudgegong River, which rises in the Great Dividing Range above Rylstone. Macquarie River traverses the township of Wellington, approximately 2 km south-west of the project site area. An unnamed tributary extends north of the river and through the project site area before branching continuing to the north-east (refer Figure 6.3). A review of LEP flood planning maps did not identify any flood planning areas in or in the vicinity of the project site area.

The project site area is identified as 'groundwater vulnerable' on the Mid-Western Region LEP Groundwater vulnerability map. Clause 6.4 of the Wellington LEP requires the consent authority to consider the likelihood of groundwater contamination from a development and potential impacts on groundwater dependent ecosystems prior to determining a development application.



Source: EMM (2021); AMPYR (2021); ESRI (2021); DFSI (2017); DPIE (2020); ICSM (2014)

0 0.5 1 km

GDA 1994 MGA Zone 55

N

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KEY

- Landholding
- Wellington substation site
- Project site area
- Indicative development footprint
- Site access
- Preliminary connection
- Wellington substation (TransGrid)
- Major road
- Minor road
- Vehicular track
- Watercourse/drainage line
- Waterbody
- Cadastral boundary

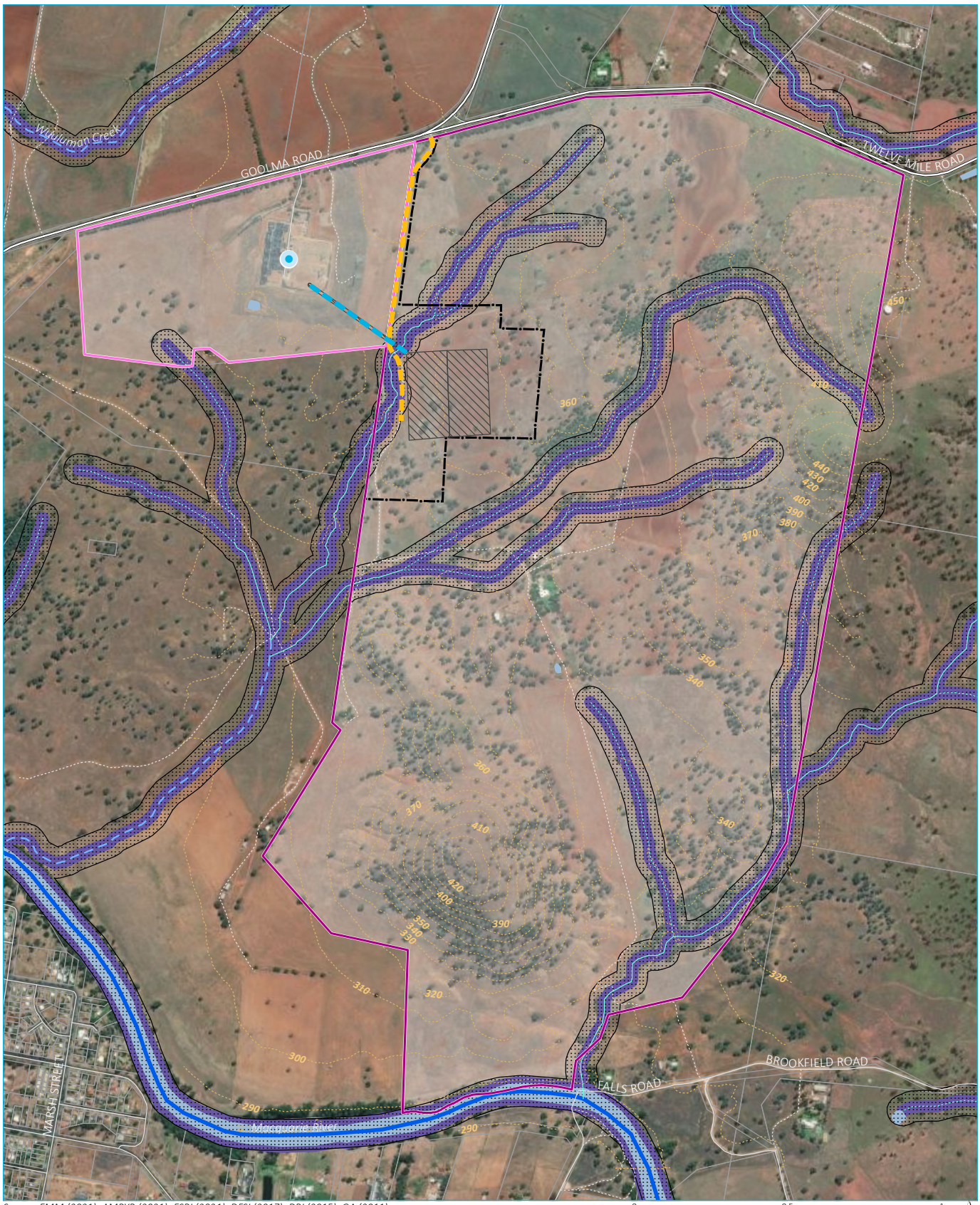
Soil erosion, bare

- <20 t/ha/yr
- 20 - <50 t/ha/yr
- 50 - <200 t/ha/yr
- 200 - <500 t/ha/yr
- 500 - <1,000 t/ha/yr

Modelled erosion, bare

Wellington Battery Energy Storage System
Scoping Report
Figure 6.2

EMM
creating opportunities



Source: EMM (2021); AMPYR (2021); ESRI (2021); DFSI (2017); DPI (2015); GA (2011)

0 0.5 1 km

GDA 1994 MGA Zone 55

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KEY

- Vegetated riparian zone (VRZ)*
- Waterfront land*
- Waterbody

Strahler stream order

- 1st order
- 2nd order
- 3rd order
- 9th order

- Landholding
- Wellington substation site
- Project site area
- Indicative development footprint
- Site access
- Preliminary connection
- Wellington substation (TransGrid)

- Major road
- Minor road
- Vehicular track
- Topographic contour (10 m)
- Cadastral boundary

*** NOTE:** Waterfront land and VRZ outside of indicative project area is indicative only

Surface water features

Wellington Battery Energy Storage System
Scoping Report
Figure 6.3

EMM
creating opportunities

6.9.2 Assessment approach

