



Munna Creek Solar Farm

**Self-assessment against Significant
Impact Guidelines 1.1 - Matters of
National Environmental Significance and
EPBC Act Referral Document**

Renewable Energy System Technologies Pty Ltd

16 November 2022

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1. Introduction

1.1 Purpose of this report

The purpose of this report is to provide a self-assessment of matters of national environmental significance (MNES), under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), against the Significant Impact Guidelines 1.1 – Matters of National Environmental Significance (DotE, 2013) for the proposed Munna Creek Solar Farm (the Project).

MNES that have been identified as likely to be impacted by the Project have been described and assessed in this report, which follows the format of the EPBC Act referral document. This report has concluded that the Project is not considered to be a controlled action as it is not considered to result in significant impacts to MNES.

1.2 Limitations

This report has been prepared by GHD for Renewable Energy System Technologies Pty Ltd and may only be used and relied on by Renewable Energy System Technologies Pty Ltd for the purpose agreed between GHD and Renewable Energy System Technologies Pty Ltd as set out in section 1.1 of this report.

GHD otherwise disclaims responsibility to any person other than Renewable Energy System Technologies Pty Ltd arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

2. About the project

2.1 Project details

2.1.1 Project title

Munna Creek Solar Farm Project

2.1.2 Project Industry type

Solar Farm Development

2.1.3 Project industry sub-type

Solar Farm Development

2.1.4 Estimated start and end date

- Indicative date construction phase (construction period March 2023 - July 2024)
- Indicative date for operation of the solar farm November 2024)

- Indicative date for the decommissioning of the solar farm (November 2054)

2.2 Proposed action details

2.2.1 Provide an overview of the proposed action, including all proposed activities

Renewable Energy System Technologies Pty Ltd (REST Energy) proposes to develop Munna Creek Solar Farm (the Project). The proposed solar farm use and associated infrastructure is planned over a freehold parcel located at 493 Blowers Road, Munna Creek, legally described as Lot 1 on SP305114 (Project area). The proposed Munna Creek Solar Farm is the proposed action.

The Project will comprise a 120 Mega Watts (MW) solar array of fixed panels and associated inverter rooms and will be erected such that they have a maximum height of 2.5 m above ground level. The proposed solar farm will cover approximately 58% of the Project area and will be located outside of the flood prone areas. The substation and administration building will be located close to the panels to facilitate connection to the transmission lines that traverse the Project area. The clearing of existing vegetation will be required for the proposed development; however, this will be limited to non-remnant vegetation.

The existing electricity easement intersects the western section of the Project area is considered suitable for the Project and a Connection Agreement has been secured from the Network Service Provider.

The overall development of the Munna Creek Solar Farm will be over several stages:

- Stage 1a - comprises of civil site preparation works for construction of utility aspects including some broader earthwork site preparation for future stages.
- Stage 1b - comprises of the construction of internal roads in the Project area, the administration building and car parking area.
- Stage 2 - comprises the construction of solar utility infrastructure including panels, inverters, fencing and other ancillary items connected to the ancillary equipment including the 132 kV Customer Connection Substation.
- Stage 3 - comprises post construction works including rehabilitation work to Blowers Road and broader drainage and landscape treatments. Landscaping treatment will be undertaken along the boundary of Lot 1 on SP305114 to screen the solar farm from the adjoining property.

Refer to Table 2-1 below. Stage 1a is the proposed actions for this referral.

Table 2.1 Proposed Stages and Key Components of Munna Creek Solar Farm

Stage	Key Components	Description
Stage 1a	Civil site preparation for construction of utility aspects Onsite informal roadway access tracks staked and established. Existing tracks will be used where possible Vegetation clearing for the proposed development footprint Road treatment along Woollooga-Bauple Road	Stage 1a of this development application comprises civil site preparation works for construction of utility aspects including some broader earthwork site preparation for future stages.
Stage 1b	Internal roads Car parking Administration facilities and the residential accommodation. These buildings will be relatively small structures, with an anticipated total footprint approximating three standard house footprints and will be located within the impact area	Stage 1b will comprise of the construction of internal roads on the Project area, the administration building and car parking area.
Stage 2	Solar panels will cover the impact area and will be positioned at a maximum height of 2.5 m above ground level and mounted on monopole structures Solar panels will be grouped in blocks and will include inverters/transformer station that will convert the power from direct current (DC) energy into grid compatible alternating current (AC) energy 132 kV substation will be constructed within the impact area. The substation will comprise a fenced substation area of approximately 3,000 m ² maximum,	Stage 2 of this development application will comprise the construction of solar utility infrastructure including panels, inverters, fencing and other ancillary items connected to the ancillary equipment including the 132 kV Customer Connection Substation.

Stage	Key Components	Description
	transformers, switchgear, control building and associated works. Security wire fencing will be erected around the proposed development.	
Stage 3	Rehabilitation works to Blowers Road post construction. Drainage treatments Landscape treatments	Stage 3 will comprise post construction works including rehabilitation work to Blowers Road and broader drainage and landscape treatments. Landscaping treatment will be undertaken along the boundary of Project area to screen the solar farm from the adjoining properties.

For Stage 1a the total disturbance area within the Project area is 254.66 hectares and this is referred to as the 'impact area' in this report and is the footprint of the proposed Munna Creek Solar Farm.

There are no MNES recorded or considered likely to occur within the disturbance area.

As part of the Project a number of investigations has been undertaken including, but not limited to:

- Traffic Impact Assessment
- Visual Amenity Assessment
- Engineering Services Assessment
- Planning Assessment
- Vegetation and Protected Plants Survey Assessment
- Hydrology and Hydraulic Assessment.

2.2.2 Project action as part of a staged development

The proposed action is part of a staged development. The overall development of the Munna Creek Solar Farm will be over several stages:

- Stage 1a - comprises of civil site preparation works for construction of utility aspects including some broader earthwork site preparation for future stages.
- Stage 1b - comprises of the construction of internal roads on the Project area, the administration building and car parking area.
- Stage 2 - comprises the construction of solar utility infrastructure including panels, inverters, fencing and other ancillary items connected to the ancillary equipment including the 132 kV Customer Connection Substation.
- Stage 3 - comprises post construction works including rehabilitation work to Blowers Road and broader drainage and landscape treatments. Landscaping treatment will be undertaken along the boundary of Lot 1 on SP305114 to screen the solar farm from the adjoining property.

For Stage 1a the total disturbance area within the Project area is 254.66 hectares and this is referred to as the 'impact area' in this report and is the footprint of the proposed Munna Creek Solar Farm.

2.2.3 Proposed action as the first stage of a staged development

The proposed action is part of a staged development and for Stage 1a the total disturbance area within the Project area is 254.66 hectares and this is referred to as the impact area in this report and is the footprint of the proposed Munna Creek Solar Farm.

The EPBC Act referral relates to Stage 1a process only. Stage 1a comprises of civil site preparation works for construction of utility aspects including some broader earthwork site preparation for future stages.

The key components of Stage 1A are outlined below:

- Civil site preparation for construction of utility aspects
- Onsite informal roadway access tracks staked and established. Existing tracks will be used where possible
- Vegetation clearing for the proposed development footprint
- Road treatment along Woollooga-Bauple Road.

A final investment decision has not yet been made. REST Energy will make the decision whether to invest in the proposed solar farm development once all other necessary permits (e.g. Electricity Connection and Generation) have been obtained. The decision will also be subject to other considerations such as the investment climate for renewable energy in Australia and the demand for electricity generated by the solar farm.

The construction phase is expected to take between 24 months to 36 months, subject to the final plant design and the requirements of REST Energy, its financiers and the preferences of the engineering, procurement and construction (EPC) contractor engaged to undertake the construction.

2.2.4 Commonwealth and state legislation, planning frameworks and policy documents relevant to the proposed action

A legislative review of the approval triggers associated with the ecological matters identified within the Project area has been undertaken to identify the statutory approvals triggered by the proposed development associated with the clearing of vegetation, impacts to fauna habitats and other environmental matters.

A summary of approval triggers for the proposed development is provided as follows:

- Development permit for a material change of use for a renewable energy facility within a rural zone. This has been secured by REST Energy Reference: MCU-171028 in 2018.
- The Connection Agreement from the Network Service Provider has been secured for the Project.
- Development permit for operational works assessable against the FCRC Planning Scheme.
- A property map of assessable vegetation (PMAV) is in place over the Project area. It classifies the entire impact area as Category X which is not regulated vegetation. Specifically, clearing in a Category X area is exempt and does not require a notification or development approval under the *Vegetation Management Act 1999* and *Planning Act 2016*.
- Based on existing survey findings and current Flora Survey Trigger mapping over the Project area, an exempt notification under the *Nature Conservation (Plants) Regulation 2020* is required for the southern extent of the Project area.
- Acceptance of a low-risk Species Management Program (SMP) under the *Nature Conservation (Animals) Regulation 2020* is recommended. Based on existing survey findings that documented threatened species are unlikely to occupy the impact area, a high-risk SMP will not be required.

Any non-*Planning Act 2016* approvals and/or permit requirements relating to specific construction related activities (such as sources of construction material, on-site storage of materials/fuel/chemicals, road works permits, protected plant clearing permits, species management programs and/or damage mitigation permits, etc.) will be applied for separately prior to commencement of construction works with some of these approvals (i.e. environmentally relevant activities, disposal permits, etc.) likely to be the responsibility of the construction contractor to apply for and obtain once construction details have been confirmed.

2.2.5 Describe any public consultation that has been, is being or will be undertaken regarding the project area, including indigenous stakeholders

As part of the design phase of the project, REST Energy undertook consultation with the following:

- Fraser Coast Regional Council (FCRC) - REST Energy undertook engagement with FCRC as part of the development approval process where approval was sought from FCRC.
- Ergon Energy and Australian Energy Market Operator (AEMO) – REST Energy undertook engagement with both parties as part of connection to grid process for the project. This involved written correspondence and meetings.
- Mary River Catchment Coordinating Committee (MRCCC) – REST Energy has undertaken discussion with Mary River Catchment Coordinating Committee regarding the waterways and riparian areas adjoining the Project area. REST Energy are planning on working with Mary River Catchment Coordinating Committee to develop strategies to enhance and revegetate areas along the waterways and riparian areas adjoining the subject.
- Local community within Fraser Coast Regional Council local government area - The local community within Fraser Coast Regional Council local government area was consulted and regarding the project.
- Traditional Owners of the area (Kabi Kabi) – Engagement was undertaken with the Traditional Owners of the area (Kabi Kabi) with regards to the Cultural Heritage management strategies for the Project area.

2.3 Referring party's identity

2.3.1 Confirm you've read the privacy policy

2.3.2 Referring party as an organisation or business

Yes

- Organisation name: GHD Pty Ltd
- ABN: 39 008 488 373

2.3.3 Identity: Person proposing to take the action

2.3.3.1 Person proposing to take the action's details are the same as the Referring party details

No

2.3.3.2 Person proposing to take the action is an organisation or business

Yes

Person proposing to take the action organisation details

- Organisation name: Renewable Energy System Technologies Pty Ltd
- ACN: 614104728

2.3.3.3 The action is proposed as part of a Joint Venture

No

2.3.3.4 The action is proposed as part of a Trust

No

2.3.3.5 Describe the Person proposing the action's history of responsible environmental management including details of any proceedings under a Commonwealth, state or territory law for the protection of the environment or the conservation and sustainable use of natural resources against the Person proposing to take the action

REST Energy's has not previously been involved in any proceedings under a Commonwealth, state or territory law for the protection of the environment or the conservation and sustainable use of natural resources.

2.3.4 Proposed designated proponent details

2.3.4.1 Proposed designated proponent's details are the same as the Person proposing to take the action

Yes

Proposed designated proponent organisation details

ABN: ACN: 614104728

Organisation name: Renewable Energy System Technologies Pty Ltd

Organisation address: PO Box 1604, Carindale QLD 4152, Australia

2.4 Payment details: Payment exemption and fee waiver

2.4.1 Proposed proponent qualifies for an exemption from fees under EPBC Regulation 5.23 (1)(a)

No

2.4.2 The department has issued the proponent with a credit note

No

2.4.3 The proponent has applied for or been granted a waiver for full or partial fees under Regulation 5.21A

No

2.4.4 The proponent is going to apply for a waiver of full or partial fees under EPBC Regulation 5.21A

No

2.4.5 The proponent would like to add a purchase order number to the invoice

No

2.4.6 Entity responsible for payment

REST Energy

2.4.7 If a third party is responsible, the third party is an organisation

Not applicable

3. Location

3.1 Project footprint and address of the proposed action

The Project area is located at 493 Blowers Road, Munna Creek and formally described as Lot 1 on SP305114 with a total area of 467.52 hectares. The Project area is wholly contained within the Fraser Coast Regional Council local government area. The Project area is located approximately 40 km north-west from Gympie and 65 km west of Rainbow Beach.

Refer to Figure 3.1.

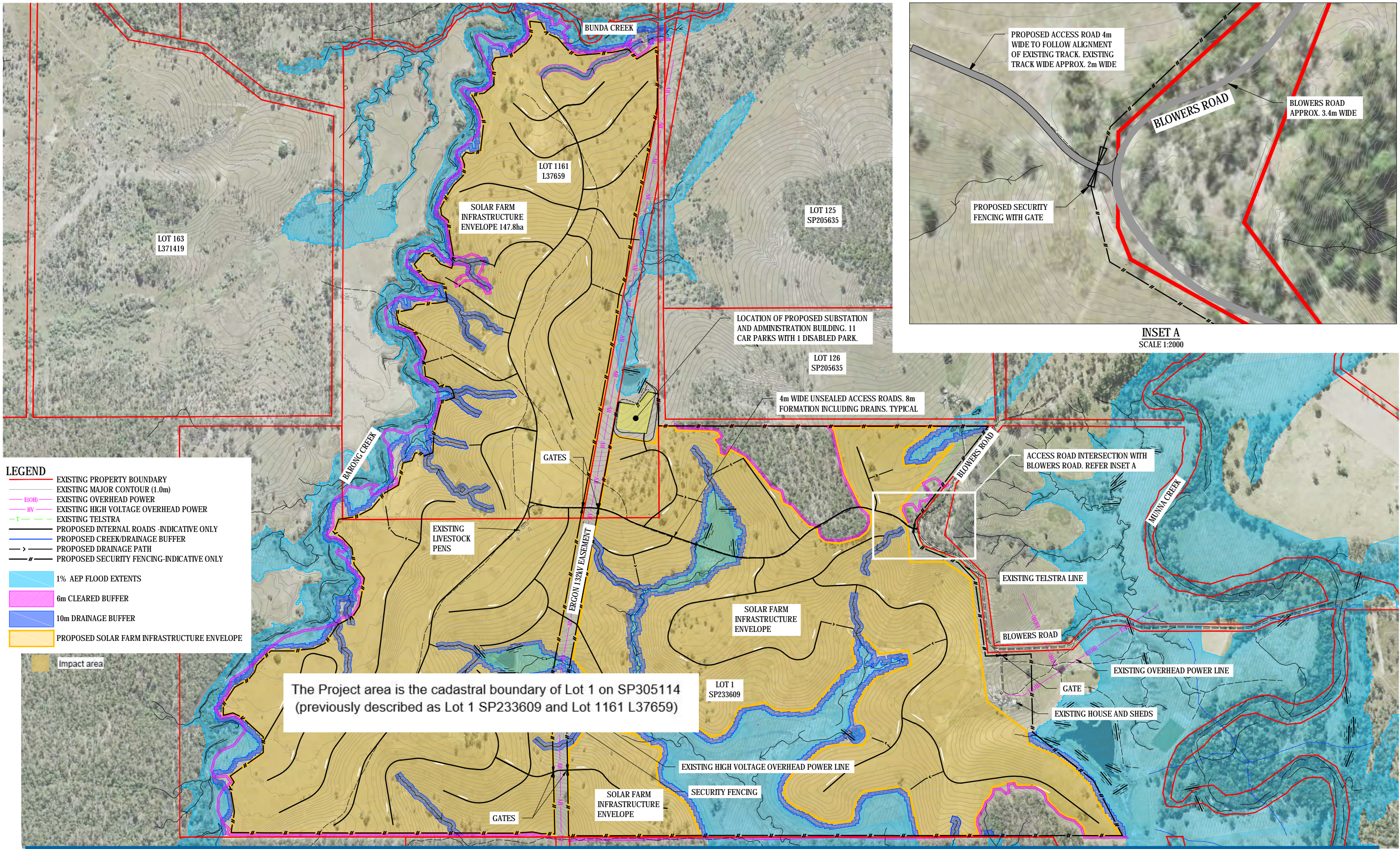
3.1.1 The primary jurisdiction of the proposed action

The Project area is wholly contained within the Fraser Coast Regional Council local government area in Queensland. Is there a secondary jurisdiction for this proposed action

3.1.2 The tenure of the action area relevant to the project area

Lot 1 SP305114 is freehold land and is owned by REST Energy. The following easements intersect the Project area:

- A AP21706 Easement
- A AP21713 Easement.



- LEGEND**
- EXISTING PROPERTY BOUNDARY
 - EXISTING MAJOR CONTOUR (1.0m)
 - E(OH) EXISTING OVERHEAD POWER
 - HV EXISTING HIGH VOLTAGE OVERHEAD POWER
 - T EXISTING TELSTRA
 - PROPOSED INTERNAL ROADS -INDICATIVE ONLY
 - PROPOSED CREEK/DRAINAGE BUFFER
 - PROPOSED DRAINAGE PATH
 - PROPOSED SECURITY FENCING-INDICATIVE ONLY
 - 1% AEP FLOOD EXTENTS
 - 6m CLEARED BUFFER
 - 10m DRAINAGE BUFFER
 - PROPOSED SOLAR FARM INFRASTRUCTURE ENVELOPE

Figure 3.1 Project area and impact area



REST ENERGY
MUNNA CREEK SOLAR FARM
CONCEPT LAYOUT
PANEL ARRANGEMENT

Job Number | 41-30594
Revision | A
Date | JUNE 2017
SK 100

4. Existing environment

4.1 Physical description

4.1.1 Describe the current condition of the project area's environment

The Project area is located at 493 Blowers Rd, Munna Creek, which is wholly contained within the Fraser Coast Regional Council local government area. The Project area has a total area of 467.52 hectares. The Project area is located approximately 40 km north-west from Gympie and 65 km west of Rainbow Beach.

The Project area is currently a rural residential and stock grazing property and is bordered to the west and south by Miva State Forest. Glenbar National Park is located immediately west of Miva National Park. The Project area is located about 19 km from Woolooga township which is located along Bauple-Woolooga Road.

An electricity easement intersects the western section of the Project area and is owned by Ergon. It is a 132 kV line that supplies power from the large Powerlink-owned Woolooga substation to the Queensland Rail substation at Mungar.

The Project area currently supports a residential dwelling as well as various structures associated with agricultural activities including a shed, cattle yard and numerous stock watering dams located along natural drainage channels. Numerous rural fences and associated farm gates traverse the Project area.

The Project area's topography is of a rolling / undulating nature and bisected by numerous local drainage channels. There are five stock watering earth dams, which have been constructed across local drainage paths.

Development in the vicinity of the Project area predominately consists of a mixture of rural, agricultural and environmental land uses. The south and west corners of the Project area adjoin state forest whereas the north and east corners join other freehold land. Munna Creek also borders the property on the eastern side.

The Project area exists in a region which has undergone substantial disturbance and clearing of vegetation within the last 100 years for agricultural and cattle grazing purposes. Large portions of the Project area are impacted by vegetation clearance and cattle grazing and supported no canopy or shrub vegetation. Two large stock dams occur in the broader Lot 1 on SP305114 property which support a narrow band of fringing wetland vegetation. Isolated patches of mature eucalypts are present, though no connectivity is maintained throughout the broader property.

Remnant eucalypt woodlands remain on the southern (Miva State Forest) and western (Glenbar National Park) boundaries of the Project area.

4.1.2 Describe any existing or proposed uses for the Project area

The Project area is currently a rural residential and stock grazing property and is bordered to the west and south by Miva State Forest. Glenbar National Park is located immediately west of Miva National Park. The Project area is located about 19 km from Woolooga township which is located along Bauple-Woolooga Road.

The Project area is located within a rural zone under the Fraser Coast Planning Scheme. The intent of the rural zone is to support non-rural uses that are compatible with a rural setting and support rural enterprise or tourism where they do not compromise the use of the land for rural activities. Renewable energy facilities have demonstrated compatibility with rural settings in other Council areas. Their ability to be low intensity once constructed provides for low vehicle volumes, employees etc. Overall, the proposed Munna Creek Solar Farm is considered to be in keeping with the overall objectives of the rural zone in respect to land use compatibility.

The Project area is designated as being within the Regional Landscape and Rural Production Area of the Wide Bay Burnett Regional Plan 2011 (Regional Plan). The intention of the Regional Landscape and Rural Production area (RLRPA) is to acknowledge regional landscape, rural production or other non-urban values and avoid encroachment by inappropriate development, particularly urban or rural residential development. The RLRPA does not impede on existing use rights and this allows existing commitments and significant activities, such as agricultural production, access to natural resources, water storage, tourism, outdoor recreation and nature

conservation, can continue. Overall, the proposed Munna Creek Solar Farm is considered to be in keeping with the overall objectives of the RLRPA in respect to land use compatibility.

4.1.3 Describe any outstanding natural features and/or any other important or unique values that applies to the project area

The Project area adjoins Munna Creek, which is a sixth order waterway and watercourse as defined under the *Water Act 2000*. Munna Creek flows in a northerly direction where it continues to meander before converging with the Mary River (approximately 7 km further downstream). Smaller drainage lines are present within the western extent of the Project area and comprise two first order streams (Barong Creek and Bunda Creek) and a second order stream. The second order waterway is also mapped as a defined 'watercourse' under the *Water Act 2000*. These waterways are located outside of the impact area. There are no other known outstanding natural features or unique values within the Project area.

4.1.4 Describe the gradient relevant to the project area.

The Project area is located within the Gympie province geological unit which extends in a north westerly trending slender belt from Nambour to west of Bundaberg in southeast Queensland (DNRM, 2014a). The Project area topography is of a rolling / undulating nature and bisected by numerous local drainage channels.

4.2 Flora and fauna

4.2.1 Describe the flora and fauna within the affected area and attach any investigations of surveys if applicable.

Desktop assessments (Appendix A) and field surveys of the Munna Creek Project area has been undertaken by GHD in 2016 and 2022 to identify and assess ecological features and values.

The impact area consists of flat, agriculture land which has been largely cleared of remnant vegetation (Plate 4-1). The impact area is consistent with much of the broader Lot 1SP305114 which has been cleared and is actively grazed by cattle. Several scattered eucalypts are present in the north of the Project area and along the western side of Barong Creek; however mature eucalypts are absent from impact area. The final footprint configuration has been designed to avoid large, remnant patches of woodlands on the Project's northeast boundary and the centre of the Project area, and as such, vegetation clearing is anticipated to be minimal. The riparian vegetation of Barong Creek, which runs along the western extent of the Site is likely to be supportive of fauna habitat for a range of least concern species genera including bird and arboreal species. Furthermore, three large farm dams are present on the Site which may provide habitat for a number or least concern fauna species.

Conservation significant flora species

No conservation significant flora species protected under the *Nature Conservation Act 1992* (NC Act) or the EBPC Act were identified during the field investigation. No protected plant species were recorded within the Project area. All flora species identified during the field survey were least concern or introduced under the *Nature Conservation (Plants) Regulation 2020*.

Nine of the 10 protected plant species identified during the desktop assessment were rated as 'unlikely to occur'. One species was rated as 'may occur', namely *Cupaniopsis shirleyana*. Based on survey effort expended, it can be concluded with a high degree of confidence that this species is not present.

The western section of the Project area is mapped within the protected plants trigger area on the DES Protected Plants Flora Survey trigger map. However, this area is outside of the impact area as shown in Figure 4.1.

The EPBC Act Protected Matters Search identified 17 EPBC-listed flora species that have the potential to occur within 10 km of the Project area. Of those species, none has been previously recorded within the Project area. The Wildlife Online search identified four conservation significant flora species that have confirmed records within 2.5 km of the Project area, with the closest record being approximately 1.5 km northwest of the Project area (Table 4.1).

The conservation status of species identified in the Wildlife Online search and details of closest occurrence records held in DES's spatial database (Species Profile Search) are provided in Table 4.1.

No essential habitat for flora species is mapped by DoR within or in proximity to the impact area.

Table 4.1 Conservation significant flora and nearest record to the Project

Species	Conservation status		Nearest record
	EPBC Act	NC Act	
<i>Cupaniopsis shirleyana</i>	V	V	1.5 km southeast of the Project.
<i>Hernandia bivalvis</i>	-	NT	1.5 km southeast of the Project.
<i>Plectranthus omissus</i>	E	E	2.1 km southeast of the Project.
<i>Coleus omissus</i>	E	E	2.2 km southwest of the Project.

Key to table: V = vulnerable, E = endangered, NT = near threatened

The following three restricted plants listed under the *Biosecurity Act 2014* were identified during the field investigation:

- *Dolichandra unguis-cati* (cat’s claw creeper)
- *Lantana camara* (common lantana)
- *Opuntia stricta* (prickly pear).

Conservation significant fauna species

The EPBC Act Protected Matters Search identified 28 EPBC-listed fauna species have the potential to occur within 10 km of the Project area.

No conservation significant species were confirmed present within the Project area during the 2016 or 2022 field surveys. Furthermore, no historical records occur within or immediately adjacent to the Project area. As summary of historical records for conservation significant fauna is presented in Table 4.2 (Appendix A).

Table 4.2 Conservation significant fauna and nearest record to the Project

Species	Conservation status		Nearest record
	EPBC Act	NC Act	
Koala	E	V	None within 10 km radius
Greater glider	E	V	None within 10 km radius
Yellow bellied glider	V	V	3 records within 10 km radius, nearly 4.9 km east of the Project (Gundiah State Forest).

Key to table: V = vulnerable, E = endangered, NT = near threatened

No suitable habitat for conservation significant fauna species is present within the Project footprint; however, three conservation significant fauna species have the potential to occur in areas adjacent to the Project. These being the koala, the yellow-bellied glider and the greater glider. Suitable foraging habitat for these species occurs along the southern and northern eastern boundary of the Project area. These areas are outside the direct impacts of the Project. No breeding or denning habitat occurs within the Project area.

No essential habitat for fauna species is mapped by DoR within or in close proximity to the impact area as shown in Figure 4.1. Additionally, there are no koala habitat areas (koala priority area, core koala habitat area) mapped under Queensland Globe over or adjoining the Project area as shown in Figure 4.1.

Within the impact area there are no mapped biodiversity corridors (State, regional or local), riparian corridors and/or matters of state environmental significance wildlife habitat areas (refer to Figure 4.2). As discussed previously, the impact area is mostly cleared of vegetation and the impact area is setback from existing remnant vegetation areas and waterways. There is a regional terrestrial biodiversity corridor (mapped by the State) located approximately 5.8 km west of the impact area and it connects Glenbar State Forest, Wongi State Forest and Wongi National Park to the north (refer to Figure 4.2). The regional terrestrial biodiversity corridor is considered to be a wildlife corridor and movement of wildlife within this corridor is not expected to be impacted by the Project.

There is also a riparian corridor mapped by the State located to the immediate east of the Project area, and it is referred to as Teebar Creek and it connects to the regional terrestrial biodiversity corridor (refer to Figure 4.2). The

proposed Munna Creek Solar Farm is not considered to impede or adversely impact the potential movement fauna species along the regional terrestrial biodiversity corridor and riparian corridor.

The following flora and fauna investigation reports have been included in this report.

- GHD (2017) Munna Creek Solar Farm Vegetation and Protected Plants Survey Report (Appendix B)
- GHD (2017) Property Map of Assessable Vegetation (Figure 4.4).

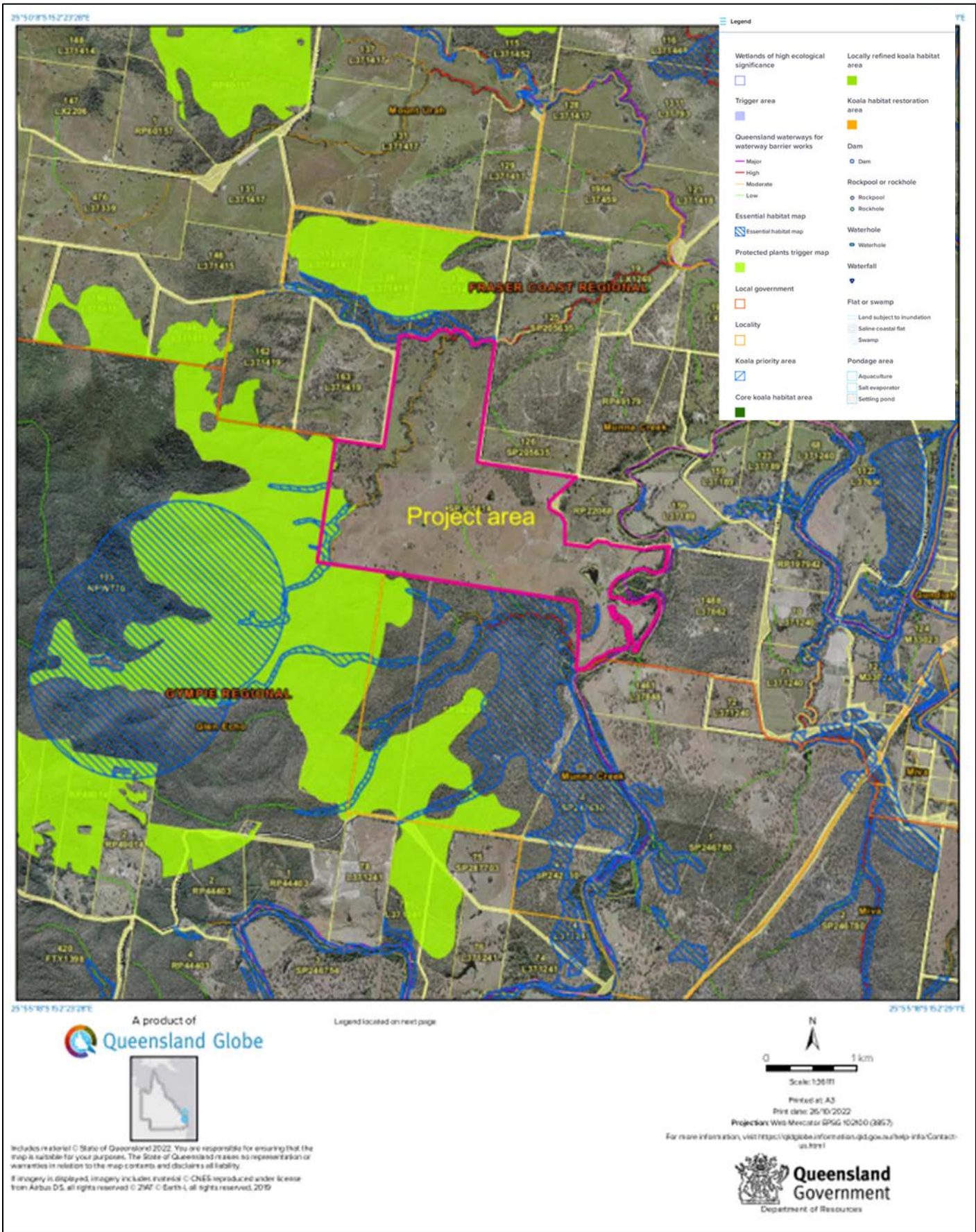
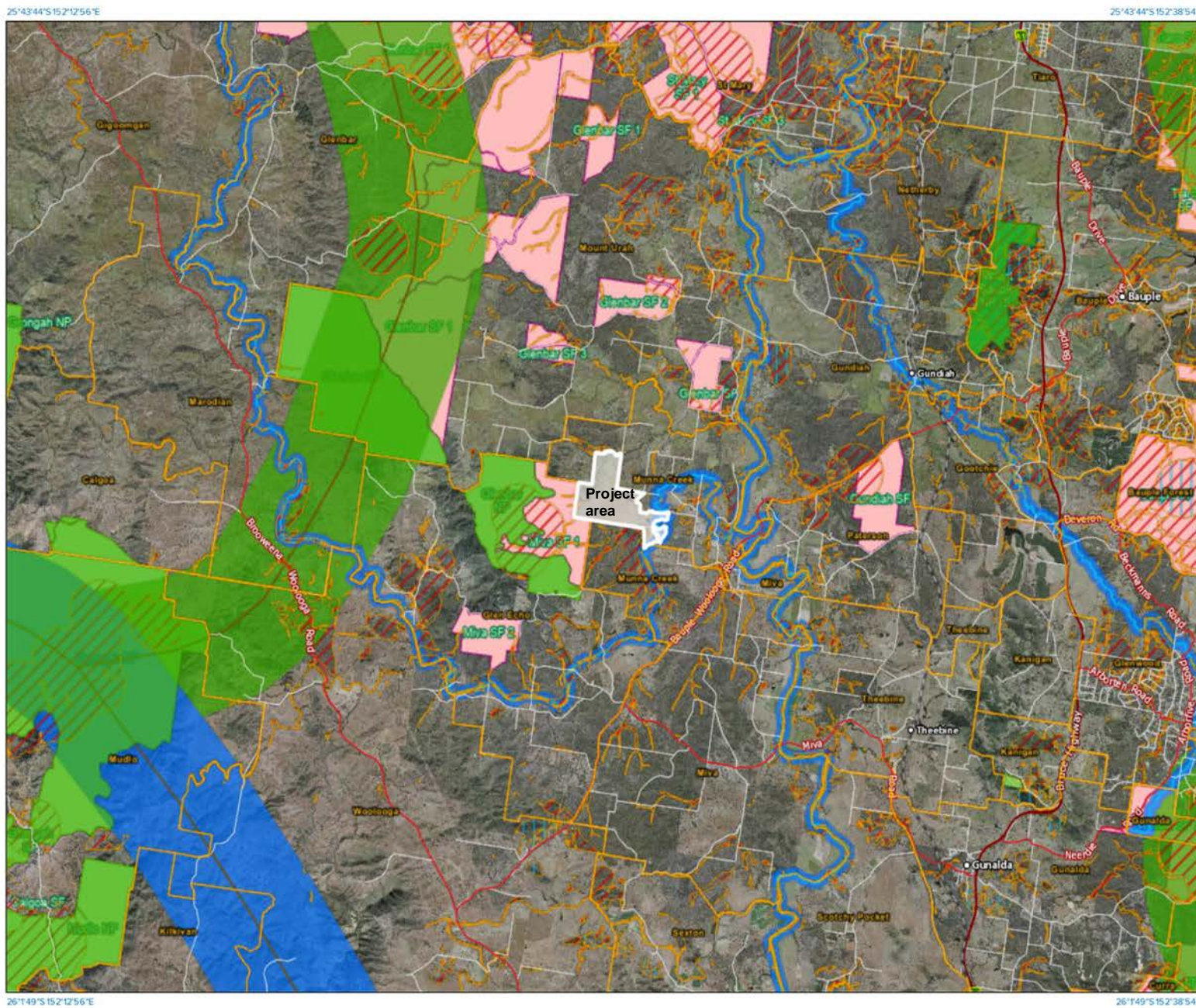
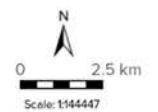


Figure 4.1 Environmental values mapped over the Project area



Legend located on next page



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Print date: 20/11/2022
Projection: Web Mercator EPSG 102100 (3857)

For more information, visit <https://qdglobe.information.qld.gov.au/help-info/Contact-us.html>

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Legend

- MSES protected area [estates]
- MSES protected area [nature refuges]
- MSES marine park [highly protected]
- MSES declared fish habitat area [A and B areas]
- MSES legally secured offset area [offset register]
- MSES legally secured offset area [vegetation offsets]
- MSES wildlife habitat [endangered or vulnerable]
- MSES wildlife habitat [special least concern animal]
- MSES wildlife habitat [SEQ koala habitat - core]
- MSES wildlife habitat [SEQ koala habitat - locally refined]

- MSES protected area [special wildlife reserves]
- MSES wildlife habitat [sea turtle nesting areas]
- Locality
- Protected areas of Queensland
 - National park
 - National park (scientific)
 - National park (Cape York Peninsula Aboriginal land)
 - Conservation park
 - Resources reserve
 - Forest reserve
 - State forest
 - Timber reserve
- Terrestrial corridor centrelines
 - Terrestrial centrelines
- Riparian corridor centrelines
 - Riparian centrelines
- Corridor buffers
 - State
 - Regional

- Places: Search Results
- 1SP305114
- Cities and Towns
- Road Crossing
 - Bridge
 - Tunnel
- Road
 - Highway
 - Main
 - Local
 - Private
- Railway

Attribution

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Figure 4.2 Mapped biodiversity corridors (State, regional or local), riparian corridors and/or matters of state environmental significance wildlife habitat areas surrounding the Project area

4.2.2 Describe the vegetation (including the status of native vegetation and soil) within the project area

Vegetation

Desktop assessments and field surveys of the Project area have been undertaken by GHD in 2016, 2017 and 2022 to identify and assess existing vegetation within the Project area.

The impact area within the Project area consists of flat, agricultural land which has been largely cleared of remnant vegetation (Plate 4-1). Substantial areas of open farm land was dominated by weed species, and the majority of the Project area contains previously cleared land that has been historically used for livestock grazing. A small, isolated patch of remnant woodland occurs near the eastern boundary of Lot 1 SP305114, which conforms with Regional Ecosystem (RE) 12.5.7 (Table 4.3). RE 12.5.7 is listed as least concern under the Queensland *Vegetation Management Act 1999*. Remnant eucalypt woodland occurs on the southern (Miva State Forest) and western (Glenbar National Park) boundaries of the Lot 1 SP305114; however, there is no connectivity to Project area (Plate 4-2).

Vegetation types comprising the remnant vegetation patch did not conform to the key diagnostic characteristics of any threatened ecological communities listed under the EPBC Act. Further information on vegetation communities can be found in the Munna Creek Solar Farm Ecological Assessment Report (GHD, 2017).



Plate 4-1 Representative photographs of vegetation communities within the Project area – cleared areas

Table 4.3 Field verified characteristics of RE 12.5.7


RE	Characteristics	Representative photo
12.5.7	The canopy layer was approximately 16 to 22 m in height, with a median height of approximately 19 m. Canopy layer dominated by <i>Corymbia citriodora subsp. variegata</i> with associated <i>C. intermedia</i> , <i>Eucalyptus acmenoides</i> and <i>E. crebra</i> . The sub-canopy layer was approximately 8 to 12 m in height, with a median height of approximately 10 m. This layer was dominated by <i>E. acmenoides</i> , <i>Jagera pseudorhus</i> , <i>C. citriodora subsp. variegata</i> and <i>C. intermedia</i> . The shrub layer was sparse and had a height of approximately 0.5 to 3 m. The ground layer was moderately dense and was dominated by <i>Aristida queenslandica</i> , <i>Chrysopogon fallax</i> with associated <i>Cymbopogon refractus</i> , <i>Microlaena stipoides</i> , <i>Imperata cylindrica</i> , <i>Heteropogon contortus</i> , <i>Entolasia stricta</i> , <i>Lobelia purpurascens</i> , <i>Eremophila debilis</i> and <i>Desmodium rhytidophyllum</i> .	



Plate 4-2 Representative photographs of vegetation communities adjacent to the Project area – remnant woodland (Miva State Forest)

Within the Project area, the impact area for the Munna Creek Solar Farm is mapped as Category X non remnant (refer to Figure 4.3). This area has been previously cleared for cattle grazing. There is a PMAV approved over the Project area (Reference: 2016/005092) and it shows the vegetation being mapped as category X non remnant (Figure 4.4).

The remaining areas within the Project area, but outside of the impact area, are mapped as Category B areas and they are outlined below:

- RE 12.5.7 – ‘least concern’ under the VM Act and described as a *Corymbia citriodora subsp. variegata* +/- *Eucalyptus portuensis* or *E. acmenoides*, *E. fibrosa subsp. fibrosa* open forest on remnant Tertiary surfaces. Usually deep red soils. The area is not impacted by the proposed impact area.

