

Chewko Solar Farm

*Development Application for Material Change of Use –
Renewable Energy Facility (Solar Farm) and associated
Substation, & Reconfiguring a Lot (2 lot into 3lots),
Subdivision by Lease Agreement and Access Easement*

Planning Report (Final)

Tilt Renewables Australia Pty Ltd

September 2017

0414798

www.erm.com

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Environmental Resources Management Australia Pty Ltd Quality System

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1

INTRODUCTION

1.1

SITE DETAILS

Address	15 Cane Road, Chewko, Queensland
Real property description	Lot 156 on SP124698 & Lot 251 on SP129910
Site area	Project site (Lot 156) - 267.684ha Access (Lot 251) - 17.3ha
Owner	Lot 156 - Alan Thomas Price and Stephen Ernest Price Lot 251 - Department of Transport and Main Roads (Refer to <i>Annex B</i> -Title Search)
Local government	Mareeba Shire Council
Planning scheme	<i>Mareeba Shire Council Planning Scheme 2016</i>
Regional plan	<i>Far North Queensland Regional Plan 2009-2031</i>
Easements and Incumbents	Easement No. 7001445 (The Far North Queensland Electricity Board over Easement A on RP865813). Refer to <i>Annex B</i> .

1.2

DEVELOPMENT APPLICATION SUMMARY

Application type	Development Permit for: <ul style="list-style-type: none"> Material Change of Use - Renewable Energy Facility (Solar Farm) and associated Substation Reconfiguring a Lot (2 lots into 3 lots), Subdivision by Lease Agreement and Access Easement
Applicant	Tilt Renewables Australia Pty Ltd c/- Environmental Resources Management Australia Pty Ltd
Proposed development	The Project involves the development of a Solar Farm with a maximum capacity of 75MW, over a 150ha development footprint within Lot 156 on SP124698. The facility will be located within a 234ha lease area which will include PV arrays, inverters, substation/switchyard, the potential for battery storage, and associated on-site infrastructure. The substation/switchyard will be located on a separate 6,400m ² lot adjacent to the existing 132kv transmission line in the north-eastern corner of the site, as required by the electricity provider. An access easement is also proposed to ensure lawful access to the new lot is provided from Cane Road. Lot 251 on SP129910 has been included for the purposes of access only.
Planning scheme zone	Lot 156 - Rural Zone Lot 251 - Community Facilities
Level of assessment	Impact Assessable
Applicable referrals <i>(Planning Regulation 2017)</i>	<ul style="list-style-type: none"> Electricity Infrastructure (Advice) - <i>Schedule 10, Part 9, Division 2, Table 1</i>; and Railway (Concurrence) - <i>Schedule 10, Division 4, Subdivision 2, Table 1 (ROL) and Table 4 (MCU)</i>.
Public notification	15 Business Days

This Planning Report has been prepared by Environmental Resources Management Australia Pty Ltd (ERM) on behalf of Tilt Renewables Australia Pty Ltd (Tilt Renewables) in support of a Development Application (DA) for Material Change of Use for a Renewable Energy Facility (Solar Farm) and associated Substation, and Reconfiguring a Lot (2 lots into 3 lots), Subdivision by Lease Agreement and Access Easement, over part of land described as Lot 156 on SP124698 and part of Lot 251 on SP129910 (access only), 15 Cane Road, Chewko (the Project).

Lot 156 on SP124698 (the Project site) has a total area of 267.684 ha, and is approximately 6 km south-west of Mareeba, within the Mareeba Shire Council Local Government Area (LGA). The Project involves the construction of a solar farm with an approximate capacity of 75MW which is to be construction over a 150ha development footprint, within the proposed 234ha lease area. Access to the facility will be provided from the existing access location off Chewko Road, via Cane Road in the north-western corner of the lot. Cane Road crosses the Mungana Branch Railway line which is located within a separate lot (lands lease) and therefore, this lot (Lot 251 on SP129910) has been included in this application.

A 6,400m² new freehold lot is also proposed in the north-eastern corner of the lot, adjacent to the existing 132kV transmission line to facilitate the connection to the grid network via a substation/ switchyard. This infrastructure must be located on a separate freehold lot at the request of the electricity provider. An access easement is proposed to provide lawful access to the new lot from Cane Road.

Under the *Mareeba Shire Planning Scheme 2016* (the Planning Scheme), Lot 156 is zoned Rural and Lot 251 is zoned Community Facilities, with the level of assessment attributed to the proposed use identified in Part 5 of the Planning Scheme as **'Impact Assessable'**. It is noted the associated Substation use is separately defined and is 'Accepted Development' within the Rural zone, with the use included in this application for completeness.

The DA also requires referral to the State Assessment and Referral Agency (SARA) and Advice Agencies in accordance with the following triggers under the *Planning Regulation 2017*:

- Department of Transport and Main Roads as a Concurrence Agency under *Schedule 10, Part 9, Division 4, Subdivision 2, Table 1 (ROL) and Table 4 (MCU)* as a result of the subject lot adjoining the Mungana Line Railway; and
- Powerlink as an Advice Agency under *Schedule 10, Part 9, Division 2, Table 1* as a result of the subject lot being burdened by an electricity transmission line.

This Planning Report sets out the details of the Project, the background to the application and addresses relevant town planning issues for the Project. The Report includes an assessment of the relevant provisions of: *Mareeba Shire Planning Scheme 2016 (QPP 4.0 Alignment Amendment 2017)* (the Planning Scheme), *State Development Assessment Provisions (Version 2.1)* (SDAP) and has been prepared in accordance with the *Planning Act 2016*.

It is considered that the Project is consistent with the land use intent of the Planning Scheme and relevant planning regulations that apply to the subject site.

The use does not compromise the long term productivity of the land nor does it negatively impact current soil classes. The facility has a 25 year lifespan, with the potential for land to be returned to agricultural uses following the decommissioning of the facility.

The Project involves the installation of approximately 200,000 solar PV panels which will provide enough clean energy to power 21,000 homes and save 100,000 tonnes of annual greenhouse gas emissions over the 25 year life of the facility.

The Project will positively contribute to the local community through the creation of approx. 250 jobs during the 8-12 month construction period, and 1-2 permanent jobs during operation.

Given the local and regional benefits of the Project, as noted above, Mareeba Shire Council's approval is sought, subject to reasonable and relevant conditions.

1.4 *PRE-LODGE MENT MEETING DISCUSSIONS*

1.4.1 *Mareeba Shire Council*

A pre-lodgement meeting was held on 13 July 2017, attended by Carl Ewin and Brian Millard (Mareeba Shire Council), Jeremy Ellis (Tilt Renewables), and Alan Simonic and Michael Rookwood (ERM). Council confirmed the Development Application is 'Impact Assessable' under the Mareeba Shire Planning Scheme, requiring public notification and will involve a number of referral agencies. Council indicated the desire to attract these types of renewable energy developments to the region and would assist in the assessment process where possible. A summary of the pre-lodgement meeting is provided as *Annex C*.

1.4.2 *State Referral Assessment Agency*

Environmental Resources Management Australia Pty Ltd, acting on behalf of Tilt Renewables Australia Pty Ltd (the Applicant), lodged a request for pre-lodgement advice to the State Referral Assessment Agency (SARA) on 28 June 2017.

The department responded on 11 July 2017 with advice relating to the need to refer the application as a result of the project being located adjacent to a state transport corridor (Mungana Branch Railway), along with waterway barrier works (if proposed) and vegetation clearing (if proposed). Advice was also provided in relation to the potential need for additional permits under the *Water Act 2000* including interfering with a watercourse and Riverine Protection Permits. A copy of the pre-lodgement advice is provided as [Annex C](#).

1.5 **STAKEHOLDER ENGAGEMENT**

As part of Tilt Renewables ongoing commitment to the local area, all landowners within 2km of the Project site were sent an information pack with details of the development and were invited to participate in one on one consultation on the 13 and 14 September 2017. Letters were sent to 77 landowners, of which seven (7) parties made contact and five (5) meetings were held to discuss the Project, including two (2) adjoining landowners directly affected by the development.

The feedback received was positive; with Tilt Renewables re-affirming their commitment keep interested locals informed of the progress and work with individuals directly impacted by the Project.

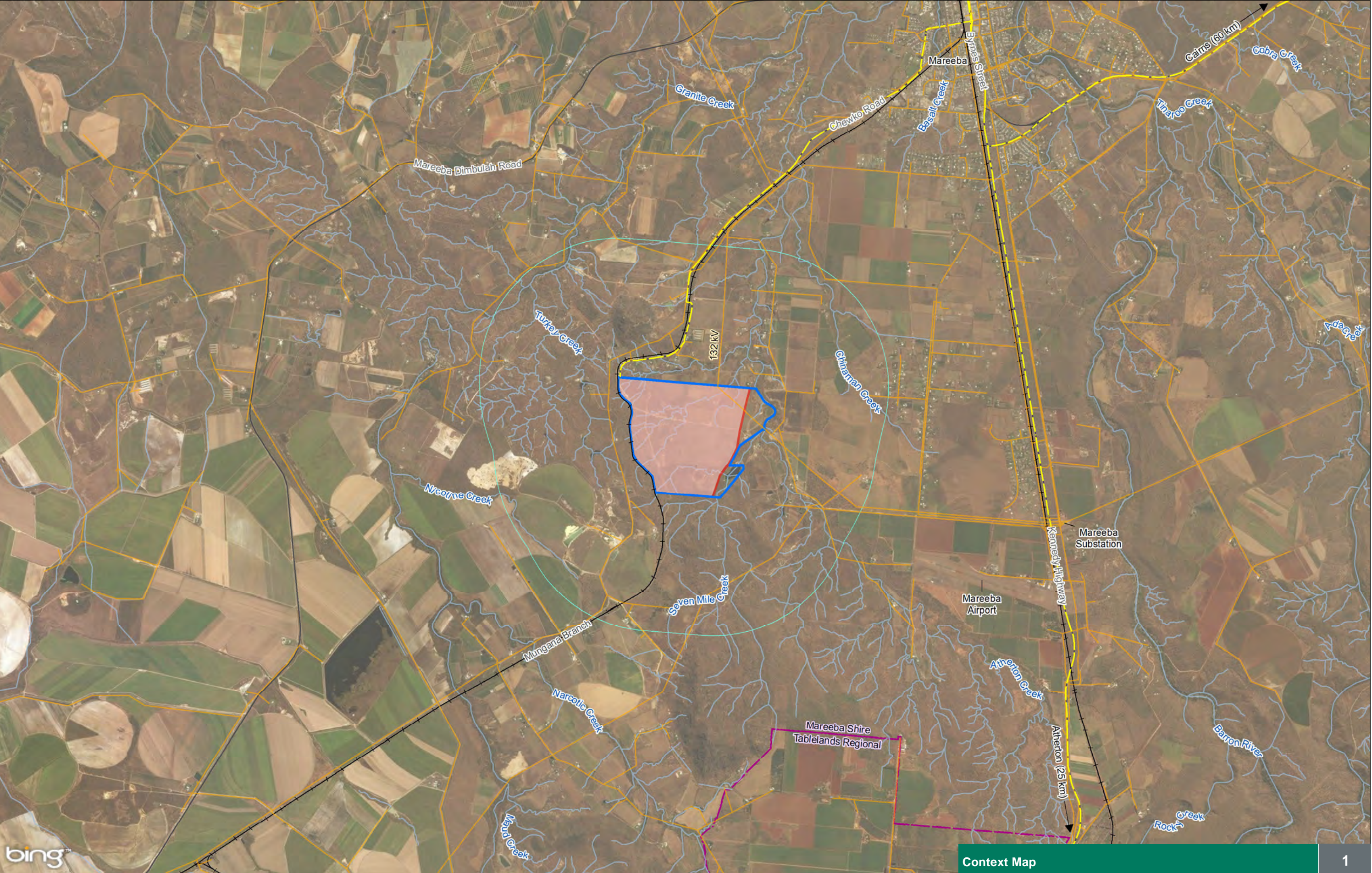
2.1

SITE AND SURROUNDING LAND USES

The Project is proposed to be located over part of Lot 156 on SP124698, which is a freehold rural lot at 15 Cane Road, Chewko, approximately 6 km south-west of Mareeba, and 70km west of Cairns, Far North Queensland. The Project site is defined as the area in which the solar farm is proposed to be developed and consists of proposed lease area, development footprint and access tracks (including access easement).

Lot 156 is a large rural property with a total area of 267.684 ha, and is primarily used for cattle grazing and avocado plantation, with a dwelling and associated rural buildings located on the eastern boundary. Low order waterways are identified within the lot which provide localised overland flow towards the north-east into Atherton Creek.

The property is within a rural locality and is surrounded by farming and grazing use. A cluster of rural residential lots are located immediately to the north of the Project area and 2km to the east, separated by Atherton Creek, which is located adjacent to the north-eastern property boundary. The Mungana Branch Railway line connecting Cairns to Almaden adjoins the western boundary of the project site and is included in this application for access purposes. The Mareeba Airport is located 3km east of the subject site, adjacent to the Kennedy Highway. A 132kV transmission line traverses the north-eastern corner of the Project area, which provides a connection to the existing Mareeba electricity substation located adjacent to the Kennedy Highway to the east of the Project area. Refer to *Figure 1 – Site Context Map*.



- Legend
- Project Area
 - Site Lot Boundary
 - Site Access Route
 - Transmission Line
 - Railway
 - Road/Track
 - Project Area Buffer (2 km)
 - Local Government Area Boundary
 - Watercourse/Drainage Line

Railway - DNRM Railway Network
Road/Track - DNRM Baseline Roads and Tracks
Watercourse/Drainage Line - DNRM Watercourse lines
LGA - DNRM Local Government Area Boundaries
Imagery - Bing Maps captured Sep 2010 - Sep 2014

Current Use of Site	Cattle grazing and avocado plantation
Topography	The site is characterised by rolling slopes towards the watercourses within the site, which flows towards Atherton Creek in the north-eastern corner of the site. Steeper slopes are visible in the south-west and north-west corners of the site.
Geology and Soils	The lot is identified in the <i>Mareeba Shire Planning Scheme 2016</i> as Class A Agricultural Land. Exposed granite is visible in the elevated areas of the site, particularly in the south-west areas, within the upper waterways and vegetated areas.
Hydrology and Drainage	The state mapping has identified a number of low order waterways within the site. A number of these low order waterways are located in the south-western portion of the site, which flow in the north-easterly direction, into a Category 2 waterway then into Atherton Creek which is a Category 3 waterway located adjacent to the site. Another Category 1 waterway is identified in the south-western corner of the site, connecting two existing dams on the property. It is also noted that a Category 1 waterway is identified in the centre of the site, which is no longer exists. Refer to the ecological assessment provided as Annex H .
Site Contamination	The site is not listed and CLR or EMR, however defence records identified that the area was previously a major airfield during World War II, with two runways and several AA installations. Refer to Annex D. As a result of this, a further UXO desktop investigation has been undertaken by G-Tek which confirmed the Lot 156 was not hired or directly used by the Mareeba Airport during World War II, and therefore no requirement for field further investigations has been recommended. Refer to a copy of the UXO report provided as Annex E .
Ecology	The Project is within the Einasleigh Uplands bioregion, Hodgkinson Basin sub-bioregion, and is dominated by non-native pasture grassland. The Project is located in a heavily disturbed landscape and is identified in the Planning Scheme as Rural Other and Rural Agricultural Area Land Use. Remnant vegetation is largely in patches on the west and southern parts of the property, with the property also containing low order waterways and associated regulated regrowth vegetation. A full assessment of the ecological values is provided in Annex H .
Heritage	The subject site is not listed on the any of the publicly available local, state or national heritage registers. An online cultural heritage search through the Department of Aboriginal and Torres Strait Islander Partnerships ('DATSIP') indicates that there are no Aboriginal cultural heritage sites or parties recorded on the site. Refer to Annex F .
Road Frontage and Access	Access to lot from Chewko Road via Cane Road and the Mungana Branch Railway in north-west corner of site.
Existing Services and Infrastructure	The site is not connected to a reticulated water or sewer network, with localised on-site services provided on the property where required for domestic and rural farming purposes.
Easements and Incumbents	A 132kv transmission line is located within an easement on which traverses through the north-east corner of the property and connects to the Mareeba electrical substation 2km to the east of the property, adjacent to the Kennedy Highway (refer to Figure 1).

3.1 OVERVIEW OF PROPOSED DEVELOPMENT

3.1.1 Solar Farm

The Project involves the construction of a solar farm with a 150ha development footprint over part of Lot 156 on SP124698, with access provided off Cane Road in the north-west corner of the lot. The detailed design, specific layout and electricity generating capacity have not yet been confirmed; however, the Project will involve a typical solar farm with an approximate capacity of 75MW with arrays, switch yard/substation, potential battery storage, control building, amenities and car park area to facilitate the operation. All aspects of the Project are listed in [Table 3.1](#) below and detailed in [Section 3.2](#).

Table 3.1 Solar Farm Project Details

Size (Ha)	Lease Area	234ha
	Development Footprint	150ha
Approx. Capacity		75MW
No. Solar PV Panels (Approx.)		200,000
Maximum Height of Solar Arrays		Approx. 5 metres
Substation Details		Approx. 6,400m ² (80m x 80m footprint)
Access Track (Easement)		Approx. 2.3ha (2,300m length x 10m width)
Supporting Infrastructure (including car parking, control building and potential battery storage area)		Approx. 1-2ha (within development footprint)

Ultimately, the final design work will be undertaken by an engineering, procurement and construction (EPC) contractor who will be engaged by Tilt Renewables following the receipt of the Development Permit for Material Change of Use and Reconfiguring a Lot. However, the development footprint is proposed to be setback a minimum of 10 metres from the northern property boundary, with a 10 metre buffer provided to the Category 1 waterways, 25 metre buffer provided to the Category 2 waterways, and a bushfire setback to existing Category B vegetation of 1.5 times the height or 20 metres, whichever is greater.

The development footprint has been located on the site following detailed assessment of the ecological values of the site, with the intent to preserve the ecological values of the site. Refer to AP01 Proposed Site Layout provided in [Annex A](#).

3.1.2 Subdivision

The proposed development involves the subdivision of Lot 156 by lease agreement to facilitate Project, with 234ha lease area proposed, along with a separate 6,400m² freehold lot to accommodate the substation and switchyard. Refer to AP02 Preliminary Subdivision Plan provided in [Annex A](#).

The creation of the separate lot is proposed as a result of requirements by the electricity provider as part of the grid connection. An access easement is also required over the proposed access track in order to provide lawful access to the new lot, with the easement to be over Lot 156 on SP124698 in favour of the new lot for access purposes only.

3.2

BUILT FORM/DESIGN CONCEPT

The Project's design will be similar to other approved solar farm projects in Queensland. It will be designed to ensure minimal environmental impacts, in keeping with the sustainable nature of the development. Tilt Renewables has worked with local landowners, environmental consultants and Powerlink to identify this location as appropriate for the Project whilst minimising impacts on the local community.

Accordingly, the existing environment; agricultural land designation and activities occurring on-site and off-site; proximity to existing electricity infrastructure; stormwater; and visual impact have been considered.

The Project comprises a number of interlinked and integral components for the operation of the equipment and generation of electricity from solar irradiance. These components include: solar PV panels, single axis or fixed tracking system, electrical transformers and inverters, MV electrical cable network, telecommunication equipment, solar farm substation/switchgear, and electrical control enclosures. [Table 3.2](#) below outlines the Project infrastructure:

Table 3.2 *Project infrastructure and characteristics*

PV Modules and Arrays	75MW over approx. 150ha, max height approx. 5m
Tracking System	Single Axis or Fixed – Pending detailed design
Inverters	Approx. 20-30, max height 5m
Substation/ Switchyard	Approx. 6,400m ²
Battery Storage (Optional)	Approx. 3,000-5,000m ² , max height 5m
Control Building	Approx. 120m ² , max height 4m
Car parking	4 vehicles

Further details of the supporting infrastructure are provided below:

PV Modules and Arrays

Although the solar PV provider has not yet been contracted, each PV module is typically made up of a number of PV cells sealed in an environmentally friendly protective laminate which converts sunlight into electricity and are seen as the building blocks of PV systems. A number of modules (one or more - pending on the design) make up a panel which are pre-wired field installed units.



A number of these panels are joined together to form an array, which is a complete power generating unit. The arrays are proposed to be connected to a single axis tracking system (a fixed array may be considered). Typical these arrays are arranged in rows normally in a north/south direction with access tracks between the rows for maintenance purposes and to avoid shading issues.

Tracking System

The solar PV arrays will either be fixed to the supporting structure or utilise a single axis tracking system which rotates the arrays from east to west each day to ensure optimal exposure to the sun. This tracking system will be determined following detailed design.



The tracking system will be determined following detailed design and will be constructed in accordance with the Australian Standards to a maximum height of approx. 5 metres.

Inverters

The energy generated by the PV modules will be converted from direct current (DC) to alternating current (AC) energy by the inverters and increased to medium voltage via integrated transformers. The inverters and transformers may be housed either in small buildings or in an outdoor “skid” configuration with a maximum height of approximately 5m.

The exact type and number of inverters that will be required for the Project will not be known until the detailed design phase, which will determine the electricity generating capacity of the facility. Approximately 20-30 inverters (based on 60MW capacity) will be required across the development. Due to the size of the lot and their location throughout the project between the PV modules ensure any visual impacts are likely to be low.



Battery Storage

The Project will make provision for battery storage; however final inclusion will depend on relevant technology viability and may be added at a later stage. While the specific design and type of storage will be finalised prior to construction (due to the rapid changes in technology), these are typically skid mounted throughout the site or located in a consolidated area of approx. 3,000-5,000m², in proximity to the proposed substation.



The maximum height will not exceed 5 metres. This allows for the storage of power during peak generating times (optimal sunlight conditions) for use later when generating capacity is low or at night. This improves the efficiency and reliability of the facility.

Substation/Switchyard

A substation and switchyard is proposed to be constructed within a separate lot located adjacent to the existing 132kV transmission line, within the proposed development footprint. A 6,400m² new freehold lot is proposed as part of the Project.

Control Building

The Project includes a control building located within the Lease Area adjacent to the proposed substation. The control building generally contains a site office, control room, storage and amenities. A small carpark will be located adjacent to this facility. During operation, 1 - 2 staff may be present on site, with additional staff as required during maintenance periods.

Utilities

The Project area is not connected to reticulated water or sewerage infrastructure. Rainwater may be collected and stored via water tanks and used on-site for maintenance purposes. A supply of water for firefighting purposes can also be maintained on site in accordance with bushfire management guidelines, if required. Sewerage will be managed by a septic system and be removed off-site by a certified contractor.

Parking and Access

Access to the facility will be provided via the existing property access off Cane Road, with the access track providing construction and operational access from the road to the facility. Additional access tracks may also be constructed throughout the Project area to provide access to the PV modules and substation for maintenance purposes.

Fencing

The electrical transmission and other sensitive infrastructure will be fenced for security purposes, with high voltage area fencing provided around the switching yard.

Construction Compound/ Temporary Laydown Area

A temporary construction compound and laydown area will be used during the construction. This will consist of temporary office facilities, amenities, and car park which will be located within the Project area, adjacent to the proposed substation.

3.3 **PROPOSED DEVELOPMENT STAGING**

3.3.1 **Design and Construction Methods**

The detailed design, specific layout and electricity generating capacity have not been confirmed at this stage of the Project, and therefore construction methods have not yet been finalised. However, the Project will involve primarily:

- a) Civil works, including construction of the access track around the site, minor earthworks, laying piling foundations, installing trackers and modules, building the inverter pads or installing the shipping containers directly on the site / skid mounting the inverters, erecting the control room, putting up fencing and constructing the car parking area; and
- b) Electrical works, including cable trenching, connecting the PV panels and strings to the inverters, installing the switchgear/substation and the grid connection.

The final design, engineering and construction will be undertaken by the Engineering, Procurement and Construction (EPC) contractor who will ensure the Project is designed and constructed in accordance with relevant standards, with the infrastructure to be signed off by a qualified Registered Professional Engineer of Queensland (RPEQ) prior to operation.

As part of the EPC contractor's scope of works, a Construction and Environmental Management Plan (CEMP) will be prepared which will detail how the construction will be managed to minimise any environmental impacts of the Project's construction. The CEMP will ensure hazards are identified and appropriate mitigation measures are adopted during the construction phase, and will be submitted to Council prior to works commencing.

3.3.2 *Project Delivery Timeframes*

The Project delivery timeframe will depend on a number of contributing factors including funding, contracting the sale of the electricity, obtaining a grid connection agreement, approval timeframes and environmental considerations. However, following the provision of relevant approvals and detailed design, the construction period is anticipated to be 8 - 12 months. Refer to [Table 3.3](#) below which provides an indicative schedule.

The Project will have provision to be constructed in stages, allowing part construction upfront, and the addition of further infrastructure (i.e. battery storage) proceeding the initial development. This infrastructure will not exceed that outlined in [Section 3.2](#).

Table 3.3 *Indicative Project Schedule*

Phase	Indicative Project Schedule (Quarterly)									
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Approvals										
Detailed Design										
Construction										
Commissioning (Battery)										
Full Commercial Operation										

3.3.3 *Operations Phase*

Upon commissioning of the electricity generating equipment the Project will begin the Operations Phase. The solar PV generator will operate during daylight hours, seven (7) days per week, 365 days per year unless disconnected for maintenance or grid disruption issues. The Project utilises passive equipment, with a 1-2 permanent employees required on-site to operate the facility.

Operational activities of the Project are generally limited to:

- Operation and control of the electricity generating equipment from the control room;
- solar module washing (once or twice a year);
- vegetation, weed, and pest management;
- equipment maintenance and inspection; and
- responding to automated electronic alerts based on monitored data, including actual versus expected tolerances for system output and other key performance metrics.

3.3.4

Decommissioning

The solar PV generating facility has an asset life of approximately 25 years. Within this timeframe, certain equipment – in particular, the inverters – will be replaced. After this time, the facility will either be refurbished or decommissioned. Decommissioning will be addressed as part of the CEMP but would typically consist of removal of all above ground infrastructure for recycling or disposal, revegetation of all disturbed land, and returning the land to agricultural use.

3.4

SITE ACCESS AND TRAFFIC CONSIDERATIONS

Access to the facility will be provided from the existing property access off Cane Road, with the existing internal access road providing construction and operational access to the facility. Refer to *Annex A* – Proposal plans.

3.4.1

Construction Traffic

Construction is likely to take approximately 8 - 12 months depending on the methods adopted and staging. While approximately 250 jobs will be created over the construction period, due to the nature of work and staging, approximately 60-80 field staff will be on-site during peak construction period.

Temporary on-site parking will be provided within the property for approximately 60 vehicles. It is anticipated that any non-local workers will be accommodated in Mareeba, with the potential for buses to be used to transfer workers to site during peak construction periods, where possible to reduce the traffic and on-site disturbance. The number of buses will depend on the demand; however, it is likely that 1-2 buses will be used.

The total number of light vehicles is not likely to exceed 40 vehicles per day (vpd) during peak construction periods. Most of these trips (approximately 80%) will be during normal construction start and finish times with a 6 - 9 am morning peak and a 3 - 6 pm afternoon peak.

Light/medium service vehicles will be required (food, water, refuse, waste, etc.). It is not anticipated that more than 3 vpd will occur during peak construction time.

Heavy construction vehicles (excavators, bulldozers, drilling rig for footings etc.) will be required to travel to site and will remain onsite until completion and will therefore have no significant impact on the road system.

Delivery of PV modules, tracking systems, transformers, battery storage and related equipment is anticipated to utilise various large vehicles, including standard container (20ft) trucks, 19m articulated vehicles or B-Doubles. Containers will be delivered over a 3 - 6 month period, and based on a maximum capacity of 75MW, it is not anticipated that more than 10 deliveries will occur on any given day.

Table 3.4 *Anticipated Traffic During Construction*

Vehicle Types	Vehicle Movements		
	Total	Average VPW	Average VPD
B-Doubles Trucks – Construction Materials	696	15	2
Flat Bed Trucks – Transporting earth moving machinery including graders, forklifts etc.	240	8	1
25 seater Bus	108	5	1
Light Vehicles – Including delivery vans, cars etc.	5760	120	20
Total	6804	148	24

Based on the existing road network conditions and anticipated traffic volume during construction, a Traffic Impact Assessment (TIA) report has been prepared by Cambray Consulting which provides a detailed assessment of the potential traffic impacts associated with the Project. A copy of the Traffic Impact Assessment is provided as *Annex G*.

3.4.2 *Operational Traffic*

During operation, between 1 and 2 staff may be required on site for operational management and maintenance. Most of these trips will be by light vehicles with larger vehicles only required to replace any equipment or for refuse/waste removal (one vehicle per week).

3.5 *STORMWATER AND FLOODING CONSIDERATIONS*

The Project area is not identified as being a flood risk by the local council. A number of low order waterways are mapped within the Project area, however this is considered to have limited environmental values, with the Project not altering the potential flow of stormwater during a heavy rainfall event. It is noted that the Project area is located at the up-stream extent of the waterways, with limited stormwater catchment flowing into the waterways, and ultimately into the Atherton Creek in the north-east of the site.

Due to the nature of construction, the solar panels are elevated and any run-off from each module is directed to the ground and does not alter the infiltration characteristics of the site, and therefore does not significantly increase stormwater runoff.

An ecological assessment of the Project area has been undertaken in order to describe the existing ecological values and identify potential impacts associated with the Project. The assessment includes a desktop review of ecological databases and mapping, along with observations made during an ecological survey of the Project area. Refer to [Annex H](#) which provides further details of the ecological assessment undertaken for project.

The project footprint has been developed following detailed ecological investigations of the site, with the facility designed to minimise any potential environmental impacts. The development footprint avoids the existing remnant vegetation, which was verified through a site survey. [Figure 2](#) illustrates the ecological values which are present on the site, in relation to the proposed development footprint.

Category R regulated regrowth vegetation is identified within a 50 metre buffer corridor provided around the mapped waterways. The purpose of this buffer corridor is to ensure bank stability, water quality and maintain riparian habitat. The proposed development involves clearing of areas of Category R vegetation, to the extent permitted under the *Managing Category R regrowth vegetation self-assessable vegetation clearing code*, which allow the clearing of vegetation up to 10 metres from the top-of-bank for Category 1 and 2 watercourses.

The proposed development also involves the realignment of a 100m section of the Category 1 watercourse located in the south-eastern corner of the site, which connects the two (2) dams on the property. The watercourse has been determined to be a drainage line under the *Water Act 2000* but will require further waterway barrier works approval at the Operational Works stage of the development.

Following the detailed ecological investigations, it is considered the proposed clearing areas watercourse realignment are limited to those that provide limited ecological value, with bank stability of the watercourses to be maintained through the retention of all vegetation within 10 metres of the top-of-bank. Refer to [Annex H](#) which provides further details of the ecological assessment undertaken for project.

Data Sources:
DNRM: Rail Network
DNRM: Baseline roads and tracks
DNRM: Watercourse lines
DNRM: Vegetation management watercourse and drainage feature map v1.4
DNRM: Cadastral data weekly
DSITI: Queensland wetland data version 4 - wetland areas
DNRM: Vegetation management - regulated vegetation management map
Basemap: Bing Captured September 2010 - September 2014



- Legend**
- Project Area
 - Development Footprint
 - Cadastre
 - Railway
 - Road/Track
 - Watercourse/Drainage Line
 - Watercourse and Stream Order (VM Act)
 - Koala Evidence
 - Pellets
 - Scratches
 - Echidna Evidence:
 - Scat
 - Feeding Sign
 - Wetland Trigger Area (GES)
 - Regulated Vegetation (Category B - State Mapping)

- Vegetation Community (ERM)***
- Remnant 9.5.9b/9.12.31b/9.12.31a/9.8.2a
 - Remnant 9.5.15b
 - Regrowth (Eucalypt Woodland)
 - Regrowth (Category R)

*Note:
Unmapped areas of the Study Area are pasture and non-vegetated land cover

Ecological Values			2
Drawing No:	0414798b_PP_G002_R2.mxd	Chewko Solar Farm Planning Pre-lodgement	
Date:	12/09/2017	Drawing Size:	A3
Drawn By:	JT / TC	Reviewed By:	MR
Coordinate System: GDA 1994 MGA Zone 55		Client: Tilt Renewables Australia Pty Ltd	
0 50 100m		N	
		This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.	
		ERM	

3.7

VISUAL & GLARE ASSESSMENT

3.7.1

Visual Impacts

The potential visual impacts of the Project generally relate to the potential glare associated with the PV modules. While there is no statutory requirement to undertake a glare analysis under the Planning Scheme, Tilt Renewables has elected to assess the potential impacts in this preliminary design stage, to inform further detailed design which may mitigate any potential glare impacts.

In order to identify the locations where sensitive receptors are likely to see the Project, and to what extent may be visible, a Visual Impact map (refer to [Figure 3](#)) has been developed based on Geographical Information Systems (GIS) data. The analysis uses topographic data and parameters of the project infrastructure including location, height, width and type of infrastructure to determine where the Project may be visible.

The Visual Impact Assessment map shows the areas surrounding the Chewko Solar Farm that may theoretically see the proposed solar panels. This is a conservative assessment in that the mapped areas don't take into account the screening effects of intervening vegetation, buildings and topographical variation such as dam walls, road cuttings and rail sidings. It is also noted that the facility is unlikely to be seen by the naked eye beyond 1-2km from the site.

3.7.2

Solar Glare Assessment

Based on the Visual Impact Assessment mapping, 10 residential receptors and five (5) other observation locations were selected to assess the solar glare impacts using the Solar Glare Hazard Analysis Tool (SGHAT). SGHAT was developed by the Sandi National Laboratory to assess potential glare and ocular impact rating. SGHAT uses latitude and longitudinal coordinates and elevation data from Google Earth in conjunction with proprietary algorithms software to predict the sun position and angle at various times throughout the year.

Project specific information such as the size and orientation of the PV array orientation, surface reflectivity are Project specific. SGHAT predicts glare potential at a nominated observation point as well as the magnitude of potential ocular impact based on the scale of effects. To be conservative, a rotation range of 120° (+/- 60°) and a maximum height of 5m were used in all modelling.

[Table 3.7](#) below provides a summary of the observation point locations, the distance to the project site boundary, and identifies the potential for glare impacts at the location. Further assessment and discussion on each observation location is provided as [Annex I](#).

Table 3.5 **Observation Locations**

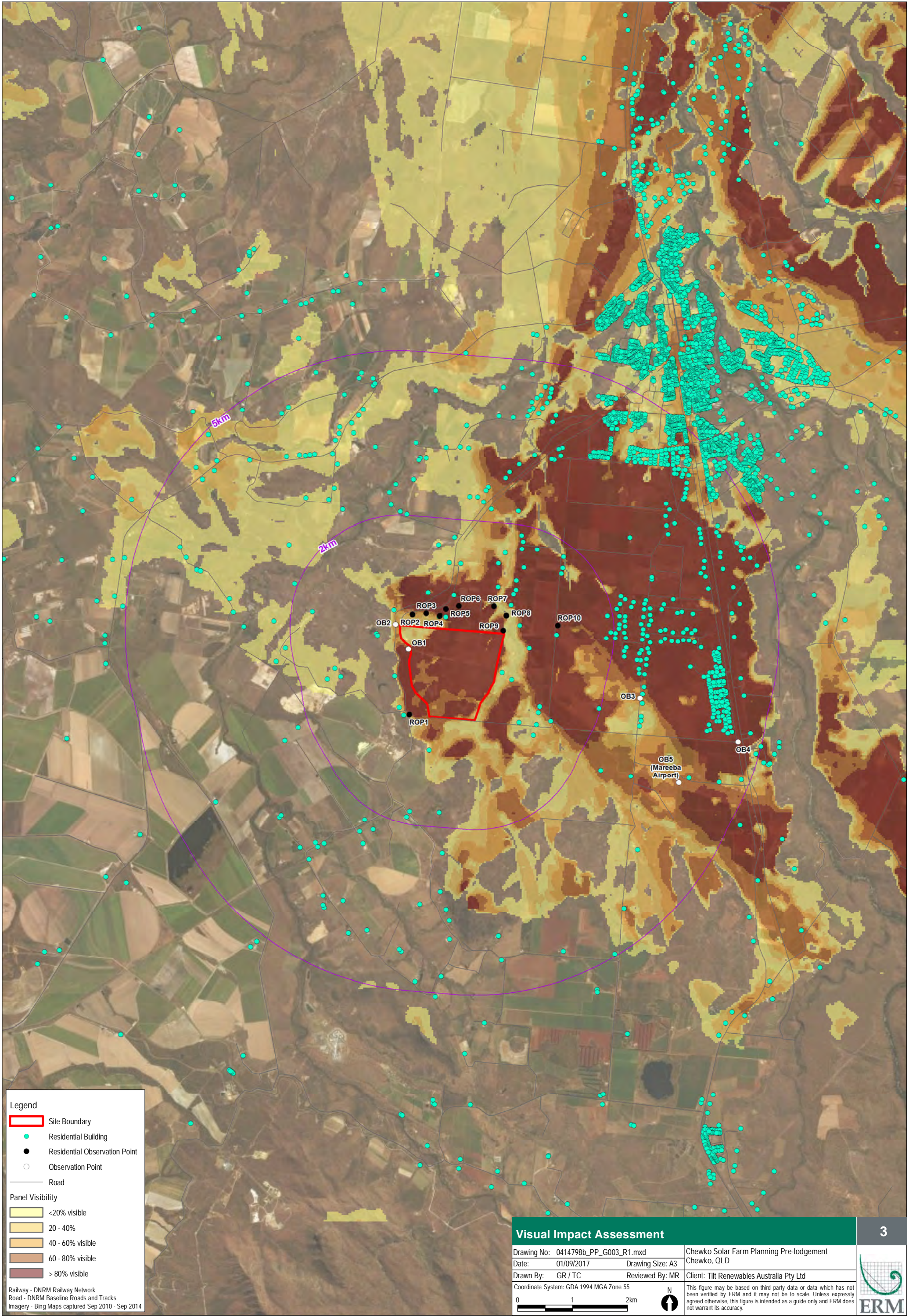
Observation Locations	Distance to nearest site boundary	Status of assessment
OB 1 – Mungana Branch Railway	15m W	No Glare
OB 2 – Chewko Road	80m W	No Glare
OB 3 – Ray Road	2,700m E	Low Potential
OB 4 – Kennedy Highway at George Fabris Road	4,700m E	Low Potential
OB 5 – Mareeba Airport	3,500m SE	No Glare
ROP 1 – Lot 466 on NR7773	520m SW	No Glare
ROP 2 – Lot 20 on RP708044	200m N	Low Potential
ROP 3 – Lot 19 on RP708044	235m N	Low Potential
ROP 4 – Lot 18 on RP880992	220m N	Low Potential
ROP 5 – Lot 17 on RP880992	350m N	Low Potential
ROP 6 – Lot 11 on SP160459	360m N	Low Potential
ROP 7 – Lot 12 on SP160459	480m N	Low Potential
ROP 8 – Lot 13 on RP708044	335m N	Low Potential
ROP 9 – Lot 14 on RP880992	50m N	Low Potential
ROP 10 – Lot 23 on SP193149	1,080m NE	Low Potential

As shown in [Table 3.7](#) above, there are a number of observation locations which may experience glare impacts based on the theoretical modelling. A desktop assessment of each of these observation locations has been undertaken and as is provided as [Annex I](#).

The modelling indicates a number of observation locations have a low potential to experience glare impacts, most notably those residential dwellings adjacent to the northern boundary of the project site which may experience low level glare impacts for short periods of time during the year, between 9.30am-11am.

It is noted however, that the modelling does not take into account the topography of the site in relation to existing vegetation, with the dwellings located adjacent to the Project site well screened by surrounding vegetation, either on the Project site or surrounding the dwellings on the affected property, filtering any low potential glare impacts.

Based on this assessment, it is considered that the existing vegetation is sufficient to mitigate any potential glare impacts which may be experienced from facility, and therefore no further mitigation measures are proposed.



Legend

Site Boundary

Residential Building

Residential Observation Point

Observation Point

Road

Panel Visibility

<20% visible

20 - 40%

40 - 60% visible

60 - 80% visible

> 80% visible

Railway - DNRM Railway Network

Road - DNRM Baseline Roads and Tracks

Imagery - Bing Maps captured Sep 2010 - Sep 2014

Visual Impact Assessment

Drawing No: 0414798b_PP_G003_R1.mxd	Chewko Solar Farm Planning Pre-lodgement
Date: 01/09/2017	Drawing Size: A3
Drawn By: GR / TC	Reviewed By: MR
Client: Tilt Renewables Australia Pty Ltd	

Coordinate System: GDA 1994 MGA Zone 55

012km

N

This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.

ERM

4.1 PLANNING FRAMEWORK

The *Planning Act 2016* provides the overarching statutory framework planning and development system in Queensland. The Local Planning Instrument relevant to the development – The *Mareeba Shire Planning Scheme 2016* should be read in conjunction with the *Planning Act 2016*. In addition, any development application must also address any identified matters of state interest in accordance with the *Planning Act 2016* requirements.

To facilitate the development of a solar farm over the subject site, an application is made for a Material Change of Use Development Permit for Renewable Energy Facility (Solar Farm) and associated Substation, and Reconfiguring a Lot Development Permit (1 lot into 2 lots), subdivision by lease agreement and access easement.

4.2 FAR NORTH QUEENSLAND REGIONAL PLAN 2009-2031

4.2.1 Regional Plan Overview

The *Far North Queensland Regional Plan 2009-2031* (the regional plan) establishes a vision and direction for the region to 2031. It provides certainty about where the region is heading and provides a framework to respond to challenges and opportunities that may arise.

The region comprises six (6) Local Government Areas (LGA's) and adjacent Queensland waters, including:

- *Cairns Regional Council;*
- *Tablelands Regional Council;*
- *Mareeba Shire Council (formerly part of Tablelands Regional Council);*
- *Cassowary Coast Regional Council;*
- *Yarrabah Aboriginal Council; and*
- *Wujal Wujal Aboriginal Council.*

The regional plan aims to respond to the variety of distinct challenges facing the region over the next two decades, and seeks to guide and support projected growth. The regional plan outlines the vision for the region to 2031 and includes strategic directions which outline broad policy framework for the region.

The regional vision for Far North Queensland is for a stronger, more liveable and sustainable community. The vision focuses on five (5) key themes for Queensland communities:

- **Strong** – create a diverse economy powered by bright ideas
- **Green** – protect our lifestyle and environment
- **Smart** – deliver world-class education and training
- **Healthy** – make Queenslanders Australia’s healthiest people
- **Fair** – support a safe and caring community

The following regional policies support the vision and strategic direction of the regional plan:

- **Natural environment** - The region’s terrestrial and aquatic natural assets, which include the Wet Tropics and Great Barrier Reef World Heritage areas, are protected and enhanced to increase their resilience to the impacts of climate change;
- **Regional landscape and natural resources** - The environmental, cultural, social and economic features that comprise the region’s unique tropical and rural landscapes are identified, maintained and managed sustainably and are more resilient to the impacts of climate change;
- **Strong communities** – The region’s communities are vibrant, safe and healthy and resilient to climate change, and diversity is welcomed and embraced;
- **Urban development** – The region has an interlinked network of well planned, discrete, sustainable urban centres which reflect best practice urban and tropical design and offer convenient and accessible residential, employment, transport and other service opportunities;
- **Economic development** – A strong, ecologically sustainable and diversified economy, building on new and existing regional and subregional competitive advantages and specialisations;
- **Infrastructure** – Timely provision of infrastructure to meet community and industry needs in a cost effective and efficient manner, consistent with retention of the region’s environmental, social and economic values;
- **Water management** – Water for the region is safe, reliable and adequate for community needs and water quality meets human use and environmental requirements through the ecologically sustainable development of the region’s water resources;
- **Transport** – Communities are connected through an integrated transport system that promotes tourism, public transport use, walking and cycling, provides safe, efficient and effective movement of goods and people, and facilitates access to places and services.

The Project supports the vision for the region and positively reinforces the Strong, Green, Smart, Healthy and Fair themes of the vision. From review of the regional plan, the Project is considered to align with the Desired Regional Outcomes, as a result of the following Project-specific outcomes:

- The Project provides an alternative green energy option for residents in the region while contributing to combatting the impacts of climate change;
- The Project location has been selected following a detailed site analysis process, with the Project area having low ecological values comparative to the region;
- The Project will ultimately be designed to first avoid and then mitigate any potential adverse impact the Project will have on the ecological values of the site;
- The Project will not compromise the long term productivity of the land nor does it negatively impact current soil classes. The facility has a 30 year lifespan, with the potential for land to be returned to agricultural uses following the decommissioning of the facility;
- The Project will contribute to the diversification of the economy in the region and provide new job opportunities for residents of Far North Queensland; and
- The Project will contribute to the provision of infrastructure to meet needs of the community while utilising existing infrastructure assets to support the development.

4.3 STATE PLANNING MATTERS

4.3.1 *Applicable State Mapping*

The State Development Assessment Mapping provides a central representation of all available mapping that may assist in identifying relevant assessment or referral triggers under the *Planning Regulation 2017* and relates to provisions contained within the State Development Assessment Provisions (SDAP). A copy of this mapping is provided as *Annex J* which illustrates the matters of state interest requiring assessment.

4.3.2 *State Agency Referrals*

Schedule 10 of the *Planning Regulation 2017* outlines the following referral triggers that are applicable to Lot 156 on SP124698 and the applicable State Codes which are required to be addressed as result of the referral:

Table 4.1 Referral Triggers

Trigger	Reference	Agency	Status	State Code
State Transport Infrastructure (Railway Infrastructure)	Schedule 10, Part 9, Division 4, Subdivision 2, Table 2 and Table 3	Department of Transport and Main Roads	Concurrence	SC2: Development in a railway environment
Electricity Infrastructure	Schedule 10, Part 9, Division 2, Table 1	Powerlink/ Ergon Energy	Advice	Nil

A detailed assessment against the criteria in each code has been provided as [Annex K](#).

4.4 MAREEBA SHIRE PLANNING SCHEME

The local planning instrument applicable to the subject site is the *Mareeba Shire Planning Scheme 2016*, administered by the Mareeba Shire Council. The *Mareeba Shire Planning Scheme 2016 (QPP 4.0 Alignment Amendment 2017)* (the Planning Scheme) was prepared in accordance with the *Planning Act 2017*. The Planning Scheme provides the framework for managing development within the local area including identifying assessable development and outcomes sought to be achieved in the local government area, as the context for assessing development.

