Scoping Report

Tamworth BESS

29 July 2021

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Tamworth BESS

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Issued to			
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Abbreviations

°C	degrees celsius
Accent	Accent Environmental Pty Ltd
ACHAR	Aboriginal cultural heritage assessment report
ACHCR	Aboriginal cultural heritage consultation requirements
AHIMS	Aboriginal heritage information management system
BAM	biodiversity assessment methodology
BC Act	*Biodiversity Conservation Act 2016*
BDAR	biodiversity development assessment report
BESS	battery energy storage system
BOM	Bureau of Meteorology
DAWE	Commonwealth Department of Agriculture, Water and the Environment
DECCW	Department of Environment, Climate Change and Water – now DPIE
DoEE	Commonwealth Department of the Environment and Energy – now DAWE
DoI	Department of Industry – now DPIE
DoP	Department of Planning – now DPIE
DPE	Department of Planning and Environment – now DPIE
DPIE	Department of Planning, Industry and Environment
DUAP	Department of Urban Affairs and Planning – now DPIE
EIS	environmental impact statement
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPA	Environment Protection Authority
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
GDA	Geocentric Datum of Australia
GWh	gigawatt hour
IBRA	Interim Biogeographic Regionalisation of Australia
ICNG	Interim Construction Noise Guidelines
ICNIRP	International Commission on Non-Ionizing Radiation Protection
km	kilometres
KMA	koala management area
kph	kilometres per hour
kV	kilovolt
LEP	local environmental plan
LGA	local government area

LRET	large-scale RET
LVIA	landscape and visual impact assessment
m	metres
Maoneng	Maoneng Group
mm	millimetres
MNES	Matter of National Environmental Significance
MW	megawatt
MWh	megawatt hour
NENWRP	New England North West Regional Plan 2036
NPI	Noise Policy for Industry
NPW Act	*National Parks and Wildlife Act 1974*
NSW	New South Wales
O&M	operation and maintenance
OEH	Office of Environment and Heritage
OSOM	oversize and/or overmass
PCT	plant community type
PHA	preliminary hazard analysis
PV	photovoltaic
RET	renewable energy target
REZ	renewable energy zone
SEAR	Secretary's Environmental Assessment Requirements
SEED	Sharing and Enabling Environmental Data
SEPP	State environmental planning policy
SRES	small-scale renewable energy scheme
SSD	State significant development
TfNSW	Transport for New South Wales

1 Introduction

1.1 Project overview

The proposed Tamworth Battery Energy Storage System (BESS) is a 200 megawatt (MW)/400 megawatt hour (MWh) utility-scale battery storage project located southeast of the township of Tamworth in New South Wales (NSW) (Figure 1.1) that is being developed to provide reliability and security to the network during peak periods.

The proposed project site has been selected due to its proximity to State-significant electrical infrastructure – including the adjacent Tamworth Substation which has capacity to accept up to 200 MW of energy from the BESS – and its low environmental sensitivity and lack of locational constraints.

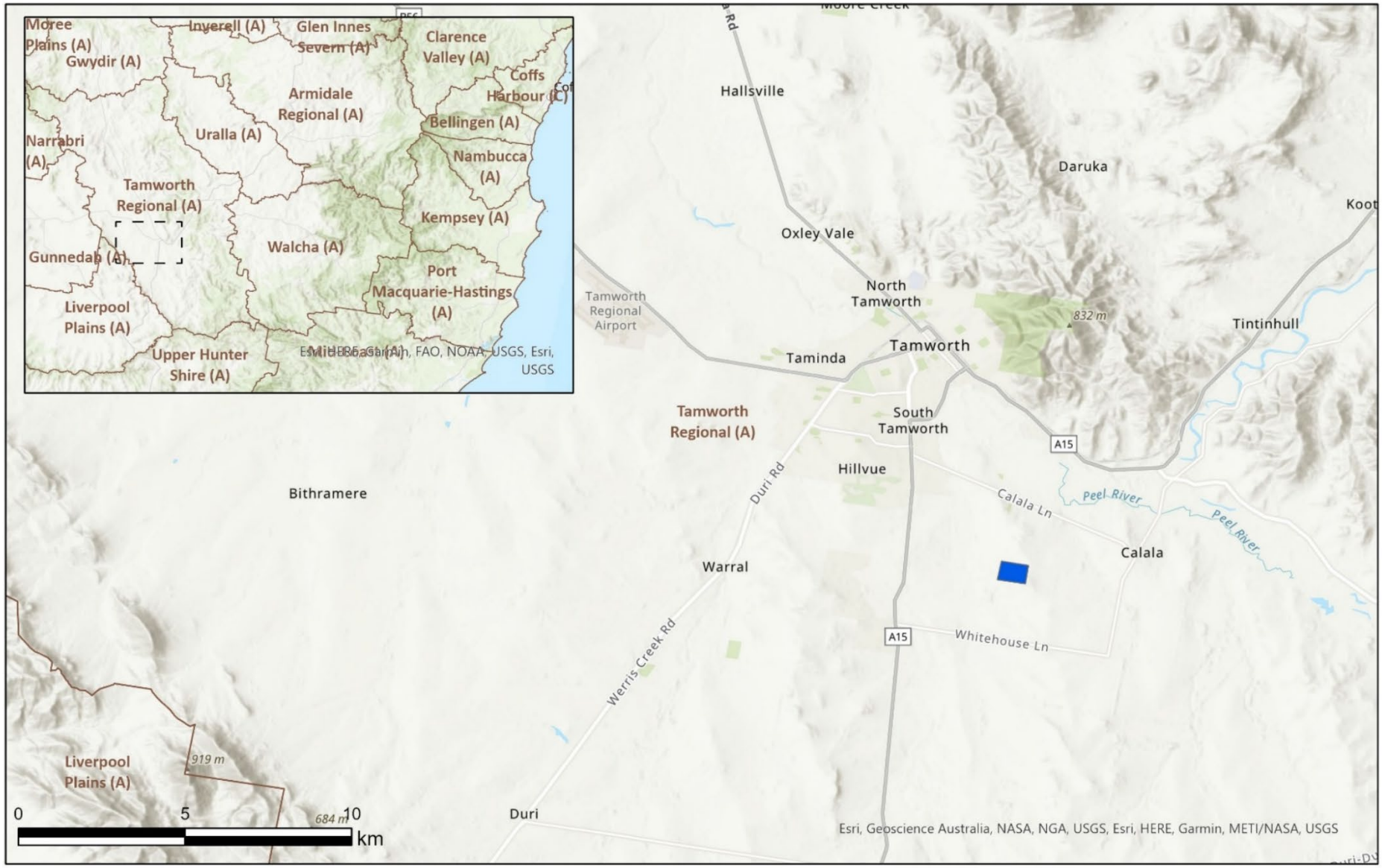
General information about the project is provided in Table 1.1. The proposed project site in relation to Tamworth is shown in Figure 1.2.

Table 1.1 Project details

Name	Tamworth BESS
Address	696 Burgmanns Lane, Tamworth, NSW
Applicant	Maoneng Group
Council	Tamworth Regional Council
Titles	Lot 44 DP1064582
Total indicative area	Secured land tenure: approximately 40 ha Area required for BESS: up to 3.2 ha
Land use	Rural land use, predominately grazing and cropping
Capacity	200 MW/400 MWh
Connection	Via a new underground or overhead transmission line from the on-site substation to the existing Tamworth Substation, located 170 m north of the site. Grid connection is expected to be via TransGrid 132 kV or 330 kV line.

1.2 Site overview

The project site for the proposed Tamworth BESS is located approximately 6 km southeast of Tamworth and 191 km west of Port Macquarie, within the Tamworth Regional Local Government Area (LGA) (see Figure 1.1). The Tamworth region is rural and mainly used for sheep and cattle grazing, lucerne and wheat growing, and poultry farming (.id undated).



Project site lot boundary

LGA boundaries NSW

N

AE1184.2 Tamworth BESS
Figure 1.1 Regional context
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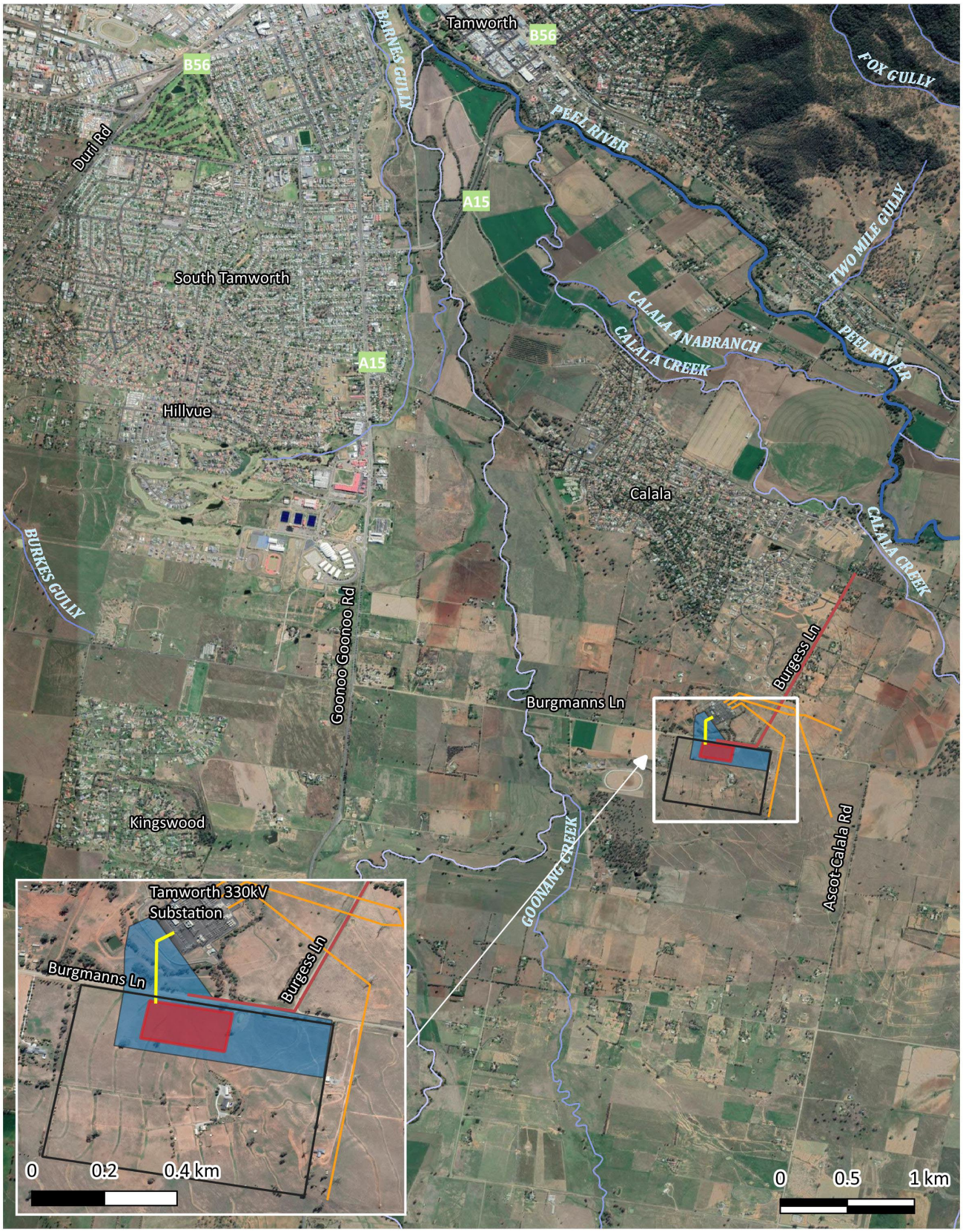

Project site lot boundary
Potential disturbance area
Proposed BESS footprint
Existing transmission lines
Proposed connection
Proposed access route

Additional data sources:
Base Map: Google Hybrid
Hyrolies: NSW Hydrography WMS

AE1184.2 Tamworth BESS
Figure 1.2 Site overview

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The site is relatively flat and drains gently to the northwest (Figure 1.3). Due to a long history of agriculture and grazing, the site is highly modified. The land is dominated by a mixture of native and exotic pasture grasses and contains a number of scattered large trees, including White Box *Eucalyptus albens* and several tree clusters.

The site is located entirely within the property of a single landholder, Lot 44 DP1064582. Four residences (non-associated) are located within 500 m of the currently proposed project footprint and approximately 35 residences (non-associated) are located between 500 m and 1 km of the footprint (see Figure 1.3).

The project site is bounded to the north by Burgmanns Lane. The nearest major road is the New England Highway which passes through Tamworth and is approximately 2.5 km to the west of the site (see Figure 1.1).

The Tamworth Substation (operated by TransGrid) is located immediately north of the project site (see Figure 1.2). A TransGrid 132 kV transmission line connects into the existing substation and is expected to provide the BESS with its connection into the grid.

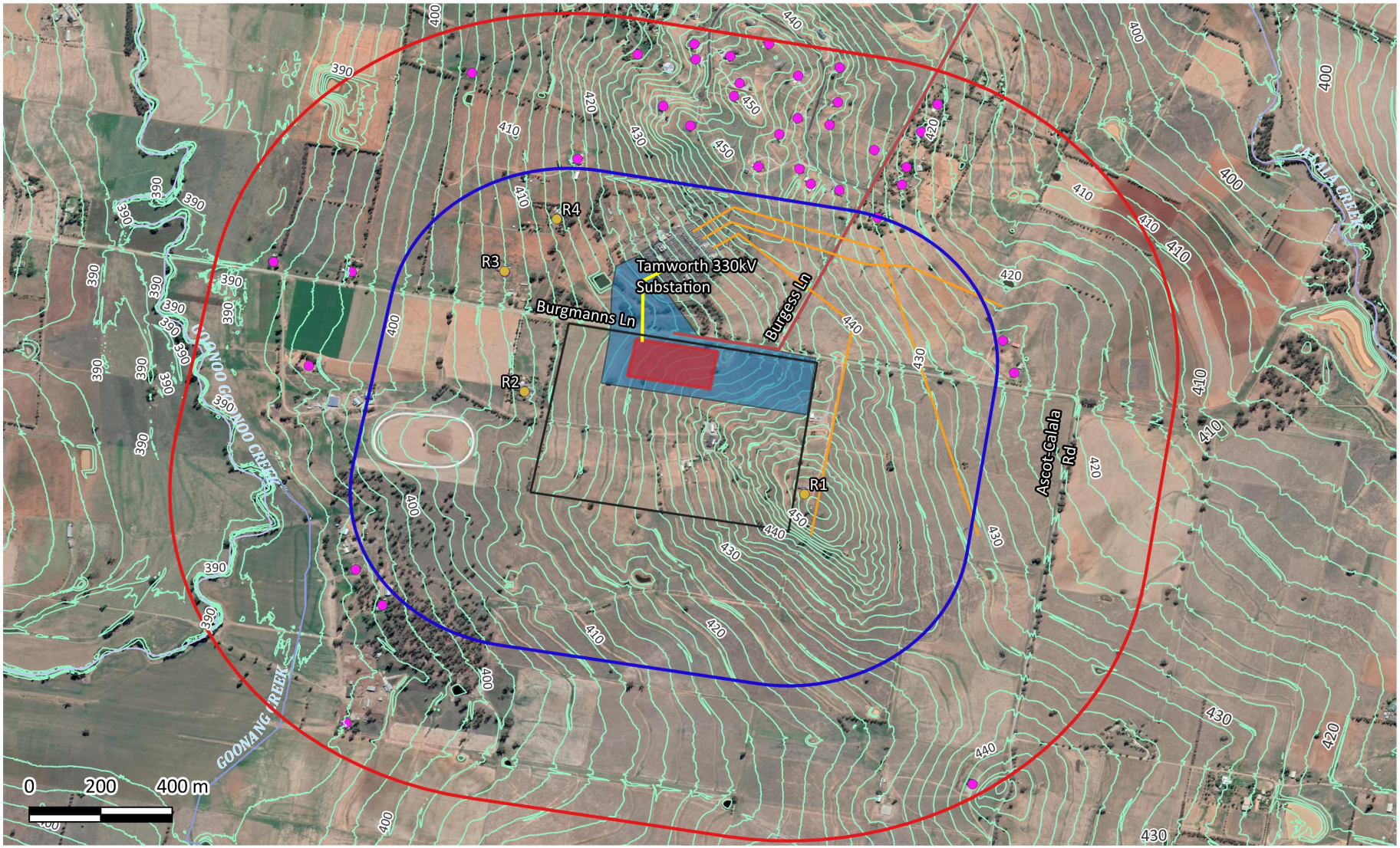
The Tamworth Regional LGA is part of the NSW Nandewar Bioregion. This bioregion is in a warm and dry climate; however, temperatures vary in relation to elevation (NSW National Parks and Wildlife Service 2003). The Bureau of Meteorology (BOM) (2021) climate records available from the nearest climate station (12.3 km from the site) at Tamworth Airport AWS (Station number 055325) consist of data recorded since 1992 as follows:

- Mean monthly maximum temperatures range from a high of 33.0°C (January) to a low of 16.5°C (July). Mean monthly minimum temperatures range from a high of 17.7°C (January) to a low of 2.3°C (July).
- Mean annual rainfall is 628.1 mm, with rainfall generally greatest over summer with a mean monthly maximum of 80.7 mm (December) and lowest in autumn with a monthly minimum of 25.1 mm (April). The mean annual number of days of rain is 60.3.
- Wind speeds average between 9.1 and 13.1 kph at 9 am, and between 14.2 and 17.9 kph at 3 pm. The strongest winds occur during the spring months.