- RE 12.9-10.21 – ‘least concern’ under the VM Act and described as a *Eucalyptus acmenoides* or *E. portuensis* woodland usually with *Corymbia trachyphloia subsp. trachyphloia* on Cainozoic to Proterozoic sediments. The area is not impacted by the proposed impact area.
- RE 12.3.3 – Endangered under the VM Act and described as *Eucalyptus tereticornis* woodland on Quaternary alluvium. The area is not impacted by the proposed impact area.
- RE 12.3.11 – ‘of concern’ under the VM Act and described as *Eucalyptus tereticornis* +/- *Eucalyptus siderophloia*, *Corymbia intermedia* open forest on alluvial plains usually near coast. The area is not impacted by the proposed impact area.

Figure 4.5 shows representative photographs of the Project area and impact area.

Field observations indicate that the composition of the heterogeneous polygon with the remnant vegetation patch was different from that depicted in the Queensland Regulated Vegetation Management Map. The heterogeneous polygon is currently mapped as comprising a mixture of RE 12.9-10.21 and RE 12.3.11; however, neither unit appeared to be present within the extent of this mapped polygon. RE 12.3.11 occurs on alluvial plains and RE 12.9-10.21 occurs on sedimentary rock; however, the extent of the heterogeneous polygon occurred on what appeared to be deeply weathered sandstone. The surface geology of this polygon was not consistent with either land zone 3 or land zone 9-10, but rather land zone 5.

From a vegetation perspective, *Eucalyptus tereticornis*, which is a keystone species of RE 12.3.11 was largely absent from the mapped heterogeneous polygon. The few individuals observed within the polygon are likely to be outliers from alluvial units on the lowlands to the west and east of the remnant vegetation patch. Whilst the vegetation assemblage recorded in the heterogeneous polygon was generally consistent with the description for RE 12.9-10.21, it was also consistent with that described for RE 12.5.7 and there was little variation in species composition or structure across the entire remnant vegetation patch. Given that the entire remnant patch appeared to occur in land zone 5 and that the vegetation composition across the entire patch was consistent with the assemblage described for RE 12.5.7, it is likely that the entire patch would be more accurately mapped as RE 12.5.7 (least concern).

Quaternary site data and representative photographs of the two vegetation communities identified within the remnant vegetation patch are provided in the Munna Creek Solar Farm Vegetation and Protected Plants Survey Report 2017 (Appendix B).

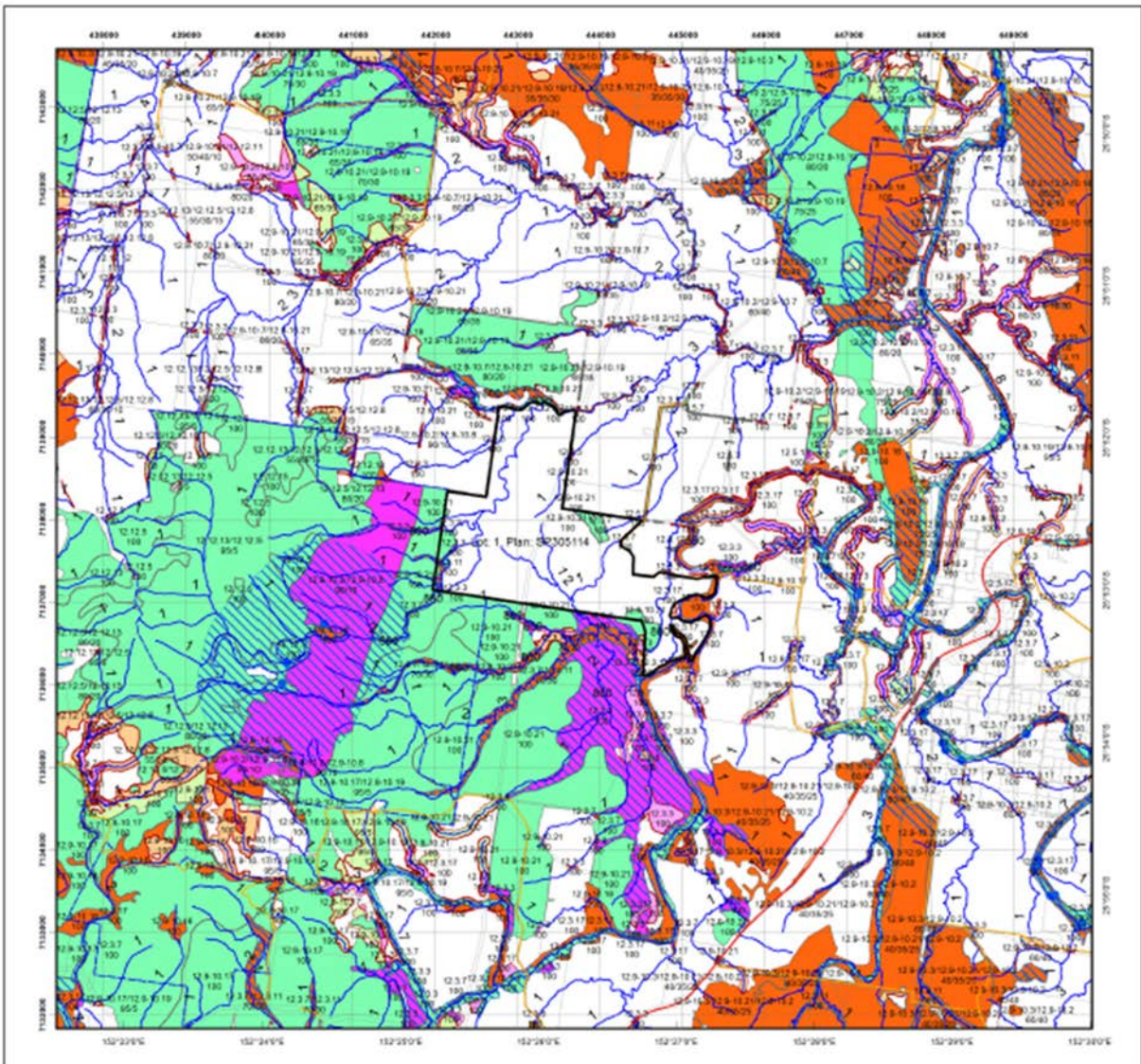
Soils

The Project area’s geology is mapped on the Department of Natural Resources and Mines’ (DNRM) MinesOnlineMaps State Geology mapping as outlined below:

- Rock Unit Name - Duckinwilla Group
- Lithological Summary – Lithofeldspathic labile and sublabile to quartzose sandstone, siltstone, shale, coal, ferruginous oolite marker
- Dominant Rock - Sedimentary rock
- Rock Type - Stratified unit (including volcanic and metamorphic)
- Age - Late Triassic - early Jurassic

The Project area is located within the Gympie province geological unit which extends in a north-north westerly trending slender belt from Nambour to west of Bundaberg in southeast Queensland (DNRM, 2014a). The province is comprised of early Permian to early Triassic arc-related mafic to felsic volcanic, volcanoclastic and marine sedimentary rocks (DNRM, 2014a). The Project area is underlain by Quaternary age floodplain alluvium including a stratified unit of clay, silt sand and gravel (DNRM, 2014b).

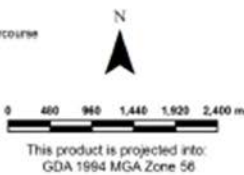
The Project area’s topography is of a rolling / undulating nature and bisected by numerous local drainage channels. There are five stock watering earth dams, which have been constructed across local drainage paths.



Vegetation Management Supporting Map

Legend

- Selected Lot and Plan
- Category A or B area containing endangered regional ecosystems
- Category A or B area containing of concern regional ecosystems
- Category A or B area that is a least concern regional ecosystem
- Category C or R area containing endangered regional ecosystems
- Category C or R area containing of concern regional ecosystems
- Category C or R area that is a least concern regional ecosystem
- Category X area
- Water
- Wetland on the vegetation management wetlands map
- Essential habitat on the essential habitat map
- Essential habitat species record
- Watercourses and drainage features on the vegetation management watercourse and drainage features map (Stream order shown as black number against stream where available)
- Highway
- Connector
- Street/Local Road
- National Parks, State Forest and other reserves
- Other land parcel boundaries



Labels for Essential Habitat are centred on the area of enquiry.

Regional ecosystem linework has been compiled at a scale of 1:100 000, except in designated areas where a completion scale of 1:50 000 is available. Linework should be used as a guide only. The positional accuracy of R/E data mapped at a scale of 1:100 000 is ± 100 metres.

Disclaimer:
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Additional information may be required for the purposes of land clearing or assessment of a regional ecosystem map or PMAV applications. For further information go to the web site: www.resources.qld.gov.au or contact the Department of Resources.

Digital data for the vegetation management watercourse and drainage feature map, vegetation management wetlands map, essential habitat map and the vegetation management remnant and regional ecosystem map are available from the Queensland Spatial Portal at <http://www.information.qld.gov.au/>

Land parcel boundaries are provided as locational aid only.

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Figure 4.3 Vegetation Management Supporting Map for the Project area

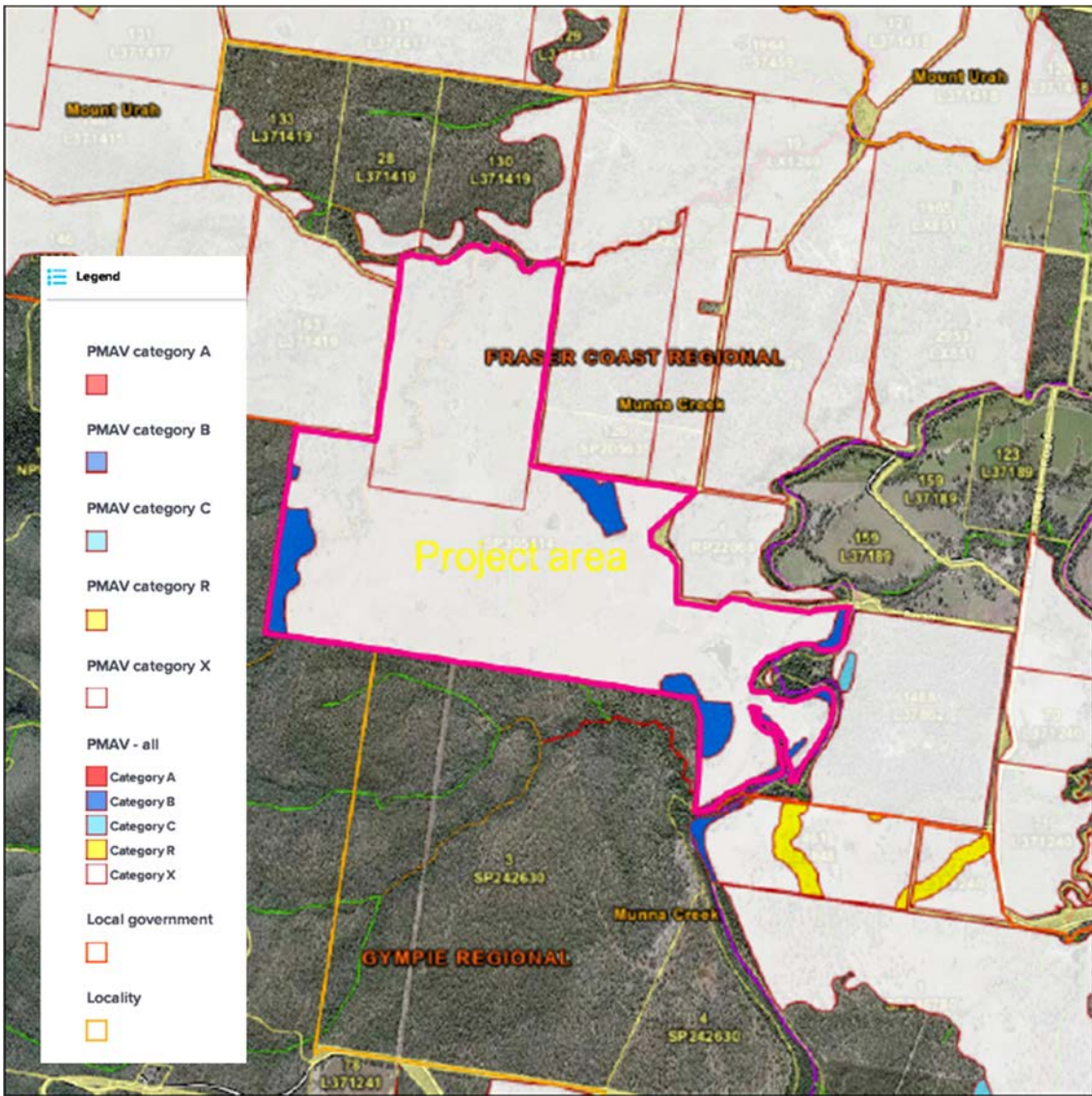


Figure 4.4 Property map of assessable vegetation



Legend located on next page



Scale: 1:18055

Printed at: A3

Print date: 20/11/2022

Projection: Web Mercator EPSG 102100 (3857)

For more information, visit <https://qdglobe.information.qld.gov.au/help-info/Contact-us.html>

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Figure 4.5 Representative photographs of the Project area (orange) and impact area (yellow)

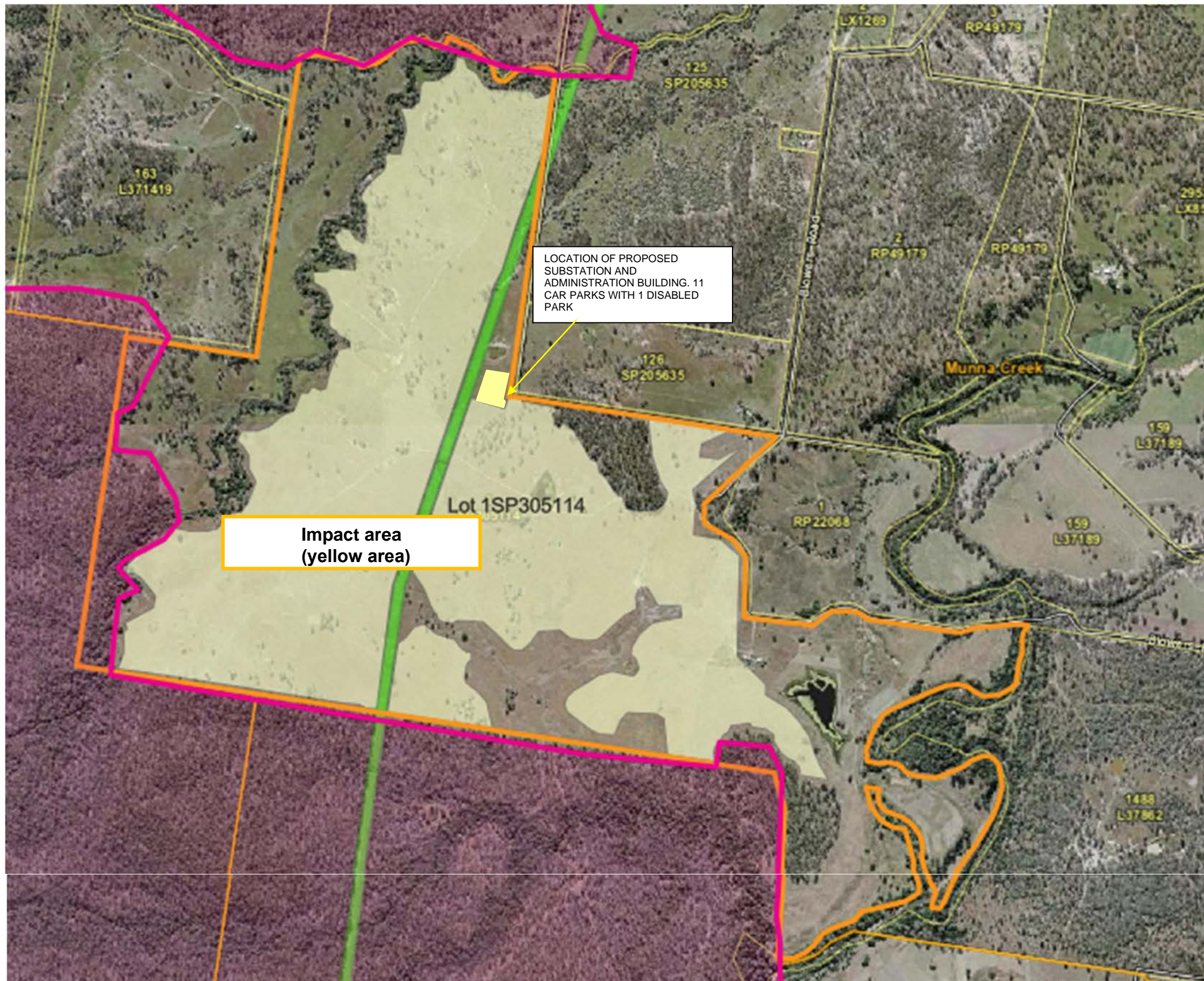


Figure 4.6 Suitable habitat for MNES species (pink) surrounding the Project area (orange). Impact area shown in yellow.

4.3 Heritage

4.3.1 Describe any Commonwealth heritage places overseas or other places recognised as having heritage values that apply to the project area

There are no Commonwealth heritage places listed for the Project area. Searches from the Queensland Heritage Register and Fraser Coast Regional Council Heritage Register did not identify listed heritage features, items and/or places.

4.3.2 Describe any Indigenous heritage values that apply to the project area

A search of the Department of Seniors, Disability Services and Aboriginal and Torres Strait Islander Partnerships cultural heritage database was undertaken within the Project Area and with a 1 km buffer applied to the search and noted the following (refer to Appendix A):

- There are no Aboriginal cultural heritage sites points recorded in the search area
- There are no Aboriginal cultural heritage sites polygons recorded in the search area
- There is no cultural heritage body recorded in the search area
- There are no cultural heritage management plans recorded in the search area
- There are no Designated Landscape Areas recorded in the search area
- There are no Registered Study Cultural Heritage Areas recorded in the search area
- The cultural heritage party for the area is the Kabi Kabi First Nation.

The area within the impact act is considered to be Category 4 Areas previously subject to Significant Ground Disturbance (Category 4) due to the site being previously used for agricultural purposes according to *Aboriginal Cultural Heritage Act 2003* Duty of Care Guidelines. The remainder of the Project area which includes mapped waterways and those areas of mapped remnant vegetation are considered to be Category 5 activities causing additional surface disturbance.

Works within the impact areas which conform to Category 4 areas are able to proceed without further cultural heritage assessment however, the works are required to comply with the *Aboriginal Cultural Heritage Act 2003* Duty of Care Guidelines.

4.4 Hydrology

4.4.1 Describe the hydrology characteristics that apply to the project area and attach any hydrological investigations or surveys if applicable

The eastern boundary of the Project area adjoins Munna Creek which is a sixth order waterway and watercourse as defined under the *Water Act 2000*. Munna Creek flows in a northerly direction where it continues to meander before converging with the Mary River (approximately 7 km further downstream).

Smaller drainage lines are present within the western extent of the Project area and comprise two first order streams and a second order stream as mapped by DoR's Vegetation Management Regional Ecosystem and Management Map. The second order waterway is also mapped as a defined 'watercourse' under the *Water Act 2000*. These waterways flow in a northerly direction through the Project area. Aerial photography indicates a narrow linear strip of riparian vegetation present along these two waterways on the western boundaries of the Project area, which is anticipated to act as a natural filter for water draining from the Project area. One additional first order stream is present through the centre of the Project area. This waterway flows in a southerly direction, aerial photography indicates that this waterway is likely to be ephemeral and may only support intermittent flows.

GHD prepared an Environmental Assessment Report in 2018 for Munna Creek Solar Farm to demonstrate to Fraser Coast Regional Council that the proposed buffers provided around the on-site waterways achieved appropriate separation distances for maintaining the waterways as per the Queensland Wetland Buffer Guidelines 2011, the State Planning Policy and the Fraser Coast Planning Scheme 2014. The report was based on both desktop and field assessment and provided commentary on the adequacy of the proposed buffers in relation to the relevant Queensland legislation. The report assessed the impacts to the waterways due to the proposed solar farm and provided mitigation measures to ensure ecosystem function is retained, enhanced and maintained with the waterway areas. Refer to Appendix C.

GHD has prepared a Hydrology and Hydraulic Report for the Project in 2017 to investigate the regional and local flood impacts on the proposed 120 MW solar farm at 493 Blowers Road, Munna Creek, Queensland. The report provides a hydrological and hydraulic assessment to estimate the potential developable area on the Project area, as well as impacts to site access via Kunst Bridge. The assessment was based on the following design storm events the 2, 10, 50 and 100 Year Average Recurrence Intervals (ARIs). Fraser Coast Regional Council's design criteria for ARIs for major and minor systems are as per the requirements of the Queensland Urban Drainage Manual, 2013 Provisional (QUDM, Ref 3). As per the guidelines, the minor and major drainage systems criteria applicable to the subject site are the 10 Year ARI and the 100 Year ARI events, respectively.

The Hydrological assessment was performed in two stages:

- Flood Frequency Analysis: to perform an external and regional catchment hydrological analysis of the Munna Creek catchment upstream of the Project area.
- XP-RAFTS modelling: to perform both an external and local catchment hydrological analysis of the Barong Creek and local site catchments. A validation of the XP-RAFTS model was also undertaken using the Rational Method as outlined in QUDM.

The results from the hydrologic models were applied to the hydraulic model to assess the flood risk to the Project area, from the three separate sources (i.e. Munna Creek catchment flows, Barong Creek catchment flows and local catchment flows). The TUFLOW was model applied to Munna Creek and Barong Creek.

Results from the assessment determined that the flood risk to the Project area from Barong Creek and the local catchment is mostly contained within the watercourses at a height between 40 – 45 m AHD. The Munna Creek flooding disperses along the floodplain at height between 35 – 40 m AHD. The estimated flood immunity of Kunst Bridge is less than 2 Year ARI. Therefore, access to the Project area is likely to be blocked during an event of this magnitude (or larger). An accommodation building has been proposed for the Project area to accommodate staff during a flood event.

The Designated Flood Event (DFE) that has been selected for the Project area for the purposes of this assessment is the 100 Year ARI. The solar panels will be constructed at surface level above the 1 in 100 Year ARI levels which varies throughout the impact area. The panels and associated infrastructure such as inverters are to be located on posts above the 1 in 100 year ARI flood level. The DFE adopted by the Fraser Coast Regional Council for the purposes of the planning scheme, is a 1 in 100 ARI. Accordingly, the proposed solution adequately balances the need to maintain flood storage over the Project area whilst protecting infrastructure from water damage. The proposed building structures, including the substation will be constructed above the 1 in 100 year ARI flood level of 54 – 54.5 m AHD.

The location of proposed structures are considered to be outside of the flood hazard areas and will be constructed on elevated slab. Ergon have been consulted on the location of the proposed substation.

5. Impacts and mitigation

5.1 Impact details

Potential MNES relevant to the proposed action area within the Project area is outlined in Table 5.1 below.

Table 5.1 Summary of controlling provisions

EPBC Act Section	Controlling Provision	Impacted	Reviewed
S18	Threatened Species and Ecological Communities	Yes	Yes

5.1.1 World Heritage

5.1.1.1 Direct or indirect impacts to World Heritage matters

The proposed Munna Creek Solar Farm is not likely to have any direct and/or indirect impact on world heritage areas as outlined in Table 5.2 below.

Table 5.2 Assessment of world heritage areas

Matter	Impact
K'gari World Heritage Area	<p>The nearest World Heritage property is the K'gari World Heritage Area and is approximately 57 km north-east of the Munna Creek Project area.</p> <p>Construction works are wholly outside of the K'gari World Heritage Area and will not result in any direct impacts to the world heritage property.</p> <p>Given the distance of the Project from the K'gari World Heritage Area and the development, together with implementation of appropriate mitigation measures and controls, no indirect impacts are anticipated.</p>

5.1.2 National Heritage

5.1.2.1 Direct or indirect impacts to National Heritage matters

The proposed Munna Creek Solar Farm is not likely to have any direct and/or indirect impact on national heritage places as outlined in Table 5.3 below.

Table 5.3 Assessment of national heritage places

Matter	Impact
K'gari National Heritage Place (109552)	<p>The project will not direct or indirect impact on the values of any National Heritage places.</p> <p>As discussed for the K'gari World Heritage Area above, construction works are wholly outside of National Heritage Place and will not result in any direct impacts to the National Heritage Place. The project is located within a previously disturbed area with historical use for grazing and agriculture.</p> <p>Given the distance of the Project from the National Heritage Place and the development, together with implementation of appropriate mitigation measures and controls, no indirect impacts are anticipated.</p>

5.1.3 Ramsar Wetland

5.1.3.1 Direct or indirect impacts to Ramsar wetlands

The proposed Munna Creek Solar Farm is not likely to have any direct and/or indirect impact on Ramsar listed wetlands as outlined in Table 5.4 below.

Table 5.4 Assessment of Ramsar wetlands

Matter	Impact
Great Sandy Strait (including Great Sandy Strait, Tin Can Bay and Tin Can Inlet)	<p>There are no Ramsar listed wetlands located within or adjacent to the Munna Creek Project area.</p> <p>The nearest Ramsar site is the Great Sandy Strait wetland, located approximately 45 km east of the Project.</p> <p>Surface runoff within the Project area drains into Munna Creek and Barong Creek, which ultimately feed into the Mary River, which flows east into the Great Sandy Strait wetland. However, due to the distance between the Ramsar wetland and the Project area, water quality related impacts are considered unlikely. Rather, considering the change of land use (energy production from agriculture), the Project is likely to reduce the potential for contaminants and excessive nutrients entering the local waterways and impacting wetland systems downstream.</p> <p>With consideration of the relative distance of the Munna Creek Solar Farm Project from the Ramsar wetland and the implementation of site-specific mitigation measures and controls, indirect impacts to Great Sandy Strait wetland are considered unlikely as a result of the proposed action.</p>

5.1.4 Threatened Species and Ecological Communities

5.1.4.1 Direct or indirect impacts to threatened species and/or ecological communities

The proposed Munna Creek Solar Farm is likely to have an indirect impact on threatened species as outlined in Table 5.5 below. No flora and/or flora conservation significant communities or species were confirmed present or assessed as 'likely to occur' within the impact area. However, three fauna species have the potential to occur in the broader Project area or surrounding landscape. There are no threatened ecological communities within the Project area.

Table 5.5 Assessment of Threatened Species and Ecological Communities

MNES	Impact
Koala (<i>Phascolarctos cinereus</i>)	<p>The koala is listed as endangered under the EPBC Act.</p> <p>No koalas or koala faecal pellets were observed during field surveys. Suitable habitat for this species was absent from the impact area, with potentially suitable habitat present elsewhere in the broader Project area including to the west of Barong Creek and a small area along the eastern boundary of the Project area.</p> <p>Koala habitat includes places that contain resources necessary for foraging, survival, growth, reproduction and movement. This includes forests or woodlands, road-side and rail vegetation and paddock trees, safe intervening ground matrix for travelling between trees, and patches to forage, shelter and reproduce, and access to vegetated corridors or paddock trees to facilitate movement between patches (DAWE 2022a).</p> <p>The way in which koalas move through the landscape also influences their use of habitat. In general, koalas are relatively sedentary, typically changing trees only a few times each day (DAWE 2021). For the rest of the year koalas move relatively little within home ranges that vary between 8 ha and 135 ha (Ellis et al., 2002; Goldingay and Dobner, 2014).</p> <p>The impact area is composed entirely of non-remnant and immature regrowth vegetation, and as such, currently supports limited foraging and shelter habitat for the koala. The koala has not been historically recorded within 10 km of the Project area; however suitable habitat is widely available in the surrounding landscape. Large patches of remnant eucalypt woodlands are present on the southern and western boundaries of Lot 1SP305114. These areas represent the Miva State Forest and Glenbar National Park, respectively. Although the impact area has been largely cleared of vegetation, transient individuals have the potential to occur from time to time when dispersing between areas of habitat.</p> <p>Considering no suitable habitat for the koala occurs within the impact area, the proposed works are unlikely to negatively impact the species. Management measures will be included during the design phase to reduce the potential for indirect impacts to the koala.</p>

MNES	Impact
<p>Greater glider (<i>Petauroides volans</i>)</p>	<p>The greater glider (central) is listed as endangered under the EPBC Act.</p> <p>The greater glider is restricted to tall, mature eucalypt forests and woodlands with an abundance of mature, hollow bearing trees (DCCEEW, 2022). The species dens in large hollow bearing trees during the day, leaving their denning site to forage at night (Eyre et al., 2022). The species has a specialist folivorous diet and requires access to forests with a diversity of tree species to provide a consistent food source throughout the year (Kavanagh, 1984). Greater gliders have been recorded gliding up to 110 m (Menkhorst and Knight, 2011), but it is more widely accepted that their typical maximum gliding distance is 60 m (Weston, 2003), and an average glide length is typically 25 to 35 m (with a launch height of 20 to 25 m) (Australian Museum Business Service, 2001).</p> <p>No greater gliders or greater glider faecal pellets were observed during field surveys and no suitable habitat for this species was recorded in the impact area. Potentially suitable foraging habitat for the species is present elsewhere in the broader Project area including to the west of Barong Creek and a small area along the eastern boundary of the Project area, noting however that the quality of this habitat has been reduced by historical logging practices. No suitable hollows were recorded during the field survey, and due to the areas isolation, the species is unlikely to utilise this area. The species has not been historically recorded within 10 km of the Project area. Regardless, the species is likely to occur in the neighbouring Miva State Forest and Glenbar National Park. Management measures will be included during the design and construction phase to reduce the potential for indirect impacts to the greater glider.</p>
<p>Yellow-bellied glider (<i>Petaurus australis</i>)</p>	<p>The yellow-bellied glider is listed as vulnerable under the EPBC Act.</p> <p>Three records of the yellow-bellied glider occur within 10 km of the Project area. No evidence of this species was recorded during the field survey and no suitable habitat for this species was recorded in the impact area. Potentially suitable habitat for this species is present elsewhere in the broader Project area, including to the west of Barong Creek and a small area along the eastern boundary of the Project area, noting however that the quality of this habitat has been reduced by historical logging practices. The species is likely to occur in the neighbouring Miva State Forest and Glenbar National Park. Management measures will be included during the design and construction phase to reduce the potential for indirect impacts to the greater glider. yellow-bellied glider.</p>

5.1.4.2 Significance of impacts to threatened species and/or ecological communities

The proposed Munna Creek Solar Farm Project is not considered to result in a significant impact to threatened species.

The proposed development will not require clearing of remnant vegetation, with clearing limited to non-remnant vegetation in the Project area during Stage 1A. Accordingly, the Project is not expected to impact on MNES. The proposed development footprint has been designed to avoid protected ecological areas including mapped regional ecosystems, local government protected ecological areas and riparian areas along Munna Creek and Bunda Creek. A minimum buffer of 6 m between the proposed development and protected environmental areas has been incorporated in the boundary of the impact area.

During the construction stage, a site-specific Construction Environmental Management Plan (CEMP) and Erosion Sediment and Control Plans (ESCPs) will be developed and implemented by the construction contractors in accordance with best practice environmental requirements and guidelines.

REST Energy will also implement and follow operational environmental management measures following the completion of construction works to ensure environmental commitments and standards are maintained for the life of the infrastructure.

During the construction phase, general management measures outlined below will be implemented through the developed of an environmental management plan to minimise impacts to native flora and fauna:

- Disturbance to native species should be minimised, as far as practicable.
- Clearing extents should be clearly delineated prior to clearing.
- Any stockpiles or laydown areas should be located within already cleared areas.
- Weed management activities should be undertaken to avoid the spread of weeds in the Project area (particularly the weedy *Sporobolus* species observed within the cleared paddocks) or the introduction of new weed species.
- A fauna spotter catcher will be present during all vegetation clearing associated with the Project.

Appropriate management of waste, dust and emissions, erosion and sedimentation, and hazardous materials should occur in accordance with strategies identified by the CEMP.

5.1.4.3 Proposed action as a controlled action

The proposed action at Munna Creek Solar Farm is not considered to be a controlled action as it is not considered to result in significant impacts to MNES.

5.1.4.4 Please describe any avoidance or mitigation measures proposed for this action and attach any supporting documentation for these avoidance and mitigation measures

During the construction stage, site-specific CEMP and ESCPs will be developed and implemented by construction contractors in accordance with best practice environmental requirements and guidelines.

REST Energy will also implement and follow operational environmental management measures following the completion of construction works to ensure environmental commitments and standards are maintained for the life of the infrastructure.

Disturbance of surface waterways and waterbodies

The downstream environment is unlikely to be indirectly or directly impacted by the Project. Impacts to aquatic habitat will be minimised by locating ancillary works outside the waterway and restoring original bed and banks conditions following construction. The following environmental controls area proposed:

- Development and implementation of an ESCP, including soil stabilisation during construction and post construction.
- Development and implementation of a CEMP
- Implementation of industry standard management practises (e.g. sediment and erosion controls, timing of works, etc.). An exclusion zone will also be established along the outer edge of the buffer to prevent impacts within the buffer zone.
- Working with the Mary River Catchment Coordinating Committee to develop strategies to enhance and revegetate areas along the waterways and riparian areas adjoining the site.
- Retain riparian vegetation along and near the waterways and retain remnant vegetation (where possible).
- The proposed solar farm infrastructure envelope to be located a minimum of 25 m from the outer bank of Barong Creek.
- Regeneration of natural vegetation through reduced grazing activities.
- Stormwater quantity and quality mitigation treatment devices to be incorporated into the overall road and internal layout design.
- Branch access roads to be graded at approximately 1% grade, and will include swale type table drains. These swale drains will intercept sheet flow runoff originating from solar panel runoff. The 1% grade is to ensure that the drainage flow regime is sufficiently slow as to mitigate against sediment transportation, as well as to promote infiltration and the achievement of nutrient up take by vegetation within the table drains.
- Drainage will be directed to designated cross drainage collection paths, which, in turn, will discharge to existing drainage paths and stock dams.
- Use of vegetated swale table drains, as well as bunds and other similar standards treatments to all roads to improve sediment drop out and reduce water velocities.
- Buffer zones to all existing drainage courses, dams and the 100 year ARI afflux inundation footprint to be implemented.
- Non-habitable floor areas are designed and constructed to be resilient to the effects of flood. The treatment of stormwater runoff from the developed site will be considered during the design phase of the project to ensure compliance with the planning scheme requirement by minimising environmental impacts to the receiving environment.
- Minimum of 10 m horizontal buffers from the 100 year ARI flood inundation footprints for all creeks and the internal backwater and stock dam inundation footprints and the centreline of any drainage path in accordance with the Defined Flood Event specified in Schedule 1.4 of the Fraser Coast Planning Scheme 2014.

Loss, fragmentation and degradation of vegetation and habitat

The extent of clearing will be clearly demarcated in construction plans. Rehabilitation of temporary construction areas will be undertaken sequentially and as soon as practicable after clearing. Clearing will be staged wherever possible, with a spotter-catcher present during clearing activities. For the bulk of the Project temporary disturbance footprint, rehabilitation will be undertaken by spreading topsoil and allowing natural regeneration of existing ground covering vegetation.

Vegetation will be removed in a manner that ensures the protection of all branches, trunks and roots of the remaining protected vegetation on site. In this regard trees are to be felled away from protected vegetation. Where works may result in an impact on the roots of vegetation to be protected the roots are to be cut rather than broken and managed based on best arboricultural practice to ensure the long-term survival of the trees.

All clearing works carried out in the vicinity of the retained vegetation are to be undertaken in accordance with AS4970 Protection of Trees on Development Sites and AS4687 Temporary Fencing and Hoarding.

Rehabilitation works are to be completed in accordance with an approved rehabilitation plan and best management practice, prior to commencement of the use and maintained for the duration of the use. All restoration and rehabilitation works are subject to a twelve month maintenance period.

Habitat degradation by dust, run-off and sedimentation

Duration of in-stream works will be minimised to reduce the potential for sedimentation. Areas subject to clearing will be stabilised as soon as practicable. All vehicle movement will be restricted to designated tracks located within the Project area. Weather conditions will be monitored during the construction stage and temporary controls will be established during extreme weather events. Rehabilitation of temporary construction areas will be undertaken as soon as practicable after clearing once these facilities are no longer required.

Introduction and spread of pest and weed species

Responsible waste management actions will be implemented, and construction staff will not be permitted to bring domestic animals into the Project area. All construction personnel will be instructed on their responsibilities related to avoiding and minimising the introduction/attraction to the construction site of feral animals.

Weed management actions will include hygiene protocols, washdown procedures, monitoring and management of weeds, vehicle access restrictions.

Disruption to behaviour and restriction of fauna movement

Removal of all temporary fencing and rehabilitation works will occur as soon as practicable after the completion of construction works. Construction activities will be managed in accordance with conditions of an approved Species Management Program and a fauna spotter catcher will be present during clearing to relocate individuals, as necessary.

Fauna injury and mortality

All clearing will be supervised by suitably qualified and experienced fauna spotter-catchers. A Traffic Management Plan will be developed for the Project with designated access routes, established and enforced speed limits and identified sensitive ecological areas and no-go areas.

No direct impacts are anticipated due to the lack of suitable habitat for EPBC-listed species within the Project area.

Recommended design measures include, but are not limited to:

- Enforcing strict speed limits for works vehicles within the Project area.
- Direct Project lighting way from remnant vegetation and use the minimum amount required for safety.
- Restrict works hours to between 6.00 am and 6.00 pm to limit noise impacts to nocturnal fauna.
- Avoid bringing domestic animals within the Project area and dispose of rubbish accordingly.
- Clearly identify to the Project area to reduce accidental impacts to neighbouring vegetation.
- Routinely check excavated areas to trapped fauna, particularly at the start of each day.
- Ensure any alternative designs avoid directly impacting Barong Creek.
- Employ a fauna spotter catching during any vegetation clearing or thinning.

5.1.4.5 Please describe any proposed offsets

Not applicable.

5.1.5 Migratory Species

5.1.5.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters?

The proposed Munna Creek Solar Farm Project is not considered to result in direct or indirect impacts to migratory species. The proposed development will not require clearing of remnant vegetation, with clearing limited to non-remnant vegetation in the Project area during Stage 1A. Accordingly, the Project is not expected to impact on MNES. The proposed development footprint has been designed to avoid protected ecological areas including mapped regional ecosystems, local government protected ecological areas and riparian areas along Munna Creek and Bunda Creek. A minimum buffer of 6 m between the proposed development and protected environmental areas has been incorporated in the boundary of the impact area. Furthermore, there were no records of the migratory species recorded within the project area and no suitable habitat found within the impact area.

5.1.6 Nuclear

5.1.6.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters?

The proposed action is not likely to have any direct and/or indirect impact on nuclear.

5.1.7 Commonwealth Marine Area

5.1.7.1 Is the proposed action likely to have any direct and/or indirect impact on any of these protected matters?

The proposed action is not likely to have any direct and/or indirect impact on Commonwealth Marine Area.

5.1.8 Great Barrier Reef

5.1.8.1 Direct or indirect impacts to the Great Barrier Reef

The proposed action is not likely to have any direct and/or indirect impact on the Great Barrier Reef.

5.1.9 Coal seam gas or large coal mining development impacts

5.1.9.1 Direct or indirect impacts associated with coal seam gas or large coal mining developments

Not applicable to the project.

5.1.10 Commonwealth Land impacts

5.1.10.1 Direct or indirect impacts to Commonwealth Land

The proposed action is not likely to have any direct and/or indirect impact on Commonwealth Lands.

5.1.11 Commonwealth heritage places overseas impacts

5.1.11.1 Direct or indirect impacts to Commonwealth heritage places overseas

The proposed action is not considered to have any direct and/or indirect impact on Commonwealth heritage places.

5.2 Impact Summary

The proposed action within the impact area for the proposed Munna Creek Solar Farm is not considered to be a controlled action as it is not considered to result in significant impacts to MNES.

5.3 Alternatives

5.3.1 Possible alternatives to the proposed action

No other alternative sites are possible for the proposed solar farm. REST Energy undertook prefeasibility assessments of other sites for the solar farm prior to the design phase. The project area has been selected for the solar farm for the following reasons:

- REST Energy has secured a Connection Agreement from the Network Service Provider for the Project to allow it to connect to Ergon's existing 132kV line that runs through the project area.
- The majority of the project area has been previously cleared and used for cattle pasture for over 100 years. It is a highly disturbed area with some scattered trees around.
- The Project area consisted of land owned by one property owner and was available for purchase and was secured by REST Energy.
- The project area is located in a relatively isolated rural setting and is not considered to adversely impact on sensitive receptors.