4.4.1 Planning Scheme Assessment Summary

Proposed Development	Solar Farm and associated Substation
Development Type	Material Change of Use and Reconfiguring a Lot
Land Use Definition	<p>In accordance with Schedule 1 of the Planning Scheme, the proposed development is defined as:</p> <p>‘Renewable Energy Facility’ which means “premises used for the generation of electricity or energy from renewable (naturally reoccurring) sources.”</p> <p>‘Substation’ which means “premises forming part of a transmission grid or supply network under the Electricity Act 1994, and used for:</p> <ul style="list-style-type: none"> • converting or transforming electrical energy from one voltage to another; or • regulating voltage in an electrical circuit; or • controlling electrical circuits; or • switching electrical current between circuits; or • a switchyard; or • communication facilities for “operating works” as defined under the Electricity Act 1994 or for workforce operational and safety communications.”
Zoning	In accordance with Schedule 2.3 of Planning Scheme, Lot 156 (Project site) is zoned Rural and the Mungana Branch Railway (included for access purposes only), is zoned Community Facilities.
Level of Assessment	In accordance with Part 5 of the Planning Scheme, the Solar Farm and Reconfiguring a Lot is ‘Impact Assessable’ while the associated Substation is ‘Accepted Development’.

Applicable Development Codes	<ul style="list-style-type: none"> • Reconfiguring a Lot; • Rural Zone; • Landscaping; • Parking and Access; and • Works, Services and Infrastructure.
Applicable Overlay Codes	<ul style="list-style-type: none"> • Agricultural Land Overlay; • Airport Environs Overlay; • Bushfire Hazard Overlay; • Environmental Significance Overlay; • Extractive Resources Overlay; • Hill and Slope Overlay; and • Regional Infrastructure Corridor and Substation Overlay.

4.4.2 Planning Scheme Code Assessment

An assessment against the applicable Planning Scheme development and overlay codes is provided below, with a detailed assessment, including specific code response tables provided as [Annex L](#).

Reconfiguring a Lot Code

The purpose of the Reconfiguring a lot code is to ensure that land is:

- (a) arranged in a manner which is consistent with the intended scale and intensity of development within the area;*
- (b) provided with access to appropriate movement and open space networks; and*
- (c) contributes to housing diversity and accommodates a range of land uses.*

The proposed development involves the creation of a new long-term lease agreement over the project site, with the proposed substation to be located on a new freehold lot, in accordance with the requirements of the electricity provider, for maintenance purposes. An access easement has been proposed which will provide lawful access to the new lot.

The proposed subdivision is required to facilitate the provision of infrastructure services to connect the facility to the grid network. The new lot is of a size and shape which is suitable for the intended purpose and is located adjacent to the existing electricity infrastructure. Therefore, it is considered that the subdivision will not impact the long-term viability of the site for future agricultural uses.

Rural Zone Code

The purpose of the Rural zone code is to:

- (a) provide for rural uses including cropping, intensive horticulture, intensive animal industries, animal husbandry, animal keeping and other primary production activities;*
- (b) provide opportunities for non-rural uses that are compatible with agriculture, the environmental features, and landscape character of the rural area where the uses do not compromise the long-term use of the land for rural purposes;*
- (c) protect or manage significant natural resources and processes to maintain the capacity for primary production.*

The Project is compatible with the purpose of the Rural Zone to the extent that the facility makes efficient use of land and location of existing infrastructure, and will not compromise the long term productivity of the land. The development footprint has been located on the property following detailed ecological investigations to ensure minimal impact on existing environmental features.

As shown on Figure 2 and discussed in Section 3.7, the facility may be visible within the immediate locality, however given the maximum height of the Project's infrastructure (excluding substation) is 5 metres, existing vegetation provides suitable screening of the facility, to the extent that the landscape character of the rural area should be maintained.

It is also considered that beyond the potential temporary impacts associated with the construction of the facility in relation to traffic and noise impacts, the facility will not detract from the amenity of the area.

Community Facilities Zone Code

The purpose of the Rural zone code is to provide for community related activities and facilities whether under public or private ownership

The Project involves the use of the Cane Road to access the facility which crosses the Mungana Branch Railway. Cane Road is a formed access road over the railway, with an existing agreement in place; however as a result of the road being located on a separate lands lease lot, the lot has been included in this application and owners consent provided.

The Project does not propose the construction of an infrastructure within this corridor and will not impact on ongoing function and viability of the line. As discussed in the Traffic Impact Assessment (refer to [Annex G](#)), mitigation measures can be implemented to ensure all necessary precautions are taken during the construction period to reduce any associated impacts during this phase of the Project.

Energy and Infrastructure Activities Code

The purpose of the Energy and infrastructure activities code is to ensure the appropriate location, planning, design, installation and operation of Energy and infrastructure activities to meet community standards and minimise any adverse impacts on nearby land uses and the natural environment. Renewable energy facility development will aim to achieve social, environmental and economic benefits to the community at both the local and regional level.

The Project has been designed and located to ensure minimal impact on the existing natural features of the area and take into account the surrounding land uses. The facility has the potential to be visible from areas immediately surrounding the Project site, particularly to the north and north-east. The 5 metre maximum height of the proposed infrastructure allows that vegetation can provide effective screening of the facility from surrounding sensitive receptors. The majority of residential dwellings within this area have existing vegetation which may provide for appropriate screening; however localised screening solutions may be possible where visibility impacts are demonstrated.

Landscaping Code

The purpose of the Landscaping code is to ensure all development is landscaped to a standard that:

- (a) complements the scale and appearance of the development;*
- (b) protects and enhances the amenity and environmental values of the site;*
- (c) complements and enhances the streetscape and local landscape character; and*
- (d) ensures effective buffering of incompatible land uses to protect local amenity.*

The proposed development does not propose any additional landscape treatments with the site, with the majority of existing vegetation within the site to be retained. Existing vegetation within and surrounding the site will aid in maintaining the rural landscape character of the area.

Parking and Access Code

The purpose of the Parking and access code is to ensure:

- (a) parking areas are appropriately designed, constructed and maintained;*
- (b) the efficient functioning of the development and the local road network; and*
- (c) all development provides sufficient parking, loading/service and manoeuvring areas to meet the demand generated by the use.*

The Project will be accessed from Chewko Road, via Cane Road, with the Project to utilise existing access tracks within the site for the facility. Cane Road crosses the Mungana Branch Railway which is held on a separate lands lease, and therefore this lot has been included in this application and consent provided.

A temporary laydown area will be provided within the development footprint during construction which will make provision for 60 temporary parking spaces and have sufficient area to allow all vehicles to enter and exit the site in a forward gear. The facility will include a control building and permanent car parking for a minimum of four (4) vehicles to cater for the ongoing operation of the facility.

Works, Services and Infrastructure Code

The purpose of the works, services and infrastructure code is to ensure that all development is appropriately serviced by physical infrastructure, public utilities and services and that work associated with development is carried out in a manner that does not adversely impact on the surrounding area.

The Project site is not connected to the reticulated sewer or local water supply networks. Temporary facilities will be used during the construction period, with permanent facilities to be included in the control building which will be installed in accordance with the relevant standards. On-site electricity and telecommunications infrastructure will be installed as part of the Project.

Agricultural Land Overlay Code

The purpose of the Agricultural land overlay code is to protect or manage important agricultural areas, resources, and processes which contribute to the shire's capacity for primary production.



The Project is proposed to be located over an area of land mapped as containing Class A agricultural land. The Project represents a temporary use (25 year lifespan) of the land, with the nature of the use resulting in minimal ground disturbance, therefore not impacting the viability of the land for future agricultural uses once the facility is decommissioned.

Airport Environs Overlay Code

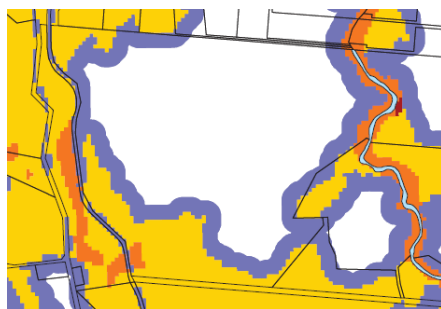
The purpose of the Airport environs overlay code is to protect the current and ongoing operations of established airports, aerodromes and aviation infrastructure in Mareeba Shire.



The Project will not impact the current and ongoing operations of the Mareeba airport. The reflectivity of the solar PV panels is considered to be very low, and is unlikely to present a safety risk to aviation activities.

Bushfire Hazard Overlay Code

The purpose of the Bushfire hazard overlay code is to minimise the threat of bushfire to people and property.



The development footprint of the Project is not located within the Bushfire hazard area, with a bushfire setback of 1.5 times the height or 20 metres, whichever is greater, provided to the existing Category B vegetation which is proposed to be retained as part of the development.

Environmental Significance Overlay Code

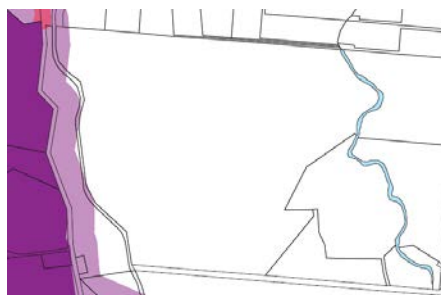
The purpose of the Environmental significance overlay code is to identify and protect matters of environmental significance, which include matters of state environmental significance (MSES) as defined under the state planning policy.



The development footprint has been located on the site following detailed ecological investigations, with the footprint having minimal impact on the ecological values of the site and maintaining the existing drainage functions of these waterways. Refer to [Section 3.6](#) and [Annex H](#).

Extractive Resources Overlay Code

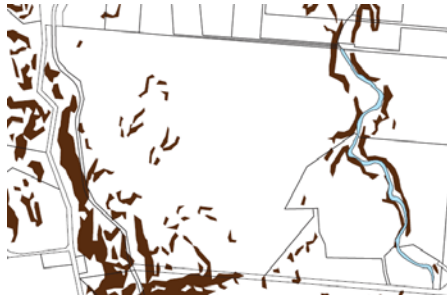
The purpose of the Extractive resources overlay code is to protect significant extractive resources and associated haulage routes to ensure that current and future extraction of resources is not compromised.



The Project will not impact the local resource area. The Project will utilise the haulage route during the construction period to transport goods and infrastructure to the site.

Hill and Slope Overlay Code

The purpose of the Hill and slope overlay code is to ensure the ongoing stability of land within a hill and slope area to prevent risk to people or property.



The Project site includes a number of watercourses and drainage lines with steep banks which has likely triggered the overlay mapping. The development footprint is proposed to be setback a minimum 10 metres to the top of bank and sediment and erosion control measures will be implemented during construction.

Regional Infrastructure Corridors and Substations Overlay Code

The purpose of the Regional infrastructure corridors and substations overlay code is to ensure that:

- (a) 'Stock routes' facilitate the proper and safe movement of stock and maintain public health and safety; and*
- (b) 'Major electricity infrastructure' and 'Substations' are protected from development that may prejudice its ongoing operation.*



The Project is compatible with the major electricity infrastructure located on the site and will not impact the ongoing operation of this infrastructure.

This Planning Report has been prepared on behalf of Tilt Renewables Australia Pty Ltd in support of a Development Application (DA) for **Material Change of Use for Renewable Energy Facility (Solar Farm), and Reconfiguring a Lot (2 Lot into 3 Lots), Subdivision by Lease and Access Easement** over land described as Lot 156 on SP124698 and Lot 251 on SP129910, 15 Cane Road, Chewko

The Project involves the subdivision by lease of a 234 ha portion of the larger Lot 156 for the purposes of constructing the Chewko Solar Farm, with a separate 6,400m² new lot proposed to facilitate the substation. The detailed design, specific layout and electricity generating capacity have not been confirmed at this stage. However, it is envisaged the Project will involve a typical solar farm of up to 75MW with arrays, switch yard and substation, battery storage, control building, and car park area to facilitate the operation of the solar farm, as shown on the proposal plans provided as *Annex A*.

This Planning Report provides an assessment of the Project against the *Mareeba Shire Planning Scheme 2016*, *Far North Queensland Regional Plan*, and *State Development Assessment Provisions*, which demonstrates the Project represents a suitable land use outcome for the site which will benefit the local community and region.

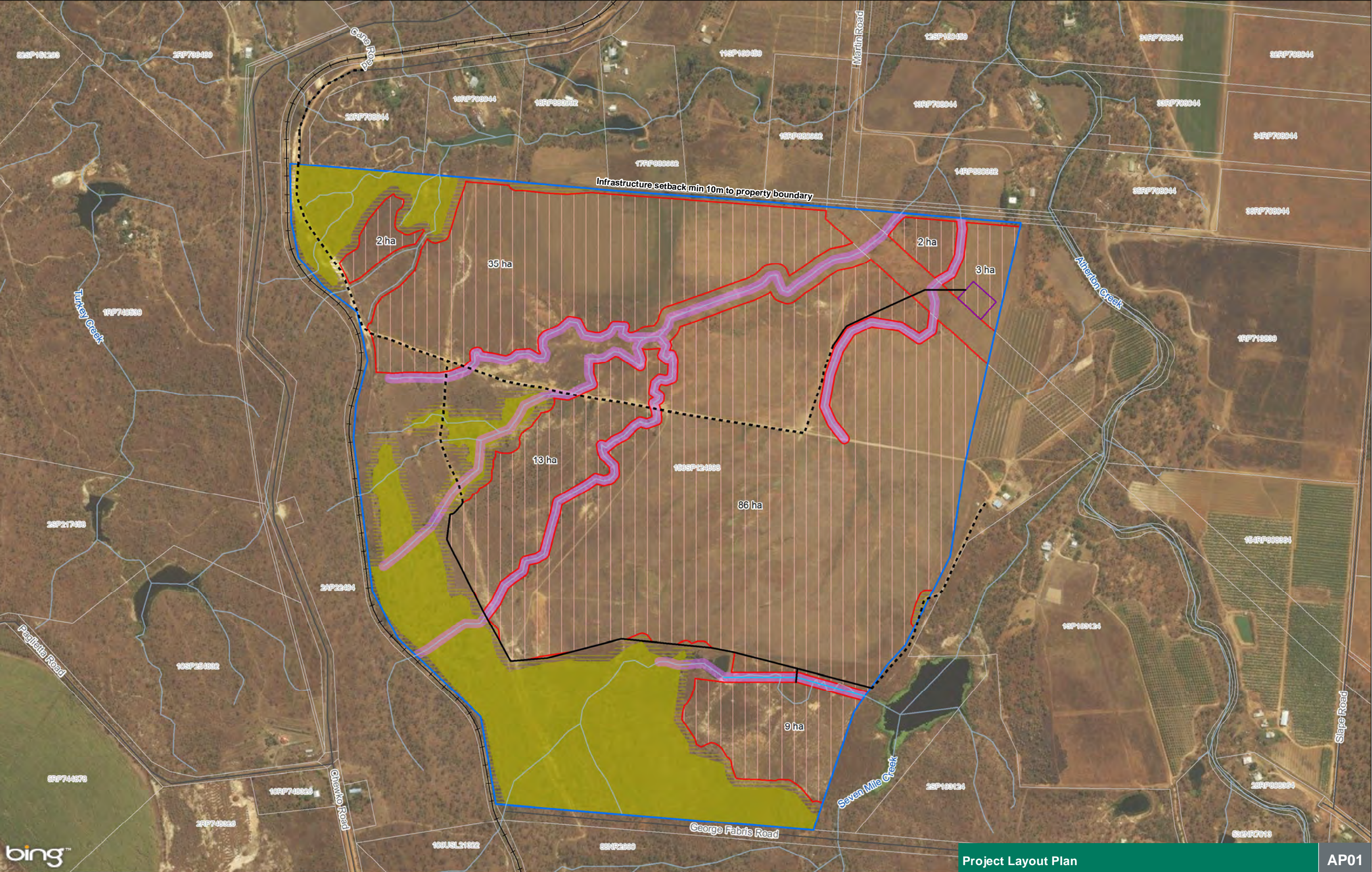
While it is acknowledged the Project is located in an area identified as Good Quality Agricultural Land, and involves the creation of a separate freehold lot, it is considered the use does not compromise the long term productivity of the land nor does it negatively impact current soil classes. The facility has a 25 year lifespan, with the potential for land to be returned to agricultural uses following the decommissioning of the facility.

The Project will also positively contribute to the local community through the creation of approx. 250 jobs during the 8 - 12 month construction period, and 1 - 2 permanent jobs during operation.

Given the local and regional benefits of the Project, as noted above, Isaac Regional Council's approval is sought, subject to reasonable and relevant conditions.

Annex A

Proposal Plans



Legend

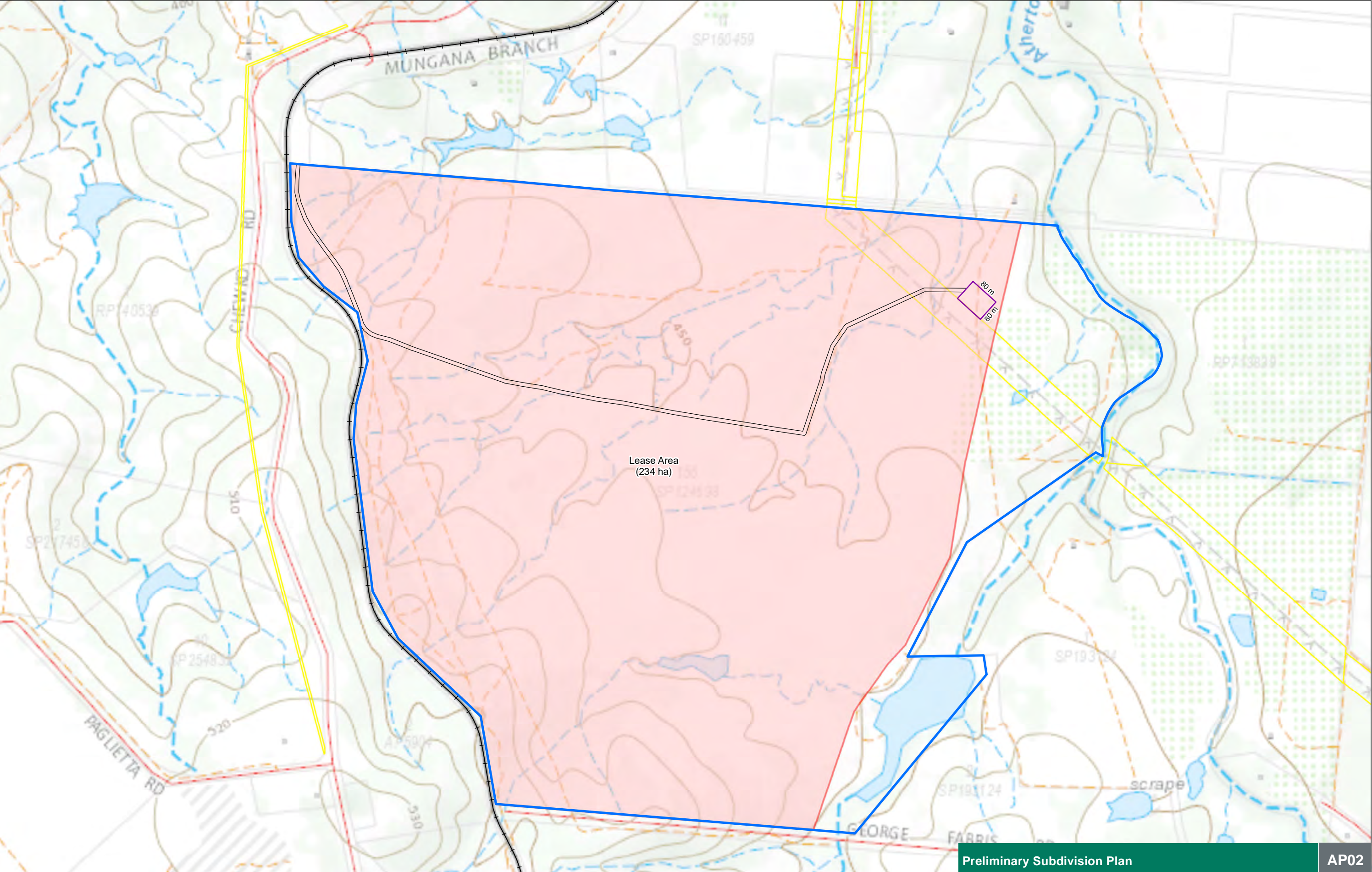
Project	Access Track: Existing	Cadastre	Watercourse/Drainage Line	Watercourse/Drainage Line Buffer (approx 10m from top of bank for Category R Regrowth)
Development Footprint	Proposed	Railway	Watercourse/Drainage Line Realignment (Proposed)	Regulated Vegetation (Category B - State Mapping)
Substation		Road/Track		Indicative Regulated Vegetation Buffer (1.5 times the height of remaining vegetation, or 20m, whichever is greater)

Data Source:
Railway - DNRM Railway Network
Road/Track - DNRM Baseline Roads and Tracks
Watercourse/Drainage Line - DNRM Watercourse lines
Cadastre - DNRM Digital Cadastre Database
Regulated Vegetation - DNRM Regulated Veg Map
Imagery - Bing Maps captured Sep 2010 - Sep 2014

Project Layout Plan

Drawing No: 0414798b_PP_G004_R0.mxd	Chewko Solar Farm Planning Pre-lodgement
Date: 01/09/2017	Drawing Size: A3
Drawn By: DR / TC	Reviewed By: MR
Client: Tilt Renewables Australia Pty Ltd	
Coordinate System: GDA 1994 MGA Zone 55	
0 150 300m	
N	
This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.	

AP01



Legend

Lease Area

Site Lot Boundary

Substation (6,400 m²)

Access Easement (10 m width)

Electrical Easement

Railway

Data Source:
Railway - DNRm Railway Network
Electrical Easement - DNRm Digital Cadastre Database
Basemap - DNRm QLD Topographic Map

Preliminary Subdivision Plan		AP02
Drawing No: 0414798b_PP_G005_R1.mxd	Date: 11/09/2017	Client: Tilt Renewables Australia Pty Ltd
Drawn By: DR / TC / MR	Reviewed By: MR	This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.
Coordinate System: GDA 1994 MGA Zone 55		
<div>0150300m</div>		<div><div></div><div>N</div></div> <div>ERM</div>

Annex B

Title Search

CURRENT TITLE SEARCH

DEPT OF NATURAL RESOURCES AND MINES, QUEENSLAND

Request No: 25277103

Search Date: 06/02/2017 14:08

Title Reference: 50330414

Date Created: 02/10/2000

Previous Title: 21424110

REGISTERED OWNER

Interest

Dealing No: 713259075 27/05/2010

ALAN THOMAS PRICE

1/2

STEPHEN ERNEST PRICE

1/2

AS TENANTS IN COMMON

ESTATE AND LAND

Estate in Fee Simple

LOT 156 SURVEY PLAN 124698
Local Government: MAREEBA

EASEMENTS, ENCUMBRANCES AND INTERESTS

1. Rights and interests reserved to the Crown by
Deed of Grant No. 21424110 (Lot 155 on CP NR7013)
2. EASEMENT No 700144512 03/08/1994 at 15:20
burdening the land to
THE FAR NORTH QUEENSLAND ELECTRICITY BOARD
OVER EASEMENT A ON RP 865813
3. MORTGAGE No 713259076 27/05/2010 at 14:59
SUNCORP-METWAY LTD A.B.N. 66 010 831 722

ADMINISTRATIVE ADVICES - NIL

UNREGISTERED DEALINGS - NIL

CERTIFICATE OF TITLE ISSUED - No

Caution - Charges do not necessarily appear in order of priority

** End of Current Title Search **

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Requested By: D-ENQ PROPERTY & TITLE SEARCH

Annex C

Summary of Pre-lodgement Advice

Michael Rookwood

From: Carl Ewin <CarlE@msc.qld.gov.au>
Sent: Monday, 24 July 2017 10:15 AM
To: Michael Rookwood
Cc: Jeremy Ellis; Alan Simonic; Brian Millard
Subject: RE: 0414798 Chewko Solar Farm - Summary of Prelodgement Meeting

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Michael,

Thank you for taking the time to prepare the comprehensive meeting summary.

As requested, I have reviewed the summary and confirm that it is an accurate representation of our discussions on 13 July 2017.

Regards,

Carl Ewin
Planning Officer



Mareeba
SHIRE COUNCIL

Phone: 1300 308 461 | **Direct:** 07 4086 4656 | **Fax:** 07 4092 3323
Email: carle@msc.qld.gov.au | **Website:** www.msc.qld.gov.au
65 Rankin Street, Mareeba | PO Box 154, Mareeba, Queensland, Australia, 4880

 Go green, keep it on screen - think before you print

From: Michael Rookwood [mailto:Michael.Rookwood@erm.com]
Sent: Friday, 21 July 2017 9:56 AM
To: Carl Ewin
Cc: Jeremy Ellis; Alan Simonic
Subject: 0414798 Chewko Solar Farm - Summary of Prelodgement Meeting

ERM Reference: 0414798

Hi Carl,

Thank you to Brian and yourself for taking the time to meet with Jeremy Ellis (Tilt Renewables), Alan Simonic (ERM Partner) and myself (ERM Town Planner) last Thursday 13th July to discuss a development proposal by Tilt Renewables to construct and operate a large-scale solar farm over land at 15 Cane Road, Chewko, formally described as Lot 156 on SP124698, within the Mareeba Shire Council area.

Below is a brief summary of the proposed development and material discussed during the meeting.

PROPOSED DEVELOPMENT SUMMARY

- The DA will involve a Material Change of Use – Renewable Energy Facility (Solar Farm) and associated Solar Farm, and Reconfiguring a Lot (2 lots into 3 lots), Subdivision by Lease Agreement and Access Easement;
- The DA will also need to include the adjacent Lot 251 on SP129910 as access to the site will be via Cane Road which crosses the Mungana Branch railway;

- The property is zoned Rural, with the adjacent railway land (Lot 251 on SP129910) zoned Community Facilities. In accordance with the *Mareeba Shire Planning Scheme – Alignment Amendment 2017* the proposed development is ‘**Impact Assessable**’;
- The DA will also require referral to the State Assessment and Referral Agency (SARA) and Advice Agencies in accordance with the following triggers under the *Planning Regulation 2017*:
 - Department of Transport and Main Roads as a Concurrence Agency under *Schedule 10, Part 9, Division 4, Subdivision 2, Table 1* (ROL) and *Table 4* (MCU) as a result of the subject lot adjoining the Mungana Line Railway;
 - Department of Natural Resources and Mines as a Concurrence Agency under *Schedule 10, Part 4, Division 2, Tables 1* as a result of the land identified as potential being contaminated because of Unexploded Ordnance; and
 - Powerlink as an Advice Agency under *Schedule 10, Part 9, Division 2, Table 1* as a result of the subject lot being burdened by an electricity transmission line.

The DA may also be referred to the Department of Natural Resources and Mines as a Concurrence Agency under *Schedule 10, Part 3, Division 4, Table 3* if the proposal involves the clearing of native vegetation.

DA SUBMISSION MATERIAL

The DA submission will include the following supporting documentation:

- **Planning Report** which includes project details and provides an assessment against the Mareeba Shire Council Planning Scheme, FNQ Regional Plan and State Development Assessment Provisions;
- **Ecological Assessment Report** which provides a desktop and field survey of regulated vegetation within the site and watercourses to determine the environmental values of the site which may be used to justify any clearing if required;
- **Visual and Glare Assessment Report** which provides a visual analysis detailing local areas which may be impacted by the development, and a glare assessment of potentially affected sensitive land uses located within proximity to the development. The assessment will also provide mitigation measures to reduce the glare impact, if required;
- **Traffic Impact Assessment** which provides a desktop assessment of the likely impacts on the Chewko Road and Cane Road intersection and potential mitigation measures, noting the high volume of vehicle traffic to the site will be temporary during construction only;
- **UXO Assessment** – Defence records have confirmed that the area was previously a major airfield during World War II, with two runways and several AA installations. As per the State Code, an assessment will be undertaken to address potential issues relating the UXO’s. *G-Tek* has been engaged to undertake an initial desktop assessment of the site to determine any potential UXO contamination in or around the site which could be impacted by the proposed development activities. Should a further detailed Field Validation Survey be required, this will be completed at the Operational Works stage of the development.

As discussed, a Stormwater Management Plan will not be provided as part of the assessment as the proposed development will avoid disturbance of the identified waterways and maintain the appropriate setbacks in accordance with the code requirements (10 metre to the Category 1 watercourses and 25 metres to the Category 2 watercourse). It was noted that a management plan which includes a sediment and erosion control plan will be prepared in association with a Construction and Environmental Management Plan (CEMP) at the Operational Works stage of the development, following the completion of the detailed design.

RELEVANT CODES

During the preliminary assessment of the development by ERM, it was identified that the proposed development does not comply with the minimum lot size requirements of the Reconfiguring a Lot Code and will be located in an area identified within the Agricultural Land Overlay. Council Officers understood that the reduced lot size is a result of Ergon Energy requiring the substation be located on a separate freehold lot and the lot would be fit for purpose, with an access easement providing lawful access to the new lot. In relation to the Agricultural Land Overlay, it was discussed that the proposal has a lifespan of 25-30 years with the proposal not impacting the soil quality, therefore does not prevent the land from returning to agricultural uses following the decommissioning of the development. Council Officers were satisfied that the development can demonstrate compliance with the codes on this basis.

It was also discussed that Chewko Road is identified as a KRA Transport Route, with the overlay code requiring that no additional traffic be directed towards Chewko Road. However, it was discussed that the impact on the road will be temporary with the heavy vehicles used consistent with the vehicles required for the KRA and therefore compatible with the existing function of the road.

Other codes as required by the Planning Scheme will be addressed.

PUBLIC NOTIFICATION AND STAKEHOLDER ENGAGEMENT

The DA is 'Impact Assessable' and requires 15 business days of public notification as part of the assessment process. However, as part of the Tilt Renewables ethos, further stakeholder engagement is being explored. The stakeholder engagement would likely include local residents, the Mareeba Airport, local Councillors and any other interested parties. Council Officers advised that the Mareeba Airport was owned by Council and recommended that Councillors be advised of the DA prior to the public notification period during the assessment.

The Council Officers noted from local experience, they did not consider the development to be 'controversial' within the community, and added that the majority of residents would likely be supportive, however welcomed an additional stakeholder engagement if proposed by Tilt Renewables.

TIMEFRAME AND ASSESSMENT FEES

- Council Officers confirmed that assessment fees would not be applicable for the 'Substation' use, with the subdivision by lease agreement considered another lot for the purposes of calculating the DA fee.
- Council Officers advised that the assessment of the application will be completed within assessment timeframes, with Council often completing assessments well within the statutory timeframes.
- ERM advised that the DA will likely be submitted to Council in the next 4-6 weeks, depending on the time required to complete the supporting material and undertake any stakeholder engagement prior to lodgement, if preferred by Tilt Renewables.

FURTHER COMMENTS

- ERM advised that pre-lodgement advice had already been provided by SARA and the referral triggers confirmed. Jeremy (Tilt Renewables) advised that vegetation clearing within the mapped areas will be avoided if possible therefore removing the trigger for native vegetation clearing by DNRM.
- Council Officers advised that they had no further comments or questions at this point, with the invitation open to all parties to maintain open communication through the pre-lodgment and assessment process.

Can you please respond to this email confirming the above summary is an accurate representation of discussions.

Please don't hesitate to contact myself or Alan Simonic to discuss further if required.

Regards,

Michael Rookwood
Town Planner

ERM

Level 4, 201 Leichhardt Street | Spring Hill QLD 4000

PO Box 1400 | Spring Hill QLD 4004

T +61 7 3007 8478 |

E michael.rookwood@erm.com | W www.erm.com



ERM *The business of sustainability*

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Our reference: SPL-0617-040495
Your reference: Chewko Solar Farm

11 July 2017

Mr Michael Rookwood
ERM Australia Pty Ltd
PO Box 1400
SPRING HILL QLD 4004

Dear Sir / Madam

Pre-lodgement advice - proposed material change of use, renewable energy facility (solar farm) and reconfiguring a lot (1 into 2 lots), subdivision by lease (>10 years) and access easement on land located at 15 Cane Road, Chewko, Mareeba, QLD, described as Lot 156 on SP124698.

Thank you for your correspondence received on 28 June 2017 in which you sought pre-lodgement advice from the Department of Infrastructure, Local Government and Planning (the department) regarding the proposed development described above.

The department has undertaken a preliminary assessment of the proposal and its impact. Based on your written correspondence, the following advice is provided:

Reference information

Departmental role:	Concurrence agency
Departmental jurisdiction:	Schedule 10, Part 3, Division 4, Table 2 – Clearing vegetation (Reconfiguring a lot)
	Schedule 10, Part 3, Division 4, Table 3 – Clearing vegetation (Material change of use)
	Schedule 10, Part 6, Division 4, Subdivision 1, Item 12 – Waterway barrier works
	Schedule 10, Part 9, Division 4, Subdivision 2, Table 4 – State transport corridor (Material change of use)
	Schedule 10, Part 9, Division 4, Subdivision 2, Table 1 – State transport corridor ((Reconfiguring a lot)

Location details

Street address:	15 Cane Road, Chewko, Mareeba QLD
Real property description:	Lot 156 on SP124698
Local government area:	Mareeba Shire Council
Existing use:	Rural
Relevant site history:	Unknown

Details of proposal

Development type:	Proposed material change of use, renewable energy facility (solar farm) and reconfiguring a lot (1 into 2 lots), subdivision by lease (>10 years) and access easement
Development description:	The lot has a total area of 267.684ha

Supporting information

Plan / Report title	Author	Reference no.	Version and date
Cane Road Crossing	-	-	-
Potential Development Footprint with Veg	-	-	-
Typical Road Crossing with Break	-	-	-

The department has carried out a review of the information provided and the impacts of the proposal. The following advice outlines the matters of interest to the department and matters that should be addressed if you lodge your development application with the assessment manager.

1. Native vegetation clearing

Schedule 10, Part 3, Division 4, Table 2 - Reconfiguring a lot that is assessable development under s21

Schedule 10, Part 3, Division 4, Table 3 – Material change of use that is assessable development under a local categorising instrument

General vegetation advice

The subject lot contains the following features/vegetation types:

- Category B area (containing least concern and of concern regional ecosystems)
- Category R (regrowth watercourse and drainage feature area)
- Category X area
- Watercourses/ drainage features as shown on the vegetation management watercourse and drainage feature map

The mapped regional ecosystems on the subject lot are:

- 9.12.31b/9.12.31a
- 9.8.2a
- 9.5.9a
- 9.313

Vegetation referral advice

Assuming all infrastructure proposed within the development footprint is clear of the required firebreak distance of 1.5 times the height of the adjacent mapped vegetation or 20 meters, whichever is greater, the department would not be triggered for referral and as such the buffers from watercourses would not be assessed under the SDAP State Code 16: Native vegetation clearing. If there were triggers, the department would only assess watercourses within the mapped regulated vegetation.

The local government may have their own requirements regarding setbacks in a watercourse.

The department requires further information in order to determine whether referral for native vegetation clearing will be required in this instance.

The development footprint (**Figure 1** provided at **Attachment 1**) indicates that referral to the department for native vegetation clearing may not be required for this development. However in order for the department to be satisfied that no clearing could occur as a result of the proposal, a development plan would need to be provided that shows:

- a) The subject Lot on Plan, development plan title, plan reference number, version number, date and author
- b) Mapped regulated vegetation over the subject and adjoining lots
- c) Existing and proposed infrastructure including buildings, fences, roads, service and utility connections (including underground services) including any proposed building envelopes. Building envelopes must be located the relevant firebreak/safety buffer distances from adjacent mapped Category B vegetation on the subject and adjoining lots
- d) Proposed lot boundaries
- e) Location of operational areas associated with the proposed development
- f) Proposed firebreaks and/or safety buffers. These should be a width of 20 metres or 1.5 times the height of the tallest adjacent tree to the infrastructure, whichever is the greater. The department will use the relevant regional ecosystem description to calculate the applicable firebreak/safety buffer, unless alternative evidence is outlined in the development application.
 - Evidence must include tree height measurements and photographs of the tallest vegetation adjacent to the proposed infrastructure. Each photograph should include a survey staff or object of known height and be accompanied by a record of its GPS location.

Once the department has reviewed more detailed information from the applicant, further and more specific advice regarding potential referral requirements for native vegetation clearing can be provided.

Water advice

The subject lot is regulated in accordance with the Water Plan (Barron) 2002. There are no requirements under the *Water Act 2000* for the proposed development. General water advice for the proposed development is provided in **Attachment 2**.

2. Waterway barrier works

Schedule 10, Part 6, Division 4, Subdivision 1, Item 12 – Assessable development-operational work for waterway barrier works

Waterway barrier works

1. The proposed site contains a number of waterways mapped on the spatial data layer Queensland waterways for waterway barrier works – Version 2, ranging from moderate (amber) to low risk (green) for fish passage.
2. If the proposed development works (including any access tracks to or from the site or along any transmission lines) impact on mapped waterways then it must be determined whether the works are considered waterway barrier works. Refer to the following fact sheets for further information:
 - [What is a Waterway Barrier Work?](#)
 - [What is not a waterway barrier work?](#)
3. It is recommended that where possible:
 - Works are designed to avoid mapped waterways and constraint mapping should incorporate buffers between waterways and development
 - Where impacts to waterways cannot be avoided any proposed waterway barrier works should provide for adequate fish passage.
4. Buffer areas are generally not stipulated in the State Development Assessment Provisions (SDAP), version 2.0, State Code 18: Constructing or raising waterway barrier works in fish habitats. However best practice is to provide for a minimum vegetated buffer width of 50m from non-tidal waterways (in accordance with Fish Habitat Guideline FHG 003 – Fish Habitat Buffer Zones).
5. Operational work that is constructing or raising waterway barrier works trigger assessable development where works are proposed within the bed and banks of a waterway. If operational works include waterway barrier works, an approval may be required under the *Planning Act 2016*.
6. Waterway barrier works may be undertaken without development assessment if they can comply with the accepted development requirements for fisheries development. The relevant requirements for waterway barriers works can be found [here](#). Works that may be undertaken as accepted development include minor dams or weirs, culvert and bed level crossings, and temporary waterway barrier works. If the proposed works do not meet the accepted development requirements, they are considered assessable development and a development application must be lodged through the department.
7. The following information must be provided for an assessment, if a development application is lodged:
 - A complete response to SDAP version 2.0, State Code 18 Constructing or raising waterway barrier works in fish habitats, available at: <https://planning.dilgp.qld.gov.au/planning/resources>
 - A complete DA Form Template 4 - Waterway barrier works, available at: <https://planning.dilgp.qld.gov.au/planning/resources>
 - Detailed information about the proposal including:
 - Relevant Lot/Plans references provided
 - The locations of proposed waterway barrier works shown in decimal degrees
 - Drawings clearly showing the location of proposed works in relation to the

existing mapped waterways

- Drawings clearly showing the cross section of proposed works in relation to the existing bed and banks of each impacted waterway
 - Details on the level of existing fish passage at this location, i.e. the ability for fish to move through the waterway network and access upstream and downstream habitats
 - Details on the fish species present, or expected to be present within this waterway
 - Demonstrate how the proposed structures/works will be designed to maintain or improve the existing level of fish passage through the site
 - Detail the expected impacts on fish passage and fish habitat resulting from the works
 - Details on the existing habitat upstream and downstream of the proposed works.
8. Note that the information requested above is the minimum required for an assessment to be undertaken. This information is also required to determine whether the development will have a significant residual impact on fish passage and determine if an environmental offset is applicable under the Environmental Offset Policy 2014.

3. State transport corridors

Schedule 10, Part 9, Division 4, Subdivision 2, Table 1 – Material change of use of premises near a State transport corridor or that is a future State transport corridor

Schedule 10, Part 9, Division 4, Subdivision 2, Table 4 – Reconfiguring a lot near a State transport corridor

General

The development proposal aims to provide access via Cane Road from Chewko Road. Cane Road crosses the Mungana Branch railway which is rail land identified as Lot 251 on SP129910. Therefore Lot 251 on SP129910 will be required to be included in the development application. While Cane Road is within rail land, there is an interface agreement which makes Cane Road a public road within the railway land. Therefore, it is unlikely that an agreement will be required between the applicant and Queensland Rail regarding the crossing.

Land owner's consent

The proposed development relies on rail corridor land held or administered by the Department of Transport and Main Roads, namely Lot 251 on SP129910, for the proposed access arrangements. The applicant is advised that section 51(2) of the *Planning Act 2016* provides that owner's consent is required for work on rail corridor land as defined under the *Transport Infrastructure Act 1994*.

Land owner's consent should be obtained from the Department of Transport and Main Roads in accordance with section 51(2) of the *Planning Act 2016*. An application for owner's consent should be made to partick.z.leys@tmr.qld.gov.au or by telephone on (07) 3066 7430.

Further information on obtaining owner's consent from the Department of Transport and Main Roads is available at:
<https://www.tmr.qld.gov.au/Community-and-environment/Planning-and-development/Planning-and-development-assessment-under-the-Planning-Act/Assessable-development/Owners-consent-dept-land/Owners-consent-rail-corridor-land>

State Development Assessment Provisions (SDAP)

Based on the referral triggers, a formal development application should demonstrate compliance with the performance outcomes of the relevant modules of SDAP State code 2 available at: <https://planning.dilgp.qld.gov.au/planning/resources>.

Further guidance on what information needs to be supplied with a formal development application can be obtained from the Department of Transport and Main Roads' SDAP Supporting Information available at: <http://www.tmr.qld.gov.au/Community-and-environment/Planning-and-development/Planning-and-development-assessment-under-SPA/Assessable-development.aspx>.

Proposal Plans

When lodging a formal development application, demonstrate how the proposed development will achieve compliance with SDAP State Code 2: Development in a railway environment, Table 2.2.1 Development in a railway environment.

In particular, the applicant should provide scaled and sufficiently detailed plans and supporting documentation which clearly shows all aspects of the proposed development (buildings, structures and works and their setbacks) in relation to the railway. These drawings should also clearly show the extent of the development area in relation to the site's boundaries with state transport infrastructure such as railways, as well as access tracks, proposed fencing and clarification of the intended timeframes for the development and any associated staging.

Filling, excavation and retaining structures

When lodging a formal development application, provide further information clarifying the extent and nature of the proposed earthworks and retaining structures in proximity to the railway. This should demonstrate how the proposed development will comply with PO10 to PO14 of SDAP State Code 2: Development in a railway environment, Table 2.2.1 Development in a railway environment.

In particular, the applicant is requested to provide an earthworks plan, including cross sections/elevations and any required supporting technical details clearly showing:

- the location and extent of proposed excavation and filling (earthworks), including likely volumes of cut and fill adjacent to the railway
- the maximum depth of any excavation and maximum height of any proposed filling and the gradient and height of any proposed batters adjacent to the railway
- the maximum height and intended form/design of any proposed retaining walls or structures adjacent to the railway
- where proposed excavations, filling/backfilling or retaining works will be greater than 1m in depth or height abutting the railway, RPEQ certified drawings should be provided demonstrating that the works will not de-stabilise rail transport infrastructure or the land supporting this infrastructure

- demonstrate that any retaining structures, excavations, and filling/backfilling will be located outside the railway

Scaled cross sections and elevations should clearly show the interface with the railway as a result of the proposed earthworks. The difference between existing site levels and finished/design levels should be clearly shown. This documentation should encompass any earthworks proposals associated with access tracks.

Stormwater and drainage

When lodging a formal development application, provide stormwater information which assesses the potential stormwater impacts on the railway as a result of the proposed development and recommends appropriate mitigation measures.

The stormwater information should demonstrate how the proposal is able to achieve compliance with PO15-PO16 of SDAP State Code 2: Development in a railway environment, Table 2.2.1 Development in a railway environment and with consideration given to the Queensland Urban Drainage Manual available at: <https://www.dews.qld.gov.au/water-supply-regulations/urban-drainage>.

In particular, the applicant should demonstrate that the management of stormwater post development can achieve a no worsening impact (on the pre-development condition) for all flood and stormwater events that exist prior to development and up to a 1% annual exceedance probability (AEP) (equivalent to 1/100 year average recurrence interval (ARI)). Stormwater management for the proposed development must ensure no worsening or actionable nuisance to the railway, including rail transport infrastructure, caused by peak discharges, flood levels, frequency/duration of flooding, flow velocities, water quality, sedimentation and scour effects.

Overland flow paths should be identified and hydraulic conveyance will need to be maintained on the site as part of the proposed development. The proposed development should not impede or interfere with any potential drainage, stormwater or floodwater flows from the railway through the site. Stormwater and floodwater flows from the proposed development must not damage or interfere with the railway. The proposed development should not cause a concentration of stormwater (including floodwater) flows discharging on the railway during construction or thereafter. Existing stormwater drainage infrastructure on the railway should not be interfered with or damaged by the proposed development such as through concentrated flows, surcharging, scour or deposition.

The stormwater information should include details of the mitigation measures proposed to address any potential stormwater impacts (including flooding impacts) of the proposed development.

Further guidance on what information needs to be supplied can be obtained via the Department of Transport and Main Roads' SDAP Supporting Information – Stormwater and Drainage at <http://www.tmr.qld.gov.au/Community-and-environment/Planning-and-development/Planning-and-development-assessment-under-SPA/Assessable-development.aspx>.

Access and Network safety

The railway level crossing of the Mareeba Mungana Line Branch at Cane Road (ID 2338) could be adversely impacted on by development generated traffic. Provide RPEQ certified traffic engineering information demonstrating how the proposal will comply with PO19 and

In particular, traffic information will be required to address the following:

- the expected traffic distribution on the road network as a result of the proposed development. This should identify the roads intended to be used by development generated traffic including the likely origin and destination of vehicles accessing the development during construction
- identification of any railway level crossing/s likely to be impacted on by development generated traffic during construction. The proportion of development generated traffic that is likely to use the identified railway level crossing/s should be identified
- the expected timeframe for the delivery of the proposed development including the commencement and completion of construction (including any stages)
- existing traffic flows (expressed as vehicles per day) over the impacted railway level crossing/s, including daily (peak hour) fluctuations, and number and percentage of heavy vehicles
- the expected background traffic growth (expressed as vehicles per day) over the impacted railway level crossing/s, including the number and percentage of heavy vehicles. This should include background traffic growth from the anticipated commencement of construction and the completion of construction (including any stages)
- the expected development generated traffic (expressed as vehicles per day), including daily fluctuations (peak hour) and percentage of heavy vehicles, that will pass over the impacted railway level crossing/s during construction (including any stages)
- the maximum size and type of vehicle (including length, width, height and weight) anticipated over the impacted railway level crossings as a result of the development during construction (including any stages)
- demonstrate how the development generated traffic will not worsen vehicular queuing (short stacking) issues over the impacted railway level crossing/s. In particular, demonstrate that there is sufficient clearance from the railway level crossing to allow the maximum size of vehicle used in the operation to queue. The minimum clearance should be 5m from the edge running rail (of the closest railway track) as per Section 5.4 – Short Stacking and Figure 3.2 – Yellow Box Marking of AS1742.7:2016 Manual of Uniform Traffic Control Devices, Part 7: Railway plus the length of the maximum design vehicle
- confirmation of sight distances on each side of the impacted railway level crossing. Advice is provided that the southern approach to the crossing on Cane Road has limited sight distances to the west due to the angle of the road and the curvature of the railway

Please contact the Rail and Public Transport Technical Advice Team of the Department of Transport and Main Roads on telephone number 3066 1456 or at RAPTTA@tmr.qld.gov.au who will assist you with addressing the items.