1.3 Applicant

Maoneng is an Australian-founded and owned company that is pioneering Australia's transition to 100% renewable energy through cutting-edge solar, battery and other utility-scale energy projects. The company was founded in 2010 to develop renewable energy assets under the 2009 Australian Renewable Energy Target (RET) scheme.

Headquartered in New South Wales, Maoneng Group has a portfolio that includes nearly 300 MW of constructed renewable power, enough to power over 50,000 homes across Australia, and is in the process of developing more than 600 MWh of utility-scale battery projects.



Project site lot boundary
Proposed BESS footprint
Potential disturbance area
Existing transmission lines
Proposed connection
Proposed access route
Contours (2m intervals)
1 km distance from site
500 m distance from site
Key sensitive receivers
Sensitive receivers

Additional data sources:
Base Map: Google Hybrid
DEM: ELVIS

AE1184.2 Tamworth BESS
Figure 1.3 Sensitive Receivers

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Maoneng and AGL Energy have an Energy Storage Development Agreement in place. Under this agreement, Maoneng will develop large-scale batteries to provide 200 MW/400 MWh of dispatchable capacity to AGL, spread across a number of sites, which will be operational by 2023.

Maoneng has developed, or is in the process of developing, a number of renewable energy assets in NSW, including:

- the 100 MW/200 MWh Lismore BESS project to meet the requirements of an Energy Storage Development Agreement with AGL
- the 13 MW Mugga Lane Solar Park project, developed and built under the ACT Government's Reverse Solar Auction – Maoneng's first major project in Australia
- the Sunraysia Emporium project, a 100 MW/200 MWh utility-scale BESS project located near Balranald, southern NSW. The project is scheduled for completion in early 2021
- the Sunraysia BESS project, a utility-scale solar photovoltaic (PV) farm near Balranald in NSW.

1.4 Capital investment value

The proposed Tamworth BESS is currently in the feasibility and design stage. Accordingly, the capital investment value of the project is not yet finally determined. However, the capital cost of the project will easily exceed the $30 million threshold for it to be classified as a State significant development (SSD), as defined under the State Environmental Planning Policy (State and Regional Development) 2011 (see Section 4.2.2).

1.5 This report

This Scoping Report has been prepared in accordance with the requirements of the Department of Planning, Industry and Environment (DPIE) for projects identified as SSDs and therefore requiring an Environmental Impact Statement (EIS) to be prepared under Schedule 2 of the Environmental Planning and Assessment Regulation 2000.

The report will support a request to DPIE from Maoneng Group for the Secretary's Environmental Assessment Requirements (SEARs) for the EIS.

The report:

- describes the proposed development, including project justification and alternatives considered
- outlines permissibility and strategic planning requirements for the project under the NSW and Commonwealth legislative frameworks
- describes the existing environmental and social context of the project
- provides a preliminary assessment of project impacts and management
- sets out previous, current and proposed stakeholder consultation
- includes a preliminary constraints analysis.

2 Project description

The proposed Tamworth BESS project is a utility-scale battery energy project that will dispatch up to 200 MW of electricity to the grid.

Maoneng spent considerable time identifying land options for the proposed project in the local and regional area. The proposed site was selected due to its:

- location close to the arterial transmission line and infrastructure which connects the Queensland-New South Wales Interconnector to rural and coastal NSW
- location immediately adjacent to the Tamworth Substation which has capacity to accept up to 200 MW of energy from the BESS
- close proximity to the electrical infrastructure associated with the Tamworth Substation
- low environmental sensitivity and lack of locational constraints due to the site:
  - being largely cleared of dense woodland vegetation
  - not being subject to any planning overlays
  - having good access to the road network.

2.1 Design and configuration

The project will have a maximum capacity of 200 MW/400 MWh. Key elements of the project will include:

- up to 76 Power Conversion Units, 1,400 lithium-ion battery racks housed within outdoor enclosures that are in 40-foot shipping containers or individual modules
- medium voltage transformers, switchgear, and auxiliary equipment
- a 33 kV switch-room, a control room and an on-site 33/330kV substation or 33/132kV substation
- internal access tracks, operations and maintenance building, temporary construction laydown area, vehicle parking, water tanks for firefighting purposes, security fencing and landscaping.

Access to the site during construction and operation is expected to be from the existing site access driveway off Burgmanns Lane (see Figure 1.2). If the BESS footprint, once selected, blocks the existing driveway, a new access driveway will be established off Burgmanns Lane. Construction traffic is expected to access Burgmanns Lane via Burgess Lane to the north.

Electricity will be delivered from the on-site substation to the Tamworth Substation via a new overhead or underground transmission line.

Figure 1.2 shows the potential project disturbance area, which covers possible access construction works on Burgmanns Lane, options for locating the BESS and on-site substation within the site, and options for the transmission line between the BESS, the on-site substation and the existing Tamworth Substation.

2.2 Construction

Project construction will last for approximately 12 months. Construction will involve the following activities:

- Stage 1: Site establishment, including demolition of existing farm shed, earthworks and any drainage requirements, construction of concrete hardstands, civil works – approximately 2 months
- Stage 2: Delivery of BESS infrastructure – approximately 3 months
- Stage 3: Installation of BESS infrastructure (containerised units, transformer, switchroom, control room and O&M) and electrical works – approximately 4 months (partially overlapping with stage 2)
- Stage 4: Commissioning and joint testing – approximately 3 months.

Up to 150 jobs are expected to be created during construction. The expected average workforce during the construction period is as follows:

- Stage 1 – 60 (2 months)
- Stage 2 – 80 (3 months)
- Stage 3 – 80 (4 months)
- Stage 4 – up to 10, on- and off-site

During the peak construction period (which will occur during the overlap of stages 2 and 3) up to 150 workers may be on site at the same time.

Construction activities will be undertaken during standard hours for construction works (i.e. 7 am to 6 pm Monday to Friday and from 8 am to 1 pm on Saturdays). Any construction or commissioning activities outside of these standard working hours would require approval from relevant authorities. Any affected local residences would be informed of the timing and duration of the proposed activities, prior to the commencement of any works.

2.3 Operation

The expected operational life of the battery infrastructure is 20 years. The operational hours will be 24 hours, 7 days a week. No permanent on-site staff are required during operations as the BESS will be operated remotely. Maintenance staff will access the site as required during operations (one full-time equivalent job).

2.4 Decommissioning

At the end of the operational life of the project, all above-ground infrastructure will be removed and the land rehabilitated to a safe, stable and non-polluting state. It is anticipated that the pre-existing land use will be re-established at the time of decommissioning, unless otherwise agreed with the landowner and/or regulatory authorities.

3 Justification and alternatives considered

3.1 Project justification

Since 2001, the Commonwealth Government has mandated the use of energy from renewable resources in electricity generation. In 2009 the Renewable Energy Target (RET) scheme mandated that 20% of Australia's electricity supply was to come from renewable sources by 2020 (NSW Trade and Investment 2014).

In 2011, the RET was split into two parts comprising a large-scale RET (LRET) and a small-scale renewable energy scheme (SRES). The LRET created a financial incentive to establish and expand renewable power stations such as BESSs, wind farms and hydro-electric power stations and deliver the majority of the 2020 target. Reforms were made to the RET in 2015 with a target for large-scale energy generation of 33,000 Gigawatt hour (GWh) by 2020 i.e. 23.5% of Australia's electricity supply will come from renewable sources by 2020. The annual target will remain at 33,000 GWh until the scheme ends in 2030.The LRET scheme sits within the broader context of Australia's need to reduce greenhouse gas emissions to meet its commitments under the 1997 Kyoto Protocol and the Paris Agreement.

The SRES provides an incentive for communities, including households and small businesses, to install eligible small-scale renewable energy systems including solar water heaters, PV systems, and small-scale wind systems (DoEE 2018).

At a state level, the NSW government's Net Zero Plan Stage 1: 2020-2030 (DPIE 2020) aims to enhance the prosperity and quality of life of the people of NSW, while helping the state to deliver a 35% cut in emissions by 2030 compared to 2005 levels. A component of the plan is to develop three Renewable Energy Zones (REZs) which are intended to play a critical role in replacing retiring generators in NSW over the next two decades and bringing up to 17,700 MW of cheaper, renewable power into the grid.

Due to the intermittent nature of renewable energy sources such as solar and wind, the development of energy storage systems is becoming an increasingly important component of the transition from fossil fuels to renewables. The construction of large-scale, standalone BESSs such as Maoneng is proposing at Tamworth is a relatively recent development but has quickly become a key focus of the renewables industry. In early 2020, to facilitate such developments in NSW, the State government passed the State Environmental Planning Policy (Infrastructure) Amendment (Energy Storage Technology) 2020 under the *Environmental Planning and Assessment Act 1979* (EP&A Act).

The proposed development of the Tamworth BESS is therefore consistent with current national and state-level goals and targets for renewable energy generation.

Other project benefits are expected to include (DoI 2016):

- employment opportunities during construction, including engagement of local contractors and materials and service providers
- long-term local employment opportunities over the life of the project
- contributions to local infrastructure improvements

- education and training of contractors and local residents
- rent received by landowners.

The proposed project also supports a number of the objectives of the EP&A Act, as set out in Section 4.2.1.

3.2 Alternatives

3.2.1 Site selection

Maoneng Group has undergone a process of constraints and opportunities analysis to identify potential development sites in NSW and other states. This process has included consideration of factors such as:

- regulatory settings for energy projects
- access to existing substations with capacity to accept energy from the BESS
- access to, and capacity of, existing energy grids
- potential for land acquisition
- land suitability (e.g. topography, existing land use, flood risk, zoning)
- need to minimise environmental and social impacts (e.g. avoiding sensitive environments or areas of cultural heritage value).

The proposed location for the Tamworth BESS emerged as a highly prospective site for the development of a BESS and a decision was made by Maoneng to initiate pre-development investigations and activities.

3.2.2 Project design and configuration

The design and configuration of the project will take into account the findings of EIS studies and investigations. This will include consideration of environmental and social factors such as the need to:

- identify and operate within environmental constraints (such as avoiding areas within the project site that may be of conservation significance)
- minimise disruption to local landholders
- minimise amenity issues
- consider the expectations and concerns of the local community and Tamworth Regional Council.

These considerations will be balanced against the need to achieve design, construction and operational efficiencies to reduce projects costs and maximise BESS efficiency.

4 Permissibility and strategic planning

4.1 Commonwealth legislation

4.1.1 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), administered by the Commonwealth Department of Agriculture, Water and the Environment (DAWE), requires approval from the Minister for the Environment for actions likely to have a significant impact on a Matter of National Environmental Significance (MNES).

The EPBC Act identifies the following nine MNES:

- World Heritage properties
- national heritage places
- wetlands of international significance (Ramsar wetlands)
- nationally threatened species and ecological communities
- migratory species
- Commonwealth marine areas
- The Great Barrier Reef Marine Park
- nuclear actions (including uranium mining)
- water resources (relating to coal seam gas development and large coal mining development).

Any proposed actions falling within the following categories must be referred to DAWE to determine whether the action is a 'controlled action':

- actions that have a significant impact on MNES
- actions that (indirectly or directly) have a significant environmental impact on Commonwealth land
- actions carried out by Commonwealth agencies.

The assessment of the significance of the impact is based on the criteria listed in the DAWE's *Significant Impact Guidelines 1.1* (DoE 2013). Should the Commonwealth Minister for the Environment decide the action is to be taken in a manner that is not likely to have a significant impact on the MNES, approval will be granted.

An independent statutory review of the EPBC Act was commenced in October 2019 and submitted to the Australian Government in October 2020. The Government has yet to respond to the recommendations of the review (Samuel 2020).

An 'EPBC Act Referral' to the Minister is not expected to be required for the Tamworth BESS project (see Section 5.2). However, the potential for impacts on MNES will be considered further in the EIS.

4.1.2 Native Title Act 1993

The *Native Title Act 1993* provides a national framework for the recognition and protection of native title (i.e. the rights and interests, recognised by common law, possessed under traditional laws and customs of Aboriginal and Torres Strait Islander people).

The Act recognises the ownership (or set of rights and interest) of land or waters by Aboriginal and Torres Strait Island groups prior to European settlement; provides a mechanism for determining where native title exists and who holds it; and identifies compensation for actions affecting it. The Act establishes ways in which future dealings affecting native title may proceeds and sets standards for those dealings.

People who hold native title have a right to practice their traditional laws and customs, while respecting Australian laws, and have a right to a) be consulted with regarding any proposed action on their land, and b) receive compensation for that action.

Native title is not thought to be relevant to the proposed Tamworth BESS site. However, the potential for native title issues will be considered further during the EIS process.

4.2 New South Wales legislation

4.2.1 Environmental Planning and Assessment Act 1979

The EP&A Act, together with the Environmental and Planning Assessment Regulation 2000 (EP&A Regulation) and other regulations and instruments, provides the framework for environmental planning and assessment in NSW.

The EP&A Act is the principal legislation regulating land use in NSW and is administered by DPIE. The EP&A Act sets a framework for approval of developments in NSW and requires relevant planning authorities to assess potential environment and social impacts of proposed development or land-use change. The Act prescribes relevant planning bodies, environmental planning instruments, environmental assessment, and liability with regards to contaminated land.

The proposed project, including the proposed supporting studies and stakeholder consultation process, supports a number of objectives of the EP&A Act by promoting and encouraging social, economic and environmental wellbeing through the use of land for power generation using renewable sources. Specifically, the project supports the following objectives of the EP&A Act:

> *(a) to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources,*
>
> *(b) to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment,*
>
> *(c) to promote the orderly and economic use and development of land,*
>
> *(e) to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats,*

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

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

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

The project is also consistent with the remaining objectives of the Act.

Consent for an SSD, including any connections to the grid (such as construction of a substation or additional feeder lines) within the BESS project site, is granted under Part 4, Division 4.7 of the EP&A Act.

Development of the Tamworth BESS will be assessed under Part 4 'Development Assessment' of the EP&A Act.

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

The State Environmental Planning Policy (SEPP) (State and Regional Development) 2011 aims to identify development that is of State significance and confers functions on joint regional planning panels to determine development applications.

The following is considered an SSD under Clause 20 of Schedule 1 of the policy:

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

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

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

The Tamworth BESS project is classified as an SSD under Part 4 of the EP&A Act, as it has a capital investment value of more than $30 million.

As an SSD, the project will be assessed by DPIE and require approval from the Minister for Planning and Environment. SSDs require the preparation of an EIS detailing potential environmental impacts as a result of the project and appropriate management measures.

The Tamworth BESS is considered an SSD and will therefore require the preparation of an EIS and approval from the Minister for Environment.

4.2.3 State Environmental Planning Policy (Infrastructure) 2007

The SEPP (Infrastructure) 2007 (Infrastructure SEPP) aims to facilitate the effective delivery of infrastructure across the State by providing for the development of electricity generating works on any land in a prescribed rural, industrial or special use zone for which there is consent. Under the *Standard Instrument* the project falls under the definition of electricity generating works, which includes "*a building or place used for the purpose of…electricity storage".*

Part 3 (Development controls), Division 4 (Electricity generation works or solar energy systems), Clause 34 of the Infrastructure SEPP states that:

> *(1) 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.*

Part 1 (Relationship to other environmental planning instruments), Clause 8 of the Infrastructure SEPP, states that:

> *(1) …if there is an inconsistency between this Policy and any other environmental planning instrument, whether made before or after the commencement of this Policy, this Policy prevails to the extent of the inconsistency.*

The Tamworth BESS is therefore a permissible development with consent as an SSD under clauses 34(1) and 8(1) of the Infrastructure SEPP.