Potential impacts to water resources from the project are expected to include demand for water during the construction of the project, as well as for land management during operations. The project is not likely to impact groundwater during construction, operation and decommissioning due to the limited amount of subsurface disturbance activities required during the installation and decommissioning of project infrastructure.

Water demands will be relatively small, as the construction of the BESS is non-water intensive and tanked water is typically brought in where needed. If surface water or groundwater extraction is required to meet the project's demand for water, an assessment of impacts for these water sources will be included in the EIS.

The surface water assessment will include a review of the existing surface water environment, an assessment of the surface water impacts and a description of any proposed mitigation and management measures. Key surface water issues to be explored will include:

- flood risk assessment to identify flood extents and potential flooding characteristics;
- water management during construction and operation; and
- impacts to receiving waters.

The project will avoid riparian corridors as far as practicable. In areas where avoidance is unavoidable, actions will be carried out to minimise potential impacts. In addition, roads and services that require watercourse crossings will be designed and constructed in accordance with best practice design and construction methods.

6.10 Air quality

6.10.1 Existing environment

Land use within the project site area and surrounds is primarily agricultural, which is likely to influence local and regional air quality. Existing sources of air pollution within a local setting are limited and consist primarily of dust and vehicle and machinery exhaust emissions associated with agricultural production. The nearest non-project related residence (59 Twelve Mile Rd) is located approximately 700 m north-east of the project site area.

6.10.2 Assessment approach

The project is not anticipated to generate significant air quality impacts during construction or operations. Project-related traffic utilising the access road to the project site area may contribute to localised dust generation primarily during the construction phase of the project. Mitigation measures will be implemented to address these impacts. These measures will be discussed with Council and surrounding landholders as part of ongoing stakeholder engagement. The implementation of these mitigation measures will ensure that the project will not generate significant air quality impacts during construction, operation or decommissioning.