6. Supporting documentation

The following documentation has been included in the appendices of this report:

- Updated desktop searches (2022) (Appendix A)
- GHD (2017) Munna Creek Solar Farm Vegetation and Protected Plants Survey Report (Appendix B)
- GHD (2018) Munna Creek Solar Farm – Environmental Assessment Report for Wetlands and Waterways (Appendix C)

Appendix A

Updated Desktop Searches



EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 06-Oct-2022

[Summary](#)

[Details](#)

[Matters of NES](#)

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

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar)	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	4
Listed Threatened Species:	45
Listed Migratory Species:	17

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

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 Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	21
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

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

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands)

[[Resource Information](#)]

Ramsar Site Name	Proximity	Buffer Status
Great sandy strait (including great sandy strait, tin can bay and tin can inlet)	30 - 40km upstream from Ramsar site	In feature area

Listed Threatened Ecological Communities

[[Resource Information](#)]

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

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

Community Name	Threatened Category	Presence Text	Buffer Status
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	Community may occur within area	In feature area
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	Endangered	Community may occur within area	In feature area
Lowland Rainforest of Subtropical Australia	Critically Endangered	Community likely to occur within area	In feature area
Poplar Box Grassy Woodland on Alluvial Plains	Endangered	Community may occur within area	In buffer area only

Listed Threatened Species

[[Resource Information](#)]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.

Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Cyclopsitta diophthalma coxeni Coxen's Fig-Parrot [59714]	Endangered	Species or species habitat may occur within area	In feature area
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Geophaps scripta scripta Squatter Pigeon (southern) [64440]	Vulnerable	Species or species habitat may occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
Turnix melanogaster Black-breasted Button-quail [923]	Vulnerable	Species or species habitat likely to occur within area	In feature area
FISH			
Maccullochella mariensis Mary River Cod [83806]	Endangered	Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Neoceratodus forsteri Australian Lungfish, Queensland Lungfish [67620]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
INSECT			
Phyllodes imperialis smithersi Pink Underwing Moth [86084]	Endangered	Species or species habitat may occur within area	In buffer area only
MAMMAL			
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat likely to occur within area	In feature area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat may occur within area	In feature area
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat may occur within area	In feature area
Petauroides volans Greater Glider (southern and central) [254]	Endangered	Species or species habitat likely to occur within area	In feature area
Petaurus australis australis Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat likely to occur within area	In feature area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
PLANT			
Acacia attenuata [10690]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Arthraxon hispidus Hairy-joint Grass [9338]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Bosistoa transversa Three-leaved Bosistoa, Yellow Satinheart [16091]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Cossinia australiana Cossinia [3066]	Endangered	Species or species habitat likely to occur within area	In feature area
Cryptostylis hunteriana Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat may occur within area	In feature area
Cupaniopsis shirleyana Wedge-leaf Tuckeroo [3205]	Vulnerable	Species or species habitat known to occur within area	In feature area
Cycas megacarpa [55794]	Endangered	Species or species habitat may occur within area	In feature area
Dichanthium setosum bluegrass [14159]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Fontainea rostrata [24039]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Fontainea venosa [24040]	Vulnerable	Species or species habitat may occur within area	In feature area
Macadamia integrifolia Macadamia Nut, Queensland Nut Tree, Smooth-shelled Macadamia, Bush Nut, Nut Oak [7326]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Macrozamia pauli-guilielmi Pineapple Zamia [5712]	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Plectranthus omissus [55729]	Endangered	Species or species habitat known to occur within area	In feature area
Rhodamnia rubescens Scrub Turpentine, Brown Malletwood [15763]	Critically Endangered	Species or species habitat known to occur within area	In buffer area only
Rhodomyrtus psidioides Native Guava [19162]	Critically Endangered	Species or species habitat may occur within area	In feature area
Samadera bidwillii Quassia [29708]	Vulnerable	Species or species habitat known to occur within area	In feature area
Sophora fraseri [8836]	Vulnerable	Species or species habitat may occur within area	In feature area
REPTILE			
Delma torquata Adorned Delma, Collared Delma [1656]	Vulnerable	Species or species habitat may occur within area	In feature area
Egernia rugosa Yakka Skink [1420]	Vulnerable	Species or species habitat may occur within area	In feature area
Elseya albagula Southern Snapping Turtle, White-throated Snapping Turtle [81648]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Elusor macrurus Mary River Turtle, Mary River Tortoise [64389]	Endangered	Species or species habitat known to occur within area	In feature area
Furina dunmalli Dunmall's Snake [59254]	Vulnerable	Species or species habitat may occur within area	In feature area
Hemiaspis damelii Grey Snake [1179]	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Marine Species			
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat likely to occur within area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area	In feature area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area	In feature area
Symposiachrus trivirgatus as Monarcha trivirgatus Spectacled Monarch [83946]		Species or species habitat likely to occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat may occur within area	In buffer area only

Other Matters Protected by the EPBC Act

Listed Marine Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area	In feature area
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat likely to occur within area overfly marine area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area	In buffer area only
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Symposiachrus trivirgatus as Monarcha trivirgatus Spectacled Monarch [83946]		Species or species habitat likely to occur within area overfly marine area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat may occur within area overfly marine area	In buffer area only
Reptile			
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area	In feature area

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Glenbar	National Park	QLD	In buffer area only

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

Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

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

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

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

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

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

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

Acknowledgements

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

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

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

Please feel free to provide feedback via the [Contact Us](#) page.

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Cultural Heritage Database and Register Search Report

Search report reference number: 124072

The Aboriginal and Torres Strait Islander Cultural Heritage Database (cultural heritage database) and Aboriginal and Torres Strait Islander Cultural Heritage Register (cultural heritage register) have been searched in accordance with the location description provided, and the results are set out in this report.

The cultural heritage database is intended to be a research and planning tool to help Aboriginal and Torres Strait Islander parties, researchers, and other persons in their consideration of the cultural heritage values of particular areas.

The cultural heritage register is intended to be a depository for information for consideration for land use and land use planning, and a research and planning tool to help people in their consideration of the Aboriginal cultural heritage values of particular objects and areas.

Aboriginal or Torres Strait Islander cultural heritage which may exist within the search area is protected under the [Aboriginal Cultural Heritage Act 2003](#) and the [Torres Strait Islander Cultural Heritage Act 2003](#) (the Cultural Heritage Acts), even if the Department of Seniors, Disability Services and Aboriginal and Torres Strait Islander Partnerships (the Department) has no records relating to it.

The placing of information on the database is not intended to be conclusive about whether the information is up-to-date, comprehensive or otherwise accurate.

Under the Cultural Heritage Acts, a person carrying out an activity must take all reasonable and practicable measures to ensure the activity does not harm Aboriginal or Torres Strait Islander cultural heritage. This applies whether or not such places are recorded in an official register and whether or not they are located on private land.

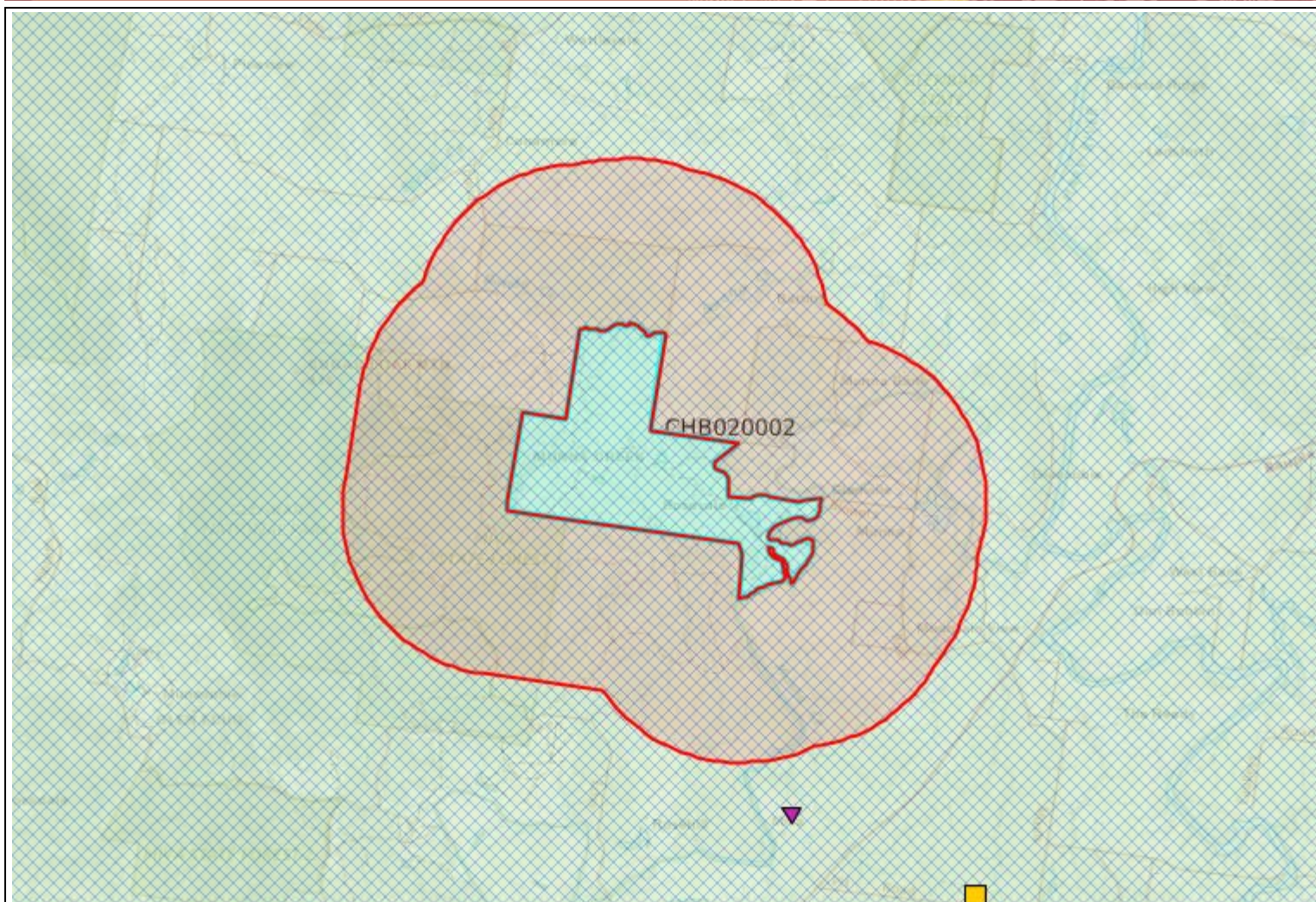
Please refer to the Department website <https://www.qld.gov.au/firstnations/environment-land-use-native-title/cultural-heritage/cultural-heritage-duty-of-care> to obtain a copy of the gazetted Cultural Heritage Duty of Care Guidelines, which set out reasonable and practicable measure for meeting the cultural heritage duty of care.

In order to meet your duty of care, any land-use activity within the vicinity of recorded cultural heritage should not proceed without the agreement of the Aboriginal or Torres Strait Islander Party for the area, or by developing a Cultural Heritage Management Plan under Part 7 of the Cultural Heritage Acts.






The extent to which the person has complied with Cultural Heritage Duty of Care Guidelines and the extent the person consulted Aboriginal or Torres Strait Islander Parties about carrying out the activity – and the results of the consultation – are factors a court may consider when determining if a land user has complied with the cultural heritage duty of care.

Should you have any further queries, please do not hesitate to contact the department via email: cultural.heritage@dssdsatsip.qld.gov.au or telephone: 1300 378 401.

Cultural Heritage Database and Register Search Report



LEGEND

-  CH Parties
-  CH Bodies
-  CHMPs
-  Study Areas
-  DLAs

Reference Number: 124072
 Search Type: Lot/Plan
 Lot: 1
 Plan: SP305114
 Shire: Fraser Coast Regional
 Buffer Distance: 2000m

Map Projection: Geographic Latitude & Longitude (GDA2020).







The Department of Seniors, Disability Services and Aboriginal and Torres Strait Islander Partnerships (DSDSATSIP) is the custodian of spatial data provided by various third parties for inclusion in the Aboriginal and Torres Strait Islander cultural heritage online portal. This includes spatial data provided by the National Native Title Tribunal and Aboriginal and Torres Strait Islander parties.

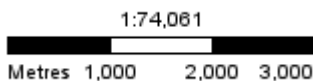
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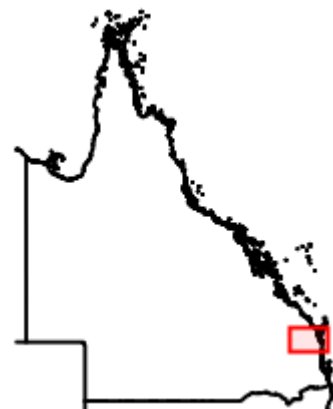
Map produced by the Cultural Heritage Unit, DSDSATSIP, Brisbane, Queensland, Australia on 20 November 2022.

Cultural Heritage Sites

-  Pre-2015 Point Site
-  Post-2015 Point Site
-  Mitigated Point Site
-  Pre-2015 Area Site
-  Post-2015 Area Site
-  Mitigated Area Site



LOCALITY



Cultural Heritage Database and Register Search Report

There are no Aboriginal or Torres Strait Islander cultural heritage site points recorded in your specific search area.

There are no Aboriginal or Torres Strait Islander cultural heritage site polygons recorded in your specific search area.

Cultural Heritage Party/ies for the area:

Reference No.	Federal Court No.	Name	Contact Details
QC2018/007	QUD20/2019	Kabi Kabi First Nation Traditional Owners Native Title Claim Group	Kabi Kabi First Nation Traditional Owners Native Title Claim Group Queensland South Native Title Services PO Box 10832 BRISBANE QLD 4000 Free Call: 1800 663 693 Phone (07) 3224 1200 Email: reception@qsnts.com.au

Cultural Heritage Body/ies for the area:

Departmental Reference No.	Name	Contact Details	Registration Date
CHB020002	Kabi Kabi People Aboriginal Corporation	Kabi Kabi Peoples Aboriginal Corporation PO Box 713 CALOUNDRA QLD 4551	27/07/2021

There are no Cultural Heritage Management Plans recorded in your specific search area.

There are no Designated Landscape Areas (DLA) recorded in your specific search area.

There are no Registered Cultural Heritage Study Areas recorded in your specific search area.

There are no National Heritage Areas (Indigenous values) recorded in your specific search area.

Cultural Heritage Database and Register Search Report

Glossary

Cultural Heritage Body: An entity registered under Part 4 of the Cultural Heritage Acts as an Aboriginal or Torres Strait Islander cultural heritage body for an area. The purpose of a cultural heritage body is to:

- identify the Aboriginal or Torres Strait Islander parties for an area
- serve as the first point of contact for cultural heritage matters.

Cultural Heritage Management Plan (CHMP): An agreement between a land user (sponsor) and Traditional Owners (endorsed party) developed under Part 7 of the Cultural Heritage Acts. The CHMP explains how land use activities can be managed to avoid or minimise harm to Aboriginal or Torres Strait Islander cultural heritage.

Cultural Heritage Party: Refers to a native title party for an area. A native title party is defined as:

- Registered native title holders (where native title has been recognised by the Federal Court of Australia).
- Registered native title claimants (whose native title claims are currently before the Federal Court of Australia).
- Previously registered native title claimants (the 'last claim standing') are native title claims that are no longer active and have been removed from the Register of Native Title Claims administered by the National Native Title Tribunal. Previously registered native title claimants will continue to be the native title party for that area providing:
 - o there is no other registered native title claimant for the area; and
 - o there is not, and never has been, a registered native title holder for the area.

The native title party maintains this status within the external boundaries of the claim even if native title has been extinguished.

Cultural heritage site points (pre 2015): Aboriginal and Torres Strait Islander cultural heritage sites and places recorded in the database as point data **before** 1 July 2015.

Cultural heritage site points (post 2015): Aboriginal and Torres Strait Islander cultural heritage sites and places recorded in the database as point data **after** 1 July 2015.

Cultural heritage site points (post 2015 mitigated): Aboriginal and Torres Strait Islander cultural heritage sites and places recorded in the database as point data after 1 July 2015 where the recorder has advised the department that the site has been mitigated.

Cultural heritage site polygons: Aboriginal and Torres Strait Islander cultural heritage sites and places recorded in the database as a polygon.

Designated Landscape Areas (DLA): Under the repealed *Cultural Record (Landscapes Queensland and Queensland Estate) Act 1987*, an area was declared a 'designated landscape area' (DLA) if it was deemed necessary or desirable for it to be preserved or to regulate access.

Indigenous Protected Areas (IPA): Areas of land and sea managed by Indigenous groups as protected areas for biodiversity conservation through voluntary agreements with the Australian Government. For further information about IPAs visit <https://www.environment.gov.au/land/indigenous-protected-areas>

National Heritage areas: Places listed on the National Heritage List for their outstanding heritage significance to Australia and are protected under the *Environment Protection and Biodiversity Conservation Act 1999*. For further information about the National Heritage List visit <https://www.environment.gov.au/heritage/about/national>

National Heritage Areas (Indigenous values): Places listed on the National Heritage list (Indigenous values) are recognised for their outstanding Indigenous cultural heritage significance to Australia and are protected under the *Environment Protection and Biodiversity Conservation Act 1999*. These areas are now included in the cultural heritage

Cultural Heritage Database and Register Search Report

register.

Registered Cultural Heritage Study Areas: Comprehensive studies of Aboriginal and or Torres Strait Islander cultural heritage in an area conducted under Part 6 of the Cultural Heritage Acts for the purpose of recording the findings of the study on the register.

Traditional Use of Marine Resources Agreement (TUMRA): Areas subject to agreement between Great Barrier Reef Traditional Owners and the Australian and Queensland governments on the management of traditional use activities on their sea country. For further information about TUMRAs visit <https://www.gbrmpa.gov.au/our-partners/traditional-owners/traditional-use-of-marine-resources-agreements>

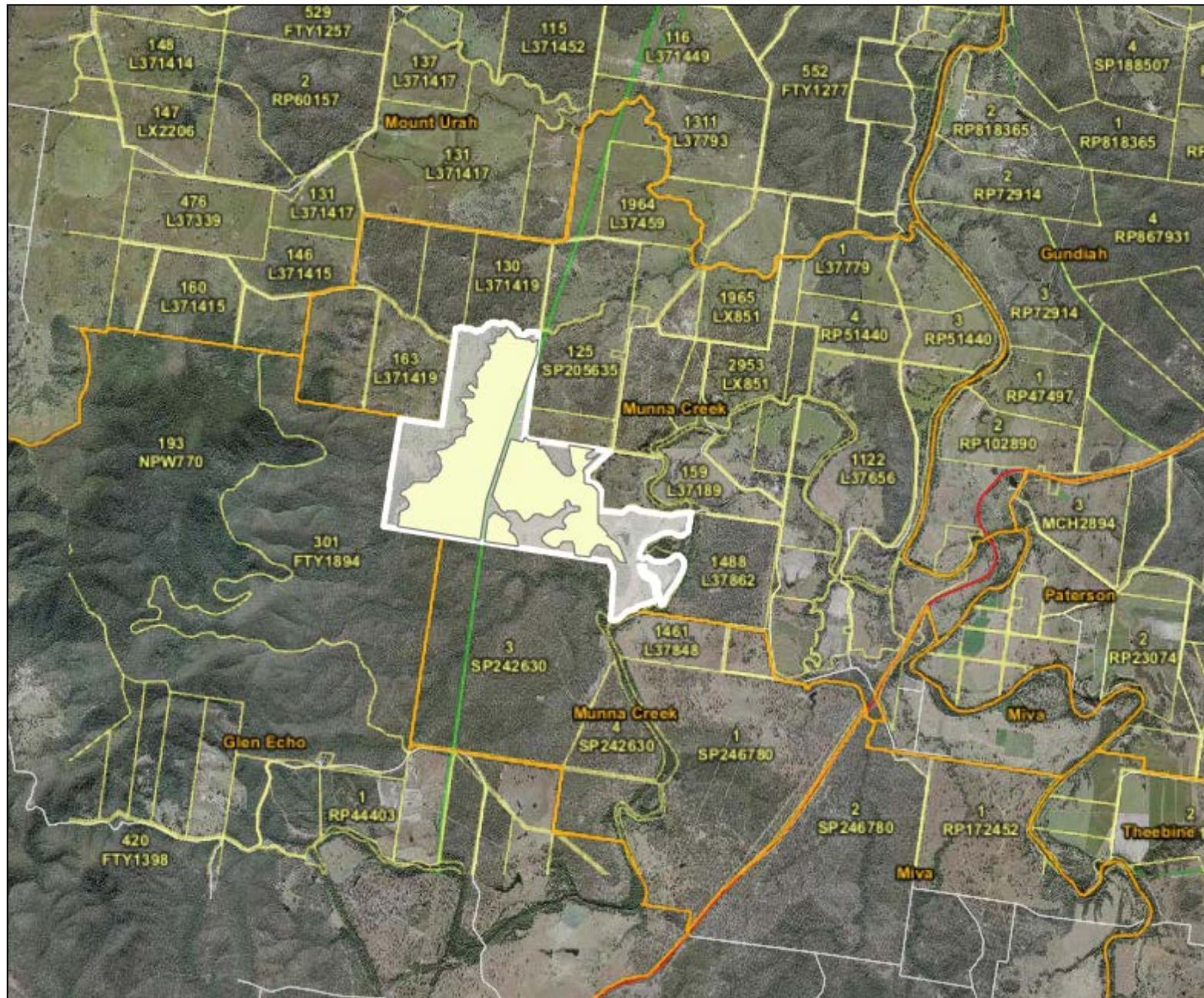
World Heritage Areas: Places inscribed on the World Heritage List pursuant to the World Heritage Convention adopted by the United Nations Education, Scientific and Cultural Organisation (UNESCO) and are protected under the [Environment Protection and Biodiversity Conservation Act 1999](#). For further information about World Heritage places in Queensland visit <https://parks.des.qld.gov.au/management/managed-areas/world-heritage-areas>

Disclaimer: *The Department of Seniors, Disability Services and Aboriginal and Torres Strait Islander Partnerships is the custodian of spatial data and information provided by various third parties for inclusion in the Aboriginal and Torres Strait Islander cultural heritage online portal. This includes spatial data provided by the National Native Title Tribunal and Aboriginal and Torres Strait Islander parties. Department of Seniors, Disability Services and Aboriginal and Torres Strait Islander Partnerships is not responsible for the accuracy of information provided by third parties or any errors in this search report arising from such information.*



25°49'50"S 152°22'43"E

25°49'50"S 152°30'49"E



25°55'50"S 152°22'43"E

25°55'50"S 152°30'49"E

Legend located on next page



0 1 km

Scale: 1:72223

Printed at: A4
Print date: 20/11/2022

Projection: Web Mercator EPSG 102100 (3857)

For more information, visit
<https://qldglobe.information.qld.gov.au/help-info/Contact-us.html>

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Legend

Proposed Solar Farm Infra Envelope_GHD_20221

117.kmz - poly



Locality




Queensland heritage register boundary




Declared not-transferable



National Park type

 Cape York Peninsula Aboriginal land [CYPAL]

 Indigenous joint management agreement [IJMA]

 Lease back

Inalienable freehold land

 Freehold [ALA]

 Freehold [TSILA]

Transferable land

 Deed of grant in trust [DOGIT]

 National park



Parcel

Land parcel - gt 1 ha



Parcel

Land parcel - gt 10 ha



Parcel

Easement parcel



Land parcel - gt 1000 ha



Parcel

Land parcel label

Land parcel label - gt 1 ha

Land parcel label - gt 10 ha

Land parcel label - gt 1000 ha

Cities and Towns



Road crossing

 Bridge

 Tunnel

Road

 Highway

 Main

 Local

 Private

Railway



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 Reserve

 State land

Places: Search Results

1SP305114



Vegetation management report

For Lot: 1 Plan: SP305114

20/10/2022

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Recent changes

Updated mapping

Updated vegetation mapping was released on 8 September 2022 and includes the most recent Queensland Herbarium scientific updates to the Regulated Vegetation Management Map, regional ecosystems, wetland, high-value regrowth and essential habitat mapping.

The Department of Environment and Science have also updated their protected plant and koala protection mapping to align with the Queensland Herbarium scientific updates.

Overview

Based on the lot on plan details you have supplied, this report provides the following detailed information:

Property details - information about the specified Lot on Plan, lot size, local government area, bioregion(s), subregion(s) and catchment(s);

Vegetation management framework - an explanation of the application of the framework and contact details for the Department of Resources who administer the framework;

Vegetation management framework details for the specified Lot on Plan including:

- the vegetation management categories on the property;
- the vegetation management regional ecosystems on the property;
- vegetation management watercourses or drainage features on the property;
- vegetation management wetlands on the property;
- vegetation management essential habitat on the property;
- whether any area management plans are associated with the property;
- whether the property is coastal or non-coastal; and
- whether the property is mapped as Agricultural Land Class A or B;

Protected plant framework - an explanation of the application of the framework and contact details for the Department of Environment and Science who administer the framework, including:

- high risk areas on the protected plant flora survey trigger map for the property;

Koala protection framework - an explanation of the application of the framework and contact details for the Department of Environment and Science who administer the framework; and

Koala protection framework details for the specified Lot on Plan including:

- the koala district the property is located in;
- koala priority areas on the property;
- core and locally refined koala habitat areas on the property;
- whether the lot is located in an identified koala broad-hectare area; and
- koala habitat regional ecosystems on the property for core koala habitat areas.

This information will assist you to determine your options for managing vegetation under:

- the vegetation management framework, which may include:

- exempt clearing work;
- accepted development vegetation clearing code;
- an area management plan;
- a development approval;

- the protected plant framework, which may include:

- the need to undertake a flora survey;
- exempt clearing;
- a protected plant clearing permit;

- the koala protection framework, which may include:

- exempted development;
- a development approval;
- the need to undertake clearing sequentially and in the presence of a koala spotter.

Other laws

The clearing of native vegetation is regulated by both Queensland and Australian legislation, and some local governments also regulate native vegetation clearing. You may need to obtain an approval or permit under another Act, such as the Commonwealth Government's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Section 8 of this guide provides contact details of other agencies you should confirm requirements with, before commencing vegetation clearing.

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1. Property details

1.1 Tenure and title area

All of the lot, plan, tenure and title area information associated with property Lot: 1 Plan: SP305114, are listed in Table 1.

Table 1: Lot, plan, tenure and title area information for the property

Lot	Plan	Tenure	Property title area (sq metres)
1	SP305114	Freehold	4,670,343
A	AP21706	Easement	37,780
A	AP21713	Easement	43,800

The tenure of the land may affect whether clearing is considered exempt clearing work or may be carried out under an accepted development vegetation clearing code.

1.2 Property location

Table 2 provides a summary of the locations for property Lot: 1 Plan: SP305114, in relation to natural and administrative boundaries.

Table 2: Property location details

Local Government(s)
Fraser Coast Regional

Bioregion(s)	Subregion(s)
Southeast Queensland	Burnett - Curtis Coastal Lowlands

Catchment(s)
Mary

2. Vegetation management framework (administered by the Department of Resources)

The *Vegetation Management Act 1999* (VMA), the *Vegetation Management Regulation 2012*, the *Planning Act 2016* and the *Planning Regulation 2017*, in conjunction with associated policies and codes, form the Vegetation Management Framework.

The VMA does not apply to all land tenures or vegetation types. State forests, national parks, forest reserves and some tenures under the *Forestry Act 1959* and *Nature Conservation Act 1992* are not regulated by the VMA. Managing or clearing vegetation on these tenures may require approvals under these laws.

The following native vegetation is not regulated under the VMA but may require permit(s) under other laws:

- grass or non-woody herbage;
- a plant within a grassland regional ecosystem prescribed under Schedule 5 of the *Vegetation Management Regulation 2012*; and
- a mangrove.

2.1 Exempt clearing work

Exempt clearing work is an activity for which you do not need to notify the Department of Resources or obtain an approval under the vegetation management framework. Exempt clearing work was previously known as exemptions.

In areas that are mapped as Category X (white in colour) on the regulated vegetation management map (see section 4.1), and where the land tenure is freehold, indigenous land and leasehold land for agriculture and grazing purposes, the clearing of vegetation is considered exempt clearing work and does not require notification or development approval under the vegetation management framework. For all other land tenures, contact the Department of Resources before commencing clearing to ensure that the proposed activity is exempt clearing work.

A range of routine property management activities are considered exempt clearing work. A list of exempt clearing work is available at

<https://www.qld.gov.au/environment/land/management/vegetation/clearing-approvals/exemptions>.

Exempt clearing work may be affected if the proposed clearing area is subject to development approval conditions, a covenant, an environmental offset, an exchange area, a restoration notice, or an area mapped as Category A. Exempt clearing work may require approval under other Commonwealth, State or Local Government laws, or local government planning schemes. Contact the Department of Resources prior to clearing in any of these areas.

2.2 Accepted development vegetation clearing codes

Some clearing activities can be undertaken under an accepted development vegetation clearing code. The codes can be downloaded at

<https://www.qld.gov.au/environment/land/management/vegetation/clearing-approvals/codes>

If you intend to clear vegetation under an accepted development vegetation clearing code, you must notify the Department of Resources before commencing. The information in this report will assist you to complete the online notification form.

You can complete the online form at

<https://apps.dnrm.qld.gov.au/vegetation/>

2.3 Area management plans

Area Management Plans (AMP) provide an alternative approval system for vegetation clearing under the vegetation management framework. They list the purposes and clearing conditions that have been approved for the areas covered by the plan. It is not necessary to use an AMP, even when an AMP applies to your property.

On 8 March 2020, AMPs ended for fodder harvesting, managing thickened vegetation and managing encroachment. New notifications cannot be made for these AMPs. You will need to consider options for fodder harvesting, managing thickened vegetation or encroachment under a relevant accepted development vegetation clearing code or apply for a development approval.

New notifications can be made for all other AMPs. These will continue to apply until their nominated end date.

If an Area Management Plan applies to your property for which you can make a new notification, it will be listed in Section 3.6 of this report. Before clearing under one of these AMPs, you must first notify the Department of Resources and then follow the conditions and requirements listed in the AMP.

<https://www.qld.gov.au/environment/land/management/vegetation/clearing-approvals/area-management-plans>

2.4 Development approvals

If under the vegetation management framework your proposed clearing is not exempt clearing work, or is not permitted under an accepted development vegetation clearing code, or an AMP, you may be able to apply for a development approval.

Information on how to apply for a development approval is available at

<https://www.qld.gov.au/environment/land/management/vegetation/clearing-approvals/development>

2.5. Contact information for the Department of Resources

For further information on the vegetation management framework:

Phone 135VEG (135 834)

Email vegetation@resources.qld.gov.au

Visit <https://www.resources.qld.gov.au/?contact=vegetation> to submit an online enquiry.

3. Vegetation management framework for Lot: 1 Plan: SP305114

3.1 Vegetation categories

The vegetation categories on your property are shown on the regulated vegetation management map in section 4.1 of this report. A summary of vegetation categories on the subject lot are listed in Table 3. Descriptions for these categories are shown in Table 4.

Table 3: Vegetation categories for subject property. Total area: 467.85ha

Vegetation category	Area (ha)
Category B	33.5
Category C	0.0
Category R	0.2
Category X	434.1

Table 4: Description of vegetation categories

Category	Colour on Map	Description	Requirements / options under the vegetation management framework
A	red	Compliance areas, environmental offset areas and voluntary declaration areas	Special conditions apply to Category A areas. Before clearing, contact the Department of Resources to confirm any requirements in a Category A area.
B	dark blue	Remnant vegetation areas	Exempt clearing work, or notification and compliance with accepted development vegetation clearing codes, area management plans or development approval.
C	light blue	High-value regrowth areas	Exempt clearing work, or notification and compliance with managing Category C regrowth vegetation accepted development vegetation clearing code.
R	yellow	Regrowth within 50m of a watercourse or drainage feature in the Great Barrier Reef catchment areas	Exempt clearing work, or notification and compliance with managing Category R regrowth accepted development vegetation clearing code or area management plans.
X	white	Clearing on freehold land, indigenous land and leasehold land for agriculture and grazing purposes is considered exempt clearing work under the vegetation management framework. Contact the Department of Resources to clarify whether a development approval is required for other State land tenures.	No permit or notification required on freehold land, indigenous land and leasehold land for agriculture and grazing. A development approval may be required for some State land tenures.

Property Map of Assessable Vegetation (PMAV)

The following Property Map of Assessable Vegetation (PMAVs) may be present on this property:

Reference number

2016/005092

2005/101966

3.2 Regional ecosystems

The endangered, of concern and least concern regional ecosystems on your property are shown on the vegetation management supporting map in section 4.2 and are listed in Table 5.

A description of regional ecosystems can be accessed online at <https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/descriptions/>

Table 5: Regional ecosystems present on subject property

Regional Ecosystem	VMA Status	Category	Area (Ha)	Short Description	Structure Category
12.3.11	Of concern	B	2.05	Eucalyptus tereticornis +/- Eucalyptus siderophloia, Corymbia intermedia open forest on alluvial plains usually near coast	Mid-dense
12.3.17	Of concern	B	5.36	Simple notophyll fringing forest usually dominated by Waterhousea floribunda	Dense
12.3.17	Of concern	R	0.04	Simple notophyll fringing forest usually dominated by Waterhousea floribunda	Dense
12.3.3	Endangered	B	1.30	Eucalyptus tereticornis woodland on Quaternary alluvium	Sparse
12.3.3	Endangered	R	0.18	Eucalyptus tereticornis woodland on Quaternary alluvium	Sparse
12.3.7	Least concern	B	3.14	Eucalyptus tereticornis, Casuarina cunninghamiana subsp. cunninghamiana +/- Melaleuca spp. fringing woodland	Sparse
12.3.7	Least concern	C	less than 0.01	Eucalyptus tereticornis, Casuarina cunninghamiana subsp. cunninghamiana +/- Melaleuca spp. fringing woodland	Sparse
12.3.7	Least concern	R	less than 0.01	Eucalyptus tereticornis, Casuarina cunninghamiana subsp. cunninghamiana +/- Melaleuca spp. fringing woodland	Sparse
12.5.7	Least concern	B	3.53	Corymbia citriodora subsp. variegata +/- Eucalyptus portuensis or E. acmenoides, E. fibrosa subsp. fibrosa open forest on remnant Tertiary surfaces. Usually deep red soils	Mid-dense
12.5.7	Least concern	R	0.01	Corymbia citriodora subsp. variegata +/- Eucalyptus portuensis or E. acmenoides, E. fibrosa subsp. fibrosa open forest on remnant Tertiary surfaces. Usually deep red soils	Mid-dense
12.9-10.21	Least concern	B	18.11	Eucalyptus acmenoides or E. portuensis woodland usually with Corymbia trachyphloia subsp. trachyphloia on Cainozoic to Proterozoic sediments	Sparse
12.9-10.21	Least concern	R	0.01	Eucalyptus acmenoides or E. portuensis woodland usually with Corymbia trachyphloia subsp. trachyphloia on Cainozoic to Proterozoic sediments	Sparse
non-rem	None	X	434.12	None	None

Please note:

1. All area and area derived figures included in this table have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 1994). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.
2. If Table 5 contains a Category 'plant', please be aware that this refers to 'plantations' such as forestry, and these areas are considered non-remnant under the VMA.

The VMA status of the regional ecosystem (whether it is endangered, of concern or least concern) also determines if any of the following are applicable:

- exempt clearing work;
- accepted development vegetation clearing codes;
- performance outcomes in State Code 16 of the State Development Assessment Provisions (SDAP).

3.3 Watercourses

Vegetation management watercourses and drainage features for this property are shown on the vegetation management supporting map in section 4.2.

3.4 Wetlands

There are no vegetation management wetlands present on this property.

3.5 Essential habitat

Under the VMA, essential habitat for protected wildlife is native wildlife prescribed under the *Nature Conservation Act 1992* (NCA) as critically endangered, endangered, vulnerable or near-threatened wildlife.

Essential habitat for protected wildlife includes suitable habitat on the lot, or where a species has been known to occur up to 1.1 kilometres from a lot on which there is assessable vegetation. These important habitat areas are protected under the VMA.

Any essential habitat on this property will be shown as blue hatching on the vegetation supporting map in section 4.2.

If essential habitat is identified on the lot, information about the protected wildlife species is provided in Table 6 below. The numeric labels on the vegetation management supporting map can be cross referenced with Table 6 to outline the essential habitat factors for that particular species. There may be essential habitat for more than one species on each lot, and areas of Category A, Category B and Category C can be mapped as Essential Habitat.

Essential habitat is compiled from a combination of species habitat models and buffered species records. Regional ecosystem is a mandatory essential habitat factor, unless otherwise stated. Essential habitat, for protected wildlife, means an area of vegetation shown on the Regulated Vegetation Management Map -

- 1) that has at least 3 essential habitat factors for the protected wildlife that must include any essential habitat factors that are stated as mandatory for the protected wildlife in the essential habitat database. Essential habitat factors are comprised of - regional ecosystem (mandatory for most species), vegetation community, altitude, soils, position in landscape; or
- 2) in which the protected wildlife, at any stage of its life cycle, is located.

If there is no essential habitat mapping shown on the vegetation management supporting map for this lot, and there is no table in the sections below, it confirms that there is no essential habitat on the lot.

Category A and/or Category B and/or Category C

Table 6: Essential habitat in Category A and/or Category B and/or Category C

Label	Scientific Name	Common Name	NCA Status	Vegetation Community	Altitude	Soils	Position in Landscape
860	Phascolarctos cinereus	koala	E	Open forests and woodlands containing Eucalyptus, Corymbia, Lophostemon or Melaleuca trees having a trunk of a diameter of more than 10cm at 1.3m above the ground. Tree species used for food and habitat varies across the state and can include: Corymbia citriodora, Corymbia henryi, Corymbia intermedia, Eucalyptus acmenoides, Eucalyptus bancroftii, Eucalyptus biturbinata, Eucalyptus blakelyi, Eucalyptus brownii, Eucalyptus camaldulensis, Eucalyptus carnea, Eucalyptus chloroclada, Eucalyptus coolabah, Eucalyptus crebra, Eucalyptus dealbata, Eucalyptus drepanophylla, Eucalyptus dunnii, Eucalyptus eugenioides, Eucalyptus exserta, Eucalyptus fibrosa, Eucalyptus grandis, Eucalyptus helidonica, Eucalyptus latisinensis, Eucalyptus longirostrata, Eucalyptus major, Eucalyptus melanophloia, Eucalyptus melliodora, Eucalyptus microcarpa, Eucalyptus microcorys, Eucalyptus microtheca, Eucalyptus moluccana, Eucalyptus montivaga, Eucalyptus orgadophila, Eucalyptus papuana, Eucalyptus pilularis, Eucalyptus platyphylla, Eucalyptus populnea, Eucalyptus portuensis, Eucalyptus propinqua, Eucalyptus racemosa, Eucalyptus resinifera, Eucalyptus robusta, Eucalyptus saligna, Eucalyptus seeana, Eucalyptus siderophloia, Eucalyptus sideroxylon, Eucalyptus tereticornis, Eucalyptus thozetiana, Eucalyptus tindaliae, Eucalyptus umbra, Lophostemon confertus, Melaleuca leucadendra, Melaleuca quinquenervia.	Sea level to 1000m.	None	Riparian areas, plains and hill/escarpment slopes.