ISEPP will allow for the development of the Tamworth BESS, with consent, even on land prescribed for rural use.

4.2.4 State Environment Planning Policy No. 33 (Hazardous and Offensive Development)

SEPP No. 33 – Hazardous and Offensive Development (SEPP 33) defines and regulates the assessment and approval of potentially hazardous or offensive development. SEPP 33 presents a systematic approach to planning and assessing proposals for potentially hazardous and offensive development for the purpose of industry or storage. Through the policy, the permissibility of a proposal to which the policy applies is linked to its safety and pollution control performance.

SEPP 33 requires the preparation of a preliminary hazard analysis (PHA) for potentially hazardous industry and sets out a risk screening process to determine whether a PHA is required. BESS projects typically do not trigger the requirement for a PHA based on the current screening criteria. However, regardless of SEPP 33 screening, SEARs typically now require that a PHA be undertaken for large-scale BESS projects.

It is anticipated that the SEARs for the Tamworth BESS will require a PHA to be undertaken as part of the EIS (see Section 5.8).

4.2.5 State Environment Planning Policy (Koala Habitat Protection) 2021

SEPP (Koala Habitat Protection) 2021 encourages the conservation and management of areas of natural vegetation that provide habitat for koalas to support a permanent free-living population over their present range and reverse the current trend of koala population decline. Before a council may grant consent to a development application to carry out development on the land, the council must assess whether the development is likely to have any impact on koalas or koala habitat. The applicant must then ascertain whether the potential habitat is 'core koala habitat'. Such habitats are defined as having:

(a) an area of land which has been assessed by a suitably qualified and experienced person as being highly suitable koala habitat and where koalas are recorded as being present at the time of assessment of the land as highly suitable koala habitat, or

(b) an area of land which has been assessed by a suitably qualified and experienced person as being highly suitable koala habitat and where koalas have been recorded as being present in the previous 18 years.

If the site has core koala habitat then a koala plan of management must be prepared by the applicant. Should koalas, or potential koala habitat, be identified within the study area, a Koala Plan of Management may be required in consultation with the Chief Executive Officer of Local Land Services and a Public Service employee designated by the Minister for Energy and Environment.

This Scoping Report considers the presence of koala habitat within the project site (see Section 5.2), and the EIS will further assess the potential for habitat to be present.

4.2.6 Roads Act 1993

The *Roads Act 1993* (Roads Act) provides a framework for the management of roads in NSW. It provides for the classification of roads and the declaration of Transport for NSW (TfNSW) and other public authorities as roads authorities for both classified and unclassified roads.

The Roads Act sets out procedures for the opening and closing of public roads and regulates the carrying out of various activities on public roads.

Under Section 138 of the Roads Act, consent from the relevant roads authority (council or TfNSW) is required for any works or activities in a public reserve, public roadway or footpath (nature strip). Section 138 requires that all activities undertaken within council road reserves be approved by council prior to the activities being undertaken.

The EIS will consider requirements for project-related use of roads and the need for any road works, particularly during BESS construction. If required, approval from the TfNSW or local council will be sought under Section 138 of the Roads Act.

4.2.7 Biodiversity Conservation Act 2016

The *Biodiversity Conservation Act 2016* (BC Act) provides a framework for maintaining a healthy, productive and resilient environment for the greatest wellbeing of the community, now and into the future, consistent with the principles of ecologically sustainable development (described in Section 6(2) of the Protection of the *Environment Administration Act 1991*).

Part 7 of the BC Act sets out the biodiversity assessment requirements for different activities. The assessment requirements for SSDs are set out in Part 7.9 which includes the requirement for an application is to be accompanied by a biodiversity development assessment report (BDAR) unless the Planning Agency Head and the Environment Agency Head determine that the proposed development is not likely to have any significant impact on biodiversity values.

A preliminary assessment of biodiversity impacts has been undertaken for this Scoping Report (see Section 5.2). The EIS for the Tamworth BESS will include a biodiversity assessment in accordance with the requirements of the BC Act.

4.2.8 National Parks and Wildlife Act 1974

The *National Parks and Wildlife Act 1974* (NPW Act) is the key legislation governing the State's care, control and management of all national parks, historic sites, nature reserves and Aboriginal areas. State conservation areas, karst conservation reserves and regional parks are also administered under the Act.

Places or objects of Aboriginal cultural heritage on, or in the vicinity of, the site will need to be managed in accordance with this Act. Section 86 of this Act states: a person must not harm or desecrate an object that the person knows is an Aboriginal object.

Under Section 89J of the EP&A Act, an Aboriginal heritage impact permit under Section 90 of the *National Parks and Wildlife Act 1974* is not required for an SSD, unless the requirement of an environmental planning instrument for consultation or concurrence specifies that it applies to an SSD.

The potential for the Tamworth BESS to have an impact upon Aboriginal cultural heritage has been considered in this Scoping Report (see Section 5.3) and will be addressed further during the EIS process.

4.2.9 Heritage Act 1977

The *Heritage Act 1977* provides a legal framework for the management of items and places of State heritage significance, providing for their protection. The Act encourages conservation of the State's heritage and provides for the identification and registration of items of State heritage significance.

Under Section 89J of the EP&A Act, an approval under Part 4, or an excavation permit under Section 139, of the *Heritage Act 1977* is not required for an SSD.

Any existing or unknown or other potential unknown State heritage items will be managed under the Act.

The potential for the Tamworth BESS to have an impact upon historic cultural heritage has been considered in this Scoping Report (see Section 5.3) and will be addressed further during the EIS process.

4.2.10 Water Management Act 2000

The objectives of the Water Management Act 2000 (Water Management Act) are to provide for the sustainable and integrated management of the water sources of the state for the benefit of both present and future generations. As set out in Section 4.41 of the EP&A Act, approvals under the Water Management Act are not required for an SSD (other than an aquifer interference approval).

The intent of the Water Management Act to provide for sustainable and integrated water source management will be addressed in the EIS.

4.2.11 Crown Lands Management Act 2016

The *Crown Lands Management Act 2016* was enacted to improve the way Crown reserves are managed and facilitate better decision making about the future use of Crown land. The Act mandates that a range of environmental, social, cultural heritage and economic factors are considered before decisions regarding Crown land are made and provides for community engagement. The Act acknowledges the spiritual, social, cultural and economic importance of Crown land to Aboriginal people and recognises and facilitates Aboriginal involvement in the management of Crown land.

Crown Land is not present within the Tamworth BESS project site and no Crown Land permits will be required for the project.

4.3 Local and regional planning

4.3.1 Tamworth Regional LEP 2010

The proposed project site is located within the Tamworth Regional Council boundaries and will therefore be subject to the relevant provisions of the Tamworth Regional Local Environmental Plan (LEP) 2010.

AIMS OF TAMWORTH REGIONAL LEP

The Tamworth Regional LEP aims to make local environmental planning provisions for land in the Tamworth Regional LGA in accordance with the relevant standard environmental planning instrument under section 33A of the EP&A Act.

The particular aims of the plan are to:

- encourage the orderly management, development and conservation of natural and other resources within the Tamworth region by protecting, enhancing or conserving:
  - important agricultural land
  - timber, minerals, soil, water and other natural resources
  - areas of significance for nature conservation
  - places and buildings of archaeological or heritage significance
- allow flexibility in the planning framework to encourage orderly, economic and equitable development while safeguarding the community's interests and residential amenity
- manage and strengthen retail hierarchies and employment opportunities, promote appropriate tourism development, guide affordable urban form and provide for the protection of heritage items
- promote ecologically sustainable urban and rural development and control the development of flood liable land
- secure a future for agriculture by expanding Tamworth's economic base and minimising the loss or fragmentation of productive agricultural land.

The proposed Tamworth BESS project is consistent with the aims of the plan, particularly in relation to protecting, enhancing or conserving natural resources (by facilitating the use of

renewable energy), promoting ecologically sustainable development, and by expanding Tamworth's economic base.

LAND ZONING

The proposed Tamworth BESS is located on land zoned RU4 Primary Production Small Lots. The objectives of the RU4 zone are to:

- enable sustainable primary industry and other compatible land uses
- maintain the rural and scenic character of the land
- ensure that development does not unreasonably increase the demand for public services or public facilities.
- minimise conflict between land uses within the zone and land uses within adjoining zones.

Although not a primary industry project and a project that requires consent, the Tamworth BESS project is not in conflict with land uses within the zone and land uses within adjoining zones. The use of the land for a BESS is consistent with the existing use of adjacent land by the Tamworth Substation and associated transmission infrastructure.

In addition, it is anticipated that the site will be able to be decommissioned and rehabilitated to return the land to its existing use at the end of its operational life. The project is therefore a sustainable use of the land that doesn't preclude future primary production.

The Infrastructure SEPP allows for the development, with consent, of electricity generating works in a prescribed rural zone (see Section 4.2.3). Under Clause 33 of the SEPP, land zoned RU4 is classified as a prescribed rural zone.

The Tamworth BESS will be subject to the relevant provisions of the Tamworth Regional LEP. Such provisions will be identified and discussed in the EIS.

4.3.2 New England North West Regional Plan 2036

The proposed Tamworth BESS falls within the New England North West region of NSW. DPIE has prepared the New England North West Regional Plan 2036 (NENWRP) which provides a 20-year blueprint for the future of the region (DPIE 2017).

The plan sets out the NSW Government's vision for the New England North West, which is to create a dynamic and prosperous region that capitalises on its past and is building for the future through diverse landscapes, rich natural resources and strong communities.

The Government has set four goals for the region to achieve this vision:

- a strong and dynamic regional economy
- a healthy environment with pristine waterways
- strong infrastructure and transport networks for a connected future
- attractive and thriving communities.

The development of the Tamworth BESS is consistent with these objectives, in particular the development of a strong and dynamic regional economy and strong infrastructure networks for a connected future.

The compatibility of the Tamworth BESS with the objectives of the NENWRP will be considered in the EIS.

5 Preliminary impact identification and assessment

5.1 Project issues and risks

The proposed Tamworth BESS project may result in a number of potential environmental and social impacts, both positive and negative. The nature and extent of these potential impacts will be assessed during the EIS process so that effective avoidance, management and mitigation measures can be incorporated into project design, construction, operation and eventual decommissioning.

The project as a whole is expected to be a relatively low risk development compared with many renewable energy SSDs due to the small footprint of the facility (e.g. in comparison to a solar farm), and the project's location in an area that has been heavily disturbed by agricultural and grazing activities, is adjacent to existing electrical infrastructure, and is distant from areas of high environmental sensitivity. The operation of the BESS will require very little handling of hazardous materials and will generate very little hazardous pollution or waste, other than the eventual removal of the lithium-ion batteries at the end of their operational life.

An initial assessment of environmental and social risks by Maoneng has identified seven higher priority areas that will require particular focus during the EIS process, as follows:

- potential impacts on ecological values such as local habitat for threatened and endangered species
- potential impacts on Aboriginal and historic cultural heritage
- potential impacts on hydrology and water quality if the project site is subject to flooding
- impacts on visual amenity for the nearest sensitive receiver
- noise and vibration impacts on the nearest sensitive receivers during project construction, operation and decommissioning
- project-related traffic impacts on local roads, particularly during construction, including the potential need for road upgrade works
- hazards associated with the presence and use of lithium-ion battery units.

These higher priority impacts are assessed in Sections 5.2 to 5.8.

The initial assessment of environmental and social risks also identified a number of lower priority potential environmental or social impacts, as follows:

- socio-economic impacts
- land use impacts
- air quality and dust
- airfield impacts
- electromagnetic fields
- bushfire hazard

- existing site contamination
- waste management.

These lower priority potential impacts are considered lower risk than the seven higher priority impacts, and/or are expected to be readily manageable by implementing standard environmental management and mitigation procedures, as will be outlined in the EIS. The lower priority impacts are assessed in Section 5.10.

5.2 Biodiversity

5.2.1 Existing conditions

A high-level assessment of the proposed project site was carried out by ABSolution Ecology on 26 May 2021 to determine the biodiversity values of the site.

FLORA

The proposed project site has had a long history of clearance, grazing and cropping, having most recently cropped Oats *Avena sativa* (2-3 years ago). The project footprint is dominated by a mixture of native and exotic pasture grasses and is currently grazed by horses. The site contains one dam which may need to be decommissioned as part of the construction activities for the BESS.

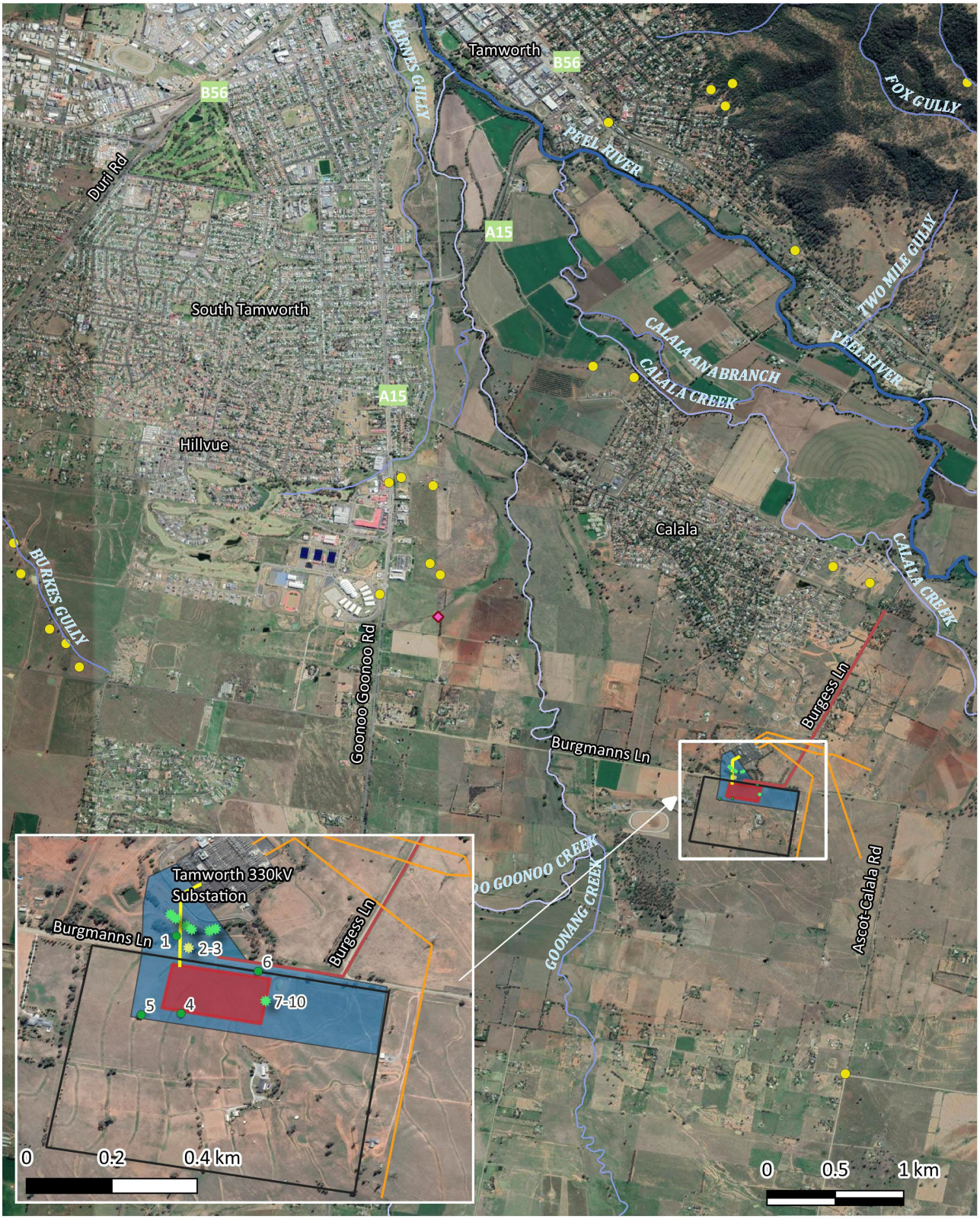
Large trees representative of grassy woodland community are scattered around the site. Trees on and around the periphery of the project site include White Box *Eucalyptus albens* individuals. The trees are generally about 100 m apart except for those located at the edge of the dam which have been planted in a cluster (numbers 7-10 on Figure 5.1). Details of trees within the potential disturbance area (including identification numbers corresponding to Figure 5.1) are provided in Table 5.1.