Over-dimensional Road Loads (Queensland Rail)

Under the Transport Infrastructure (Rail) Regulation 2006 permission from the Railway Manager (Queensland Rail) is required to take over-dimensional road loads across Queensland Rail infrastructure (e.g. rail level crossings and rail bridges). Further

information can be obtained from Queensland Rail's website at:
<http://www.queenslandrail.com.au/forbusiness/overdimensionalloads>.

This pre-lodgement advice does not constitute an approval or an endorsement that the department supports the development proposal. Additional information may be required to allow the department to properly assess the development proposal when a formal application has been lodged.

If you require any further information, please contact Sue Lockwood, Senior Planning Officer on 4037 3215 or via email sue.lockwood@dilgp.qld.gov.au who will be pleased to assist.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Brett Nancarrow', with a stylized flourish at the end.

Brett Nancarrow
Manager (Planning)

Attachment 1: Figure 1

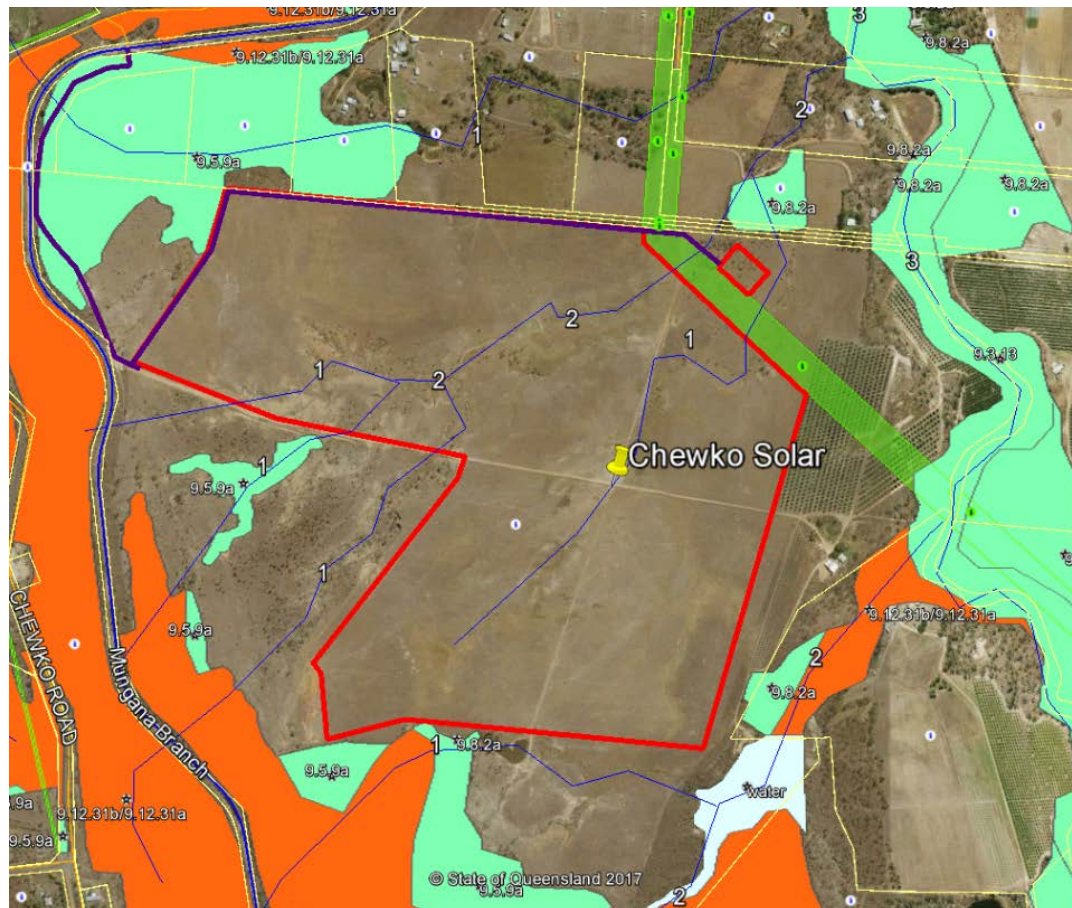


Figure1: Proposed development footprint for solar farm (source reference: pre-lodgement request SPL-0617-040495)

Attachment 2: Water advice

Water feature identification

The proposed development area includes a feature which is either not mapped or identified as 'yet to be mapped' on the DNRM Watercourse Identification Map (WIM). Information relating to the WIM can be found online at:

<https://www.business.qld.gov.au/industries/mining-energy-water/water/authorisations/watercourse-map>

If a feature is determined to be a watercourse, approval may be required under the *Water Act 2000* to undertake the following activities:

- Take or interfere with water
- Place fill or excavate material
- Excavate riverine quarry materials

Surface water (water in a watercourse, lake or spring)

Atherton Creek, located adjacent to the north-east boundary of Lot 156 on SP124698 is a watercourse located within Supplemented Surface Water Zone A of the Water Plan (Barron) 2002. Land owners adjoining Atherton Creek will require a water allocation from SunWater to take water for any purpose. Refer to the advice below regarding Supplemented Water – Mareeba Dimbulah Water Supply Scheme.

To interfere with water in Atherton Creek (e.g. to construct an impoundment or weir across a watercourse), will require an entitlement under the *Water Act 2000*. A development permit may also be required under the *Planning Act 2016*.

Overland flow water

Water captured by the existing large dam located in the south-east corner of Lot 156 on SP124698 has been determined to be overland flow water which is not managed within this water plan area. Overland flow water can be interfered with or taken without an entitlement under the *Water Act 2000*. The construction of a dam that takes or interferes with overland flow water may require a development permit under the *Planning Act 2016* for other matters e.g. vegetation clearing.

Supplemented Water – Mareeba Dimbulah Water Supply Scheme

Atherton Creek adjacent to Lot 156 on SP124698 is located within Supplemented Surface Water Zone A. A land owner may be able to access or trade water from the Mareeba Dimbulah Water Supply Scheme. Please contact SunWater on 13 15 89 to determine if water can be accessed or traded to Supplemented Surface Water Zone A.

Groundwater

In this locality, a water licence is not required to take or interfere with groundwater for any purpose. Planning approval under the *Planning Act 2016* is not required for the drilling of bores however a registered bore driller is required to drill a bore deeper than six metres. Please contact DNRM at Mareeba on 4017 0140 for further advice if required.

Advice for proponents seeking to excavate material from or place material in a watercourse

Landowners may excavate up to 500 cubic metres of material from, or place up to 150 cubic metres of fill in, a non- tidal watercourse that is on or adjacent to their property without approval. These activities may only occur where the works can be undertaken in accordance with the document: Riverine protection permit exemption requirements, available at: www.dnrm.qld.gov.au/?a=109113:policy_registry/riverine-protection-permit-exemption-requirements.pdf. Material excavated as a waste product must be disposed in accordance with the exemption document.

If the proposed works do not meet the exemption requirements, a Riverine Protection Permit must be applied for under section 218 of the *Water Act 2000*. There is no fee for this permit. A development approval under the *Planning Act 2016* is not required. The application to apply for a riverine protection permit is available at: www.business.qld.gov.au/industry/water/managing-accessing/accessing-water/authorisations/riverine-protection. The applicant should contact DNRM on 4447 9137 or RiversNorth@dnrm.qld.gov.au for further advice if required.

Advice for proponents seeking to remove quarry material from a watercourse or lake
Proponents seeking to excavate riverine quarry materials (such as sand, gravel, rocks, soil) from within a watercourse or lake for any purpose other than waste material will require a Quarry Material Allocation Notice. Please contact DNRM on 4447 9137 for further advice if required. These notices are issued by DNRM under the *Water Act 2000* and will be in addition to a development permit under the *Planning Act 2016*. Any associated clearing of vegetation within a watercourse may also require assessment.

Annex D

Contaminated Land Search Results



Department of Environment and Heritage Protection (EHP)
ABN 46 640 294 485
400 George St Brisbane, Queensland 4000
GPO Box 2454 Brisbane QLD 4001 AUSTRALIA
www.ehp.qld.gov.au

SEARCH RESPONSE
ENVIRONMENTAL MANAGEMENT REGISTER (EMR)
CONTAMINATED LAND REGISTER (CLR)

Transaction ID: 50373459 EMR Site Id: 24 April 2017
This response relates to a search request received for the site:
Lot: 156 Plan: SP124698

EMR RESULT

The above site is NOT included on the Environmental Management Register.

CLR RESULT

The above site is NOT included on the Contaminated Land Register.

ADDITIONAL ADVICE

All search responses include particulars of land listed in the EMR/CLR when the search was generated.
The EMR/CLR does NOT include:-

1. land which is contaminated land (or a complete list of contamination) if EHP has not been notified
2. land on which a notifiable activity is being or has been undertaken (or a complete list of activities) if EHP has not been notified










If you have any queries in relation to this search please phone 13QGOV (13 74 68)

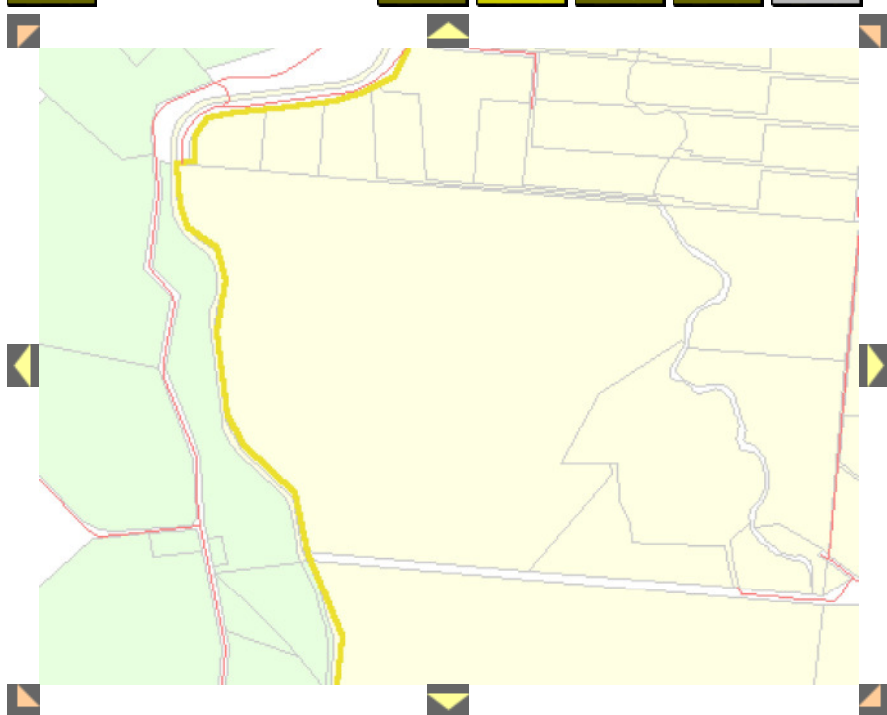
Administering Authority

[SELECT STATE](#) > [FIND A MAP](#) > [SELECT PARCEL](#)

Lot	Plan	Potentially Affected	Map Link
156	SP124698	Other	Zoom to Parcel

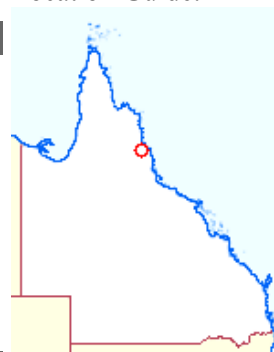
[SELECT STATE](#) > [FIND A MAP](#) > [QUERY A MAP](#)

Zoom In          Zoom Out [Recentre](#) [Query](#) [Home](#) [Info](#)











Scale: 1:22270

Location Guide:



Legend:

-  [Substantial](#) UXO Potential
-  [Slight](#) UXO Potential
-  [Other](#) UXO Potential
-  [Cadastral with Substantial](#) UXO Potential
-  [Cadastral with Slight](#) UXO Potential
-  [Cadastral with Other](#) UXO Potential
-  Cadastral outside UXO areas
-  Local Government Area

[SELECT STATE](#) > [FIND A MAP](#) > [QUERY A MAP](#) > [QUERY RESULTS](#)

You have selected the following parcel:

Lot: 156 **Plan:** SP124698

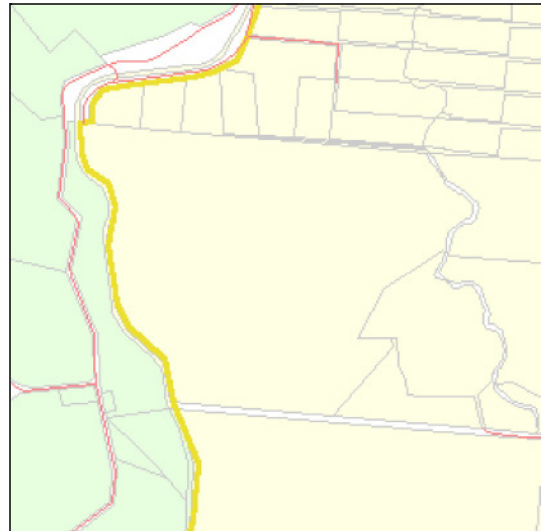
This Parcel is affected by the following UXO Areas:

Site Name: Mareeba Airfields

Category: [Other](#)

Description: This site was a major airfield during WWII with 2 runways, and several AA instalations.

Assessment: This site is assessed as having a UXO contamination potential of "Other".



Annex E

UXO Desktop Investigation Report



BETTER BY DEFINITION

UNEXPLODED ORDNANCE DESKTOP INVESTIGATION

REPORT

CHEWKO SOLAR SITE QUEENSLAND

V1.02

G-tek Australia Pty Limited
[ABN 47 099 519 034]

Unit 5K, 256 New Line Road
Dural NSW 2158
Ph 02 9651 6838
Fax 02 9651 6834

Project Ref: 17051ERMA
Prepared For: Tilt Renewables Australia Pty Ltd (c/o ERM)
Date of Issue: 1 August 2017



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Please Read This Disclaimer

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G-tek's Client

The entity that commissioned this report, and who is G-tek Australia Pty Limited's (G-tek's) client is Tilt Renewables Pty Ltd (c/o Environmental Resources Australia Pty Ltd [ERM]) (The "Client").

Purpose of This Report

This report was commissioned for the purpose of detailing the activities undertaken by G-tek on the Client's site and the results of those activities (The Purpose).

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Raised by:

Greg Guthrie MIEpE
Chief Operating Officer

Released by:

Paul O'Donnell
Senior Project Manager

DOCUMENT VERSION CONTROL

Version	Date	Raised By	Reviewed/Released By
1.01	31 July 2017	G Guthrie	P O'Donnell
1.02	1 August 2017	G Guthrie	P O'Donnell

DOCUMENTATION CONTROL

Copy Number	Issued To
1	Tilt Renewables Australia Pty Ltd (c/o ERM)
2	G-tek Australia Pty Limited

Copy 1 of 2



The following Definitions apply within this Report:

Ammunition: A device charged with explosives, propellants, pyrotechnics, initiating composition, or nuclear, biological or chemical material for use in connection with defence or offence including demolitions. Certain ammunition can be used for training, ceremonial or other non-operational purposes.

Ammunition Produce: Non-explosive stores and components used in the assembly or the initiation of ammunition.

Explosive Ordnance (EO): All munitions containing explosives, nuclear fission and fusion materials and biological and chemical agents. This includes bombs and warheads; guided and ballistic missiles; artillery, mortar, rocket and small arms ammunition; all mines, torpedoes and depth charges; demolition charges; pyrotechnics; clusters and dispensers; cartridges and propellant actuated devices; electro-explosive devices; clandestine and improvised explosive devices; and all similar or related items or components explosive in nature.

Explosive Ordnance Waste (EOW): Inert material remnant from the initiation or functioning of explosive ordnance.

Field Validation Survey (FVS): A percentage field sampling activity designed to determine whether an area is affected by UXO, the boundaries of any affected area, the location of impact points within any affected area and the nature and concentration of UXO within any affected area (see also UXO Assessment).

Fragmentation: Metallic fragments of the fractured casing of EO resultant from the initiation of high explosive filling and often projected at high velocities over considerable distances from the point of initiation.

Hazard Reduction Operation (HRO): An operation designed to reduce the EO hazard within the boundaries of an affected area (see also UXO Remediation).

Military Produce: Any item identified as military in origin that is not ammunition-related.

Safeguarding: An operation designed to monitor excavation or drilling processes in an area of potential UXO risk.

Small Arms: All arms, including automatic weapons of less than 20 mm in calibre and all gauges of shotguns.

Small Arms Ammunition (SAA): Ammunition for small arms, ie all ammunition of less than 20 mm in calibre, and all gauges of shotgun cartridges.

Small Arms Ammunition Waste (SAAW): Inert material remnant from the transport, packaging, preparation, and use of SAA.

Unexploded Ordnance (UXO): Explosive ordnance that has been primed, fused, armed or otherwise prepared for action and which has been fired, dropped, launched, projected or placed in such a manner as to constitute a hazard to operations, installations, personnel or material but remains unexploded either by malfunction or design or for any cause. UXO includes items of military ammunition or explosives removed from their original resting-place for any reason, including souveniring by members of the public.

UXO Assessment: An activity designed to determine whether an area is affected by UXO, the boundaries of any affected area, the location of impact points within any affected area and the nature and concentration of UXO within any affected area (see also Field Validation Survey).

UXO Investigation: A systematic examination to determine whether an area is affected by UXO. UXO Investigation may include historical research, field assessment/survey activities and/or remedial works.

UXO Remediation: An operation designed to reduce the EO hazard within the boundaries of an affected area (see also Hazard Reduction Operation).



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1.0 INTRODUCTION

1.1 General

Tilt Renewables Australia Pty Limited (through Environmental Resources Australia Pty Ltd [ERM]) have contracted G-tek Australia Pty Ltd (G-tek) to conduct a desktop historical review of a selected area of land at Chewko, Queensland. Parts of Australia were used for defence training and infrastructure purposes during World War Two (WWII), primarily through lease or purchase by the Department of Defence (Defence) and became potentially contaminated with unexploded ordnance (UXO) and explosive ordnance (EO) as a result of their usage.

The areas of interest is indicated at Figure 1 below, and includes part of Lot 156 on SP 124698 in the County of Nares, Parish of Tinaroo, Queensland. Lot 156 comprises some 268 hectares (ha), and is located approximately 7 kilometres (km) south-west of the town of Mareeba and approximately 4.5 km north-west of the current Mareeba Airport (IATA:MRG – ICAO: YMBA).

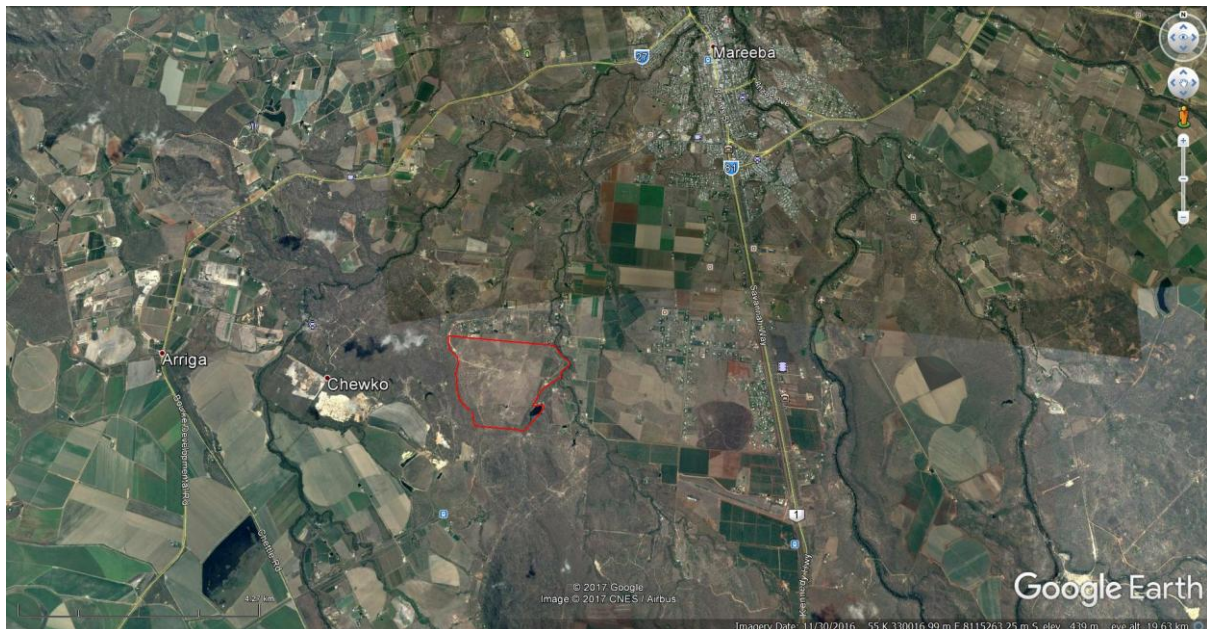


Figure 1: Sites Location (Google Earth)

1.2 Authority to Undertake Task

Authority to undertake this task ERM Purchase Order AU04/0414798/PO01 dated 20/07/2017.

1.3 Objectives

The objectives of this UXO Project are to:

- Perform an UXO Desktop Investigation of the Site to identify any potential UXO hazard.
- Detail the findings in a Report.

1.4 Nature of Report

This Report details the conduct of the UXO Desktop Investigation. All relevant documentation is included as part of this Report.

1.5 Previous Investigations of the Site

G-tek has not conducted previous UXO review of the Site, but has conducted UXO Investigation and Remediation works within the Atherton Tablelands area.

2.0 UXO CONTRACTOR DETAILS

The contracting firm is G-tek Australia Pty Limited (G-tek) ABN 47 099 519 034. G-tek is a member of the current Department of Defence Environment and Heritage Panel (HEHP) and is qualified for the conduct of these works through both this Panel membership and the membership of individual staff within the Institute of Explosive Engineers (IExpE).

2.1 G-tek Staff

G-tek staff directly involved in this investigation include:

Project Leader/Researcher	Greg Guthrie
Project Support	Paul O'Donnell

3.0 OWNERSHIP AND CLIENT DETAILS

The current ownership of the Site is not part of the Project brief.

The Client for the task is:

Tilt Renewables Australia Pty Ltd
c/o Environmental Resources Management Pty Ltd
PO Box 1400
Spring Hill, QLD, 4004

4.0 GENERAL HISTORY

General indigenous and European cultural history of the Site is not considered to be within the scope of this Investigation. It is understood that the Site has been used for general agricultural purposes since initial European settlement of the area in the mid 1800's.

5.0 MILITARY HISTORY

At the entry of Japan into WWII following the bombing of Pearl Harbour, Hawaii, on 7 December, 1941, Australian and Allied focus in the Pacific was on stopping further Japanese advances and training forces to combat them.

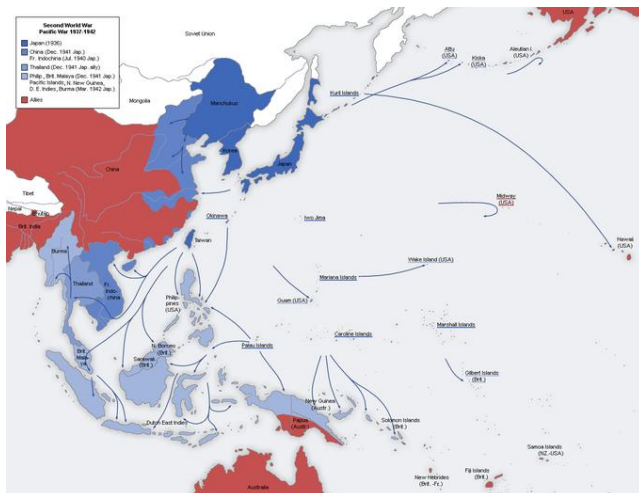


Figure 2: Japanese Expansion 1942 (<https://www.boundless.com/u-s-history/textbooks/>)

In March 1942 the Japanese military adopted a strategy of isolating Australia from the United States and preventing Allied offensive operations by capturing Port Moresby, the Solomon Islands, Fiji, Samoa and New Caledonia. An attempt by the Japanese to capture Port Moresby by an amphibious assault was thwarted by the Battle of the Coral Sea in May 1942, and a decision was then made to capture Port Moresby by an overland attack. The Japanese advance was first stopped by Australian forces along the Kokoda Track, and, through mid to late 1942 and into 1943, Australian and United States forces gradually forced back the Japanese in Papua New Guinea.

In late November 1942 General Blamey (*Commander in Chief – Australian Military Forces*) ordered a survey of the Atherton Tableland with the intention of developing facilities for a rehabilitation and training area for Australian troops recently returned from the Middle East. Known as the 'Atherton Project', the scheme had three key purposes—recuperate troops in a cooler climate while engaged in jungle warfare training; provide suitable hospitalisation for malaria and tropical disease cases; and locate personnel and maintenance installations close to the New Guinea frontline with access to railway and port facilities. From December 1942 the headquarters of the Australian Army in north Queensland transferred from Townsville to the Atherton Tableland with the main administrative base established around the town of Atherton and the nearby settlement of Tolga. A huge schedule of construction work commenced in January 1943 involving the building of tent encampments, hutments, stores, bakeries, mess kitchens, entertainment halls, hospitals, sewage plants, army farms and a war cemetery. Rocky Creek AGH, near Atherton, was the largest military hospital to be built in north Queensland during World War II. The hospital was a key component in the development of training and rest facilities for Australian Army divisions on the Atherton Tableland, in preparations for the planned New Guinea and island offensives. At its peak the hospital complex included a convalescent depot of 1000-bed capacity and two general hospital units, each with 1200-beds. (<http://www.ww2places.qld.gov.au/theseservices/theaustralianarmy>).

As a result of the training activities conducted, large areas of the Atherton Tableland are assessed by the Department of Defence as having a potential to contain remnant UXO from that period.

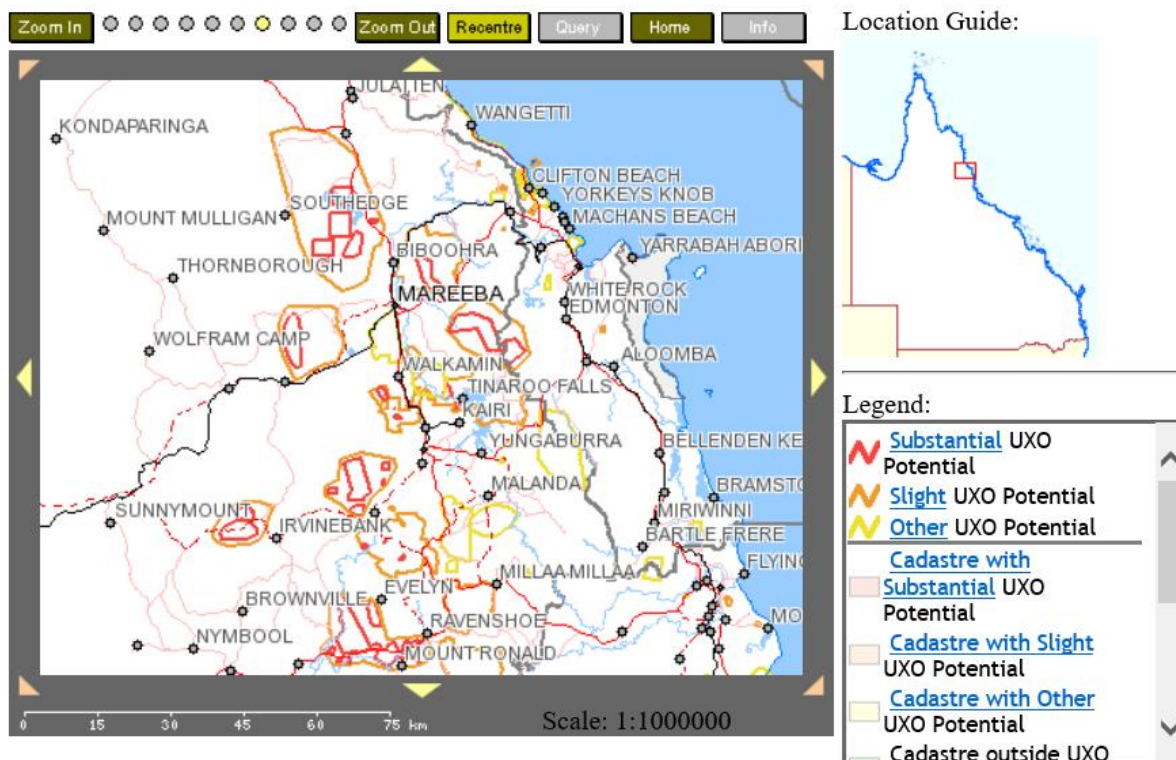


Figure 3: Potential UXO Areas, Atherton Tableland (<http://www.defence.gov.au/UXO/WhereIs.asp>)

5.1 Mareeba Aerodrome

An area south of Mareeba was selected as the Site for operational airbases to be established to support the campaigns in PNG and the South West Pacific Theatre. The Mareeba Aerodrome started as major United States Army Air Force (USAAF) Base comprising two (2) runways, a taxiway connecting them, dispersal loops containing individual aircraft dispersal bays, an ordnance storage area ("Bomb Dump") and required sleeping, eating, briefing and logistic and administrative support areas. The area was also protected by anti-aircraft guns.

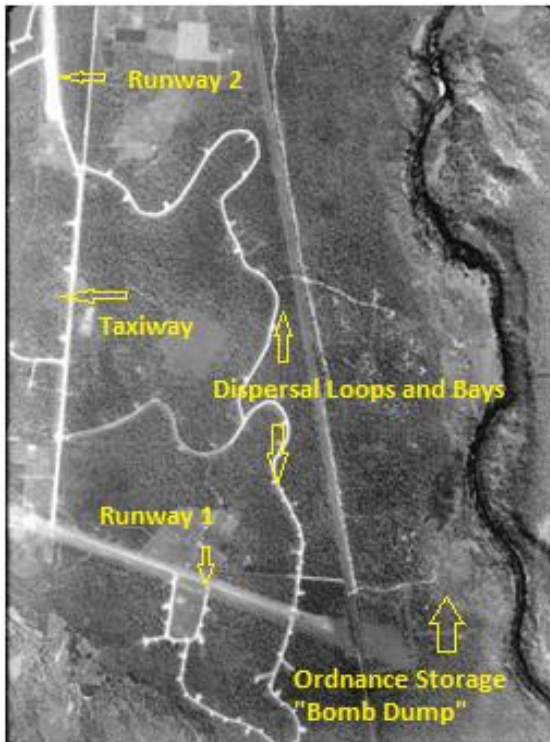


Figure 4 – Mareeba Aerodrome (<http://www.ozatwar.com/airfields/mareebaairstfield.htm>)

Mareeba housed both heavy bomber and fighter squadrons of the USAAF in 1942 and 1943. The Americans referred to it as Hoevet Field in honor of Major Dean Carol "Pinky" Hoevet who was killed on 16 August 1942.

Known USAAF units assigned to Mareeba were:

- 19th Bombardment Group, (Headquarters) (24 July 1942 – 23 October 1943)
 - 28th Bombardment Squadron B-17 Flying Fortress, (23 July 1942 – 25 October 1943)
 - 30th Bombardment Squadron B-17 Flying Fortress, (23 July 1942 – 25 October 1943)
 - 93d Bombardment Squadron B-17 Flying Fortress, (23 July 1942 – 25 October 1943)
- 63d Bombardment Squadron B-17 Flying Fortress (43d Bombardment Group), (20 August 1942 – 23 January 1943)
- 64th Bombardment Squadron B-17 Flying Fortress (43d Bombardment Group), (8 November 1942 – 20 January 1943)
- 65th Bombardment Squadron B-17 Flying Fortress (43d Bombardment Group), (7 November 1942 – 20 January 1943)
- 403d Bombardment Squadron B-17 Flying Fortress (43d Bombardment Group), (21 January – 11 May 1943)
- 8th Fighter Group, (Headquarters) (February–16 May 1943)
 - 35th Fighter Squadron, P-39 Airacobra (24 February – May 1943)
 - 36th Fighter Squadron, P-39 Airacobra (22 February – 22 May 1943)
 - 80th Fighter Squadron, P-39 Airacobra (6 February – 21 March 1943)



Figure 5 – USAAF 19th Bomb Group personnel on parade at Mareeba, with B-17E 41-2562

(By USAAF - USAF Historical Research Agency via B-17 Flying Fortress Units of the Pacific War, Osprey Publishing; First Edition (April 20, 2003) ISBN: 1841764817, Public Domain, <https://commons.wikimedia.org/w/index.php?curid=5799986>)

With the departure of the American units, Mareeba was then used by Nos 5 and 100 Squadrons, No 5 Communication Unit and a variety of Royal Australian Air Force (RAAF) support units, with No 24 Operational Base Unit disbanding in early 1946 (https://en.wikipedia.org/wiki/Mareeba_Airfield).

5.2 Mareeba Aerodrome Lands

The lands enclosed within in the red boundary in Figure 6 below were hired by the Royal Australian Air Force (RAAF) from various land owners from 1942 to allow the development of the Mareeba airfields and infrastructure.

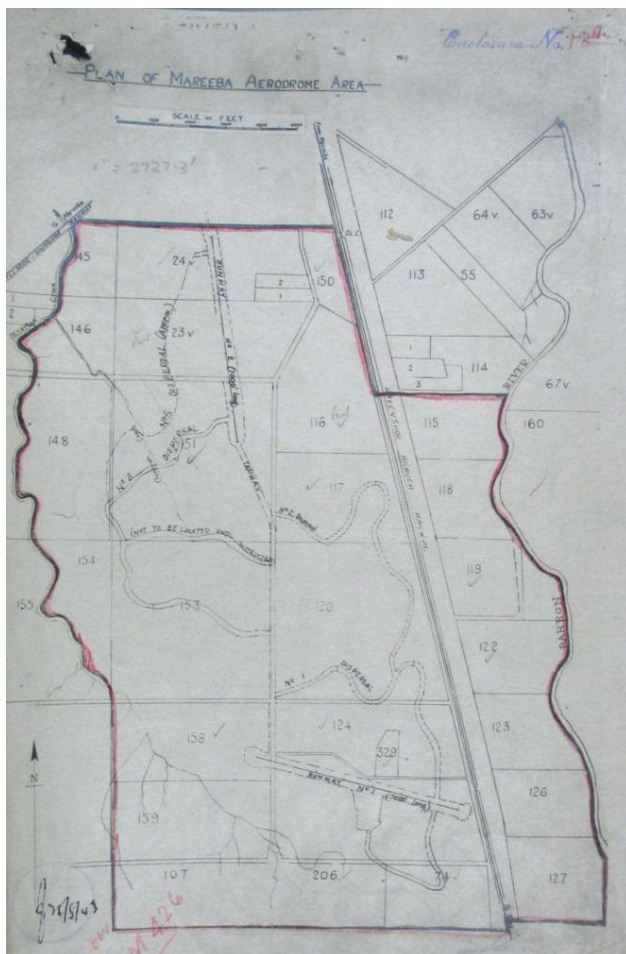


Figure 6 – Mareeba Aerodrome Land Hirings (NAA File 175/6/109 Part 1)



Monthly compensation was paid on an annual basis to impacted landowners for the amount of their property that was being used, and generally to replace income potentially lost by not being able to crop or use the land; hires at Mareeba identified did not include hire of Lot 156.

Property	Owner	Compensation per Year
Lot 24V	G J McIver	£130.0.0
Lot 3 and 4 of 23V	Hymet Muret	£146.0.0
Lot 1 of 23V	Henry Myrteza	£130.0.0
Lot 2 of 35V	Sabri Isa	£120.0.0
Lot 117 and Lot 5 of 116	Zenel Shabin	£104.0.0
Lot 329	W J Dunn	£156.0.0
Lot 150	Mrs B B Meehan	£24.0.0
Lot 119 and 122	Australian Trustee Executors Ltd	£44.16.0
Lot 151	W Sparvell	£216.0.0
Lot 158	R A Ray	£312.0.0
Lot 124, Lot 74 and Lot 206	Sgt J R Braes	£208.0.0
Lot 153 and Lot 154	F Stephenson	£34.5.0

Figure 7 – Mareeba Aerodrome Area Annual Hirings (NAA File 175/6/109 Part 1)

The majority of Hirings ceased in 1947, other than for land in the southern portion which eventually became the current Mareeba airport. At the time of hire ceasing, compensation was generally paid for damage to the property and any rectification required as a result of military use. Frederick Stephenson's (Lots 153 and 154) claims are indicative of the type of use made of the Mareeba hired lands and included:

1.	Fencing destroyed completely	£210.0.0
2.	Land rendered completely unproductive by taxi-way and aircraft dispersal bays	£ 48.0.0
3.	Drain through Camp area to cess pit	£ 2.0.0
4.	Filling slit trenches	£ 10.0.0
5.	Filling cess-pits (3) and deep pit latrines (5)	£ 20.0.0
6.	Clearing secondary growth from 80 acres cleared land (including removal of gun emplacements and ammunition stores)	£400.0.0
7.	Damage to six acre cultivation area	£ 12.0.0
8.	Gather up and remove rubbish dumps	£ 10.0.0
9.	Two tobacco curing barns demolished	£100.0.0
		<u>£812.0.0</u>

(NAA File 175/6/109 Part 1 – A.A. Form P.124 Submission and Determination Hiring Serial 2140(RAAF No. 2203)

Detail noted from within the claim in relation to the Aerodrome infrastructure includes:

- Concrete floors in camp area and some roadways;
- Sealed bitumen taxiways and dispersal bays;
- Gravelled hard stand areas;
- About 200 slit trenches;
- Each paddock contains a large anti-aircraft emplacement with associate ammo store (2); and,
- Gun emplacements are 25-30 feet across, partly below surface, and partly banked with hard gravel, retained by basalt boulders and with partly underground ammo stores.

On reviewing cadastral data, it is believed that Lot 155, at the west of Figure 4 (outside the Red boundary) is either incorrectly annotated and that the Figure 4 indicated Lot 155 area incorporates the eastern edges of Lot 155 and Lot 156, then divided by Seven Mile Creek.. Alternatively, Lot 155 was subdivided into Lot 155 and 156 post the 1940's hirings. Either way, Lot 156 is considered outside, but contiguous with, the Mareeba Aerodromes Site.



Figure 8 – Lot on Plan Detail – Lot 156 and Lot 155

5.3 Mareeba Aerodrome UXO Potential

A review of the Department of Defence (Defence) UXO website indicates that Lot 156 has been included within lands potentially impacted by WWII use of the Mareeba Aerodrome.

You have selected the following parcel:

Lot: 156 **Plan:** SP124698

This Parcel is affected by the following UXO Areas:

Site Name: Mareeba Airfields

Category: [Other](#)

Description: This site was a major airfield during WWII with 2 runways, and several AA installations.

Assessment: This site is assessed as having a UXO contamination potential of "Other".

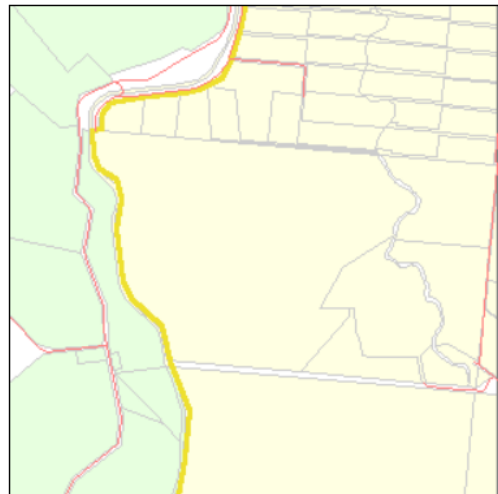


Figure 9 – UXO Potential Lot 156 SP124698 (<http://www.defence.gov.au/UXO/WhereIs.asp>)

Department of Defence Information and Advice:

Other: Defence records confirm that the area was used for military training but do not confirm that the site was used for live firing. UXO or explosive ordnance fragments / components have not been recovered from the site. Defence opinion is that it would be inappropriate to assess as either slight or substantial.

Warning: Allied Defence Forces used many areas throughout Australia, during and after World War II, for encampments, field training, live firing of weapons and other military activities. This property is on such a site; however no specific UXO contaminated site has been identified in the area. If you should find a suspicious item, that may be a UXO, do not touch or disturb it. It has been there for many years, it won't hurt you if you don't disturb it. There are no known instances, in Australia, where UXO have caused injuries except when they were deliberately and intentionally disturbed. Contact police they will arrange for military experts to attend and dispose of it.

Advice: These sites have been included for general information purposes only. Defence makes no recommendations in regards to this category.

A review of Department of Defence Explosive Ordnance Incident Reports (EOIR) indicates large numbers of reports of WWII ordnance identified and recovered from the general Mareeba area, including one (1) hand grenade from the current Mareeba airport site.



6.0 CONCLUSIONS

Areas south west of Mareeba and known as the “Mareeba Airfields” were developed for use by the United States Army Air Force and later the Royal Australian Air Force as a forward operating base to support Allied operations against Japanese forces in Papua New Guinea and the South West Pacific Theatre of Operations.

Aircraft were stored, serviced, armed and refuelled at the Mareeba Airfields.

Personnel were accommodated at the Mareeba Airfields to maintain, service, manage and fly the aircraft stationed in the area.

The Mareeba Airfield were an area defended by armed personnel and fixed anti aircraft installations.

The area of interest to this UXO Investigation, Lot 156 on RP 124698 is NOT on lands directly hired or used as part of the Mareeba Airfields.

Lot 156 is contiguous with lands hired and used as part of the Mareeba Airfields.

7.0 RECOMMENDATIONS

Based on the UXO Investigation conducted there is considered to be no requirement for any additional UXO studies, safeguarding or other works to be conducted within Lot 156 RP124698.

Because of the wide potential for UXO within the Atherton Tableland, it is considered appropriate that any future inductions or safety briefings for works within this Site should include reference to WWII activities in the area and follow the Department of Defence protocol on finding any suspicious item:

1. If a suspect UXO item is found - **DO NOT TOUCH**, disturb or tamper with the item in any way. This includes making any attempt to move the item to a 'safe' location.
2. Carefully note the appearance of the item and the location. Take a photograph if it is possible to do so without further approaching or disturbing the item.
3. If possible, mark the location so that it can be found later. Coloured tape or paint make easily recognised marker material. Note the route to the item.
4. Inform the property owner, prime contractor, site foreman or supervisor of the find.
5. Inform the Police that a possible ammunition item has been found. They will instigate a request for Defence personnel to attend and dispose of the item.

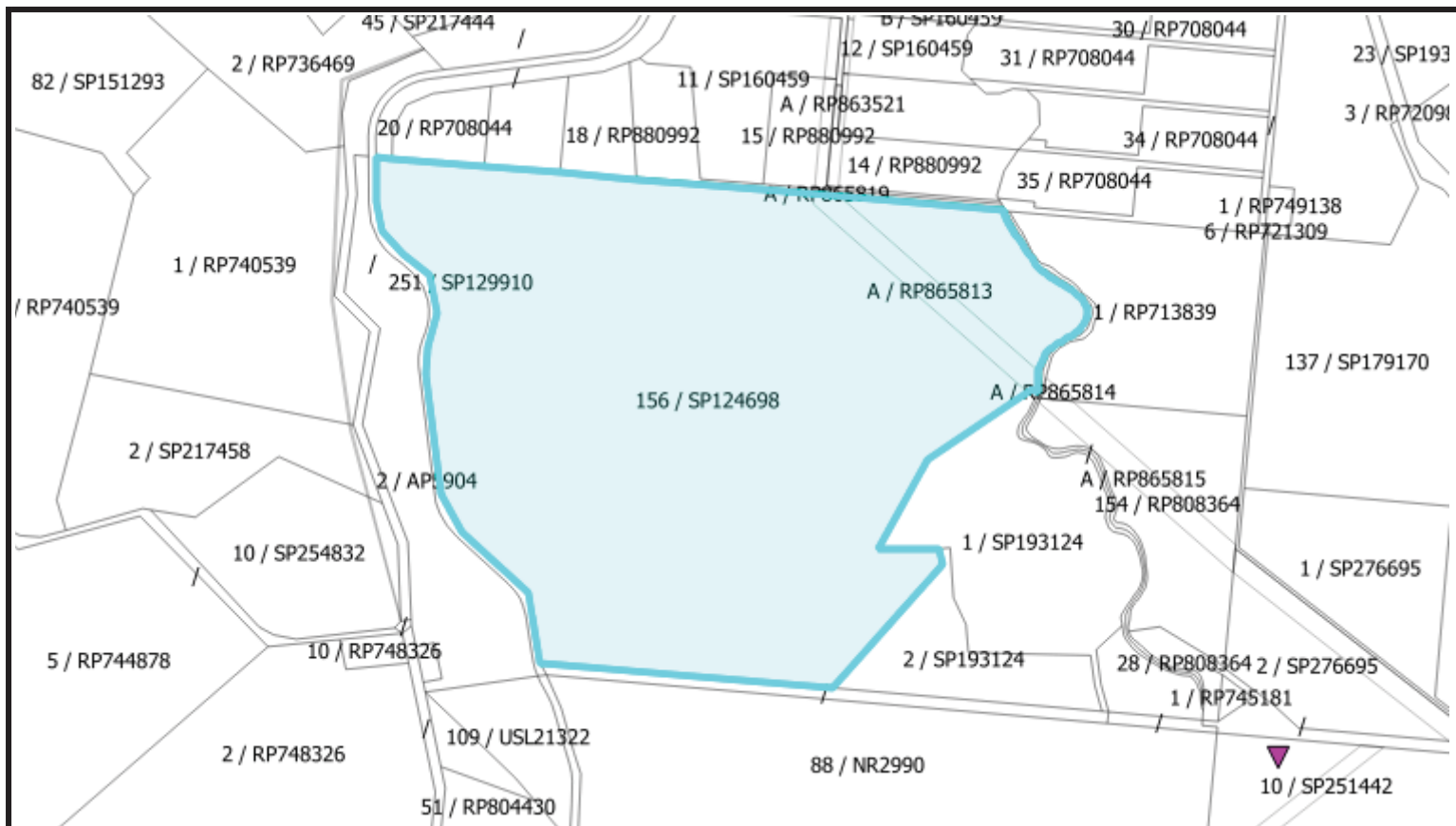
Annex F

Cultural Heritage Search Results



Lot on Plan Search

Reference Number:	20748
Lot:	156
Plan:	SP124698
LGA:	Mareeba Shire
Buffer Distance:	0 metres



There are no Aboriginal cultural heritage site points recorded in your specific search area.

There are no Aboriginal cultural heritage site polygons recorded in your specific search area.

There are no cultural heritage parties recorded in your specific search area.

There is no cultural heritage body recorded in your specific search area.

Apr 21, 2017, 3:47 PM



Lot on Plan Search

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 Study Cultural Heritage Areas recorded in your specific search area.

Regional Coordinator:

Name	Position	Phone	Mobile	Email
Leigh Preston	Cultural Heritage Coordinator North Region	07 4799 7562	0427 142 782	Leigh.Preston@atsip.qld.gov.au



Lot on Plan Search

I refer to your application in which you requested advice on Aboriginal cultural heritage places recorded on the above location.