Label	Regional Ecosystem (mandatory unless otherwise specified)
860	4.3.1, 4.3.2, 4.3.3, 4.3.4, 4.3.5, 4.3.6, 4.3.8, 4.3.10, 4.3.11, 4.5.3, 4.5.5, 4.5.6, 4.5.8, 4.5.9, 4.7.1, 4.7.7, 4.7.8, 4.9.6, 4.9.10, 4.9.12, 4.9.17, 6.3.1, 6.3.2, 6.3.3, 6.3.4, 6.3.5, 6.3.7, 6.3.8, 6.3.9, 6.3.11, 6.3.12, 6.3.17, 6.3.18, 6.3.22, 6.3.24, 6.3.25, 6.4.1, 6.4.2, 6.4.3, 6.4.4, 6.5.1, 6.5.2, 6.5.3, 6.5.5, 6.5.6, 6.5.7, 6.5.8, 6.5.9, 6.5.10, 6.5.11, 6.5.13, 6.5.14, 6.5.15, 6.5.16, 6.5.17, 6.5.18, 6.5.19, 6.6.2, 6.7.1, 6.7.2, 6.7.5, 6.7.6, 6.7.7, 6.7.9, 6.7.11, 6.7.12, 6.7.13, 6.7.14, 6.7.17, 6.9.3, 7.2.3, 7.2.4, 7.2.7, 7.2.11, 7.3.7, 7.3.8, 7.3.9, 7.3.12, 7.3.13, 7.3.14, 7.3.16, 7.3.19, 7.3.20, 7.3.21, 7.3.25, 7.3.26, 7.3.39, 7.3.40, 7.3.42, 7.3.43, 7.3.44, 7.3.45, 7.3.47, 7.3.48, 7.3.50, 7.5.1, 7.5.2, 7.5.3, 7.5.4, 7.8.7, 7.8.8, 7.8.10, 7.8.15, 7.8.16, 7.8.17, 7.8.18, 7.8.19, 7.11.5, 7.11.6, 7.11.13, 7.11.14, 7.11.16, 7.11.18, 7.11.19, 7.11.20, 7.11.21, 7.11.31, 7.11.32, 7.11.33, 7.11.34, 7.11.35, 7.11.37, 7.11.41, 7.11.42, 7.11.43, 7.11.44, 7.11.45, 7.11.46, 7.11.47, 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11.11.13, 11.11.14, 11.11.15, 11.11.16, 11.11.17, 11.11.19, 11.11.20, 11.12.1, 11.12.2, 11.12.3, 11.12.5, 11.12.6, 11.12.7, 11.12.8, 11.12.9, 11.12.10, 11.12.13, 11.12.14, 11.12.15, 11.12.16, 11.12.17, 11.12.19, 11.12.20, 12.2.5, 12.2.6, 12.2.7, 12.2.8, 12.2.10, 12.3.2, 12.3.3, 12.3.4, 12.3.5, 12.3.6, 12.3.7, 12.3.9, 12.3.10, 12.3.11, 12.3.14, 12.3.18, 12.3.19, 12.3.20, 12.5.1, 12.5.2, 12.5.3, 12.5.4, 12.5.6, 12.5.7, 12.5.10, 12.5.12, 12.8.1, 12.8.8, 12.8.9, 12.8.11, 12.8.12, 12.8.14, 12.8.16, 12.8.17, 12.8.20, 12.8.24, 12.8.25, 12.9-10.1, 12.9-10.2, 12.9-10.3, 12.9-10.4, 12.9-10.5, 12.9-10.7, 12.9-10.8, 12.9-10.11, 12.9-10.12, 12.9-10.14, 12.9-10.17, 12.9-10.18, 12.9-10.19, 12.9-10.21, 12.9-10.25, 12.9-10.26, 12.9-10.27, 12.9-10.28, 12.9-10.29, 12.11.2, 12.11.3, 12.11.5, 12.11.6, 12.11.7, 12.11.8, 12.11.9, 12.11.14, 12.11.15, 12.11.16, 12.11.17, 12.11.18, 12.11.22, 12.11.23, 12.11.24, 12.11.25, 12.11.26, 12.11.27, 12.11.28, 12.12.2, 12.12.3, 12.12.4, 12.12.5, 12.12.6, 12.12.7, 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3.6 Area Management Plan(s)

Nil

3.7 Coastal or non-coastal

For the purposes of the accepted development vegetation clearing codes and State Code 16 of the State Development Assessment Provisions (SDAP), this property is regarded as*

Coastal

*See also Map 4.3

3.8 Agricultural Land Class A or B

The following can be used to identify Agricultural Land Class A or B areas under the "Managing regulated regrowth vegetation" accepted development vegetation clearing code:

Does this lot contain land that is mapped as Agricultural Land Class A or B in the State Planning Interactive Mapping System?

Class A (with urban areas masked as per SPP): 11.16ha

No Class B

Note - This confirms Agricultural Land Classes as per the State Planning Interactive Mapping System only. This response does not include Agricultural Land Classes identified under local government planning schemes. For further information, check the Planning Scheme for your local government area.

See Map 4.4 to identify the location and extent of Class A and/or Class B Agricultural land on Lot: 1 Plan: SP305114.

4. Vegetation management framework maps

Vegetation management maps included in this report may also be requested individually at:

<https://www.resources.qld.gov.au/qld/environment/land/vegetation/vegetation-map-request-form>

Regulated vegetation management map

The regulated vegetation management map shows vegetation categories needed to determine clearing requirements. These maps are updated monthly to show new [property maps of assessable vegetation \(PMAV\)](#).

Vegetation management supporting map

The vegetation management supporting map provides information on regional ecosystems, wetlands, watercourses and essential habitat.

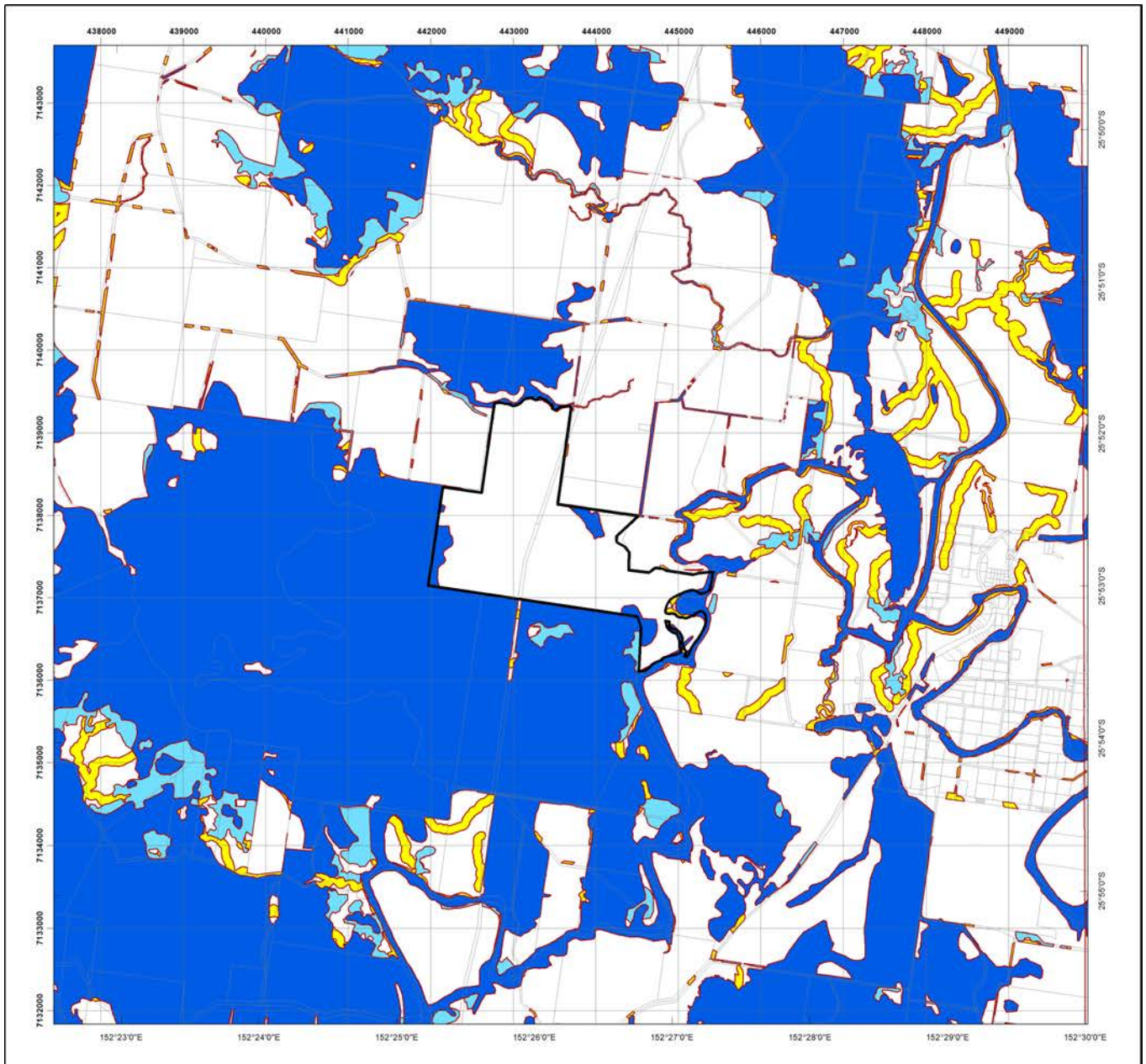
Coastal/non-coastal map

The coastal/non-coastal map confirms whether the lot, or which parts of the lot, are considered coastal or non-coastal for the purposes of the accepted development vegetation clearing codes and State Code 16 of the State Development Assessment Provisions (SDAP).

Agricultural Land Class A or B as per State Planning Policy: State Interest for Agriculture

The Agricultural Land Class map confirms the location and extent of land mapped as Agricultural Land Classes A or B as identified on the State Planning Interactive Mapping System. Please note that this map does not include areas identified as Agricultural Land Class A or B in local government planning schemes. This map can be used to identify Agricultural Land Class A or B areas under the "Managing regulated regrowth vegetation" accepted development vegetation clearing code.

4.1 Regulated vegetation management map



Regulated Vegetation Management Map

Legend

- Selected Lot and Plan
- Category A area (Vegetation offsets/compliance notices/VDecs)
- Category B area (Remnant vegetation)
- Category C area (High-value regrowth vegetation)
- Category R area (Reef regrowth watercourse vegetation)
- Category X area (Exempt clearing work on Freehold, Indigenous and Leasehold land)
- Water
- Other land parcel boundaries



This product is projected into:
GDA 1994 MGA Zone 56

Disclaimer:

While every care is taken to ensure the accuracy of this product, the Department of Resources makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the product being inaccurate or incomplete in any way and for any reason.

Additional information required for the assessment of vegetation values is provided in the accompanying "Vegetation Management Supporting map". For further information go to the web site: www.resources.qld.gov.au or contact the Department of Resources.

Digital data for the regulated vegetation management map is available from the Queensland Spatial Portal at <http://www.information.qld.gov.au/>

Land parcel boundaries are provided as locational aid only.

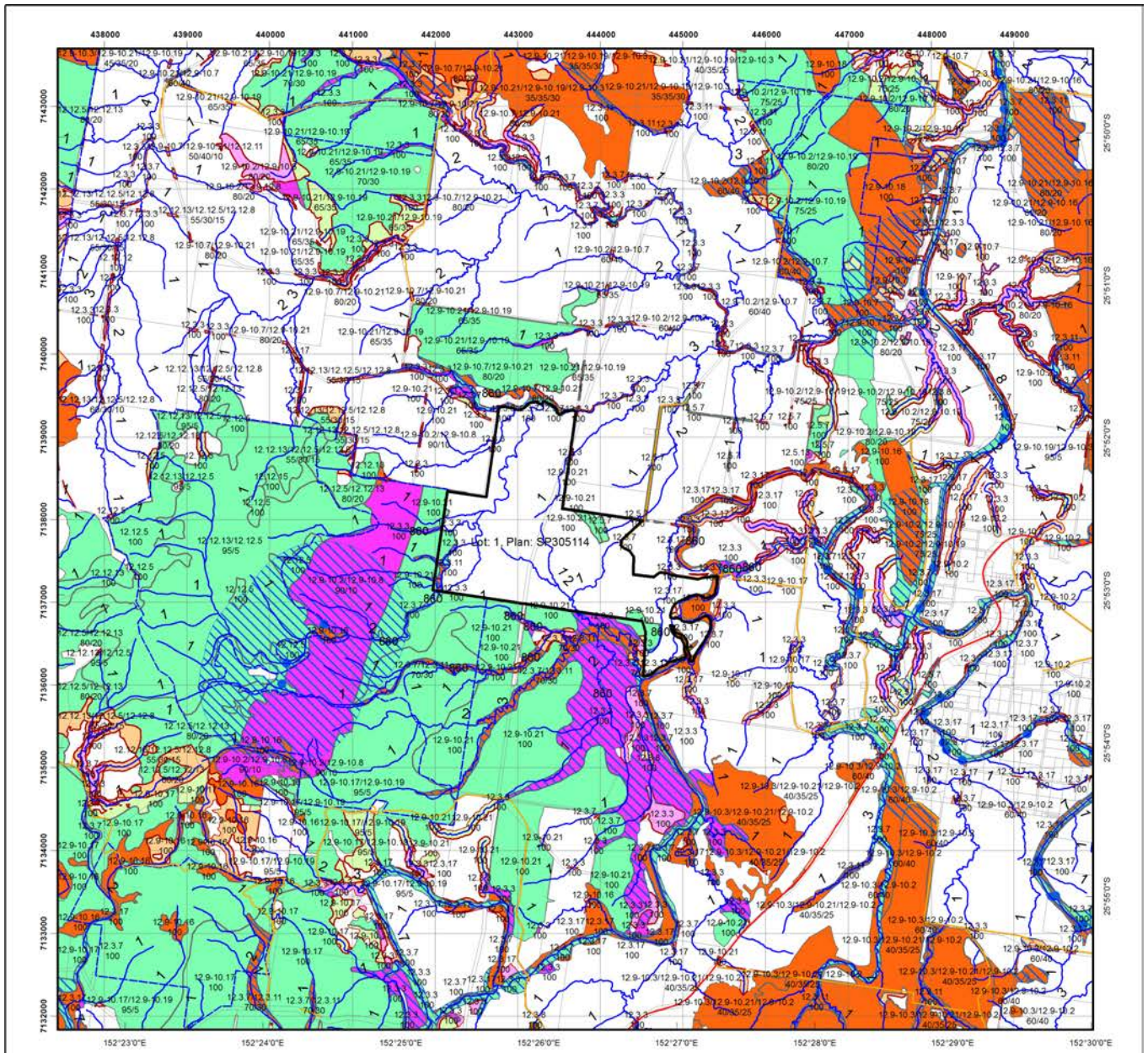
This map is updated on a monthly basis to ensure new PMAVs are included as they are approved.



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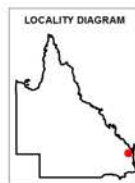
4.2 Vegetation management supporting map



Vegetation Management Supporting Map

Legend

- Selected Lot and Plan
- Category A or B area containing endangered regional ecosystems
- Category A or B area containing of concern regional ecosystems
- Category A or B area that is a least concern regional ecosystem
- Category C or R area containing endangered regional ecosystems
- Category C or R area containing of concern regional ecosystems
- Category C or R area that is a least concern regional ecosystem
- Category X area
- Water
- Wetland on the vegetation management wetlands map
- Essential habitat on the essential habitat map
- Essential habitat species record
- Watercourses and drainage features on the vegetation management watercourse and drainage features map (Stream order shown as black number against stream where available)
- Highway
- Connector
- Street/Local Road
- National Parks, State Forest and other reserves
- Other land parcel boundaries



0 480 960 1,440 1,920 2,400 m

This product is projected into:
GDA 1994 MGA Zone 56

Labels for Essential Habitat are centred on the area of enquiry.

Regional ecosystem linework has been compiled at a scale of 1:100 000, except in designated areas where a compilation scale of 1:50 000 is available. Linework should be used as a guide only. The positional accuracy of RE data mapped at a scale of 1:100 000 is +/- 100 metres.

Disclaimer:

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Additional information may be required for the purposes of land clearing or assessment of a regional ecosystem map or PMAV applications. For further information go to the web site: www.resources.qld.gov.au or contact the Department of Resources.

Digital data for the vegetation management watercourse and drainage feature map, vegetation management wetlands map, essential habitat map and the vegetation management remnant and regional ecosystem map are available from the Queensland Spatial Portal at <http://www.information.qld.gov.au/>





Land parcel boundaries are provided as locational aid only.

4.3 Coastal/non-coastal map



Coastal/Non Coastal Map

Legend

-  Selected Lot and Plan
-  Coastal
-  Non Coastal
-  Other land parcel boundaries



This product is projected into:
GDA 1994 MGA Zone 56

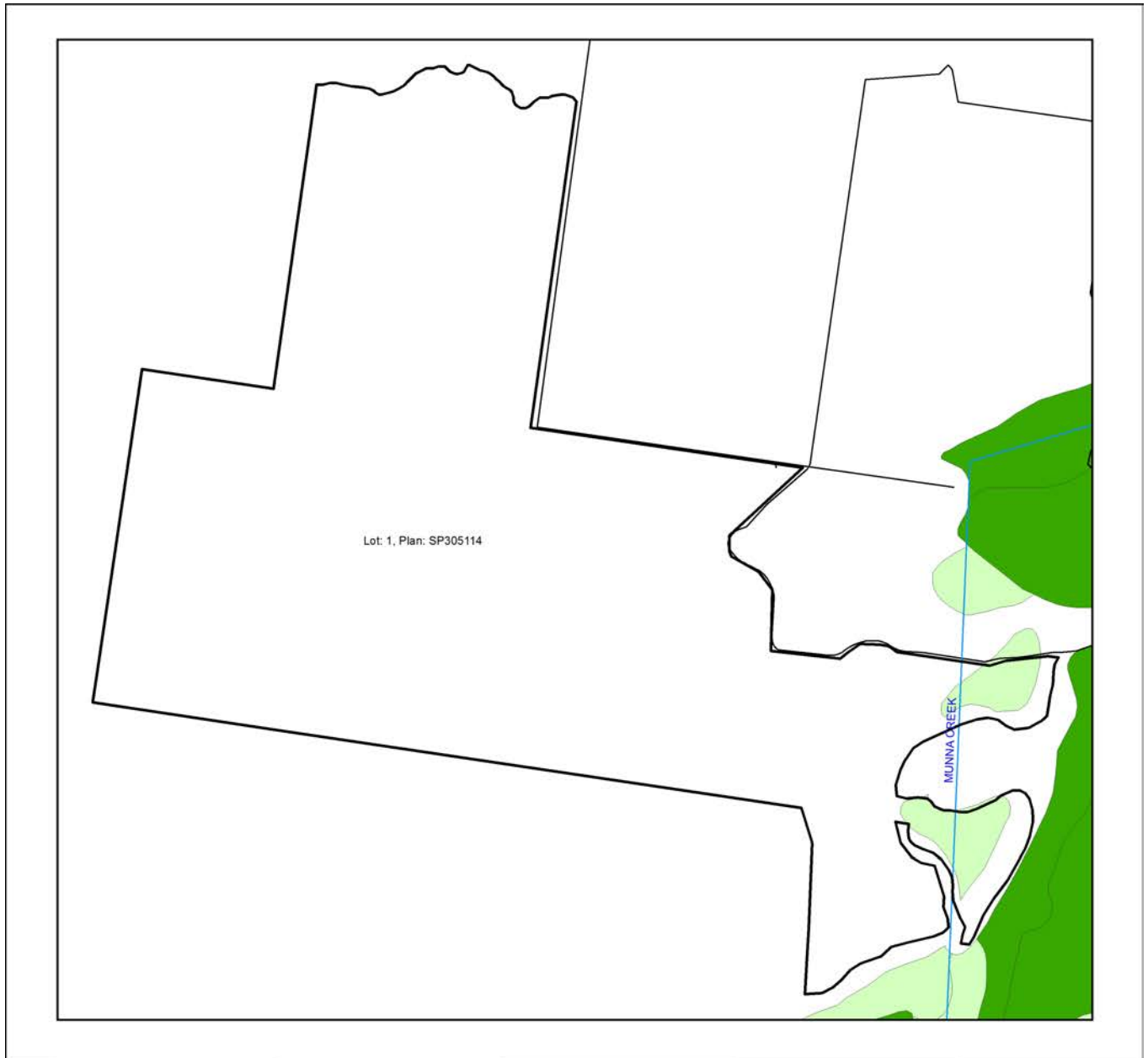
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Land parcel boundaries shown are provided as a locational aid only.











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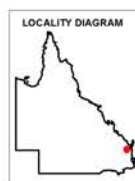
4.4 Agricultural Land Class A or B as per State Planning Policy: State Interest for Agriculture



Agricultural Land Class A or B as per State Planning Policy: State Interest for Agriculture

Legend

-  Selected Lot and Plan
-  Towns
-  Rivers and creeks
-  Freeways / motorways; Highways
-  Secondary roads; Streets
- Agricultural land class A or B
-  A
-  B
-  Not class A or B



This product is projected into GDA 1994 MGA Zone 56

Disclaimer

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5. Protected plants framework (administered by the Department of Environment and Science (DES))

In Queensland, all plants that are native to Australia are protected plants under the [Nature Conservation Act 1992](#) (NCA). The NCA regulates the clearing of protected plants 'in the wild' (see [Operational policy: When a protected plant in Queensland is considered to be 'in the wild'](#)) that are listed as critically endangered, endangered, vulnerable or near threatened under the Act.

Please note that the protected plant clearing framework applies irrespective of the classification of the vegetation under the *Vegetation Management Act 1999* and any approval or exemptions given under another Act, for example, the *Vegetation Management Act 1999* or *Planning Regulation 2017*.

5.1 Clearing in high risk areas on the flora survey trigger map

The flora survey trigger map identifies high-risk areas for threatened and near threatened plants. These are areas where threatened or near threatened plants are known to exist or are likely to exist based on the habitat present. The flora survey trigger map for this property is provided in section 5.5.

If you are proposing to clear an area shown as high risk on the flora survey trigger map, a flora survey of the clearing impact area must be undertaken by a suitably qualified person in accordance with the [Flora survey guidelines](#). The main objective of a flora survey is to locate any threatened or near threatened plants that may be present in the clearing impact area.

If the flora survey identifies that threatened or near threatened plants are not present within the clearing impact area or clearing within 100m of a threatened or near threatened plant can be avoided, the clearing activity is exempt from a permit. An [exempt clearing notification form](#) must be submitted to the Department of Environment and Science, with a copy of the flora survey report, at least one week prior to clearing.

If the flora survey identifies that threatened or near threatened plants are present in, or within 100m of, the area to be cleared, a clearing permit is required before any clearing is undertaken. The flora survey report, as well as an impact management report, must be submitted with the [clearing permit application form](#).

5.2 Clearing outside high risk areas on the flora survey trigger map

In an area other than a high risk area, a clearing permit is only required where a person is, or becomes aware that threatened or near threatened plants are present in, or within 100m of, the area to be cleared. You must keep a copy of the flora survey trigger map for the area subject to clearing for five years from the day the clearing starts. If you do not clear within the 12 month period that the flora survey trigger map was printed, you need to print and check a new flora survey trigger map.

5.3 Exemptions

Many activities are 'exempt' under the protected plant clearing framework, which means that clearing of native plants that are in the wild can be undertaken for these activities with no need for a flora survey or a protected plant clearing permit. The Information sheet - General exemptions for the take of protected plants provides some of these exemptions.

Some exemptions under the NCA are the same as exempt clearing work (formerly known as exemptions) under the *Vegetation Management Act 1999* (i.e. listed in Schedule 21 of the Planning Regulations 2017) while some are different.

5.4 Contact information for DES

For further information on the protected plants framework:

Phone 1300 130 372 (and select option four)

Email palm@des.qld.gov.au

Visit <https://www.qld.gov.au/environment/plants-animals/plants/protected-plants>

5.5 Protected plants flora survey trigger map

This map included may also be requested individually at: <https://apps.des.qld.gov.au/map-request/flora-survey-trigger/>.

Updates to the data informing the flora survey trigger map

The flora survey trigger map will be reviewed, and updated if necessary, at least every 12 months to ensure the map reflects the most up-to-date and accurate data available.






Species information

Please note that flora survey trigger maps do not identify species associated with 'high risk areas'. While some species information may be publicly available, for example via the [Queensland Spatial Catalogue](#), the Department of Environment and Science does not provide species information on request. Regardless of whether species information is available for a particular high risk area, clearing plants in a high risk area may require a flora survey and/or clearing permit. Please see the Department of Environment and Science webpage on the [clearing of protected plants](#) for more information.



Protected Plants Flora Survey Trigger Map

Legend

-  Selected Lot and Plan
-  High risk area
-  Other land parcel boundaries
-  Freeways / motorways / highways
-  Secondary roads / streets



This product is projected into:
GDA 1994 MGA Zone 56

This map shows areas where particular provisions of the Nature Conservation Act 1992 apply to the clearing of protected plants.

Land parcel boundaries are provided as locational aid only.

This map is produced at a scale relevant to the size of the area selected and should be printed as A4 size in portrait orientation.

For further information or assistance with interpretation of this product, please contact the Department of Environment and Science at palm@des.qld.gov.au

Disclaimer:
While every care is taken to ensure the accuracy of the data used to generate this product, the Queensland Government makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaim all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damages) and costs which might be incurred as a consequence of reliance on the data, or as a result of the data being inaccurate or incomplete in any way and for any reason.

6. Koala protection framework (administered by the Department of Environment and Science (DES))

The koala (*Phascolarctos cinereus*) is listed in Queensland as vulnerable by the Queensland Government under *Nature Conservation Act 1992* and by the Australian Government under the *Environment Protection and Biodiversity Conservation Act 1999*.

The Queensland Government's koala protection framework is comprised of the *Nature Conservation Act 1992*, the Nature Conservation (Animals) Regulation 2020, the Nature Conservation (Koala) Conservation Plan 2017, the *Planning Act 2016* and the Planning Regulation 2017.

6.1 Koala mapping

6.1.1 Koala districts

The parts of Queensland where koalas are known to occur has been divided into three koala districts - koala district A, koala district B and koala district C. Each koala district is made up of areas with comparable koala populations (e.g. density, extent and significance of threatening processes affecting the population) which require similar management regimes.

Section 7.1 identifies which koala district your property is located in.

6.1.2 Koala habitat areas

Koala habitat areas are areas of vegetation that have been determined to contain koala habitat that is essential for the conservation of a viable koala population in the wild based on the combination of habitat suitability and biophysical variables with known relationships to koala habitat (e.g. landcover, soil, terrain, climate and ground water). In order to protect this important koala habitat, clearing controls have been introduced into the Planning Regulation 2017 for development in koala habitat areas.

Please note that koala habitat areas only exist in koala district A which is the South East Queensland "Shaping SEQ" Regional Plan area. These areas include the local government areas of Brisbane, Gold Coast, Logan, Lockyer Valley, Ipswich, Moreton Bay, Noosa, Redland, Scenic Rim, Somerset, Sunshine Coast and Toowoomba (urban extent).

There are two different categories of koala habitat area (core koala habitat area and locally refined koala habitat), which have been determined using two different methodologies. These methodologies are described in the document [Spatial modelling in South East Queensland](#).

Section 7.2 shows any koala habitat area that exists on your property.

Under the Nature Conservation (Koala) Conservation Plan 2017, an owner of land (or a person acting on the owner's behalf with written consent) can request to make, amend or revoke a koala habitat area determination if they believe, on reasonable grounds, that the existing determination for all or part of their property is incorrect.

More information on requests to make, amend or revoke a koala habitat area determination can be found in the document [Guideline - Requests to make, amend or revoke a koala habitat area determination](#).

The koala habitat area map will be updated at least annually to include any koala habitat areas that have been made, amended or revoked.

Changes to the koala habitat area map which occur between annual updates because of a request to make, amend or revoke a koala habitat area determination can be viewed on the register of approved requests to make, amend or revoke a koala habitat area available at: <https://environment.des.qld.gov.au/wildlife/animals/living-with/koalas/mapping/koalamaps>. The register includes the lot on plan for the change, the date the decision was made and the map issued to the landholder that shows areas determined to be koala habitat areas.

6.1.3 Koala priority areas

Koala priority areas are large, connected areas that have been determined to have the highest likelihood of achieving conservation outcomes for koalas based on the combination of habitat suitability, biophysical variables with known relationships to koala habitat (e.g. landcover, soil, terrain, climate and ground water) and a koala conservation cost benefit analysis.

Conservation efforts will be prioritised in these areas to ensure the conservation of viable koala populations in the wild including a focus on management (e.g. habitat protection, habitat restoration and threat mitigation) and monitoring. This includes a prohibition on clearing in koala habitat areas that are in koala priority areas under the Planning Regulation 2017 (subject to some exemptions).

Please note that koala priority areas only exist in koala district A which is the South East Queensland "Shaping SEQ" Regional Plan area. These areas include the local government areas of Brisbane, Gold Coast, Logan, Lockyer Valley,

Ipswich, Moreton Bay, Noosa, Redland, Scenic Rim, Somerset, Sunshine Coast and Toowoomba (urban extent).

Section 7.2 identifies if your property is in a koala priority area.

6.1.4 Identified koala broad-hectare areas

There are seven identified koala broad-hectare areas in SEQ. These are areas of koala habitat that are located in areas committed to meet development targets in the SEQ Regional Plan to accommodate SEQ's growing population including bring-forward Greenfield sites under the Queensland Housing Affordability Strategy and declared master planned areas under the repealed *Sustainable Planning Act 2009* and the repealed *Integrated Planning Act 1997*.

Specific assessment benchmarks apply to development applications for development proposed in identified koala broad-hectare areas to ensure koala conservation measures are incorporated into the proposed development.

Section 7.2 identifies if your property is in an identified koala broad-hectare area.

6.2 Koala habitat planning controls

On 7 February 2020, the Queensland Government introduced new planning controls to the Planning Regulation 2017 to strengthen the protection of koala habitat in South East Queensland (i.e. koala district A).

More information on these planning controls can be found here:

<https://environment.des.qld.gov.au/wildlife/animals/living-with/koalas/mapping/legislation-policy>.

As a high-level summary, the koala habitat planning controls make:

- development that involves interfering with koala habitat (defined below) in an area that is both a koala priority area and a koala habitat area, prohibited development (i.e. development for which a development application cannot be made);
- development that involves interfering with koala habitat (defined below) in an area that is a koala habitat area but is not a koala priority area, assessable development (i.e. development for which development approval is required); and
- development that is for extractive industries where the development involves interfering with koala habitat (defined below) in an area that is both a koala habitat area and a key resource area, assessable development (i.e. development for which development approval is required).

Interfering with koala habitat means:

- 1) Removing, cutting down, ringbarking, pushing over, poisoning or destroying in anyway, including by burning, flooding or draining native vegetation in a koala habitat area; but
- 2) Does not include destroying standing vegetation by stock or lopping a tree.

However, these planning controls do not apply if the development is exempted development as defined in Schedule 24 of the [Planning Regulation 2017](#). More information on exempted development can be found here:

<https://environment.des.qld.gov.au/wildlife/animals/living-with/koalas/mapping/legislation-policy>.

There are also assessment benchmarks that apply to development applications for:

- building works, operational works, material change of use or reconfiguration of a lot where:
 - the local government planning scheme makes the development assessable;
 - the premises includes an area that is both a koala priority area and a koala habitat area; and
 - the development does not involve interfering with koala habitat (defined above); and
- development in identified koala broad-hectare areas.

The [Guideline - Assessment Benchmarks in relation to Koala Habitat in South East Queensland assessment benchmarks](#) outlines these assessment benchmarks, the intent of these assessment benchmarks and advice on how proposed development may meet these assessment benchmarks.

6.3 Koala Conservation Plan clearing requirements

Section 10 and 11 of the [Nature Conservation \(Koala\) Conservation Plan 2017](#) prescribes requirements that must be met when clearing koala habitat in koala district A and koala district B.

These clearing requirements are independent to the koala habitat planning controls introduced into the Planning Regulation 2017, which means they must be complied with irrespective of any approvals or exemptions offered under other legislation.

Unlike the clearing controls prescribed in the Planning Regulation 2017 that are to protect koala habitat, the clearing requirements prescribed in the Nature Conservation (Koala) Conservation Plan 2017 are in place to prevent the injury or death of koalas when koala habitat is being cleared.

6.4 Contact information for DES

For further information on the koala protection framework:

Phone 13 QGOV (13 74 68)

Email koala.assessment@des.qld.gov.au

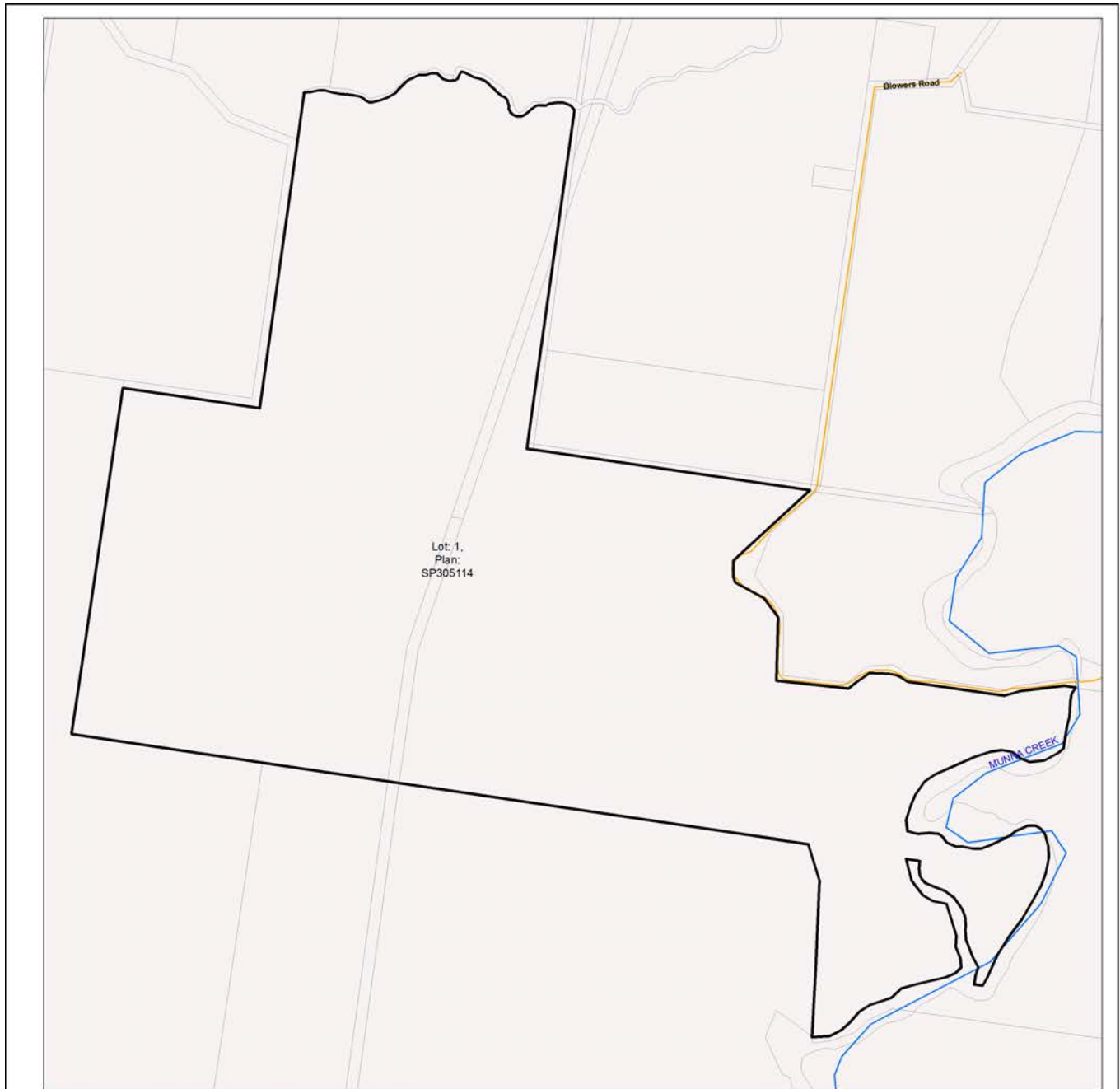
Visit <https://environment.des.qld.gov.au/wildlife/animals/living-with/koalas/mapping>

7. Koala protection framework details for Lot: 1 Plan: SP305114

7.1 Koala districts













Koala District B

7.2 Koala priority area, koala habitat area and identified koala broad-hectare area map

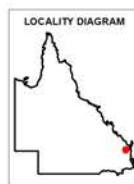


Koala priority area, koala habitat area and identified koala broad-hectare area map

Legend

-  Selected Lot and Plan
-  Koala habitat area (core)
-  Koala habitat area (locally refined)
-  Koala priority area
-  Identified koala broad-hectare area
-  Cadastral Boundaries
-  Towns
-  Highway
-  Connector
-  Street/Local Road
-  Major rivers/creeks
-  Queensland

The koala habitat mapping within South East Queensland uses regional ecosystem linework compiled at a scale varying from 1:25,000 to 1:100,000. Linework should be used as a guide only. The positional accuracy of regional ecosystem data mapped at a scale of 1:100,000 is +/- 100 metres.



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The koala conservation plan maps will be updated at least annually to include any koala habitat areas that have been made, amended or revoked.

In order to ensure that the most recent map for an area of interest can be accessed, prior to the annual update, a register of changes made to koala habitat areas as a result of the map amendment process will be available at:
<https://environment.des.qld.gov.au/wildlife/animals/living-with/koalas/mapping/>.
 The register will include lot on plan for the change, the date the decision was made and the map issued to the landholder which shows areas determined to be koala habitat areas.

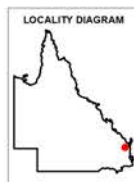
7.3 Koala habitat regional ecosystems for core koala habitat areas



Koala habitat regional ecosystems for core koala habitat areas

Legend

-  Selected Lot and Plan
-  Koala habitat area (core)
-  Towns
-  Highway
-  Connector
-  Street/Local Road
-  Major rivers/creeks
-  Queensland



The koala habitat mapping within South East Queensland uses regional ecosystem linework compiled at a scale varying from 1:25,000 to 1:100,000. Linework should be used as a guide only. The positional accuracy of regional ecosystem data mapped at a scale of 1:100,000 is +/- 100 metres.

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This product is projected into GDA 1994 MGA Zone 56

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8. Other relevant legislation contacts list

Activity	Legislation	Agency	Contact details
<ul style="list-style-type: none"> • Interference with overland flow • Earthworks, significant disturbance 	<i>Water Act 2000</i> <i>Soil Conservation Act 1986</i>	Department of Regional Development, Manufacturing and Water (Queensland Government) Department of Resources (Queensland Government)	Ph: 13 QGOV (13 74 68) www.rdmw.qld.gov.au www.resources.qld.gov.au
<ul style="list-style-type: none"> • Indigenous Cultural Heritage 	<i>Aboriginal Cultural Heritage Act 2003</i> <i>Torres Strait Islander Cultural Heritage Act 2003</i>	Department of Seniors, Disability Services and Aboriginal and Torres Strait Islander Partnerships	Ph: 13 QGOV (13 74 68) www.datsip.qld.gov.au
<ul style="list-style-type: none"> • Mining and environmentally relevant activities • Infrastructure development (coastal) • Heritage issues 	<i>Environmental Protection Act 1994</i> <i>Coastal Protection and Management Act 1995</i> <i>Queensland Heritage Act 1992</i>	Department of Environment and Science (Queensland Government)	Ph: 13 QGOV (13 74 68) www.des.qld.gov.au
<ul style="list-style-type: none"> • Protected plants and protected areas 	<i>Nature Conservation Act 1992</i>	Department of Environment and Science (Queensland Government)	Ph: 1300 130 372 (option 4) palm@des.qld.gov.au www.des.qld.gov.au
<ul style="list-style-type: none"> • Koala mapping and regulations 	<i>Nature Conservation Act 1992</i>	Department of Environment and Science (Queensland Government)	Ph: 13 QGOV (13 74 68) Koala.assessment@des.qld.gov.au
<ul style="list-style-type: none"> • Interference with fish passage in a watercourse, mangroves • Forestry activities on State land tenures 	<i>Fisheries Act 1994</i> <i>Forestry Act 1959</i>	Department of Agriculture and Fisheries (Queensland Government)	Ph: 13 QGOV (13 74 68) www.daf.qld.gov.au
<ul style="list-style-type: none"> • Matters of National Environmental Significance including listed threatened species and ecological communities 	<i>Environment Protection and Biodiversity Conservation Act 1999</i>	Department of Agriculture, Water and the Environment (Australian Government)	Ph: 1800 803 772 www.environment.gov.au
<ul style="list-style-type: none"> • Development and planning processes 	<i>Planning Act 2016</i> <i>State Development and Public Works Organisation Act 1971</i>	Department of State Development, Infrastructure, Local Government and Planning (Queensland Government)	Ph: 13 QGOV (13 74 68) www.dsdmip.qld.gov.au
<ul style="list-style-type: none"> • Local government requirements 	<i>Local Government Act 2009</i> <i>Planning Act 2016</i>	Department of State Development, Infrastructure, Local Government and Planning (Queensland Government)	Ph: 13 QGOV (13 74 68) Your relevant local government office
<ul style="list-style-type: none"> • Harvesting timber in the Wet Tropics of Qld World Heritage area 	<i>Wet Tropics World Heritage Protection and Management Act 1993</i>	Wet Tropics Management Authority	Ph: (07) 4241 0500 www.wettropics.gov.au



Queensland Government

Department of Environment and Science

Environmental Reports

Matters of State Environmental Significance

For the selected area of interest
Lot: 1 Plan: SP305114

Environmental Reports - General Information

The Environmental Reports portal provides for the assessment of selected matters of interest relevant to a user specified location, or area of interest (AOI). All area and derivative figures are relevant to the extent of matters of interest contained within the AOI unless otherwise stated. Please note, if a user selects an AOI via the "central coordinates" option, the resulting assessment area encompasses an area extending for a 2km radius from the point of interest.