Tamworth Substation site and potential connection corridor

Within the Tamworth Substation site, the vegetation is comprised of a mixture of planted corridors and remnant trees. The understorey is a mix of native and exotic species with mainly natives (Kangaroo Grass *Themeda triandra*) occurring between the screening trees and the Substation. Trees along the fence line of the Substation were small and have been managed (lopped) due to the overhead powerlines.

A large White Box (Tree 1 on Figure 5.1), is located within the potential transmission line corridor between the BESS and the Tamworth Substation (Photo 5.1).

Photo 5.1 Large White Box



Project site lot boundary
Potential disturbance area
Proposed BESS footprint
Existing transmission lines
Proposed connection
Proposed access route

AHIMS sites
Artefact site
Artefact site and waterhole

eco location
Planted cluster of trees
Small managed trees
Single tree

AE1184.2 Tamworth BESS
Figure 5.1 Archaeological and ecological features

Date created: 4/7/2021
CRS: GDA 94 MGA 55
Page size: A4
Additional data sources:
Base Map: Google Hybrid
Hyrolies: NSW Hydrography WMS

ACCENT ENVIRONMENTAL

Table 5.1 Trees on proposed project site

Tree ID	Tree Type	DBH	Height	Hollows	Nests	Nearest tree
1	*Eucalyptus albens*	101	15	Yes (small)	No	10 m (small)
2	*Eucalyptus albens*	35	7*	No	Yes	3 m
3	*Peppermint*	nr	7*	No	Yes	3 m
4	*Eucalyptus albens*	101	15	Yes (15-20 cm)	No	>100 m
5	*Eucalyptus albens*	94	11	No	nr	>100 m
6	*Eucalyptus albens*	150+	15	Yes	nr	>100 m
7	Planted Eucalypt	39	8	nr	nr	10 m
8	Planted Eucalypt	40	8	nr	nr	10 m
9	Planted Eucalypt	31	7	nr	nr	10 m
10	Planted Eucalypt	45	8	nr	nr	10 m

*has been lopped
Shading indicates trees at greatest risk of being removed
DBH = diameter at breast height nr = not recorded

Planted clusters of trees observed are small and contain species such as Silky Oak *Grevillea robusta*, Bottlebrush *Callistemon sp.*, River Oak *Casuarina cunninghamiana* subsp. *cunninghamiana* and various Eucalypts *Eucalyptus sp*.

Proposed project site

Occasional trees are located within or on the periphery of the proposed project site (Photo 5.2). These are the only remnant of what was probably White Box—Yellow Box—Blakely's Red Gum Grassy Woodland. However, given such disturbance and pasture improvement they are no longer considered characteristic of that community.

The pasture contains a mixture of exotic and native pasture species and had been slashed shortly before the site visit (see Photo 5.2). According to the landholder, the paddock had been planted as an oat crop until recently and the grasses had just established themselves. Dominant species consisted of exotic species such as Purpletop *Verbena bonariensis*, Ribwort *Plantago lanceolata*, Sorghum sp., Slender Rat's Tail Grass *Sporobolus elongatus* and Paspalum *dilatatum*.

Photo 5.2 Pasture grasses and scattered tree on project site

More serious weeds are also present on the site: the non-woody Spear Thistle *Cirsium vulgare* and Coolatai Grass *Hyparrhenia hirta*. Bathurst Burr *Xanthium spinosum* were occasionally observed. Occasionally native grasses occurred and were identified as Bluegrass D*icanthium sericeum*, Couch *Cynodon dactylon* and Wallaby Grass *Rhytidosperma* sp.

Occasional observations of native understorey species were made across the broader site, and these include Paddock Love Grass *Eragrostis leptostachya* and Bluebells *Wahlenbergia* sp. Native species covered approximately 5-10% of the entire understorey within the potential disturbance area and were insignificant at the time of the survey (however, May is not optimal timing for identifying native understorey species).

FAUNA

There is very little physical structure on the site to provide habitat for fauna. As the site is pasture grass with some scattered trees and a dam, the species located are correlated with that habitat type. The site is suited to large macropods such as the Eastern Grey Kangaroo *Macropus giganteus* and Wallaby, of which scats were observed. There is the potential for species such as Common Brush-tail Possums *Trichosurus vulpecula* to utilise the trees and their hollows when moving from area to area. Horses currently graze the pasture.

Both microbats and large bats could be expected to utilise the site as a source of food and/or between sites of preference. However, the site provides minimal opportunity for breeding. Common bats that have been recorded in the area before include White-striped Freetail-bat *Austronomus australis*, Gould's Wattled Bat *Chalinolobus gouldii* and Eastern Free-tailed Bat *Ozimops ridei* and these are among a few types that could potentially fly over the site. As the Grey-headed Flying Fox *Pteropus poliocephalus* has been observed in Camps around Tamworth, it is likely this species flies the site and may opportunistically use the site for feeding when a nectar source is available.

There is an absence of available habitat structure to support small ground-dwelling mammals, but pests such as European Rabbit *Oryctolagus cuniculus* and Red Fox *Vulpes* likely use the site opportunistically. There are also many mice (House Mouse *Mus musculus*) on and around the project site and the Tamworth Substation area. Numerous holes were observed and both living and poisoned (dead) mice were seen regularly.

The habitat on the proposed project site and its immediate surroundings provides few opportunities for birds due to a lack of habitat structure, with a lack of shrubs and ground layer diversity. The site suits birds that nest in trees and forage on the ground such as Australian Magpie *Gymnorhina tibicen*, Magpie Lark *Grallina cyanoleuca* and Galahs *Eolophus roseicapilla*. Red-rumped Parrots *Psephotus haematonotus* were observed using the canopy of the cluster of planted trees present. Habitat for birds is of higher quality in the planted vegetation within the Tamworth Substation and some birds are utilising trees adjacent to Burgmanns Lane for nesting. Tree hollows present at both locations are likely to attract birds that rely on hollows for nesting, and the introduced species Common Starling *Sturnus vulgaris* was observed using these.

There is very little habitat for reptiles and amphibians on site, due to the farm dam lacking suitable emergent and fringing aquatic vegetation and any structures for shelter. Incidental

occurrences of common reptile and amphibian species may be observed in assessments undertaken at appropriate seasonal times.

BAM CALCULATOR DATA

There was insufficient native vegetation to be designated a patch of native vegetation, so the BAM calculator was not used. This is based on the following considerations:

- there was insufficient native vegetation to perform a BAM Plot (at least in May)
- if a BAM Plot was performed, the result would likely be a <17 integrity score with no required offset and, as the habitat is poor, there would not be a requirement for ecosystem or species credits.

However, the vegetation on the project site can be summarised as follows:

- Interim Biogeographic Regionalisation of Australia (IBRA) region: Nandewar
- IBRA subregion: Peel
- Mitchell Landscape: Tamworth - Keepit Slopes and Plains
- Likely plant community type (PCT): White Box—Yellow Box—Blakely's Red Gum Grassy Woodland

As White Box is the only tree species and the understorey is heavily modified, this PCT is not certain. However, it is most probable.

It would be expected that because of the low quality of the habitat, very low cover and abundance of native understorey (in May) and the cleared nature of the site, no ecosystem credits are likely to be associated with the use of the site.

THREATENED SPECIES AND ECOLOGICAL COMMUNITIES

Searches of databases of threatened species and ecological communities in the project site and the surrounding region were undertaken to identify any species or communities that may impose ecological constraints on project development. A consolidated list of threatened species known to, predicted to, or possibly occurring within the project site, along with their conservation status, a summary of their habitat preference and the likelihood of occurrence, is provided in Appendix A. The results of the database searches are discussed below.

EPBC Protected Matters Search

An EPBC Protected Matters Search of a 10 km radius from the site resulted in the following:

- Four Listed Threatened Ecological Communities:
  - New England Peppermint (*Eucalyptus nova-anglica*) Grassy Woodlands (critically endangered) likely to occur within area
  - White Box—Yellow Box—Blakely's Red Gum Grassy Woodland and Derived Native Grassland (critically endangered) likely to occur within area
  - Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland (critically endangered) likely to occur within area
  - Weeping Myall Woodlands (endangered community) may occur within area

- 32 listed threatened species:
  - Of the 32 listed threatened species, there is potential for some fauna species to forage on the project site. However, insufficient habitat appears to be present to support each of the species. Some opportunistic foraging is possible for species such as Grey-headed Flying Fox.
- Ten listed threatened migratory species

Refer to Appendix B for the complete list and results.

BioNET Search

A BioNET search identified 145 fauna and 355 flora species that have been recorded within a 10 km radius of the site over the past 30 years. Of these, one threatened flora species has been observed: Magenta Lilly Pilly *Syzygium paniculatum*, a species listed on both State and Federal threatened species listings. Among fauna species, one megachiropteran (Grey-headed Flying Fox *Pteropus poliocephalus*), eight birds, two reptiles, one amphibian and one mammal have been recorded in the search area.

The complete list of species identified in the BioNET search is presented in Appendix A. In addition, based on the habitat on the proposed project site, an indication of each species' likelihood of occurring on site has been made.

Other searches

- A review of the Biodiversity Values Threshold tool Map located nearby sensitive areas associated with the creeks either side of the property, approximately 1-2 km from the proposed project site.
- NSW vegetation mapping sourced via the online Sharing and Enabling Environmental Data (SEED) portal shows a lack of native vegetation. The closest mapped vegetation is approximately 1 km from the project site and is part of Blakely's Red Gum-Yellow Box Grassy Tall Woodland in the Brigalow Belt South Bioregion and Nandewar Bioregion.

Summary

In summary, the number of species listed in the BioNet search and the EPBC Protected Matters Search (10 km radius) is low, and BAM Candidate species are also low in number. Due to the heavily disturbed nature of the site, there is a lack of habitat features for threatened species. However, there is potential for some threatened fauna species to utilise the site during transit or when opportunistically foraging.

Birds such as Little Lorikeet *Glossopsitta pusilla* and Turquoise Parrot *Neophema pulchella* are potential species that may use hollows. Therefore, efforts to avoid trees containing hollows should be made. Appendix A indicates threatened species and their likelihood of occurrence.

5.2.2 Preliminary impact assessment and management

The installation of the transmission line between the BESS and the Tamworth Substation potentially could result in impacts on, or the removal of, a large White Box (Tree 1 on Figure 5.1), or the loss of other native vegetation including ground cover and planted clusters

of trees. However, the construction and operation of the BESS will be managed to minimise disturbance to biodiversity values and where practical, standing trees will be avoided.

The loss of the trees, if unavoidable, will not result in major impacts on any threatened species as such species are not thought to currently reside in the trees. However, the potential to minimise tree removal will be further assessed as part of the EIS. The lack of native understorey indicates that the impact on native vegetation will be negligible.

Localised loss of habitat for bird and bat species that utilise the site may occur. Several threatened species that appeared in database searches that may have foraged in areas on the site will only be marginally impacted by the loss, as the project footprint is small (up to 3.1 ha) and similar biodiversity assets surround the site. The ongoing operation of the BESS is not likely to cause a significantly greater disruption to fauna species than is already caused by the operation of the existing farm and neighbouring Tamworth Substation. Factors such as the use of lights at night will be considered. Temporary artificial nest boxes are one alternative to replace hollows removed during tree removal. In addition, the planting of screening vegetation may be beneficial in providing habitat for birds. This could also include planting the same trees as those to be removed (White Box) to ensure these trees are still present on the site.

Disturbance of fauna habitat will occur during the construction phase of the BESS due to the removal of trees and potentially due to the introduction of new weed species. During tree removal, a fauna spotter will carry out a pre-clearance inspection and will be present on site to retrieve/relocate fauna that use the small hollows or nests within the trees. Tree removal will occur where possible outside the breeding season for bird species (spring). It is expected that most fauna species will disperse from the area during construction and require an alternative source for habitat. Standard weed management practices will be adopted, as will be outlined in the EIS.

Close review of the trees on the proposed project site showed no evidence of use by koalas. White Box is considered a secondary food tree species for koalas and the site is not considered a core koala habitat (under SEPP (Koala Habitat Protection) 2021). However, there has been documentation of high use of this species across NSW (OEH 2018), especially where primary feeder trees are absent. Although koalas were not observed nor was the site core koala habitat, it is a requirement to consider the development assessment process for an area with no approved koala plan of management for land (Part 2 Development control of koala habitats in SEPP (Koala Habitat Protection) 2021). The project site is at least 1 ha and does not have an approved koala plan of management applying to the land. The council must assess whether the project is likely to have any impact on koalas or koala habitat. If the council is satisfied that the development is likely to have low or no impact on koalas or koala habitat, the council may grant consent to the development application. If the council is satisfied that the project is likely to have a higher level of impact on koalas or koala habitat, the council must, in deciding whether to grant consent to the development application, take into account a koala assessment report for the project.

5.2.3 Need for further assessment

The site is disturbed and of low biodiversity significance. However, scattered trees provide some habitat for arboreal species and stick nests observed indicate some use for breeding. As

assessments were performed in winter, a non-optimal timing for determining the presence of native ground storey species and coverage, further assessment will be required. A survey of the site and the construction footprint to determine the presence and percentage cover of native understorey in late spring/early summer is necessary. In addition, once the location of the connecting transmission line is known, the area of disturbance within the power plant should be assessed in detail to determine the presence of any significant native understorey vegetation. Native grasses observed, including Kangaroo grass, may be deemed derived native grasses from the White Box—Yellow Box—Blakely's Red Gum Grassy Woodland (critically endangered) Community. However, due to the condition of the likely poor condition of the vegetation it is not anticipated that an EPBC Act referral will be required.

As the likely biodiversity losses are minimal, it is expected that a BDAR waiver request will be submitted. However, the spring assessments of proposed project disturbance areas will be required to meet DPIE's seasonal survey requirements. The spring flora and fauna assessment will also include a vegetation quality assessment within road reserves along any roads that will require upgrading.

No further koala assessment is required, although a koala assessment report to fulfil the requirements of the Council is needed. The koala assessment report, for development, means a report prepared by a suitably qualified and experienced person about the likely and potential impacts of the project on koalas or koala habitat and the proposed management of those impacts. It is not expected that koalas will be impacted by the project and suitable offsetting of trees can be achieved.

5.3 Cultural heritage

5.3.1 Existing conditions

ABORIGINAL CULTURAL HERITAGE

A search of the Heritage NSW administered Aboriginal Heritage Information Management System (AHIMS) database on 22 June 2021 returned 27 results for Aboriginal sites within a 5 km radius of the proposed project site (GDA Zone 56 Eastings: 299285–311055; Northings: 6547030–6558070 with no buffer) (Table 5.2). The sites closest to the project site are shown on Figure 5.1.

No AHIMS sites are located within the project site.

The most frequently recorded site types across the searched area are stone artefact sites of varying densities which account for 96.3% of sites in the search area. These also make up the site types close to the project site, the closest of which is located approximately 1.7 km to the northeast. The only other site type located within the designated search area is a waterhole and artefact site.

HISTORIC HERITAGE

A desktop search was conducted on a number of databases to identify any heritage items previously recorded within the proposed project site. The results of this search are summarised in Table 5.3 and shown in Figure 5.1.

Table 5.2 AHIMS site types and frequencies

Site type	Number	% frequency
Artefact site	26	96.3
Artefact site and waterhole	1	3.7
Total	**27**	**100**

Table 5.3 Historic heritage desktop database search results

Name of database searched	Date of search	Type of search	Comment
Commonwealth Heritage Listings	22/6/21	Tamworth LGA	No places listed on either the National or Commonwealth heritage lists are located within or close to the Tamworth BESS project site.
National Native Title Claims Search	22/6/21	NSW	Gomeroi People claim NC2011/006 includes the entire Tamworth LGA, including the Tamworth BESS project site.
LEP	22/6/21	Tamworth LEP of 2010	No results within or adjacent to the Tamworth BESS project site.

5.3.2 Preliminary impact assessment and management

Due to the historical disturbance of the site for agriculture and grazing, Aboriginal archaeological or cultural heritage sites are unlikely to be present. Historic heritage sites of significance are also unlikely to be present. However, if any potential impacts to heritage sites or items are identified during the field assessments as part of the EIS, they will be managed in accordance with the NPW Act. This could result in a change in the siting of the BESS within the lot to avoid heritage sites.

5.3.3 Need for further assessment

To fulfil the expected requirements of the Tamworth BESS EIS, further assessment of the likely impacts to Aboriginal and historic heritage from the development of the BESS will be undertaken. This will include expanding on the desktop research carried out, Aboriginal community consultation and field investigations resulting in informed impact assessments. This will allow the development of tailored management and mitigation strategies in relation to any impacts as required.