The Cultural Heritage Database and Register search has been completed and I would like to advise that no Aboriginal cultural heritage is currently recorded in your specific search area, from the data provided by you. However, it is probable that the absence of recorded Aboriginal cultural heritage places reflects a lack of previous cultural heritage surveys of the area. Therefore, our records are not likely to reflect a true picture of the Aboriginal cultural heritage values of the area.

I note that, pursuant to the Cultural Heritage Duty of Care Guidelines, you have advised that the proposed activity is a 'Category 5 activity'. As such, I take this opportunity to remind you that in accordance with those Guidelines:-

Where an activity is proposed under category 5 there is generally a high risk that it could harm Aboriginal cultural heritage. In these circumstances, the activity should not proceed without cultural heritage assessment.

Where an activity is proposed under category 5, it is necessary to notify the Aboriginal Party and seek:

- (a) Advice as to whether the feature constitutes Aboriginal cultural heritage; and
- (b) If it does, agreement as to how best the activity may be managed to avoid or minimise harm to any Aboriginal cultural heritage.

I remind you also that the extent to which the person has complied with Cultural Heritage Duty of Care Guidelines and the extent to which the person consulted with Aboriginal parties about the carrying out of the activity, and the results of the consultation are factors a court may consider when determining if a party has complied with the duty of care.

Please refer to our website www.datsip.qld.gov.au/people-communities/aboriginal-and-torres-strait-islander-cultural-heritage for a copy of the gazetted Cultural Heritage duty of care guidelines, which set out reasonable and practical measures for meeting the duty of care.

Should you have any further queries, please do not hesitate to contact the approval officer on 1300 378 401.

Kind regards

The Director

Cultural Heritage | Community Participation | Department of Aboriginal and Torres Strait Islander Partnerships

Apr 21, 2017, 3:47 PM

Annex G

Traffic Impact Assessment



CAMBRAY CONSULTING

TRAFFIC ENGINEERING + TRANSPORT PLANNING



Chewko Solar Farm Resources Development TRAFFIC IMPACT ASSESSMENT REPORT

*Prepared For ERM
8th September 2017*

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Appendices

Appendix A

Proposed Development Overview

– Tilt Renewables

Appendix B

Development Design and Construction Information

–Tilt Renewables

Appendix C

Extractive Resources Enlargements Overlay Map 4F – Mareeba Shire Council

Appendix D

Chewko Road Traffic Survey Results

– Austraffic

Appendix E

Chewko Road / Cane Road Intersection Concept

– Cambray Consulting

Appendix F

Savannahlander Itinerary



1.0 Introduction

Cambray Consulting was engaged by Tilt Renewables Australia Pty Ltd (Tilt Renewables) to provide traffic engineering advice in relation to a proposed Solar Farm, to be located at 15 Cane Road, Chewko.

The proposed development site layout is included in **Appendix A**.

1.1 Development Overview

Tilt Renewables proposes to construct an array of interlinked solar panels to generate electricity.

An overview of the infrastructure elements to be installed / constructed as part of the development is provided in **Table 1.1**.

Table 1.1 Project Infrastructure Elements Overview

Elements	Characteristics
PV Modules and Arrays	60MW over approx. 150ha, max height approx. 5m
Tracking System	Single Axis or Fixed – Pending detailed design
Inverters	Approx. 20-30, max height 5m
Substation/ Switchyard	Approx. 6,400m ²
Battery Storage (Optional)	Approx. 3,000-5,000m ² , max height 5m
Control Building	Approx. 120m ² , max height 4m
Car parking provision	4 vehicles (Operational Phase)

Construction of the development is expected to commence in early 2019 and take between 8 to 12 months to complete. The development is expected to be operational by 2020.

Further information in relation to the design, construction and operation of the proposed development is included in **Appendix B**.

1.2 Scope of Works

As part of preparing this report, we undertook the following scope of works:

- Completion of a site inspection to review the operation and configuration of the existing transport network, including potential construction traffic routes;
- An assessment of the Chewko Road / Cane Road intersection taking into consideration:
 - Expected development traffic generation;
 - The types of vehicles expected to access the site during development construction and operation;
 - The potential need for upgrade works;
 - Site layout and on-site vehicle circulation arrangements;
 - Servicing requirements and vehicle swept path analyses; and
- A high level review of the physical layout of the site from a traffic perspective, taking into consideration vehicle access arrangements and carparking provisions.

The results of the above analyses are outlined in the following sections.



1.3 Limits of Report

This report takes into account the particular instructions and requirements of our client. Cambray Consulting has taken care in the preparation of this report, however it neither accepts liability nor responsibility whatsoever in respect of:

- Any use of this report by any third party;
- Any third party whose interests may be affected by any decision made regarding the contents of this report; and/or
- Any conclusion drawn resulting from omission or lack of full disclosure by the client, or the clients' consultants.

1.4 Safety in Design

Within our scope, we have identified safety in design issues and potential hazards, whenever reasonably practicable within our field of expertise. Due to our limited and upfront role on this project, it is not considered reasonably practicable to identify all potential hazards which may occur throughout the life of a project, including during detailed design and construction activities. It is strongly recommended that safety in design issues be reviewed during all ensuing design and construction stages of the project.

1.5 Qualifications

This report was prepared by:

- Andrew Douglas, Director – BE Civil (Hons), MSc Env Man, FIEAust, CPEng, **RPEQ 6691**;
- Nathan Edwards, Transport Engineer – BE Civil (Hons), BCom Finance, MIEAust, MAITPM; and
- John Dollisson, Graduate Transport Engineer – BE Civil.



2.0 Context

2.1 Site Location

The subject site is located at 15 Cane Road, Chewko and is formally described as Lot 156 on SP1224698. The site is located within the Mareeba Shire Council (Council) local government area.

The site in relation to the surrounding road network is illustrated in **Figure 2.1**

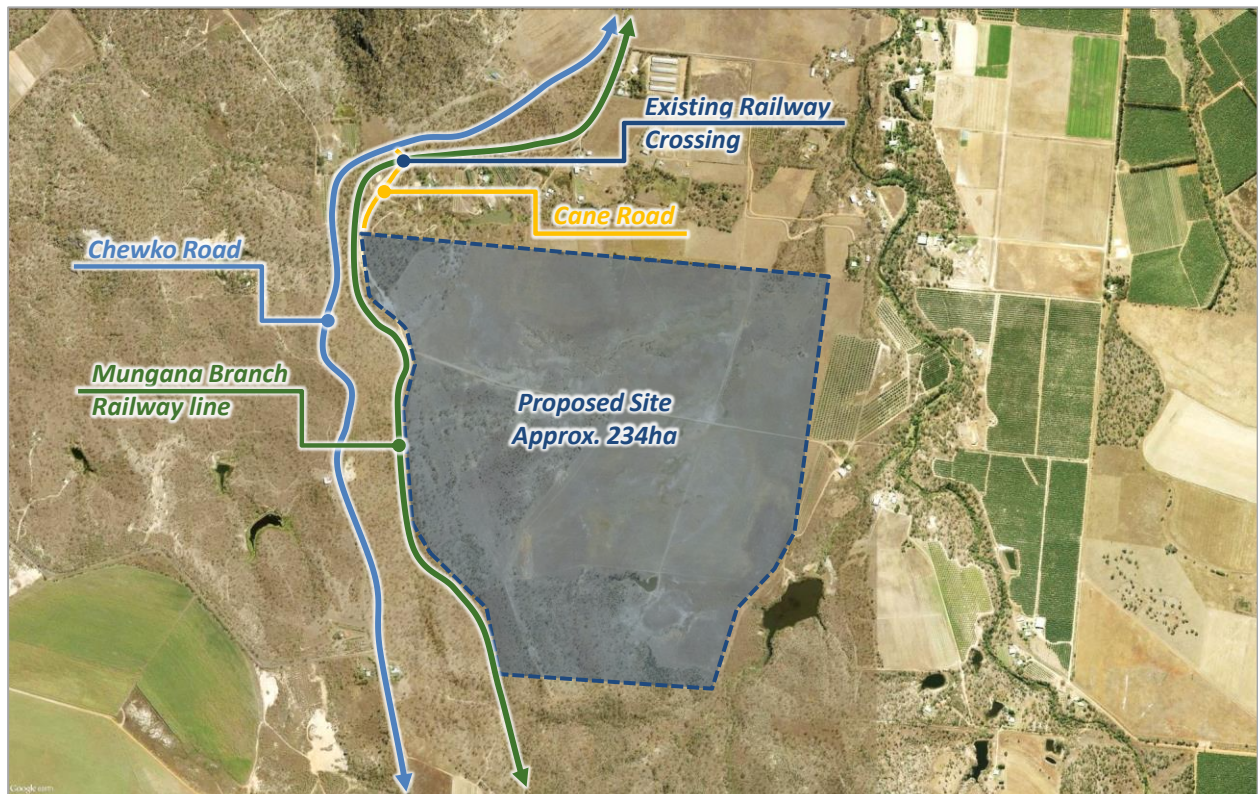


Figure 2.1 Site Location

©2016 State of Queensland

2.2 Surrounding Transport Network

A site inspection was conducted on 11th August 2017 to review the operation and configuration of the existing transport network surrounding the site.

Key characteristics of the road network surrounding the site are summarised in **Table 2.1**.

Table 2.1 Road Network Overview

Road	Jurisdiction	Hierarchy	Existing Cross Section	Speed Limit
Chewko Road	Council	Major rural road	Two Lane, Undivided, Sealed	100km/h
Cane Road	Council	Minor rural road	Two Lane, Undivided, Unsealed (south of the rail crossing)	Unsigned

It is noted that Council recently increased the posted speed limit of Chewko Road from 80 km/h to 100 km/h.



Key characteristics of the Mungana railway line, which runs adjacent to the site, are summarised in **Table 2.2**.

Table 2.2 Rail Network Overview

Rail Line	Number of tracks	Operational Status
Mungana Branch	One (1)	Yes

2.3 Local Site Access Arrangements

Access to the development is proposed via Cane Road, which connects to the broader road network via the Chewko Road / Cane Road intersection.

A driveway will lead from a gate located at the north-eastern site boundary to the location of the development infrastructure. The north-eastern site boundary is at the southern end of Cane Road approximately 1km from the Chewko Road / Cane Road intersection.

Local site access arrangements are illustrated in **Figure 2.2**.

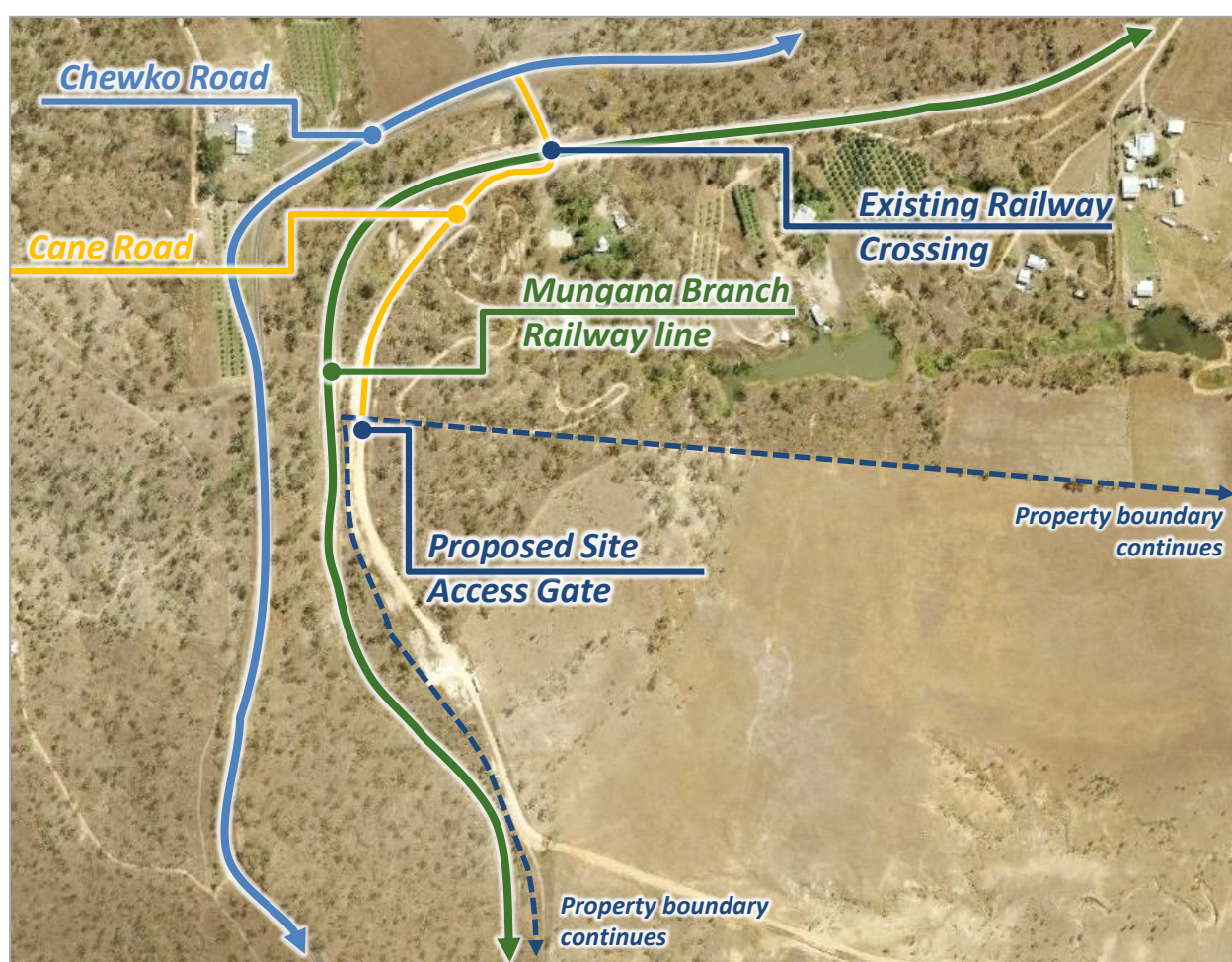


Figure 2.2 Local Site Access Arrangements

©2016 State of Queensland



2.4 Broader Road Network Access Arrangements

Chewko Road provides access to the broader road network and forms part of a key resource transport route which runs from the Dimbulah Road Key Resource Area (KRA) (Ref: KRA151) to Mareeba.

A copy of the Mareeba Shire Council *Extractive Resources – Enlargements Overlay Map 4F*, which illustrates the Dimbulah Road KRA and associated transport routes, is included in **Appendix C**.

The Council roads proposed to be used by construction and operational vehicles associated with the proposed solar farm were discussed at a meeting with Council on 11th August 2017. A summary of the feedback provided by Council in relation to this is outlined below:

- They would not be supportive of large vehicles (e.g. B-Doubles) using Costin Street to access the Kennedy Highway due to existing geometric constraints (the close offset to the Mareeba Connection Road intersection); and
- They would be generally supportive of large vehicles, including B-doubles, utilising Rankin Street to access Chewko Road.

Council also indicated it is likely it will condition the preparation of a Construction Traffic Management Plan for the delivery of materials on-site, which is likely to set out particular requirements regarding the use of B-Double vehicles. Requirements may include a temporarily reduced speed limit on Chewko Road, localised improvements to the Cane Road / Chewko Road intersection, and actions to maintain the condition of Cane Road between the site access and Chewko Road and to minimise dust impacts on nearby residents.



3.0 Traffic Review – Inputs

3.1 Overview

We undertook a review of the potential impacts development traffic may have on the existing transport network surrounding the site.

The inputs which form the basis of our review are outlined in the following sections.

3.2 Background Traffic Volumes

3.2.1 Chewko Road

Cambray commissioned Austraffic to undertake a traffic survey (pneumatic tube) to record existing Chewko Road traffic volumes.

An overview of the traffic survey undertaken is provided below:

- Pneumatic tube counter location – Chewko Road, approximately 100m west of Cane Road;
- Survey period – Wednesday, 9th August to Sunday, 13th August 2017.

A summary of the average traffic volumes recorded across the surveyed period is provided in **Table 3.1**.

Table 3.1 Surveyed Traffic Volumes – All Day Average

AM Peak		PM Peak		Daily Traffic Volume
Period	Traffic Volume	Period	Traffic Volume	
11:00am to 12:00pm	44 vehicles	2:00pm to 3:00pm	46 vehicles	543 vehicles

Morning and afternoon development traffic peak periods are expected to fall between:

- 6:00am to 9:00am; and
- 3:00pm to 6:00pm.

A summary of the highest hourly average traffic volumes surveyed in these periods is provided in **Table 3.2**.

Table 3.2 Surveyed Traffic Volumes – All Day Average – Development Peak Periods

AM Peak		PM Peak	
Period	Traffic Volume	Period	Traffic Volume
8:00am to 9:00am	31 vehicles	3:00pm to 4:00pm	43 vehicles

A copy of the traffic survey results is included in **Appendix D**.

3.2.2 Cane Road

We estimated existing Cane Road traffic volumes based on a review of existing developments which access the road and corresponding industry standard traffic generation rates.

Three (3) residential dwellings currently have access to Cane Road.



The Roads and Maritime Services (RMS) *Guide to Traffic Generating Developments* (GTGD) was reviewed to identify potential traffic generation rates for residential dwellings. The RMS GTGD indicates that on average, a residential dwelling generates 0.8 trips in peak periods and eight (8) trips per day.

For the purposes of our assessment, we conservatively adopted higher traffic generation rates as outlined in **Table 3.3**.

Table 3.3 Adopted Trip Generation Rates

Land Use	AM Peak (8:00am to 9:00am)	PM Peak (3:00pm to 4:00pm)	Daily	Unit
Low Density Residential	1	1	10	trips / dwelling

Estimated Cane Road traffic volumes based on the above assumptions are outlined in **Table 3.4**.

Table 3.4 Estimated Cane Road Traffic Volumes – Existing

Land Use	AM Peak (8:00am to 9:00am)	PM Peak (3:00pm to 4:00pm)	Daily	Unit
Low Density Residential	3	3	30	trips / dwelling

3.3 Development Traffic Volumes

3.3.1 Construction Phase

Tilt Renewables provided information in relation to expected traffic volumes during the construction phase. The information considered as part of our traffic review is summarised below. However, further information in relation to the proposed construction of the proposed development can be found in **Appendix B**.

An overview of the expected type of construction vehicles and their use is provided below:

- B-Doubles – General construction materials / components;
- Rigid Vehicles – Machinery and miscellaneous construction materials / components;
- 25 Seater Buses – Staff transport; and
- Light Vehicles – Staff transport.

Tilt Renewables expects that on average, the construction of the development will generate in the order of 46 trips per day (23 in and 23 out).

Construction traffic volumes are expected to peak at 154 trips per day (77 in and 77 out).

In order to produce a conservative assessment, we identified peak traffic volumes based on following assumptions:

- 40% of daily trips occur with the morning peak hour; and
- 40% of daily trips occur with the afternoon peak hour.

However, it is expected that development traffic will be more evenly spread throughout the day.



3.3.2 Operational Phase

Tilt Renewables also provided information in relation to expected traffic volumes during the operational phase. The information considered as part of our traffic review is summarised below. However, further information in relation to the operation of the proposed development can be found in **Appendix B**.

The proposed development will operate seven (7) days per week, 365 days per year and require up to three (3) permanent employees to work on-site. We have assumed that each staff member will generate two (2) trips per day (1 in and 1 out).

The development is expected to require servicing once a week by refuse collection vehicle.

Therefore, we estimate that the development may generate up to eight (8) trips per day (6 staff trips and 2 service vehicle trips).

In order to produce a conservative assessment, we identified peak traffic volumes based on following assumptions:

- 50% of daily trips occur with the morning peak period; and
- 50% of daily trips occur with the afternoon peak period.

3.3.3 External Traffic Distribution

The external traffic distribution we adopted for both the construction and operational phases was based on a review of trip attractors and generators surrounding the development and is summarised in **Table 3.4**.

Table 3.4 Adopted External Traffic Distribution

Direction	%
East (towards Mareeba)	95%
East (towards Chewko)	5%

3.3.4 Directional Traffic Distribution

Adopted the directional traffic distribution splits for the various trip types are outlined in **Table 3.5**.

Table 3.5 Adopted Directional Traffic Distribution Splits

Traffic Type	AM Peak (8:00am to 9:00am)			PM Peak (3:00pm to 4:00pm)		
	In	Out	Total	In	Out	Total
Existing Residential	30%	70%	100%	70%	30%	100%
Construction Phase	80%	20%	100%	20%	80%	100%
Operational Phase	80%	20%	100%	20%	80%	100%



4.0 Traffic Review

4.1 Chewko Road / Cane Road Intersection

4.1.1 Turn Warrants

A turn warrant assessment was undertaken at the Chewko Road and Cane Road intersection in accordance with Austroads *Guide to Road Design Part 4A* and the Department of Transport and Main Roads' (DTMR) *Road Planning and Design Manual*. The turn warrants assessment identified the turn-lane treatment/s that may be required to support turning volumes during development construction and operation.

As noted in **Section 1.1**, the development is expected to be constructed in 2019 and operational by 2020. Therefore, we adopted 2030 as the 10 years post-opening design horizon.

Noting the above, turn warrants analysis was undertaken at the intersection, based on the following traffic demand scenarios:

1. 2019 Background and Development Construction Traffic Volumes (2019 BG + DEV CON); and
2. 2030 Background and Development Operations Traffic Volumes (2030 BG + DEV OPS).

The traffic volumes assessed in each of the scenarios are illustrated in **Figure 4.1** and **Figure 4.2** respectively.

		Chewko Road			
				(24)	(14)
				8	48
				T	L
T	R			Cane Road	
				R	L
24	3			14	(48)
(21)	(1)			L	1
					(3)
<p>00 – AM Peak Volumes (8:00am to 9:00am)</p> <p>(00) – PM Peak Volumes (3:00pm to 4:00pm)</p>					

Figure 4.1 Assessed Traffic Volumes - 2019 BG + DEV CON



Figure 4.3 Turn Warrant Analysis Results - 2019 BG + DEV CON

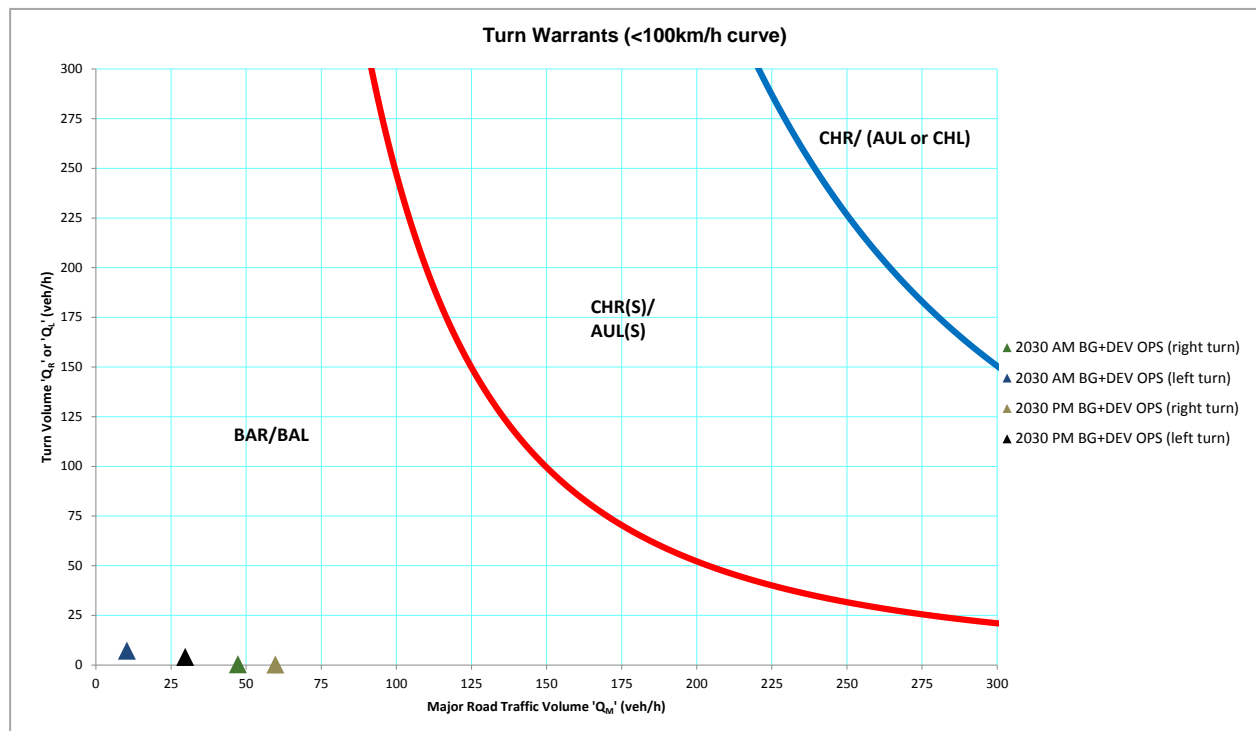


Figure 4.4 Turn Warrant Analysis Results - 2030 BG + DEV OPS

The turn warrants analysis indicated that a basic left (BAL) turn treatment is required on Chewko Road to support turning movements at the intersection, at least during construction.

Traffic volumes turning right from Chewko Road are expected to be very low. As such, the analysis indicated that no right turn treatment on Chewko Road is necessary. No left turn treatments are currently provided at the intersection.

Therefore, we undertook a high level review of how a BAL treatment could be constructed.

The existing configuration of the intersection and adjacent constraints are illustrated in **Figure 4.5**.



Figure 4.5 Chewko Road / Cane Road Intersection Overview

It is noted that Cane Road does not currently meet Chewko Road perpendicularly. Drivers currently need to perform an acute left turn (approximately 70 degrees) from Chewko Road into Cane Road.

A utilities pole is located on the south-eastern corner of the intersection, constraining left turn geometry into Cane Road. The pole does not appear to carry services but appears to provide support to a power pole opposite.

The utilities poles located in proximity to the intersection are illustrated in **Figure 4.6**.



Figure 4.6 Utilities Poles Located in Proximity to the Chewko Road / Cane Road Intersection



The supporting utilities pole would need to be relocated in order for a standard BAL treatment to be constructed at the intersection.

A concept was prepared illustrating an alternative auxiliary left-turn lane arrangement which deviates around the pole. This concept is included in **Appendix E**.

The arrangement identified above also allows larger vehicles to more easily turn right from Cane Road. The guide wire associated with the support pole may need to be relocated, and the pole protected and delineated to ensure the safe passage of construction vehicles.

The existing Chewko Road shoulder may also need to be widened, subject to construction vehicle swept paths.

4.1.2 Sight Distance

A review of required sight distances at the access was undertaken in accordance with Austroads *Guide to Road Design – Part 4A: Unsignalised and Signalised Intersections*. It is noted that 'Safe Intersection Sight Distance' (SISD) is the distance which should ideally be achieved from accesses / side roads.

It is noted that SISD is calculated based on a road's design speed, which is defined as the 85th percentile road speed. Typically, the 85th percentile road speed is assumed to be the posted speed limit plus 10km/h. However, in this instance, the speed survey found the 85th percentile speed on Chewko Road in proximity to the intersection to be 85km/h.

The SISD requirements based on road conditions at the intersection are summarised in **Table 4.1**.

Table 4.1: SISD Sight Distance Requirements – Chewko Road / Cane Road Intersection

Direction	Posted Speed Limit	Design Speed	Reaction Time	Upgrade/ Downgrade	SISD
East	100 km/h	85 km/h	2 seconds	4%	190 m
West				-2%	177 m

A review of available sight distances, based on a site inspection on the 11th August 2017, and the 85th percentile speed (85km/h) is summarised in **Table 4.2**.

Table 4.2: SISD Sight Distance Review – Chewko Road / Cane Road Intersection

Direction	SISD	Available Sight Distance	Compliant
East	214 m	225m	✓
West	210 m	230m	✓

The results indicate that SISD can be achieved to/from Cane Road based on Chewko Road having a design speed of 85km/h.



4.2 Chewko Road Speed Limit – Construction

Sight distance at the Chewko Road / Cane Road intersection is considered generally sufficient, noting the 85th percentile speed recorded during the traffic surveys. However, as the posted speed limit on Chewko Road is 100km/h, vehicles can (and some are) legally driving at higher speeds.

As a number of larger, slower vehicles are expected to turn at the intersection during the construction phase, we recommend that consideration be given to reducing the speed limit on Chewko Road during construction. An 80km/h speed limit in proximity to Cane Road during construction would be expected to result in vehicles travelling at slower speeds. Lower speeds reduce vehicle stopping distances and typically also reduce the likelihood and severity of vehicular accidents.

During our meeting with Council officers, they indicated that they would be willing to consider a reduction in the Chewko Road speed limit, in proximity to Cane Road for the development construction phase. It is understood that Tilt Renewables would be accepting of a condition requiring the introduction of temporary speed limits and associated truck turning warning signage

4.3 Cane Road

An overview of existing Cane Road attributes is provided below:

- Two-way, unsealed (single lane seal between Chewko Road and the railway crossing);
- Unsealed pavement width approximately 5m to 6m;
- Drainage – Basic side table drains; and
- Estimated daily traffic volumes – 20 to 30 vehicles per day (northern end).

The existing condition of Cane Road is illustrated in **Figure 4.8**.



Figure 4.8 Cane Road viewed from the Mareeba Branch Railway crossing

©Tilt Renewables



We undertook a high level review of the potential impacts of development traffic on the existing Cane Road pavement.

Austrroads *Guide to Pavement Technology – Part 6: Unsealed Pavement*, Table 2.2 identifies five (5) indicative unsealed pavement types, their attributes and typical applications. This table has been reproduced in **Figure 4.9**.

Pavement type	Traffic spectrum	Attributes	Typical applications
U1	>200 veh/day and/or >20% heavy vehicles ²	Up to 100 km/h ¹ two lanes plus shoulder	<ul style="list-style-type: none"> Main unsealed roads carrying significant freight or livestock. Links to major resource developments, e.g. mines, gas fields, etc.
U2	100-200 veh/day and/or >10% heavy vehicles	Up to 100 km/h two lanes plus shoulder	<ul style="list-style-type: none"> Main links between communities, national parks, recreational areas, haul roads.
U3	20-100 veh/day and/or <10% heavy vehicles	Up to 80 km/h two lanes	<ul style="list-style-type: none"> Links between smaller communities, national parks, recreational and remote areas, haul roads within quarries/mines.
U4	<20 veh/day	Up to 80 km/h single lane	<ul style="list-style-type: none"> Main access to remote areas, difficult terrains and fire protection, national park access.
U5	<10 veh/day	Up to 60 km/h single lane	<ul style="list-style-type: none"> Minor access (four wheel drive or heavy duty vehicles) to remote locations, fire protection.

1 Speed is dependent upon terrain, road geometry and slipperiness/condition of wearing course (e.g. wet, gravelly or sandy).
2 Heavy vehicles are defined as Class 4 vehicles and above or mine haul trucks.

Figure 4.9 Indicative Unsealed Pavement Types

©Austrroads Guide to Pavement Technology
Part 6: Unsealed Pavement

Based on the existing daily traffic volumes we estimated in **Section 3.2** (approximately 30 vehicles per day) and the existing attributes, we believe that Cane Road is most comparable to a U3 standard road.

Development related traffic volumes are expected to be highest during the construction phase of the project. As outlined in **Section 3.2**, construction traffic volumes may reach 77 vehicles per day.

Therefore, volumes on Cane Road may temporarily reach approximately 100 vehicles per day during construction. This volume is at the upper end of the traffic volume spectrum for a U3 standard road.

After construction is complete, traffic volumes are expected to reduce significantly and revert to in the order of 30 to 40 vehicles per day.

No significant upgrades to the existing standard of Cane Road are considered to be required. However, it is considered appropriate that a condition along the lines indicated by Council for any damage to Cane Road attributable to development construction traffic be made good by Tilt Renewables or their construction contractor.

It is understood that Tilt Renewables would be accepting of a condition requiring that construction of the development leave Cane Road in no worse condition than that identified prior to construction or similar.



4.4 Mareeba Branch Railway

Access to the site and other properties on Cane Road requires passing over Mareeba branch railway line. The effect of development traffic on the crossing has been considered herein.

The Savannahlander operates a weekly tourist service on this railway line consisting of one (1) inbound and one (1) outbound journey. The Savannahlander is the sole operator on this line since the discontinuation of the sugar cane trains on the line in 2010. Based on existing timetabling, the Savannahlander typically crosses Cane Road twice a week as outlined below:

- Wednesday, between 9:30am and 10:10am; and
- Saturday, between 2:30pm and 3:00pm

A copy of the current Savannahlander itinerary can be found in **Appendix E**.

The train crosses Cane Road outside the anticipated development traffic peaks (6:00 to 9:00 am morning peak and a 3:00 and 6:00 pm afternoon peak). As the development is expected to generate relatively minor traffic volumes, it is considered unlikely that vehicles will approach the crossing when a train is passing.

Signage on approach to the crossing is also provided to warn drivers of the crossing and requires them to stop to check for trains before proceeding to cross. Therefore, the likelihood of vehicle-train conflicts is considered to be limited. However, supplementary temporary warning signage for vehicles approaching from Chewko Road during the construction stage may be beneficial.

The existing Cane Road railway crossing is illustrated in **Figure 4.10**.



Figure 4.10 Cane Road Railway Crossing



4.5 Internal Site Layout

Tilt Renewables intends to construct internal roadways, carparking, manoeuvring areas etc. on-site to meet their requirements. Noting the site is approximately 230ha, it is expected that this infrastructure could be appropriately accommodated within the site.

It is understood that Tilt Renewables would be accepting of a condition requiring that all vehicular parking demands are accommodated within the site and all permanent carparking, roads, manoeuvring areas are constructed in accordance with relevant standards and guidelines (e.g. AS2890.1).



5.0 Summary

Key findings are summarised below:

- B-Double access to and egress between the site and the Kennedy Highway is appropriate via Rankin Street and Chewko Road, noting this is an existing haul route for the Dimbulah Key Resource Area;
- It is recommended that a short auxiliary left turn treatment be constructed at the Chewko Road / Cane Road intersection to facilitate construction traffic access;
- Available sight distance at the Chewko Road / Cane Road intersection is sufficient, noting the 85th percentile speed recorded on Chewko Road in proximity to the intersection. However, we recommend that consideration be given to reducing the speed limit on Chewko Road to 80km/h during at least the construction period;
- The likelihood of vehicle-train conflicts at the crossing of the Mareeba branch railway line on Cane Road is considered to be low. However, advanced warning signage for the approach from Chewko Road during the construction stage may be beneficial; and
- It would be appropriate for Mareeba Shire Council to condition Tilt Renewables to prepare a Construction Traffic Management Plan incorporating the above recommendations.

In light of the above, we recommend that the development be approved with reasonable and relevant conditions.

Please do not hesitate to contact the undersigned on 07 3221 3503 if you have any queries regarding the above.

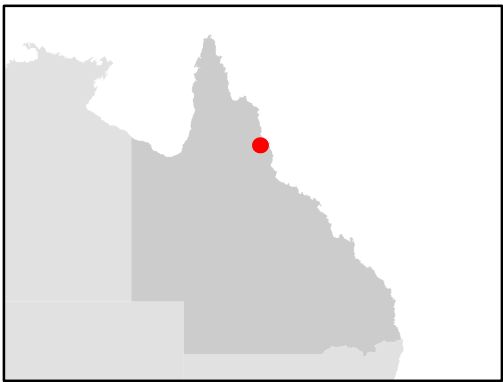
Yours faithfully,

Andrew Douglas

Director | Cambray Consulting Pty Ltd
BECivil (Hons) | MSc (Env Man)
FIEAust | CPEng | RPEQ 6691

APPENDIX A

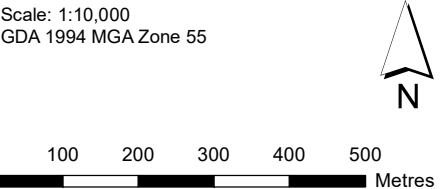
Proposed Development Overview – Tilt Renewables



- Legend**
- Site Boundary
 - National Electricity Transmission Line
 - Cadastre

Date: 9/05/2017
Version:A

Data Sources: Cadastre (Department of Natural Resources and Mines, March 2017), National Electricity Transmission Lines (© Commonwealth of Australia (Geoscience Australia) 2017)



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Document Path: C:\GIS\Development_Sites\QLD\Chewko\Maps\Working\CHW_001_SiteLayout_A3L.mxd



APPENDIX B

Development Design and Construction Information –Tilt Renewables



CHEWKO SOLAR FARM

DESIGN AND CONSTRUCTION INFORMATION

BUILT FORM/ DESIGN CONCEPT

The Project's design will be similar to other approved solar farm projects in Queensland. It will be designed to ensure minimal environmental impacts, in keeping with the sustainable nature of the development. Tilt Renewables has worked with local landowners, environmental consultants and Powerlink to identify this location as appropriate for the Project whilst minimising impacts on the local community.

Accordingly, the existing environment; agricultural land designation and activities occurring on-site and off-site; proximity to existing electricity infrastructure; stormwater; and visual impact have been considered.

The Project comprises a number of interlinked and integral components for the operation of the equipment and generation of electricity from solar irradiance. These components include: solar PV panels, single axis or fixed tracking system, electrical transformers and inverters, MV electrical cable network, telecommunication equipment, solar farm substation/switchgear, and electrical control enclosures. The Project is envisaged to consist of the following infrastructure:

Project infrastructure elements and characteristics

PV Modules and Arrays	60MW over approx. 150ha, max height approx. 5m
Tracking System	Single Axis or Fixed – Pending detailed design
Inverters	Approx. 20-30, max height 5m
Substation/ Switchyard	Approx. 6,400m ²
Battery Storage (Optional)	Approx. 3,000-5,000m ² , max height 5m
Control Building	Approx. 120m ² , max height 4m
Car parking	4 vehicles

SITE ACCESS AND TRAFFIC CONSIDERATIONS

Access to the facility will be provided from the existing property access off Chewko Road, via Cane Road, with the existing internal access road providing construction and operational access to the facility.

Construction Traffic

Construction is likely to take approximately 8 - 12 months depending on the methods adopted and staging. While approximately 250 jobs will be created over the construction period, due to the nature of work and staging, approximately 60-80 field staff will be on-site during peak construction period.

Temporary on-site parking will be provided within the property for approximately 60 vehicles. It is anticipated that any non-local workers will be accommodated in Mareeba, with the potential for buses to be used to transfer



workers to site during peak construction periods, where possible to reduce the traffic and on-site disturbance. The number of buses will depend on the demand; however, it is likely that 1-2 buses will be used.

The total number of light vehicles is not likely to exceed 40 vehicles per day (vpd) during peak construction periods. Most of these trips (approximately 80%) will be during normal construction start and finish times with a 6 - 9 am morning peak and a 3 - 6 pm afternoon peak.

Light/medium service vehicles will be required (food, water, refuse, waste, etc.). It is not anticipated that more than 3 vpd will occur during peak construction time.

Heavy construction vehicles (excavators, bulldozers, drilling rig for footings etc.) will be required to travel to site and will remain onsite until completion and will therefore have no significant impact on the road system.

Delivery of PV modules, tracking systems, transformers, battery storage and related equipment is anticipated to utilise various large vehicles, including standard container (20ft) trucks, 19m articulated vehicles or B-Doubles. Containers will be delivered over a 3 - 6 month period based on a maximum capacity of 60MW. It is not anticipated that more than 10 deliveries will occur on any given day.

Anticipated Traffic During Construction

Vehicle Types	Vehicle Movements		
	Total	Average VPW	Average VPD
B-Double Trucks – Construction Materials	696	15	2
Flat Bed Trucks transporting Earth Moving Machinery including Graders, Forklifts etc	240	8	1
25 Seater Bus	108	5	1
Light Vehicles	5760	120	20
Total	6804	145	23

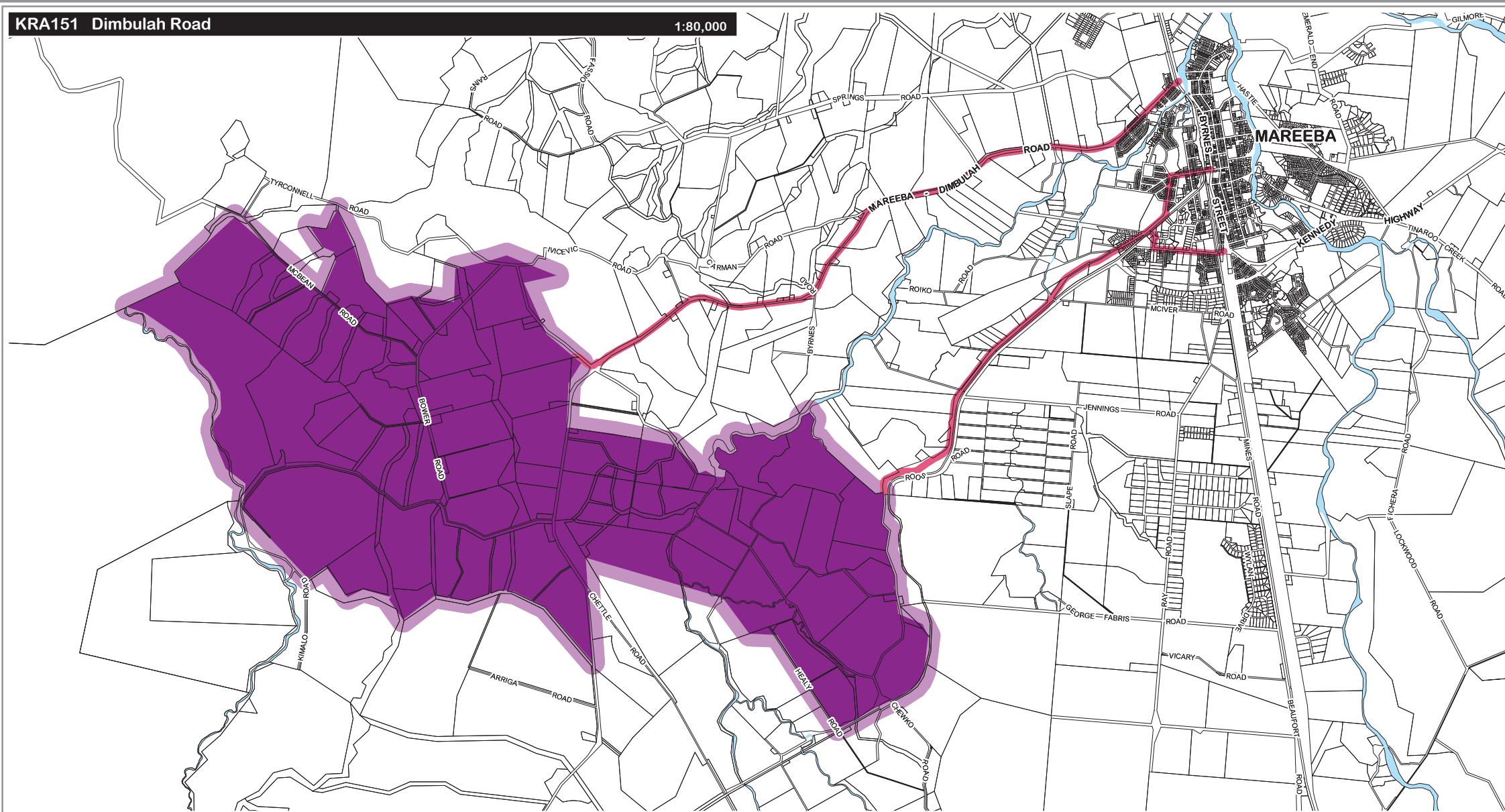
Chewko Road is a sealed rural road which provides secondary access from Mareeba to the Key Resource Area and other rural properties in the local area. Due to the nature of the road, traffic volume data is not available; however, based on a peak demand of 77vpd, it is unlikely the proposed development will have an adverse impact on the function of the local road network. A Traffic Management Plan will be prepared as part of the CEMP.

Operational Traffic

During operation, between 1 and 3 staff may be required on site for operational management and maintenance. Most of these trips will be by light vehicles with larger vehicles only required to replace any equipment or for refuse/waste removal (one vehicle per week).

APPENDIX C

Extractive Resources Enlargements Overlay Map 4F – Mareeba Shire Council

**LEGEND****Extractive and Mineral Resources**

- Key Resource Processing Area
- Key Resource Separation Area
- Key Resource Transport Route
- Local Resource Area
- Local Resource Separation Area
- Mining Claims (granted claims only)⁽¹⁾
- Mineral Development Licenses (granted licenses only)⁽¹⁾
- Mining Leases (granted leases only)⁽¹⁾

⁽¹⁾ Mining tenements include mining claims or leases and mineral development licences.

The Sustainable Planning Act 2009 does not apply to mining tenements authorised under the Mineral Resources Act 1989, other than for administering IDAS for the Queensland Heritage Act 1992, in relation to a Queensland heritage place under the Heritage Act. Interested persons may obtain details of the mining tenement from -

- for a mining claim or lease - the mining registrar for the land covered by the claim or lease; or
- for a mineral development licence - the chief executive of the department in which the Act is administered

Other Elements

- Cadastre
- Mareeba Shire Council Boundary
- Watercourse

Information

Whilst every care is taken to ensure the accuracy of this product, neither the Mareeba Shire Council or the State of Queensland make any 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 that may occur as a result of the product being inaccurate or incomplete in any way or for any reason.

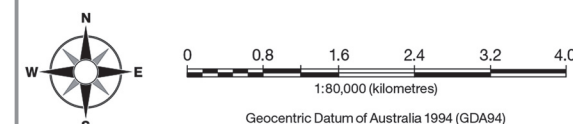
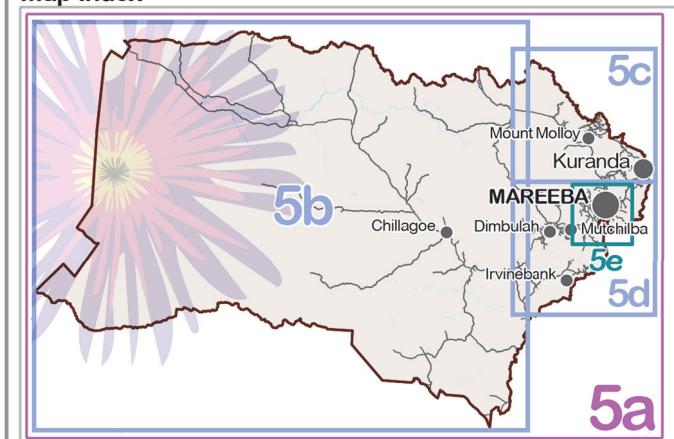
All data depicted on this map has been sourced from either the Mareeba Shire Council or the State of Queensland from the latest datasets available at the time of map compilation.

Map compilation date: August 2015.

Crown & Council Copyright Reserved.