All area and area derived figures included in this report have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 1994). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.

Figures in tables may be affected by rounding.

The matters of interest reported on in this document are based upon available state mapped datasets. Where the report indicates that a matter of interest is not present within the AOI (e.g. where area related calculations are equal to zero, or no values are listed), this may be due either to the fact that state mapping has not been undertaken for the AOI, that state mapping is incomplete for the AOI, or that no values have been identified within the site.

The information presented in this report should be considered as a guide only and field survey may be required to validate values on the ground.

Please direct queries about these reports to: Planning.Support@des.qld.gov.au

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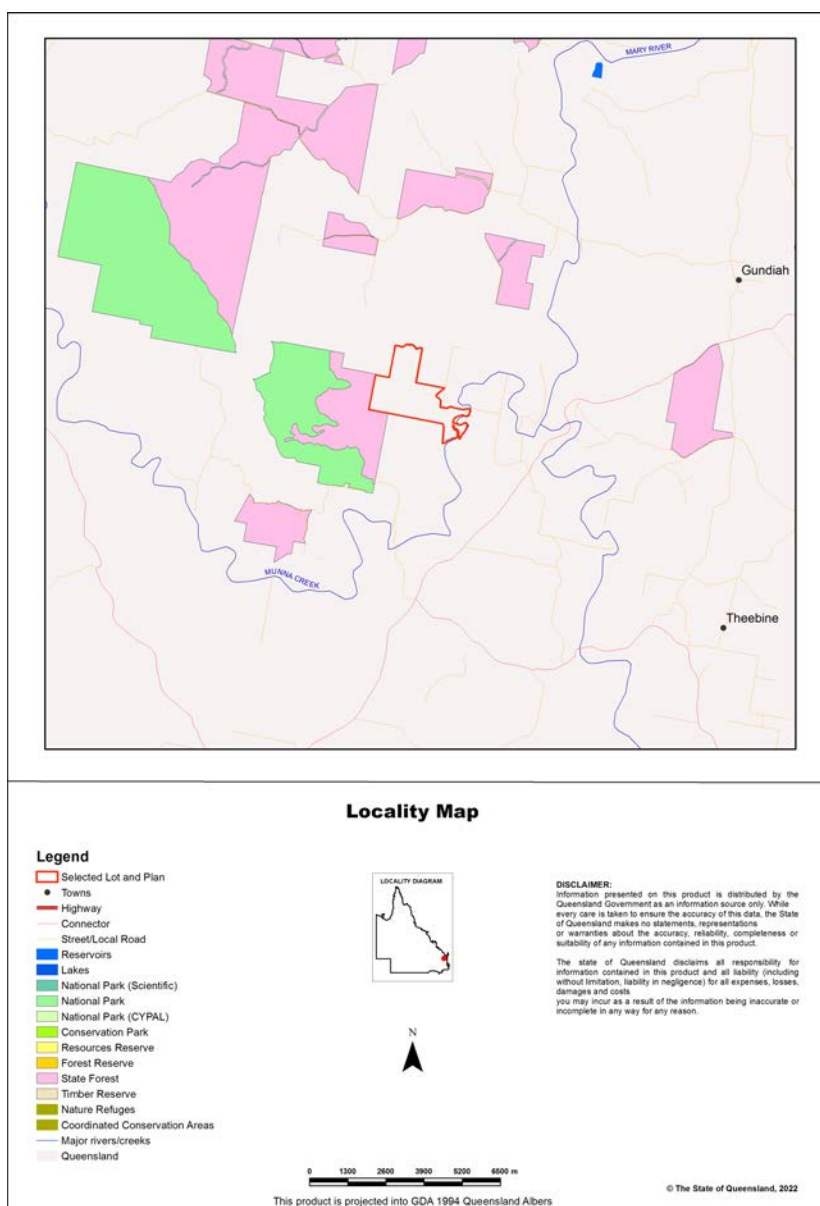
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Assessment Area Details

The following table provides an overview of the area of interest (AOI) with respect to selected topographic and environmental values.

Table 1: Summary table, details for AOI Lot: 1 Plan: SP305114

Size (ha)	467.86
Local Government(s)	Fraser Coast Regional
Bioregion(s)	Southeast Queensland
Subregion(s)	Burnett - Curtis Coastal Lowlands
Catchment(s)	Mary



Matters of State Environmental Significance (MSES)

MSES Categories

Queensland's State Planning Policy (SPP) includes a biodiversity State interest that states:

'The sustainable, long-term conservation of biodiversity is supported. Significant impacts on matters of national or state environmental significance are avoided, or where this cannot be reasonably achieved; impacts are minimised and residual impacts offset.'

The MSES mapping product is a guide to assist planning and development assessment decision-making. Its primary purpose is to support implementation of the SPP biodiversity policy. While it supports the SPP, the mapping does not replace the regulatory mapping or environmental values specifically called up under other laws or regulations. Similarly, the SPP biodiversity policy does not override or replace specific requirements of other Acts or regulations.

The SPP defines matters of state environmental significance as:

- Protected areas (including all classes of protected area except coordinated conservation areas) under the *Nature Conservation Act 1992* ;
- Marine parks and land within a 'marine national park', 'conservation park', 'scientific research', 'preservation' or 'buffer' zone under the *Marine Parks Act 2004* ;
- Areas within declared fish habitat areas that are management A areas or management B areas under the Fisheries Regulation 2008;
- Threatened wildlife under the *Nature Conservation Act 1992* and special least concern animals under the Nature Conservation (Wildlife) Regulation 2006;
- Regulated vegetation under the *Vegetation Management Act 1999* that is:
 - Category B areas on the regulated vegetation management map, that are 'endangered' or 'of concern' regional ecosystems;
 - Category C areas on the regulated vegetation management map that are 'endangered' or 'of concern' regional ecosystems;
 - Category R areas on the regulated vegetation management map;
 - Regional ecosystems that intersect with watercourses identified on the vegetation management watercourse and drainage feature map;
 - Regional ecosystems that intersect with wetlands identified on the vegetation management wetlands map;
- Strategic Environmental Areas under the *Regional Planning Interests Act 2014* ;
- Wetlands in a wetland protection area of wetlands of high ecological significance shown on the Map of Queensland Wetland Environmental Values under the Environment Protection Regulation 2019;
- Wetlands and watercourses in high ecological value waters defined in the Environmental Protection (Water) Policy 2009, schedule 2;
- Legally secured offset areas.

MSES Values Present

The MSES values that are present in the area of interest are summarised in the table below:

Table 2: Summary of MSES present within the AOI

1a Protected Areas- estates	0.0 ha	0.0 %
1b Protected Areas- nature refuges	0.0 ha	0.0 %
1c Protected Areas- special wildlife reserves	0.0 ha	0.0 %
2 State Marine Parks- highly protected zones	0.0 ha	0.0 %
3 Fish habitat areas (A and B areas)	0.0 ha	0.0 %
4 Strategic Environmental Areas (SEA)	0.0 ha	0.0 %
5 High Ecological Significance wetlands on the map of Referable Wetlands	5.06 ha	1.1%
6a High Ecological Value (HEV) wetlands	0.0 ha	0.0 %
6b High Ecological Value (HEV) waterways	0.0 km	Not applicable
7a Threatened (endangered or vulnerable) wildlife	6.28 ha	1.3%
7b Special least concern animals	0.0 ha	0.0 %
7c i Koala habitat area - core (SEQ)	0.0 ha	0.0 %
7c ii Koala habitat area - locally refined (SEQ)	0.0 ha	0.0 %
7d Sea turtle nesting areas	0.0 km	Not applicable
8a Regulated Vegetation - Endangered/Of concern in Category B (remnant)	8.71 ha	1.9%
8b Regulated Vegetation - Endangered/Of concern in Category C (regrowth)	0.0 ha	0.0 %
8c Regulated Vegetation - Category R (GBR riverine regrowth)	0.24 ha	0.1%
8d Regulated Vegetation - Essential habitat	6.28 ha	1.3%
8e Regulated Vegetation - intersecting a watercourse	13.9 km	Not applicable
8f Regulated Vegetation - within 100m of a Vegetation Management Wetland	0.0 ha	0.0 %
9a Legally secured offset areas- offset register areas	0.0 ha	0.0 %
9b Legally secured offset areas- vegetation offsets through a Property Map of Assessable Vegetation	0.0 ha	0.0 %

Additional Information with Respect to MSES Values Present

MSES - State Conservation Areas

1a. Protected Areas - estates

(no results)

1b. Protected Areas - nature refuges

(no results)

1c. Protected Areas - special wildlife reserves

(no results)

2. State Marine Parks - highly protected zones

(no results)

3. Fish habitat areas (A and B areas)

(no results)

Refer to **Map 1 - MSES - State Conservation Areas** for an overview of the relevant MSES.

MSES - Wetlands and Waterways

4. Strategic Environmental Areas (SEA)

(no results)

5. High Ecological Significance wetlands on the Map of Queensland Wetland Environmental Values

Natural wetlands that are 'High Ecological Significance' (HES) on the Map of Queensland Wetland Environmental Values are present.

6a. Wetlands in High Ecological Value (HEV) waters

(no results)

6b. Waterways in High Ecological Value (HEV) waters

(no results)

Refer to **Map 2 - MSES - Wetlands and Waterways** for an overview of the relevant MSES.

MSES - Species

7a. Threatened (endangered or vulnerable) wildlife

Values are present

7b. Special least concern animals

Not applicable

7c i. Koala habitat area - core (SEQ)

Not applicable

7c ii. Koala habitat area - locally refined (SEQ)

Not applicable

7d. Wildlife habitat (sea turtle nesting areas)

Not applicable

Threatened (endangered or vulnerable) wildlife habitat suitability models

Species	Common name	NCA status	Presence
<i>Boronia keysii</i>		V	None
<i>Calyptorhynchus lathami</i>	Glossy black cockatoo	V	None
<i>Casuarium casuarium johnsonii</i>	Sthn population cassowary	E	None
<i>Crinia tinnula</i>	Wallum froglet	V	None
<i>Denisonia maculata</i>	Ornamental snake	V	None
<i>Litoria freycineti</i>	Wallum rocketfrog	V	None
<i>Litoria olongburensis</i>	Wallum sedgefrog	V	None
<i>Macadamia integrifolia</i>		V	None
<i>Macadamia ternifolia</i>		V	None
<i>Macadamia tetraphylla</i>		V	None
<i>Melaleuca irbyana</i>		E	None
<i>Petaurus gracilis</i>	Mahogany Glider	E	None
<i>Petrogale persephone</i>	Proserpine rock-wallaby	E	None
<i>Pezoporus wallicus wallicus</i>	Eastern ground parrot	V	None
<i>Phascolarctos cinereus</i>	Koala - outside SEQ*	V	Core
<i>Taudactylus pleione</i>	Kroombit tinkerfrog	E	None
<i>Xeromys myoides</i>	Water Mouse	V	None

*For koala model, this includes areas outside SEQ. Check 7c SEQ koala habitat for presence/absence.

Threatened (endangered or vulnerable) wildlife species records

(no results)

Special least concern animal species records

(no results)

Shorebird habitat (critically endangered/endangered/vulnerable)

Not applicable

Shorebird habitat (special least concern)

Not applicable

**Nature Conservation Act 1992 (NCA) Status- Endangered (E), Vulnerable (V) or Special Least Concern Animal (SL). Environment Protection and Biodiversity Conservation Act 1999 (EPBC) status: Critically Endangered (CE) Endangered (E), Vulnerable (V)*

Migratory status (M) - China and Australia Migratory Bird Agreement (C), Japan and Australia Migratory Bird Agreement (J), Republic of Korea and Australia Migratory Bird Agreement (R), Bonn Migratory Convention (B), Eastern Flyway (E)

To request a species list for an area, or search for a species profile, access Wildlife Online at:

<https://www.qld.gov.au/environment/plants-animals/species-list/>

Refer to **Map 3a - MSES - Species - Threatened (endangered or vulnerable) wildlife and special least concern animals**, **Map 3b - MSES - Species - Koala habitat area (SEQ)** and **Map 3c - MSES - Wildlife habitat (sea turtle nesting areas)** for an overview of the relevant MSES.

MSES - Regulated Vegetation

For further information relating to regional ecosystems in general, go to:

<https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/>

For a more detailed description of a particular regional ecosystem, access the regional ecosystem search page at:

<https://environment.ehp.qld.gov.au/regional-ecosystems/>

8a. Regulated Vegetation - Endangered/Of concern in Category B (remnant)

Regional ecosystem	Vegetation management polygon	Vegetation management status
12.3.3	E-dom	rem_end
12.3.11	O-dom	rem_oc
12.3.17	O-dom	rem_oc

8b. Regulated Vegetation - Endangered/Of concern in Category C (regrowth)

Not applicable

8c. Regulated Vegetation - Category R (GBR riverine regrowth)

Regulated vegetation map category	Map number
R	9346

8d. Regulated Vegetation - Essential habitat

Values are present

8e. Regulated Vegetation - intersecting a watercourse**

A vegetation management watercourse is mapped as present

8f. Regulated Vegetation - within 100m of a Vegetation Management wetland

Not applicable

Refer to **Map 4 - MSES - Regulated Vegetation** for an overview of the relevant MSES.

MSES - Offsets**9a. Legally secured offset areas - offset register areas**

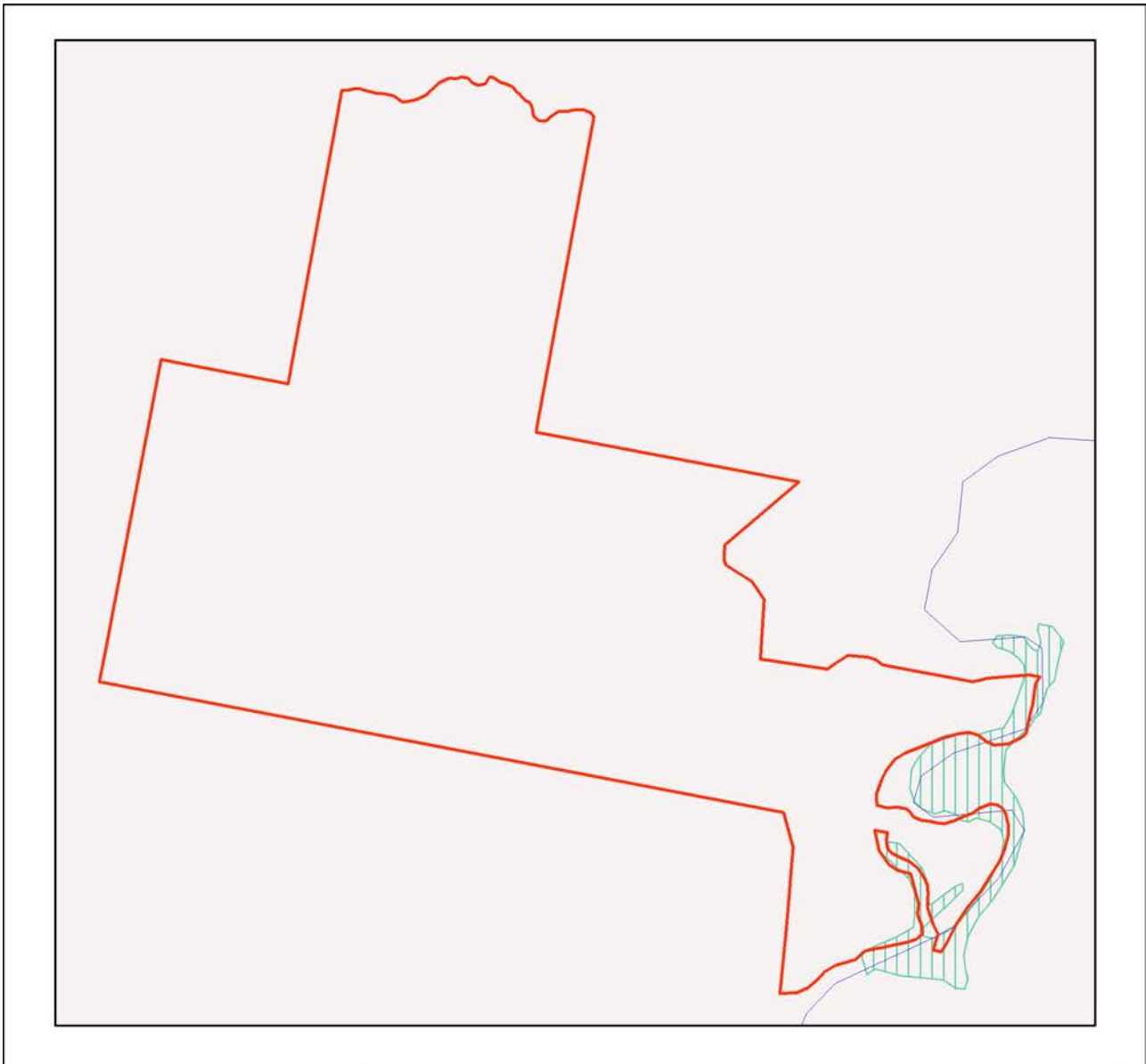
(no results)

9b. Legally secured offset areas - vegetation offsets through a Property Map of Assessable Vegetation

(no results)

Refer to **Map 5 - MSES - Offset Areas** for an overview of the relevant MSES.

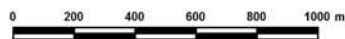
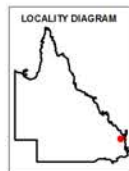
Map 2 - MSES - Wetlands and Waterways



MSES - Wetlands and Waterways

Area of Interest

- Selected Lot and Plan
- Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Declared high ecological value waters (watercourse)
- Strategic environmental area (designated precinct)
- Declared high ecological value waters (wetland)
- High ecological significance wetlands



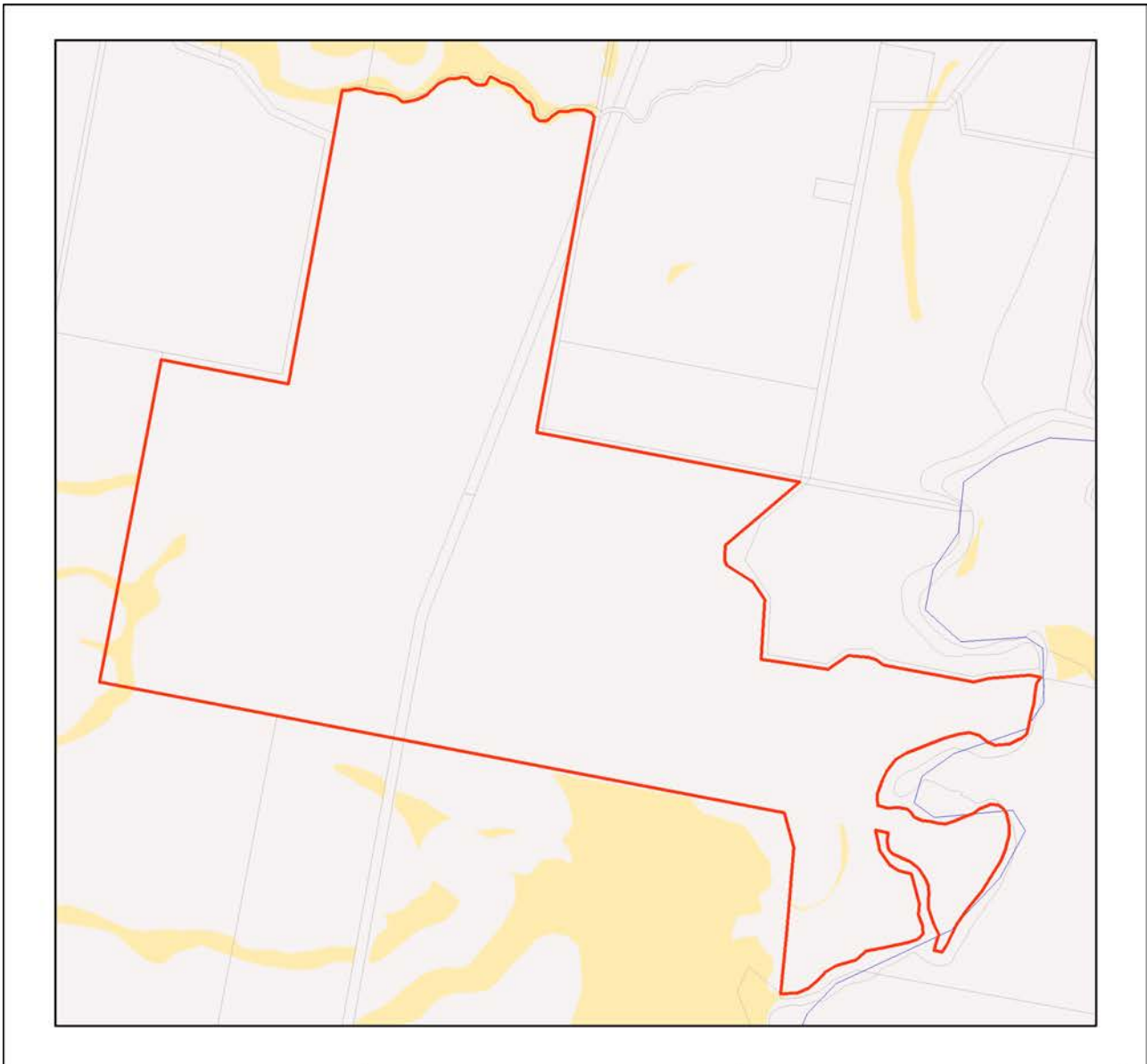
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Map 3a - MSES - Species - Threatened (endangered or vulnerable) wildlife and special least concern animals



MSES - Species Threatened (endangered or vulnerable) wildlife and special least concern animals

Area of Interest

- Selected Lot and Plan
- Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Wildlife habitat (special least concern)
- Wildlife habitat (endangered or vulnerable)



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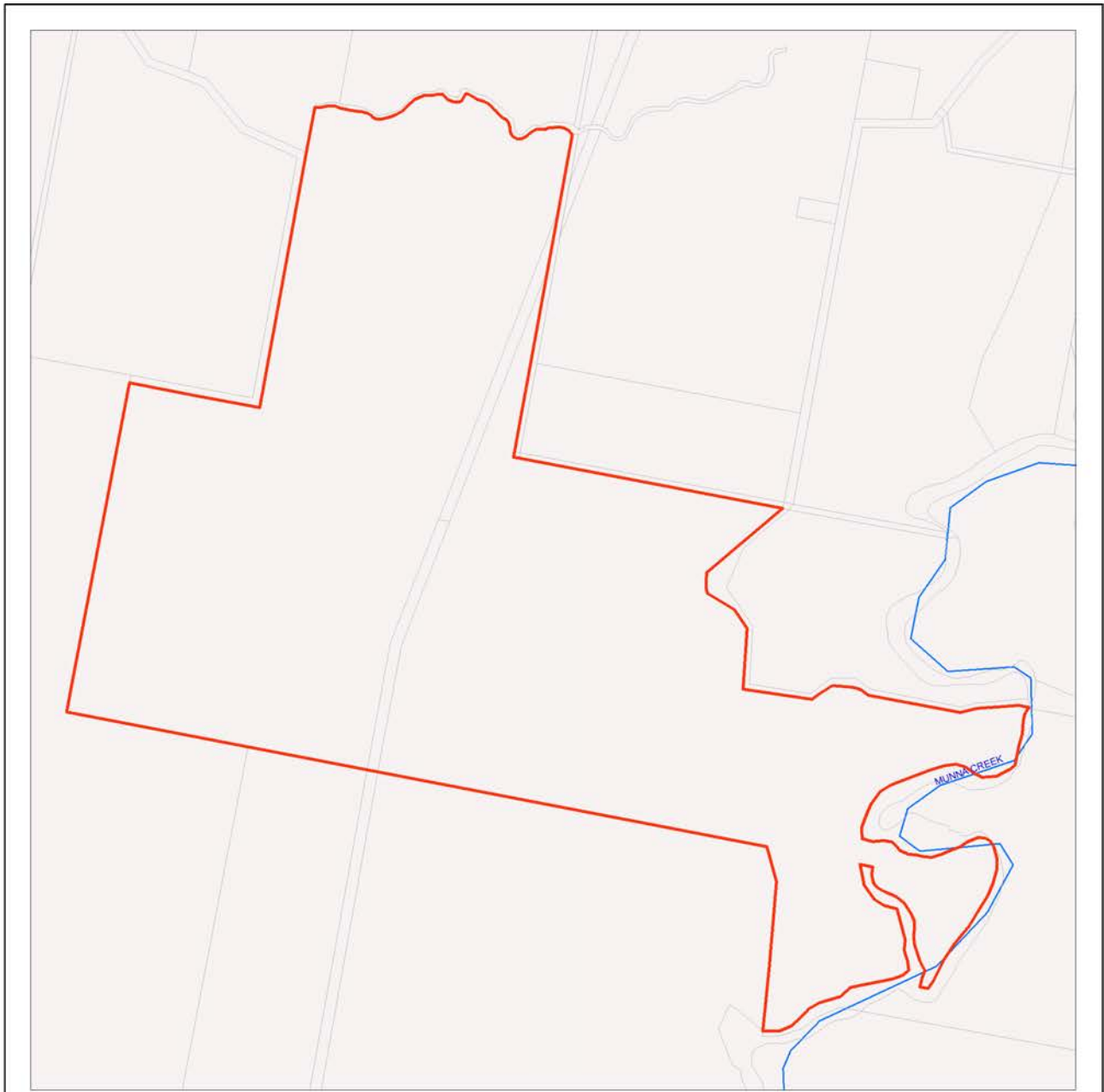
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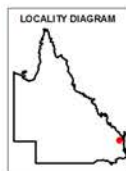
Map 3b - MSES - Species - Koala habitat area (SEQ)



MSES - Species Koala habitat area (SEQ)

Area of Interest

- Selected Lot and Plan
- Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Koala habitat area (core)
- Koala habitat area (locally refined)



The koala habitat mapping within South East Queensland uses regional ecosystem linework compiled at a scale varying from 1:25,000 to 1:100,000. Linework should be used as a guide only. The positional accuracy of regional ecosystem data mapped at a scale of 1:100,000 is +/- 100 metres.

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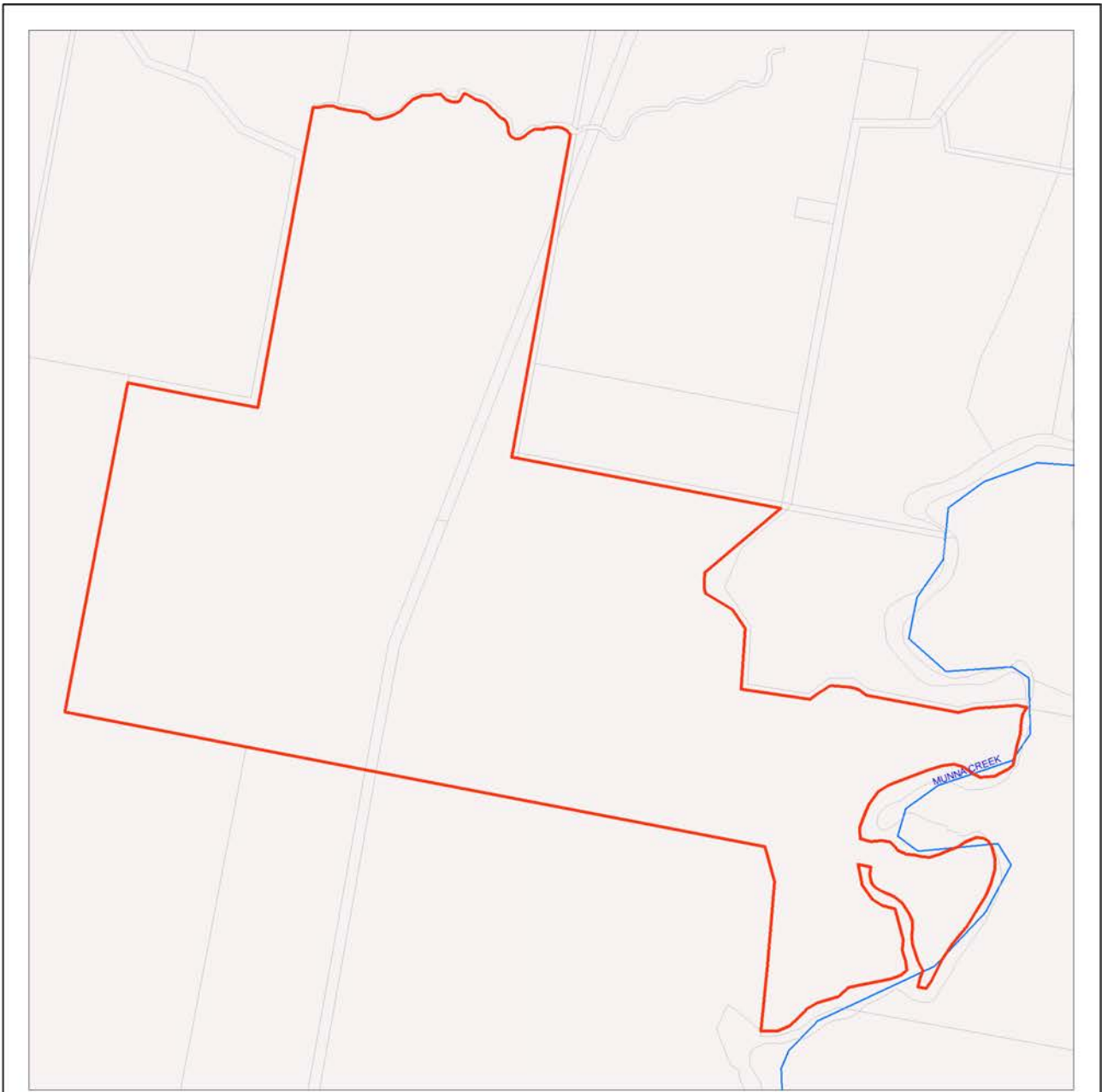


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The represented layers for SEQ 'koala habitat area-core' and 'koala habitat area- locally refined' in MSES are sourced directly from the regulatory mapping under the Nature Conservation (Koala) Conservation Plan 2017. Whilst every effort is made to ensure the information remains current, there may be delays between updating versions. Please refer to the original mapping for the most recent version. See <https://environment.des.qld.gov.au/wildlife/animals/living-with/koalas/mapping>

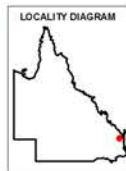
Map 3c - MSES - Wildlife habitat (sea turtle nesting areas)



MSES - Wildlife habitat (sea turtle nesting areas)

Area of Interest

- Selected Lot and Plan
- Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Wildlife habitat (sea turtle nesting areas)

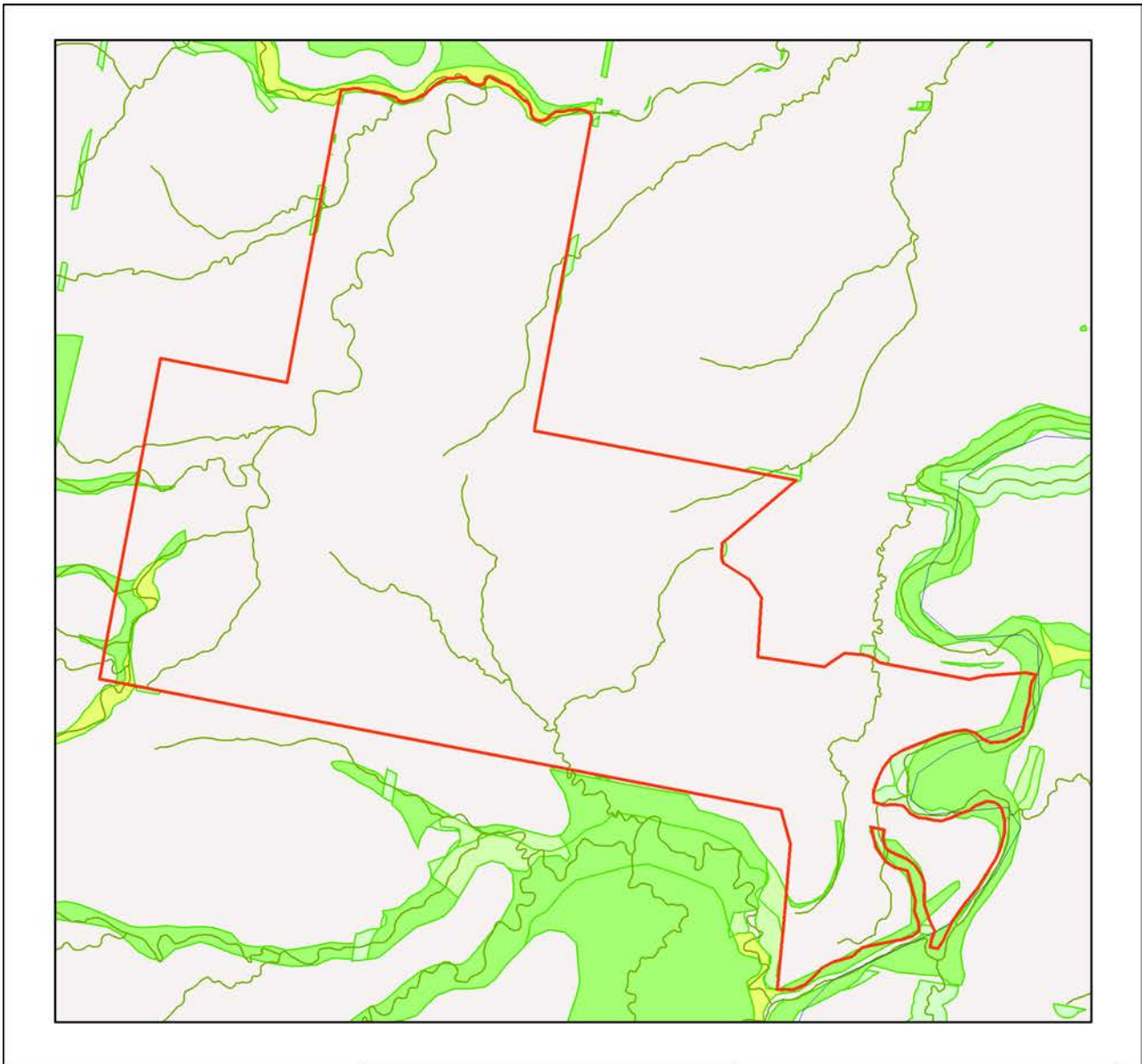


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MSES mapping of sea turtle nesting areas identifies beaches where the recorded number of turtle nests are over 1% of the turtle species or genetic stock. The linework is also deliberately extended along nearby rocky coastlines and headlands to recognise that significant numbers of nesting adults and hatchlings can become disoriented by light pollution from development on rocky coastlines and headlands while navigating offshore from nesting beaches.



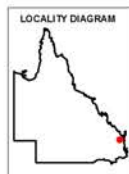
Map 4 - MSES - Regulated Vegetation



MSES - Regulated Vegetation

Area of Interest

- Selected Lot and Plan
- Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Regulated vegetation (intersecting a watercourse)
- Regulated vegetation (100m from wetland)
- Regulated vegetation (category B - endangered or of concern)
- Regulated vegetation (category C - endangered or of concern)
- Regulated vegetation (category R - GBR riverine)
- Regulated vegetation (essential habitat)



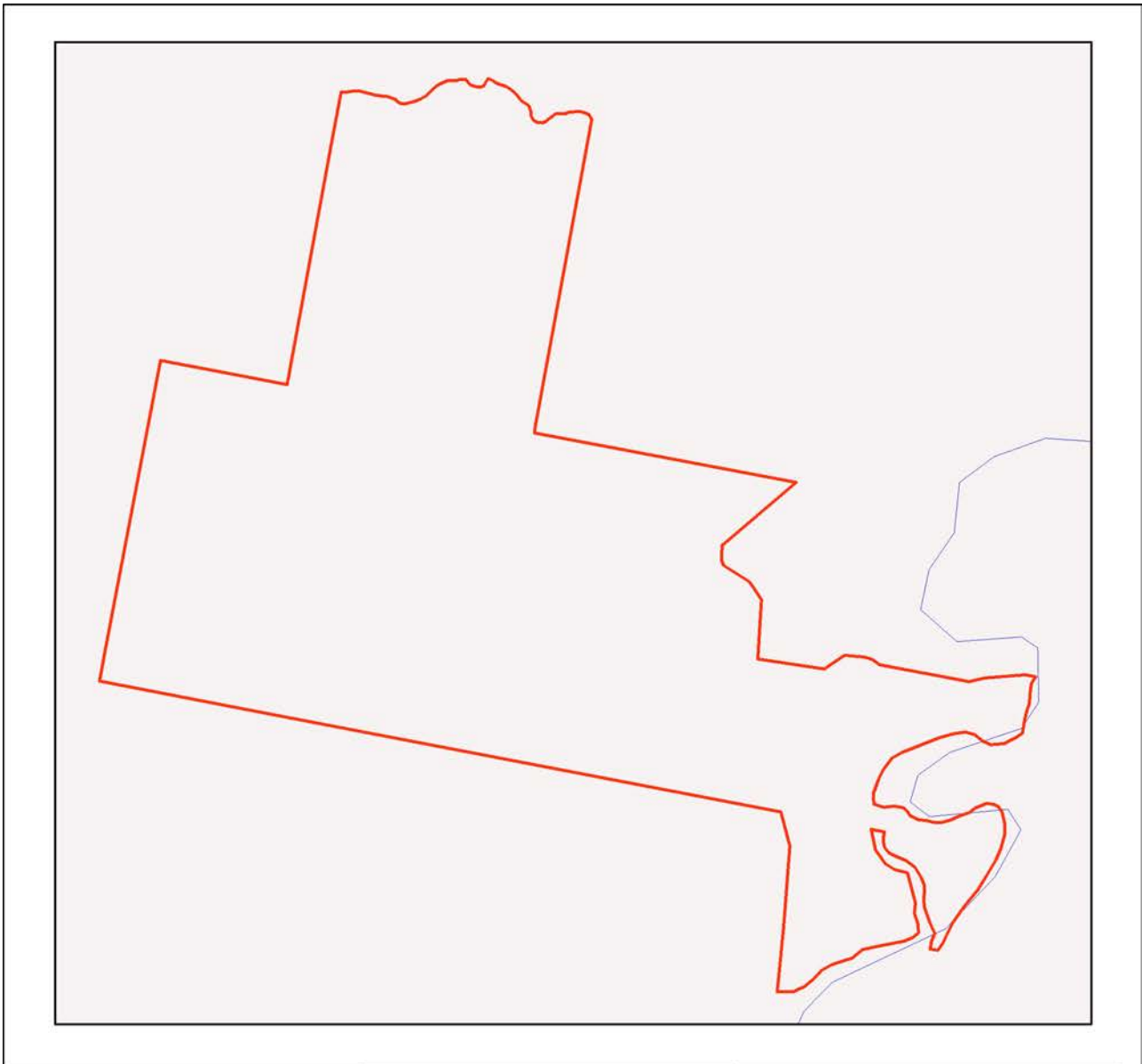
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Map 5 - MSES - Offset Areas



MSES - Offsets

Area of Interest

-  Selected Lot and Plan
-  Towns
-  Freeways/Highways
-  Secondary roads
-  Major rivers/creeks
-  Legally secured offset area (offset register)
-  Legally secured offset area (vegetation offsets)



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Appendices

Appendix 1 - Matters of State Environmental Significance (MSES) methodology

MSES mapping is a regional-scale representation of the definition for MSES under the State Planning Policy (SPP). The compiled MSES mapping product is a guide to assist planning and development assessment decision-making. Its primary purpose is to support implementation of the SPP biodiversity policy. While it supports the SPP, the mapping does not replace the regulatory mapping or environmental values specifically called up under other laws or regulations. Similarly, the SPP biodiversity policy does not override or replace specific requirements of other Acts or regulations.