The following documents will guide the assessment:

- *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (ACHCRs, DECCW 2010a)
- *Code of Practice for Archaeological Investigations of Objects in NSW* (the Code, DECCW 2010b)
- *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* ('The guide') (OEH 2011)
- *NSW Heritage Manual* (DUAP and Heritage NSW 1996).

It is proposed that the following specialist reports are produced to support the EIS:

- An Aboriginal Cultural Heritage Assessment Report (ACHAR) which will be based on Heritage NSW templates[1]. Management options and mitigation measures will be based on best practice heritage management with regard to practical outcomes for the project and input from Aboriginal community stakeholders.
- An Historic Heritage Impact Assessment (HHIA) which will document the findings of the survey and provide preliminary heritage assessments of items with potential heritage significance .

5.4 Hydrology and water resource management

5.4.1 Existing conditions

The project site is located within the Murray-Darling basin, approximately 2.5 km southwest of the Peel River. Goonoo Goonoo Creek lies approximately 1 km to the west and the Calala Creek is located approximately 2 km to the east (see Figure 1.2). The proposed project site slopes gently to the northwest (see Figure 1.3). A dam is located in the northeast corner of the site, which may need to be filled depending upon the final siting of the BESS.

The project site is not located within designated flood affected land. The site lies approximately 600 m east of land along the Goonoo Goonoo Creek designated as 'Flood Affected Land' under the Tamworth Regional Development Control Plan (Tamworth Regional Council 2010). The Council has adopted flood levels corresponding to a 1% annual exceedance probability (AEP) flood to define 'Flood Affected Land'.

5.4.2 Preliminary impact assessment and management

Construction and operation of the project is expected to result in only minor ground disturbance, primarily associated with the construction of the access road area, the concrete pads for the BESS units, the foundations of the on-site substation, and the transmission line (if installed underground) between the on-site substation and the Tamworth Substation. The risk

[1] Based on the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010b) and the *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH 2011).

of impacts to water quality or hydrology in channels, dams and waterways from erosion or disturbance of acid sulphate soils (if present) is considered low, temporary (during construction) and manageable. Standard erosion and sediment controls measures such as outlined in Landcom (2004) will be implemented, as will be outlined in the EIS.

The BESS and on-site substation will be sited away from natural drainage lines and are unlikely to have significant impact on surface flows, including in the event of localised flooding.

The risk of groundwater impacts during construction is expected to be low as site levelling for the BESS and substation foundations is expected to require excavation of no more than 400-600 mm, reflecting the flat terrain of the site, and trenches for underground cables are expected to be 1,000-1,200 mm deep.

Water use during project construction and operation will be minimal and water will be brought to site by tanker as required. No impacts are anticipated on the availability of current surface or groundwater resources used by local landholders.

5.4.3 Need for further assessment

Impacts to waterways and hydrology during construction and operation, including flood risk, will be assessed as part of the EIS process, including an assessment of the potential impacts on:

- water movement during localised flood events
- surface water and groundwater resources, including (if identified) watercourses, wetlands, riparian land, and groundwater dependent ecosystems (including impacts from acid sulphate soil disturbance), and the associated environmental values
- adjacent licensed water users and basic landholder rights
- measures proposed to monitor, reduce and mitigate impacts as required.

5.5 Visual amenity

5.5.1 Existing conditions

The proposed project site is located approximately 6 km south of the township of Tamworth and will have potential to visually impact on road users and nearby rural residents.

The landholder's residence is located within the Lot and will not be occupied during the operational life of the BESS. Approximately 39 non-associated residences are located within 1 km of the project site (see Figure 1.3). The exact number of residences within 1 km of the site and their status (e.g. how many of the identified residences are occupied and their ownership) will be determined during the EIS program as part of Maoneng's community consultation activities (see Section 6).

Four of the non-associated residences are located within 500 m of the project site: R1 430 m southeast, R2 290 m southwest, R3 350 m northwest and R4 385 m northwest. Given the nature and magnitude of potential impacts on sensitive receivers associated with the construction and operation of a large-scale BESS, these residences are expected to be the key

sensitive receivers, although all receivers within the 1 km radius of the project will be considered in the EIS.

5.5.2 Preliminary impact assessment and management

The existing Tamworth Substation and associated electrical transmission infrastructure are already part of the viewshed of the area and the BESS will be consistent with these elements of the location's visual character.

The terrain across the project lot slopes gently to the northwest and varies approximately 28 m in elevation across the potential disturbance area. R1 is elevated on a hill above the proposed BESS footprint with only limited existing vegetation to provide screening. The potential for visual impact at R1 is therefore relatively high. R2, R3 and R4 are all located on gently sloping land with a greater degree of intervening vegetation to help obscure views of the site. However, the existing infrastructure within the viewshed of the four residences includes the large Tamworth Substation and associated transmission infrastructure, reducing the sensitivity of the viewshed to the visual impacts of the BESS.

A number of potential sensitive receivers are located to the north and northeast of the project, on or outside the 500 m radius and with elevated views across the project site. For many of these residences to the north, the view of the BESS is likely to be fully or partially blocked by the Tamworth Substation. Other possible receivers and residences further from the proposed site will be less likely to be impacted due to the presence of already established vegetation creating visual screening as well as intervening topography.

The use of strategically placed landscape screening may be required to minimise visual impacts from some viewpoints. The relatively small footprint of the BESS makes the use of landscape screening, if required, an effective impact management tool. However, patches of established vegetation and scattered trees exist between the majority of the identified residences and the site, creating a degree of existing visual screening.

Visual impacts may be greatest (although still minor or moderate) for road users of Burgmanns Lane, and possibly for users of Burgess Lane when approaching the site. However, impacts on road users are expected to be moderate or minor, particularly given the fleeting nature of views from passing traffic.

5.5.3 Need for further assessment

A landscape and visual impact assessment (LVIA) will be undertaken as part of the EIS process including an assessment of the likely visual impacts of the project (including glare, reflectivity and night lighting) on surrounding residences, scenic or significant vistas, air traffic and road corridors in the public domain. The LVIA will include a draft landscaping plan for any proposed on-site perimeter planting or other visual screening. The draft landscaping plan will be developed in consultation with affected landowners.

5.6 Noise and vibration

5.6.1 Existing conditions

Background noise levels are expected to reflect the site's location just outside Tamworth in a rural setting. The existing Tamworth Substation is a likely source of local noise, and other background noise sources would include traffic, farm equipment (e.g. harvesters, boom sprayers and tractors), wind through trees, and insects.

The 39 residences within 1 km of the site (see Figure 1.3) will potentially be subject to noise and vibration associated with the proposed project.

5.6.2 Preliminary impact assessment and management

Impacts from noise during the 12-month construction period will occur mostly from construction vehicles and equipment. Best practice mitigation measures will be implemented to reduce potential noise disturbance (e.g. working within standard hours or fitting vehicles with silencing devices, where appropriate).

Operational noise sources associated with the BESS will include the battery cubicles, transformers and inverters. Other noises during operation, such as from maintenance works, will be minimal, short in duration, and unlikely to disturb surrounding residences.

Residences R1, R2, R3 and R4 are expected to be the most vulnerable to noise impacts as they are the closest residences to the site and are shielded by only limited or absent vegetation or intervening topography. However, it is expected that noise will be effectively managed and minimised through the adoption of standard management practices, as will be outlined in the EIS. If necessary, there may be potential to reduce noise impacts by the careful location of noise generating components within the site to increase the distance to sensitive receivers.

Vibration issues are not expected to be significant during either construction or operation due to the distance between the site and the nearest sensitive receivers.

5.6.3 Need for further assessment

An assessment of construction noise impacts will be undertaken in accordance with the Interim Construction Noise Guideline (ICNG) (DECC 2009), and operational noise impacts in accordance with the Noise Policy for Industry (NPI) (EPA 2017).

Should noise levels be likely to exceed relevant criteria, a noise management plan will be developed and included in the EIS.

5.7 Traffic and transport

5.7.1 Existing conditions

The site is well serviced by local roads, being located on Burgmanns Lane, with Burgess Lane to the north expected to provide the main access route to the site during construction (see Figure 1.2).

In addition, the site is located about 2.5 km east of the New England Highway (see Figure 1.1). The New England Highway is an 878 km long highway that connects the Hunter region at its southern end to the Queensland border at its northern end (NSW Government 2021).

5.7.2 Preliminary impact assessment and management

Access to the site during construction and operation is expected to be from the existing site access driveway off Burgmanns Lane (696 Burgmanns Lane). If the BESS footprint, once selected, blocks the existing driveway, a new access driveway will be established off Burgmanns Lane.

Construction traffic is expected to access Burgmanns Lane via Burgess Lane to the north. The turn-off from Burgmanns Lane to the site will need to be assessed for B-double accessibility, and road works will likely be necessary to upgrade the turn-off.

During construction, traffic is expected to peak at approximately 45 vehicles per day (return vehicle trips) during Stage 2 (delivery of BESS infrastructure) and Stage 3 (installation of BESS infrastructure) (Table 5.4). Traffic during these two stages is estimated to comprise approximately 40 light vehicles and 5 heavy vehicles per day. In addition, an estimated total of 8 oversize and/or overmass (OSOM) vehicle return trips to site are expected to be required during Stage 1 of construction, and another 8 return trips during Stage 2.

Table 5.4 Estimated vehicle trips during construction

Construction stage	Estimated return vehicle trips		
	Light vehicles (per day)	Heavy vehicles (per day)	OSOM vehicles (total trips per stage)
Stage 1: Site establishment (3 months)	30	6	8
Stage 2: Delivery of BESS infrastructure (4 months)	40	5	8
Stage 3: Installation of BESS infrastructure (5 months)	40	5	-

Operational traffic will be negligible – a maximum of 1 return vehicle trip per day, with an average of 1 to 2 return vehicle trips per week.

Transport impacts as a result of the proposed project will be largely limited to the construction phase and may result from factors including: haulage of materials and components, and movements of workers to and from the site; and movement of trucks, vehicles and construction machinery within the site.

Construction will result in an increase in traffic on the local road network. However, this increase will occur during the standard hours of construction and be managed in consultation with TfNSW, local councils and landholders, where relevant, so that impacts on other road users or local residents are minimised and generally minor.

Standard traffic management measures will be implemented, such as ensuring vehicle road-worthiness, enforcing speed limits, erecting signage, proper design of site access points, and ensuring access roads within the site are properly engineered.

5.7.3 Need for further assessment

A transport assessment will be undertaken as part of the EIS process including an assessment of the site access route, site access point (including required road works) and likely transport impacts of the project on the capacity and condition of roads.

5.8 Preliminary hazard assessment

5.8.1 Existing conditions

The site and immediate surrounds is a predominantly rural landscape with one exception being the adjacent Tamworth Substation and associated electrical transmission infrastructure. The management of hazards associated with the substation are subject to the requirements of SafeWork NSW and applicable legislation. The main hazards associated with the rural use of the area are expected to be the presence of farm-scale storages of fuels, hydrocarbons and chemicals such as pesticides and herbicides.

5.8.2 Preliminary impact assessment and management

Hazards associated with the BESS units include the presence of potentially flammable lithium-ion batteries. The design of the BESS units includes operational controls such as ventilation and cooling systems to limit associated risks and to quickly detect and respond to any issues such as over-heating. The individual, containerised BESS units are also physically separated and configured to minimise risk. Detailed operational, maintenance and emergency response procedures will be implemented to further minimise risk.

Hazards associated with the proposed on-site substation will be managed in accordance with the standard requirements of SafeWork NSW and applicable legislation.

5.8.3 Need for further assessment

Although the Tamworth BESS is not expected to trigger the need for a PHA under the current wording of SEPP 33 (see Section 4.2.4), it is anticipated that such an assessment will be required by the SEARs. It is therefore proposed that a PHA will be undertaken, prepared in accordance with *Hazardous Industry Planning Advisory Paper No. 6 – Guideline for Hazard Analysis* (DoP 2011a) and *Multi-Level Risk Assessment* (DoP 2011b).

The PHA will be a detailed hazard assessment. It is not preliminary in the sense that it is high-level, but in the sense that it is based on preliminary project design information. A detailed hazard assessment will also be undertaken during the later detailed design phase of the project.

The findings of the PHA and proposed management measures will be outlined in the EIS and the PHA will be appended. The findings of the PHA will be a key focus of Maoneng's community and stakeholder engagement program (see Section 6).

5.9 Cumulative impacts

The EIS will need to assess the cumulative impacts of the proposed Tamworth BESS project and existing, approved or proposed developments in the region.

There are currently four approved or proposed energy-related SSDs in the Tamworth Regional LGA listed on the DPIE Major Projects website in addition to the Tamworth BESS. These are listed in Table 5.5 and shown in Figure 5.2.

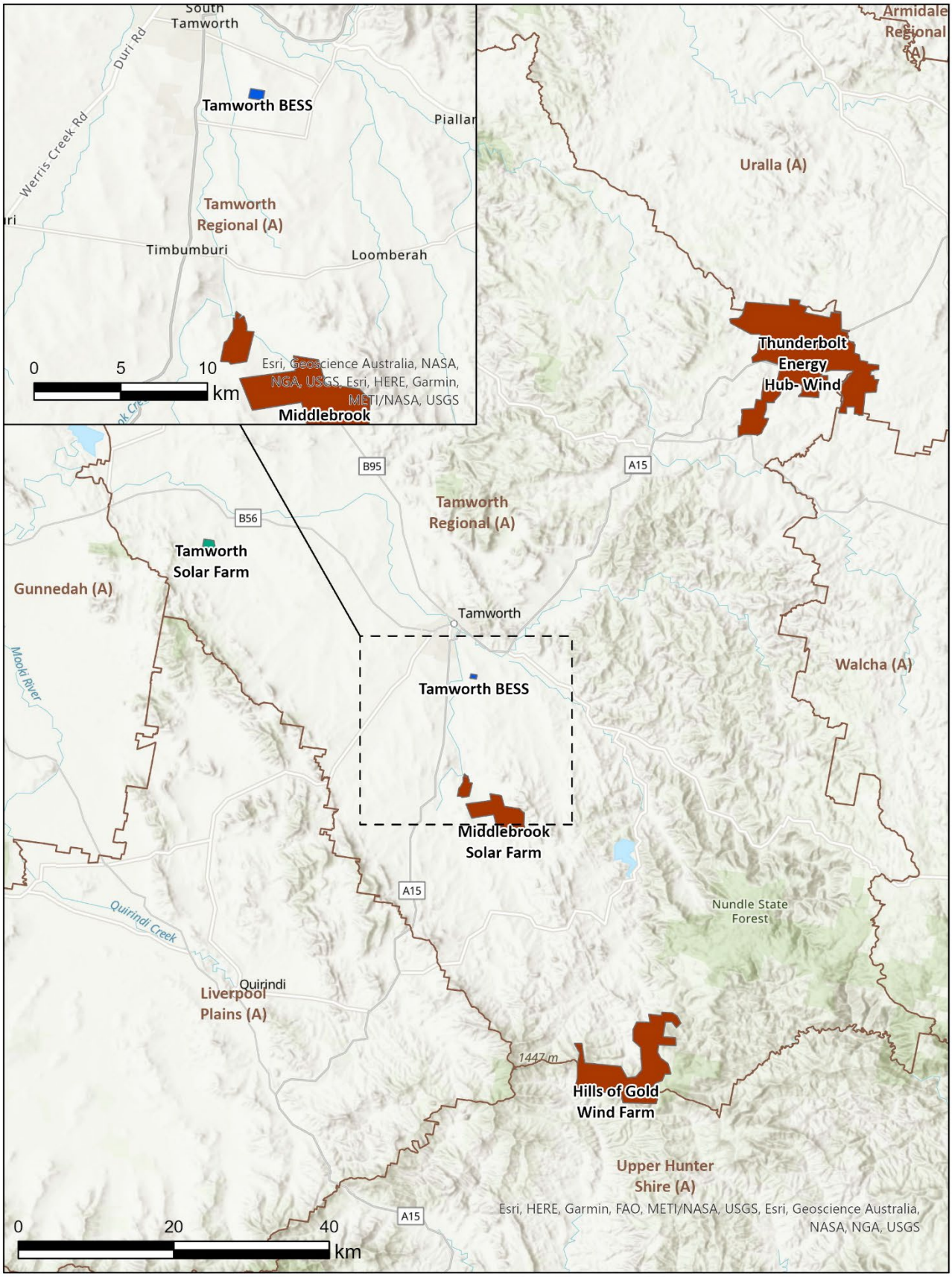
The cumulative impact assessment will consider cumulative impacts on aspects such as land use, noise and traffic. The assessment will include a screening process to determine which aspects require more detailed consideration.