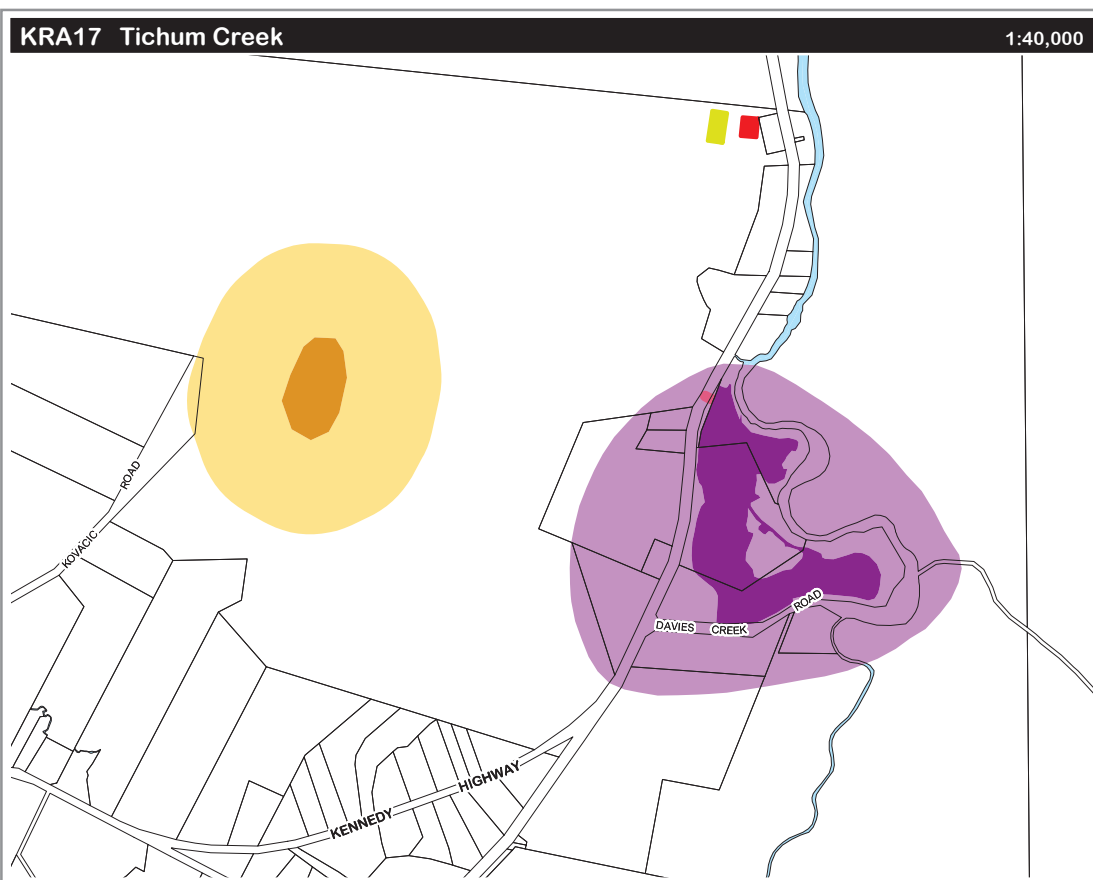
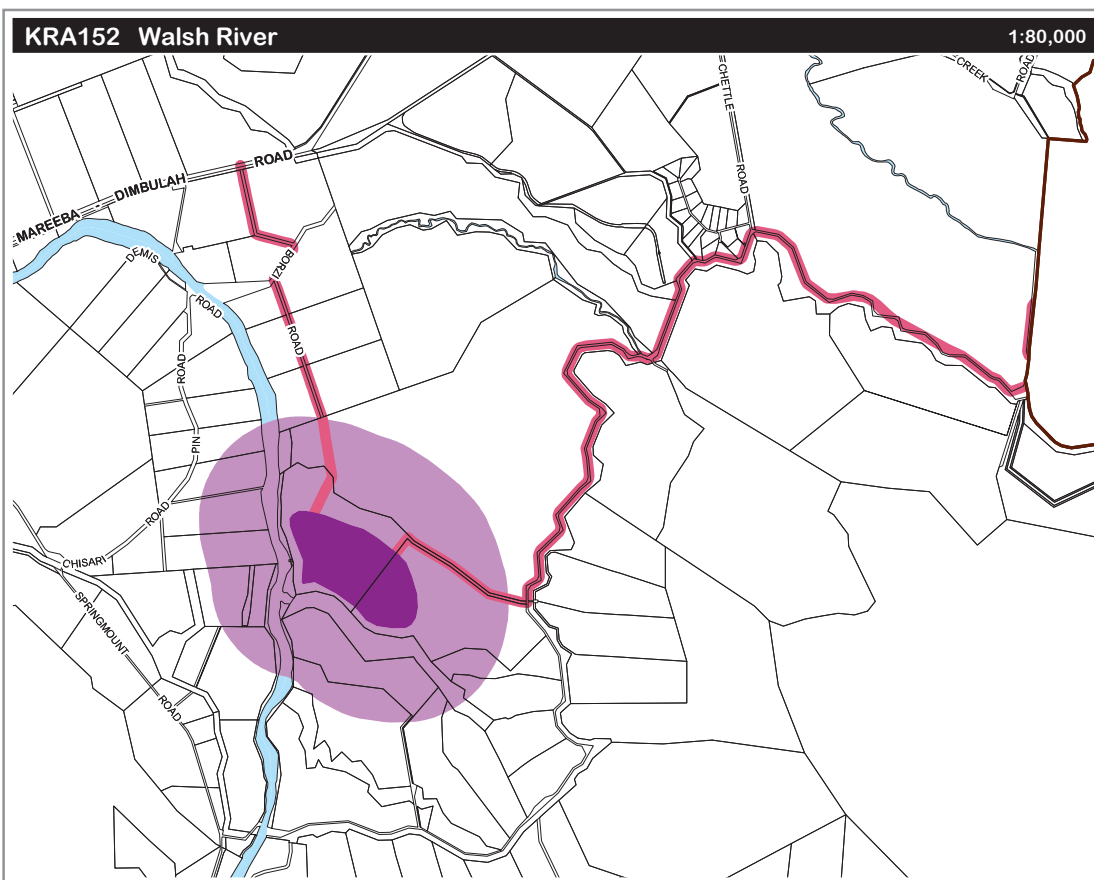
Note

Where information on the map is obscured by text or other map elements contact Council for a determination.

**Map Index**

Overlay Map Extractive Resources- Enlargements

OVERLAY MAP - OM005e



APPENDIX D

Chewko Road Traffic Survey Results – Austraffic

Site No.	1	City		Surveyed	Wed 09 Aug 17 to Sun 13 Aug	Job#	13716
Location	Chewko Road 300m West of Cane Road (100kmh)					Direction	West Bound

Hourly Traffic Volume Summary										
Time (hour starting)	Wednesday 9/08/17	Thursday 10/8/17	Friday 11/8/17	Saturday 12/8/17	Sunday 13/8/17	Monday 14/8/17	Tuesday 15/8/17	Total 7 day Volumes	Average Weekday Volumes	Average Daily Volumes
00:00	1	2	3	2	0	-	-	8	2	2
01:00	2	2	1	3	7	-	-	15	2	3
02:00	3	0	1	3	1	-	-	8	1	2
03:00	0	0	2	1	2	-	-	5	1	1
04:00	3	0	1	2	1	-	-	7	1	1
05:00	3	4	4	2	1	-	-	14	4	3
06:00	6	5	6	6	2	-	-	25	6	5
07:00	15	14	11	5	6	-	-	51	13	10
08:00	8	10	11	7	6	-	-	42	10	8
09:00	23	10	8	16	13	-	-	70	14	14
10:00	17	20	21	32	20	-	-	110	19	22
11:00	20	24	29	33	27	-	-	133	24	27
12:00	22	29	18	27	11	-	-	107	23	21
13:00	20	13	23	21	28	-	-	105	19	21
14:00	22	32	25	27	23	-	-	129	26	26
15:00	20	27	25	17	28	-	-	117	24	23
16:00	28	21	18	22	19	-	-	108	22	22
17:00	24	20	21	10	21	-	-	96	22	19
18:00	12	17	18	15	8	-	-	70	16	14
19:00	11	4	13	6	6	-	-	40	9	8
20:00	9	7	10	3	5	-	-	34	9	7
21:00	5	3	6	7	4	-	-	25	5	5
22:00	3	8	7	5	1	-	-	24	6	5
23:00	4	7	4	6	6	-	-	27	5	5
Daily Total Traffic Volumes	281	279	286	278	246	-	-	1370	282	274
Peak Hourly Traffic Volumes	28	32	29	33	28	-	-	133	26	27
AM Peak	23 9:00:00 AM	24 11:00:00 AM	29 11:00:00 AM	33 11:00:00 AM	27 11:00:00 AM	-	-	133 11:00:00 AM	24 11:00:00 AM	27 11:00:00 AM
PM Peak	28 4:00:00 PM	32 2:00:00 PM	25 2:00:00 PM	27 12:00:00 PM	28 1:00:00 PM	-	-	129 2:00:00 PM	26 2:00:00 PM	26 2:00:00 PM

APPENDIX E

Chewko Road / Cane Road Intersection Concept – Cambray Consulting



CONCEPT DRAWING.
FOR DISCUSSION ONLY.



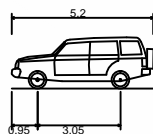
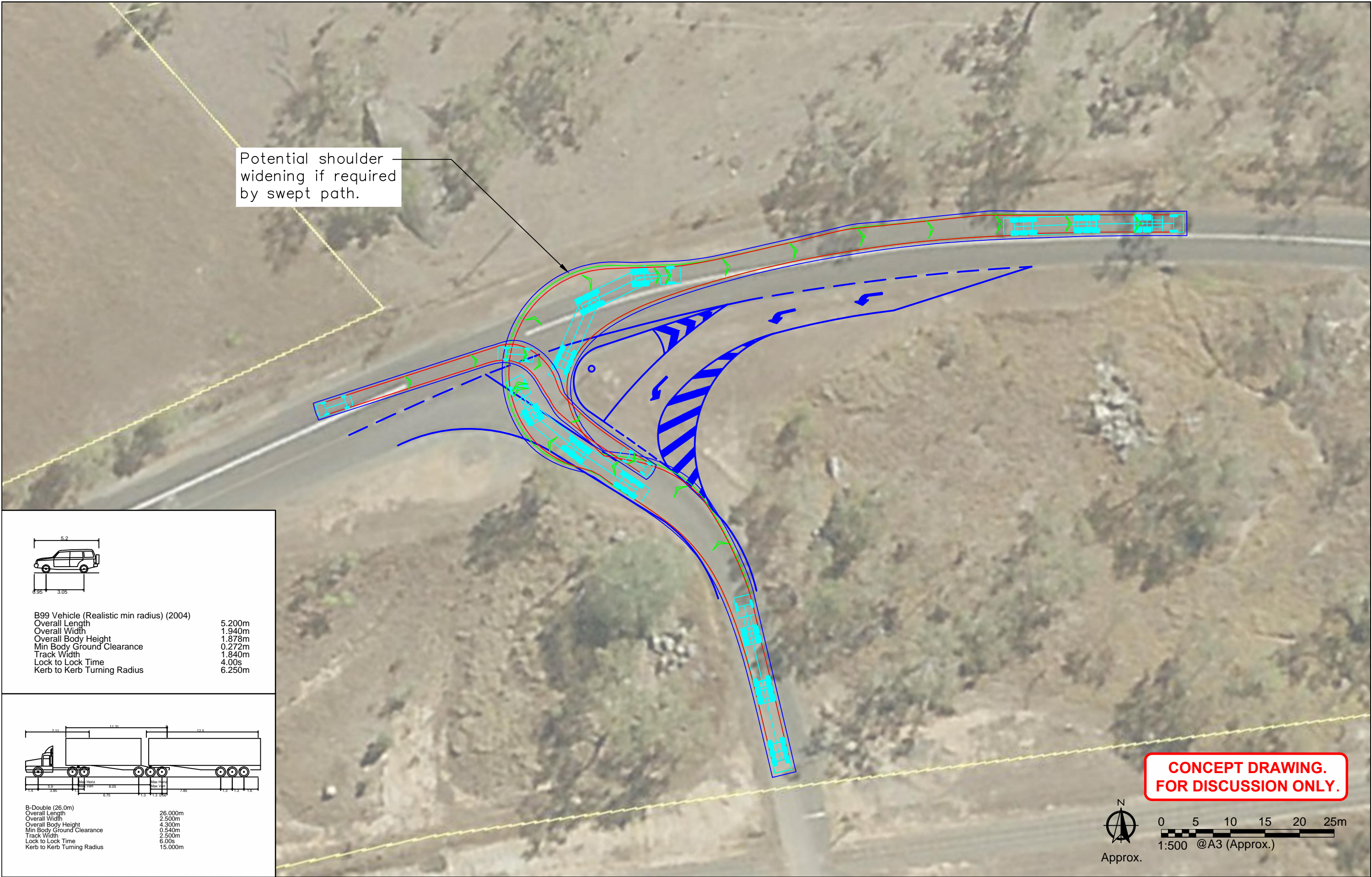
CAMBRAYconsulting
Traffic Engineering and Transport Planning
Suite 2601, 21 Mary Street Brisbane Q 4000
t : 07 3221 3503 | e : contact@cambray.com.au

DRAWING TITLE
Chewko Road / Cane Road Intersection
Alternate Left Turn Arrangement -
Concept sketch

LOCATION
Cane Road,
Mareeba, QLD

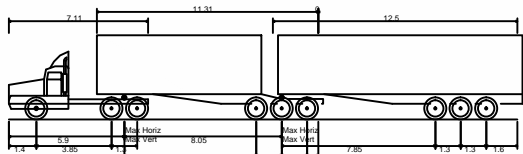
REV	DATE	AMENDMENT / ISSUE	DWN	CHK
A	01.09.17	For Discussion	J.D.	A.D.
DISCLAIMER				
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PRELIMINARY NOT FOR CONSTRUCTION		JOB No. // DRAWING No. ERM0117-02 // SK01	
DATE 01.09.2017	Scale (A3) 1:250	PREPARED FOR Discussion	



B99 Vehicle (Realistic min radius) (2004)

Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.878m
Min Body Ground Clearance	0.272m
Track Width	1.840m
Lock to Lock Time	4.00s
Kerb to Kerb Turning Radius	6.250m



B-Double (26.0m)

Overall Length	26.000m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.540m
Track Width	2.500m
Lock to Lock Time	6.00s
Kerb to Kerb Turning Radius	15.000m

**CONCEPT DRAWING.
FOR DISCUSSION ONLY.**



0 5 10 15 20 25m
1:500 @A3 (Approx.)

Approx.



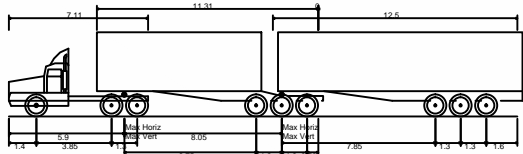
CAMBRA Yconsulting
Traffic Engineering and Transport Planning
Suite 2601, 21 Mary Street Brisbane Q 4000
t : 07 3221 3503 | e : contact@cambray.com.au

DRAWING TITLE
Chewko Road / Cane Road Intersection
Alternate Left Turn Arrangement -
Swept Path Assessment -
B - Double (26m) + B99

LOCATION
Cane Road,
Mareeba, QLD

REV	DATE	AMENDMENT / ISSUE	DWN	CHK
A	01.09.17	For Discussion	J.D.	A.D.
DISCLAIMER This concept takes into account the instructions and requirements of our client. Cambray has taken care in preparing this concept, however it neither accepts liability nor responsibility whatsoever in respect of; any use of this document by any third party, any third party whose interests may be affected by any decision made regarding the contents of this document and/or any conclusion drawn resulting from omission or lack of full disclosure by the client or the client's consultants.				

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DATE 01.09.2017	~Scale (A3) 1:500	PREPARED FOR Discussion	



B-Double (26.0m)
Overall Length 26.00m
Overall Width 2.50m
Overall Body Height 4.30m
Min Body Ground Clearance 0.54m
Track Width 2.50m
Lock to Lock Time 6.00s
Kerb to Kerb Turning Radius 15.00m



**CONCEPT DRAWING.
FOR DISCUSSION ONLY.**

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1:500 @A3 (Approx.)



CAMBRAYconsulting

Traffic Engineering and Transport Planning

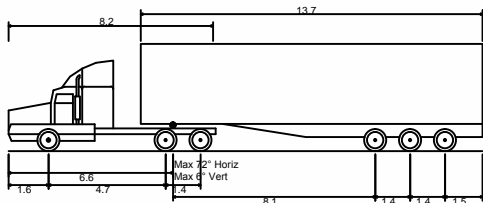
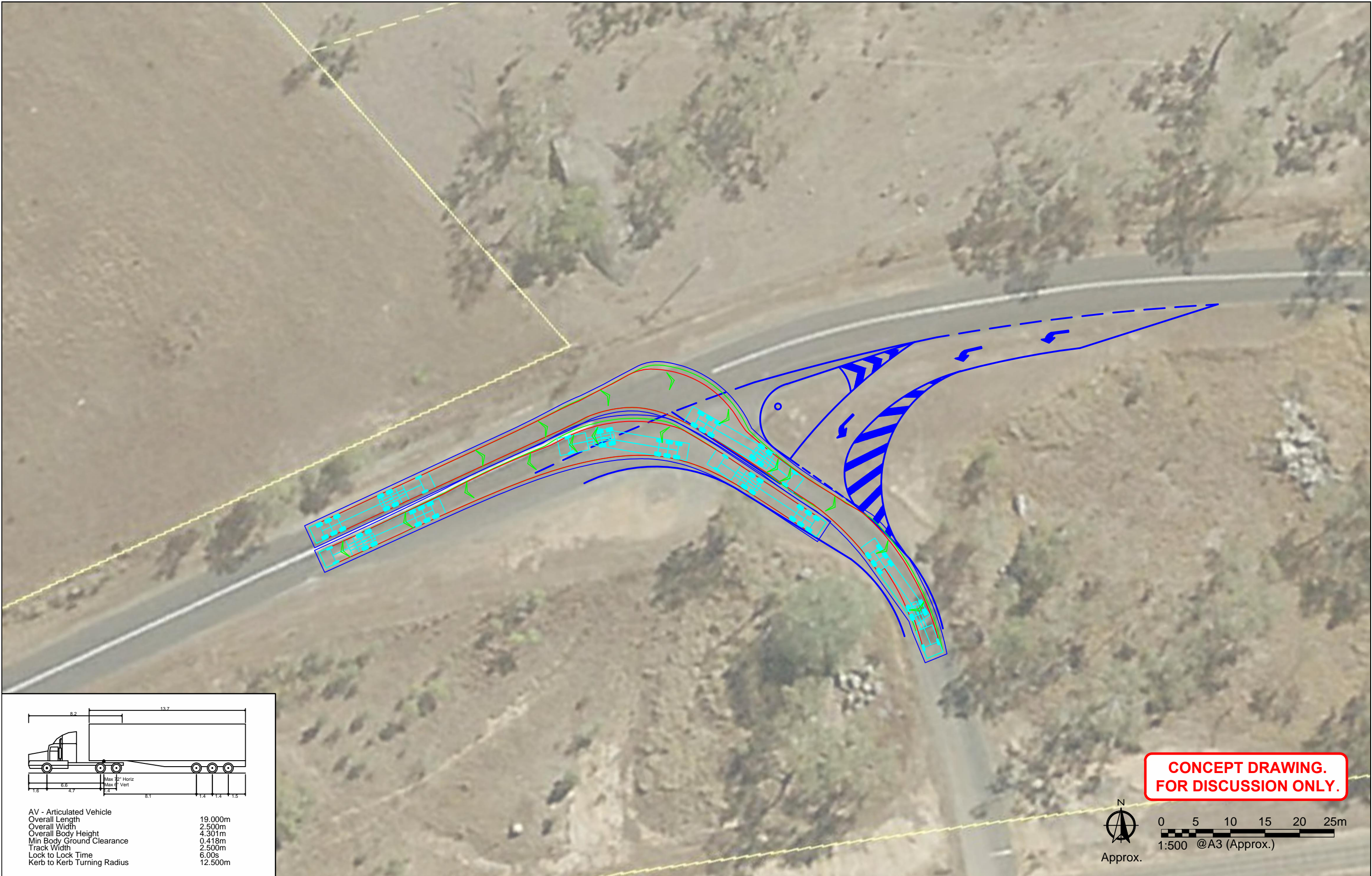
Suite 2601, 21 Mary Street Brisbane Q 4000
t : 07 3221 3503 | e : contact@cambray.com.au

DRAWING TITLE
Chewko Road / Cane Road Intersection
Alternate Left Turn Arrangement
Swept Path Assessment -
B - Double (26m)

LOCATION
Cane Road,
Mareeba, QLD

REV	DATE	AMENDMENT / ISSUE	DWN	CHK
A	01.09.17	For Discussion	J.D.	A.D.
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PRELIMINARY NOT FOR CONSTRUCTION		JOB No. // DRAWING No. ERM0117-02 // SK03	
DATE 01.09.2017	~Scale (A3) 1:500	PREPARED FOR Discussion	



AV - Articulated Vehicle
Overall Length 19.000m
Overall Width 2.500m
Overall Body Height 4.301m
Min Body Ground Clearance 0.418m
Track Width 2.500m
Lock to Lock Time 6.00s
Kerb to Kerb Turning Radius 12.500m

**CONCEPT DRAWING.
FOR DISCUSSION ONLY.**



0 5 10 15 20 25m
1:500 @A3 (Approx.)



CAMBRAYconsulting
Traffic Engineering and Transport Planning
Suite 2601, 21 Mary Street Brisbane Q 4000
t : 07 3221 3503 | e : contact@cambray.com.au

DRAWING TITLE Chewko Road / Cane Road Intersection Alternate Left Turn Arrangement Swept Path Assessment - Articulated Vehicle - 19m	LOCATION Cane Road, Mareeba, QLD	REV	DATE	AMENDMENT / ISSUE	DWN	CHK	PRELIMINARY NOT FOR CONSTRUCTION	JOB No. // DRAWING No. ERM0117-02 // SK04	
		A	01.09.17	For Discussion	J.D.	A.D.			
		DISCLAIMER This concept takes into account the instructions and requirements of our client. Cambray has taken care in preparing this concept, however it neither accepts liability nor responsibility whatsoever in respect of; any use of this document by any third party, any third party whose interests may be affected by any decision made regarding the contents of this document and/or any conclusion drawn resulting from omission or lack of full disclosure by the client or the client's consultants.					DATE 01.09.2017	~Scale (A3) 1:500	PREPARED FOR Discussion

APPENDIX F

Savannahlander Itinerary



Savannahlander Itinerary

www.savannahlander.com.au

1800 793848

The Savannahlander departs Cairns every Wednesday morning between March and December. Note that the times below are only a guide and can change due to operational circumstances.

Wednesday

6.30am

The Savannahlander departs Cairns Station, located in Cairns Central Shopping centre. Please be at the station at least 15 minutes before departure. There is no food available at the station or on board the train so please organise breakfast at your accommodation or bring your own supplies to eat on the train. If you would like to be picked up at Freshwater station let us know when booking.

7.30am

We get a good look at the famous Stoney Creek Falls.

8.00am

The train stops at Barron Falls Station for a look at the falls

8.10am

We have a short stop at Kuranda railway station to enjoy the famous gardens.

9.30am

The train arrives in Mareeba and stops to set down and pick up passengers if required. Those doing the Barron River Rover trip have a short wait at Mareeba station for the bus back to Kuranda/Cairns.

10.10am

The Savannahlander stops at Mutchilba for morning tea. Orders are taken on board in the morning so your smoko will be ready on arrival.

11.00am

There's a short stop at the railway station in Dimbulah to have a look at the museum that has been set up in the old station building.

1.15pm

The train arrives in Almaden which is the end of the train trip for Wednesday. Lunch is at the Railway Hotel which is directly across the road from the railway station. If you're staying in Almaden then that's the end of the day for you. Those going to Chillagoe will be transferred by bus after lunch.

3pm

If you're staying in Chillagoe and doing the cave and town tour you'll be picked up for your tour.

5.30pm

Those on the cave and town tour in Chillagoe will be returned to their accommodation and can relax for the rest of the day.

Note: Lunch and morning tea are at own expense.

To Book, call 1800793848 or visit www.savannahlander.com.au



Savannahlander Itinerary

www.savannahlander.com.au

1800 793848

Thursday

7am

The transfer bus starts picking up passengers staying in Chillagoe.

8am

The Savannahlander departs Almaden.

10 – 10.30am

The train arrives at the designated morning tea stop depending on time of year and passenger numbers. Locations include the famous Bullock Creek Cafe, the Lynd River or Saltwater Creek.

11.30am

We stop at Mt Surprise for lunch. Passengers travelling on the Surprise Getaway leave us here and have a short wait for the bus back to Cairns.

12.15pm

The Savannahlander departs Mt Surprise. This is where Etheridge Rambler and Einasleigh half day passengers join us.

2pm

We arrive in Einasleigh. There's enough time to have a beer at the pub or head down and check out the Copperfield Gorge. Passengers doing the half day trip from Forsayth join us here for our 2.45pm departure. Those people doing the half day tour from Mt Surprise leave us here and board their bus to head back to Mt Surprise.

5.30pm

The Savannahlander reaches the end of the line - Forsayth. Customers staying at Cobbold Gorge transfer to a bus for the 40 minute drive to their accommodation. Those staying in Forsayth have finished for the day.

Note: Lunch and morning tea are at own expense.

To Book, call 1800793848 or visit www.savannahlander.com.au



Savannahlander Itinerary

www.savannahlander.com.au

1800 793848

Friday

6.55am

Passengers staying in Forsayth and visiting Cobbold Gorge tour leave by bus.

8am

The tour of Cobbold Gorge starts.

8.30am

The Savannahlander departs Forsayth, with passengers from the Gulflander tour.

9.30am

Train passengers enjoy a morning tea stop.

10am

Passengers at Cobbold Gorge depart by bus for Einasleigh.

11.15am

The train arrives in Einasleigh. There's a decent amount of time here to enjoy the gorge and have lunch at the pub while waiting for those who have visited Cobbold Gorge to arrive by bus.

11.45am

The bus from Cobbold Gorge arrives in Einasleigh. Lunch is at the Einasleigh pub.

12.15pm

The train departs Einasleigh.

2.15pm

The Savannahlander arrives in Mt Surprise for an overnight stay. If you're staying at Undara Lava Tubes you'll be picked up and transferred to your accommodation by Undara Experience staff. Those staying in Mt Surprise and not doing an Undara tour have the afternoon to themselves.

2.45pm

If you're staying in Mt Surprise and doing a tour of the lava tubes with Bedrock Village your bus will pick you up to head out to the tubes.

3.30pm

Passengers staying at Undara commence their tour with the staff from Undara Experience.

5.30pm

If you're on the tour of the Undara Lava Tubes with the staff from Bedrock Village you'll arrive back in Mt Surprise and can relax after a busy day!

Note: *Lunch is at own expense.*

To Book, call 1800793848 or visit www.savannahlander.com.au



Savannahlander Itinerary

www.savannahlander.com.au

1800 793848

Saturday

6.00am

Breakfast is served for passengers staying at Undara Experience

7.00am

The bus departs Undara for Mt Surprise.

8.00am

The Savannahlander departs Mt Surprise. We're joined by passengers enjoying a Surprise Getaway or the 2 day Undara with rail.

11.00am

The train arrives at the Railway Hotel, Almaden for morning tea.

11.30am

We depart Almaden

1.45pm

The train arrives at Dimbulah for lunch. There is also time to have a look at the museum that has been set up in the old station building.

2.30pm

We depart Dimbulah

4.45pm

The Savannahlander arrives at Kuranda. There's a short break for a leg stretch and a look at the gardens.

5.10pm

The train stops at Barron Falls station.

6.30pm

The Savannahlander finishes its four day journey when it arrives at Cairns station.

Note: Lunch and morning/afternoon tea are at own expense.

To Book, call 1800793848 or visit www.savannahlander.com.au



CAMBRAY CONSULTING PTY LTD

Suite 2601 | 21 Mary Street

Brisbane QLD 4000

07 3221 3503

contact@cambray.com.au

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Annex H

Ecological Assessment

Level 4, 201 Leichhardt Street
Spring Hill QLD 4004
AUSTRALIA

To Jeremy Ellis
Tilt Renewables Australia Pty Ltd

PO Box 1400
Spring Hill QLD 4004
AUSTRALIA
www.erm.com

From ERM Australia Pty Ltd

Telephone: +61 7 3839 8393

Ref/Job Number 0414798_Chewko Solar Farm

Facsimile: +61 7 3839 8381

Subject CHEWKO SOLAR FARM
ECOLOGICAL ASSESSMENT

TECHNICAL NOTE



Date 11/09/2017

1. INTRODUCTION

Tilt Renewables Australia Pty Ltd (the Applicant) is seeking approval for the construction and operation of the Chewko Solar Farm (the Project) on land within Lot 156 on SP124698 and Lot 251 on SP129910 (access only). The Development Footprint is approximately 150 ha. The Project requires a Development Application (DA) including Reconfiguring a Lot (ROL) and Material Change of Use (MCU) to be supported by an ecological assessment. This ecological assessment report meets this requirement.

For the purposes of this report, the 'Development Footprint' is defined as the 150 ha area (excluding main access tracks) in which the Project will occur (Lot 156 on SP124698). The Project Area is defined as the 234 ha portion of Lot 156 on SP124698 proposed to be leased for the Project. The location of the Development Footprint and Project Area is displayed in *Figure 1* provided as *Annex A*.

2. PURPOSE AND METHODOLOGY

An ecological assessment of the Project Area has been undertaken in order to describe the existing ecological values and identify the most appropriate Development Footprint, having regard for the potential impacts associated with the Project. The assessment included a desktop review of ecological databases and mapping, along with observations made during a three (3) day site visit by an Ecologist between the 17 and 19 July 2017.

2.1 DESKTOP ASSESSMENT

The purpose of the desktop assessment was to:

- Identify ecological values mapped by Commonwealth and State government spatial data sets within the Project Area, and Planning Scheme overlays and relevant codes;

- Determine the known or likely presence of Matters of National Environmental Significance (MNES) identified under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)* including listed threatened species and ecological communities;
- Determine the known or likely presence of Matters of State Environmental Significance (MSES) identified under the *Nature Conservation Act 1992 (NC Act)* and *Vegetation Management Act 1999 (VM Act)* including listed flora and fauna species and vegetation communities; and
- Identify potential impacts associated with the Project based on the understanding of the ecological values of the Development Footprint.

2.2 FIELD SURVEY

The purpose of the field survey was to verify the findings of the desktop assessment. Specifically, the field survey sought to verify the various environmental mapping products assessed as part of the desktop review, and provide information about the types and quality of vegetation communities and habitats occurring at the Project Area. Information collected during the field survey allowed for a characterisation of the broad ecological values of the Project Area, and guided the assessment of the potential for species and communities of national and/or state environmental significance to occur.

The site visit comprised the following activities:

- Verification of mapped remnant vegetation (Regional Ecosystems (RE)), utilising a 'quaternary' level of assessment as per Neldner et al. (2012) at eleven (11) sites in representative vegetation communities across the Project Area;
- Vegetation community observations including flora species assemblages and structural characteristics at one-hundred and sixty-six (166) locations across the Project Area;
- Identification of the type and prevalence of non-native plants;
- Identification of habitat values—including broad habitat types, finer-scale microhabitat features, and evidence of degradation—associated with remnant vegetation, non-remnant vegetation and waterbodies/watercourses;
- Identification of the type and locality of habitats that may support conservation-significant flora and fauna species listed under the EPBC Act and/or NC Act; and
- Opportunistic records of fauna at RE verification sites, and across the broader Project Area.

2.3 LIKELIHOOD OF OCCURRENCE ASSESSMENT

Database searches identified a number of flora and fauna species listed under the EPBC Act and NC Act that have been previously recorded or are predicted to occur within a 10 km buffer of the Project Area, from here on referred to as the 'locality'. In order to refine the list to those species that are known or may occur within the Development Footprint, a likelihood of occurrence assessment was undertaken. The assessment ranks the likelihood of the species occurring through analysis of species distribution information and the presence of specific habitat attributes as identified through the desktop analysis and site visit. A likelihood rank was provided based on the combination of the criteria outlined in *Table 2.1*.

Table 2.1 Likelihood of Occurrence Criteria

	Preferred habitat exists	Suitable habitat exists¹	Habitat does not exist²
Records within Development Footprint (based on site surveys and recent database records)	Known	Known	Known
Records in the locality ³	Likely	Potential	Unlikely
No records in the locality, but Development Footprint is within known distribution	Potential	Unlikely	Unlikely
No records in the locality, and Development Footprint is outside of distribution	Unlikely	Unlikely	Unlikely
1. Habitat may be considered suitable, but not preferred because: some desired habitat features may be present, but not all; habitat may have poor connectivity; or habitat may be known to be disturbed. 2. Based on sources reviewed. 3. Locality refers to a 10 km buffer of the Project Area.			

Specific to this project, likelihood of occurrence criteria indicate that species:

- are 'known' to occur if they have been recorded within the Development Footprint;
- are 'likely' to occur if preferred habitat exists in the Development Footprint and recent records of the species have been identified within the locality;
- have 'potential' to occur if there are records within the locality and suitable habitat exists, however the habitat is not considered to be preferred habitat;
- have 'potential' to occur if there are no records within the locality, but the Development Footprint provides preferred habitat;
- are 'unlikely' to occur if the Development Footprint is outside the species distribution or the Development Footprint does not contain preferred or suitable habitat for the species.

The likelihood rank is based on information obtained from the desktop assessment sources and observations made during a three (3) day site visit, as outlined above. Desktop sources are indicative only and likelihood rankings, particularly in regard to the presence of preferred habitat, are conservative.

2.4 LEGISLATIVE FRAMEWORK

The ecological assessment of the Project Area was completed in accordance with the requirements of the following local, state and commonwealth legislation governing biodiversity in the Mareeba Shire area:

- *Mareeba Shire Planning Scheme (QPP 4.0 – Alignment Amendment – 2017)*
- *Vegetation Management Act (Qld) 1999*
- *Nature Conservation Act (Qld) 1992*
- *Environmental Protection Act 1994*
- *Environmental Protection and Biodiversity Act (Commonwealth) 1999*

Annex B provides a summary of the ecological values of the Project Area and identifies the purpose and applicability of the legislative framework identified above.

3. ECOLOGICAL ASSESSMENT

3.1 PROJECT AREA DESCRIPTION

The Project Area is within the Einasleigh Uplands bioregion, Hodgkinson Basin sub-bioregion, and is dominated by non-native pasture grassland. The Project Area occurs in a heavily disturbed landscape and is identified in the Mareeba Shire Planning Scheme as Rural Other and Rural Agricultural Area Land Use. Remnant vegetation (regulated under the VM Act) is largely in patches on the west and southern parts of the property, all of which are outside the Development Footprint.

3.2 SUMMARY OF ECOLOGICAL VALUES

3.2.1 Vegetation Communities

The majority of the Project Area is characterised by non-native pasture grassland which is currently being used for cattle grazing. Remnant vegetation (Category B) is largely restricted to the west and south of the property. Small patches of regrowth vegetation are present within the Project Area, however, are largely outside the Development Footprint. The Project will involve the clearing of 1.3 ha of regulated regrowth vegetation (Category R), however this will be in accordance with the self-assessable clearing code requirements as detailed in *Annex B*.

The Development Footprint avoids remnant vegetation and largely avoids regrowth vegetation as indicated in *Figure 2* in *Annex A* and *Table 3.1* below.

Table 3.1 Vegetation communities within the Project Area

RE	VM Act Status	Description	Area (ha) within Development Footprint
REMNANT VEGETATION			
9.5.9b	Least concern	<i>Eucalyptus leptophleba</i> , <i>E. platyphylla</i> and/or <i>Corymbia clarksoniana</i> +/- <i>C. intermedia</i> +/- <i>C. dallachiana</i> on plains	0
9.12.31a	Of concern	<i>E. leptophleba</i> and <i>C. clarksoniana</i> with <i>E. crebra</i> or <i>E. cullenii</i> and <i>C. dallachiana</i> on acid igneous hills	
9.12.31b	Of concern	<i>E. crebra</i> and <i>C. clarksoniana</i> +/- <i>C. dallachiana</i> +/- <i>E. leptophleba</i> +/- <i>C. citriodora</i> subsp. <i>citriodora</i> +/- <i>C. tessellaris</i> on acid igneous hills	
9.8.2a	Least concern	<i>E. leptophleba</i> +/- <i>C. clarksoniana</i> +/- <i>C. dallachiana</i> +/- <i>C. erythrophloia</i> +/- <i>E. cullenii</i> +/- <i>E. platyphylla</i> on basalt plains	
9.5.15b	Least concern	<i>Melaleuca monantha</i> +/- <i>Callitris intratropica</i> +/- <i>Melaleuca</i> spp. low open forest on valley infill	
REGROWTH VEGETATION			
-	-	Patches of eucalyptus woodland which do not meet remnnant status. Patches include one or more of the following eucalypt species: <i>E. leptophleba</i> , <i>E. platyphylla</i> , <i>C. clarksoniana</i> , <i>C. erythrophloia</i> , <i>C. citriodora</i> subsp. <i>Citriodora</i> and <i>C. tessellais</i> and are largely associated with drainage lines.	0.2
-	-	Patches of regrowth vegetation classified as Category R regrowth regulated vegetation. Patches include one or more of the following species: <i>E. leptophleba</i> , <i>C. clarksoniana</i> , <i>C. erythrophloia</i> , <i>E. platyphylla</i> , <i>C. tessellaris</i> , <i>C. citriodora</i> subsp. <i>citriodora</i> , <i>Melaleuca nervosa</i> , <i>M. viridiflora</i> , <i>Lophostemon grandifloras</i> , <i>Pandanus spiralis</i> and <i>Grevillea glauca</i> to an average height of 3 m. Refer to Annex B for further actions required relating to regulated vegetation.	1.3
PASTURE VEGETATION			
-	-	Non-native <i>Sporobolus</i> sp., <i>Waltheria indica</i> , <i>Themeda quadrivalvis</i> (grader grass), <i>siratro</i> (<i>Macropitilium atropurpureum</i>), <i>Chloris</i> sp., Indian couch grass (<i>Bothriochloa pertusa</i>) with some scattered individuals/patches consisting of <i>E. leptophleba</i> , <i>C. clarksoniana</i> , <i>C. erythrophloia</i> , <i>E. platyphylla</i> , <i>C. tessellaris</i> , <i>C. citriodora</i> subsp. <i>citriodora</i> , <i>Melaleuca nervosa</i> , <i>M.</i>	130

RE	VM Act Status	Description	Area (ha) within Development Footprint
		<i>viridiflora</i> , <i>Lophostemon grandifloras</i> , <i>Pandanus spiralis</i> and <i>Grevillea glauca</i> to an average height of 3 m. There is also approximately 2.2 ha of orchards along the eastern boundary of the Project Area.	

3.2.2 Threatened Species

The Likelihood of Occurrence Assessment identified each threatened species listed as 'critically endangered', 'endangered', 'vulnerable' under the EPBC Act and NC Act which were investigated as part of the desktop assessment and site visit as unlikely to occur within the Development Footprint as shown in [Annex C](#). It is noted that 0.2 ha of regrowth eucalypt woodland is present within the Development Footprint, however, is distributed across 9 disconnected patches. The Project Area provides habitat for threatened species (particularly koala as evidence of this species was identified in the field survey) in the remnant and regrowth vegetation to the western and southern part of the property, all of which is outside the Development Footprint. The field survey identified evidence of the 'special least concern' echidna within the Development Footprint where the species likely forages, however, preferred habitat for the species is present in the remnant and regrowth vegetation which is located outside the Development Footprint. Clearing of pasture within the Development Footprint is not likely a significant impact to the echidna after review against the Queensland Environmental Offsets Policy significant residual impact criteria.

3.2.3 Waterbodies

There are five (5) stream order one (1) and one (1) stream order two drainage lines within the Project Area. In addition there are a number of smaller drainage lines throughout the Project Area. All drainage lines within the Project Area were dry at the time of the site visit. There is one (1) small farm dam located in the Project Area. There is a 0.4 ha portion of general ecological significance (GES) wetland trigger area in the north-eastern corner of the Development Footprint as shown in [Figure 2](#) in [Annex A](#).

The Development Footprint will largely avoid disturbance of these mapped waterways, with the exception of a minor realignment of a 100m section between the two (2) dams in the south-eastern corner of the property. The proposed works within this waterway will require further development permits, however this area is not considered suitable habitat for listed species.

4. CONCLUSIONS AND RECOMMENDATIONS

The location of the Development Footprint has been selected to avoid and minimise impact to ecological values. While it is expected the disturbance to ecological values is reduced

through avoidance measures, a range of measures are recommended to minimise indirect impacts to vegetation communities, watercourses, fauna habitat and fauna. Recommended measures include:

- Clearing of watercourse areas restricted to the areas required for access or under the self-assessable clearing code for Category R regulated regrowth vegetation.
- Vehicle hygiene procedures to minimise the risk of the introduction/spread of weed species.
- Erosion control measures to minimise the runoff of sediment into watercourses during the construction phase of the project.
- Establishing vehicle speed limits in close proximity to vegetated areas to minimise risk of accidental fauna mortality.

5. SUPPORTING DOCUMENTATION

The following documentation is attached to support the ecological assessment:

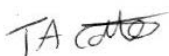
- Figure 1 – Survey Effort (*Annex A*);
- Figure 2 – Ecological Values (*Annex A*);
- Summary of Ecological Values (*Annex B*);
- Likelihood of Occurrence Assessment (*Annex C*);
- EPBC Act Protected Matters Search Tool Results (*Annex D*);
- Wildlife Online Search Results (*Annex E*); and
- Vegetation Management, MSES and Referable Wetlands Reports (*Annex F*).

6. CONCLUDING COMMENTS

If you have any queries regarding the advice in this Technical Note or supporting documentation, please contact Tom Cotter on telephone (07) 3007 8444 or via email at tom.cotter@erm.com.

Yours sincerely,

for Environmental Resources Management Australia Pty Ltd



Tom Cotter
Ecologist



Dr David Dique
Partner

Annex A

FIGURES



Legend

Project Area

Development Footprint

Cadastrate

Access Track:

Existing

Proposed

Railway

Road/Track

Watercourse/Drainage Line

Survey Locations

Vegetation Community Observations

GPS Tracklog

Data Source:
DNRM: Rail Network
DNRM: Baseline roads and tracks
DNRM: Watercourse lines
DNRM: Cadastral data weekly
Basemap: Bing Captured September 2010 - September 2014

Survey Effort

Drawing No: 0414798b_EA_G001_R3.mxd	Chewko Solar Farm Ecological Assessment
Date: 03/09/2017	Chewko, QLD
Drawn By: JT / TC	Client: Tilt Renewables Australia Pty Ltd
Reviewed By: DD	
Coordinate System: GDA 1994 MGA Zone 55	

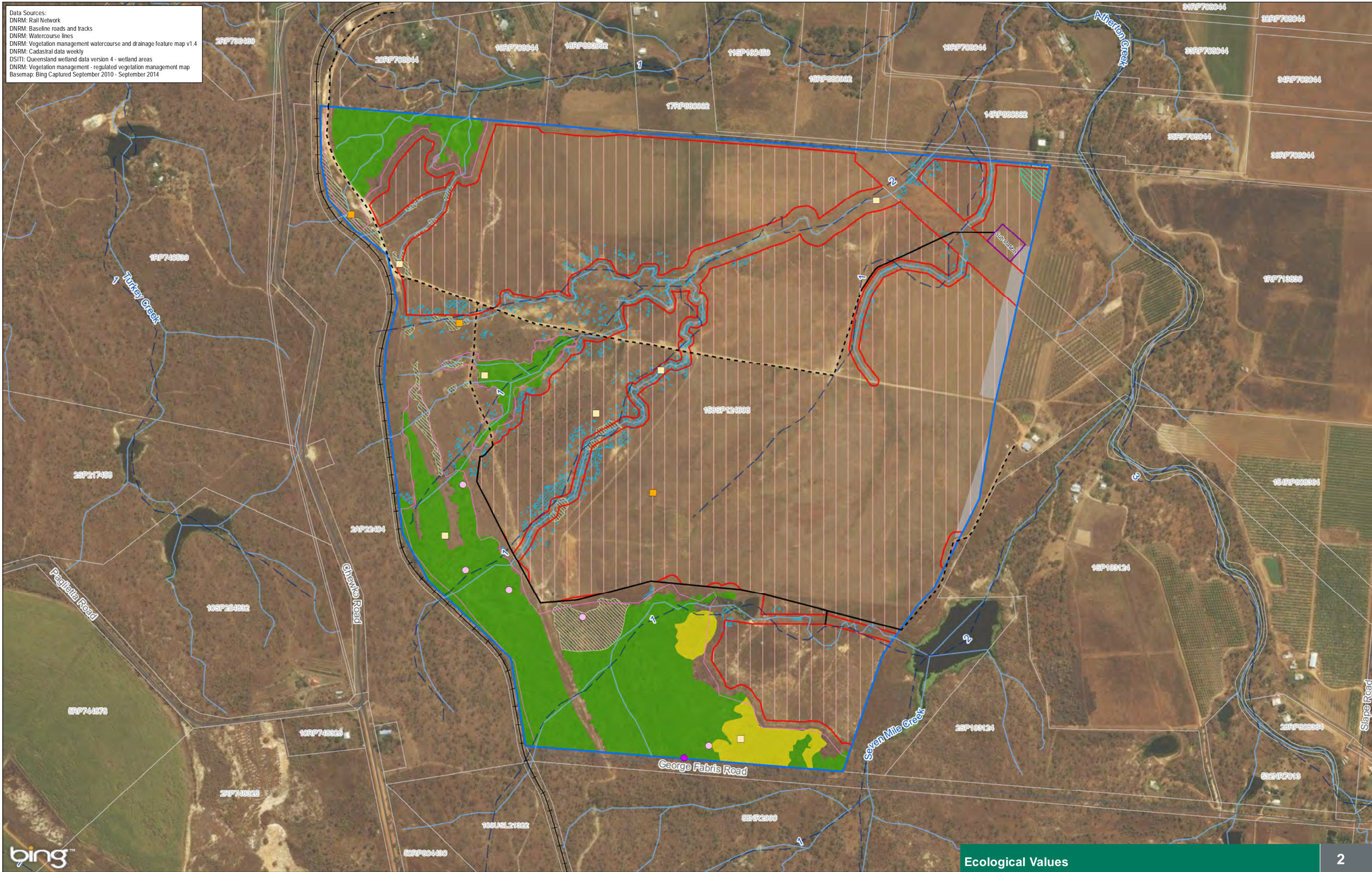
0 50 100m

N

This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.