The Queensland Government's "Method for mapping - matters of state environmental significance for use in land use planning and development assessment" can be downloaded from:

<http://www.ehp.qld.gov.au/land/natural-resource/method-mapping-mses.html> .

Appendix 2 - Source Data

The datasets listed below are available on request from:

<http://qldspatial.information.qld.gov.au/catalogue/custom/index.page>

- Matters of State environmental significance

Note: MSES mapping is not based on new or unique data. The primary mapping product draws data from a number of underlying environment databases and geo-referenced information sources. MSES mapping is a versioned product that is updated generally on a twice-yearly basis to incorporate the changes to underlying data sources. Several components of MSES mapping made for the current version may differ from the current underlying data sources. To ensure accuracy, or proper representation of MSES values, it is strongly recommended that users refer to the underlying data sources and review the current definition of MSES in the State Planning Policy, before applying the MSES mapping.

Individual MSES layers can be attributed to the following source data available at QSpatial:

MSES layers	current QSpatial data (http://qspatial.information.qld.gov.au)
Protected Areas-Estates, Nature Refuges, Special Wildlife Reserves	- Protected areas of Queensland - Nature Refuges - Queensland - Special Wildlife Reserves- Queensland
Marine Park-Highly Protected Zones	Moreton Bay marine park zoning 2008
Fish Habitat Areas	Queensland fish habitat areas
Strategic Environmental Areas-designated	Regional Planning Interests Act - Strategic Environmental Areas
HES wetlands	Map of Queensland Wetland Environmental Values
Wetlands in HEV waters	HEV waters: - EPP Water intent for waters Source Wetlands: - Queensland Wetland Mapping (Current version 5) Source Watercourses: - Vegetation management watercourse and drainage feature map (1:100000 and 1:250000)
Wildlife habitat (threatened and special least concern)	- WildNet database species records - habitat suitability models (various) - SEQ koala habitat areas under the Koala Conservation Plan 2019 - Sea Turtle Nesting Areas records
VMA regulated regional ecosystems	Vegetation management regional ecosystem and remnant map
VMA Essential Habitat	Vegetation management - essential habitat map
VMA Wetlands	Vegetation management wetlands map
Legally secured offsets	Vegetation Management Act property maps of assessable vegetation. For offset register data-contact DES
Regulated Vegetation Map	Vegetation management - regulated vegetation management map

Appendix 3 - Acronyms and Abbreviations

AOI	- Area of Interest
DES	- Department of Environment and Science
EP Act	- <i>Environmental Protection Act 1994</i>
EPP	- Environmental Protection Policy
GDA94	- Geocentric Datum of Australia 1994
GEM	- General Environmental Matters
GIS	- Geographic Information System
MSES	- Matters of State Environmental Significance
NCA	- <i>Nature Conservation Act 1992</i>
RE	- Regional Ecosystem
SPP	- State Planning Policy
VMA	- <i>Vegetation Management Act 1999</i>



Queensland Government

WildNet species list

Search Criteria: Species List for a Specified Point
Species: All
Type: Native
Queensland status: Rare and threatened species
Records: All
Date: All
Latitude: -25.8762
Longitude: 152.4327
Distance: 10
Email: harrison.rosnell@ghd.com
Date submitted: Thursday 06 Oct 2022 08:29:56
Date extracted: Thursday 06 Oct 2022 08:30:03

The number of records retrieved = 9

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Information about your Species lists request is logged for quality assurance, user support and product enhancement purposes only.

The information provided should be appropriately acknowledged as being derived from WildNet database when it is used. As the WildNet Program is still in a process of collating and vetting data, it is possible the information given is not complete. Go to the WildNet database webpage (<https://www.qld.gov.au/environment/plants-animals/species-information/wildnet>) to find out more about WildNet and where to access other WildNet information products approved for publication. Feedback about WildNet species lists should be emailed to wildlife.online@des.qld.gov.au.

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Apodidae	<i>Hirundapus caudacutus</i>	white-throated needletail		V	V	2
animals	mammals	Dasyuridae	<i>Dasyurus maculatus maculatus</i>	spotted-tailed quoll (southern subspecies)		E	E	2/1
animals	mammals	Petauridae	<i>Petaurus australis australis</i>	yellow-bellied glider (southern subspecies)		V	V	3
animals	reptiles	Chelidae	<i>Elseya albagula</i>	southern snapping turtle		CR	CE	8
animals	reptiles	Chelidae	<i>Elusor macrurus</i>	Mary River turtle		E	E	22/1
plants	land plants	Hernandiaceae	<i>Hernandia bivalvis</i>	cudgerie		NT		4/1
plants	land plants	Lamiaceae	<i>Coleus omissus</i>			E	E	1/1
plants	land plants	Myrtaceae	<i>Rhodamnia dumicola</i>	rib-fruited malletwood		E		2
plants	land plants	Sapindaceae	<i>Cupaniopsis shirleyana</i>	wedge-leaf tuckeroo		V	V	6/4

CODES

I - Y indicates that the taxon is introduced to Queensland and has naturalised.

Q - Indicates the Queensland conservation status of each taxon under the *Nature Conservation Act 1992*.

The codes are Extinct (EX), Extinct in the Wild (PE), Critically Endangered (CR), Endangered (E), Vulnerable (V), Near Threatened (NT), Special Least Concern (SL) and Least Concern (C).

A - Indicates the Australian conservation status of each taxon under the *Environment Protection and Biodiversity Conservation Act 1999*.

The values of EPBC are Extinct (EX), Extinct in the Wild (XW), Critically Endangered (CE), Endangered (E), Vulnerable (V) and Conservation Dependent (CD).

Records - The first number indicates the total number of records of the taxon (wildlife records and species listings for selected areas).

This number is output as 99999 if it equals or exceeds this value. A second number located after a / indicates the number of specimen records for the taxon.

This number is output as 999 if it equals or exceeds this value.

Appendix B

**Munna Creek Solar Farm – Vegetation and
Protected Plants Survey Report**



Renewable Energy System Technologies Pty Ltd
**Munna Creek Solar Farm
Vegetation and Protected Plants Survey Report**

June 2017

This report: has been prepared by GHD for Renewable Energy System Technologies Pty Ltd and may only be used and relied on by Renewable Energy System Technologies Pty Ltd for the purpose agreed between GHD and the Renewable Energy System Technologies Pty Ltd as set out in section 1.2 of this report.

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The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

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1. Introduction

1.1 Project background

Renewable Energy System Technologies Pty Ltd (REST Energy) is proposing to develop and operate a 120 MW solar PV facility at 493 Blowers Road, Munna Creek in Queensland (herein referred to as the project). The project is located on two rural residential properties totalling 467.52 ha, currently used for grazing land described as Lot 1 on SP233609 and Lot 1161 on L37659 which are located approximately 40 km north-west of Gympie and 65 km west of Rainbow Beach (refer to Figure 1).

The project will comprise a 120 MW solar array of fixed panels and associated inverter rooms, which are likely to be erected with a maximum height of 2-3 metres above ground level. The array cover approximately 58 percent of the site. It is anticipated that a substation will be located close to the panels to facilitate connection to the transmission lines that traverse the site. Furthermore, it is assumed that there would also be an administration also located near the panels.

It is anticipated that fixed solar panel array can be positioned so that there would be no requirement for substantial clearing of existing non remnant vegetation or for substantial earthworks (only to accommodate site maintenance vehicle access) most earthworks would be less than 1.0 m in height of depth) or landform modification. It is expected that the facility will be remotely monitored and only the occasional visit will occur for maintenance and repairs. It is expected that there would be limited requirements for lighting (perhaps some security lighting around the buildings).

1.2 Purpose of this report

This report presents the findings of a vegetation and protected plants survey undertaken within the project area. The specific purpose of this report is to:

- Confirm the regional ecosystems protected under the *Vegetation Management Act 1999* comprising the protected vegetation located to the north of Lot 1 on SP233609 and provide information necessary to support a property map of assessable vegetation (PMAV) application if required.
- Provide information necessary to support an Exempt Clearing Notification to the Queensland Department of Environment and Heritage Protection (EHP) under the *Nature Conservation Act 1992* if required and to demonstrate compliance with the principles of the Flora Survey Guidelines – Protected Plants ('the Guidelines').

1.3 Project area

The site is located at 493 Blowers Road, Munna Creek, which is wholly contained within the Fraser Coast Regional Council local government area. The site comprises two properties, formally described as Lot 1 on SP233609 and Lot 1161 on L37659, the details of which are outlined in Table 1.

Table 1 Site details

Property Details	Site 1	Site 2
Site Address	Blowers Road, Munna Creek	Blowers Road, Munna Creek

Property Details	Site 1	Site 2
Lot on Plan	Lot 1 on SP233609	L1161 on L37659
Site Area	333.49 Ha	67.18 Ha
Tenure	Freehold	Freehold
Land owners	G and K Blowers	G and K Blowers
Local Government Area	Fraser Coast Regional Council	Fraser Coast Regional Council
Current Use	Cattle Grazing and Breeding	Cattle Grazing and Breeding

The site is bordered to the west and south by Miva State Forest. Glenbar National Park is located immediately west of Miva State Forest. An 132 kV Ergon electricity transmission line and easement intersects the site running in a north south direction. It supplies power from the large Powerlink-owned Woolooga substation to the Queensland Rail substation at Mungar.

1.3.1 Study areas

The study area for the vegetation survey encompassed the polygon of mapped remnant vegetation immediately east of the proposed substation location.

The study area for the protected plant survey area was confined to the clearing impact area within the south-western corner of project area.

The two geographically distinct study areas are shown in Figure 1.

1.5 Relevant legislation and guidelines

1.3.2 Nature Conservation Act 1992

The Queensland *Nature Conservation Act 1992* (NC Act) provides for the conservation of nature through protection of all native plants and animals in Queensland. The Queensland *Nature Conservation Wildlife Regulation 2006* (NC Wildlife Regulation) lists flora and fauna species considered to be endangered, vulnerable or near threatened (EVNT) or least concern in Queensland. Clearing of protected (i.e. EVNT) plants is regulated by the *Nature Conservation Wildlife Management Regulation* (NC Wildlife Management Regulation).

Guidance on survey requirements for protected plants is provided in EHP's Flora Survey Guidelines – Protected Plants ('the Guidelines'). In summary, the Guidelines prescribe the following requirements:

- Flora surveys to be co-ordinated and led by a suitably qualified person, defined as personnel that obtain a minimum of 100 points as per the Guidelines' suitability qualified person self-assessment grading system
- For clearing within an area identified as high risk on the Flora Survey Trigger Map, the flora survey needs to assess the area to be cleared as well as a buffer area of 100 m around the clearing, termed the 'clearing impact area'
- If an EVNT plant species is recorded during the survey, a more comprehensive survey is required in order to collect data concerning the EVNT population and its supporting habitat
- The survey must be conducted at the most appropriate time of year to maximise the chance of detecting EVNT species

1.3.3 Vegetation Management Act 1999

The Queensland *Vegetation Management Act 1999* (VM Act) provides the vegetation management framework for Queensland. The Act applies to all vegetation other than state forests, national parks, forest reserves and certain other tenures nominated under the Queensland *Forestry Act 1959* and the *Nature Conservation Act 1992*.

The vegetation management framework uses a series of maps based on regional ecosystem classifications to determine what vegetation is regulated and where clearing may not take place.

Generally the clearing of vegetation to which the Vegetation Management Act applies is "assessable development" under the Queensland *Sustainable Planning Act 2009* and will require a development approval in accordance with that Act, unless an exemption under the *Sustainable Planning Regulation 2009* is applicable.

Where potential errors in regional ecosystem mapping are identified, they may be rectified by applying for a PMAV through the Department of Natural Resources and Mines (DNRM).

1.4 Associated terminology

The following terminology is used when referring to aspects of the project area in this report:

Project area – refers to the entire 467.52 ha for which the project is proposed - Lot 1 on SP233609 and Lot 1161 on L37659.

Disturbance footprint – refers to the area where direct impacts are likely to occur within the mapped high risk area.

Clearing impact area - refers to the disturbance footprint (as defined above) together with a surrounding 100 m buffer area.

Remnant vegetation patch – refers to the polygon of mapped remnant vegetation immediately east of the proposed substation location shown in Figure 1.

Protected plant - refers to a species that is listed as endangered, vulnerable or near threatened pursuant to the NC Wildlife Regulation.

1.5 Construction timing

The solar farm is anticipated to be constructed between mid-2018 and mid-2019.

1.6 Certification

I certify that (a) I have adhered to all requirements of the Guidelines and (b) the flora survey report is an accurate and full account of the flora survey.

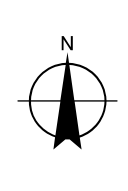
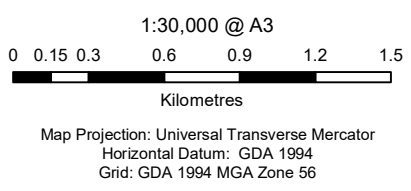
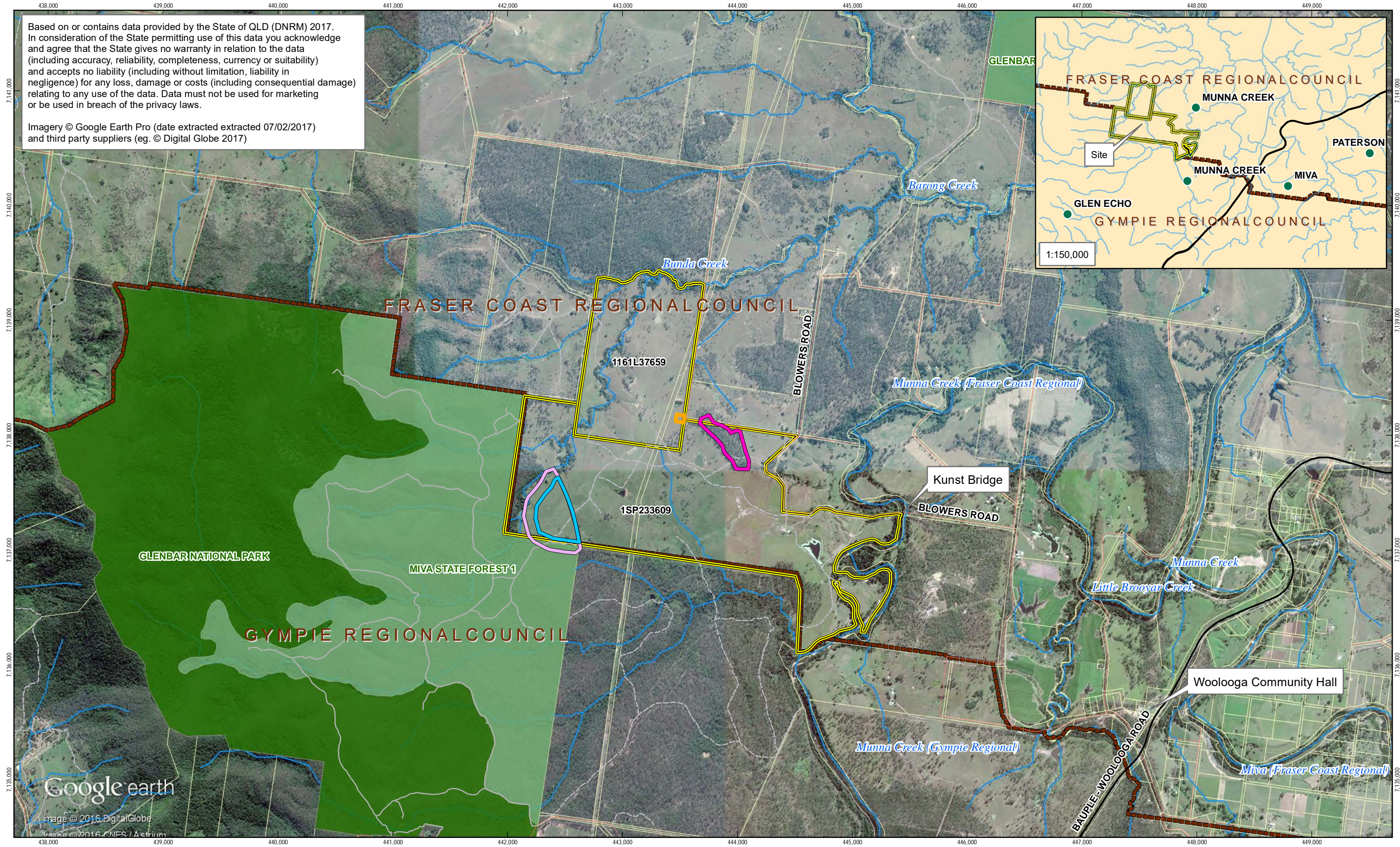
Name: P Moonie

Signature:

Date: 22/06/2017

Based on or contains data provided by the State of QLD (DNRM) 2017. In consideration of the State permitting use of this data you acknowledge and agree that the State gives no warranty in relation to the data (including accuracy, reliability, completeness, currency or suitability) and accepts no liability (including without limitation, liability in negligence) for any loss, damage or costs (including consequential damage) relating to any use of the data. Data must not be used for marketing or be used in breach of the privacy laws.

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LEGEND			
● Town	— Private or Restricted Road	▭ Project area	■ State Forest
— Rail Network	- - - 4WD and Track	▭ Cadastre	▭ Disturbance footprint
— State-controlled Road	— Waterways	▭ Local Government Boundaries	▭ Protected plants survey area (clearing impact area)
— Street/Local Road	▭ Proposed substation building	■ National Park	▭ Vegetation survey study area



Renewable Energy System Technologies Pty Ltd
Proposed Solar Farm Munna Creek

Job Number	41-30594
Revision	0
Date	29 Jun 2017

Locality Plan

Figure 1

2. Methodology

2.1 Suitably qualified person

The senior ecologist was the suitably qualified person responsible for the field survey. The ecologist achieves 150 points in the Guidelines' suitably qualified person self-assessment grading system (refer Table 2).

Table 2 Suitably qualified person self-assessment for P **Moonie**

Component	Points allocated by Guideline	Points achieved
Component 1: Qualification knowledge and ability		
A relevant qualification from a recognised institution (e.g. University, TAFE) that results in a thorough knowledge of plant identification and flora surveys.	30 - General training; OR	50 – Completed a BSc majoring in ecology at Griffith University
	40 - Australian focussed training; OR	
	50 - Queensland focussed training	
Regional ecosystem training by a recognised and qualified institution, such as the Queensland Herbarium.	5	5 - Completed regional ecosystem and bio-condition assessment training at the Queensland Herbarium
Member of a recognised group / certificate program relevant to ecology/botany, where skills/knowledge are demonstrated to be granted membership. E.g. Certified Environmental Practitioner (CEnvP) Program	5	-
Lead author of articles/papers published in peer reviewed journals in relation to Qld flora surveys, Qld plant identification, or Qld EVNT plants.	10	-
Pre-existing Commonwealth Government accreditation for flora surveys under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act)	30	30 – EPBC Act accreditation reference number is 2012/00558
Component 2: Field experience		
Experience within the last 2 years and a total of at least 5 years at leading flora surveys in a field-based environment at a rate of no less than 5 comprehensive botanical surveys that focus on locating and identifying EVNT plants, per year.	40 - General flora surveys; OR	60 – The ecologist has been leading comprehensive botanical surveys that focus on locating and identifying EVNT plants in Queensland for the past 6 years and in Australia for the past 18 years.
	50 – Australian flora surveys; OR	
	60 - Queensland flora surveys	
Number of plant specimens you have collected that have been retained/incorporated into the Queensland Herbarium collection.	5 points per 5 specimens	5 – Unsure of exact total number, but at least 5 specimens have been incorporated into the collection

2.2 Desktop assessment

Prior to the field survey, a comprehensive desktop assessment was undertaken to identify EVNT species potentially present and to determine areas of focus for the field assessment. The desktop assessment involved review of the information sources listed in Table 3.

Table 3 Desktop information sources

Information source	Database administrator	Purpose
Protected Plants Flora Survey Trigger Map	EHP	Viewed to determine the extent of high risk areas within the disturbance footprint (refer Appendix B).
Wildlife Online database	The Queensland Government Department of Science, Information Technology and Innovation (DSITI)	Searched to retrieve records of EVNT flora species previously recorded within a 10 km radius of the approximate centre of the project area (-25.879; 152.433) (refer Appendix C).
Species Profile Search	EHP	Undertaken to obtain spatial data records for EVNT species responsible for generating high risk trigger areas intersecting the project area. The search was also undertaken to gain an understanding of the location and collection date of any protected plant records in proximity to the disturbance footprint.
Protected Matters Search Tool	The Commonwealth Department of the Environment and Energy (DoEE)	Undertaken to identify flora species listed under the EPBC Act that are predicted to occur in proximity to the disturbance footprint, based on bioclimatic modelling, knowledge of species' distributions and habitat preferences. The search area was a 1 km buffer around a point roughly corresponding with the centre of the project area (-25.8775; 152.4356) (refer Appendix D).
Vegetation Management Regional Ecosystem and Remnant Map (version 10.0)	DNRM	Viewed to determine the type and extent of vegetation types within the project area and adjacent to the disturbance footprint.
Essential Habitat Map (version 4.41)	DNRM	Viewed to determine whether recognised habitat for protected plants is mapped within or in close proximity to the disturbance footprint.

2.1 Field assessment

The one-day field assessment conducted on 16 June 2017, consisted of a vegetation and protected plants survey. A description of the methodology employed for each survey component is provided in the following sub-sections.

2.1.1 Vegetation survey

A vegetation survey of the remnant vegetation patch was undertaken in accordance with the Queensland Herbarium's *Methodology for Survey and mapping of Regional Ecosystems and Vegetation Communities in Queensland* (Neldner *et al.* 2012). The quaternary level of assessment was applied and involved recording the following attributes:

- Identification of the ecologically dominant layer

- Structural formation
- Height range and median height for each layer (emergent, canopy, sub-canopy, shrub, ground layer)
- Flora species composition and abundance of each layer
- Soils, geology, slope, aspect and landform

Two quaternary sites were assessed within each of the vegetation communities comprising the remnant vegetation patch. The characteristics of each vegetation type were compared to descriptions provided by the Regional Ecosystem Description Database (REDD) (version 10) (Queensland Herbarium 2016) to assign an RE identity to each community.

2.1.2 Protected plants survey

A description of the methodology employed during the protected plant survey and relative compliance with the requirements specified in the Guidelines is provided in Table 4.

Table 4 Field survey compliance with the Guidelines

Survey component	Description and compliance with the Guidelines
Survey timing	The protected plants survey was conducted on 9 April 2017. All of the target protected plant species are long-lived and readily identifiable throughout the year (refer Table 7 in Section 3.2.3).
Survey area	The portion of the project area within the high risk area included several small polygons along the edges of Lot 1 on SP233609, adjoining Miva State Forest. Searches covered the disturbance footprint together with the surrounding 100 m wide clearing impact area.
Survey method	The systematic transect search method (outlined in Section 6.2.3 of the Guidelines) was employed to search for EVNT plants within the survey area. Searches were conducted in search lanes which were broadly parallel. Deviations were undertaken to intensively search habitats considered suitable for EVNT species. A spatial representation of the survey effort across the clearing impact area (as recorded by the track log function of the handheld GPS) is provided as Appendix E.
Population or plot surveys	No population survey or plot-based assessments were undertaken as no EVNT species were detected.
Identification of plant species	The majority of plant species encountered were identified in the field. Where this was not possible, specimen material was collected and later identified with the assistance of diagnostic keys and references. Throughout this report, an asterisk (*) is used to identify species that are listed as introduced (i.e. exotic) pursuant to the NC Wildlife Regulation.

3. Results

3.1 Desktop assessment results

3.1.1 Vegetation

Commonwealth

A search of the EPBC protected matters database identified that one threatened ecological community listed under the EPBC Act has potential to occur with 1 km of the site, namely the Lowland Rainforest of Subtropical Australia (refer Appendix D).

State

The Queensland Regulated Vegetation Management Map depicts the western half of the remnant vegetation patch as comprising the mixed polygon RE 12.9-10.21/12.3.11 and the eastern half as comprising the homogeneous polygon RE 12.5.7 (refer Plate 1). The status of these REs under the VM Act is provided in Table 5 together with the description provided by the REDD.

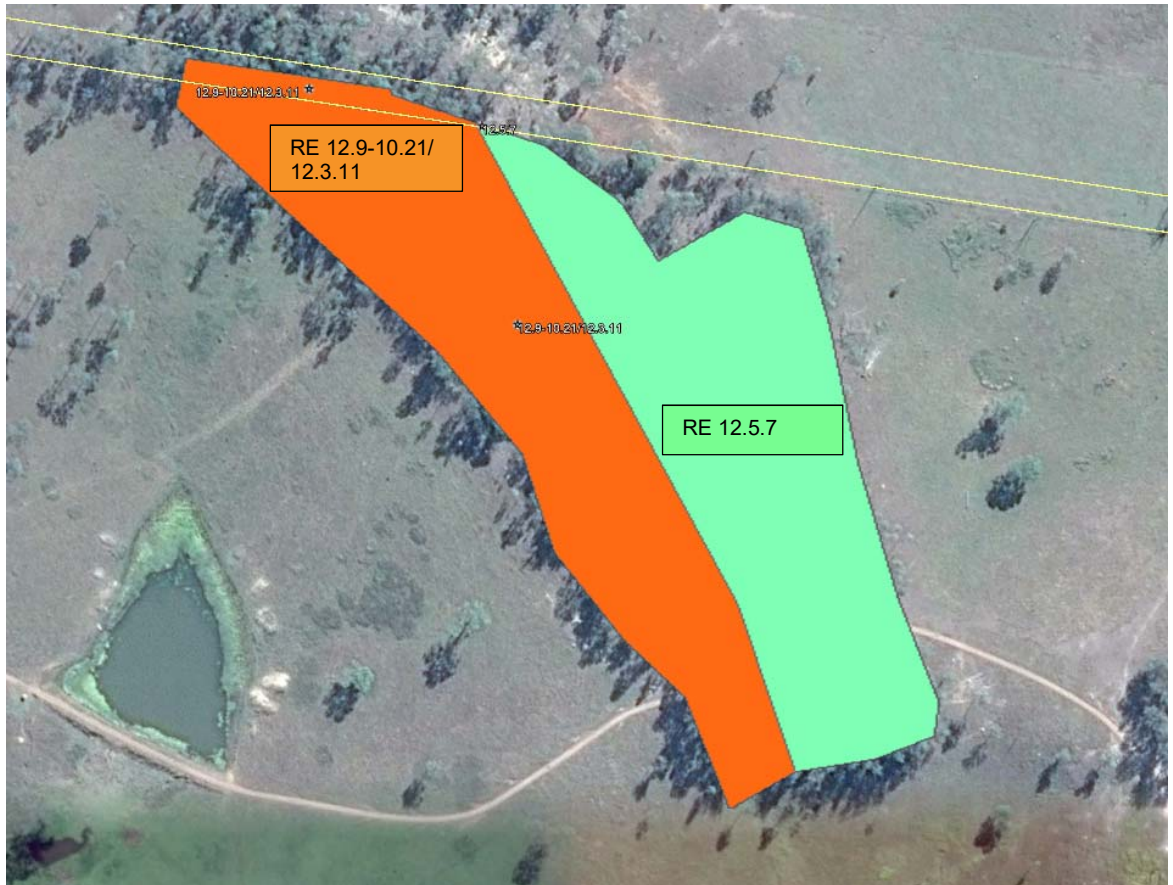


Plate 1 Remnant vegetation patch (source: QLD Globe Vegetation management Supporting Map)

Table 5 Regional Ecosystems mapped by DNRM within the remnant vegetation patch

RE	VM Act status	REDD description
12.9-10.21	Least concern	<i>Eucalyptus acmenoides</i> or <i>E. portuensis</i> woodland usually with <i>Corymbia trachyphloia</i> subsp. <i>trachyphloia</i> on Cainozoic to Proterozoic sediments
12.3.11	Of concern	<i>Eucalyptus tereticornis</i> +/- <i>Eucalyptus siderophloia</i> , <i>Corymbia intermedia</i> open forest on alluvial plains usually near coast
12.5.7	Least concern	<i>Corymbia citriodora</i> subsp. <i>variegata</i> +/- <i>Eucalyptus portuensis</i> or <i>E. acmenoides</i> , <i>E. fibrosa</i> subsp. <i>fibrosa</i> open forest on remnant Tertiary surfaces. Usually deep red soils

3.1.2 Protected plants

The protected plants flora survey trigger map indicates that the south-western extent of the site is located within a 'high risk' area for protected plants, refer to Appendix B.

The Wildlife Online search identified three EVNT species that have confirmed records within 10 km of a point central to the project area. The EPBC Act Protected Matters Search identified a further seven flora species (also State-listed under the Nature Conservation Act) that have the potential to occur within 1 km of the project area. Of those species identified in both searches, none has been previously recorded within the actual disturbance footprint, with the closest record being approximately 1.5 km northwest of the clearing impact area (refer Table 6). No essential habitat for flora species is mapped within or in close proximity to the disturbance footprint. The conservation status of species identified in the Wildlife Online search and details of closest occurrence records held in EHP's spatial database (Species Profile Search) are provided in Table 6. Information regarding the likelihood of occurrence of these species or their habitat within the clearing impact area is provided in Section 3.2.2 (Table 10).

Table 6 Conservation status and closest record

Species	NC Act Status	EPBC Act Status	Closest Record (source: species profile search)
<i>Cupaniopsis shirleyana</i>	V	V	1.5 km south east of the disturbance footprint
<i>Hernandia bivalvis</i>	NT	-	1.5 km south east of the disturbance footprint
<i>Plectranthus omissus</i>	E	E	2.1 km south east of the disturbance footprint

V = vulnerable, E = endangered, NT = near threatened

3.2 Field assessment results

3.2.1 Vegetation survey

Commonwealth

Vegetation types comprising the remnant vegetation patch did not conform to the key diagnostic characteristics of any threatened ecological communities listed under the EPBC Act.

State

Field observations indicate that the composition of the heterogeneous polygon with the remnant vegetation patch was different from that depicted in the Queensland Regulated Vegetation Management Map. The heterogeneous polygon is currently mapped as comprising a mixture of RE 12.9-10.21 and RE 12.3.11; however, neither unit appeared to be present within the extent of this mapped polygon. As indicated in Table 5, RE 12.3.11 occurs on alluvial plains and RE 12.9-10.21 occurs on sedimentary rock; however, the extent of the heterogeneous polygon occurred on what appeared to be deeply weathered sandstone (refer Plate 1). The surface geology of this polygon was not consistent with either land zone 3 or land zone 9-10, but rather land zone 5.

From a vegetation perspective, *Eucalyptus tereticornis*, which is a keystone species of RE 12.3.11 was largely absent from the mapped heterogeneous polygon. The few individuals observed within the polygon are likely to be outliers from alluvial units on the lowlands to the west and east of the remnant vegetation patch. Whilst the vegetation assemblage recorded in the heterogeneous polygon was generally consistent with the description for RE 12.9-10.21, it was also consistent with that described for RE 12.5.7 and there was little variation in species composition or structure across the entire remnant vegetation patch.

Given that the entire remnant patch appeared to occur in land zone 5 and that the vegetation composition across the entire patch was consistent with the assemblage described for RE 12.5.7, it is likely that the entire patch would be more accurately mapped as RE 12.5.7 (least concern).



Plate 2 Deeply weathered (duri-crusted) sandstone rock outcrop within the mapped RE 12.9-10.21/RE 12.3.11 unit

Quaternary site data and representative photographs of the two vegetation communities identified within the remnant vegetation patch are provided in Table 7.

Table 7 Quaternary site data

Quaternary sites 1 and 2 (mapped RE polygon 12.9-10.21/12.3.11)	
Mapped RE	RE 12.9-10.21/RE 12.3.11
Field validated RE	RE 12.5.7
Ecologically dominant layer	T2 (sub-canopy) at Site 1 and T1 at Site 2 (canopy)
Structural formation	Remnant woodland
Landform, geology, soils	Upper slopes and crest of low hill, shallow light brown sandy clay loam soils with rock outcrop (possibly deeply weathered sandstone)
Floristic structure and composition	<p>The canopy layer of this community was approximately 16 to 20 m in height, with a median height of approximately 18 m. The canopy layer was dominated by <i>Corymbia citriodora</i> subsp. <i>variegata</i> and <i>Eucalyptus acmenoides</i> with associated <i>E. crebra</i> and <i>C. intermedia</i>.</p> <p>The sub-canopy layer was approximately 6 to 12 m in height, with a median height of approximately 10 m. This layer was dominated by <i>E. acmenoides</i> and <i>Acacia disparrima</i> subsp. <i>disparrima</i> with associated <i>C. citriodora</i> subsp. <i>variegata</i>, <i>A. maidenii</i> and <i>Lophostemon confertus</i>.</p> <p>The shrub layer was sparse and had a height of approximately 0.5 to 2 m. Common species present included <i>A. disparrima</i> subsp. <i>disparrima</i>, <i>A. leiocalyx</i>, <i>Alyxia ruscifolia</i>, <i>Carissa ovata</i> and <i>Alphitonia excelsa</i>.</p> <p>The ground layer was moderately dense and was dominated by <i>Aristida queenslandica</i> var. <i>queenslandica</i>, <i>Cymbopogon refractus</i> and <i>Chrysopogon fallax</i> with associated <i>Heteropogon contortus</i>, <i>Microlaena stipoides</i>, <i>Panicum effusum</i>, <i>Entolasia stricta</i>, <i>Dianella</i> sp, <i>Desmodium rhytidophyllum</i> and <i>Solanum stelligerum</i>.</p>

Representative photograph



Quaternary sites 3 and 4 (mapped RE polygon 12.5.7)

Mapped RE	12.5.7
Field validated RE	12.5.7
VM Act status	Least concern
Ecologically dominant layer	T1 (canopy)
Structural formation	Remnant woodland
Landform, geology, soils	Upper slopes and crest of low hill, red sandy clay loam soils with ferruginous gravels
Floristic structure and composition	<p>The canopy layer of this community was approximately 16 to 22 m in height, with a median height of approximately 19 m. The canopy layer was dominated by <i>Corymbia citriodora</i> subsp. <i>variegata</i> with associated <i>Eucalyptus acmenoides</i>. The sub-canopy layer was approximately 8 to 12 m in height, with a median height of approximately 10 m. This layer was dominated by <i>E. acmenoides</i>, <i>Jagera pseudorhus</i>, <i>C. citriodora</i> subsp. <i>variegata</i> and <i>C. intermedia</i>.</p> <p>The shrub layer was sparse and had a height of approximately 0.5 to 3 m. Common species present included <i>Acacia disparrima</i> subsp. <i>disparrima</i>, <i>Acacia leiocalyx</i>, <i>A. maidenii</i>, <i>Alyxia ruscifolia</i>, <i>Carissa ovata</i>, <i>Psydrax odorata</i>, <i>Alphitonia excelsa</i> and <i>Lantana camara</i>.</p> <p>The ground layer was moderately dense and was dominated by <i>Aristida queenslandica</i> var. <i>queenslandica</i>, <i>Chrysopogon fallax</i> with associated <i>Cymbopogon refractus</i>, <i>Microlaena stipoides</i>, <i>Imperata cylindrica</i>, <i>Heteropogon contortus</i>, <i>Entolasia stricta</i>, <i>Lobelia purpurascens</i>, <i>Eremophila debilis</i>, <i>Dianella</i> sp and <i>Desmodium rhytidophyllum</i>.</p>

Representative photograph



3.2.2 Protected plant survey

Habitat types

Two habitat types were identified within the protected plant survey area. A representative photograph and vegetation community description of each is provided in Table 8.

Table 8 Habitat types within the protected plants survey area

Habitat	Description	Photograph
Highly modified	<p>Vegetation –non-remnant vegetation community comprising a mixture of native and introduced pasture grasses with occasional trees and shrubs. Common grasses included <i>Heteropogon contortus</i>, <i>Bothriochloa decipiens</i> var. <i>decipiens</i>, <i>Themeda triandra</i>, <i>*Cynodon dactylon</i> var. <i>dactylon</i>, <i>*Chamaecrista rotundifolia</i> var. <i>rotundifolia</i>, <i>Imperata cylindrica</i>, <i>*Hyparrhenia rufa</i>, <i>Alloteropsis semialata</i>, <i>Cymbopogon refractus</i>, <i>*Sporobolus africanus</i> and <i>*Sporobolus pyramidalis</i>. Tree and/or shrub species present included <i>Eucalyptus tereticornis</i>, <i>Melaleuca viminalis</i>, <i>E. crebra</i>, <i>Corymbia citriodora</i> subsp. <i>variegata</i>, <i>Petalostigma pubescens</i> and <i>Lophostemon suaveolens</i>.</p> <p>Landforms present – alluvial plain and adjacent low sandstone hills</p>	
Remnant woodland	<p>Vegetation – remnant woodland to 22 m dominated by <i>Corymbia citriodora</i> subsp. <i>variegata</i> and <i>Eucalyptus acmenoides</i> with associated <i>E. crebra</i>, <i>Lophostemon suaveolens</i> <i>C. trachyphloia</i> and <i>C. intermedia</i> over <i>Acacia disparrima</i> subsp. <i>disparrima</i>, <i>Acacia leiocalyx</i>, <i>Alphitonia excelsa</i> and <i>L. confertus</i>.</p> <p>Landform – low sandstone hill</p>	

Protected plant species

No protected plant species were identified during the field survey. All flora species recorded during the field surveys were least concern or introduced under the NC Wildlife Regulation.

Habitat suitability and likelihood of occurrence

Although no protected plants were recorded during the field assessment, a precautionary approach was adopted and a habitat suitability and likelihood of occurrence assessment for protected plants was undertaken for the clearing impact area. The criteria for the likelihood of occurrence assessment are provided in Table 9, and the outcomes of the assessment are presented in Table 10.

Nine of the 10 State-listed flora species identified during the desktop assessment were rated as 'unlikely to occur'. Many of these species are associated with rainforest habitats, which were absent from the clearing impact area.

One species was rated as 'may occur', namely *Cupaniopsis shirleyana*. This species is readily identifiable in the field throughout the year and taking into consideration the survey effort expended it can be concluded with a high degree of confidence following the field survey that this species is not present within the clearing impact area.

Table 9 Likelihood of occurrence criteria

Likelihood	Definition of Supporting Information
Known to occur	Species has been recorded within the clearing impact area
Likely to occur	Species has been recorded within 10 km of the clearing impact area and the clearing impact area contains suitable habitat for the species
May occur	Species has not been recorded within 10 km of the clearing impact area but the clearing impact area is within the species' current known distribution and the clearing impact area contains suitable habitat for the species OR the species has been recorded within 10 km of the clearing impact area and marginal habitat is present for the species
Unlikely to occur	The clearing impact area is not within the species' known distribution and/or suitable habitat is marginal or not present within the clearing impact area

Table 10 Likelihood of occurrence assessment

Species	NC Act Status	EPBC Act Status	Seasonality	Habitat Requirements	Likelihood of Occurrence
<i>Acacia attenuata</i>	Vulnerable	Vulnerable	This species is a fast growing perennial shrub with a life span of between five and 10 years (DoEE 2017).	Occurs in seasonally waterlogged areas of wet heathland or heathland margins, open forest and woodland communities (DoEE 2017).	Unlikely to occur No suitable habitat present and no records are known within 10 km of the project area.
<i>Cossinia australiana</i>	Endangered	Endangered	Long-lived shrub/small tree. Flowering has been recorded from October to January, with fruiting observed in February (DoEE 2017). It can be identified based on vegetative features.	Found in fragmented relict patches of Araucarian vine forests or vine thickets on fertile soils in central and southern Queensland. Occurs from 20 to 520 m altitude (DoEE 2017).	Unlikely to occur No suitable habitat present and no records are known within 10 km of the project area.
<i>Cupaniopsis shirleyana</i>	Vulnerable	Vulnerable	Typically flowers in May to July, occasionally January or March. Fruiting has been recorded from July to December (EHP 2017). It can be identified based on vegetative features.	Occurs at 20 to 550 m elevation. Recorded in a variety of rainforest types including vine thicket and dry rainforest. Occurs on hillsides, mountain tops, lower slopes of valleys, stream beds and along riverbanks. (EHP 2017)	May occur Marginally suitable habitat present and records are known within 10 km of the project area.
<i>Fontainea venosa</i>	Vulnerable	Vulnerable	Flowering recorded in January, February, April, May, June, August and October, fruiting most of year (EHP 2017). It can be identified based on vegetative features.	Known from notophyll vine forest and vine thicket with a mean annual rainfall of 1000-1100 mm on soils derived from and containing abundant andesitic rocks, often on rocky outcrops or along creeks (EHP 2017).	Unlikely to occur No suitable habitat present and no records are known within 10 km of the project area.
<i>Hernandia bivalvis</i>	Near threatened	-	Flowers from October to December and fruits from January to April (EHP 2017). It can be identified based on vegetative features.	Occurs in rainforest on rock pavements and outcrops with shallow soils. Most Queensland Herbarium records are from either vine thicket or microphyll vine forest. It occurs up to 620 m altitude (EHP 2017).	Unlikely to occur Found within 10 km but no suitable habitat present.