A detailed air quality assessment is not considered to be required as part of the EIS as potential impacts will be temporary in nature and will not extend beyond the construction phase of the project.

6.11 Cumulative impacts

Other proposed, approved, under construction, and operational renewable energy developments are within the vicinity of the project site area. These project include:

- Wellington Solar Farm South - adjacent to the project site area on the opposite side of Goolma Road;
- Wellington Solar Farm North - north of the Wellington Solar Farm South;
- Bodangora Wind Farm - approximately 10 km north-east of the project site area;
- Uungula Wind Farm - approximately 10.5 km east of the project site area; and
- Suntop Solar Farm - approximately 13 km south-west of the project site area.

The project may generate cumulative impacts in conjunction with surrounding projects during both construction and operation. These impacts may include cumulative traffic, noise, visual, social, and biodiversity impacts.

However, there may also be a cumulative benefit to local communities from the project and other developments in the region, particularly during project construction, and contribution to local economies associated with the purchase of local goods and services.

The EIS will carry out a cumulative assessment in accordance with the *Cumulative Impact Assessment Guidelines for State Significant Projects* (DPIE 2021c).

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OEH 2021, *BCD BioNet Atlas of NSW Wildlife.*

REMPLAN 2020, *Dubbo Regional Council,* https://app.remplan.com.au/dubboregionalcouncil/community.

Appendix A

Scoping summary table

A.1 Scoping summary table

Table A.1 Scoping summary table

Level of assessment	Matter	Cumulative Impact Assessment (CIA)	Engagement	Relevant policies and guidelines
Detailed	Heritage – Aboriginal	Yes	Specific	• 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);
	Biodiversity	Yes	General	• 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);
	Amenity – Noise and vibration	Yes	General	• NSW Interim Construction Noise Guideline (ICNG) (DECC 2009); • NSW Noise Policy for Industry (NPfI) (EPA 2017); • NSW Road Noise Policy (RNP) (DECCW 2011); and • Assessing Vibration: A Technical Guideline (DECC 2006).
Standard	Air quality	No	General	• N/A
	Heritage - Historic	Yes	General	• Historical Archaeology Code of Practice (Heritage Council 2006)
	Hazards and risks	No	Specific	• Hazardous Industry Planning Advisory Paper No. 6 – Guideline for Hazard Analysis (DoP, 2011b); • Multi-Level Risk Assessment (DoP, 2011d); • Hazardous and Offensive Development Application Guidelines: Applying SEPP 33 (DoP 2011a);
	Land resources	No	General	• Land Use Conflict Risk Assessment Guideline (DPI 2011) • Managing Land Contamination: Planning Guidelines SEPP 55 – Remediation of Land (Department of Urban Affairs and Planning and Environment Protection Authority, 1998)
	Socio-economic	Yes	Specific	• Social Impact Assessment Guideline for State Significant Projects 2021 (DPIE 2021d)
	Traffic and transport	Yes	Specific	• Guide to Traffic Management – Part 3 Traffic Studies and Analysis (Austroads, 2013)

Table A.1 Scoping summary table

Level of assessment	Matter	Cumulative Impact Assessment (CIA)	Engagement	Relevant policies and guidelines
	Amenity - Visual	Yes	Specific	• *Guidelines for Landscape and Visual Impact Assessment* (United Kingdom Landscape Institute of Environmental Management and Assessment 2013); • Wind Energy: Visual Assessment (VA) Bulletin AB 01 For State Significant Wind Energy Development (DPE 2016); and • *Guidance Note for Landscape and Visual Assessment* (Australian Institute of Landscape Architects 2018).
	Water resources	No	General	• 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)