1

Data Sources:
DNRM: Rail Network
DNRM: Baseline roads and tracks
DNRM: Watercourse lines
DNRM: Vegetation management watercourse and drainage feature map v1.4
DNRM: Cadastral data weekly
DSITI: Queensland wetland data version 4 - wetland areas
DNRM: Vegetation management - regulated vegetation management map
Basemap: Bing Captured September 2010 - September 2014



bing™

Legend		Vegetation Community (ERM)*		Ecological Values		2	
Project Area	Access Track: Existing	Koala Evidence: Pellets	Echidna Evidence: Scat	Remnant 9.5.9b/9.12.31b/9.12.31a/9.8.2a	Drawing No: 0414798b_EA_G002_R5.mxd	Chewko Solar Farm Ecological Assessment Chewko, QLD	
Development Footprint	Proposed	Koala Evidence: Scratches	Echidna Evidence: Feeding Sign	Remnant 9.5.15b	Date: 03/09/2017		Drawing Size: A3
Cadastre	Watercourse/Drainage Line	Regulated Vegetation (Category B - State Mapping)	Orchard	Regrowth (Eucalypt Woodland)	Drawn By: JT / TC	Reviewed By: DD	Client: Tilt Renewables Australia Pty Ltd
Watercourse and Stream Order (VM Act)				Regrowth (Category R)	Coordinate System: GDA 1994 MGA Zone 55		 N
					0 50 100m		
							 ERM
					*Note: Unmapped areas of the Study Area are pasture and non-vegetated land cover		

Annex B

SUMMARY OF ECOLOGICAL VALUES

SUMMARY OF ECOLOGICAL VALUES

Administering Authority	Purpose	Application/Implementation	Applicability to Project Area	Summary of field survey findings	Are further actions required?
<i>Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) (Commonwealth)</i>					
Department of the Environment and Energy (DoEE)	<p>The protection of the environment within Australia – in particular (MNES), which include:</p> <ul style="list-style-type: none">• World heritage properties;• National heritage properties;• Wetlands of international importance;• Threatened species and ecological communities;• Migratory species;• Commonwealth marine areas;• The Great Barrier Reef Marine Park;• Nuclear Actions (include. uranium mines); and• Water Resources.	<p>Should a project or action have the potential to significantly impact MNES, approval from the Commonwealth Environment Minister is required.</p>	<p>An EPBC Protected Matters Report for a 10 km buffer of the Project Area identified zero (0) Threatened Ecological Communities (TECs), 34 Threatened Species and 20 Migratory Species which may be located within 10 km of the Project Area.</p>	<p>A site survey verified that no TEC’s are located within the Project Area.</p> <p>Likelihood of occurrence assessment identified each of the EPBC Act species listed as ‘Critically Endangered’, ‘Endangered’, and ‘Vulnerable’ as unlikely to occur within the Development Footprint. The field survey identified evidence of koala which is listed as ‘vulnerable’ largely within remnant vegetation which is located outside the Development Footprint. It is noted that within the Development Footprint there is 0.2 ha of regrowth eucalypt woodland which is considered suitable koala habitat.</p> <p>The likelihood of occurrence assessment identified two EPBC Act species, grey wagtail and yellow wagtail, which are listed as ‘Migratory’ as potential to occur in the Development Footprint.</p>	<p>A review of the MNES significant impact guidelines indicates that the clearing of 0.2 ha of suitable koala habitat is not considered to constitute a significant impact.</p> <p>Due to generalist habitat requirements of the two migratory species with potential occur in the Development Footprint, the Project is not likely to significantly impact these two species.</p> <p>Further assessment in accordance with the EPBC Act is not required.</p>
<i>Nature Conservation Act 1992 (NC Act) (QLD)</i>					
Department of Environment and Heritage Protection (DEHP)	<p>The object of the NC Act is the conservation of nature while allowing for certain uses of protected areas. The NC Act allows the declaration of protected areas and the listing of threatened species under the regulations of the NC Act.</p>	<p>The NC Act regulates actions impacting protected native flora and fauna species. Permits for disturbance to native flora and fauna can be administered under the NC Act.</p> <p>The associated <i>Nature Conservation (Wildlife) Regulation 2006</i> lists flora and fauna species that are ‘extinct in the wild’, ‘endangered’, ‘vulnerable’ and ‘near threatened’. The <i>Nature Conservation (Wildlife Management) Regulation 2006</i> prohibits tampering with a native animal breeding place except under specific conditions which include the activity being part of an approved Species Management Program (SMP).</p>	<p>The property is not identified within the Flora Survey Trigger Map area and there is no Essential Habitat mapped within the Project Area. However, the Wildlife Online Extract includes ten records of spectacled flying-fox and one record of estuarine crocodile, Atherton ctenotus and <i>Goodenia stirlingii</i> listed as ‘vulnerable’ and five records of <i>Phaius australis</i> listed as ‘endangered’ within 10 km of the Project Area. Echidna habitat has been identified in the MSES mapping as within the Project Area, however, not within the Development Footprint.</p>	<p>The site survey identified no suitable habitat or evidence of species listed as ‘endangered’, ‘vulnerable’ or ‘near threatened’ within the Development Footprint, however evidence of koala was observed in the remnant and regrowth vegetation outside of the Development Footprint.</p> <p>The site survey identified evidence of echidna which is listed as ‘special least concern’ within the Development Footprint. Preferred habitat for the species is within the remnant and regrowth areas of the Project Area with some foraging habitat within the Development Footprint.</p>	<p>The Project does not involve the clearing of suitable threatened species habitat listed as ‘endangered’, ‘vulnerable’ or ‘near threatened’. A significant residual impact assessment (for MSES) against the impact criteria (DEHP, 2014) is not required.</p> <p>A review of the significant residual impact criteria indicates that clearing of echidna foraging habitat within the Development Footprint is not likely to be a significant impact.</p> <p>No further action is required.</p>
<i>Vegetation Management Act 1999 (VM Act) (QLD)</i>					
Department of Natural Resources and Mines (DNRM)	<p>Regulates the broad-scale clearing of vegetation, with the intent of conserving remnant vegetation, preventing the loss of biodiversity, maintaining ecological processes and allowing for sustainable use.</p>	<p>The VM Act regulates the clearing of remnant vegetation and the clearing of regrowth vegetation on leasehold land for agriculture and grazing. One of the mechanisms for implementation of the VM Act is assessment against the vegetation clearing code provided in the State Development Assessment Provisions as part of the Integrated Development Assessment System.</p>	<p>The Regulated Vegetation Map indicates there is Category R regrowth vegetation and Category B remnant vegetation within the Project Area. A stream order one watercourse is also identified within the Development Footprint. Category R regrowth vegetation and Category B remnant vegetation are MSES (Regulated Vegetation).</p>	<p>The site survey identified 1.3 ha of Category R regrowth vegetation within the Development Footprint. The site survey confirmed there is no Category B remnant vegetation within the Development Footprint. The site survey confirmed that the stream order one watercourse within the Development Footprint is a drainage line which would likely not be considered a stream order one watercourse following further assessment.</p>	<p>The Project involves the clearing of 1.3 ha of Category R regrowth vegetation. This clearing complies with the DNRM accepted development vegetation clearing code for managing Category R regrowth vegetation. The clearing is not proposed to occur within 10 m from the defining bank of the stream order 1 and 2 watercourses within the Development Footprint. This complies with the general purposes clearing practice as the required watercourse protection area has been established.</p>

					<p>DNRM is to be notified prior to the commencement of clearing as outlined in the clearing code. As regrowth vegetation is not considered regulated vegetation under the significant residual impact guidelines, the clearing will not constitute a significant residual impact to MSES (Regulated vegetation).</p> <p>The Project does not involve the clearing of Category B remnant vegetation based on results from the field survey. This will be confirmed during the Project's detailed design phase. As no regulated vegetation will be cleared there will be no significant residual impact to MSES (Regulated vegetation).</p> <p>DNRM is to be contacted regarding the likely incorrect mapping of the stream order one watercourse within the Development Footprint.</p>
<i>Environmental Protection Act 1994</i>					
Department of Environment and Heritage Protection (DEHP)	To protect Queensland's environment while allowing for development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends (ecologically sustainable development).	The Environmental Protection Act 1994 provides a framework for ecologically sustainable development within Queensland.	The Map of Referable Wetlands includes a 0.4 ha portion of general ecological significance (GES) wetland trigger area in the north-eastern corner of the Project Area.	The site survey identified that the mapped portion of GES wetland trigger area within the Development Footprint is pasture.	<p>The pasture within the GES wetland trigger area is not considered to provide important contribution to the environmental values of the GES associated with Atherton Creek to the east as outlined in Section 81A of the Environmental Protection Regulation 2008.</p> <p>No further action is required.</p>
<i>Mareeba Shire Planning Scheme (QPP 4.0 – Amendment Alignment – 2017)</i>					
Mareeba Shire Council	The Mareeba Shire Planning Scheme ('Planning Scheme') provides the framework for managing development within the local area.	The Mareeba Shire Planning Scheme (the 'Planning Scheme') was prepared in accordance with the <i>Planning Act 2016</i> and came into effect in on 3 July 2017. The Planning Scheme provides the framework for managing development within the local area, including identifying local environmental values.	The Mareeba Shire Council Planning Scheme Environmental Significance Overlay maps Ecological Corridor and Regulated Vegetation associated with drainage lines within the Project Area.	The site survey confirmed the Development Footprint contains pasture rather than remnant or regrowth vegetation within the area mapped as Ecological Corridor. The site survey identified that the stream order one watercourse within the Development Footprint is a drainage line which would likely not be considered a stream order one watercourse following further assessment.	A 10 m (from top of bank) stream protection zone for stream order one and a 25 m (from top of bank) stream protection zone for stream order two drainage lines has been defined and is outside the Development Footprint, with the exception of minor works proposed in the south-east corner between the two existing dams.

Annex C

LIKELIHOOD OF OCCURRENCE
ASSESSMENT

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
FLORA							
<i>Acacia purpureopetala</i>	-	CE	-	Occurs in the Herberton district in the Einasleigh Uplands biogeographic region of north-east Queensland. From north to south there are five general locations where this species is found: Mt Emerald south of Walkamin; Stannery Hills; an area near Herberton; Irvinebank; and along the Misery-Coolgara Road, north-east of Mt Garnet.	<i>Acacia purpureopetala</i> grows on steep rocky slopes, usually at altitudes of 780-880 m above sea level in eucalypt woodland.	Unlikely - The PMST Development Footprint is within the species known distribution, however there are no records in the locality and the Development Footprint does not contain suitable habitat.	

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
<i>Cajanus mareebensis</i>	-	E	-	<i>Cajanus mareebensis</i> is known from eight sites near Musgrave on Cape York Peninsula; at three sites from the Irvinebank to Petford area; and at one site south-west of Mt Garnet. It has been recollected from the original type locality only once in 40 years despite thorough searching.	<i>Cajanus mareebensis</i> occurs in grassy woodlands of Melaleuca-Acacia, Eucalyptus- <i>Callitris</i> and Eucalyptus- <i>Corymbia</i> woodlands on sandy soils derived from granite with a lower horizon of impeded drainage.	Unlikely - There are records within the locality, however, the Development Footprint does not contain habitat for the species.	PMST, WO, ALA

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
<i>Dendrobium bigibbum</i>	Cooktown Orchid	V	-	<p>Subpopulations of the Cooktown orchid group occur north from Cairns, throughout Cape York, the Torres Strait and in southern Papua New Guinea. The species has an extent of 300 000 km² and occurs at least 30 subpopulations. Some subpopulations are described as abundant.</p> <p><i>Dendrobium bigibbum</i> occurs in the northern half of Cape York, north from the Archer River (Aurukun, west coast of Cape York) and the Iron Range (east coast of Cape York), the islands of Torres Strait and southern Papua New Guinea. Subpopulations in the west of Cape York (in the Weipa region) resemble other <i>D. bigibbum</i> subpopulations (as <i>D. b. var. bigibbum</i>).</p>	<p>Subpopulations of the Cooktown orchid group are epiphytic (growing on branches) and epilithic (growing on rocks), and occurs at sites with moderate light intensity. The area where it occurs has moderate to high rainfall that is seasonal (more rainfall in summer and autumn). Collections have been made from sea level (including on branches overhanging salt water) to altitudes of at least 250 m above sea level. Many collections have been made along creeks or on rocky hillsides where fire cannot penetrate. Vegetation associations where it occurs include closed forest (low deciduous scrub, coastal dunes, gallery forest), open monsoon forest, mangrove, heath and inland dry scrub.</p>	<p>Unlikely – There are no records in the locality, the Development Footprint is outside the species distribution and does not contain suitable habitat does not exist.</p>	PMST

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
<i>Dichanthium setosum</i>	bluegrass	V	-	This species has been primarily recorded from inland northern New South Wales. It also occurs patchily in Queensland.	<i>Dichanthium setosum</i> is primarily associated with heavy soils such as cracking clays or alluvium (often in association with gilgais), in open woodland habitats featuring brigalow or <i>Eucalyptus</i> species. It can persist in modified environments such as cleared woodland and grazed land.	Unlikely - The PMST Development Footprint is within the species known distribution, however there are no records in the locality and the Development Footprint does not contain suitable habitat.	
<i>Euphorbia carissoides</i>		V	-	<i>Chamaesyce carissoides</i> is restricted to north-east Queensland where it is known from near Georgetown and east to Stannary Hills, with a disjunct occurrence near Hopevale.	The species grows on cliffclines, among rocky outcrops and hillsides in shrubland and eucalypt low open woodland communities in generally shallow soils derived from sandstone, granite and rhyolite substrates.	Unlikely - The PMST Development Footprint is within the species known distribution, however there are no records in the locality and the Development Footprint does not contain suitable habitat.	

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
<i>Goodenia stirlingsii</i>		-	V	The species is endemic to north Queensland with the Atlas of Living Australia containing records of the species from Mount Garnet in the south to Arriga in the north and from Petford in the west to Moomin in the east.	The RE Description Database lists RE 9.11.10 <i>Eucalyptus cloeziana</i> , <i>Corymbia citriodora</i> subsp. <i>citriodora</i> , <i>E. portuensis</i> and <i>E. cullenii</i> mixed woodland on steep dissected hills on highly metalliferous metamorphic rocks as habitat for <i>Goodenia stirlingsii</i> .	Unlikely – There are records in the locality, however, the Development Footprint does not contain suitable habitat.	WO, ALA

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
<i>Grevillea glossadenia</i>		V	-	<i>Grevillea glossadenia</i> occurs in north-east Queensland mainly in the Einasleigh Uplands bioregion, with a few collections from the Wet Tropics Bioregion. It mainly occurs between Walkamin, Irvinebank, Herberton and Watsonville. Localities include Mount Emerald, Mount Misery, Cooloomon Creek, Little Cooloomon Creek, Emu Creek, Granite Creek and Barkerville. This species is reported as occurring west of Chillagoe but it is now believed that this record refers to <i>G. decora</i> .	<i>Grevillea glossadenia</i> grows in eucalypt woodland or low open forest, in shallow to skeletal granitic soils on rolling hills, gravel terraces near stream beds, and along roadsides and mining tracks. It occurs in areas of 1000–1300 mm rainfall. Associated plant species include Gympie Messmate (<i>Eucalyptus cloeziana</i>), <i>E. pachycalyx</i> , Ramornie Stringybark (<i>E. tindaliae</i>), Cullen's Ironbark (<i>E. cullenii</i>), <i>E. atrata</i> , Range Bloodwood (<i>Corymbia abergiana</i>), Yellow Jacket (<i>C. leichhardtii</i>), White Bloodwood (<i>C. trachyphloia</i>), <i>C. watsoniana</i> , Lemon-scented Gum (<i>C. citriodora</i>), Northern Cypress Pine (<i>Callitris intratropica</i>), Red Ash (<i>Alphitonia excelsa</i>), <i>Acacia purpureopetala</i> , <i>Homoranthus porteri</i> , <i>Leptospermum amboinense</i> and <i>Xanthorrhoea johnsonii</i> .	Unlikely - The PMST Development Footprint is within the species known distribution, however there are no records in the locality and the Development Footprint does not contain suitable habitat.	

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
<i>Homoranthus porteri</i>		V	-	<i>Homoranthus porteri</i> is restricted to north-east Queensland from near Mareeba southwards to near Ravenshoe. Collections have been made from Mt Emerald (south-west of Atherton), Baal Gammon Mining Lease near Watsonville (west of Herberton), Mt Stewart (east of Herberton), Kaban - Archer Creek area (west of Ravenshoe), Mt Klaatsch, State Forest 754 (north-west of Ravenshoe) and State Forest Reserve 488 (south of Ravenshoe). The species was described as 'common' from a collection site at Mt Emerald.	<i>Homoranthus porteri</i> occurs in shallow soils on a variety of rock types (including rhyolite), usually in woodland or heath. It has been recorded on sandstone pavement, rock outcrops and scree slopes, on the edge of rocky escarpments and rocky hillsides. The species favours the edges of rock pavements, is restricted to exposed ridge topography and forms almost monospecific thickets.	Unlikely - The PMST Development Footprint is within the species known distribution, however there are no records in the locality and the Development Footprint does not contain suitable habitat.	

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
<i>Macropteranthes montana</i>		V	-	<i>Macropteranthes montana</i> is known from a small area just south of Cape York Peninsula, Queensland. Collections have been made from as far north as Hutchinson (inland from Cape Tribulation) and from localities near Mount Mulligan, Chillagoe, Dimbulah, Petford, Irvinebank, Elizabeth Creek Gorge, Bulleringa National Park and south west as far as the northern Newcastle Range.	This species occurs in shallow soil in low woodland or vine thicket.	Unlikely - The PMST Development Footprint is within the species known distribution, however there are no records in the locality and the Development Footprint does not contain suitable habitat.	

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
<i>Phaius australis</i>	Lesser Swamp-orchid	E	E	The Lesser Swamp-orchid is endemic to Australia and occurs in southern Queensland and northern NSW. Taking into account the possibility of misidentification due to ongoing taxonomic confusion between the Greater Swamp-orchid and the Lesser Swamp-orchid, the distribution of the Lesser Swamp-orchid has been tentatively described as being north from Lake Cathie (near Port Macquarie), but mainly north of the Evans Head area to the Barron River in northeast Queensland, although it is rare in the latter region (only 1 or 2 records) and the populations are now thought to be destroyed.	The Lesser Swamp-orchid is commonly associated with coastal wet heath/sedgeland wetlands, swampy grassland or swampy forest and often where Broad-leaved Paperbark or Swamp Mahogany are found. Typically, the Lesser Swamp-orchid is restricted to the swamp-forest margins, where it occurs in swamp sclerophyll forest (Broad-leaved Paperbark/Swamp Mahogany/Swamp Box (<i>Lophostemon suaveolens</i>)), swampy rainforest (often with sclerophyll emergents), or fringing open forest. It is often associated with rainforest elements such as Bangalow Palm (<i>Archontophoenix cunninghamiana</i>) or Cabbage Tree Palm (<i>Livistona australis</i>).	Unlikely - There are records within the locality, however, the Development Footprint does not contain habitat for the species.	PMST, WO, ALA

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
<i>Tropilis callitrophilis</i>	Thin Feather Orchid	V	-	<i>Tropilis callitrophilum</i> is endemic to north-east Queensland where it occurs on the Evelyn, Mt Windsor, Atherton and Carbine Tablelands and some of the higher mountains between the Daintree and Bloomfield Rivers.	<i>Tropilis callitrophilum</i> grows at altitudes of 760–1500 m above sea level, in or close to rainforest. It favours Stringybark Cypress Pine (<i>Callitris macleayana</i>) but also grows on various shrubby myrtles such as <i>Austromyrtus</i> .	Unlikely - The PMST Development Footprint is within the species known distribution, however there are no records in the locality and the Development Footprint does not contain suitable habitat.	

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
<i>Vappodes lithocola</i>	Dwarf Butterfly Orchid, Cooktown Orchid	E	-	<i>Vappodes lithocola</i> is known from Cape York Peninsula, northern Queensland, south to the Archer River. It is also known from Singapore and Indonesia. <i>Vappodes lithocola</i> has been collected from a variety of locations including Hartley Creek in the Macalister Range, Mt White near Coen, Mt Scatterbrain (5 km east of Lakeland Downs), Bakers Blue Mountain (between Mt Molloy and Mt Carbine), Edward River, Olive River, a number of locations near Aurukun, Newcastle Bay, Temple Bay (Glennie Inlet), Princess Charlotte Bay, Muddy Bay, Possum Scrub, Darnley Island, Horn Island and Hammond Island.	<i>Vappodes lithocola</i> grows at altitudes between 0–400 m above sea level. It grows on trees and rocks with moderate light intensity in a range of habitats including coastal scrub, streambank vegetation, monsoon thickets, and gullies in open forest and woodland where fire cannot penetrate.	Unlikely – There are no records in the locality and the Development Footprint is outside the species known distribution and does not contain suitable habitat.	PMST

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
<i>Vappodes phalaenopsis</i>	Cooktown Orchid	V	-	<i>Vappodes phalaenopsis</i> is known from Cooktown to the Font Hills west of Mt Molloy, Queensland. It grows as far north as Princess Charlotte Bay. Locations include Helenvale Road, Black Mountain, Marina Plains Rd 52 km from Musgrave Station, and the Johnstone River.	<i>Vappodes phalaenopsis</i> grows on trees and rocks in coastal scrub, littoral rainforest, riverine vegetation, monsoon thickets, swamps and gullies in open forests at altitudes of up to 400 m above sea level. It also grows in vegetation near beaches, in areas with a hot climate and extremely seasonal rainfall.	Unlikely - The PMST Development Footprint is within the species known distribution, however, there are no records within the locality and the Development Footprint does not contain suitable habitat.	

REPTILES

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
<i>Crocodylus porosus</i>	salt-water crocodile	M	V	The salt-water crocodile is found in Australian coastal waters, estuaries, lakes, inland swamps and marshes. Despite the species' common name, the Salt-water Crocodile can persist in freshwater bodies. The species' distribution ranges from Rockhampton in Queensland throughout coastal Northern Territory to King Sound (near Broome) in Western Australia.	The salt-water crocodile mostly occurs in tidal rivers, coastal floodplains and channels, billabongs and swamps up to 150 km inland from the coast. The salt-water crocodile usually inhabits the lower (estuarine) reaches of rivers, while the upper reaches are inhabited by <i>Crocodylus johnstoni</i> (Fresh-water Crocodile); although, areas of overlap occur in some rivers. In Queensland, the species is usually restricted to coastal waterways and floodplain wetlands. Populations may also be found hundreds of kilometres upstream, such as in the Fitzroy River and the waterways of the southern Gulf of Carpentaria.	Unlikely - There are records within the locality, however, the Development Footprint does not contain habitat for the species.	WO, ALA

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
<i>Ctenotus monticola</i>	Atherton ctenotus	-	V	The species is endemic to north Queensland with the Atlas of Living Australia containing records of the species from Wairuna in the south to Mount Molloy in the north and from Arriga in the west to Mareeba in the east.	Eucalypt woodlands over a grassy understorey, often in association with granite.	Unlikely - There are records within the locality, however, the Development Footprint does not contain habitat for the species.	WO, ALA

MAMMALS

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
<i>Dasyurus hallucatus</i>	northern quoll	E	C	In Queensland, the northern quoll is known to occur as far south as Gracemere and Mt Morgan, south of Rockhampton, as far north as Weipa, and extends west into central Queensland to the vicinity of Carnarvon Range National Park. There are occasionally records as far south in Queensland as Maleny on the Sunshine Coast hinterland.	The species occupies a diversity of habitats across its range which includes rocky areas, eucalypt forest and woodlands, rainforests, sandy lowlands and beaches, shrubland, grasslands and desert. This species is also known to occupy non-rocky lowland habitats such as beach scrub communities in central Queensland. Northern quoll habitat generally encompasses some form of rocky area for denning purposes with surrounding vegetated habitats used for foraging and dispersal. Eucalypt forest or woodland habitats usually have a high structural diversity containing large diameter trees, termite mounds or hollow logs for denning purposes. Dens are made in rock crevices, tree holes or occasionally termite mounds. Northern quolls sometimes occur around human dwellings and campgrounds.	Unlikely - There are records within the locality, however, the Development Footprint does not contain habitat for the species.	PMST, WO, ALA

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
<i>Hipposideros semoni</i>	Semon's Leaf-nosed Bat, Greater Wart-nosed Horseshoe-bat	V	-	The known broad-scale distribution for Semon's Leaf-nosed Bat includes coastal Queensland from Cape York to just south of Cooktown. The southern limit is unclear, though Coles and colleagues (1996) recorded calls on the Mt Windsor Tableland. There is an outlier population at Kroombit Tops, near Gladstone.	Semon's Leaf-nosed Bat is found in tropical rainforest, monsoon forest, wet sclerophyll forest and open savannah woodland. This species does not have an obligatory requirement for cave roosts. Daytime roost sites include tree hollows, deserted buildings in rainforest, road culverts and shallow caves amongst granite boulders or in fissures. They appear to prefer rainforest and are more likely to be tree-dwelling than cave-dwelling.	Unlikely - The PMST Development Footprint is within the species known distribution, however, there are no records within the locality and the Development Footprint does not contain suitable habitat.	
<i>Macroderma gigas</i>	ghost bat	V	V	This species is broadly distributed in distinct colonies across tropical and non-tropical Australia.	The ghost bat utilises a range of woodland and forest habitats, although it requires deep natural cave systems or large disused mines for permanent roosts.	Unlikely - The PMST Development Footprint is within the species known distribution, however, there are no records within the locality and the Development Footprint does not contain preferred habitat.	

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
<i>Mesembriomys gouldii rattoides</i>	black-footed Tree-rat (north Queensland), shaggy rabbit-rat	V	C	The distribution of the black-footed tree rat (north Queensland) is poorly known. It has been recorded mostly from eucalypt forests and woodlands (but not rainforests) around Mareeba, but there are records sparsely across Cape York Peninsula, including recent records from Mungkan Kandju National Park and the Australian Wildlife Conservancy's Piccaninny Plains and Brooklyn wildlife sanctuaries.	In north Queensland, the species mostly occurs in eucalypt forests and woodlands, especially where hollows are relatively plentiful. There is a record of denning in a hollow in a large rainforest tree near a rainforest-eucalypt forest boundary at Iron Range. The black-footed tree rat is a nocturnal rodent that dens mostly in tree hollows, but occasionally in dense foliage (notably of Pandanus), and occasionally in buildings.	Unlikely - There are records within the locality, however, the Development Footprint does not contain habitat for the species.	PMST, WO, ALA

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
<i>Petauroides volans</i>	greater glider	V	-	The greater glider is restricted to eastern Australia, occurring from the Windsor Tableland in north Queensland through to central Victoria (Wombat State Forest), with an elevational range from sea level to 1200 m above sea level. An isolated inland subpopulation occurs in the Gregory Range west of Townsville, and another in the Einasleigh Uplands.	<p>The greater glider is an arboreal nocturnal marsupial, largely restricted to eucalypt forests and woodlands. It is primarily folivorous, with a diet mostly comprising eucalypt leaves, and occasionally flowers. It is typically found in highest abundance in taller, montane, moist eucalypt forests with relatively old trees and abundant hollows. The greater glider favours forests with a diversity of eucalypt species, due to seasonal variation in its preferred tree species.</p> <p>During the day it shelters in tree hollows, with a particular selection for large hollows in large, old trees. In Grafton/Casino, Urbenville and the Urunga/Coffs Harbour Forestry Management Areas in northern New South Wales, the abundance of greater gliders on survey sites was significantly greater on sites with a higher abundance of tree hollows.</p>	Unlikely - The PMST Development Footprint is within the species known distribution, however, there are no records within the locality and the Development Footprint does not contain suitable habitat.	

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
<i>Phascolarctos cinereus</i>	koala	V	V	The koala is endemic to Australia. The species' range extends from north-eastern Queensland to the south-east corner of South Australia. (combined populations of Queensland, New South Wales and the Australian Capital Territory)	Koalas naturally inhabit a range of temperate, sub-tropical and tropical forest, woodland and semi-arid communities dominated by <i>Eucalyptus</i> species.	Unlikely - There are records within the locality, however, the Development Footprint does not contain habitat for the species.	PMST, ERM

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
<i>Pteropus conspicillatus</i>	spectacled flying-fox	V	V	The spectacled flying-fox occurs in north-eastern Queensland, north of Cardwell with past records from Brisbane and Chillagoe. It is restricted to tropical rainforest areas, most specifically, the species occurs between Ingham and Cooktown, and between the McIlwraith and Iron Ranges of Cape York. The species also occurs on Torres Strait islands. The largest population in Australia is known from the Wet Tropics of Queensland World Heritage Area between Townsville and Cooktown.	One study has shown that the spectacled flying-fox roosts within 6.5 km of rainforest although a roost 16 km from rainforest has also been observed. The species was long assumed to feed primarily on rainforest species but individuals regularly feed on a wide variety of non-rainforest species, including eucalypts (<i>Eucalyptus</i> spp., <i>Corymbia</i> spp.) in tall open forests adjoining rainforest communities and in tropical woodland and savanna ecosystems.	Unlikely - There are records within the locality, however, the Development Footprint does not contain habitat for the species.	PMST, WO, ALA

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
<i>Rhinolophus robertsi</i>	large-eared horseshoe bat	V	E	The large-eared horseshoe bat occurs only in northern Queensland, from the Iron Range southwards to Townsville and west to the karst regions of Chillagoe and Mitchell-Palmer. The southern limit of its range has not been clarified, and it might be present south of Townsville at Mt Elliott and Cape Cleveland.	The large-eared horseshoe bat is found in lowland rainforest, along gallery forest-lined creeks within open eucalypt forest, <i>Melaleuca</i> forest with rainforest understorey, open savannah woodland and tall riparian woodland of <i>Melaleuca</i> , Forest Red Gum (<i>E. tereticornis</i>) and Moreton Bay Ash (<i>C. tessellaris</i>). Daytime roosting habitat for the species includes caves and underground mines located in rainforest, and open eucalypt forest and woodland. Roosts have also been observed in road culverts, and it is suspected that the species uses basal hollows of large trees, dense vegetation, rockpiles and areas beneath creekbanks. At night, the species forages mainly in open forest and wattle-dominated ridges in rainforest. In open forest and woodland, they prefer to forage amongst the thicker vegetation in gullies and along creeks, though they have been observed at the edge of grassy clearings in rainforest and road edges.	Unlikely - The PMST Development Footprint is within the species known distribution, however, there are no records within the locality and the Development Footprint does not contain suitable habitat.	

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
<i>Saccolaimus saccolaimus nudicluniatu</i>	bare-rumped sheath-tailed bat	V	-	The type locality for the Bare-rumped Sheathtail Bat is Babinda Creek near Cardwell, North Queensland, with syntypes collected from Gowrie Creek near Cardwell. Occasional individuals have been collected from a narrow coastal region (less than 40 km inland) between Ayr and Cooktown, North Queensland, with one isolated specimen from north of Coen on Cape York Peninsula. Other observations include a road-killed individual on Magnetic Island off Townsville; a sighting of up to 15 individuals flushed from a roost tree in the Iron Range area, Cape York, Queensland; and likely acoustic detection in an area to the west of Townsville.	The Bare-rumped Sheathtail Bat occurs mostly in lowland areas, typically in a range of woodland, forest and open environments. It has been suggested to forage over habitat edges such as the edge of rainforest and in forest clearings. The small number of confirmed roosts located in Australia have all been in tree hollows.	Unlikely - The Development Footprint is within the species known distribution, however, there are no records within the locality and the Development Footprint does not contain preferred habitat.	PMST

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
<i>Tachyglossus aculeatus</i>	short-beaked echidna	-	SL	The echidna is a widespread species found across mainland Australia, Tasmania and nearby islands.	The echidna ranges from undisturbed to disturbed habitats and includes forests, woodlands, shrublands and grasslands, rocky outcrops and agricultural lands. Echidna's are usually found among rocks, in hollow logs, under vegetation or piles of debris, under tree roots or sometimes in wombat or rabbit burrows. During rainy or windy weather they often burrow into the soil or shelter under tussocks of grass or under bushes.	Known - There are records in the Development Footprint and the Development Footprint contains suitable habitat for foraging.	WO, ERM

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
BIRDS							
<i>Calidris ferruginea</i>	curlew sandpiper	CE, M	-	The curlew sandpiper is widely distributed around the coast of Australia, and while records occur across a broad extent of inland Australia, this species' occurrence away from the coast tends to be erratic.	The curlew sandpiper is a wading bird that is typically associated with intertidal mudflats in coastal areas. Additionally, this species utilises coastal swamps, lakes and lagoons, as well as ponds at saltworks and sewage farms. The curlew sandpiper is less frequently recorded inland where exposed mud or sand abuts ephemeral and permanent water bodies such as lakes, dams and waterholes. The species is a non-breeding migrant in Australia.	Unlikely - The PMST Development Footprint is within the species known distribution, however there are no records in the locality and the Development Footprint does not contain preferred habitat.	

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
<i>Charadrius veredus</i>	oriental plover	M	SL	The oriental plover is a non-breeding visitor to Australia, where the species occurs in both coastal and inland areas, mostly in northern Australia. Most records are along the north-western coast, between Exmouth Gulf and Derby in Western Australia, and there are records at a few scattered sites elsewhere, mainly along the northern coast, such as in the Top End, the Gulf of Carpentaria and on Cape York Peninsula. The species also often occurs further inland on the 'blacksoil' plains of northern Western Australia, the Northern Territory and north-western Queensland. It is seldom recorded in southern Australia. The species has also been recorded as a vagrant on Lord Howe Island and Christmas Island	After arriving in non-breeding grounds in northern Australia, oriental plovers spend a few weeks in coastal habitats such as estuarine mudflats and sandbanks, on sandy or rocky ocean beaches or nearby reefs, or in near-coastal grasslands, before dispersing further inland. Thereafter they usually inhabit flat, open, semi-arid or arid grasslands, where the grass is short and sparse, and interspersed with hard, bare ground, such as claypans, dry paddocks, playing fields, lawns and cattle camps, or open areas that have been recently burnt. At the onset of the Wet Season, some may move into lightly wooded grasslands. Some remain in estuarine and littoral environments, and a few are occasionally recorded around terrestrial wetlands or flooded paddocks. Vagrants in southern Australia have been recorded in saltmarsh.	Unlikely – There are records in the locality, however, the Development Footprint does not contain suitable habitat.	WO

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
<i>Erythrorhynchus radiatus</i>	red goshawk	V	E	The red goshawk is endemic to Australia. It is very sparsely dispersed across coastal and sub-coastal Australia, from western Kimberley Division to northeastern NSW.	The red goshawk occurs in coastal and sub-coastal areas in wooded and forested lands of tropical and warm-temperate Australia. The red goshawk nests in large trees, frequently the tallest and most massive in a tall stand, and nest trees are invariably within one km of permanent water (an average distance of 164 m has been reported). Forests of intermediate density are favoured, or ecotones between habitats of differing densities, e.g. between rainforest and eucalypt forest, between gallery forest and woodland, or on edges of woodland and forest where they meet grassland, cleared land, roads or watercourses.	Unlikely - The PMST Development Footprint is within the species known distribution, however there are no records in the locality and the Development Footprint does not contain preferred habitat.	

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
<i>Erythrura gouldiae</i>	Gouldian Finch	E	-	Sparsely distributed across northern Australia between the Kimberley and north-central Queensland,	The species inhabits open woodlands that are dominated by <i>Eucalyptus</i> trees and support a ground cover of <i>Sorghum</i> and other grasses. The critical components of suitable core habitat for the Gouldian finch appear to be the presence of favoured annual and perennial grasses (especially <i>Sorghum</i>), a nearby source of surface water and, in the breeding season, unburnt hollow-bearing <i>Eucalyptus</i> trees.	Unlikely - The Development Footprint is within the species known distribution, however there are no records in the locality and the Development Footprint does not contain preferred habitat.	PMST

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
<i>Fregata ariel</i>	lesser frigatebird	M	SL	Major breeding populations of the lesser frigatebird are found in tropical waters of the Indian and Pacific Ocean (excluding the east Pacific), as well as one population in the South Atlantic (Trinidad and Martim Vaz, Brazil). Outside the breeding season it is sedentary, with immature and non-breeding individuals dispersing throughout tropical seas, especially of the Indian and Pacific Oceans.	The lesser frigatebird breeds on small, remote tropical and sub-tropical islands, in mangroves or bushes, and even on bare ground. It feeds mainly on fish (especially flying-fish) and squid, but also on seabird eggs and chicks, carrion and fish scraps. Kleptoparasitic behaviour is observed in this species; however it is unlikely to be a major chick-provisioning resource.	Unlikely – There are records in the locality, however, the Development Footprint does not contain suitable habitat.	WO

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
<i>Gelochelidon nilotica</i>	gull-billed tern	M	SL	This species has an extremely large range across Asia, Australia, America, Africa, Europe and the Middle East.	The species breeds in a variety of locations with bare or sparsely vegetated islands, banks, flats, or spits of dry mud and sand including barrier beaches (shoals), dunes, saltmarshes, saltpans, freshwater lagoons, estuaries, deltas, inland lakes, rivers, marshes and swamps. During this season it may also feed on emerging insects over lakes, agricultural fields, grasslands and even over semi-desert regions. On passage the species typically forages over saltpans, coastal lagoons, mudflats, marshes and wet fields, overwintering on estuaries, saltpans, lagoons and saltmarshes or in more inland sites such as large rivers, lakes, rice-fields, sewage ponds, reservoirs, saltpans and irrigation canals.	Unlikely – There are records in the locality, however, the Development Footprint does not contain suitable habitat.	WO

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
<i>Numenius madagascariensis</i>	eastern curlew, far eastern curlew	CE, M	CE	Within Australia, the eastern curlew has a primarily coastal distribution. The species is found in all states, particularly the north, east, and south-east regions including Tasmania. Eastern curlews are rarely recorded inland. They have a continuous distribution from Barrow Island and Dampier Archipelago, Western Australia, through the Kimberley and along the Northern Territory, Queensland, and NSW coasts and the islands of Torres Strait. They are patchily distributed elsewhere.	During the non-breeding season in Australia, the eastern curlew is most commonly associated with sheltered coasts, especially estuaries, bays, harbours, inlets and coastal lagoons, with large intertidal mudflats or sandflats, often with beds of seagrass.	Unlikely - The Development Footprint is within the species known distribution, however there are no records in the locality and the Development Footprint does not contain suitable habitat.	PMST

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
<i>Poephila cincta cincta</i>	southern black-throated finch	E	E	The southern black-throated finch occurs at two general locations: Townsville (and its surrounds (Giru, Serpentine Lagoon, Toonpan, and near Ross River Dam)), Ingham, Charters Towers area; and at scattered sites in central-eastern Queensland between Aramac and Great Basalt Wall National Park.	The southern black-throated finch occurs mainly in grassy, open woodlands and forests, typically dominated by <i>Eucalyptus</i> , <i>Corymbia</i> and <i>Melaleuca</i> , and occasionally in tussock grasslands or other habitats (for example freshwater wetlands), often along or near watercourses, or in the vicinity of water. Almost all recent records of the finch from south of the tropics have been in riparian habitat. The species is thought to require a mosaic of different habitats in which it can find seed during the wet season. The species has occasionally been recorded in other habitats, including in freshwater wetlands, in cultivation surrounded by woodland, and in a heavily grazed paddock.	Unlikely - The Development Footprint is within the species known distribution, however there are no records in the locality and the Development Footprint does not contain preferred habitat.	PMST
<i>Rhipidura rufifrons</i>	rufous fantail	M	SL	The rufous fantail occurs in coastal and near coastal districts of northern and eastern Australia. <i>Rhipidura rufifrons rufifrons</i> has breeding populations occurring from about the South Australia-Victoria border, through south and central Victoria, on	In east and south-east Australia, the rufous fantail mainly inhabits wet sclerophyll forests, often in gullies dominated by eucalypts such as <i>Eucalyptus microcorys</i> , <i>E. cypellocarpa</i> , <i>E. radiata</i> , <i>E. regnans</i> , <i>E. delegatensis</i> , <i>E. pilularis</i> or <i>E. resinifera</i> ; usually with a	Unlikely - There are records in the locality, however, the Development Footprint does not contain suitable	PSMT, WO

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
				and east of the Great Divide in New South Wales (NSW), and north to about the NSW-Queensland border; and <i>R. r. intermedia</i> has breeding populations occurring on and east of the Great Divide, from about the NSW-Queensland border, north to the Cairns-Atherton region, Queensland. Both subspecies winter farther north from Cape York Peninsula in Queensland to Torres Strait and southern Papua New Guinea.	dense shrubby understorey often including ferns. They also occur in subtropical and temperate rainforests; for example near Bega in south-east NSW, where they are recorded in temperate <i>Acmena smithii</i> rainforest, with <i>Backhousia myrtifolia</i> , <i>Doryphora sassafras</i> and <i>Pittosporum undulatum</i> subdominants. They occasionally occur in secondary regrowth, following logging or disturbance in forests or rainforests. When on passage, they are sometimes recorded in drier sclerophyll forests and woodlands, including <i>Eucalyptus maculata</i> , <i>E. melliodora</i> , ironbarks or stringybarks, often with a shrubby or heath understorey. They are also recorded from parks and gardens when on passage. In north and north-east Australia, they often occur in tropical rainforest and monsoon rainforests, including semi-evergreen mesophyll vine forests, semi-deciduous vine thickets or thickets of (<i>Melaleuca</i> spp.	habitat.	

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
<i>Rostratula australis</i>	Australian painted snipe	E	V	The Australian painted snipe has been recorded at wetlands in all states of Australia. It is most common in eastern Australia, where it has been recorded at scattered locations throughout much of Queensland, NSW, Victoria and south-eastern South Australia.	The Australian painted snipe generally inhabits shallow terrestrial freshwater (occasionally brackish) wetlands, including temporary and permanent lakes, swamps and claypans. They also use inundated or waterlogged grassland or saltmarsh, dams, rice crops, sewage farms and bore drains.	Unlikely - The Development Footprint is within the species known distribution, however there are no records in the locality and the Development Footprint does not contain suitable habitat.	PMST
<i>Tringa stagnatilis</i>	marsh sandpiper	M	SL	The marsh sandpiper is found on coastal and inland wetlands throughout Australia. The species is widespread in coastal Queensland, but few records exist north of Cooktown. It is recorded in all regions of NSW but especially the central and south coasts and (inland) on the western slopes of Great Divide and western plains. In Victoria, most are found in Port Phillip Bay, but also Gippsland, Westernport Bay and the Western Districts. Inland records exist for Murray Valley, round Barmah, Kerang-Swan Hill and Mildura; also some from around Shepparton, west to Rupanyup and Hindmarsh and Albacutya Lakes. The species is a	The marsh sandpiper lives in permanent or ephemeral wetlands of varying salinity, including swamps, lagoons, billabongs, saltpans, saltmarshes, estuaries, pools on inundated floodplains, and intertidal mudflats and also regularly at sewage farms and saltworks. They are recorded less often at reservoirs, waterholes, soaks, bore-drain swamps and flooded inland lakes. In north Australia they prefer intertidal mudflats, although surveys in Kakadu National Park recorded more birds around shallow freshwater lakes than in areas influenced by tide. At the Top End they often use ephemeral pools on inundated freshwater and tidal floodplains. Three of the five sites with	Unlikely - There are records in the locality, however, the Development Footprint does not contain suitable habitat.	WO

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
				vagrant to Tasmania. In South Australia, most records are east of 137° E. Occasionally the species has been recorded in the south-east, mostly from The Coorong to Yorke Peninsula, including inland along Murray Valley. On Eyre Peninsula the species has been recorded from Whyalla to Little Swamp and Coffin Bay. It is widespread at the Lake Eyre drainage basin. There are scattered records in Western Australia and the Northern Territory. In Western Australia they are mainly found around the coast. A few visit New Zealand. The Marsh Sandpiper is also recorded on Lord Howe Island, Norfolk Island, Chatham Island and Christmas Island	highest recorded numbers are saltwater habitats (Hunter Estuary, NSW; Port Hedland Saltworks, Western Australia; Tullakool Evaporation Ponds, NSW). In the south-east Gulf of Carpentaria they have been recorded round both saline and fresh waters. Elsewhere they said to avoid, or rarely occur in, tidal habitats, and rarely occur on beaches. In Western Australia they prefer freshwater to marine environments. In south-east Australia they prefer inland saline lakes and coastal saltworks. They are found infrequently around mangroves.		