Species	NC Act Status	EPBC Act Status	Seasonality	Habitat Requirements	Likelihood of Occurrence
<i>Macadamia integrifolia</i>	Vulnerable	Vulnerable	This species is a long-lived tree that is known to flower and fruit over summer months (DoEE 2017), such that the timing of the survey was appropriate for this species. It can be identified based on vegetative features.	Grows in remnant rainforest, preferring partially open areas such as rainforest edges. The species can occur on a wide range of landforms including hill crests, hill slopes, scree slopes and foot slopes, gullies, benches and terrace plains (DoEE 2017).	Unlikely to occur No suitable habitat present and no records are known within 10 km of the project area.
<i>Macrozamia pauli-guilielmi</i>	Endangered	Endangered	Long-lived cycad. Coning (fruit production) events only occur every 4–6 years. Seed becomes ripe in March to April (Queensland Herbarium 2007). It can be identified based on vegetative features.	Scattered in open woodland, almost always on siliceous sand deposits from old beach dunes (Queensland Herbarium 2007).	Unlikely to occur No suitable habitat present and no records are known within 10 km of the project area.
<i>Phebalium distans</i>	Endangered	Critically endangered	This species is a long-lived shrub/small tree that flowers in spring (DoEE 2017). It can be identified based on vegetative features.	Occurs in rainforest and rainforest margins and adjacent grassland and open grassy woodland above 500 metres altitude (DoEE 2017).	Unlikely to occur Marginally suitable habitat, but no records are known within 10 km of the project area.
<i>Plectranthus omissus</i>	Endangered	Endangered	Sub-shrub. Flowering of the similar <i>Plectranthus graniticola</i> has been recorded around Mackay in April, May, August and October (EHP 2017).	Found on steep rocky outcrops approximately 300-400 m above sea level on the margin of vine forest or sclerophyll forests (EHP 2017).	Unlikely to occur Found within 10 km but no suitable habitat present.
<i>Samadera bidwillii</i>	Vulnerable	Vulnerable	This species is a long-lived shrub or tree, with flowers and red fruit recorded from November to March (DoEE 2017), such that the timing of the survey was appropriate for this species. This species can be identified based on vegetative features.	This species generally occurs in lowland rainforest or on rainforest margins, and is commonly found in areas adjacent to both temporary and permanent watercourses (DoEE 2017).	Unlikely to occur Marginally suitable habitat, but no records are known within 10 km of the project area.

4. Potential impacts

No EVNT flora species under the Nature Conservation Act were identified within the clearing impact area and it is considered unlikely that the project will impact on any EVNT flora.

Based on the current infrastructure layout for the solar installation, the project is not expected to impact on the remnant vegetation patch immediately to the east of the proposed substation location.

5. Recommendations

Should the proposed layout change and clearing of the remnant vegetation patch immediately east of the proposed substation location be required, it is recommended that a PMAV application be submitted to DNRM to rectify the inaccuracy of existing mapping and allow clearing for the project to occur under an exemption for least concern vegetation.

Based on existing survey findings, a protected plant clearing permit under the NC Wildlife Regulation is not considered to be required for the project; however, an exempt clearing notification should be submitted to EHP within one year of the survey being undertaken and at least one week prior to the clearing commencing.

General management measures that can be implemented during the construction works to minimise impacts to native flora include the following:

- Disturbance to native species should be minimised, as far as practicable.
- Clearing extents should be clearly delineated prior to clearing.
- Any stockpiles or laydown areas should be located within already cleared areas.
- Weed management activities should be undertaken to avoid the spread of weeds in the project area (particularly the weedy *Sporobolus* species observed within the cleared paddocks) or the introduction of new weed species.
- Appropriate management of waste, dust and emissions, erosion and sedimentation, and hazardous materials should occur in accordance with strategies identified by the Environmental Management Plan (Construction).

6. Conclusion

This assessment was undertaken to verify the RE(s) comprising the remnant vegetation patch east of the proposed substation building and to determine the presence, or likely presence, of protected plants that may potentially be impacted by project. Key outcomes of the assessment are as follows:

- The Queensland Regulated Vegetation Management Map depicts the western half of the remnant vegetation patch as comprising the mixed polygon RE 12.9-10.21/12.3.11 and the eastern half as comprising the homogeneous polygon RE 12.5.7. Field observations of the geology and vegetation assemblage present suggests that the entire patch should be re-mapped as RE 12.5.7.
- A PMAV application should be submitted to DNRM to rectify the inaccuracy of existing mapping if clearing of the remnant patch is required for the project.
- No protected plant species were recorded within the project area. All flora species identified during the field survey were least concern or introduced under the NC Wildlife Regulation.
- Nine of the 10 state listed protected plant species identified during the desktop assessment were rated as 'unlikely to occur'. One species was rated as 'may occur', namely *Cupaniopsis shirleyana*. Based on survey effort expended, it can be concluded with a high degree of confidence that this species is not present.
- Based on existing survey findings, a protected plant clearing permit under the NC Wildlife Regulation is not considered to be required for the project.

7. References

Department of the Environment and Energy (DoEE) (2017a) Species Profile and Threats Database. Viewed 20 April 2017. Available from: <http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl>.

Department of Environment and Heritage Protection (EHP) Species Profile Search Database. Viewed 20 June 2017. Available from: <https://environment.ehp.qld.gov.au/species-search/?class=&family=&kingdom=plants&species>

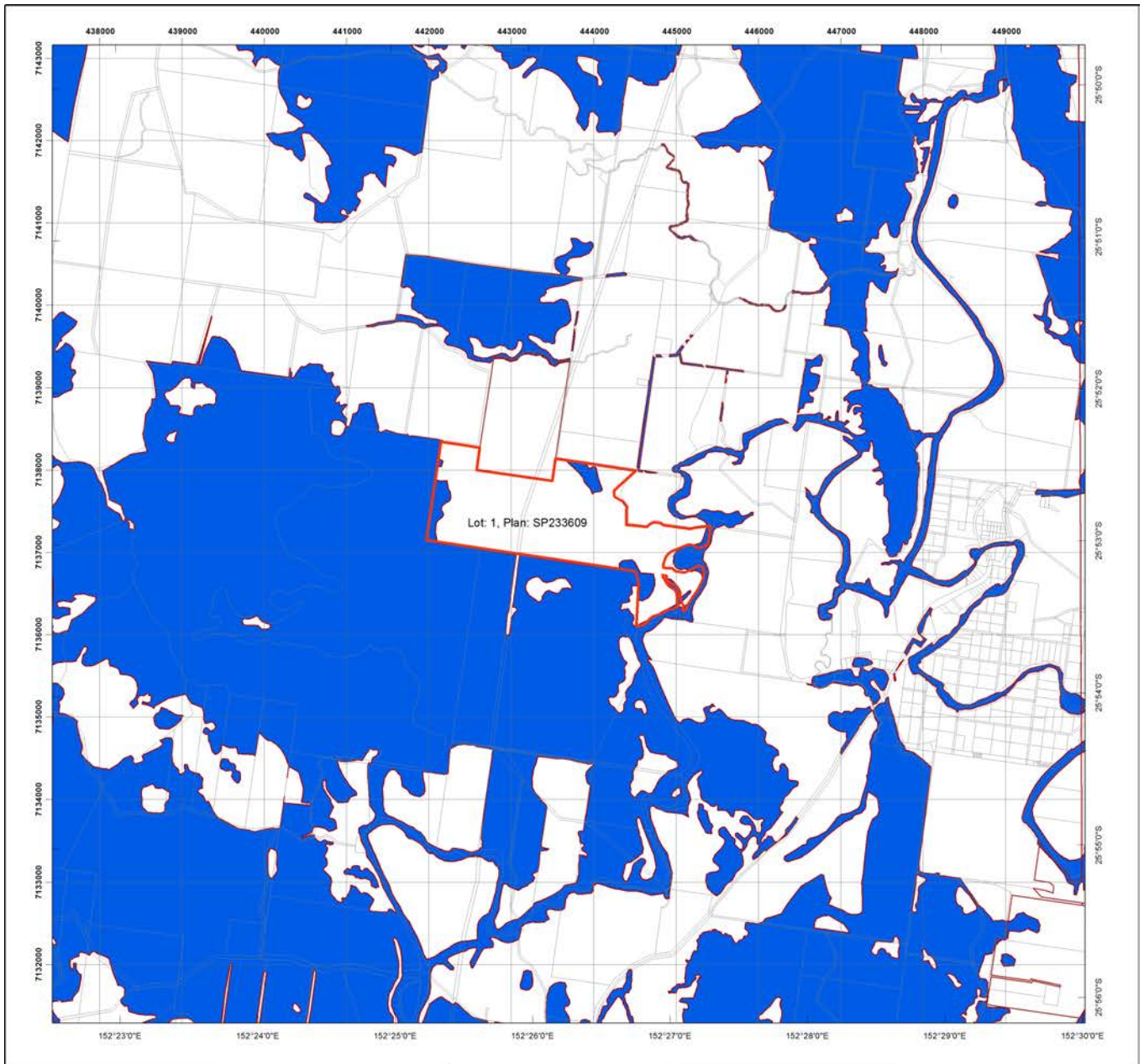
Neldner, V.J., Wilson, B.A., Thompson, E.J. and Dillewaard, H.A. (2012) *Methodology for Surveys and Mapping of Regional Ecosystems and Vegetation Communities in Queensland*. Version 3.2. Queensland Herbarium, Queensland Government, Brisbane.

Queensland Herbarium (2007). *National Multi-species Recovery Plan for the cycads, Cycas megacarpa, Cycas ophiolitica, Macrozamia cranei, Macrozamia lomandroides, Macrozamia pauli-guilielmi and Macrozamia platyrhachis*. Report to Department of the Environment and Water Resources, Canberra. Queensland Parks and Wildlife Service, Brisbane.

Appendices




Appendix A – CV

Appendix B – Flora survey trigger map



Regulated Vegetation Management Map

Legend

-  Lot and Plan
-  Category A area (Vegetation offsets/compliance notices/VDecs)
-  Category B area (Remnant vegetation)
-  Category C area (High-value regrowth vegetation)
-  Category R area (Reef regrowth watercourse vegetation)
-  Category X area (Exempt on Freehold, Indigenous and Leasehold land)
-  Water
-  Area not categorised
-  Cadastral line
-  Property boundaries shown are provided as a locational aid only



This product is projected into:
 GDA 1994 MGA Zone 56

Disclaimer:

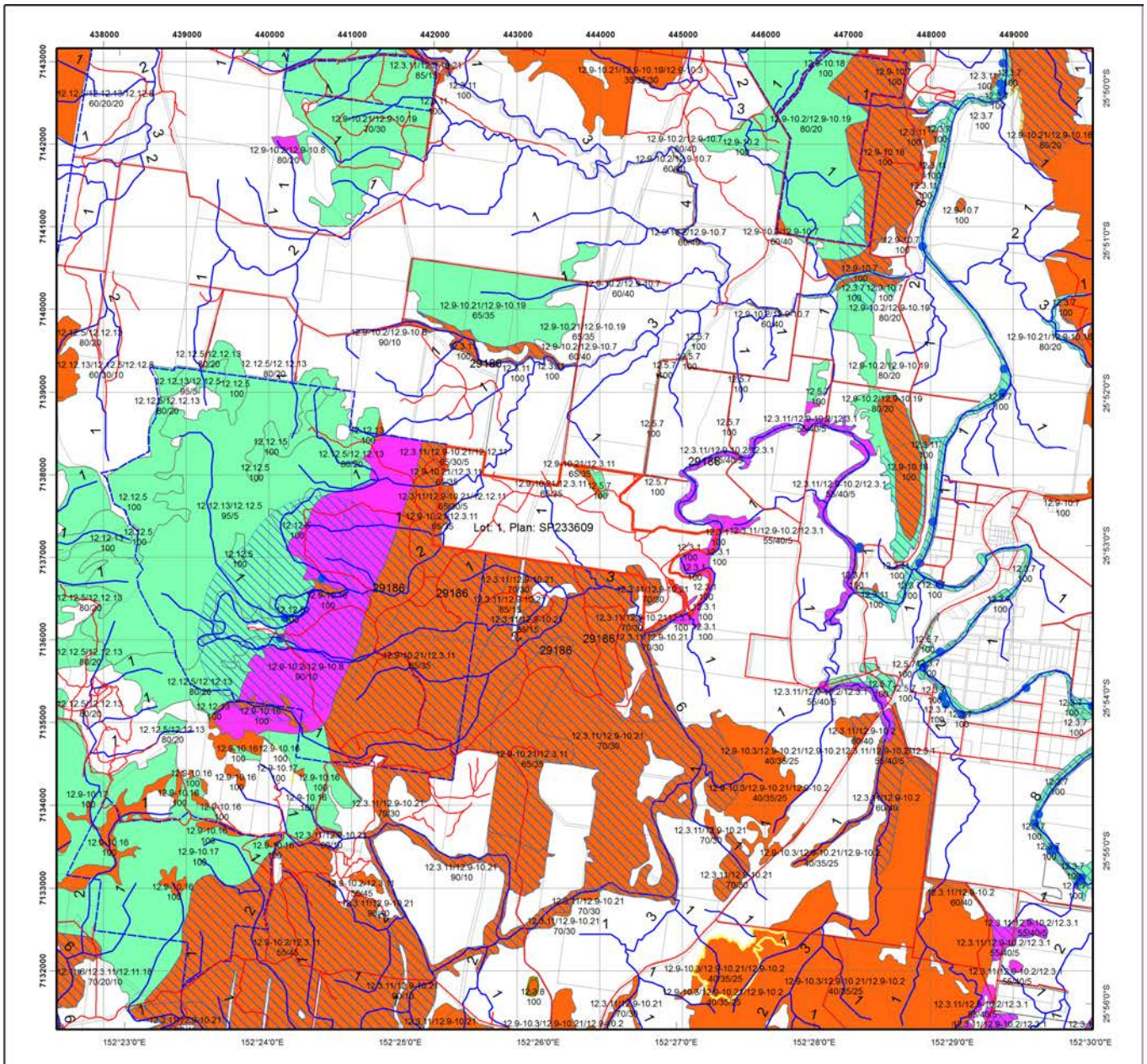
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Additional information required for the assessment of vegetation values is provided in the accompanying "Vegetation Management Supporting map". For further information go to the web site: www.dnrm.qld.gov.au or contact the Department of Natural Resources and Mines.

Digital data for the regulated vegetation management map is available from the Queensland Spatial Portal at <http://www.information.qld.gov.au/>

This map is updated on a monthly basis to ensure new PMAVs are included as they are approved.

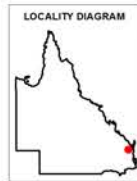




Vegetation Management Supporting Map

Legend

- Lot and Plan
- Category A or B area containing endangered regional ecosystems
- Category A or B area containing of concern regional ecosystems
- Category A or B area that is a least concern regional ecosystem
- Category A or B area containing remnant vegetation
- Category A or B area under Section 20AH
These areas are edged in yellow and filled with the remnant RE Status
- Category C area containing endangered regional ecosystems
- Category C area containing of concern regional ecosystems
- Category C area that is a least concern regional ecosystem
- Category C area containing high value regrowth vegetation
- Category C area under Section 20AI
These areas are edged in purple and filled with the remnant RE Status
- Non Remnant
- Water
- Wetland on the vegetation management wetlands map
- Essential habitat on the essential habitat map
- Essential habitat species record
- Watercourse on the vegetation management watercourse and drainage feature map
(Stream order shown as black number against stream where available)
- Roads
- National Parks, State Forest and other reserves
- Cadastral line
- Property boundaries shown are provided as a locational aid only



This product is projected into:
GDA 1994 MGA Zone 56

Labels for Essential Habitat are centred on the area of enquiry.

Regional ecosystem linework has been compiled at a scale of 1:100 000, except in designated areas where a compilation scale of 1:50 000 is available. Linework should be used as a guide only. The positional accuracy of RE data mapped at a scale of 1:100 000 is +/- 100 metres.

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Additional information may be required for the purposes of land clearing or assessment of a regional ecosystem map or PMAV applications. For further information go to the web site: www.dnrm.qld.gov.au or contact the Department of Natural Resources and Mines.

Digital data for the vegetation management watercourse and drainage feature map, vegetation management wetlands map, essential habitat map and the vegetation management remnant and regional ecosystem map are available from the Queensland Spatial Portal at <http://www.information.qld.gov.au/>



Vegetation Management Act 1999 - Extract from the essential habitat database

Essential habitat is required for assessment under the:

- State Development Assessment Provisions - Module 8: Native vegetation clearing which sets out the matters of interest to the state for development assessment under the *Sustainable Planning Act 2009*; and
- Self-assessable vegetation clearing codes made under the *Vegetation Management Act 1999*

Essential habitat for one or more of the following species is found on and within 1.1 km of the identified subject lot/s or on and within 2.2 km of an identified coordinate on the accompanying essential habitat map.

This report identifies essential habitat in Category A, B and Category C areas.

The numeric labels on the essential habitat map can be cross referenced with the database below to determine which essential habitat factors might exist for a particular species.

Essential habitat is compiled from a combination of species habitat models and buffered species records.

The Department of Natural Resources and Mines website (<http://www.dnrm.qld.gov.au>) has more information on how the layer is applied under the State Development Assessment Provisions - Module 8: Native vegetation clearing and the *Vegetation Management Act 1999*.

Regional ecosystem is a mandatory essential habitat factor, unless otherwise stated.

Essential habitat, for protected wildlife, means a category A area, a category B area or category C area shown on the regulated vegetation management map-

- 1) (a) that has at least 3 essential habitat factors for the protected wildlife that must include any essential habitat factors that are stated as mandatory for the protected wildlife in the essential habitat database; or
- 2) (b) in which the protected wildlife, at any stage of its life cycle, is located.

Essential habitat identifies endangered or vulnerable native wildlife prescribed under the *Nature Conservation Act 1994*.

Essential habitat in Category A and B (Remnant vegetation species record) areas:1100m Species Information

(no results)

Essential habitat in Category A and B (Remnant vegetation species record) areas:1100m Regional Ecosystems Information

(no results)

Essential habitat in Category A and B (Remnant vegetation) areas:1100m Species Information

Label	Scientific Name	Common Name	NCA Status	Vegetation Community	Altitude	Soils	Position in Landscape
29186	<i>Phascolarctos cinereus</i> (southeast Queensland bioregion)	Koala	V	Open eucalypt forest and woodland that has: a) multiple strata layers containing Eucalyptus, Corymbia, Angophora, Lophostemon or Melaleuca trees that-at 1.3 metres above the ground-have a diameter both greater and less than 30 centimetres; and b) at least 1 of the following species: Eucalyptus tereticornis, E. fibrosa, E. propinqua; E. umbra, E. grandis, E. microcorys, E. tindaliae, E. resinifera, E. populnea, E. robusta, E. nigra, E. racemosa, E. crebra, E. exserta, E. seeana, Lophostemon confertus, L. suaveolens, Melaleuca quinquenervia.	Sea level to 1000m.	no soil information	None

Essential habitat in Category A and B (Remnant vegetation) areas:1100m Regional Ecosystems Information

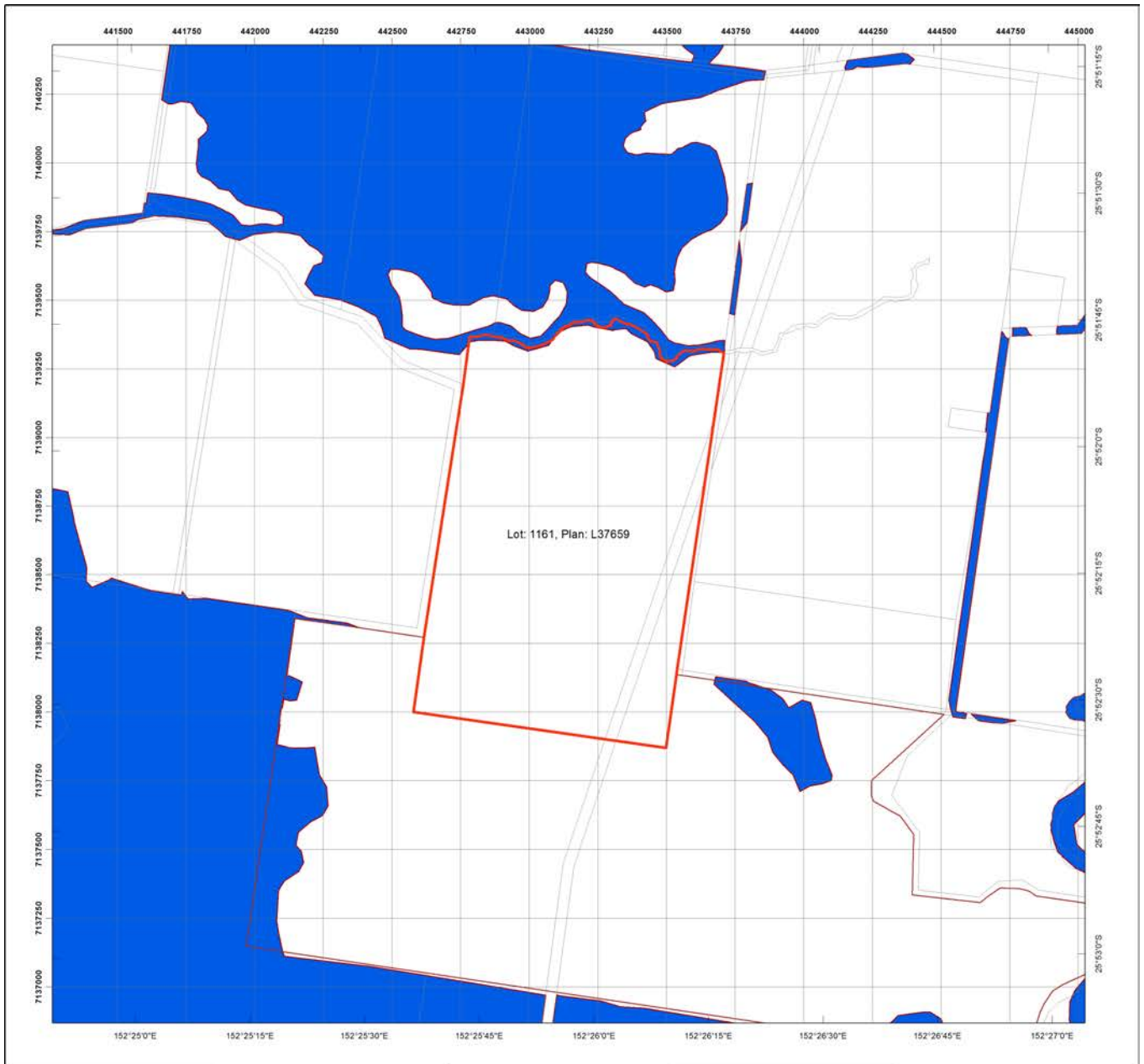
Label	Regional Ecosystem (this is a mandatory essential habitat factor, unless otherwise stated)
29186	12.3.3, 12.3.4, 12.3.6, 12.3.7, 12.3.10, 12.3.11, 12.5.2, 12.5.3, 12.8.14, 12.9-10.4, 12.9-10.7, 12.9-10.17, 12.11.5, 12.11.18, 12.12.12

Essential habitat in Category C (High value regrowth vegetation) areas:1100m Species Information

(no results)





Essential habitat in Category C (High value regrowth vegetation) areas:1100m Regional Ecosystems Information

(no results)



Regulated Vegetation Management Map

Legend

-  Lot and Plan
-  Category A area (Vegetation offsets/compliance notices/VDecs)
-  Category B area (Remnant vegetation)
-  Category C area (High-value regrowth vegetation)
-  Category R area (Reef regrowth watercourse vegetation)
-  Category X area (Exempt on Freehold, Indigenous and Leasehold land)
-  Water
-  Area not categorised
-  Cadastral line
-  Property boundaries shown are provided as a locational aid only



This product is projected into:
 GDA 1994 MGA Zone 56

Disclaimer:

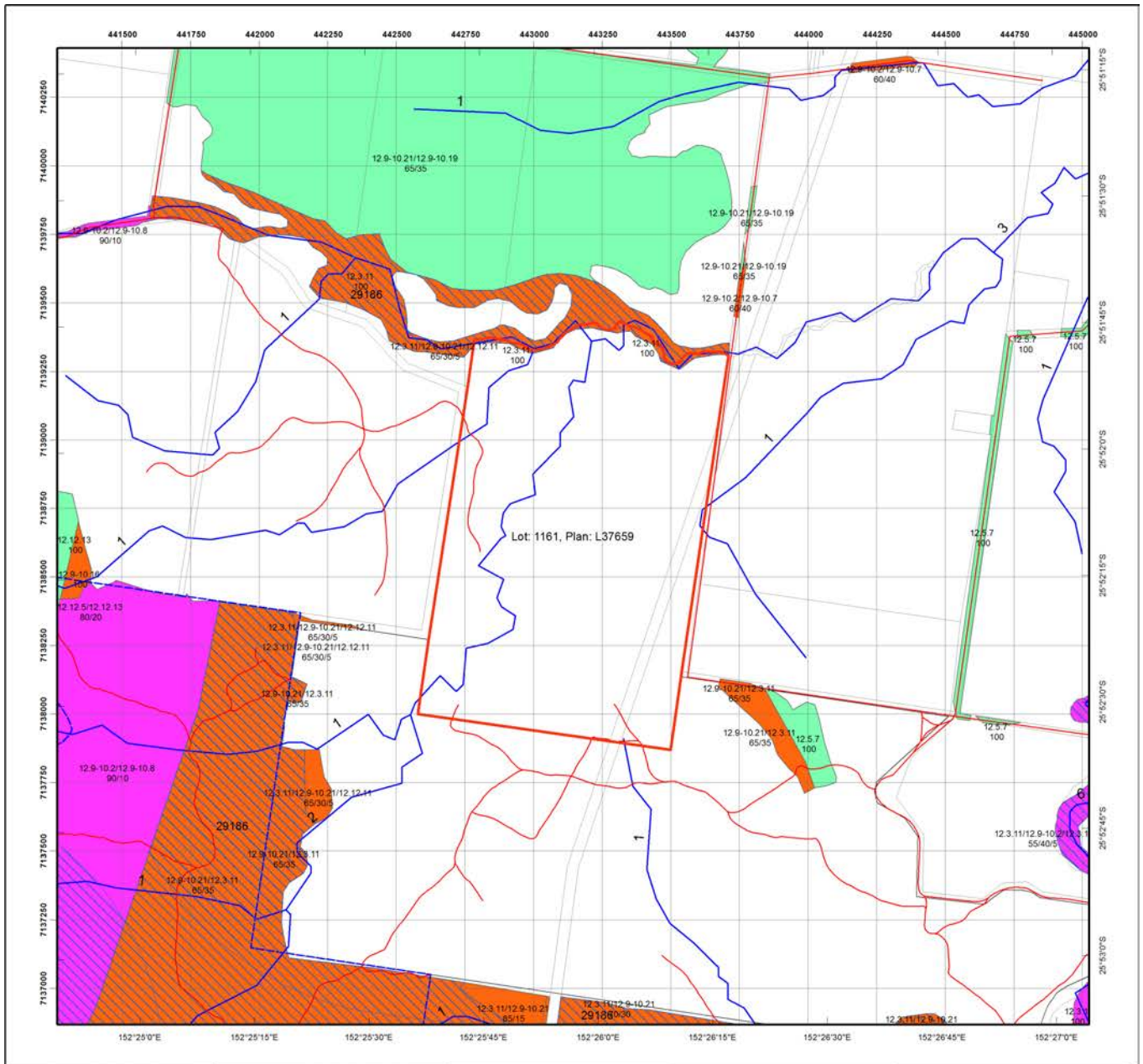
While every care is taken to ensure the accuracy of this product, the Department of Natural Resources and Mines makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the product being inaccurate or incomplete in any way and for any reason.

Additional information required for the assessment of vegetation values is provided in the accompanying "Vegetation Management Supporting map". For further information go to the web site: www.dnrm.qld.gov.au or contact the Department of Natural Resources and Mines.

Digital data for the regulated vegetation management map is available from the Queensland Spatial Portal at <http://www.information.qld.gov.au/>

This map is updated on a monthly basis to ensure new PMAVs are included as they are approved.

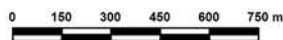
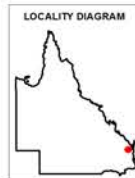




Vegetation Management Supporting Map

Legend

- Lot and Plan
- Category A or B area containing endangered regional ecosystems
- Category A or B area containing of concern regional ecosystems
- Category A or B area that is a least concern regional ecosystem
- Category A or B area containing remnant vegetation
- Category A or B area under Section 20AH
These areas are edged in yellow and filled with the remnant RE Status
- Category C area containing endangered regional ecosystems
- Category C area containing of concern regional ecosystems
- Category C area that is a least concern regional ecosystem
- Category C area containing high value regrowth vegetation
- Category C area under Section 20AI
These areas are edged in purple and filled with the remnant RE Status
- Non Remnant
- Water
- Wetland on the vegetation management wetlands map
- Essential habitat on the essential habitat map
- Essential habitat species record
- Watercourse on the vegetation management watercourse and drainage feature map
(Stream order shown as black number against stream where available)
- Roads
- National Parks, State Forest and other reserves
- Cadastral line
- Property boundaries shown are provided as a locational aid only



This product is projected into:
GDA 1994 MGA Zone 56

Labels for Essential Habitat are centred on the area of enquiry.

Regional ecosystem linework has been compiled at a scale of 1:100 000, except in designated areas where a compilation scale of 1:50 000 is available. Linework should be used as a guide only. The positional accuracy of RE data mapped at a scale of 1:100 000 is +/- 100 metres.

Disclaimer:
While every care is taken to ensure the accuracy of this product, the Department of Natural Resources and Mines makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the product being inaccurate or incomplete in any way and for any reason.

Additional information may be required for the purposes of land clearing or assessment of a regional ecosystem map or PMAV applications. For further information go to the web site: www.dnrm.qld.gov.au or contact the Department of Natural Resources and Mines.

Digital data for the vegetation management watercourse and drainage feature map, vegetation management wetlands map, essential habitat map and the vegetation management remnant and regional ecosystem map are available from the Queensland Spatial Portal at <http://www.information.qld.gov.au/>



Vegetation Management Act 1999 - Extract from the essential habitat database

Essential habitat is required for assessment under the:

- State Development Assessment Provisions - Module 8: Native vegetation clearing which sets out the matters of interest to the state for development assessment under the *Sustainable Planning Act 2009*; and
- Self-assessable vegetation clearing codes made under the *Vegetation Management Act 1999*

Essential habitat for one or more of the following species is found on and within 1.1 km of the identified subject lot/s or on and within 2.2 km of an identified coordinate on the accompanying essential habitat map.

This report identifies essential habitat in Category A, B and Category C areas.

The numeric labels on the essential habitat map can be cross referenced with the database below to determine which essential habitat factors might exist for a particular species.

Essential habitat is compiled from a combination of species habitat models and buffered species records.

The Department of Natural Resources and Mines website (<http://www.dnrm.qld.gov.au>) has more information on how the layer is applied under the State Development Assessment Provisions - Module 8: Native vegetation clearing and the *Vegetation Management Act 1999*.

Regional ecosystem is a mandatory essential habitat factor, unless otherwise stated.

Essential habitat, for protected wildlife, means a category A area, a category B area or category C area shown on the regulated vegetation management map-

- 1) (a) that has at least 3 essential habitat factors for the protected wildlife that must include any essential habitat factors that are stated as mandatory for the protected wildlife in the essential habitat database; or
- 2) (b) in which the protected wildlife, at any stage of its life cycle, is located.

Essential habitat identifies endangered or vulnerable native wildlife prescribed under the *Nature Conservation Act 1994*.

Essential habitat in Category A and B (Remnant vegetation species record) areas:1100m Species Information

(no results)

Essential habitat in Category A and B (Remnant vegetation species record) areas:1100m Regional Ecosystems Information

(no results)

Essential habitat in Category A and B (Remnant vegetation) areas:1100m Species Information

Label	Scientific Name	Common Name	NCA Status	Vegetation Community	Altitude	Soils	Position in Landscape
29186	<i>Phascolarctos cinereus</i> (southeast Queensland bioregion)	Koala	V	Open eucalypt forest and woodland that has: a) multiple strata layers containing Eucalyptus, Corymbia, Angophora, Lophostemon or Melaleuca trees that-at 1.3 metres above the ground-have a diameter both greater and less than 30 centimetres; and b) at least 1 of the following species: Eucalyptus tereticornis, E. fibrosa, E. propinqua; E. umbra, E. grandis, E. microcorys, E. tindaliae, E. resinifera, E. populnea, E. robusta, E. nigra, E. racemosa, E. crebra, E. exserta, E. seeana, Lophostemon confertus, L. suaveolens, Melaleuca quinquenervia.	Sea level to 1000m.	no soil information	None

Essential habitat in Category A and B (Remnant vegetation) areas:1100m Regional Ecosystems Information

Label	Regional Ecosystem (this is a mandatory essential habitat factor, unless otherwise stated)
29186	12.3.3, 12.3.4, 12.3.6, 12.3.7, 12.3.10, 12.3.11, 12.5.2, 12.5.3, 12.8.14, 12.9-10.4, 12.9-10.7, 12.9-10.17, 12.11.5, 12.11.18, 12.12.12

Essential habitat in Category C (High value regrowth vegetation) areas:1100m Species Information

(no results)

Essential habitat in Category C (High value regrowth vegetation) areas:1100m Regional Ecosystems Information

(no results)

Appendix C – Wildlife Online results



Queensland Government

Wildlife Online Extract

Search Criteria: Species List for a Specified Point

Species: All

Type: All

Status: Rare and threatened species

Records: All

Date: All

Latitude: -25.879

Longitude: 152.433

Distance: 10

Email: colin.vaughan@ghd.com

Date submitted: Thursday 02 Feb 2017 13:11:48

Date extracted: Thursday 02 Feb 2017 13:20:03

The number of records retrieved = 6

Disclaimer

As the DSITIA is still in a process of collating and vetting data, it is possible the information given is not complete. The information provided should only be used for the project for which it was requested and it should be appropriately acknowledged as being derived from Wildlife Online when it is used.

The State of Queensland does not invite reliance upon, nor accept responsibility for this information. Persons should satisfy themselves through independent means as to the accuracy and completeness of this information.

No statements, representations or warranties are made about the accuracy or completeness of this information. The State of Queensland disclaims all responsibility for this information and all liability (including without limitation, liability in negligence) for all expenses, losses, damages and costs you may incur as a result of the information being inaccurate or incomplete in any way for any reason.

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	mammals	Dasyuridae	<i>Dasyurus maculatus maculatus</i>	spotted-tailed quoll (southern subspecies)		V	E	2/1
animals	reptiles	Chelidae	<i>Elseya albagula</i>	southern snapping turtle		E	CE	8
animals	reptiles	Chelidae	<i>Elusor macrurus</i>	Mary River turtle		E	E	21/1
plants	higher dicots	Lamiaceae	<i>Plectranthus omissus</i>			E	E	1/1
plants	higher dicots	Sapindaceae	<i>Cupaniopsis shirleyana</i>	wedge-leaf tuckeroo		V	V	6/4
plants	lower dicots	Hernandiaceae	<i>Hernandia bivalvis</i>	cudgerie		NT		4/1

CODES

I - Y indicates that the taxon is introduced to Queensland and has naturalised.

Q - Indicates the Queensland conservation status of each taxon under the *Nature Conservation Act 1992*. The codes are Extinct in the Wild (PE), Endangered (E), Vulnerable (V), Near Threatened (NT), Least Concern (C) or Not Protected ().

A - Indicates the Australian conservation status of each taxon under the *Environment Protection and Biodiversity Conservation Act 1999*. The values of EPBC are Conservation Dependent (CD), Critically Endangered (CE), Endangered (E), Extinct (EX), Extinct in the Wild (XW) and Vulnerable (V).

Records – The first number indicates the total number of records of the taxon for the record option selected (i.e. All, Confirmed or Specimens).

This number is output as 99999 if it equals or exceeds this value. The second number located after the / indicates the number of specimen records for the taxon.

This number is output as 999 if it equals or exceeds this value.