Appendix B

Protected Matters Search Tool result

Australian Government

Department of Agriculture, Water and the Environment

EPBC Act Protected Matters Report

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

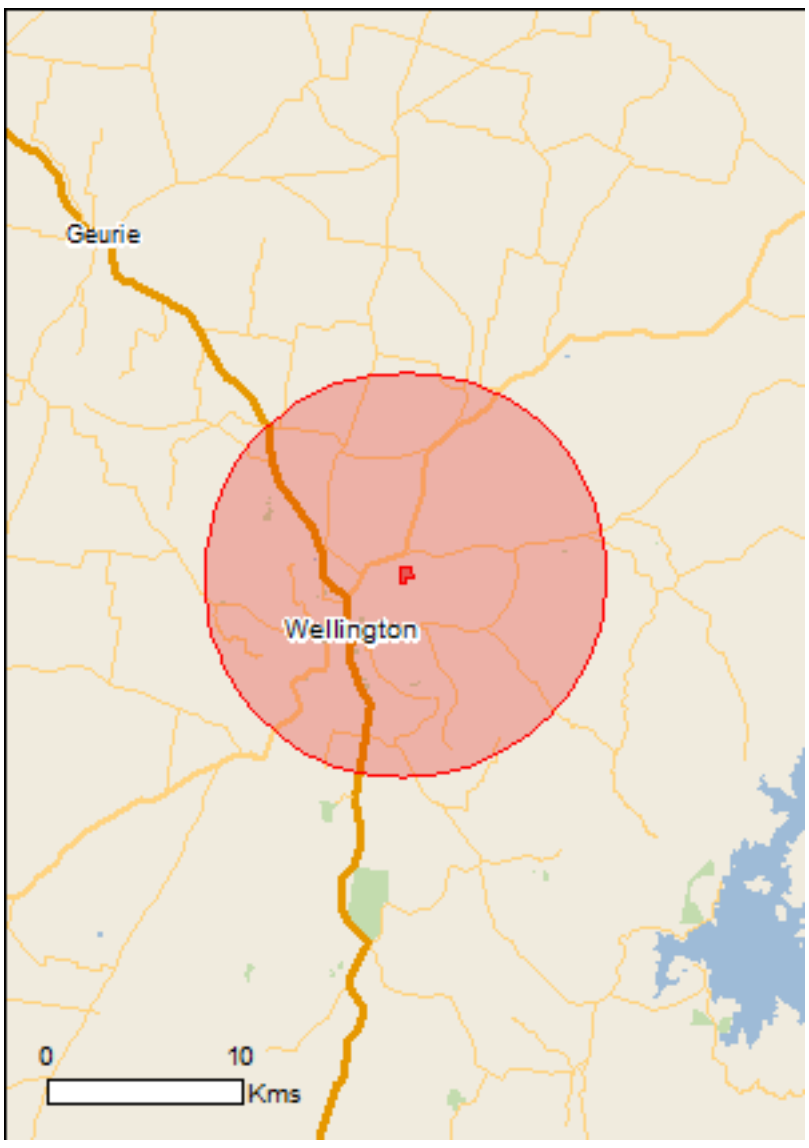
Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

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

Report created: 22/07/21 16:06:53

Summary
Details
- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat
Acknowledgements



Coordinates

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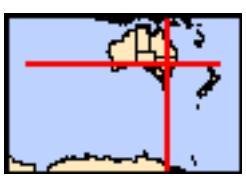

Summary

Matters of National Environmental Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	4
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	3
Listed Threatened Species:	30
Listed Migratory Species:	11

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Land:	2
Commonwealth Heritage Places:	1
Listed Marine Species:	17
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

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

State and Territory Reserves:	None
Regional Forest Agreements:	None
Invasive Species:	29
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar) [Resource Information]

Name	Proximity
Banrock station wetland complex	800 - 900km upstream
Riverland	700 - 800km upstream
The coorong, and lakes alexandrina and albert wetland	900 - 1000km upstream
The macquarie marshes	200 - 300km upstream

Listed Threatened Ecological Communities [Resource Information]

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

Name	Status	Type of Presence
Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Endangered	Community likely to occur within area
Poplar Box Grassy Woodland on Alluvial Plains	Endangered	Community may occur within area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area

Listed Threatened Species [Resource Information]