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
<i>Tyto novaehollandiae kimberli</i>	masked owl (northern)	V	V	The distribution of the Masked Owl (northern) is very poorly known. In Queensland, there are historical records from the Normanton region, and from Pascoe, Archer, Chester and Watson Rivers on Cape York Peninsula. It occurs along the southern rim of the Gulf of Carpentaria, Cape York Peninsula and south to Atherton Tablelands and the Einasleigh-Burdekin divide. There is some confusion about where the Queensland southern limit of the subspecies is, with authorities suggesting Mackay or Coomoooboolaroo Station (west of Rockhampton).	In northern Australia, the Masked Owl has been recorded from riparian forest, rainforest, open forest, <i>Melaleuca</i> swamps and the edges of mangroves, as well as along the margins of sugar cane fields.	Unlikely - The Development Footprint is within the species known distribution, however there are no records in the locality and the Development Footprint does not contain suitable habitat.	PMST

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
<i>Turnix olivii</i>	Buff-breasted Button-quail	E	-	The Buff-breasted Button-quail occurs in north-eastern Queensland. It is one of the least known birds in Australia, and has only been recorded in the Iron Range and near Coen, Cooktown, Musgrave, Mount Molloy, Mareeba, Chillagoe and Ingham. There have not been any recent records from near Coen or Cooktown.	The Buff-breasted Button-quail occurs in patches of short and sparse grassland, on a terrain of small stones (often on the lower slopes of hills and ridges), and sometimes in open glades amongst <i>Melaleuca</i> , <i>Acacia</i> , <i>Alphitonia</i> or <i>Tristania</i> , in rainforest or open <i>Eucalyptus</i> woodland. It has also been recorded on burnt patches of habitat. It is possible that fires that occur early in the wet season might help to maintain a suitable open habitat structure for the breeding season, although observations suggest that the rapid and dense regrowth of grasses in burnt areas following the onset of the wet season quickly renders such habitats unsuitable for the Buff-breasted Button-quail.	Unlikely - The Development Footprint is within the species known distribution, however there are no records in the locality and the Development Footprint does not contain preferred habitat.	PMST

FISH

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
<i>Melanotaenia eachamensis</i>	Lake Eacham Rainbowfish	E	-	The Lake Eacham Rainbowfish occurs in north-east Queensland in the upper reaches of the Barron, North Johnstone and South Johnstone River catchments at altitudes above 500 m above sea level (asl), and also in Koombooloomba Dam on the Tully River. Pusey and colleagues (1997) speculated on an even wider possible distribution for the Lake Eacham Rainbowfish, including the upper Tully River, however this was never confirmed. Furthermore, populations occurring below 500 m asl are now known to be that of the Utchee Creek Rainbowfish (<i>Melanotaenia utcheensis</i>).	The Lake Eacham Rainbowfish is a schooling species that prefers shallow waters with slow to moderate flow. It usually occurs among, or directly adjacent to, aquatic vegetation, submerged terrestrial vegetation and root masses in areas with streamside riparian vegetation or grasses (including the invasive Para Grass (<i>Brachiara mutica</i>). It is usually close to the riverbed in specific locations with rock and cobble substrates. The species occurs in small streams, especially smaller tributaries, and lakes, including crater lakes (Euramoo and Bromfield Swamp) and artificial lakes (Lake Tinaroo and Koombooloomba Dam). In Lake Eacham, the species was found in clear, shallow water along the shoreline. It was particularly abundant around docks, submerged logs and branches, and among aquatic vegetation.	Unlikely - There are records of this species within the locality, however, the Development Footprint does not contain habitat for the species.	PMST, WO, ALA

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
FROGS							
<i>Litoria dayi</i>	Australian Lace-lid, Lace-eyed Tree Frog	E	-	The Lace-eyed Tree Frog occurred throughout the Wet Tropics Bioregion from Paluma to Cooktown, northern Queensland, at altitudes between 0 and 1200 m. The species has been recorded on Commonwealth land in the Tully and Cowley Beach Training Area.	The Lace-eyed Tree Frog is associated with rainforests and rainforest margins. In montane areas the species prefers fast-flowing rocky streams although they also frequent slower watercourses where ample vegetation exists along the margins. At low elevations, the Lace-eyed Tree Frog favours rock soaks, narrow ephemeral streams and rock outcrops in larger watercourses. It may also be found on rocks, boulders and vegetation in or adjacent to streams.	Unlikely - The Development Footprint is outside the species known distribution, there are no records of the species in the locality and the Development Footprint does not contain habitat.	PMST

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
<i>Litoria nannotis</i>	Waterfall Frog, Torrent Tree Frog	E	-	The Waterfall Frog occurs throughout the Wet Tropics Bioregion, North Queensland, from Paluma to Cooktown, but only has stable populations at lowland sites (180-400 m).	The Waterfall Frog is restricted to rocky stream habitats in rainforest or wet sclerophyll forest where there is fast flowing water, waterfalls and cascades.	Unlikely - The Development Footprint is outside the species known distribution, there are no records of the species in the locality and the Development Footprint does not contain habitat.	PMST

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
<i>Litoria rheocola</i>	Common Mistfrog	E	-	The Common Mistfrog is endemic to the Wet Tropics Bioregion and historically occurred from Broadwater Creek National Park to Amos Bay, northern Queensland, at altitudes between 0 and 1180 m above sea level (asl). It has since disappeared from most upland sites south of the Daintree River. In 2013, there was an exciting rediscovery of upland sites (possibly near Spurgeon River) that may indicate recovery of populations that had become locally extinct from chytrid disease.	The Common Mistfrog is a rainforest specialist restricted to fast flowing rocky creeks and streams in rainforest as well as wet sclerophyll forest. Within these streams this species are often found in the slower more open sections, away from waterfalls.	Unlikely - The Development Footprint is outside the species known distribution, there are no records of the species in the locality and the Development Footprint does not contain habitat.	PMST

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
<i>Pseudophryne covacevichae</i>	Magnificent Brood Frog	V	-	The Magnificent Brood Frog is known from a small area near Ravenshoe, north Queensland where it has been found at 22 discrete sites with 36 populations. All records of the species have been from above 800 m altitude.	The Magnificent Brood Frog appears to be restricted to specific habitats with all records being from the rhyolites of the Glen Gorden Volcanics. The species has been found around seepage areas in open eucalypt forests with an understorey comprised of <i>Themeda triandra</i> , <i>Xanthorrhoea</i> sp., <i>Gahnia</i> sp., <i>Lophostemon suaveolens</i> , <i>Allocasuarina littoralis</i> and <i>A. torulosa</i> . In areas where cattle grazing has reduced ground cover the species has also been located in leaf-litter build up in first order streams. The non breeding habitat for this species is unknown.	Unlikely - The Development Footprint is outside the species known distribution, there are no records of the species in the locality and the Development Footprint does not contain habitat.	PMST

MIGRATORY SPECIES

<i>Actitis hypoleucos</i>	common sandpiper	M	SL	-	Wetland or coastal species.	Unlikely - The Development Footprint is within the species known distribution, however, there are no records in the locality and the	PMST
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Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
						Development Footprint does not contain preferred habitat.	
<i>Calidris acuminata</i>	sharp-tailed sandpiper	M	SL	-	Wetland or coastal species.	Unlikely - The Development Footprint is within the species known distribution, however, there are no records in the locality and the Development Footprint does not contain preferred habitat.	PMST
<i>Calidris melanotos</i>	pectoral sandpiper	M	SL	-	Wetland or coastal species.	Unlikely - The Development Footprint is within the species known distribution, however, there are no records in the locality and the Development Footprint does not contain preferred habitat.	PMST

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
<i>Gallinago hardwickii</i>	Latham's snipe	M	SL	-	Wetland or coastal species.	Unlikely - The Development Footprint is within the species known distribution, however, there are no records in the locality and the Development Footprint does not contain preferred habitat.	PMST
<i>Pandion haliaetus</i>	osprey	M	-	-	Wetland or coastal species.	Unlikely - The Development Footprint is within the species known distribution, however, there are no records in the locality and the Development Footprint does not contain preferred habitat.	PSMT
<i>Tringa nebularia</i>	common greenshank	M	SL	-	Wetland or coastal species.	Unlikely - The Development Footprint is within the species known distribution,	PMST

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
						however, there are no records in the locality and the Development Footprint does not contain preferred habitat.	
<i>Cuculus optatus</i>	Oriental cuckoo	M	SL	-	Rainforest and wet forest species.	Unlikely - The Development Footprint is within the species known distribution, however, there are no records in the locality and the Development Footprint does not contain preferred habitat.	PSMT
<i>Monarcha frater</i>	black-winged monarch	M	SL	-	Rainforest and wet forest species.	Unlikely - The Development Footprint is within the species known distribution, however, there are no records in the locality and the Development Footprint does not	PMST

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
						contain preferred habitat.	
<i>Monarcha melanopsis</i>	black-faced monarch	M	SL	-	Rainforest and wet forest species.	Unlikely - The Development Footprint is within the species known distribution, however, there are no records in the locality and the Development Footprint does not contain preferred habitat.	PSMT
<i>Monarcha trivirgatus</i>	spectacled monarch	M	SL	-	Rainforest and wet forest species.	Unlikely - The Development Footprint is within the species known distribution, however, there are no records in the locality and the Development Footprint does not contain preferred	PSMT

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
						habitat.	
<i>Myiagra cyanoleuca</i>	satin flycatcher	M	SL	-	Rainforest and wet forest species.	Unlikely - The Development Footprint is within the species known distribution, however, there are no records in the locality and the Development Footprint does not contain preferred habitat.	PSMT
<i>Hirundo rustica</i>	barn swallow	M	-	-	Species with generalist habitat requirements.	Unlikely - The Development Footprint is within the species known distribution, however, there are no records in the locality and the Development Footprint does not contain preferred	PMST

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
						habitat.	
<i>Motacilla cinerea</i>	grey wagtail	M	SL	-	Species with generalist habitat requirements.	Potential - The Development Footprint is within the species known distribution and contains preferred habitat, however, there are no records of the species in the locality.	PMST
<i>Motacilla flava</i>	yellow wagtail	M	SL	-	Species with generalist habitat requirements.	Potential - The Development Footprint is within the species known distribution and contains preferred habitat, however, there are no records of the species in the locality.	PSMT
<i>Apus pacificus</i>	fork-tailed swift	M	SL	-	Almost exclusively aerial species.	Unlikely - The Development Footprint is within the species known distribution, however, there are	PMST

Scientific Name	Common Name	EPBC Act Status ²	NC Act Status ²	Distribution ³	Habitat Requirements ³	Likelihood of Occurrence	Source
						no records in the locality and the Development Footprint does not contain preferred habitat.	
<i>Hirundapus caudacutus</i>	white-throated needletail	M	SL	-	Almost exclusively aerial species.	Unlikely - The Development Footprint is within the species known distribution, however, there are no records in the locality and the Development Footprint does not contain preferred habitat.	PMST

1. 'Locality' refers to a 10 km buffer of the Project Area.
 2. Conservation Status: NT = Near Threatened, V = Vulnerable, E = Endangered, CE = Critically Endangered, M = Migratory, SL = Special Least Concern
 3. Distribution and Habitat Requirement source: Species Profiles and Threats Database (DoEE, various dates); Conservation Listing Advice (TSSC, various dates); DEHP A to Z of Animals (DEHP 2013); IUCN Red List of Threatened Species; Atlas of Living Australia (July 2017).
- Source: PMST = Protected Matters Search Tool (DoEE); WO = Wildlife Online Database search (DEHP); ALA = Atlas of Living Australia; ERM = Environmental Resources Management Survey July 2017.

Annex D

EPBC ACT PROTECTED MATTERS SEARCH



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: 06/07/17 16:02:09

[Summary](#)

[Details](#)

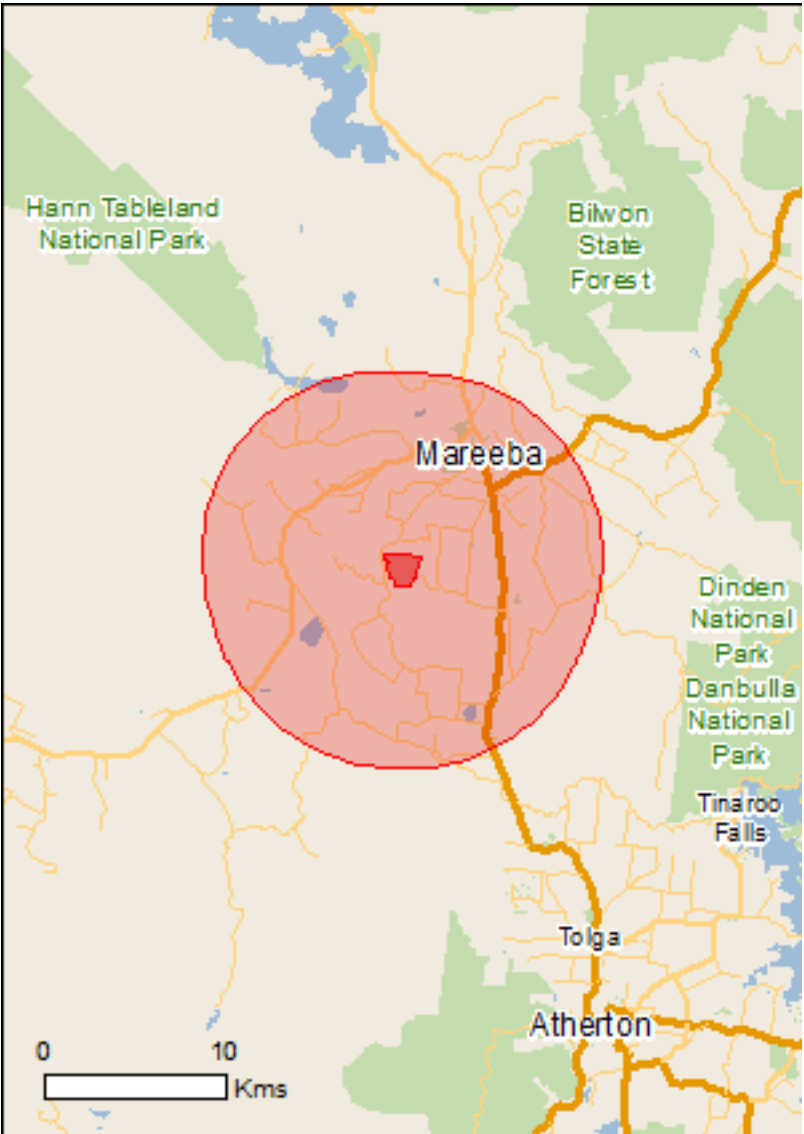
[Matters of NES](#)

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

[Extra Information](#)

[Caveat](#)

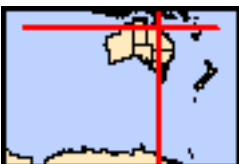
[Acknowledgements](#)



This map may contain data which are
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[Coordinates](#)

Buffer: 10.0Km



Summary

Matters of National Environmental Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	34
Listed Migratory Species:	20

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Land:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	27
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:	1
Regional Forest Agreements:	None
Invasive Species:	31
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Listed Threatened Species		[Resource Information]
Name	Status	Type of Presence
Birds		
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 known to occur within area
Erythrura gouldiae Gouldian Finch [413]	Endangered	Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat likely to occur within area
Poephila cincta cincta Southern Black-throated Finch [64447]	Endangered	Species or species habitat known to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Turnix olivii Buff-breasted Button-quail [59293]	Endangered	Species or species habitat likely to occur within area
Tyto novaehollandiae kimberli Masked Owl (northern) [26048]	Vulnerable	Species or species habitat likely to occur within area
Fish		
Melanotaenia eachamensis Lake Eacham Rainbowfish [26185]	Endangered	Species or species habitat likely to occur within area
Frogs		
Litoria dayi Australian Lace-lid, Lace-eyed Tree Frog [86707]	Endangered	Species or species habitat may occur within area
Litoria nannotis Waterfall Frog, Torrent Tree Frog [1817]	Endangered	Species or species habitat may occur within area
Litoria rheocola Common Mistfrog [1802]	Endangered	Species or species habitat likely to occur within area

Name	Status	Type of Presence
Pseudophryne covacevichae Magnificent Brood Frog [64385]	Vulnerable	Species or species habitat likely to occur within area
Mammals		
Dasyurus hallucatus Northern Quoll, Digul [331]	Endangered	Species or species habitat known to occur within area
Hipposideros semoni Semon's Leaf-nosed Bat, Greater Wart-nosed Horseshoe-bat [180]	Vulnerable	Species or species habitat may occur within area
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat likely to occur within area
Mesembriomys gouldii rattoides Black-footed Tree-rat (north Queensland), Shaggy Rabbit-rat [87620]	Vulnerable	Species or species habitat known to occur 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 likely to occur within area
Pteropus conspicillatus Spectacled Flying-fox [185]	Vulnerable	Species or species habitat known to occur within area
Rhinolophus robertsi Large-eared Horseshoe Bat, Greater Large-eared Horseshoe Bat [87639]	Vulnerable	Species or species habitat known to occur within area
Saccolaimus saccolaimus nudicluniatus Bare-rumped Sheath-tailed Bat, Bare-rumped Sheathtail Bat [66889]	Vulnerable	Species or species habitat likely to occur within area
Plants		
Acacia purpureopetala [61156]	Critically Endangered	Species or species habitat likely to occur within area
Cajanus mareebensis [8635]	Endangered	Species or species habitat known to occur within area
Dendrobium bigibbum Cooktown Orchid [10306]	Vulnerable	Species or species habitat may occur within area
Dichanthium setosum bluegrass [14159]	Vulnerable	Species or species habitat likely to occur within area
Euphorbia carissoides [12431]	Vulnerable	Species or species habitat likely to occur within area
Grevillea glossadenia [7979]	Vulnerable	Species or species habitat likely to occur within area
Homoranthus porteri [55196]	Vulnerable	Species or species habitat known to occur within area
Macropteranthes montana [9003]	Vulnerable	Species or species habitat may occur within

Name	Status	Type of Presence
		area
Phaius australis Lesser Swamp-orchid [5872]	Endangered	Species or species habitat may occur within area
Tropilis callitrophilis Thin Feather Orchid [82771]	Vulnerable	Species or species habitat may occur within area
Vappodes lithocola Dwarf Butterfly Orchid, Cooktown Orchid [78893]	Endangered	Species or species habitat may occur within area
Vappodes phalaenopsis Cooktown Orchid [78894]	Vulnerable	Species or species habitat may occur within area

Listed Migratory Species

[[Resource Information](#)]

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

Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Marine Species		
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat known to occur within area
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat may occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat likely to occur within area
Monarcha frater Black-winged Monarch [607]		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 likely to occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat known to occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Breeding known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Migratory Wetlands Species		

Name	Threatened	Type of Presence
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat likely to 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 likely to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

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

Name
Defence - AIRTC MAREEBA ; MAREEBA TRG DEP

Listed Marine Species	[Resource Information]	
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
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 known to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species

Name	Threatened	Type of Presence
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	habitat likely to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Cuculus saturatus Oriental Cuckoo, Himalayan Cuckoo [710]		Species or species habitat likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat known to occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]	Critically Endangered	Species or species habitat may occur within area
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat known to occur within area
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat likely to occur within area
Monarcha frater Black-winged Monarch [607]	Critically Endangered	Species or species habitat may occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat likely to occur within area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat likely to occur within area
Motacilla flava Yellow Wagtail [644]	Critically Endangered	Species or species habitat known to 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]		Breeding known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area
Rhipidura rufifrons Rufous Fantail [592]	Endangered*	Species or species habitat known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]		Species or species habitat likely to occur within area

Name	Threatened	Type of Presence
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area
Reptiles		
Crocodylus johnstoni Freshwater Crocodile, Johnston's Crocodile, Johnston's River Crocodile [1773]		Species or species habitat may occur within area
Crocodylus porosus Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area

Extra Information

State and Territory Reserves	[Resource Information]
Name	State
Mareeba Tropical Savanna and Wetland Reserve	QLD

Invasive Species

[Resource Information]

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

Name	Status	Type of Presence
Birds		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
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

Name	Status	Type of Presence
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
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus norvegicus Brown Rat, Norway Rat [83]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Plants		
Acacia nilotica subsp. indica Prickly Acacia [6196]		Species or species habitat may occur within area
Andropogon gayanus Gamba Grass [66895]		Species or species habitat likely to occur within area
Anredera cordifolia Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643] Asparagus plumosus Climbing Asparagus-fern [48993]		Species or species habitat likely to occur within area
Cabomba caroliniana Cabomba, Fanwort, Carolina Watershield, Fish Grass, Washington Grass, Watershield, Carolina Fanwort, Common Cabomba [5171] Cryptostegia grandiflora Rubber Vine, Rubbervine, India Rubber Vine, India Rubbervine, Palay Rubbervine, Purple Allamanda [18913] Dolichandra unguis-cati Cat's Claw Vine, Yellow Trumpet Vine, Cat's Claw Creeper, Funnel Creeper [85119]		Species or species habitat likely to occur within area
Eichhornia crassipes Water Hyacinth, Water Orchid, Nile Lily [13466]		Species or species habitat likely to occur within area
Hymenachne amplexicaulis Hymenachne, Olive Hymenachne, Water Stargrass, West Indian Grass, West Indian Marsh Grass [31754]		Species or species habitat likely to occur within area
Jatropha gossypifolia Cotton-leaved Physic-Nut, Bellyache Bush, Cotton-leaf Physic Nut, Cotton-leaf Jatropha, Black Physic Nut [7507] Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red		Species or species habitat likely to occur within area
		Species or species habitat likely to occur

Name	Status	Type of Presence
Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892] Parthenium hysterophorus		within area
Parthenium Weed, Bitter Weed, Carrot Grass, False Ragweed [19566]		Species or species habitat likely to occur within area
Protasparagus plumosus Climbing Asparagus-fern, Ferny Asparagus [11747]		Species or species habitat likely to occur within area
Salvinia molesta Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]		Species or species habitat likely to occur within area
Reptiles		
Hemidactylus frenatus Asian House Gecko [1708]		Species or species habitat likely to occur within area
Lepidodactylus lugubris Mourning Gecko [1712]		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

-17.052682 145.390884,-17.054741 145.389776,-17.055198 145.389336,-17.056289 145.388509,-17.059062 145.387507,-17.05839 145.379768,-17.056328 145.379417,-17.054492 145.377418,-17.053379 145.376804,-17.049797 145.376374,-17.048994 145.37644,-17.047978 145.376727,-17.046839 145.376489,-17.046225 145.37567,-17.04554 145.375067,-17.044691 145.374895,-17.043335 145.374882,-17.044024 145.382648,-17.044867 145.392678,-17.052682 145.390884

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.

Annex E

WILDLIFE ONLINE SEARCH RESULTS



Queensland Government

Wildlife Online Extract

Search Criteria: Species List for a Defined Area
Species: All
Type: All
Status: All
Records: All
Date: Since 1980
Latitude: 16.953 to 17.1494
Longitude: 145.2810 to 145.4866
Email: frances.alexander@erm.com
Date submitted: Thursday 06 Jul 2017 16:32:57
Date extracted: Thursday 06 Jul 2017 16:40:02

The number of records retrieved = 649

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.

Feedback about Wildlife Online should be emailed to wildlife.online@science.dsitia.qld.gov.au

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	amphibians	Bufonidae	<i>Rhinella marina</i>	cane toad	Y			2
animals	amphibians	Hylidae	<i>Litoria inermis</i>	bumpy rocketfrog		C		1
animals	amphibians	Hylidae	<i>Litoria caerulea</i>	common green treefrog		C		2
animals	amphibians	Hylidae	<i>Litoria wilcoxii</i>	eastern stony creek frog		C		1
animals	amphibians	Hylidae	<i>Cyclorana novaehollandiae</i>	eastern snapping frog		C		1
animals	amphibians	Hylidae	<i>Litoria lesueuri sensu lato</i>	stony creek frog		C		3/2
animals	amphibians	Hylidae	<i>Litoria rothii</i>	northern laughing treefrog		C		9/8
animals	amphibians	Hylidae	<i>Litoria infrafrenata</i>	white lipped treefrog		C		1
animals	amphibians	Ranidae	<i>Papurana daemeli</i>	Australian woodfrog		C		1
animals	birds	Acanthizidae	<i>Gerygone magnirostris</i>	large-billed gerygone		C		1
animals	birds	Acanthizidae	<i>Gerygone mouki</i>	brown gerygone		C		2
animals	birds	Acanthizidae	<i>Gerygone olivacea</i>	white-throated gerygone		C		3
animals	birds	Acanthizidae	<i>Gerygone palpebrosa</i>	fairy gerygone		C		5
animals	birds	Acanthizidae	<i>Smicrornis brevirostris</i>	weebill		C		5
animals	birds	Accipitridae	<i>Circus approximans</i>	swamp harrier		C		2
animals	birds	Accipitridae	<i>Accipiter fasciatus</i>	brown goshawk		C		2
animals	birds	Accipitridae	<i>Haliastur sphenurus</i>	whistling kite		C		8
animals	birds	Accipitridae	<i>Haliaeetus leucogaster</i>	white-bellied sea-eagle		C		5
animals	birds	Accipitridae	<i>Elanus axillaris</i>	black-shouldered kite		C		4
animals	birds	Accipitridae	<i>Circus assimilis</i>	spotted harrier		C		1
animals	birds	Accipitridae	<i>Hieraaetus morphnoides</i>	little eagle		C		1
animals	birds	Accipitridae	<i>Milvus migrans</i>	black kite		C		23
animals	birds	Accipitridae	<i>Aquila audax</i>	wedge-tailed eagle		C		2
animals	birds	Accipitridae	<i>Elanus scriptus</i>	letter-winged kite		C		3
animals	birds	Acrocephalidae	<i>Acrocephalus australis</i>	Australian reed-warbler		C		2
animals	birds	Aegothelidae	<i>Aegotheles cristatus</i>	Australian owl-nightjar		C		1/1
animals	birds	Alcedinidae	<i>Ceyx azureus</i>	azure kingfisher		C		2
animals	birds	Anatidae	<i>Tadorna radjah</i>	radjah shelduck		C		1
animals	birds	Anatidae	<i>Aythya australis</i>	hardhead		C		2
animals	birds	Anatidae	<i>Nettapus pulchellus</i>	green pygmy-goose		C		3
animals	birds	Anatidae	<i>Nettapus coromandelianus</i>	cotton pygmy-goose		C		1
animals	birds	Anatidae	<i>Anas superciliosa</i>	Pacific black duck		C		14
animals	birds	Anatidae	<i>Dendrocygna arcuata</i>	wandering whistling-duck		C		2
animals	birds	Anatidae	<i>Cygnus atratus</i>	black swan		C		6
animals	birds	Anhingidae	<i>Anhinga novaehollandiae</i>	Australasian darter		C		7
animals	birds	Anseranatidae	<i>Anseranas semipalmata</i>	magpie goose		C		2
animals	birds	Apodidae	<i>Aerodramus terraereginae</i>	Australian swiftlet		C		6
animals	birds	Ardeidae	<i>Ardea intermedia</i>	intermediate egret		C		1
animals	birds	Ardeidae	<i>Egretta garzetta</i>	little egret		C		2
animals	birds	Ardeidae	<i>Ardea alba modesta</i>	eastern great egret		C		1
animals	birds	Ardeidae	<i>Egretta picata</i>	pied heron		C		1
animals	birds	Ardeidae	<i>Bubulcus ibis</i>	cattle egret		C		2
animals	birds	Ardeidae	<i>Egretta novaehollandiae</i>	white-faced heron		C		5
animals	birds	Artamidae	<i>Strepera graculina</i>	pied currawong		C		6
animals	birds	Artamidae	<i>Artamus leucorhynchus</i>	white-breasted woodswallow		C		3
animals	birds	Artamidae	<i>Cracticus nigrogularis</i>	pied butcherbird		C		17

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Artamidae	<i>Cracticus tibicen</i>	Australian magpie		C		23
animals	birds	Burhinidae	<i>Burhinus grallarius</i>	bush stone-curlew		C		3
animals	birds	Cacatuidae	<i>Calyptorhynchus banksii</i>	red-tailed black-cockatoo		C		10
animals	birds	Cacatuidae	<i>Cacatua galerita</i>	sulphur-crested cockatoo		C		19
animals	birds	Cacatuidae	<i>Eolophus roseicapilla</i>	galah		C		1
animals	birds	Campephagidae	<i>Lalage leucomela</i>	varied triller		C		1
animals	birds	Campephagidae	<i>Lalage tricolor</i>	white-winged triller		C		2
animals	birds	Campephagidae	<i>Coracina tenuirostris</i>	cicadabird		C		1
animals	birds	Campephagidae	<i>Coracina novaehollandiae</i>	black-faced cuckoo-shrike		C		29
animals	birds	Campephagidae	<i>Coracina papuensis</i>	white-bellied cuckoo-shrike		C		26
animals	birds	Charadriidae	<i>Erythronyx cinctus</i>	red-kneed dotterel		C		1
animals	birds	Charadriidae	<i>Vanellus miles</i>	masked lapwing		C		6
animals	birds	Charadriidae	<i>Vanellus tricolor</i>	banded lapwing		C		2
animals	birds	Charadriidae	<i>Charadrius veredus</i>	oriental plover		SL		1
animals	birds	Charadriidae	<i>Vanellus miles miles</i>	masked lapwing (northern subspecies)		C		2
animals	birds	Cisticolidae	<i>Cisticola exilis</i>	golden-headed cisticola		C		4
animals	birds	Climacteridae	<i>Climacteris picumnus</i>	brown treecreeper		C		1
animals	birds	Columbidae	<i>Streptopelia chinensis</i>	spotted dove	Y			6
animals	birds	Columbidae	<i>Geopelia humeralis</i>	bar-shouldered dove		C		3
animals	birds	Columbidae	<i>Ocyphaps lophotes</i>	crested pigeon		C		7
animals	birds	Columbidae	<i>Geopelia striata</i>	peaceful dove		C		35
animals	birds	Columbidae	<i>Geophaps scripta</i>	squatter pigeon		C		35
animals	birds	Coraciidae	<i>Eurystomus orientalis</i>	dollarbird		C		4
animals	birds	Corcoracidae	<i>Struthidea cinerea</i>	apostlebird		C		2
animals	birds	Corvidae	<i>Corvus orru</i>	Torresian crow		C		9
animals	birds	Corvidae	<i>Corvus sp.</i>					1
animals	birds	Cuculidae	<i>Chalcites basalis</i>	Horsfield's bronze-cuckoo		C		2
animals	birds	Cuculidae	<i>Scythrops novaehollandiae</i>	channel-billed cuckoo		C		3
animals	birds	Cuculidae	<i>Chalcites lucidus</i>	shining bronze-cuckoo		C		1
animals	birds	Cuculidae	<i>Chalcites minutillus</i>	little bronze-cuckoo		C		1
animals	birds	Cuculidae	<i>Eudynamys orientalis</i>	eastern koel		C		2
animals	birds	Cuculidae	<i>Cacomantis variolosus</i>	brush cuckoo		C		2
animals	birds	Cuculidae	<i>Centropus phasianinus</i>	pheasant coucal		C		11
animals	birds	Cuculidae	<i>Cacomantis flabelliformis</i>	fan-tailed cuckoo		C		1
animals	birds	Dicruridae	<i>Dicrurus bracteatus</i>	spangled drongo		C		19
animals	birds	Estrildidae	<i>Poephila cincta</i>	black-throated finch		C		3
animals	birds	Estrildidae	<i>Lonchura punctulata</i>	nutmeg mannikin	Y			1
animals	birds	Estrildidae	<i>Neochmia temporalis</i>	red-browed finch		C		2
animals	birds	Estrildidae	<i>Taeniopygia guttata</i>	zebra finch		C		1
animals	birds	Estrildidae	<i>Taeniopygia bichenovii</i>	double-barred finch		C		11
animals	birds	Estrildidae	<i>Lonchura castaneothorax</i>	chestnut-breasted mannikin		C		4
animals	birds	Falconidae	<i>Falco berigora</i>	brown falcon		C		2
animals	birds	Falconidae	<i>Falco cenchroides</i>	nankeen kestrel		C		7
animals	birds	Falconidae	<i>Falco longipennis</i>	Australian hobby		C		1
animals	birds	Fregatidae	<i>Fregata ariel</i>	lesser frigatebird		SL		2
animals	birds	Glareolidae	<i>Stiltia isabella</i>	Australian pratincole		C		1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Gruidae	<i>Grus rubicunda</i>	brolga		C		2
animals	birds	Gruidae	<i>Grus antigone</i>	sarus crane		C		2
animals	birds	Halcyonidae	<i>Dacelo novaeguineae</i>	laughing kookaburra		C		22
animals	birds	Halcyonidae	<i>Todiramphus sanctus</i>	sacred kingfisher		C		1
animals	birds	Halcyonidae	<i>Todiramphus macleayi</i>	forest kingfisher		C		7
animals	birds	Halcyonidae	<i>Dacelo leachii</i>	blue-winged kookaburra		C		5
animals	birds	Halcyonidae	<i>Todiramphus pyrrhopygius</i>	red-backed kingfisher		C		2
animals	birds	Hirundinidae	<i>Petrochelidon nigricans</i>	tree martin		C		2
animals	birds	Hirundinidae	<i>Cheramoeca leucosterna</i>	white-backed swallow		C		2
animals	birds	Hirundinidae	<i>Petrochelidon ariel</i>	fairy martin		C		1
animals	birds	Hirundinidae	<i>Hirundo neoxena</i>	welcome swallow		C		8
animals	birds	Jacanidae	<i>Irediparra gallinacea</i>	comb-crested jacana		C		4
animals	birds	Laridae	<i>Gelochelidon nilotica</i>	gull-billed tern		SL		1
animals	birds	Laridae	<i>Chlidonias hybrida</i>	whiskered tern		C		1
animals	birds	Maluridae	<i>Malurus melanocephalus</i>	red-backed fairy-wren		C		8
animals	birds	Megaluridae	<i>Cincloramphus mathewsi</i>	rufous songlark		C		1
animals	birds	Meliphagidae	<i>Philemon corniculatus</i>	noisy friarbird		C		13
animals	birds	Meliphagidae	<i>Ramsayornis modestus</i>	brown-backed honeyeater		C		1
animals	birds	Meliphagidae	<i>Cissomela pectoralis</i>	banded honeyeater		C		1
animals	birds	Meliphagidae	<i>Philemon buceroides</i>	helmeted friarbird		C		1
animals	birds	Meliphagidae	<i>Entomyzon cyanotis</i>	blue-faced honeyeater		C		16
animals	birds	Meliphagidae	<i>Meliphaga lewinii</i>	Lewin's honeyeater		C		1
animals	birds	Meliphagidae	<i>Stomiopera flava</i>	yellow honeyeater		C		21
animals	birds	Meliphagidae	<i>Myzomela obscura</i>	dusky honeyeater		C		1
animals	birds	Meliphagidae	<i>Ramsayornis fasciatus</i>	bar-breasted honeyeater		C		1
animals	birds	Meliphagidae	<i>Myzomela sanguinolenta</i>	scarlet honeyeater		C		6
animals	birds	Meliphagidae	<i>Philemon citreogularis</i>	little friarbird		C		10
animals	birds	Meliphagidae	<i>Melithreptus albogularis</i>	white-throated honeyeater		C		11
animals	birds	Meliphagidae	<i>Lichmera indistincta</i>	brown honeyeater		C		28
animals	birds	Meropidae	<i>Merops ornatus</i>	rainbow bee-eater		C		23/1
animals	birds	Monarchidae	<i>Grallina cyanoleuca</i>	magpie-lark		C		32
animals	birds	Monarchidae	<i>Myiagra rubecula</i>	leaden flycatcher		C		5
animals	birds	Motacillidae	<i>Anthus novaeseelandiae</i>	Australasian pipit		C		1
animals	birds	Nectariniidae	<i>Nectarinia jugularis</i>	olive-backed sunbird		C		3
animals	birds	Nectariniidae	<i>Dicaeum hirundinaceum</i>	mistletoebird		C		11
animals	birds	Oriolidae	<i>Oriolus sagittatus</i>	olive-backed oriole		C		11
animals	birds	Oriolidae	<i>Sphecotheres vieillotii</i>	Australasian figbird		C		20
animals	birds	Otididae	<i>Ardeotis australis</i>	Australian bustard		C		3
animals	birds	Pachycephalidae	<i>Pachycephala rufiventris</i>	rufous whistler		C		8
animals	birds	Pachycephalidae	<i>Colluricincla harmonica</i>	grey shrike-thrush		C		1
animals	birds	Pardalotidae	<i>Pardalotus rubricatus</i>	red-browed pardalote		C		1
animals	birds	Pardalotidae	<i>Pardalotus striatus</i>	striated pardalote		C		15
animals	birds	Passeridae	<i>Passer domesticus</i>	house sparrow	Y			8
animals	birds	Pelecanidae	<i>Pelecanus conspicillatus</i>	Australian pelican		C		2
animals	birds	Petroicidae	<i>Eopsaltria australis</i>	eastern yellow robin		C		1
animals	birds	Petroicidae	<i>Microeca flavigaster</i>	lemon-bellied flycatcher		C		2

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Phalacrocoracidae	<i>Phalacrocorax sulcirostris</i>	little black cormorant		C		3
animals	birds	Phalacrocoracidae	<i>Microcarbo melanoleucos</i>	little pied cormorant		C		8
animals	birds	Phalacrocoracidae	<i>Phalacrocorax carbo</i>	great cormorant		C		5
animals	birds	Podargidae	<i>Podargus strigoides</i>	tawny frogmouth		C		2
animals	birds	Podicipedidae	<i>Podiceps cristatus</i>	great crested grebe		C		3
animals	birds	Podicipedidae	<i>Tachybaptus novaehollandiae</i>	Australasian grebe		C		10
animals	birds	Pomatostomidae	<i>Pomatostomus temporalis</i>	grey-crowned babbler		C		4
animals	birds	Psittacidae	<i>Platycercus adscitus</i>	pale-headed rosella		C		11
animals	birds	Psittacidae	<i>Aprosmictus erythropterus</i>	red-winged parrot		C		9
animals	birds	Psittacidae	<i>Trichoglossus chlorolepidotus</i>	scaly-breasted lorikeet		C		9
animals	birds	Psittacidae	<i>Trichoglossus haematomus moluccanus</i>	rainbow lorikeet		C		28
animals	birds	Psittacidae	<i>Alisterus scapularis</i>	Australian king-parrot		C		1
animals	birds	Ptilonorhynchidae	<i>Ptilonorhynchus nuchalis</i>	great bowerbird		C		7
animals	birds	Rallidae	<i>Gallinula tenebrosa</i>	dusky moorhen		C		1
animals	birds	Rallidae	<i>Fulica atra</i>	Eurasian coot		C		6
animals	birds	Rallidae	<i>Porphyrio melanotus</i>	purple swamphen		C		1
animals	birds	Recurvirostridae	<i>Recurvirostra novaehollandiae</i>	red-necked avocet		C		1
animals	birds	Recurvirostridae	<i>Himantopus himantopus</i>	black-winged stilt		C		1
animals	birds	Rhipiduridae	<i>Rhipidura rufifrons</i>	rufous fantail		SL		1
animals	birds	Rhipiduridae	<i>Rhipidura albiscapa</i>	grey fantail		C		6
animals	birds	Rhipiduridae	<i>Rhipidura leucophrys</i>	willie wagtail		C		11
animals	birds	Scolopacidae	<i>Tringa stagnatilis</i>	marsh sandpiper		SL		1
animals	birds	Strigidae	<i>Ninox boobook</i>	southern boobook		C		1
animals	birds	Sturnidae	<i>Acridotheres tristis</i>	common myna	Y			20
animals	birds	Threskiornithidae	<i>Platalea regia</i>	royal spoonbill		C		1
animals	birds	Threskiornithidae	<i>Platalea flavipes</i>	yellow-billed spoonbill		C		1
animals	birds	Threskiornithidae	<i>Threskiornis molucca</i>	Australian white ibis		C		13
animals	birds	Threskiornithidae	<i>Threskiornis spinicollis</i>	straw-necked ibis		C		13
animals	birds	Tytonidae	<i>Tyto delicatula</i>	eastern barn owl		C		2/1
animals	insects	Lycaenidae	<i>Theclinessthes onycha capricornia</i>	cycad blue (northern subspecies)				1
animals	insects	Lycaenidae	<i>Hypochrysops apelles apelles</i>	copper jewel				1
animals	malacostracans	Parastacidae	<i>Cherax quadricarinatus</i>	redclaw				5
animals	mammals	Canidae	<i>Canis sp.</i>					1
animals	mammals	Dasyuridae	<i>Antechinus flavipes rubeculus</i>	yellow-footed antechinus (north-east Queensland)		C		1/1
animals	mammals	Dasyuridae	<i>Dasyurus hallucatus</i>	northern quoll		C	E	5/2
animals	mammals	Leporidae	<i>Oryctolagus cuniculus</i>	rabbit	Y			4
animals	mammals	Macropodidae	<i>Petrogale sp.</i>			C		1/1
animals	mammals	Macropodidae	<i>Macropus agilis</i>	agile wallaby		C		54
animals	mammals	Macropodidae	<i>Macropus parryi</i>	whiptail wallaby		C		1
animals	mammals	Macropodidae	<i>Macropus robustus</i>	common wallaroo		C		7
animals	mammals	Macropodidae	<i>Petrogale mareeba</i>	Mareeba rock-wallaby		C		3/1
animals	mammals	Macropodidae	<i>Lagorchestes conspicillatus</i>	spectacled hare-wallaby		C		1
animals	mammals	Muridae	<i>Uromys caudimaculatus</i>	giant white-tailed rat		C		1
animals	mammals	Muridae	<i>Mesembriomys gouldii</i>	black-footed tree-rat		C	V	1/1
animals	mammals	Muridae	<i>Melomys cervinipes</i>	fawn-footed melomys		C		1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	mammals	Muridae	<i>Rattus lutreolus</i>	swamp rat		C		1
animals	mammals	Muridae	<i>Rattus sordidus</i>	canefield rat		C		1
animals	mammals	Muridae	<i>Mus musculus</i>	house mouse	Y			1
animals	mammals	Muridae	<i>Melomys burtoni</i>	grassland melomys		C		1
animals	mammals	Muridae	<i>Rattus fuscipes</i>	bush rat		C		1
animals	mammals	Muridae	<i>Rattus rattus</i>	black rat	Y			1
animals	mammals	Peramelidae	<i>Isoodon macrourus</i>	northern brown bandicoot		C		1
animals	mammals	Petauridae	<i>Dactylopsila trivirgata</i>	striped possum		C		1/1
animals	mammals	Phalangeridae	<i>Trichosurus vulpecula</i>	common brushtail possum		C		6
animals	mammals	Potoroidae	<i>Aepyprymnus rufescens</i>	rufous bettong		C		4
animals	mammals	Pseudocheiridae	<i>Pseudocheirus peregrinus</i>	common ringtail possum		C		1
animals	mammals	Pteropodidae	<i>Pteropus conspicillatus</i>	spectacled flying-fox		V	V	10/1
animals	mammals	Tachyglossidae	<i>Tachyglossus aculeatus</i>	short-beaked echidna		SL		3
animals	ray-finned fishes	Ambassidae	<i>Ambassis sp.</i>					1
animals	ray-finned fishes	Apogonidae	<i>Glossamia aprion</i>	mouth almighty				74
animals	ray-finned fishes	Atherinidae	<i>Craterocephalus stercusmuscarum</i>	flyspecked hardyhead				31
animals	ray-finned fishes	Cichlidae	<i>Tilapia mariae</i>	spotted tilapia	Y			7
animals	ray-finned fishes	Clupeidae	<i>Nematalosa erebi</i>	bony bream				76
animals	ray-finned fishes	Eleotridae	<i>Hypseleotris compressa</i>	empire gudgeon				2
animals	ray-finned fishes	Eleotridae	<i>Oxyeleotris lineolata</i>	sleepy cod				3
animals	ray-finned fishes	Eleotridae	<i>Mogurnda mogurnda</i>	northern purplespotted gudgeon				8
animals	ray-finned fishes	Melanotaeniidae	<i>Melanotaenia eachamensis</i>	Lake Eacham rainbowfish			E	1/1
animals	ray-finned fishes	Melanotaeniidae	<i>Melanotaenia splendida splendida</i>	eastern rainbowfish				50
animals	ray-finned fishes	Melanotaeniidae	<i>Melanotaenia splendida inornata</i>	checkered rainbowfish				25
animals	ray-finned fishes	Plotosidae	<i>Porochilus rendahli</i>	Rendahli's catfish				19
animals	ray-finned fishes	Plotosidae	<i>Neosilurus hyrtlai</i>	Hyrtl's catfish				6
animals	ray-finned fishes	Plotosidae	<i>Tandanus tandanus</i>	freshwater catfish				7
animals	ray-finned fishes	Plotosidae	<i>Neosilurus ater</i>	black catfish				5
animals	ray-finned fishes	Poeciliidae	<i>Poecilia reticulata</i>	guppy	Y			3
animals	ray-finned fishes	Terapontidae	<i>Leiopotherapon unicolor</i>	spangled perch				7
animals	ray-finned fishes	Terapontidae	<i>Hephaestus fuliginosus</i>	sooty grunter				2
animals	ray-finned fishes	Terapontidae	<i>Amniataba percoides</i>	barred grunter				52
animals	ray-finned fishes	Terapontidae	<i>Hephaestus carbo</i>	coal grunter				1
animals	reptiles	Agamidae	<i>Diporiphora australis</i>	tommy roundhead		C		6/5
animals	reptiles	Agamidae	<i>Intellagama lesueurii</i>	eastern water dragon		C		1
animals	reptiles	Agamidae	<i>Chlamydosaurus kingii</i>	frilled lizard		C		2
animals	reptiles	Boidae	<i>Morelia spilota</i>	carpet python		C		1
animals	reptiles	Crocodylidae	<i>Crocodylus porosus</i>	estuarine crocodile		V		1
animals	reptiles	Diplodactylidae	<i>Oedura castelnaui</i>	northern velvet gecko		C		1/1
animals	reptiles	Diplodactylidae	<i>Amalosia rhombifer</i>	zig-zag gecko		C		4/3
animals	reptiles	Gekkonidae	<i>Gehyra dubia</i>	dubious dtella		C		1/1
animals	reptiles	Gekkonidae	<i>Heteronotia binoei</i>	Bynoe's gecko		C		4
animals	reptiles	Scincidae	<i>Carlia jarnoldae</i>	lined rainbow-skink		C		4/4
animals	reptiles	Scincidae	<i>Glaphyromorphus cracens</i>	slender mulch-skink		C		1/1
animals	reptiles	Scincidae	<i>Cryptoblepharus metallicus</i>	metallic snake-eyed skink		C		1
animals	reptiles	Scincidae	<i>Ctenotus monticola</i>	Atherton ctenotus		V		1/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	uncertain	Indeterminate	<i>Indeterminate</i>	Unknown or Code Pending		C		2
fungi	club fungi	Basidiomycota	<i>Amanita</i>			C		2/2
fungi	club fungi	Basidiomycota	<i>Phallus multicolor</i>			C		1/1
fungi	club fungi	Basidiomycota	<i>Pisolithus albus</i>			C		1/1
fungi	club fungi	Basidiomycota	<i>Boletus</i>			C		3/3
fungi	club fungi	Basidiomycota	<i>Tylopilus sordidus</i>			C		1/1
fungi	sac fungi	Pertusariaceae	<i>Pertusaria xanthoplaca</i>			C		1/1
fungi	sac fungi	Pertusariaceae	<i>Ochrolechia</i>			C		1/1
fungi	sac fungi	Teloschistaceae	<i>Caloplaca</i>			C		1/1
fungi	uncertain	Ascomycota	<i>Podosordaria hircina</i>			C		1/1
plants	conifers	Cupressaceae	<i>Callitris intratropica</i>	coast cypress pine		C		2/1
plants	conifers	Pinaceae	<i>Pinus caribaea</i>	Caribbean pine	Y			2/2
plants	cycads	Cycadaceae	<i>Cycas media subsp. banksii</i>			C		1
plants	ferns	Adiantaceae	<i>Cheilanthes brownii</i>			C		5/5
plants	ferns	Adiantaceae	<i>Adiantum philippense</i>			C		3/3
plants	ferns	Adiantaceae	<i>Paraceterach muelleri</i>			C		2/2
plants	ferns	Adiantaceae	<i>Cheilanthes sieberi subsp. sieberi</i>			C		2/2
plants	ferns	Adiantaceae	<i>Pityrogramma calomelanos var. calomelanos</i>		Y			1/1
plants	ferns	Azollaceae	<i>Azolla</i>					1
plants	ferns	Azollaceae	<i>Azolla pinnata</i>	ferny azolla		C		1/1
plants	ferns	Davalliaceae	<i>Davallia denticulata var. denticulata</i>			C		1/1
plants	ferns	Hymenophyllaceae	<i>Hymenophyllum samoense</i>			C		1/1
plants	ferns	Ophioglossaceae	<i>Ophioglossum reticulatum</i>			C		1/1
plants	ferns	Ophioglossaceae	<i>Ophioglossum costatum</i>	large adder's tongue		C		2/2
plants	ferns	Platyzomataceae	<i>Platyzoma microphyllum</i>	braid fern		C		9/9
plants	ferns	Pteridaceae	<i>Pteris tripartita</i>	lacy bracken		C		1/1
plants	ferns	Pteridaceae	<i>Pteris vittata</i>	Chinese bracken		C		1/1
plants	ferns	Salviniaceae	<i>Salvinia molesta</i>	salvinia	Y			1/1
plants	ferns	Thelypteridaceae	<i>Cyclosorus interruptus</i>			C		3/3
plants	ferns	Thelypteridaceae	<i>Sphaerostephanos unitus var. unitus</i>			C		2/2
plants	higher dicots	Acanthaceae	<i>Asystasia gangetica subsp. gangetica</i>		Y			2/2
plants	higher dicots	Acanthaceae	<i>Rostellularia adscendens var. hispida</i>			C		1/1
plants	higher dicots	Acanthaceae	<i>Rostellularia adscendens</i>			C		1/1
plants	higher dicots	Acanthaceae	<i>Barleria lupulina</i>		Y			1/1
plants	higher dicots	Amaranthaceae	<i>Alternanthera ficoidea</i>		Y			1/1
plants	higher dicots	Amaranthaceae	<i>Amaranthus viridis</i>	green amaranth	Y			1/1
plants	higher dicots	Amaranthaceae	<i>Guilleminea densa</i>	small matweed	Y			1/1
plants	higher dicots	Amaranthaceae	<i>Celosia argentea</i>		Y			1/1
plants	higher dicots	Amaranthaceae	<i>Alternanthera denticulata var. micrantha</i>			C		1/1
plants	higher dicots	Amaranthaceae	<i>Amaranthus spinosus</i>	needle burr	Y			1/1
plants	higher dicots	Anacardiaceae	<i>Pleiogynium timorense</i>	Burdekin plum		C		1
plants	higher dicots	Apocynaceae	<i>Cryptostegia grandiflora</i>	rubber vine	Y			2/2
plants	higher dicots	Apocynaceae	<i>Asclepias curassavica</i>	red-head cottonbush	Y			1/1
plants	higher dicots	Apocynaceae	<i>Cascabela thevetia</i>	yellow oleander	Y			1/1
plants	higher dicots	Apocynaceae	<i>Wrightia saligna</i>			C		1/1
plants	higher dicots	Apocynaceae	<i>Alyxia spicata</i>			C		1/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	higher dicots	Apocynaceae	<i>Hoya australis subsp. australis</i>			C		1/1
plants	higher dicots	Araliaceae	<i>Hydrocotyle acutiloba</i>			C		1/1
plants	higher dicots	Asteraceae	<i>Bidens pilosa</i>		Y			1/1
plants	higher dicots	Asteraceae	<i>Blumea mollis</i>			C		1/1
plants	higher dicots	Asteraceae	<i>Cosmos caudatus</i>		Y			1/1
plants	higher dicots	Asteraceae	<i>Peripleura scabra</i>			C		1/1
plants	higher dicots	Asteraceae	<i>Camptacra gracilis</i>			C		2/2
plants	higher dicots	Asteraceae	<i>Praxelis clematidea</i>		Y			5/5
plants	higher dicots	Asteraceae	<i>Erigeron bonariensis</i>		Y			1/1
plants	higher dicots	Asteraceae	<i>Galinsoga parviflora</i>	yellow weed	Y			1/1
plants	higher dicots	Asteraceae	<i>Xanthium occidentale</i>		Y			1/1
plants	higher dicots	Asteraceae	<i>Glossocardia refracta</i>			C		1/1
plants	higher dicots	Asteraceae	<i>Coronidium lanuginosum</i>			C		3/3
plants	higher dicots	Asteraceae	<i>Sphagneticola trilobata</i>		Y			1/1
plants	higher dicots	Asteraceae	<i>Parthenium hysterophorus</i>	parthenium weed	Y			3/3
plants	higher dicots	Asteraceae	<i>Phacellothrix cladochaeta</i>			C		1/1
plants	higher dicots	Asteraceae	<i>Pseudognaphalium luteoalbum</i>	Jersey cudweed		C		1/1
plants	higher dicots	Asteraceae	<i>Emilia sonchifolia var. sonchifolia</i>		Y			2/2
plants	higher dicots	Asteraceae	<i>Acmella grandiflora var. brachyglossa</i>			C		2/2
plants	higher dicots	Asteraceae	<i>Ageratum conyzoides subsp. conyzoides</i>		Y			1/1
plants	higher dicots	Bignoniaceae	<i>Pandorea pandorana</i>	wonga vine		C		1/1
plants	higher dicots	Boraginaceae	<i>Trichodesma</i>			C		1/1
plants	higher dicots	Brassicaceae	<i>Cardamine flexuosa</i>	wood bittercress	Y			1/1
plants	higher dicots	Brassicaceae	<i>Cardamine hirsuta</i>	common bittercress	Y			1/1
plants	higher dicots	Burseraceae	<i>Canarium australianum</i>			C		1
plants	higher dicots	Byblidaceae	<i>Byblis liniflora</i>			C		1/1
plants	higher dicots	Caesalpiniaceae	<i>Senna hirsuta</i>		Y			1/1
plants	higher dicots	Caesalpiniaceae	<i>Erythrophleum chlorostachys</i>			C		2/1
plants	higher dicots	Caesalpiniaceae	<i>Chamaecrista nomame var. nomame</i>			C		2/2
plants	higher dicots	Caesalpiniaceae	<i>Chamaecrista rotundifolia var. rotundifolia</i>		Y			1/1
plants	higher dicots	Campanulaceae	<i>Lobelia leucotos</i>			C		2/2
plants	higher dicots	Capparaceae	<i>Capparis arborea</i>	brush caper berry		C		1
plants	higher dicots	Caryophyllaceae	<i>Polycarpaea spirostylis</i>			C		3/3
plants	higher dicots	Celastraceae	<i>Hedraianthera porphyropetala</i>	hedrianthera		C		1/1
plants	higher dicots	Celastraceae	<i>Denhamia disperma</i>			C		2/1
plants	higher dicots	Cleomaceae	<i>Cleome aculeata</i>		Y			1/1
plants	higher dicots	Cleomaceae	<i>Tarenaya hassleriana</i>		Y			1/1
plants	higher dicots	Combretaceae	<i>Terminalia aridicola</i>			C		1
plants	higher dicots	Convolvulaceae	<i>Ipomoea eriocarpa</i>			C		1/1
plants	higher dicots	Convolvulaceae	<i>Turbina corymbosa</i>		Y			3/3
plants	higher dicots	Convolvulaceae	<i>Ipomoea polymorpha</i>			C		1/1
plants	higher dicots	Convolvulaceae	<i>Xenostegia tridentata</i>			C		1/1
plants	higher dicots	Convolvulaceae	<i>Ipomoea polpha subsp. polpha</i>			C		3/3
plants	higher dicots	Convolvulaceae	<i>Ipomoea graminea</i>			C		1/1
plants	higher dicots	Dilleniaceae	<i>Hibbertia longifolia</i>			C		1/1
plants	higher dicots	Droseraceae	<i>Drosera serpens</i>			C		1/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	higher dicots	Euphorbiaceae	<i>Euphorbia hirta</i>		Y			1/1
plants	higher dicots	Euphorbiaceae	<i>Ricinus communis</i>	castor oil bush	Y			1/1
plants	higher dicots	Euphorbiaceae	<i>Euphorbia thymifolia</i>		Y			1/1
plants	higher dicots	Euphorbiaceae	<i>Microstachys chamaelea</i>			C		1/1
plants	higher dicots	Euphorbiaceae	<i>Mallotus philippensis</i>	red kamala		C		1
plants	higher dicots	Euphorbiaceae	<i>Euphorbia hyssopifolia</i>		Y			1/1
plants	higher dicots	Euphorbiaceae	<i>Euphorbia cyathophora</i>	dwarf poinsettia	Y			1/1
plants	higher dicots	Fabaceae	<i>Cajanus acutifolius</i>			C		2/2
plants	higher dicots	Fabaceae	<i>Austrodolichos errabundus</i> var. (<i>Mareeba I.B.Staples 070572/9B</i>) - <i>A.errabundus</i> var. (<i>Davies Creek J.R.Clarkson+ 7886B</i>)			C		1/1
plants	higher dicots	Fabaceae	<i>Cajanus mareebensis</i>		Y	C	E	1/1
plants	higher dicots	Fabaceae	<i>Crotalaria calycina</i>			C		1/1
plants	higher dicots	Fabaceae	<i>Desmodium triflorum</i>		Y			1/1
plants	higher dicots	Fabaceae	<i>Stylosanthes scabra</i>		Y			2/1
plants	higher dicots	Fabaceae	<i>Crotalaria goreensis</i>	gambia pea	Y			1/1
plants	higher dicots	Fabaceae	<i>Indigofera linifolia</i>			C		1/1
plants	higher dicots	Fabaceae	<i>Jacksonia thesioides</i>			C		1/1
plants	higher dicots	Fabaceae	<i>Pycnospora lutescens</i>	pycnospora		C		1/1
plants	higher dicots	Fabaceae	<i>Stylosanthes humilis</i>	Townsville stylo	Y			2/2
plants	higher dicots	Fabaceae	<i>Stylosanthes viscosa</i>		Y			2/2
plants	higher dicots	Fabaceae	<i>Tephrosia leptoclada</i>			C		1/1
plants	higher dicots	Fabaceae	<i>Tephrosia noctiflora</i>		Y			1/1
plants	higher dicots	Fabaceae	<i>Uraria lagopodioides</i>			C		1/1
plants	higher dicots	Fabaceae	<i>Aeschynomene paniculata</i>		Y			1/1
plants	higher dicots	Fabaceae	<i>Lamprolobium fruticosum</i>			C		2/1
plants	higher dicots	Fabaceae	<i>Tephrosia astragaloides</i>			C		1/1
plants	higher dicots	Fabaceae	<i>Aphyllodium biarticulatum</i>			C		1/1
plants	higher dicots	Fabaceae	<i>Austrodolichos errabundus</i>			C		1/1
plants	higher dicots	Fabaceae	<i>Alysicarpus bupleurifolius</i>	sweet alys	Y			1/1
plants	higher dicots	Fabaceae	<i>Macroptilium atropurpureum</i>	siratro	Y			1/1
plants	higher dicots	Fabaceae	<i>Vigna radiata</i> var. <i>sublobata</i>			C		1/1
plants	higher dicots	Fabaceae	<i>Crotalaria retusa</i> var. <i>retusa</i>		Y			2/2
plants	higher dicots	Fabaceae	<i>Neonotonia wightii</i> var. <i>wightii</i>		Y			1/1
plants	higher dicots	Fabaceae	<i>Zornia prostrata</i> var. <i>prostrata</i>			C		1/1
plants	higher dicots	Fabaceae	<i>Galactia tenuiflora</i> forma <i>sericea</i>			C		1/1
plants	higher dicots	Fabaceae	<i>Macrotyloma axillare</i> var. <i>axillare</i>		Y			1/1
plants	higher dicots	Fabaceae	<i>Vigna</i>			C		1/1
plants	higher dicots	Fabaceae	<i>Galactia</i>			C		1/1
plants	higher dicots	Fabaceae	<i>Tephrosia</i>			C		2/1
plants	higher dicots	Fabaceae	<i>Tephrosia juncea</i>			C		1/1
plants	higher dicots	Fabaceae	<i>Clitoria ternatea</i>	butterfly pea	Y			1/1
plants	higher dicots	Fabaceae	<i>Tephrosia filipes</i>			C		1/1
plants	higher dicots	Fabaceae	<i>Tephrosia varians</i>			C		1/1
plants	higher dicots	Fabaceae	<i>Cajanus marmoratus</i>			C		1/1
plants	higher dicots	Fabaceae	<i>Indigofera colutea</i>	sticky indigo		C		1/1