Appendix D – Protected Matters Search Tool results



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: 30/01/17 10:42:42

[Summary](#)

[Details](#)

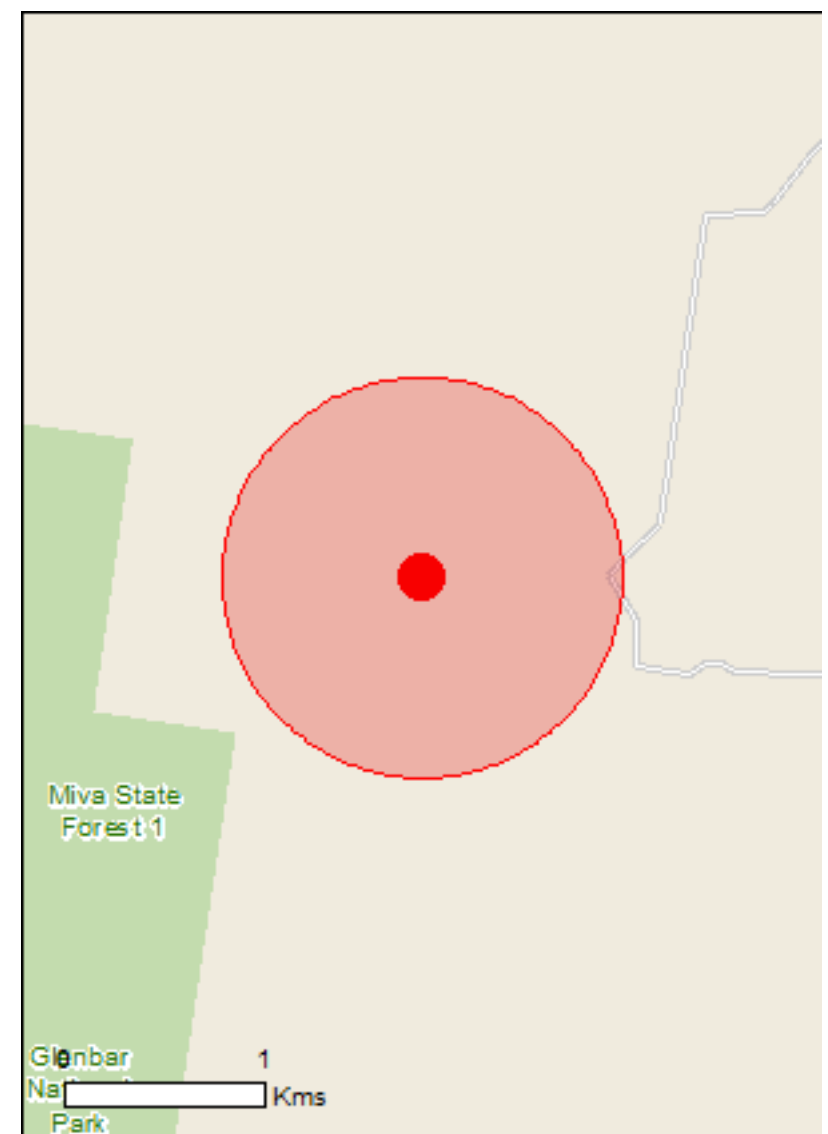
[Matters of NES](#)

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

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)



This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

[Coordinates](#)

Buffer: 1.0Km



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:	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	1
Listed Threatened Species:	26
Listed Migratory Species:	11

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Land:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	18
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Commonwealth Reserves Marine:	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:	20
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar)	[Resource Information]
Name	Proximity
Great sandy strait (including great sandy strait, tin can bay and tin can	40 - 50km upstream

Listed Threatened Ecological Communities [\[Resource Information \]](#)

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

Name	Status	Type of Presence
Lowland Rainforest of Subtropical Australia	Critically Endangered	Community may occur within area

Listed Threatened Species [\[Resource Information \]](#)

Name	Status	Type of Presence
------	--------	------------------

Birds

Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area
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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
--	------------	--

Geophaps scripta scripta Squatter Pigeon (southern) [64440]	Vulnerable	Species or species habitat may occur within area
--	------------	--

Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat may occur within area
---	-----------------------	--

Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
---	-----------------------	--

Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
--	------------	--

Turnix melanogaster Black-breasted Button-quail [923]	Vulnerable	Species or species habitat likely 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 hallucatus Northern Quoll, Digul [331]	Endangered	Species or species habitat likely to occur
--	------------	--

Name	Status	Type of Presence within area
Petauroides volans Greater Glider [254]	Vulnerable	Species or species habitat may occur within area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat may occur within area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Other		
Macrozamia pauli-guilielmi Pineapple Zamia [5712]	Endangered	Species or species habitat likely to occur within area
Plants		
Bosistoa transversa Three-leaved Bosistoa, Yellow Satinheart [16091]	Vulnerable	Species or species habitat likely to occur within area
Cossinia australiana Cossinia [3066]	Endangered	Species or species habitat likely to occur within area
Cupaniopsis shirleyana Wedge-leaf Tuckerroo [3205]	Vulnerable	Species or species habitat likely to occur within area
Dichanthium setosum bluegrass [14159]	Vulnerable	Species or species habitat likely to occur within area
Fontainea venosa [24040]	Vulnerable	Species or species habitat likely to occur within area
Macadamia integrifolia Macadamia Nut, Queensland Nut Tree, Smooth-shelled Macadamia, Bush Nut, Nut Oak [7326]	Vulnerable	Species or species habitat likely to occur within area
Phebalium distans Mt Berryman Phebalium [81869]	Critically Endangered	Species or species habitat may occur within area
Plectranthus omissus [55729]	Endangered	Species or species habitat likely to occur within area
Samadera bidwillii Quassia [29708]	Vulnerable	Species or species habitat likely to occur within area
Reptiles		
Delma torquata Collared Delma [1656]	Vulnerable	Species or species habitat may occur within area
Egernia rugosa Yakka Skink [1420]	Vulnerable	Species or species habitat may occur within area
Furina dunmalli Dunmall's Snake [59254]	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

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		
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat likely to occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat likely to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		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		
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

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		
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species

Name	Threatened	Type of Presence
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	habitat may occur within area Species or species habitat may occur within area
Cuculus saturatus Oriental Cuckoo, Himalayan Cuckoo [710]		Species or species habitat may 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]		Species or species habitat likely to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat likely to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat may 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 may 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 Resources Audit, 2001.

Name	Status	Type of Presence
Birds		
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Lonchura punctulata Nutmeg Mannikin [399]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
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
Frogs		
Rhinella marina Cane Toad [83218]		Species or species habitat likely to occur within area
Mammals		
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
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
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Plants		
<p><i>Chrysanthemoides monilifera</i> Bitou Bush, Boneseed [18983]</p>		Species or species habitat may occur within area
<p><i>Cryptostegia grandiflora</i> Rubber Vine, Rubbervine, India Rubber Vine, India Rubbervine, Palay Rubbervine, Purple Allamanda [18913]</p>		Species or species habitat likely to occur within area
<p><i>Lantana camara</i> Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]</p>		Species or species habitat likely to occur within area
<p><i>Parthenium hysterophorus</i> Parthenium Weed, Bitter Weed, Carrot Grass, False Ragweed [19566]</p>		Species or species habitat likely to occur within area
<p><i>Rubus fruticosus aggregate</i> Blackberry, European Blackberry [68406]</p>		Species or species habitat likely to occur within area
<p><i>Salvinia molesta</i> Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]</p>		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

-25.877566 152.435699

Acknowledgements

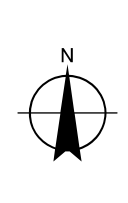
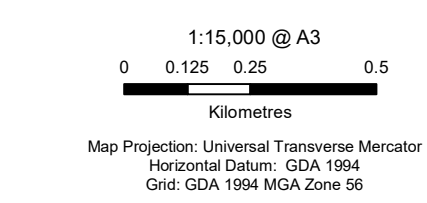
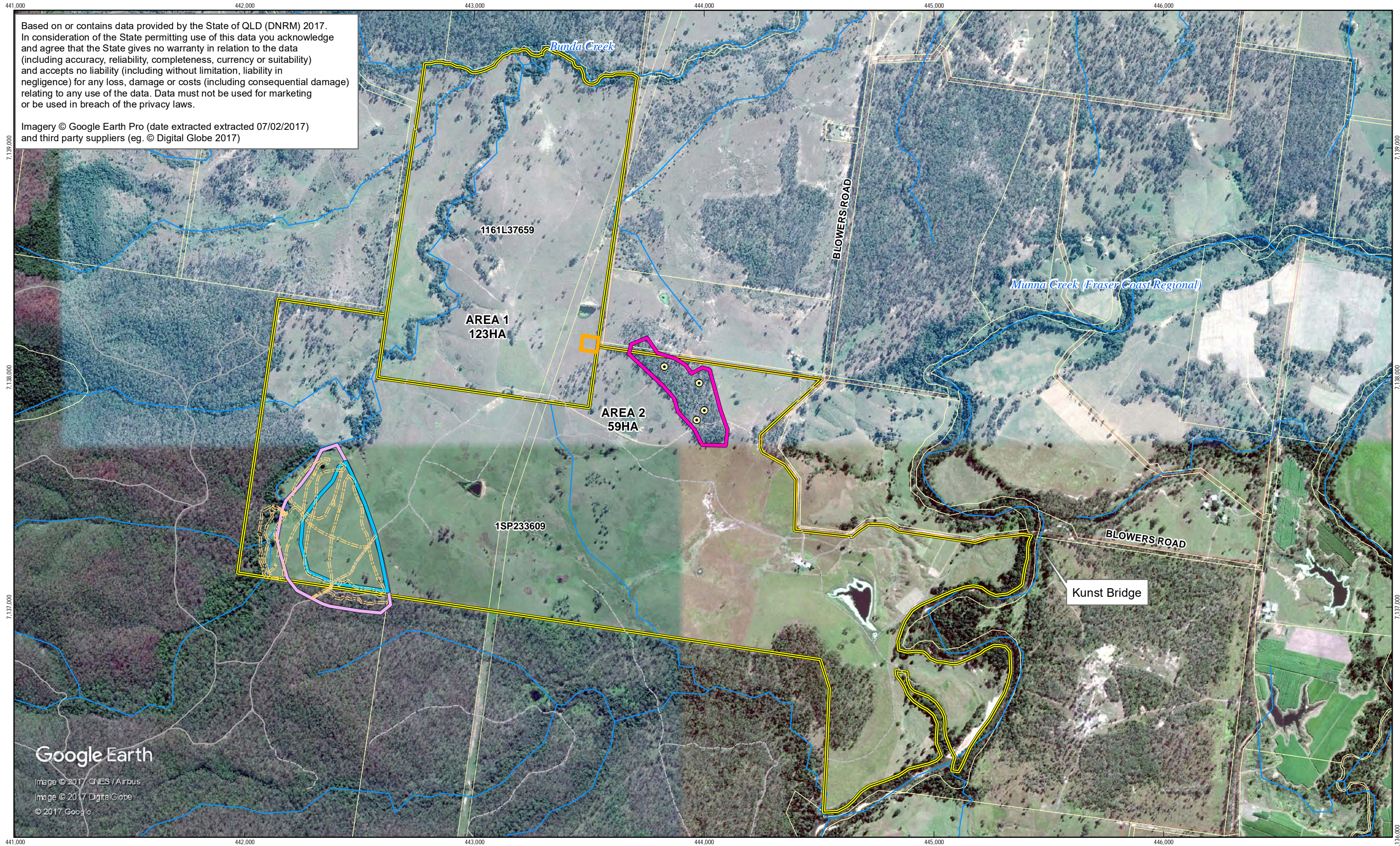
This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-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](#)
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- [-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](#)
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- [-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.

Appendix E – Map of survey effort



LEGEND	
	Quaternary site assessment location
	Street/Local Road
	Private or Restricted Road
	4WD and Track
	Waterways (stream order)
	Track log of survey effort
	Proposed substation building
	Project Area
	Cadastre
	Disturbance footprint
	Protected plants survey area (clearing impact area)
	Vegetation survey study area

	Renewable Energy System Technologies Pty Ltd Proposed Solar Farm Munna Creek	Job Number 41-30594
		Revision 0
		Date 29 Jun 2017
Track Log of Survey Effort		Appendix E

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Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
0	P. Moonie	P Bradley	on file	E Kerr	on file	29/06/2017

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Appendix C

**Munna Creek Solar Farm – Environmental
Assessment Report for Wetlands and
Waterways**



FRASER COAST REGIONAL COUNCIL
These are the plans referred to in
Decision Notice No.

MCU 17/1028

20 APR 2018

.....
For Assessment Mgr.



Munna Creek Solar Farm Pty Ltd
Munna Creek Solar Farm - Environmental Assessment
Report for Wetlands and Waterways

April 2018

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1. Introduction

Fraser Coast Regional Council (FCRC) has requested as a condition of development permit (ref: MCU-171028) for the proposed Munna Creek Solar Farm that the proponent (Munna Creek Solar Farm Pty Ltd) submits an environmental assessment report that '*demonstrates that the buffers provided around on-site wetlands and waterways achieve appropriate separation distances for maintaining or enhancing the wetland/waterways as per the Queensland Wetland Buffer Guideline (2011), the State Planning Policy and the Fraser Coast Planning Scheme 2014*' (refer to condition 9).

GHD ecologists completed a desktop and field assessment of on-site wetlands and waterways and associated buffers at the proposed Munna Creek Solar Farm site on 15 February 2018. This report summarises the outcomes of the assessment and provides comment on the adequacy of proposed buffers in relation to relevant legislation and guidelines. The report also discusses the impacts to wetlands and waterways due to the proposed development and provides mitigation measures to ensure ecosystem function is retained, enhanced and maintained within the wetland/waterway areas. Key definitions are also provided as background information.

1.1 Project background

The project site is located at 493 Blowers Road, Munna Creek in Queensland, approximately 40 km north-west of Gympie. The project extent as shown by the proposed solar farm infrastructure envelope on Figure 1, encompasses the majority of Lot 1 on SP233609 and Lot 1161 on L37659 (referred to 'the site'), both of which are currently used for grazing purposes (refer to Figure 1).

The project will comprise a 120 megawatt solar array of fixed panels and associated inverter rooms, which are likely to be erected as such that they have a maximum height of 2-3 metres above ground level. The array will most likely be located in the western part of the site. It is anticipated that a substation will be located close to the panels to facilitate connection to the transmission lines that traverse the site. Furthermore, it is assumed that there would also be a small maintenance shed also located near the panels.

It is anticipated that there would be no requirement for substantial clearing of existing vegetation or for substantial earthworks or landform modification. It is expected that the facility will be remotely monitored and only the occasional visit will occur for maintenance and repairs. It is expected that there would be limited requirements for lighting (perhaps some security lighting around the shed).

1.2 Limitations

This report has been prepared by GHD for Munna Creek Solar Farm Pty Ltd and may only be used and relied on by Munna Creek Solar Farm Pty Ltd for the purpose agreed between GHD and the Munna Creek Solar Farm Pty Ltd as set out in section 1 of this report.

GHD otherwise disclaims responsibility to any person other than Munna Creek Solar Farm Pty Ltd arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer section 1 and 2 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

1.3 Key definitions

The following definitions listed in Table 1 are applicable to the outcomes of the assessment.

Table 1 Key Definitions

Term	Source	Definition
Lateral limits	<i>Water Act 2000</i>	The outer bank on one side of the watercourse and the outer bank on the other side of the watercourse
Outer bank	<i>Water Act 2000</i>	The outer bank, at any location on one side of a watercourse, is - (a) if there is a floodplain on that side of the watercourse—the edge of the floodplain that is on the same side of the floodplain as the watercourse; or (b) if there is not a floodplain on that side of the watercourse—the place on the bank of the watercourse marked by— - a scour mark; or - a depositional feature; or - if there are 2 or more scour marks, 2 or more depositional features or 1 or more scour marks and 1 or more depositional features—whichever scour mark or depositional feature is highest.
Waterway	<i>Fisheries Act 1994</i>	Includes a river, creek, stream, watercourse or inlet of the sea. A waterway must have at least one of the following: - Defined bed and banks - An extended, if non-permanent, period of flow. - Flow adequacy - Fish habitat at, or upstream of, the site
Wetland	Queensland wetland definition and delineation guideline: Part A – DRAFT	Wetlands are areas of permanent or periodic/intermittent inundation, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed 6 metres. A wetland must have one or more of the following attributes: - The land supports, at least periodically, plants or animals that are adapted to and dependent on living in wet conditions for at least part of their life cycle - The substratum is predominantly undrained soils that are saturated, flooded or ponded long enough to develop anaerobic conditions in the upper layers - The substratum is not soil and is saturated with water, or covered by water, at some time
Wetland buffer	Queensland wetland definition and delineation guideline: Part A – DRAFT	A wetland buffer is the transition zone between the wetland and the surrounding land use. Its purpose is to support the values and processes of the wetland and protect it from external threats.

2. Method

The ecological assessment included both a desktop assessment and field investigation. The desktop component involved a review of the site layout plans and existing reports produced for the development application for the proposed Munna Creek Solar Farm. Government spatial mapping was also examined, together with relevant guidance documents such as the *'Queensland wetland definition and delineation guideline Part A: A guide to existing wetland definitions and the application of the Queensland Wetlands Program definition'* (Department of Environment and Resource Management, 2011).

The field investigation was undertaken on 15 February 2018 and involved establishing transects at three separate locations to confirm the presence of mapped wetlands and/or waterways and assess the ecological values and conditions of each. Transect locations were recorded with a handheld GPS and are shown in Figure 1. The Program Wetland Definition was used as a basis for determining the presence of wetlands on site. In this regard, assessments were made against the inundation, vegetation and soil criteria specified in the *Queensland wetland definition and delineation guidelines: Part B – DRAFT*.

Information was also collected on the following attributes at each location:

- Presence of wetland fauna
- Existing connectivity
- Ecological significance of the wetland
- Wetland condition
- Existing buffer characteristics
- Existing wetland pressures
- Future wetland pressures

Delineation of wetland boundaries was not required as none of the mapped wetlands shown on the Fraser Coast Regional Council's Biodiversity, Waterways and Wetlands Overlay Map (Ref: OM-004) were confirmed present within the proposed solar farm infrastructure envelope on site.

The presence of waterways was assessed on site using the physical and hydrological attributes listed by the Department of Fisheries (accessed at <https://www.daf.qld.gov.au/business/priorities/fisheries/habitats/policies-and-guidelines/fish-habitat-factsheets/what-is-a-waterway>). The lateral extents of waterways were determined using the definition provided in the *Water Act 2000*.

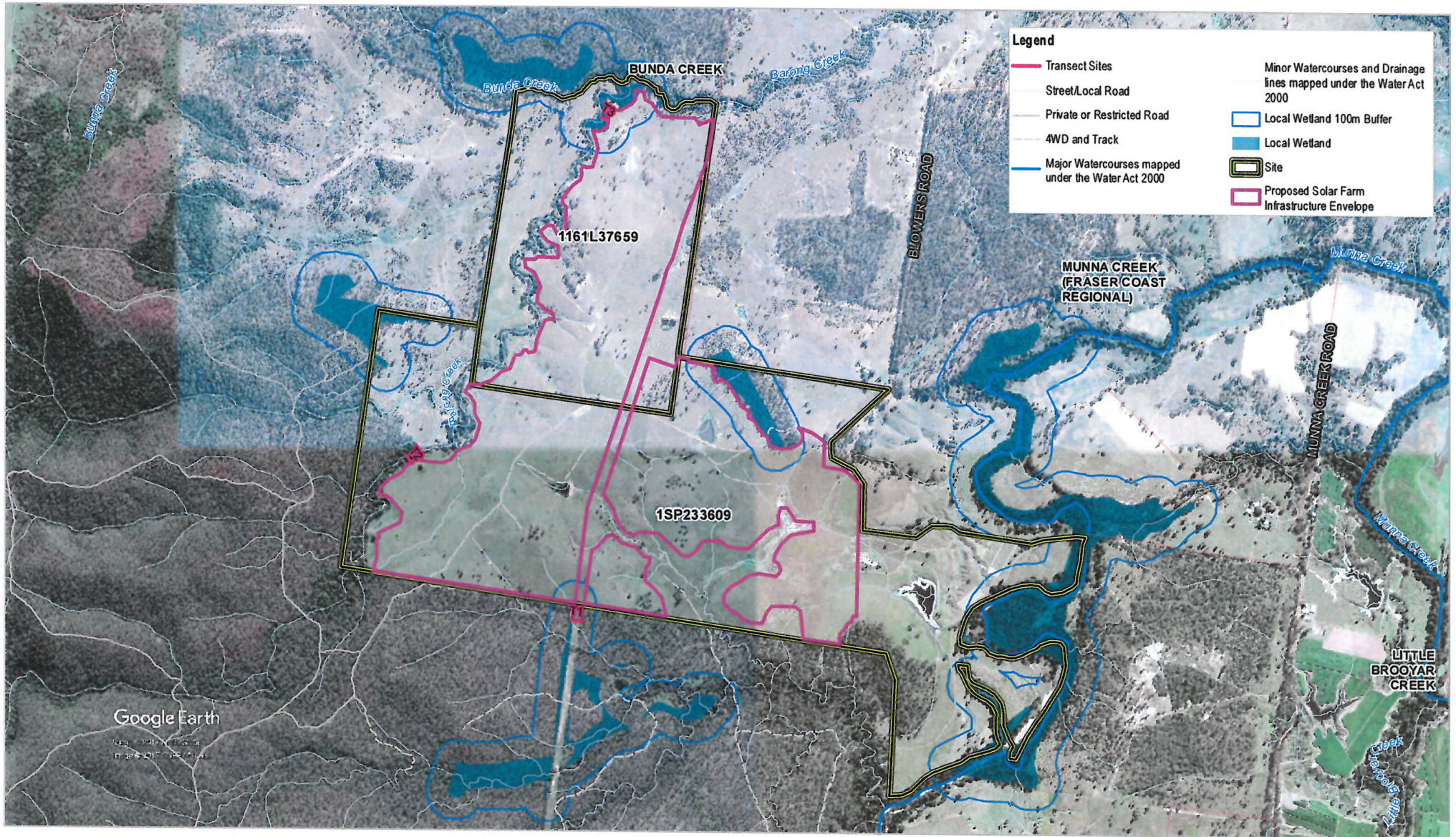
2.1 Assessment personnel

The ecologists who undertook the survey are both suitably experienced and qualified to complete waterway and wetland assessments. Peter Moonie has a degree majoring in ecology and over 20 years' experience in ecological assessments. He has undertaken numerous waterway and wetland delineation and characterisation assessments. Sofie Bernays has a PhD qualification in ecology and currently works as an aquatic ecologist. Sofie regularly assesses the environmental values of aquatic systems and is particularly familiar with the Australian River Assessment System (AUSRIVAS).

3. Desktop assessment results

A summary of results from the desktop assessment within the proposed solar farm infrastructure envelope is provided as follows:

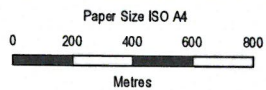
- Barong Creek traverses the western and northern perimeter of the site. Barong Creek is mapped as a waterbody on the Fraser Coast Regional Council base maps. The section traversing the northern perimeter is mapped as a:
 - Local wetland and local wetland buffer on the FCRC Planning Scheme Biodiversity, Waterways and Wetlands Overlay (OM-004) near T3;
 - Stream Order 3 on the Vegetation Management and Drainage Feature Map (Queensland Globe 2018);
 - Watercourse on the Watercourse Identification Map (WIM) as shown on Figure 1; and
 - High risk (red) waterway on the Queensland waterways for waterways barrier works spatial layer (Queensland Globe 2018).
- The section of Barong Creek traversing the western perimeter is mapped as a:
 - Stream Order 2 on the Vegetation Management and Drainage Feature Map (Queensland Globe 2018);
 - Moderate risk (amber) waterway on the Queensland waterways for waterways barrier works spatial layer (Queensland Globe 2018); and
 - Drainage line along the southern section and a watercourse along the northern section on the WIM.
- Two local wetlands buffers are mapped as occurring within the proposed solar farm infrastructure envelope (as shown on Figure 1) on the Biodiversity, Waterways and Wetlands Overlay (OM-004). One of which occurs on a hilltop near the northern boundary of Lot 1 SP233609 and has previously been discounted as a wetland as it has no wetland plants or wetland soil indicators present. A second local wetland buffer is mapped immediately south of the site, on Lot 1 SP233609 with the proposed solar farm infrastructure envelope near T1.
- The upper reaches of the local catchment are reasonably well vegetated; however, the site itself has a long history of disturbance from agricultural activity.
- There are no mapped wetland protection areas and/or high ecological value waters (wetland and/or watercourse) within the site.
- A high ecological significance wetland is mapped along Munna Creek along the eastern boundary of Lot 1 SP233609, however it is outside of the proposed solar farm infrastructure envelope.



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 Satellite imagery provided by
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Map Projection: Transverse Mercator
 Horizontal Datum: GDA 1994
 Grid: GDA 1994 MGA Zone 56



Munna Creek Solar Farm Pty Ltd
Munna Creek Solar Farm

**Mapped wetlands, waterways
 and transect locations at
 Munna Creek Solar Farm**

Project No. 41-31519
 Revision No. 0
 Date 17/04/2018

FIGURE 1


4. Field assessment results



Field assessment results are documented in Table 2 and are summarised below:



- None of the local wetlands mapped within the proposed solar farm infrastructure envelope were confirmed present on site during field investigations, with few to no wetland plants or soil indicators present.
- Wetland vegetation recorded on site was largely restricted to the riparian zone (lower banks) of Barong Creek. The majority of vegetation fringing the creek is mapped as non-remnant; however, the southern and northern extents within the site are mapped as comprising remnant vegetation. A small section of the creek (approximately 80 m in length) is mapped as comprising the endangered regional ecosystem 12.3.3 which is classified as *Eucalyptus tereticornis* woodland and it is a floodplain, but not a wetland.
- Barong Creek is an ephemeral waterway, principally surrounded by cleared agricultural land. It is moderately to highly disturbed and has no habitat for conservation significant species. Despite its ephemeral nature, shallow pool habitat was commonly observed along its length and such habitat is likely to provide refuge for aquatic species during drier periods and also provide opportunities for recolonisation when conditions are suitable.

Field transect locations are shown on Figure 1.

Table 2 Transect descriptions for three separate locations at the site

Attribute	Description	Photograph
Transect 1 (T1) – Mapped local wetland adjacent to southern perimeter		
Wetland presence and extent	Mapped as local wetland but no wetland observed at this location.	 <p>Site of mapped local wetland at Transect 1</p>
Physical features	No physical wetland features observed. Site occurs on lower slope of low hill.	
Geology/soils/substrate	Moist brown sandy loam. No wetland soil indicators present (e.g. accumulation of organic matter, sulfidic materials, gleyed soil matrix colours, mottles, iron or manganese segregations etc.)	
Hydrological features	No surface water or evidence of recent or regular inundation.	
Wetland vegetation	Only two wetland indicator species present (<i>Cyperus exaltatus</i> , <i>C. difformis</i>); both in low abundance and restricted to a single rill. Vegetation across the site was dominated by dryland species such as <i>Bothriochloa decipiens</i> var. <i>decipiens</i> , <i>Eragrostis</i> sp., <i>Pterocaulon redolens</i> , <i>Chamaecrista rotundifolia</i> var. <i>rotundifolia</i> , <i>Euphorbia hirta</i> and <i>Imperata cylindrica</i>	
Fauna	Termite mounds present. No wetland dependent fauna observed.	
Connectivity	Site occurs within a cleared high voltage powerline easement which fragments the landscape.	
Ecological significance	No significant ecological values observed. No aquatic habitat observed. No remnant vegetation present within Lot 1 on SP233609.	
Condition	Highly modified. Regularly cleared to maintain the high voltage powerline corridor.	
Existing buffer	Not applicable. No wetland present within 100 m of proposed solar farm infrastructure envelope at this location.	
Existing wetland pressures	Not applicable.	
Future wetland pressures	Not applicable.	
Transect 2 (T2) – Barong Creek (adjacent to western perimeter of project site)		
Wetland presence and extent	No wetland mapped at the transect site. Ephemeral waterway present with an integrated tributary channel pattern. No wetland present on floodplain. Wetland component restricted to lower banks of waterway.	

Attribute	Description	Photograph
Physical features	Continuous bed and banks along reach. Low flow channel (4-5 m wide) consisted of a series of isolated pools separated by riffles and vegetated bars. Western bank was steep and heavily eroded with exposed tree roots. Eastern bank was more gently sloped with a series of terraces present. A floodplain adjoins the eastern outer bank. Debris on the lower banks indicates occasional overtopping of low flow channel but lack of scouring on upper eastern bank and predominance of dryland vegetation suggests flooding of the broader channel is very infrequent.	
Geology/soils/substrate	Alluvium. Exposed bedrock and sands within channel. Brown sandy silts on banks.	
Hydrological features	Sustained heavy rainfall likely to be required to generate flows. Flows are likely to be infrequent and of short duration. Surface water restricted to isolated pools within channel at time of survey. Pool depth approximately 1 m.	Low flow channel at Transect 2
Wetland vegetation	Wetland indicator species (DES 2018) restricted to low flow channel and lower banks. Dominant species included <i>Melaleuca viminalis</i> , <i>Lomandra longifolia</i> , <i>Ludwigia peploides</i> , <i>Ottelia ovalifolia</i> , <i>Cyperus</i> spp.. Mapped remnant vegetation adjacent.	
Fauna	Macroinvertebrates, crustaceans, small freshwater fish, tadpoles	
Connectivity	Narrow fringe of vegetation providing some connectivity between larger patches of remnant vegetation	Outer eastern bank and adjacent floodplain at Transect 2
Ecological significance	No significant ecological values apparent apart from small polygon of mapped endangered RE 12.3.3 adjacent to the transect location. General ecological values: moderate diversity of habitats – pools, riffles during periods of high flow, floodplain. Pools provide refuge for aquatic species during drier periods, trap sediments and provide a water source for terrestrial fauna.	
Condition	Highly disturbed - moderate to high weed levels (including presence of highly invasive weeds such as <i>Macfadyena unguis-cati</i>), bank erosion, sedimentation of pools, elevated nutrients	
Proposed buffer	Separation distances from proposed solar farm infrastructure envelope: <ul style="list-style-type: none"> • 25 m to outer bank of waterway • 60 m to riparian zone (extent of wetland based on the presence of wetland vegetation) • 65 m to low flow channel. 	
Existing wetland pressures	Grazing, erosion, weeds, elevated nutrient levels	

Attribute	Description	Photograph
Future wetland pressures	<p>Increased sediment transport associated with vegetation clearing for track construction and increase volume of runoff from increased impervious areas</p> <p>Reduced grazing intensity</p>	
Transect 3 (T3) – Barong Creek		
Wetland presence and extent	Ephemeral waterway with an integrated tributary channel pattern. Wetland confined to lower banks of waterway rather than intersecting adjacent floodplain as mapped in the Biodiversity, Waterways and Wetlands Overlay (OM-004).	 <p data-bbox="1532 799 1921 823">Lateral view from western bank of T3</p>
Physical features	Continuous bed and banks along reach. Lateral extent of waterway (outer bank to outer bank) approximately 30 m. Low flow channel approximately 2-4 m wide. Bank angles relatively steep (30-40 degrees). Low flow channel characterised by long isolated shallow pools separated by rock/sand bars. Vehicle crossing point present. Exposed roots on eroded banks. Evidence of debris on lower slopes from higher flow events. Overtopping of upper banks very infrequent. Floodplain present either side of waterway.	
Geology/soils/substrate	Alluvium. Light brown silty sands.	 <p data-bbox="1532 1161 1921 1209">Longitudinal view along low flow channel and lower banks</p>
Hydrological features	Sustained heavy rainfall likely to be required to generate flows. Flows are likely to be infrequent and of short duration. Surface water restricted to long isolated pools within channel at time of survey. Pool depth approximately 1 m. No surface water or evidence of recent or regular inundation on the extent of the floodplain mapped as a local wetland.	
Wetland vegetation	Wetland indicator species (DES 2018) restricted to low flow channel and lower banks. Dominant species included <i>Casuarina cunninghamiana</i> , <i>Melaleuca viminalis</i> , <i>Lomandra longifolia</i> and <i>Cyperus polystachyos</i> . No remnant vegetation present.	
Fauna	Macroinvertebrates, crustaceans, small freshwater fish, tadpoles	
Connectivity	Narrow fringe of vegetation providing some connectivity between larger patches of remnant vegetation	
Ecological significance	<p>No significant ecological values apparent.</p> <p>General ecological values: moderate diversity of habitats – pools, riffles during periods of high flow, floodplain. Pools provide refugia for aquatic species during drier periods (macroinvertebrates, crustaceans, small fish and amphibians), trap sediments and provide a water source for terrestrial fauna.</p>	
Condition	Highly disturbed - moderate to high weed levels (including presence of highly invasive weeds such as <i>Macfadyena unguis-cati</i>), bank erosion, sedimentation of pools, elevated nutrients. Artificial barrier to low flow (vehicle crossing).	

Attribute	Description	Photograph
Existing buffer	Separation distances from proposed solar farm infrastructure envelope: <ul style="list-style-type: none"> • 25 m to outer bank of waterway. • 35 m to riparian zone (extent of wetland based on the presence of wetland vegetation) • 40 m to low flow channel. 	
Existing wetland pressures	Grazing, erosion, weeds, elevated nutrients	
Future wetland pressures	Increased sediment transport associated with vegetation clearing for track construction and increase volume of runoff from increased impervious areas Reduced grazing intensity	

5. Buffer considerations

Local wetlands depicted in FCRC's Biodiversity, Waterways and Wetlands Overlay Code mapping (within and adjacent to the site) appear to be mapped in association with floodplains adjacent to local waterways. None of these local wetlands were confirmed present on site during field investigations, with few to no wetland plants or soil indicators present. The only wetland vegetation recorded adjacent to the proposed solar farm infrastructure envelope was a very narrow tract of riparian vegetation (10-15 m wide) growing on the lower banks of Barong Creek. This tract of vegetation was present along the entire extent of Barong Creek but does not appear to be included as a locally important waterway on the Biodiversity, Waterways and Wetlands Overlay Code map.

Given that none of the local wetlands depicted in FCRC's Overlay Code mapping are present on site and Barong Creek is not mapped as a locally important waterway, buffer separations specified in Tables 8.2.4.3.3 and 8.2.4.3.4 of the Code (i.e. 200 m for a wetland and 100 m for a waterway) are not applicable. Nonetheless, Munna Creek Solar Farm Pty Ltd is committed to operating in an environmentally responsible manner and has located the proposed solar farm infrastructure envelope a minimum distance of 25 m from the outer bank of Barong Creek. This separation distance is considered appropriate to maintain the existing habitat and ecological functioning of the creek, particularly given the buffer characteristics (i.e. dense grass layer on subdued terrain), the degraded nature of the creek, its residual environmental values and proposed management and mitigation measures to be implemented during construction and operations (refer Section 6).

The separation distance nominated for Munna Creek Solar Farm has also been determined in consideration of adequate buffer distances cited for specific wetland environmental values in Appendix F of the *Queensland Wetland Buffer Guideline* (Department of Environment and Resource Management, 2011). Buffer distances cited for relevant matters are discussed below:

- General human impact on waterways (firebreaks and human impact deterrence) - the recommended buffer distances cited in the *Queensland Wetland Buffer Guideline* ranges from 6 – 30 m (Department of Environment and Resource Management, 2011). For Munna Creek Solar Farm, a 25 m buffer is proposed from the outer bank of Barong Creek to the proposed solar farm infrastructure envelope. The 25 m buffer incorporates the 10 m bushfire access to allow for bushfire firefighting access along the property boundary. This is detailed in the Munna Creek Solar Farm Bushfire Hazard Management Plan.
- Maintain local biodiversity, maintain ecological processes and support wildlife corridors - the recommended buffer distance discussed in the *Queensland Wetland Buffer Guideline* is 5 – 50 m (Department of Environment and Resource Management, 2011). The proposed buffer distance at the site falls within this range and is considered appropriate to maintain the existing habitat and ecological functioning of the creek.
- Erosion and sediment controls along the waterway (maintaining water quality, stabilising banks, instream health, healthy riparian vegetation) - the recommended buffer distance discussed in the *Queensland Wetland Buffer Guideline* is 5 – 20 m (Department of Environment and Resource Management, 2011). The proposed buffer distance at the site is considered appropriate to mitigate against any potential negative impacts to the waterway and the construction contractor will be obligated to develop and implement an Erosion and Sediment Control Plan during the construction phase.

6. Impact assessment and management

Project development works will involve clearing of vegetation, construction of gravel roads and office facilities and installation of solar array infrastructure. The project has the potential to impact environmental values associated with the riparian and aquatic habitats of Barong Creek. The removal of terrestrial vegetation in close proximity to the creek may result in soil erosion and sediment transport. This may impact water quality and smother benthic habitat through sedimentation. It is expected that the impact will be minor due to the limited clearing footprint and the implementation of industry standard management practices (e.g. sediment and erosion controls, exclusion zones, buffer zones, timing of works, etc.). Impacts are also likely to be of relatively short duration, with storm events during construction of greatest risk; although lower level, ongoing impacts are possible.

During the construction phase of Munna Creek Solar Farm, an Environmental Management Plan (Construction) (EMP(C)) will be developed and implemented for the site. The EMP(C) will ensure the hazards of the project are identified and appropriate mitigation measures are adopted during the construction phase. A summary of potential impacts and associated mitigation measures to be adopted in the EMP(C) is presented in Table 3.

Table 3 Mitigation measures to protect wetlands and waterways

Impacts	Mitigation measure
<p>Clearing of vegetation</p> <p>Removal of terrestrial vegetation within proximity to creeks and mapped wetland areas, resulting in soil erosion and sediment transportation. This may result in impacts to water quality within watercourses and mapped wetlands.</p> <p>Increased peak runoff as a result of natural drainage channels and clearing of vegetation, resulting in sediment transportation into the waterways and mapped wetlands.</p>	<p>Development and implementation of an Erosion and Sediment Control Plan (ESCP). Including soil stabilisation during construction and post construction.</p> <p>Development and implementation of an Environmental Management Plan (Construction) (EMP(C)).</p> <p>Implementation of industry standard management practises (e.g. sediment and erosion controls, timing of works, etc.). An exclusion zone will also be established along the outer edge of the buffer to prevent impacts within the buffer zone.</p> <p>Working with the Mary River Catchment Coordinating Committee to develop strategies to enhance and revegetate areas along the waterways and riparian areas adjoining the site.</p> <p>Retain riparian vegetation along and near the waterways and retain remnant vegetation (where possible).</p> <p>The proposed solar farm infrastructure envelope to be located a minimum of 25 m from the outer bank of Barong Creek.</p> <p>Regeneration of natural vegetation through reduced grazing activities.</p> <p>Stormwater quantity and quality mitigation treatment devices to be incorporated into the overall road and internal layout design.</p>
<p>Road and infrastructure construction</p> <p>Increased sediment and stormwater runoff as a result of the gravel access roads and infrastructure on site. This could result in sediment transportation and erosion, as well as impacts to water quality within the watercourses and mapped wetlands.</p>	<p>Development and implementation of ESCP.</p> <p>Development and implementation of an EMP(C).</p> <p>Branch access roads to be graded at approximately 1% grade, and will include swale type table drains. These swale drains will intercept sheet flow runoff originating from solar panel runoff. The 1% grade is to ensure that the drainage flow regime is sufficiently slow as to mitigate against sediment transportation, as well as to promote infiltration and the achievement of nutrient up take by vegetation within the table drains.</p> <p>Drainage will be directed to designated cross drainage collection paths, which, in turn, will discharge to existing drainage paths and stock dams.</p>

Impacts	Mitigation measure
<p>Placement of infrastructure and roads within 100 year ARI flood inundation footprints, resulting in impacts to infrastructure and water quality, as well as sediment transportation to waterways and mapped wetland areas.</p>	<p>Use of vegetated swale table drains, as well as bunds and other similar standards treatments to all roads to improve sediment drop out and reduce water velocities.</p> <p>Buffer zones to all existing drainage courses, dams and the 100 year ARI afflux inundation footprint to be implemented.</p> <p>Non-habitable floor areas are designed and constructed to be resilient to the effects of flood. The treatment of stormwater runoff from the developed site will be considered during the design phase of the project to ensure compliance with the planning scheme requirement by minimising environmental impacts to the receiving environment.</p> <p>Minimum of 10 m horizontal buffers from the 100 year ARI flood inundation footprints for all creeks and the internal backwater and stock dam inundation footprints and the centreline of any drainage path in accordance with the Defined Flood Event specified in Schedule 1.4 of the <i>Fraser Coast Planning Scheme 2014</i>.</p>
<p>Installation of Solar Panels</p>	
<p>Runoff from the surface of solar panels has the potential to substantially alter the drainage regime for the site, which could result in sheet flow runoff and sediment transportation to the surrounding creeks and mapped wetland areas.</p>	<p>Development and implementation of ESCP.</p> <p>Development and implementation of an EMP(C).</p> <p>Runoff will be redirected to mimic the existing sheet flow conditions across the existing underlying natural ground surface as closely as possible to facilitate maximum infiltration and to return runoff conditions to those approximating the pre-development impervious conditions.</p> <p>Runoff from the solar panel arrays to be intercepted and directed to ground level in a manner that more closely approximates distributed flow conditions, and to return the runoff conditions to that of broad sheet flow conditions under the panel arrays</p> <p>Existing stock dams to be repurposed to serve as detention/retention basins with associated water-sensitive urban design (WSUD) water quality improvement intentions.</p> <p>Additional flow check dams, detention and/or retention basins are proposed where future water quality modelling indicates that this will provide positive and necessary treatment outcomes.</p>

7. Conclusion

This assessment was undertaken to address condition 9 in the development permit (ref: MCU-171028) to confirm the presence of mapped wetlands on the site and to comment on the adequacy of proposed buffers between the proposed solar farm infrastructure envelope and wetlands and waterways in relation to relevant legislation and guidelines.

The assessment determined that the mapped local wetlands depicted in FCRC's Overlay Code mapping are not present on site and Barong Creek is not mapped as a locally important waterway. Barong Creek is ephemeral in nature, moderately to highly disturbed, and with some general riparian and aquatic habitat values and limited significant ecological values adjacent to the site. Therefore, the minimum separation distance of 25 m from the outer bank of Barong Creek to the proposed solar farm infrastructure envelope on site is considered appropriate to maintain the existing habitat and ecological functioning of the creek and its residual environmental values.

During the construction phase of Munna Creek Solar Farm, an Environmental Management Plan (Construction) (EMP(C)) will be developed and implemented for the site. The EMP(C) will ensure ecosystem function is retained, enhanced and maintained within the wetland/waterway areas during the construction phase. The EMP(C) will include an Erosion and Sediment Control Plan and a number of other measures to mitigate potential impacts relating to hydrology, water quality and vegetation protection. Furthermore, Munna Creek Solar Farm Pty Ltd will work with the Mary River Catchment Coordinating Committee to develop strategies to enhance and revegetate areas along the waterways and riparian areas adjoining the site.

8. References

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