Table 5.5 Other energy-related SSDs in the Tamworth Regional LGA

Name	Number	Status	Distance from Tamworth BESS
Tamworth Solar Farm	SSD- 9264	Approved	33 km northwest
Hills of Gold Wind Farm	SSD 9679	Response to submissions	48 km southeast
Thunderbolt Energy Hub-Wind	SSD 10807896	Prepare EIS	42 km northeast
Middlebrook Solar Farm	SSD-10455	Prepare EIS	13 km to south

5.10 Other impacts

Other potential environmental or social impacts that are lower risk than those in Sections 5.2 to 5.8 and/or are readily manageable by implementing standard environmental management and mitigation procedures (as will be outlined in the EIS) are assessed in Table 5.6.



Tamworth BESS
LGA boundaries

Other energy-related SSDs
Approved
Proposed

N

AE1184.2 Tamworth BESS
Figure 5.2 Energy-related SSDs within Tamworth Regional LGA
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Table 5.6 Assessment of lower priority project impacts and need for further assessment

Existing conditions	Preliminary impact assessment and management	Need for further assessment
Socio-economic impacts		
The project site is in the Tamworth Regional Council LGA. The Tamworth region had a population of approximately 62,545 in 2020 and covers an area of 9,884 km² (ABS 2020). Rural land in the region is used largely for sheep and cattle grazing, lucerne and wheat growing, and poultry farming (.id undated). The main town centres within the LGA are Tamworth, Barraba, Kootingal, Manilla and Nundle (.id undated).	Construction of the project will provide immediate social and economic benefits to the local community. The project will increase local employment opportunities and help drive growth in the area, while helping NSW to sustainably meet its energy needs. Pressure on local services including accommodation, health services and schools has the potential to increase due to the relocation of construction workers into the area. Communities that host BESSs are likely to benefit from increases in business during construction and, to a lesser extent, operation.	The EIS will assess the generally positive potential impacts of the project on the local community and include consideration of accommodation and other services for construction workers.
Land use impacts		
The project site is located within a rural use zone and is currently used for agricultural purposes.	There will be temporary loss of agricultural land and production as a result of the project. However, the loss of the land within the Lot (40 ha) for an expected period of two decades will have an insignificant impact on the region's output from primary industry. Construction and operation of the project is expected to result in only minor ground disturbance (up to 3.1 ha), primarily associated with access road construction within the site and the establishment of concrete foundations for the BESS units and on-site substation.	An assessment of the impact of the project on land use (during construction, operation and after decommissioning) will be undertaken as part of the EIS process. This will include an assessment of the impact of the project on agricultural land, and a soil assessment to consider the potential for erosion to occur. Particular attention will be paid to the compatibility of the project with adjacent land uses during operation and after decommissioning, with reference to the zoning

Existing conditions	Preliminary impact assessment and management	Need for further assessment
	However, where soils are disturbed, soil erosion and sedimentation issues can result. All above-ground and underground infrastructure will be removed during project decommissioning. Rehabilitation is expected to return the land to its former land use and agricultural capability.	provisions applying to the land.
Air quality and dust		
Existing sources of air pollution in Tamworth are likely to result from vehicle emissions and dust from agriculture and may increase during the colder months from solid fuel heating and during summer periods if bushfires or dust storms occur in the region.	Construction has the potential to increase dust through movement of traffic on unsealed roads on dry days, vegetation removal and construction activities (such as access road construction). However, dust impacts are unlikely to be significant and standard dust suppression measures can be readily implemented. Impacts to air quality during operation will be negligible.	Measures to manage potential air quality impacts during construction will be outlined in the EIS. No specific investigation is required as part of the EIS.
Airfields		
Airfields are located at Tamworth, approximately 12 km to the west, and Lake Keepit Soaring Club, approximately 51 km south.	It is unlikely that air traffic will be affected from the glint or glare of the BESS's infrastructure.	Any potential affects to air traffic will be discussed in the LVIA, prepared as part of the EIS process.
Electromagnetic fields		
Electricity will be delivered from the on-site substation to the Tamworth Substation, located to the immediate north of the site via a new underground transmission line. Its location will be confirmed in consultation with Council and Transgrid. Grid connection is expected to be	Cables to connect the batteries, power conversion units, transformers, switchroom and on-site substation will be located underground. The transmission line between the on-site substation and Tamworth Substation may be either underground or above-ground.	The EIS process will include an assessment of potential hazards and risks associated with transmission infrastructure and the substation against the International Commission on Non-Ionizing Radiation Protection (ICNIRP) *Guidelines for limiting exposure to Time-varying Electric, Magnetic and*

Existing conditions	Preliminary impact assessment and management	Need for further assessment
via a TransGrid 132 kV or 330kV transmission line.	The BESS units, cabling, power conversion units, transformers and substation will produce some electromagnetic emissions. However, these emissions are expected to be below the guideline for public exposure.	*Electromagnetic Fields* (ICNIRP 1998).
Bushfire hazard		
The project site is largely cleared of vegetation for agricultural purposes and is not considered to be bushfire-prone land, according to the Rural Fire Service Online Tool (search undertaken 28 June 2021).	The proposed project is unlikely to be at high or moderate risk of being affected by bushfire or pose a significant bushfire risk.	Bushfire response will be part of emergency management planning for the project. No specific investigation is required as part of the EIS. However, consultation will be undertaken with the NSW Rural Fire Authority during the EIS process to determine fire risk and response requirements.
Existing site contamination		
A search of the NSW EPA Contaminated Land Record of Notices identified 5 contaminated sites within the Tamworth Regional Council (search undertaken 29 June 2021). Most sites are industrial or service station sites in the Tamworth city area approximately 6 km northwest of the proposed project and thus not expected to impact the site. Other sites are greater than 20 km from the project site and thus not expected to impact the site. A search of EPA potentially contaminated sites identified 14 sites (search undertaken 18 June 2021). Most sites are in the Tamworth city area and of industrial or service station origin. The closest of these sites is 5 km northwest of the	Existing contamination of the project site could be present as a result of past fertiliser, herbicide, pesticide, and other chemical use on the land, and may be uncovered during excavation works at the site. Field visits to date have not identified any visible land contamination. Only very minor quantities of potentially polluting hazardous materials or dangerous goods will be used or stored on site during project construction or operation. Hydrocarbons and hazardous materials on site will be managed in accordance with relevant EPA and SafeWork NSW guidelines.	Risks associated with existing or project-related contamination are low. Therefore, an assessment of contamination risks will not be required as part of the EIS process, provided that any use of hydrocarbons and hazardous materials is subject to standard management practice as will be outlined in the EIS.

Existing conditions	Preliminary impact assessment and management	Need for further assessment
project site and will not affect the project. One site, identified as a cattle dip, is located 3 km to the southeast of the project site and will not affect the project.		

6 Community and stakeholder consultation

6.1 Consultation activities undertaken

Maoneng has identified a range of stakeholders in the development of the Tamworth BESS. These include regulators who have a decision-making role in project approvals, and groups or individuals who may be directly or indirectly affected by the project. Initial consultation has included formal and informal engagement with the following:

- Tamworth Regional Council – a meeting has been held with the Tamworth Regional Council development team. The team informed Maoneng that the site at Burgmanns Lane is their preference for a BESS, compared to another site of interest nearby. After several attempts, Maoneng is proposing to schedule a meeting as soon as possible with both the Mayor and General Manager.
- TransGrid – initial discussions have been held including a preliminary grid enquiry.
- Local Member of State Parliament – a meeting was held with the media officer for Kevin Anderson MP. The Minister's office has been provided with project information and no negative feedback has been received. The office expressed a wish to be informed of ongoing project updates.
- Landholders – a register of landholders within a 1 km distance of the project site (see Figure 1.3) has been compiled. Letters have been sent to all identified landholders (all of which are non-associated), providing an outline of the proposed project and approvals process, and advising them of the upcoming process of community engagement (see Table 6.1). Maoneng has also called landholders, where phone numbers were available, to discuss the project. Landholders generally expressed interest in the development and keen to be kept informed. No negative responses to the project have been received to date.

Table 6.1 Initial landholder consultation

Category	Number
Landholders sent letters	37
Landholders called	34*
Non-responses to either letter or phone call	21
Phone conversations	13
Negative responses	0

*Three phone numbers not identified.

The consultation to date has provided stakeholders with opportunities to contribute to the project development process and raise any concerns, and has also contributed to identification of potential impacts. Maoneng continues to expand its stakeholder database as consultation proceeds.

The council has certain obligations under the *Local Government Act 1993* and the EP&A Act to notify owners of land whose enjoyment of that land may be affected by the proposed development. Maoneng will support the council in this.

6.2 Community and Stakeholder Consultation Plan

The EIS process requires project applicants to undertake detailed consultation with affected landowners surrounding the project, the local community and local council.

A formal process of consultation will be implemented in support of the EIS process and in accordance with requirements set out in the SEARs.

In addition to those listed in Section 6.1 (above), stakeholders will include:

- local community groups
- RAPs
- DPIE
- TfNSW
- Rural Fire Service.

Maoneng has prepared a high-level community and stakeholder consultation plan to guide consultation during the EIS process and the approvals phase of the project. The plan includes various methods of information dissemination (such as letter box drops and face-to-face meetings with local landholders) and opportunities for stakeholder engagement at key milestones.

Maoneng recognises that large-scale BESS developments are new to NSW and that a strong emphasis needs to be placed on engagement to inform stakeholders as to the nature of such projects, to fully describe potential project impacts, to explain proposed measures for impact management and mitigation, and to provide opportunities for stakeholder input into the development process.

7 Constraints assessment

An initial, qualitative assessment of site constraints has been undertaken based on the preliminary site information to determine whether environmental or cultural sensitivities will constrain or influence the design of the proposed Tamworth BESS project, or affect the location and/or configuration of the project within the proposed project site. Maoneng recognises the importance of understanding site constraints so that project impacts are avoided and/or minimised where possible.

The initial constraints assessment considered the extent to which the seven higher priority areas of potential impact identified in Section 5.1 are expected to influence project design, location or configuration. The outcomes of the assessment are presented in Table 7.1.

Table 7.1 Outcomes of initial constraints assessment

Area of potential project impact	Associated constraints	Current implications for project design, location or configuration	Additional EIS investigation required
Ecological values	No major constraints identified during preliminary assessment	Potential siting of footprint and connecting transmission line to minimise clearance of paddock trees	Further assessment of extent and quality of native grassland and fauna habitat
Aboriginal cultural heritage and historic heritage	No constraints identified during preliminary assessment	No current implications	Additional desktop review Archaeological field survey, and RAP consultation Historic heritage field survey
Hydrology and water resources (including flood risk)	No constraints identified during preliminary assessment	No current implications	Flood modelling to quantify flood risk
Visual amenity	No major constraints identified during preliminary assessment	Potential need for screening vegetation	LVIA including draft landscape management plan (and landholder consultation)
Noise and vibration	No major constraints identified during preliminary assessment	Potential need to locate noise-generating components (e.g. the new substation) a	Noise assessment to determine compliance of project with applicable noise criteria and any constraints on

Area of potential project impact	Associated constraints	Current implications for project design, location or configuration	Additional EIS investigation required
		minimum distance from sensitive receivers	siting of noise-generating components
Traffic and transport	No major constraints identified during preliminary assessment	Potential need for road works to enable safe and compliant site access	Assessment of site access options, associated road works and associated implications (such as vegetation clearance)
Hazards associated with BESS and proposed substation	No constraints identified during preliminary assessment	No current implications	PHA to identify any implications for component siting or need for other controls

Potential constraints such as those listed in Table 7.1 or identified during the proposed EIS investigation program will be a key consideration in project planning and development and will be a focus of the avoidance, minimisation and mitigation measures incorporated into the project's environmental management.

8 Conclusion

This Scoping Report has been prepared in accordance with the requirements of DPIE for projects identified as SSDs and therefore requiring an EIS to be prepared under Part 4 of the EP&A Act. The report will support a request to DPIE from Maoneng for the SEARs for the EIS.

Potential environmental and social issues associated with the project have been identified and prioritised as either higher priority or lower priority issues. Based on a preliminary assessment of these potential issues, Maoneng has proposed environmental assessment requirements for consideration by DPIE.

The proposed project site is disturbed and of low biodiversity significance. A small number of scattered trees provide some habitat for arboreal species and nests observed indicate some use for breeding. However, it is considered likely that a BDAR waiver will apply. As assessments were performed in winter, a non-optimal timing for determining the presence of native ground storey species and coverage, some further assessment will be required to confirm or modify the findings of the preliminary assessment.

The site is likely to be of low cultural heritage significance and, additionally, is unlikely to pose a flood risk. Issues associated with visual amenity, noise (and vibration) and traffic are expected to be relatively minor. Some road works are likely to be required and will need appropriate approvals and management.

Impact avoidance and minimisation has been achieved through the initial site selection and will be further considered during project design, and in the location of the BESS and associated infrastructure within the site. A detailed preliminary hazard assessment will be undertaken to demonstrate that risks associated with the facility have been acceptably minimised through appropriate design and the integration of engineering controls.

Large-scale BESS developments are new to NSW and a strong emphasis will be placed on engagement to fully inform stakeholders as to the potential impacts of the project and proposed management measures, and to provide opportunities for stakeholder input into the development process.

The project is expected to be a relatively low risk development compared with many SSDs due to the small footprint of the facility (e.g. in comparison to a solar farm) and the location of the project in an area that has a long history of disturbance from primary production, is adjacent to existing electrical infrastructure, and is distant from areas of high environmental sensitivity. In addition, the project is expected to result in significant benefits to the local community and State of NSW by generating economic activity, and contributing to the transition to cleaner electricity generation and increased energy security.

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Appendix A: Species Lists

Scientific Name	Exotic	Common Name	NSW status	Comm. status	Records	Info	Present onsite in Prelim assessment	Likelihood of occurrence (Threatened Species)
Crinia signifera		Common Eastern Froglet	P		3			
Litoria booroolongensis		Booroolong Frog	E1,P	E	1			low, insufficient habitat
Litoria caerulea		Green Tree Frog	P		1			
Litoria latopalmata		Broad-palmed Frog	P		1			
Litoria peronii		Peron's Tree Frog	P		3			
Litoria wilcoxii			P		1			
Limnodynastes fletcheri		Long-thumbed Frog	P		2			
Limnodynastes tasmaniensis		Spotted Grass Frog	P		2			
Chelonia mydas		Green Turtle	V,P	V	1			Low, marine animal
Chelodina longicollis		Eastern Snake-necked Turtle	P		3			
Nebulifera robusta		Robust Velvet Gecko	P		1			
Gehyra dubia		Dubious Dtella	P		2			
Heteronotia binoei		Bynoe's Gecko	P		1			
Aprasia parapulchella		Pink-tailed Legless Lizard	V,P	V	1			Low, site lack rocks
Delma plebeia		Leaden Delma	P		1			
Anomalopus leuckartii		Two-clawed Worm-skink	P		1			
Carlia tetradactyla		Southern Rainbow-skink	P		1			
Cryptoblepharus virgatus		Cream-striped Shinning-skink	P		2			
Ctenotus robustus		Robust Ctenotus	P		1			
Lygisaurus foliorum		Tree-base Litter-skink	P		1			
Tiliqua scincoides		Eastern Blue-tongue	P		21			
Intellagama lesueurii		Eastern Water Dragon	P		1			
Pogona barbata		Bearded Dragon	P		3			
Pogona vitticeps		Central Bearded Dragon	P		1			
Varanus gouldii		Gould's Goanna	P		1			
Demansia psammophis		Yellow-faced Whip Snake	P		2			
Pseudechis porphyriacus		Red-bellied Black Snake	P		3			
Pseudonaja textilis		Eastern Brown Snake	P		32			
Alectura lathami		Australian Brush-turkey	P		1			
Alectura lathami		Australian Brush-turkey population in the Nandewar and Brigalow Belt South Bioregions	E2,P		1			Low, unsuitable habitat
Coturnix sp.		Unidentified Quail	P		1			
Synoicus ypsilophora		Brown Quail	P		1			
Anas superciliosa		Pacific Black Duck	P		3			
Chenonetta jubata		Australian Wood Duck	P		8		Y	
Tachybaptus novaehollandiae		Australasian Grebe	P		1			
Columba livia	*	Rock Dove			3			