Name	Status	Type of Presence
Birds		
Anthochaera phrygia		
Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area
Botaurus poiciloptilus		
Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Falco hypoleucos		
Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Grantiella picta		
Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area
Hirundapus caudacutus		
White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor		
Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Leipoa ocellata		
Malleefowl [934]	Vulnerable	Species or species habitat likely to occur within area

Name	Status	Type of Presence
[Numenius madagascariensis](#) Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
[Polytelis swainsonii](#) Superb Parrot [738]	Vulnerable	Species or species habitat known to occur within area
[Rostratula australis](#) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Fish		
[Galaxias rostratus](#) Flathead Galaxias, Beaked Minnow, Flat-headed Galaxias, Flat-headed Jollytail, Flat-headed Minnow [84745]	Critically Endangered	Species or species habitat may occur within area
[Maccullochella macquariensis](#) Trout Cod [26171]	Endangered	Species or species habitat likely to occur within area
[Maccullochella peelii](#) Murray Cod [66633]	Vulnerable	Species or species habitat known to occur within area
[Macquaria australasica](#) Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area
Mammals		
[Chalinolobus dwyeri](#) Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat likely to occur within area
[Dasyurus maculatus maculatus (SE mainland population)](#) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat known to occur within area
[Nyctophilus corbeni](#) Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat likely to occur within area
[Petrogale penicillata](#) Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat may occur within area
[Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)](#) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat known to occur within area
[Pteropus poliocephalus](#) Grey-headed Flying-fox [186]	Vulnerable	Roosting known to occur within area
Plants		
[Androcalva procumbens](#) [87153]	Vulnerable	Species or species habitat likely to occur within area
[Austrostipa wakoolica](#) [66623]	Endangered	Species or species habitat may occur within area
[Euphrasia arguta](#) [4325]	Critically Endangered	Species or species habitat may occur within area
[Prasophyllum petilum](#) Tarengo Leek Orchid [55144]	Endangered	Species or species habitat may occur within area
[Prasophyllum sp. Wybong (C.Phelps ORG 5269)](#) a leek-orchid [81964]	Critically Endangered	Species or species habitat may occur within

Name	Status	Type of Presence
		area
Swainsona recta Small Purple-pea, Mountain Swainson-pea, Small Purple Pea [7580]	Endangered	Species or species habitat known to occur within area
Tylophora linearis [55231]	Endangered	Species or species habitat may occur within area
Zieria obcordata Granite Zieria [3240]	Endangered	Species or species habitat likely to occur within area
Reptiles		
Aprasia parapulchella Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat likely to occur within area

Listed Migratory Species [Resource Information]

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

Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land [Resource Information]

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

Name
Commonwealth Land - Australian Postal Commission
Commonwealth Land - Australian Telecommunications Commission

Commonwealth Heritage Places [Resource Information]

Name	State	Status
Historic		
Wellington Post Office	NSW	Listed place

Listed Marine Species [Resource Information]

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

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Chrysococcyx osculans Black-eared Cuckoo [705]		Species or species habitat likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat may occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area

Extra Information

Invasive Species [Resource Information]

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

Name	Status	Type of Presence
Birds		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Capra hircus Goat [2]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Feral deer Feral deer species in Australia [85733]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Nassella neesiana Chilean Needle grass [67699]		Species or species habitat likely to occur within area
Nassella trichotoma Serrated Tussock, Yass River Tussock, Yass Tussock, Nassella Tussock (NZ) [18884]		Species or species habitat likely to occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur

Name	Status	Type of Presence within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Tamarix aphylla Athel Pine, Athel Tree, Tamarisk, Athel Tamarisk, Athel Tamarix, Desert Tamarisk, Flowering Cypress, Salt Cedar [16018]		Species or species habitat likely to occur within area
Ulex europaeus Gorse, Furze [7693]		Species or species habitat likely to occur within area

Caveat

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

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

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

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

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

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

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

- migratory and
- marine

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

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

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

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

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

Coordinates

-32.528614 148.966829,-32.528488 148.972472,-32.533047 148.972772,-32.533101 148.969683,-32.534783 148.969425,-32.534621 148.966571,-32.528614 148.966829

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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