Lopholaimus antarcticus		Topknot Pigeon	P	1		
Ocyphaps lophotes		Crested Pigeon	P	19	Y	
Spilopelia chinensis	*	Spotted Turtle-Dove		10		
Podargus strigoides		Tawny Frogmouth	P	20		
Microcarbo melanoleucos		Little Pied Cormorant	P	1		
Phalacrocorax sp.		Unidentified Cormorant	P	1		
Threskiornis spinicollis		Straw-necked Ibis	P	2		
Accipiter cirrocephalus		Collared Sparrowhawk	P	1		
Accipiter fasciatus		Brown Goshawk	P	2		
Aquila audax		Wedge-tailed Eagle	P	1		
Elanus axillaris		Black-shouldered Kite	P	1		
Haliastur sphenurus		Whistling Kite	P	1		
^^Lophoictinia isura		Square-tailed Kite	V,P,3	1		Low, may hunt PS
Milvus migrans		Black Kite	P	3		
Falco cenchroides cenchroides		Nankeen Kestrel	P	3		
Falco longipennis		Australian Hobby	P	1		
Falco subniger		Black Falcon	V,P	1		Low, unsuitable habitat
Raptor sp.		Unidentified Raptor	P	1		
Gallinula tenebrosa		Dusky Moorhen	P	2		
Porphyrio porphyrio		Purple Swamphen	P	1		
Vanellus miles		Masked Lapwing	P	3		
Cacatua galerita		Sulphur-crested Cockatoo	P	7		
^Calyptorhynchus banksii samueli		Red-tailed Black-Cockatoo (inland subspecies)	V,P,2	1		Low, unsuitable habitat
Eolophus roseicapilla		Galah	P	43	Y	
Nymphicus hollandicus		Cockatiel	P	2		
Alisterus scapularis		Australian King-Parrot	P	9		
Glossopsitta concinna		Musk Lorikeet	P	3		
Glossopsitta pusilla		Little Lorikeet	V,P	1		Mod, hollows present
^^Neophema pulchella		Turquoise Parrot	V,P,3	1		Mod, hollows present
Platycercus elegans		Crimson Rosella	P	6		
Platycercus eximius		Eastern Rosella	P	19	Y	
Platycercus sp.		Unidentified Rosella	P	8		
Psephotus haematonotus		Red-rumped Parrot	P	9	Y	
Trichoglossus haematodus		Rainbow Lorikeet	P	20		
Ninox novaeseelandiae		Southern Boobook	P	3		
^^Ninox strenua		Powerful Owl	V,P,3	1		Low, unsuitable breed.
Tyto javanica		Eastern Barn Owl	P	3		
Ceyx azureus		Azure Kingfisher	P	1		
Dacelo novaeguineae		Laughing Kookaburra	P	5	Y	
Todiramphus sp.		Unidentified Kingfisher	P	7		
Eurystomus orientalis		Dollarbird	P	2		
Malurus cyaneus		Superb Fairy-wren	P	2		
Acanthiza chrysorrhoa		Yellow-rumped Thornbill	P	1		
Pardalotus striatus		Striated Pardalote	P	2		
Acanthagenys rufogularis		Spiny-cheeked Honeyeater	P	2		

Anthochaera carunculata		Red Wattlebird	P		1		
Anthochaera sp.		Unidentified Wattlebird	P		1		
Caligavis chrysops		Yellow-faced Honeyeater	P		1		
Entomyzon cyanotis		Blue-faced Honeyeater	P		2		
Manorina melanocephala		Noisy Miner	P		11		
Myzomela sanguinolenta		Scarlet Honeyeater	P		1		
Philemon citreogularis		Little Friarbird	P		1		
Philemon corniculatus		Noisy Friarbird	P		7		
Ptilotula penicillata		White-plumed Honeyeater	P		2		
Coracina novaehollandiae		Black-faced Cuckoo-shrike	P		3		
Coracina papuensis		White-bellied Cuckoo-shrike	P		2		
Colluricincla harmonica		Grey Shrike-thrush	P		1		
Cracticus nigrogularis		Pied Butcherbird	P		1		
Cracticus sp.		Unidentified Butcherbird	P		2		
Cracticus torquatus		Grey Butcherbird	P		1		
Gymnorhina tibicen		Australian Magpie	P		56	Y	
Strepera graculina		Pied Currawong	P		6		
Strepera versicolor		Grey Currawong	P		1		
Rhipidura leucophrys		Willie Wagtail	P		8	Y	
Corvus coronoides		Australian Raven	P		3	Y	
Corvus sp.		Unidentified Corvid	P		1		
Grallina cyanoleuca		Magpie-lark	P		25	Y	
Corcorax melanorhamphos		White-winged Chough	P		1		
Alauda arvensis	*	Eurasian Skylark			1		
Poodytes gramineus		Little Grassbird	P		1		
Hirundo neoxena		Welcome Swallow	P		4		
Petrochelidon ariel		Fairy Martin	P		2		
Acridotheres tristis	*	Common Myna			10	Y	
Sturnus vulgaris	*	Common Starling			6	Y	
Zosterops lateralis		Silvereye	P		3		
Neochmia temporalis		Red-browed Finch	P		2		
Stagonopleura guttata		Diamond Firetail	V,P		1		Low, poor habitat
Passer domesticus	*	House Sparrow			4		
Anthus novaeseelandiae		Australian Pipit	P		2		
Tachyglossus aculeatus		Short-beaked Echidna	P		8		
Dasyurus maculatus		Spotted-tailed Quoll	V,P	E	4		Low, poor habitat
Petaurus breviceps		Sugar Glider	P		1		
Pseudocheirus peregrinus		Common Ringtail Possum	P		3		
Trichosurus sp.		brushtail possum	P		4		
Trichosurus vulpecula		Common Brushtail Possum	P		10		
Macropus giganteus		Eastern Grey Kangaroo	P		13	Y	
Macropus sp.		kangaroo / wallaby	P		33	Y (scat)	
Osphranter robustus		Common Wallaroo	P		8		
Wallabia bicolor		Swamp Wallaby	P		2		
Pteropus poliocephalus		Grey-headed Flying-fox	V,P	V	7		Mod, may feed on Eucs

Pteropus scapulatus		Little Red Flying-fox	P	4	
Pteropus sp.		Flying-fox	P	4	
Austronomus australis		White-striped Freetail-bat	P	3	
Ozimops ridei		Eastern Free-tailed Bat	P	1	
Chalinolobus gouldii		Gould's Wattled Bat	P	2	
Scotorepens balstoni		Inland Broad-nosed Bat	P	1	
Vespadelus vulturnus		Little Forest Bat	P	1	
Mus musculus	*	House Mouse		1	Y
Canis familiaris	*	Dog		1	
Vulpes vulpes	*	Fox		9	
Felis catus	*	Cat		4	
Lepus capensis occidentalis			P	2	
Oryctolagus cuniculus	*	Rabbit		4	
Bos taurus	*	European cattle		1	Y
Bird sp.		Unidentified Bird		35	
Fauna sp.		Unidentified Fauna		7	
Mammal sp.		Unidentified Mammal		1	
Microchiroptera suborder		Unidentified Microbat		5	
Reptile sp.		Unidentified Reptile		1	
Brunoniella australis		Blue Trumpet		1	
Rostellularia adscendens		Pink Tongues		1	
Rostellularia adscendens var. adscendens				3	
Alternanthera pungens	*	Khaki Weed		2	
Amaranthus macrocarpus var. macrocarpus				1	
Amaranthus powellii	*	Powell's Amaranth		1	
Amaranthus retroflexus	*	Redroot Amaranth		3	
Amaranthus viridis	*	Green Amaranth		1	
Guilleminea densa	*	Small Matweed		1	
Schinus areira	*	Pepper Tree		2	Y
Arthropodium minus		Small Vanilla Lily		2	
Arthropodium spp.				1	
Dichopogon fimbriatus		Nodding Chocolate Lily		1	
Ammi majus	*	Bishop's Weed		1	
Daucus glochidiatus		Native Carrot		1	
Foeniculum vulgare	*	Fennel		3	
Hydrocotyle bonariensis	*			1	
Hydrocotyle laxiflora		Stinking Pennywort		1	
Gomphocarpus fruticosus	*	Narrow-leaved Cotton Bush		3	
Nerium oleander	*	Oleander		1	
Parsonsia eucalyptophylla		Gargaloo		1	
Hedera helix	*	English Ivy		1	
Asphodelus fistulosus	*	Onion Weed		1	
Bulbine bulbosa		Bulbine Lily		1	
Arctotheca calendula	*	Capeweed		2	

Aster subulatus	*	Wild Aster	1	
Bidens pilosa	*	Cobbler's Pegs	5	Y(PS)
Brachyscome ciliaris		Variable Daisy	1	
Brachyscome multifida		Cut-leaved Daisy	1	
Calotis lappulacea		Yellow Burr-daisy	4	Y(PS)
Cassinia quinquefaria			2	
Centaurea melitensis	*	Maltese Cockspur	1	
Centaurea solstitialis	*	St Barnabys Thistle	7	
Chrysocephalum apiculatum		Common Everlasting	3	
Chrysocephalum semipapposum		Clustered Everlasting	3	
Cichorium intybus	*	Chicory	1	
Cirsium vulgare	*	Spear Thistle	7	Y
Conyza bonariensis	*	Flaxleaf Fleabane	7	
Conyza sumatrensis	*	Tall fleabane	1	
Coreopsis lanceolata	*	Coreopsis	1	
Cymbonotus lawsonianus		Bear's Ear	2	
Euchiton involucratus		Star Cudweed	1	
Euchiton sphaericus		Star Cudweed	1	
Glossocardia bidens		Cobbler's Tack	1	
Helianthus annuus	*	Common Sunflower	1	
Hypochaeris glabra	*	Smooth Catsear	1	
Hypochaeris radicata	*	Catsear	3	
Lactuca serriola	*	Prickly Lettuce	2	
Leiocarpa panaetioides		Wooly Buttons	1	
Leiocarpa spp.			1	
Leontodon rhagadioloides	*	Cretan Weed	1	
Olearia elliptica		Sticky Daisy-bush	1	
Onopordum acanthium subsp. acanthium	*	Scotch Thistle	1	
Schkuhria pinnata var. abrotanoides	*	Dwarf Marigold	3	
Senecio quadridentatus		Cotton Fireweed	3	
Sigesbeckia orientalis subsp. orientalis		Indian Weed	1	
Silybum marianum	*	Variegated Thistle	3	Y
Solenogyne bellioides		Solengyne	1	
Sonchus asper	*	Prickly Sowthistle	2	
Sonchus oleraceus	*	Common Sowthistle	3	
Tagetes minuta	*	Stinking Roger	1	
Taraxacum officinale	*	Dandelion	1	
Taraxacum spp.		Dandelion	1	
Tragopogon porrifolius subsp. porrifolius	*	Salsify	1	
Triptilodiscus pygmaeus		Common Sunray	1	
Vittadinia cuneata			1	
Vittadinia cuneata var. cuneata			1	Y(PS)
Vittadinia muelleri			1	
Vittadinia sulcata			2	

Xanthium occidentale	*	Noogoora Burr	1	
Xanthium spinosum	*	Bathurst Burr	1	Y
Zinnia peruviana	*		1	
Anredera cordifolia	*	Madeira Vine	1	
Jacaranda mimosifolia	*	Jacaranda	1	
Pandorea pandorana		Wonga Wonga Vine	1	
Echium plantagineum	*	Patterson's Curse	3	
Brassica napus	*	Canola	1	
Capsella bursa-pastoris	*	Shepherd's Purse	2	
Lepidium africanum	*	Common Peppercress	4	Y
Lepidium bonariense	*	Argentine Peppercress	1	
Lepidium campestre	*	Field Cress	1	
Rapistrum rugosum	*	Turnip Weed	2	
Sisymbrium irio	*	London Rocket	2	
Sisymbrium officinale	*	Hedge Mustard	2	Y
Sisymbrium orientale	*	Indian Hedge Mustard	1	
Opuntia aurantiaca	*	Tiger Pear	1	
Opuntia spp.	*		1	
Opuntia stricta	*	Common Prickly Pear	1	
Wahlenbergia communis		Tufted Bluebell	4	Y
Wahlenbergia gracilis		Sprawling Bluebell	1	
Wahlenbergia luteola		Bluebell	3	
Wahlenbergia stricta		Tall Bluebell	1	
Lonicera japonica	*	Japanese Honeysuckle	1	
Cerastium glomeratum	*	Mouse-ear Chickweed	2	Y
Petrorhagia nanteuilii	*	Proliferous Pink	2	
Polycarpaea corymbosa var. minor			1	
Silene gallica	*	French Catchfly	1	
Spergularia marina		Lesser Sea-spurrey	1	
Casuarina cunninghamiana subsp. cunninghamiana		River Oak	4	Y(PS)
Chenopodium ambrosioides	*	Mexican Tea	1	
Einadia nutans		Climbing Saltbush	3	
Einadia polygonoides		Knotweed Goosefoot	1	Y(PS)
Salsola kali var. kali		Buckbush	2	
Hypericum perforatum	*	St. Johns Wort	2	
Iphigenia indica			1	
Wurmbea biglandulosa			1	
Commelina cyanea		Native Wandering Jew	1	
Convolvulus erubescens		Pink Bindweed	3	
Dichondra repens		Kidney Weed	4	Y(PS)
Dichondra sp. Inglewood			3	
Crassula sieberiana		Australian Stonecrop	1	
Cyperus eragrostis	*	Umbrella Sedge	2	
Cyperus gracilis		Slender Flat-sedge	1	Y
Lepidosperma laterale		Variable Sword-sedge	1	

Melichrus urceolatus		Urn Heath	1	
Chamaesyce dallachyana			1	
Chamaesyce drummondii		Caustic Weed	2	
Ceratonia siliqua	*	Carob	1	
Gleditsia triacanthos	*	Honey Locust	1	
Desmodium varians		Slender Tick-trefoil	2	
Glycine clandestina		Twining glycine	1	
Glycine tabacina		Variable Glycine	4	
Medicago polymorpha	*	Burr Medic	1	Y
Medicago sativa	*	Lucerne	3	Y
Medicago scutellata	*	Snail Medic	1	
Oxytes brachypoda		Large Tick-trefoil	1	
Swainsona greyana		Darling Pea	1	
Swainsona reticulata		Kneed Swainson-pea	1	
Trifolium arvense	*	Haresfoot Clover	3	
Trifolium dubium	*	Yellow Suckling Clover	1	
Trifolium fragiferum	*	Strawberry Clover	2	
Trifolium repens	*	White Clover	3	Y
Trifolium resupinatum	*	Shaftal Clover	1	
Trifolium subterraneum	*	Subterranean Clover	1	
Trifolium tomentosum	*	Woolly Clover	1	
Acacia decora		Western Silver Wattle	1	
Acacia implexa		Hickory Wattle	1	
Acacia salicina		Cooba	1	
Acacia saligna	*	Golden Wreath Wattle	1	
Fumaria capreolata subsp. capreolata	*	Climbing Fumitory	1	Y(PS)
Centaurium tenuiflorum	*	Branched Centaury, Slender centaury	1	
Schenkia spicata		Spike Centaury	1	
Erodium cicutarium	*	Common Crowfoot	3	
Erodium crinitum		Blue Crowfoot	1	
Geranium homeanum			1	
Geranium molle subsp. molle	*	Cranesbill Geranium	1	
Geranium solanderi		Native Geranium	2	Y(PS)
Geranium solanderi var. solanderi			1	
Goodenia bellidifolia			1	
Goodenia pinnatifida		Scrambles Eggs	1	
Gonocarpus tetragynus		Poverty Raspwort	1	
Haloragis aspera		Rough Raspwort	2	
Romulea rosea var. australis	*	Onion Grass	1	
Juncus spp.			2	
Juncus subsecundus		Finger Rush	2	
Ajuga australis		Austral Bugle	2	
Mentha pulegium	*	Pennyroyal	1	
Plectranthus graveolens			1	
Salvia verbenaca	*	Vervain	1	

Teucrium betchei					1		
Lomandra filiformis		Wattle Matt-rush			1		
Lomandra longifolia		Spiny-headed Mat-rush			1		
Amyema cambagei		Needle-leaf Mistletoe			1		
Amyema miquelii		Box Mistletoe			2	Y(PS)	
Dendrophthoe vitellina					1		
Cotoneaster glaucophyllus	*				1		
Crataegus monogyna	*	Hawthorn			1		
Malva parviflora	*	Small-flowered Mallow			3	Y	
Modiola caroliniana	*	Red-flowered Mallow			1		
Sida corrugata		Corrugated Sida			2		
Sida rhombifolia	*	Paddy's Lucerne			4		
Melia azedarach		White Cedar			1		
Angophora floribunda		Rough-barked Apple			1		
Eucalyptus albens		White Box			6	Y	
Eucalyptus blakelyi		Blakely's Red Gum			2		
Eucalyptus camaldulensis		River Red Gum			4		
Eucalyptus globulus					1		
Eucalyptus melliodora		Yellow Box			6		
Eucalyptus moluccana		Grey Box			1		
Eucalyptus populnea subsp. bimbil		Bimble Box			1		
Eucalyptus sideroxylon		Mugga Ironbark			2	Y(PS)	
Syzygium paniculatum		Magenta Lilly Pilly	E1	V	1		Low, unsuitable habitat
Boerhavia dominii		Tarvine			3		
Ligustrum lucidum	*	Large-leaved Privet			1		
Oxalis chnoodes					1		
Oxalis perennans					1		
Dianella caerulea		Blue Flax-lily			1		
Dianella caerulea var. cinerascens					1		
Dianella revoluta		Blueberry Lily			1		
Pinus radiata	*	Radiata Pine			1		
Bursaria spinosa		Native Blackthorn			2		
Rhytidosporum spp.					1		
Linaria arvensis	*				1		
Plantago debilis		Shade Plantain			1		
Plantago lanceolata	*	Lamb's Tongues			7	Y	
Plantago scabra	*	Sand Plantain			1		
Veronica anagallis-aquatica	*	Blue Water-speedwell			1		
Veronica calycina		Hairy Speedwell			4		
Anthosachne scabra		Wheatgrass, Common Wheatgrass			2		
Aristida ramosa		Purple Wiregrass			4	Y	
Aristida vagans		Threeawn Speargrass			1		
Arundo donax	*	Giant Reed			1		
Austrostipa aristiglumis		Plains Grass			2		
Austrostipa nitida					1		

Austrostipa scabra		Speargrass	1	Y
Austrostipa scabra subsp. scabra		Rough Speargrass	2	
Austrostipa verticillata		Slender Bamboo Grass	4	
Avena barbata	*	Bearded Oats	1	
Axonopus fissifolius	*	Narrow-leafed Carpet Grass	1	
Bothriochloa decipiens var. decipiens		Pitted Bluegrass	2	
Bothriochloa macra		Red Grass	2	Y
Bromus catharticus	*	Praire Grass	5	
Bromus molliformis	*	Soft Brome	2	
Cenchrus clandestinus	*	Kikuyu Grass	2	
Chloris gayana	*	Rhodes Grass	3	Y
Chloris truncata		Windmill Grass	6	Y(PS)
Chloris ventricosa		Tall Chloris	3	
Chloris virgata	*	Feathertop Rhodes Grass	3	
Cortaderia selloana	*	Pampas Grass	1	
Cynodon dactylon		Common Couch	7	Y both
Dactyloctenium radulans		Button Grass	1	
Dichanthium sericeum		Queensland Bluegrass	2	Y both
Dichanthium sericeum subsp. sericeum		Queensland Bluegrass	1	
Dichelachne micrantha		Shorthair Plumegrass	4	
Digitaria brownii		Cotton Panic Grass	1	
Digitaria ciliaris	*	Summer Grass	1	
Digitaria divaricatissima		Umbrella Grass	1	
Digitaria hystrichoides		Curly Umbrella Grass	1	
Digitaria sanguinalis	*	Crab Grass	2	
Echinochloa crus-galli	*	Barnyard Grass	1	
Ehrharta erecta	*	Panic Veldtgrass	1	
Eleusine tristachya	*	Goose Grass	2	
Enneapogon nigricans		Niggerheads	1	
Eragrostis brownii		Brown's Lovegrass	1	
Eragrostis cilianensis	*	Stinkgrass	3	
Eragrostis curvula	*	African Lovegrass	2	
Eragrostis leptostachya		Paddock Lovegrass	3	Y
Festuca pratensis	*	Meadow Fescue	2	
Hordeum leporinum	*	Barley Grass	3	
Hyparrhenia hirta	*	Coolatai Grass	2	Y
Lolium rigidum	*	Wimmera Ryegrass	1	
Megathyrsus maximum var. pubiglumis	*	green panic	1	
Microlaena stipoides		Weeping Grass	2	
Nassella tenuissima	*		2	
Panicum coloratum var. makarikariense	*		1	
Panicum simile		Two-colour Panic	1	
Panicum spp.		Panicum	1	
Paspalidium distans			2	
Paspalum dilatatum	*	Paspalum	1	Y both

Paspalum distichum		Water Couch	1	
Poa annua	*	Winter Grass	2	
Poa sieberiana		Snowgrass	3	
Rostraria pumila	*	Roughtail	1	
Rytidosperma bipartitum		Wallaby Grass	3	
Rytidosperma monticola		Mountain Wallaby Grass	1	
Rytidosperma racemosum		Wallaby Grass	1	
Rytidosperma racemosum var. racemosum		Wallaby Grass	1	
Rytidosperma spp.			3	Y
Rytidosperma tenuius			1	
Setaria parviflora	*		1	
Sorghum almum	*	Columbus Grass	1	
Sorghum bicolor	*	Sorghum	1	Y
Sorghum halepense	*	Johnson Grass	2	
Sorghum spp.			2	
Sporobolus elongatus		Slender Rat's Tail Grass	1	Y
Themeda triandra			2	
Urochloa panicoides	*	Urochloa Grass	2	
Vulpia myuros	*	Rat's Tail Fescue	1	Y(PS)
Acetosella vulgaris	*	Sheep Sorrel	2	
Fallopia convolvulus	*	Black Bindweed	1	
Persicaria lapathifolia		Pale Knotweed	1	
Polygonum aviculare	*	Wireweed	2	Y
Polygonum plebeium		Small Knotweed	1	
Rumex brownii		Swamp Dock	4	Y
Rumex conglomeratus	*	Clustered Dock	1	Y
Portulaca oleracea		Pigweed	1	
Lysimachia arvensis	*	Scarlet Pimpernel	1	
Cheilanthes sieberi		Rock Fern	2	
Cheilanthes sieberi subsp. sieberi		Rock Fern	2	Y
Clematis glycinoides		Headache Vine	1	
Rosa rubiginosa	*	Sweet Briar	1	
Rubus fruticosus sp. agg.	*	Blackberry complex	1	
Asperula conferta		Common Woodruff	1	
Opercularia hispida		Hairy Stinkweed	1	Y
Pomax umbellata		Pomax	1	
Geijera parviflora		Wilga	1	
Populus alba	*	White Poplar	1	
Salix babylonica	*	Weeping Willow	1	
Salix fragilis var. fragilis	*	Crack Willow	1	
Acer spp.	*		1	
Dodonaea peduncularis			1	
Cymbalaria muralis subsp. muralis	*	Ivy-leaved Toadflax	1	
Verbascum thapsus subsp. thapsus	*	Great Mullein	1	

Verbascum virgatum	*	Twiggy Mullein	2	
Ailanthus altissima	*	Tree of Heaven	1	Y (PS)
Cestrum parqui	*	Green Cestrum	1	
Datura stramonium	*	Common Thornapple	2	
Lycium ferocissimum	*	African Boxthorn	1	Y (PS)
Petunia axillaris	*		1	
Stackhousia monogyna		Creamy Candles	1	
Stackhousia viminea		Slender Stackhousia	1	
Pimelea linifolia		Slender Rice Flower	1	
Typha domingensis		Narrow-leaved Cumbungi	1	
Urtica incisa		Stinging Nettle	2	
Verbena bonariensis	*	Purpletop	6	Y both
Verbena gaudichaudii		Verbena	1	
Verbena rigida var. rigida	*	Veined Verbena	2	
Melicytus dentatus		Tree Violet	1	
Tribulus micrococcus		Spineless Caltrop	1	
Tribulus terrestris	*	Cat-head	2	
Additional species				
Grevillea robusta		Silky Oak		Y(PS)
Melaleuca sp.		Paperbark (unidentified)		Y(PS)
Solanum nigrum		Black Nightshade		Y(PS)
Callistemon sp.		unidentified bottlebrush		Y(PS)
Marrubium vulgare		Horehound		Y(PS)
Galium aparine		Cleavers		Y(PS)

ACCENT ENVIRONMENTAL

Appendix B: EPBC Protected Matters Search Results

Australian Government

Department of Agriculture, Water and the Environment

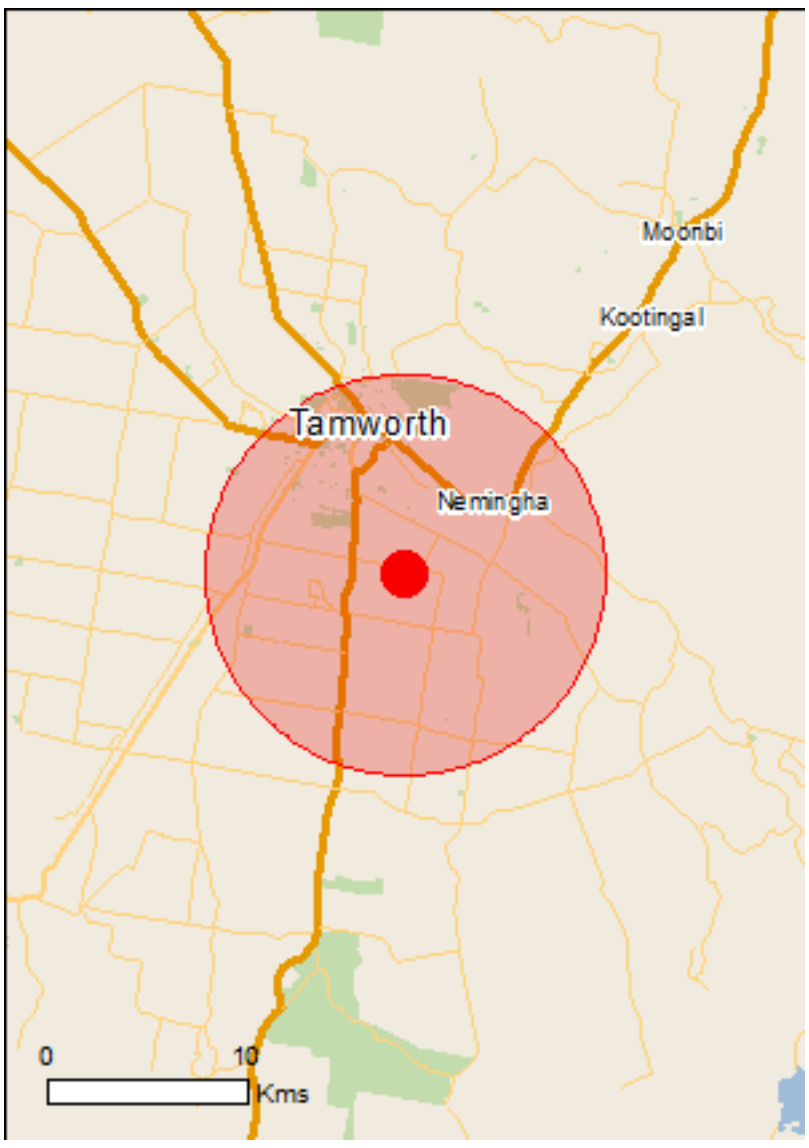
EPBC Act Protected Matters Report

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.

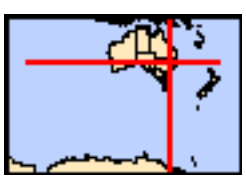
Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

Report created: 28/04/21 17:13:22



Coordinates

Buffer: 10.0Km



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:	3
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	4
Listed Threatened Species:	32
Listed Migratory Species:	10

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:	11
Commonwealth Heritage Places:	1
Listed Marine Species:	16
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:	34
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	1000 - 1100km
Riverland	900 - 1000km upstream
The coorong, and lakes alexandrina and albert wetland	1100 - 1200km

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
Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland	Critically Endangered	Community likely to occur within area
New England Peppermint (Eucalyptus nova-anglica) Grassy Woodlands	Critically Endangered	Community may occur within area
Weeping Myall Woodlands	Endangered	Community may occur within area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area

Listed Threatened Species [Resource Information]

Name	Status	Type of Presence
Birds		
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat likely to 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 likely to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur

Name	Status	Type of Presence
		within area
Polytelis swainsonii Superb Parrot [738]	Vulnerable	Species or species habitat may occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Fish		
Maccullochella peelii Murray Cod [66633]	Vulnerable	Species or species habitat known to occur within area
Frogs		
Litoria booroolongensis Booroolong Frog [1844]	Endangered	Species or species habitat known to occur within area
Mammals		
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat may 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
Petauroides volans Greater Glider [254]	Vulnerable	Species or species habitat may occur within area
Petrogale penicillata Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat likely to 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		
Cadellia pentastylis Ooline [9828]	Vulnerable	Species or species habitat likely to occur within area
Callistemon pungens [55581]	Vulnerable	Species or species habitat likely to occur within area
Dichanthium setosum bluegrass [14159]	Vulnerable	Species or species habitat known to occur within area
Euphrasia arguta [4325]	Critically Endangered	Species or species habitat likely to occur within area
Homoranthus prolixus [55198]	Vulnerable	Species or species habitat may occur within area
Lepidium monoplocoides Winged Pepper-cress [9190]	Endangered	Species or species habitat may occur within area

Name	Status	Type of Presence
Picris evae Hawkweed [10839]	Vulnerable	Species or species habitat likely to occur within area
Prasophyllum sp. Wybong (C.Phelps ORG 5269) a leek-orchid [81964]	Critically Endangered	Species or species habitat may occur within area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area
Tylophora linearis [55231]	Endangered	Species or species habitat may occur within area
Reptiles		
Aprasia parapulchella Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat may occur within area
Uvidicolus sphyrurus Border Thick-tailed Gecko, Granite Belt Thick-tailed Gecko [84578]	Vulnerable	Species or species habitat known to occur within area
Wollumbinia belli Bell's Turtle, Western Sawshelled Turtle, Namoi River Turtle, Bell's Saw-shelled Turtle [86071]	Vulnerable	Species or species habitat may occur within area

Listed Migratory Species [Resource Information]

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

Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to 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

Name	Threatened	Type of Presence
Gallinago hardwickii		
Latham's Snipe, Japanese Snipe [863]		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 & Overseas Telecommunications Corporation
Commonwealth Land - Australian Postal Commission
Commonwealth Land - Australian Telecommunications Commission
Commonwealth Land - Commonwealth Bank of Australia
Commonwealth Land - Commonwealth Trading Bank of Australia
Commonwealth Land - Defence Housing Authority
Commonwealth Land - Defence Service Homes Corporation
Commonwealth Land - Director of Defence Service Homes
Commonwealth Land - Director of War Service Homes
Commonwealth Land - Telstra Corporation Limited
Defence - TAMWORTH GRES DEPOT ; BEERSHEBA BARRACKS-TAMWORTH

Commonwealth Heritage Places [Resource Information]

Name	State	Status
Historic		
Tamworth 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

Name	Threatened	Type of Presence
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Chrysococcyx osculans Black-eared Cuckoo [705]		Species or species habitat known to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to 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

Name	Status	Type of Presence
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
Frogs		
Rhinella marina Cane Toad [83218]		Species or species habitat may occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
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

Name	Status	Type of Presence within area
Plants		
Anredera cordifolia Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643]		Species or species habitat likely to occur within area
Asparagus aethiopicus Asparagus Fern, Ground Asparagus, Basket Fern, Sprengi's Fern, Bushy Asparagus, Emerald Asparagus [62425]		Species or species habitat likely to occur within area
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Asparagus plumosus Climbing Asparagus-fern [48993]		Species or species habitat likely to occur within area
Cytisus scoparius Broom, English Broom, Scotch Broom, Common Broom, Scottish Broom, Spanish Broom [5934]		Species or species habitat likely to occur within area
Dolichandra unguis-cati Cat's Claw Vine, Yellow Trumpet Vine, Cat's Claw Creeper, Funnel Creeper [85119]		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 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
Senecio madagascariensis Fireweed, Madagascar Ragwort, Madagascar Groundsel [2624]		Species or species habitat likely to occur within area
Solanum elaeagnifolium Silver Nightshade, Silver-leaved Nightshade, White Horse Nettle, Silver-leaf Nightshade, Tomato Weed, White Nightshade, Bull-nettle, Prairie-berry, Satansbos, Silver-leaf Bitter-apple, Silverleaf-nettle, Trompillo [12323]		Species or species habitat likely to occur within area

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

-31.15146 150.94642

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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