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plants	higher dicots	Fabaceae	<i>Indigofera hirsuta</i>	hairy indigo			C	4/4
plants	higher dicots	Fabaceae	<i>Indigofera spicata</i>	creeping indigo	Y			1/1
plants	higher dicots	Fabaceae	<i>Lotononis bainesii</i>	lotononis	Y			1/1
plants	higher dicots	Fabaceae	<i>Cajanus reticulatus</i> var. <i>reticulatus</i>				C	2/2
plants	higher dicots	Fabaceae	<i>Crotalaria montana</i> var. <i>angustifolia</i>				C	1/1
plants	higher dicots	Fabaceae	<i>Macrotyloma uniflorum</i> var. <i>uniflorum</i>		Y			1/1
plants	higher dicots	Fabaceae	<i>Aeschynomene americana</i> var. <i>americana</i>		Y			1/1
plants	higher dicots	Fabaceae	<i>Crotalaria lanceolata</i> subsp. <i>lanceolata</i>		Y			2/2
plants	higher dicots	Fabaceae	<i>Crotalaria mitchellii</i> subsp. <i>mitchellii</i>				C	2/2
plants	higher dicots	Fabaceae	<i>Cajanus scarabaeoides</i> var. <i>scarabaeoides</i>				C	1/1
plants	higher dicots	Fabaceae	<i>Erythrina vespertilio</i> subsp. <i>vespertilio</i>				C	2/1
plants	higher dicots	Fabaceae	<i>Austrodolichos errabundus</i> var. (Davies Creek J.R.Clarkson+ 7886B)				C	1/1
plants	higher dicots	Flacourtiaceae	<i>Homalium brachybotrys</i>				C	1/1
plants	higher dicots	Goodeniaceae	<i>Goodenia stirlingii</i>				V	1/1
plants	higher dicots	Haloragaceae	<i>Haloragis heterophylla</i>	rough raspweed			C	1/1
plants	higher dicots	Haloragaceae	<i>Haloragis</i>				C	1/1
plants	higher dicots	Lamiaceae	<i>Salvia coccinea</i>	red salvia	Y			1/1
plants	higher dicots	Lamiaceae	<i>Gmelina arborea</i>		Y			1/1
plants	higher dicots	Lamiaceae	<i>Clerodendrum floribundum</i>				C	1/1
plants	higher dicots	Lamiaceae	<i>Mesosphaerum suaveolens</i>		Y			1/1
plants	higher dicots	Lamiaceae	<i>Plectranthus diversus</i>				C	1/1
plants	higher dicots	Lamiaceae	<i>Salvia misella</i>		Y			2/2
plants	higher dicots	Lamiaceae	<i>Pogostemon stellatus</i>				C	1/1
plants	higher dicots	Lamiaceae	<i>Leucas decemdentata</i>				C	1/1
plants	higher dicots	Lamiaceae	<i>Leucas lavandulifolia</i>		Y			2/2
plants	higher dicots	Lamiaceae	<i>Ocimum americanum</i>		Y			1/1
plants	higher dicots	Lecythidaceae	<i>Planchonia careya</i>	cockatoo apple			C	1
plants	higher dicots	Lentibulariaceae	<i>Utricularia uliginosa</i>	asian bladderwort			C	1/1
plants	higher dicots	Lentibulariaceae	<i>Utricularia</i>				C	1
plants	higher dicots	Lentibulariaceae	<i>Utricularia bifida</i>				C	1/1
plants	higher dicots	Loganiaceae	<i>Mitrasacme nudicaulis</i> var. <i>nudicaulis</i>				C	1/1
plants	higher dicots	Loganiaceae	<i>Mitrasacme brachystemonea</i>				C	1/1
plants	higher dicots	Loganiaceae	<i>Mitrasacme nummularia</i>				C	1/1
plants	higher dicots	Loganiaceae	<i>Mitrasacme connata</i>				C	1/1
plants	higher dicots	Loranthaceae	<i>Lysiana filifolia</i>				C	1/1
plants	higher dicots	Lythraceae	<i>Rotala tripartita</i>				C	1/1
plants	higher dicots	Maesaceae	<i>Maesa haplobotrys</i>				C	1/1
plants	higher dicots	Menyanthaceae	<i>Nymphoides</i>				C	2
plants	higher dicots	Menyanthaceae	<i>Nymphoides indica</i>	water snowflake			C	2/2
plants	higher dicots	Mimosaceae	<i>Acacia decora</i>	pretty wattle			C	1/1
plants	higher dicots	Mimosaceae	<i>Albizia</i>				C	2/2
plants	higher dicots	Mimosaceae	<i>Acacia simsii</i>				C	1/1
plants	higher dicots	Mimosaceae	<i>Acacia crassicarpa</i>				C	2/2
plants	higher dicots	Mimosaceae	<i>Acacia umbellata</i>				C	1/1
plants	higher dicots	Mimosaceae	<i>Albizia lebbek</i>	Indian siris			C	1/1

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plants	higher dicots	Mimosaceae	<i>Leucaena leucocephala subsp. leucocephala</i>		Y			2/2
plants	higher dicots	Mimosaceae	<i>Acacia disparrima subsp. calidestris</i>			C		2/2
plants	higher dicots	Mimosaceae	<i>Acaciella angustissima</i>	white ball acacia	Y			1/1
plants	higher dicots	Mimosaceae	<i>Vachellia bidwillii</i>			C		1
plants	higher dicots	Mimosaceae	<i>Acacia multisiliqua</i>			C		1/1
plants	higher dicots	Mimosaceae	<i>Acacia holosericea</i>			C		1/1
plants	higher dicots	Moraceae	<i>Ficus racemosa var. racemosa</i>			C		1/1
plants	higher dicots	Myrtaceae	<i>Melaleuca viridiflora</i>			C		1/1
plants	higher dicots	Myrtaceae	<i>Corymbia erythrophloia</i>	variable-barked bloodwood		C		2/1
plants	higher dicots	Myrtaceae	<i>Eucalyptus leptophleba</i>	Molloy red box		C		5/4
plants	higher dicots	Myrtaceae	<i>Melaleuca stenostachya</i>			C		1/1
plants	higher dicots	Myrtaceae	<i>Eucalyptus tereticornis</i>			C		1
plants	higher dicots	Myrtaceae	<i>Corymbia stockeri subsp. stockeri</i>			C		1
plants	higher dicots	Myrtaceae	<i>Melaleuca viridiflora var. viridiflora</i>			C		3/3
plants	higher dicots	Myrtaceae	<i>Melaleuca leucadendra</i>	broad-leaved tea-tree		C		1/1
plants	higher dicots	Myrtaceae	<i>Eucalyptus portuensis</i>			C		1
plants	higher dicots	Myrtaceae	<i>Corymbia leichhardtii</i>	rustyjacket		C		1
plants	higher dicots	Myrtaceae	<i>Corymbia clarksoniana</i>			C		2/1
plants	higher dicots	Myrtaceae	<i>Syzygium tierneyanum</i>	river cherry		C		1/1
plants	higher dicots	Myrtaceae	<i>Corymbia dallachiana</i>			C		2/1
plants	higher dicots	Myrtaceae	<i>Melaleuca viminalis</i>			C		2/2
plants	higher dicots	Myrtaceae	<i>Melaleuca citrolens</i>			C		1
plants	higher dicots	Myrtaceae	<i>Melaleuca bracteata</i>			C		1/1
plants	higher dicots	Myrtaceae	<i>Eucalyptus cullenii</i>	Cullen's ironbark		C		1
plants	higher dicots	Myrtaceae	<i>Melaleuca monantha</i>			C		4/3
plants	higher dicots	Myrtaceae	<i>Melaleuca borealis</i>			C		1/1
plants	higher dicots	Myrtaceae	<i>Lophostemon grandiflorus subsp. riparius</i>			C		2/1
plants	higher dicots	Myrtaceae	<i>Eucalyptus crebra</i>	narrow-leaved red ironbark		C		1
plants	higher dicots	Myrtaceae	<i>Lophostemon</i>			C		1
plants	higher dicots	Myrtaceae	<i>Melaleuca</i>			C		1
plants	higher dicots	Myrtaceae	<i>Melaleuca nervosa</i>			C		2/2
plants	higher dicots	Onagraceae	<i>Ludwigia octovalvis</i>	willow primrose		C		3/1
plants	higher dicots	Onagraceae	<i>Ludwigia peploides subsp. montevidensis</i>			C		1/1
plants	higher dicots	Orobanchaceae	<i>Centranthera cochinchinensis</i>			C		1/1
plants	higher dicots	Orobanchaceae	<i>Buchnera gracilis</i>			C		1/1
plants	higher dicots	Orobanchaceae	<i>Rhamphicarpa australiensis</i>			C		3/3
plants	higher dicots	Oxalidaceae	<i>Oxalis corniculata</i>		Y			1/1
plants	higher dicots	Phyllanthaceae	<i>Phyllanthus amarus</i>		Y			1/1
plants	higher dicots	Phyllanthaceae	<i>Breynia oblongifolia</i>			C		1/1
plants	higher dicots	Phyllanthaceae	<i>Phyllanthus tenellus</i>		Y			1/1
plants	higher dicots	Phyllanthaceae	<i>Antidesma parvifolium</i>			C		2/2
plants	higher dicots	Phyllanthaceae	<i>Poranthera microphylla</i>	small poranthera		C		1/1
plants	higher dicots	Phyllanthaceae	<i>Phyllanthus</i>			C		1/1
plants	higher dicots	Picrodendraceae	<i>Petalostigma pubescens</i>	quinine tree		C		2/1
plants	higher dicots	Picrodendraceae	<i>Petalostigma banksii</i>			C		2/1
plants	higher dicots	Pittosporaceae	<i>Bursaria incana</i>			C		2/2

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plants	higher dicots	Pittosporaceae	<i>Bursaria incana x B.tenuifolia</i>			C		1/1
plants	higher dicots	Pittosporaceae	<i>Pittosporum ferrugineum subsp. linifolium</i>			C		1/1
plants	higher dicots	Plantaginaceae	<i>Limnophila fragrans</i>			C		1/1
plants	higher dicots	Plantaginaceae	<i>Limnophila aromatica</i>			C		1/1
plants	higher dicots	Polygalaceae	<i>Polygala persicariifolia</i>			C		1/1
plants	higher dicots	Polygonaceae	<i>Persicaria attenuata</i>			C		1/1
plants	higher dicots	Polygonaceae	<i>Persicaria decipiens</i>	slender knotweed		C		2/2
plants	higher dicots	Polygonaceae	<i>Persicaria barbata</i>			C		1/1
plants	higher dicots	Polygonaceae	<i>Persicaria</i>			C		1
plants	higher dicots	Portulacaceae	<i>Portulaca oleracea</i>	pigweed	Y			1/1
plants	higher dicots	Proteaceae	<i>Grevillea dryandri subsp. dryandri</i>			C		1
plants	higher dicots	Proteaceae	<i>Grevillea mcgillivrayi</i>			C		1/1
plants	higher dicots	Proteaceae	<i>Grevillea pteridifolia</i>	golden parrot tree		C		2/2
plants	higher dicots	Proteaceae	<i>Xylomelum scottianum</i>			C		1
plants	higher dicots	Proteaceae	<i>Hakea persiehana</i>			C		1/1
plants	higher dicots	Proteaceae	<i>Grevillea mimosoides</i>			C		1
plants	higher dicots	Proteaceae	<i>Grevillea glauca</i>	bushy's clothes peg		C		3/3
plants	higher dicots	Proteaceae	<i>Persoonia falcata</i>			C		1/1
plants	higher dicots	Proteaceae	<i>Grevillea parallela</i>			C		3/2
plants	higher dicots	Putranjivaceae	<i>Drypetes deplanchei</i>	grey boxwood		C		2/1
plants	higher dicots	Rhamnaceae	<i>Alphitonia pomaderroides</i>			C		6/6
plants	higher dicots	Rubiaceae	<i>Richardia scabra</i>		Y			1/1
plants	higher dicots	Rubiaceae	<i>Psychotria interstans</i>			C		1/1
plants	higher dicots	Rubiaceae	<i>Richardia brasiliensis</i>	white eye	Y			1/1
plants	higher dicots	Rubiaceae	<i>Coelospermum reticulatum</i>			C		2/2
plants	higher dicots	Rubiaceae	<i>Timonius timon var. timon</i>			C		1/1
plants	higher dicots	Rubiaceae	<i>Nauclea orientalis</i>	Leichhardt tree		C		2/2
plants	higher dicots	Rubiaceae	<i>Larsenaikia ochreata</i>			C		2/1
plants	higher dicots	Rubiaceae	<i>Psydrax attenuata</i>			C		1/1
plants	higher dicots	Rubiaceae	<i>Mitracarpus hirtus</i>		Y			3/3
plants	higher dicots	Rutaceae	<i>Micromelum minutum</i>	clusterberry		C		1/1
plants	higher dicots	Rutaceae	<i>Acronychia laevis</i>	glossy acronychia		C		1/1
plants	higher dicots	Santalaceae	<i>Exocarpos latifolius</i>			C		1/1
plants	higher dicots	Sapindaceae	<i>Alectryon tomentosus</i>			C		3/3
plants	higher dicots	Sapindaceae	<i>Cardiospermum halicacabum var. halicacabum</i>		Y			1/1
plants	higher dicots	Sapindaceae	<i>Dodonaea malvacea</i>			C		1/1
plants	higher dicots	Sapotaceae	<i>Sersalisia sericea</i>			C		2/1
plants	higher dicots	Solanaceae	<i>Solanum torvum</i>	devil's fig	Y			3/3
plants	higher dicots	Solanaceae	<i>Nicandra physalodes</i>	apple of Peru	Y			1/1
plants	higher dicots	Solanaceae	<i>Datura inoxia</i>		Y			1/1
plants	higher dicots	Solanaceae	<i>Solanum seaforthianum</i>	Brazilian nightshade	Y			2/2
plants	higher dicots	Sparrmanniaceae	<i>Grewia retusifolia</i>			C		2/2
plants	higher dicots	Sterculiaceae	<i>Brachychiton diversifolius subsp. orientalis</i>			C		1/1
plants	higher dicots	Stylidiaceae	<i>Stylidium cordifolium</i>			C		1/1
plants	higher dicots	Stylidiaceae	<i>Stylidium oviflorum</i>			C		1/1
plants	higher dicots	Stylidiaceae	<i>Stylidium capillare</i>			C		1/1

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plants	higher dicots	Thymelaeaceae	<i>Pimelea sericostachya</i> subsp. <i>sericostachya</i>			C		2/2
plants	higher dicots	Thymelaeaceae	<i>Wikstroemia indica</i>	tie bush		C		3/3
plants	higher dicots	Verbenaceae	<i>Stachytarpheta mutabilis</i>	pink snakeweed	Y			1/1
plants	higher dicots	Verbenaceae	<i>Duranta erecta</i>	duranta	Y			1/1
plants	higher dicots	Vitaceae	<i>Cayratia trifolia</i>			C		1/1
plants	higher dicots	Vitaceae	<i>Clematicissus opaca</i>			C		1/1
plants	higher dicots	Vitaceae	<i>Tetrastigma petraeum</i>			C		1/1
plants	higher dicots	Zygophyllaceae	<i>Tribulus terrestris</i>	caltrop		C		2/2
plants	lower dicots	Aristolochiaceae	<i>Aristolochia elegans</i>	calico-flower	Y			1/1
plants	lower dicots	Cabombaceae	<i>Brasenia schreberi</i>			C		1/1
plants	lower dicots	Lauraceae	<i>Cassytha filiformis</i>	dodder laurel		C		2/2
plants	lower dicots	Linderniaceae	<i>Lindernia anagallis</i>			C		2/2
plants	lower dicots	Linderniaceae	<i>Artanema fimbriatum</i>			C		1/1
plants	lower dicots	Nymphaeaceae	<i>Nymphaea</i>			C		1
plants	lower dicots	Nymphaeaceae	<i>Nymphaea immutabilis</i>			C		1/1
plants	lower dicots	Papaveraceae	<i>Argemone ochroleuca</i> subsp. <i>ochroleuca</i>	Mexican poppy	Y			1/1
plants	lower dicots	Papaveraceae	<i>Argemone mexicana</i>	prickly poppy	Y			1/1
plants	monocots	Alismataceae	<i>Echinodorus cordifolius</i>		Y			1/1
plants	monocots	Araceae	<i>Spirodela oligorrhiza</i>			C		1/1
plants	monocots	Commelinaceae	<i>Cartonema spicatum</i>			C		3/3
plants	monocots	Commelinaceae	<i>Cyanotis axillaris</i>			C		1/1
plants	monocots	Commelinaceae	<i>Murdannia graminea</i>	murdannia		C		1/1
plants	monocots	Commelinaceae	<i>Commelina ensifolia</i>	scurvy grass		C		1/1
plants	monocots	Commelinaceae	<i>Murdannia nudiflora</i>		Y			1/1
plants	monocots	Cyperaceae	<i>Eleocharis dulcis</i>			C		1/1
plants	monocots	Cyperaceae	<i>Eleocharis minuta</i>		Y			1/1
plants	monocots	Cyperaceae	<i>Fuirena umbellata</i>			C		1/1
plants	monocots	Cyperaceae	<i>Schoenus falcatus</i>			C		1/1
plants	monocots	Cyperaceae	<i>Cyperus pulchellus</i>			C		1/1
plants	monocots	Cyperaceae	<i>Cyperus squarrosus</i>	bearded flatsedge		C		2/2
plants	monocots	Cyperaceae	<i>Cyperus unioides</i>			C		1/1
plants	monocots	Cyperaceae	<i>Fuirena incrassata</i>			C		1/1
plants	monocots	Cyperaceae	<i>Cyperus brevifolius</i>	Mullumbimby couch	Y			1/1
plants	monocots	Cyperaceae	<i>Cyperus sphacelatus</i>		Y			1/1
plants	monocots	Cyperaceae	<i>Fimbristylis nutans</i>			C		1/1
plants	monocots	Cyperaceae	<i>Cyperus involucratus</i>		Y			4/4
plants	monocots	Cyperaceae	<i>Cyperus polystachyos</i>			C		3/3
plants	monocots	Cyperaceae	<i>Lipocarpha chinensis</i>			C		2/2
plants	monocots	Cyperaceae	<i>Eleocharis equisetina</i>			C		1/1
plants	monocots	Cyperaceae	<i>Fimbristylis dichotoma</i>	common fringe-rush		C		2/2
plants	monocots	Cyperaceae	<i>Eleocharis atropurpurea</i>			C		1/1
plants	monocots	Cyperaceae	<i>Lipocarpha microcephala</i>			C		1/1
plants	monocots	Cyperaceae	<i>Schoenoplectiella laevis</i>			C		1/1
plants	monocots	Cyperaceae	<i>Schoenoplectiella mucronata</i>			C		6/4
plants	monocots	Cyperaceae	<i>Cyperus nutans</i> var. <i>eleusinoides</i>	flatsedge		C		1/1
plants	monocots	Cyperaceae	<i>Cyperus polystachyos</i> var. <i>polystachyos</i>			C		1/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	monocots	Cyperaceae	<i>Cyperus kyllingia</i>		Y			1/1
plants	monocots	Cyperaceae	<i>Cyperus castaneus</i>			C		2/2
plants	monocots	Cyperaceae	<i>Cyperus aquatilis</i>			C		1/1
plants	monocots	Cyperaceae	<i>Cyperus flavidus</i>			C		1/1
plants	monocots	Cyperaceae	<i>Cyperus fulvus</i>			C		1/1
plants	monocots	Cyperaceae	<i>Eleocharis</i>			C		2
plants	monocots	Cyperaceae	<i>Cyperus</i>			C		1
plants	monocots	Cyperaceae	<i>Fuirena</i>			C		1/1
plants	monocots	Eriocaulaceae	<i>Eriocaulon nanum</i>			C		1/1
plants	monocots	Eriocaulaceae	<i>Eriocaulon tortuosum</i>			C		1/1
plants	monocots	Hemerocallidaceae	<i>Dianella caerulea</i> var. <i>vannata</i>			C		1/1
plants	monocots	Hydrocharitaceae	<i>Limnobium laevigatum</i>		Y			5/5
plants	monocots	Hypoxidaceae	<i>Curculigo ensifolia</i> var. <i>ensifolia</i>			C		1/1
plants	monocots	Laxmanniaceae	<i>Lomandra hystrix</i>			C		1/1
plants	monocots	Orchidaceae	<i>Phaius australis</i>			E	E	5/5
plants	monocots	Orchidaceae	<i>Epipogium roseum</i>	leafless nodding orchid		C		1/1
plants	monocots	Orchidaceae	<i>Dockrillia calamiformis</i>			C		1/1
plants	monocots	Orchidaceae	<i>Dendrobium monophyllum</i>			C		1/1
plants	monocots	Orchidaceae	<i>Dipodium elegantulum</i>			C		1/1
plants	monocots	Poaceae	<i>Hyparrhenia rufa</i> subsp. <i>rufa</i>		Y			2/2
plants	monocots	Poaceae	<i>Digitaria eriantha</i> cv. <i>Pangola</i>		Y			1/1
plants	monocots	Poaceae	<i>Ischaemum rugosum</i> var. <i>segetum</i>			C		1/1
plants	monocots	Poaceae	<i>Ischaemum australe</i> var. <i>australe</i>			C		1/1
plants	monocots	Poaceae	<i>Aristida holathera</i> var. <i>holathera</i>			C		1/1
plants	monocots	Poaceae	<i>Echinochloa polystachya</i> cv. <i>Amity</i>		Y			1/1
plants	monocots	Poaceae	<i>Chloris divaricata</i> var. <i>divaricata</i>	slender chloris		C		1/1
plants	monocots	Poaceae	<i>Hymenachne amplexicaulis</i> cv. <i>Olive</i>		Y			4/4
plants	monocots	Poaceae	<i>Setaria pumila</i> subsp. <i>subtesselata</i>		Y			1/1
plants	monocots	Poaceae	<i>Bothriochloa bladhii</i> subsp. <i>bladhii</i>			C		3/3
plants	monocots	Poaceae	<i>Cenchrus pedicellatus</i> subsp. <i>unispiculus</i>		Y			1/1
plants	monocots	Poaceae	<i>Themeda quadrivalvis</i>	grader grass	Y			1/1
plants	monocots	Poaceae	<i>Tripogon loliiformis</i>	five minute grass		C		1/1
plants	monocots	Poaceae	<i>Whiteochloa airoides</i>			C		1/1
plants	monocots	Poaceae	<i>Aristida superpendens</i>			C		1/1
plants	monocots	Poaceae	<i>Cenchrus polystachios</i>		Y			4/4
plants	monocots	Poaceae	<i>Dichanthium annulatum</i>	sheda grass	Y			1/1
plants	monocots	Poaceae	<i>Dichanthium aristatum</i>	angleton grass	Y			2/2
plants	monocots	Poaceae	<i>Eragrostis parviflora</i>	weeping lovegrass		C		1/1
plants	monocots	Poaceae	<i>Eragrostis tenuifolia</i>	elastic grass	Y			1/1
plants	monocots	Poaceae	<i>Heteropogon triticeus</i>	giant speargrass		C		1/1
plants	monocots	Poaceae	<i>Pogonatherum crinitum</i>			C		1/1
plants	monocots	Poaceae	<i>Sporobolus natalensis</i>		Y			2/2
plants	monocots	Poaceae	<i>Alloteropsis semialata</i>	cockatoo grass		C		1/1
plants	monocots	Poaceae	<i>Sporobolus pyramidalis</i>		Y			1/1
plants	monocots	Poaceae	<i>Urochloa mosambicensis</i>	sabi grass	Y			1/1
plants	monocots	Poaceae	<i>Echinochloa frumentacea</i>	Siberian millet	Y			1/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	monocots	Poaceae	<i>Oryza</i>			C		1/1
plants	monocots	Poaceae	<i>Perotis rara</i>	comet grass		C		1/1
plants	monocots	Poaceae	<i>Chloris gayana</i>	rhodes grass	Y			1/1
plants	monocots	Poaceae	<i>Melinis repens</i>	red natal grass	Y			2/1
plants	monocots	Poaceae	<i>Chloris inflata</i>	purpletop chloris	Y			2/1
plants	monocots	Poaceae	<i>Chloris virgata</i>	feathertop rhodes grass	Y			1/1
plants	monocots	Poaceae	<i>Eriachne obtusa</i>			C		1/1
plants	monocots	Poaceae	<i>Oryza rufipogon</i>			C		3/3
plants	monocots	Poaceae	<i>Urochloa mutica</i>		Y			3/1
plants	monocots	Poaceae	<i>Eriachne trisetia</i>			C		1/1
plants	monocots	Poaceae	<i>Leersia hexandra</i>	swamp rice grass		C		3/1
plants	monocots	Poaceae	<i>Paspalum notatum</i>	bahia grass	Y			1/1
plants	monocots	Poaceae	<i>Themeda triandra</i>	kangaroo grass		C		2/1
plants	monocots	Poaceae	<i>Ectrosia leporina</i>			C		2/2
plants	monocots	Poaceae	<i>Paspalum virgatum</i>		Y			1/1
plants	monocots	Poaceae	<i>Urochloa pubigera</i>			C		1/1
plants	monocots	Poaceae	<i>Andropogon gayanus</i>	gamba grass	Y			6/6
plants	monocots	Poaceae	<i>Aristida warburgii</i>			C		1/1
plants	monocots	Poaceae	<i>Cenchrus purpureus</i>		Y			1/1
plants	monocots	Poaceae	<i>Digitaria ciliaris</i>	summer grass	Y			1/1
plants	monocots	Poaceae	<i>Echinochloa colona</i>	awnless barnyard grass	Y			3/3
plants	monocots	Poaceae	<i>Oryza meridionalis</i>			C		1/1
plants	monocots	Poaceae	<i>Panicum antidotale</i>	giant panic	Y			1/1
plants	monocots	Poaceae	<i>Setaria sphacelata</i>		Y			1/1
plants	monocots	Poaceae	<i>Urochloa brizantha</i>		Y			1/1
plants	monocots	Poaceae	<i>Urochloa decumbens</i>		Y			1/1
plants	monocots	Poaceae	<i>Urochloa distachya</i>		Y			1/1
plants	monocots	Poaceae	<i>Cymbopogon ambiguus</i>	lemon grass		C		1/1
plants	monocots	Poaceae	<i>Eragrostis cumingii</i>			C		1/1
plants	monocots	Poaceae	<i>Megathyrsus maximus</i>		Y			1/1
plants	monocots	Poaceae	<i>Melinis minutiflora</i>	molasses grass	Y			1/1
plants	monocots	Poaceae	<i>Paspalum conjugatum</i>	sourgrass	Y			1/1
plants	monocots	Poaceae	<i>Bothriochloa pertusa</i>		Y			1/1
plants	monocots	Poaceae	<i>Dichanthium fecundum</i>	curly bluegrass		C		1/1
plants	monocots	Poaceae	<i>Dichanthium sericeum</i>			C		1
plants	monocots	Poaceae	<i>Echinochloa inundata</i>	marsh millet		C		1/1
plants	monocots	Poaceae	<i>Ectrosia agrostoides</i>			C		1/1
plants	monocots	Poaceae	<i>Paspalum paniculatum</i>	Russell River grass	Y			1/1
plants	monocots	Poaceae	<i>Sorghum arundinaceum</i>	Rhodesian Sudan grass	Y			1/1
plants	monocots	Poaceae	<i>Thaumastochloa major</i>			C		1/1
plants	monocots	Poaceae	<i>Hymenachne x calamitosa</i>			C		1/1
plants	monocots	Poaceae	<i>Sporobolus jacquemontii</i>		Y			3/3
plants	monocots	Poaceae	<i>Dactyloctenium aegyptium</i>	coast button grass	Y			1/1
plants	monocots	Poaceae	<i>Echinochloa dietrichiana</i>			C		1/1
plants	monocots	Poaceae	<i>Capillipedium parviflorum</i>	scented top		C		2/2
plants	monocots	Poaceae	<i>Schizachyrium pachyarthron</i>			C		1/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	monocots	Poaceae	<i>Pseudopogonatherum irritans</i>			C		1/1
plants	monocots	Pontederiaceae	<i>Monochoria cyanea</i>			C		1/1
plants	monocots	Potamogetonaceae	<i>Potamogeton</i>			C		1/1
plants	monocots	Typhaceae	<i>Typha domingensis</i>			C		1/1
plants	monocots	Typhaceae	<i>Typha</i>			C		2
plants	monocots	Xyridaceae	<i>Xyris pauciflora</i>			C		1/1
plants	monocots	Xyridaceae	<i>Xyris complanata</i>	yellow-eye		C		7/7
plants	uncertain	Indet.	<i>Indet.</i>			C		2
plants	whisk ferns	Psilotaceae	<i>Psilotum nudum</i>	skeleton fork fern		C		1/1

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.

Annex F

VEGETATION MANAGEMENT, MSES AND
REFERABLE WETLANDS REPORTS



Vegetation management report

For Lot: 156 Plan: SP124698

Current as at 26/04/2017

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Overview

The management and clearing of native vegetation in Queensland is regulated by the *Vegetation Management Act 1999*, the *Vegetation Management Regulation 2009*, the *Sustainable Planning Act 2009* and the *Sustainable Planning Regulation 2009* in conjunction with associated policies and codes. These legislation, policies and codes are referred to as the Vegetation Management Framework.

Many routine vegetation management activities can be carried out under exemptions or self-assessable codes under the *Vegetation Management Act 1999*. Other activities may require you to apply for a development approval under the *Sustainable Planning Act 2009*. The requirements for a permit depend on the type of vegetation, the land tenure (e.g. freehold or leasehold land), the location, and the extent and purpose of the proposed clearing. In urban areas, vegetation may be regulated by local government provisions even if it is not regulated vegetation under the VMA.

The information in this report will assist you to determine the options for managing vegetation on your property. Based on the lot on plan you have supplied, this report provides the following detailed information:

1. *Property region* - the local government area, bioregion(s), subregion(s), catchment(s) and any applicable area management plans associated with your property.
2. *Vegetation management framework* - an explanation of the options that may be available to manage vegetation on your property.
3. *Property details for the specified Lot on Plan* - specific information about your property including land tenure, vegetation categories, regional ecosystems, watercourses, wetlands, essential habitat, land suitability and protected plants.
4. *Maps* - a series of colour maps to assist in identifying regulated vegetation on your property including:
 - regulated vegetation management map
 - vegetation management map
 - land suitability map
 - protected plants map.

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1. Property regions

Table 1 provides a summary of the regions that property Lot: 156 Plan: SP124698 is located within.

Table 1: Property regions

Local Government(s)
Mareeba Shire

Bioregion(s)	Subregion(s)
Einasleigh Uplands	Hodgkinson Basin

Catchment(s)
Barron

Area Management Plan(s)
Area Management Plan for the control of pest plants in the Dry Tropics region

2. Vegetation management framework

Vegetation clearing is regulated under the *Vegetation Management Act 1999* (VMA) and the *Sustainable Planning Act 2009* (SPA). A development approval is required to clear where the clearing is not exempt under the SPA, or where it cannot be carried out under a self-assessable clearing code or an area management plan under the VMA.

The VMA does not apply to all land tenures or vegetation types. State forests, national parks, forest reserves and some tenure types as defined under the *Forestry Act 1959* and *Nature Conservation Act 1992* are not regulated by the VMA. Managing vegetation not regulated under the VMA may require permits 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; and
- a mangrove.

The regulated vegetation management map, the vegetation management map, the land suitability map and the protected plants map provided in section 4 and the information provided in section 2 and 3 of this report will assist you in identifying clearing suitability and enable you to determine whether your proposed clearing is:

- exempt;
- requires notification and compliance with a self-assessable code or area management plan; or
- requires a development approval.

2.1 Exemptions

The vegetation management framework allows clearing for certain purposes without approval, known as an exemption.

Areas that are mapped as Category X (white in colour) on the regulated vegetation management map (section 5.1) on most State land tenures are exempt and therefore do not require a development approval or notification.

There are other exemptions that apply to a range of routine property management activities. A list of these is available at <https://www.qld.gov.au/environment/land/vegetation/exemptions/>.

Although vegetation management laws may allow clearing under an exemption, there may be other state, local or Commonwealth laws that apply. Exemptions may not apply if the vegetation is subject to permit conditions, a covenant, an

offset or restrictions as a result of unlawful clearing.

2.2 Self-assessable codes

Some clearing activities can be undertaken using a self-assessable vegetation clearing code and notification process. The codes can be downloaded at

<https://www.qld.gov.au/environment/land/vegetation/codes/>

If you intend to clear vegetation under a self-assessable vegetation clearing code, you must notify the department 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. 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.

If an area management plan applies to your property, it will be listed in Table 1 of this report.

To clear under an existing AMP, you must notify the DNRM before clearing starts and follow the conditions listed in the AMP. You can download the area management clearing notification form and obtain a copy of the relevant AMP at

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

2.4 Development approvals

If your proposed clearing is not exempt, or is not permitted under a self-assessable 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/vegetation/applying/>

3. Property details for Lot: 156 Plan: SP124698

3.1 Tenure

All of the lot, plan and tenure information associated with property Lot: 156 Plan: SP124698, including links to relevant Smart Maps, are listed in Table 2. The tenure of the property (whether it is freehold, leasehold, or other) may be viewed by clicking on the Smart Map link(s) provided.

Table 2: Lot, plan and tenure information for the property

Tenure	Lot	Plan	Link to property on SmartMap
Freehold	156	SP124698	http://globe.information.qld.gov.au/cgi-bin/SmartMapgen.py?q=156\SP124698
Easement	A	RP865813	http://globe.information.qld.gov.au/cgi-bin/SmartMapgen.py?q=A\RP865813
Easement	A	RP865819	http://globe.information.qld.gov.au/cgi-bin/SmartMapgen.py?q=A\RP865819

The tenure of the land determines whether certain exemptions are applicable.

Some self-assessable codes apply only to freehold and leasehold land granted for grazing and agricultural purposes.

3.2 Vegetation categories

Vegetation categories are shown on the regulated vegetation management map in section 5.1 of this report. Descriptions for these categories are shown in Table 3.

Table 3

Category	Colour on Map	Description	Requirements
A	red	Compliance areas, environmental offset areas and voluntary declaration areas	Clearing requires a development approval, exemption, or self-assessable clearing code or area management plan notification.
B	dark blue	Remnant vegetation areas	Clearing requires a development approval, exemption, or self-assessable clearing code or area management plan notification.
C	light blue	High-value regrowth areas	Clearing requires exemption, or self-assessable clearing code or area management plan notification.
R	yellow	Regrowth within 50m of a watercourse in the priority reef catchment areas	Clearing requires exemption, or self-assessable clearing code or area management plan notification.
X	white	Areas not regulated under the <i>Vegetation Management Act 1999</i>	No permit or notification required on all but certain state land tenures.

The vegetation categories on this property are listed in Table 4.

Table 4: Vegetation categories for subject property

Vegetation category
Category R
Category X
Category B

3.3 Regional ecosystems

The endangered, of concern and least concern regional ecosystems on your property are shown on the vegetation management supporting map in section 5.2 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

Regulated vegetation description	Regional ecosystem patch
rem_leastc	9.3.13
rem_oc	9.12.31
rem_leastc	9.8.2
rem_leastc	9.5.9

rem_leastc is vegetation category A or B with a VMA status of least concern

rem_oc is vegetation category A or B with a VMA status of concern

rem_end is vegetation category A or B with a VMA status of endangered

hvr_leastc is vegetation category C or R with a VMA status of least concern

hvr_oc is vegetation category C or R with a VMA status of concern

hvr_end is vegetation category C or R with a VMA status of endangered

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:

- exemptions
- performance outcomes in State Development Assessment Provisions (SDAP)
- self-assessable codes.

Some clearing purposes are limited to a particular group of regional ecosystems (e.g. encroachment) and some self-assessable codes allow clearing only in certain regional ecosystems.

3.4 Watercourses

Vegetation management watercourses for this property are shown on the vegetation management supporting map in section 5.2.

3.5 Wetlands

There are no vegetation management wetlands present on this property.

3.6 Essential habitat

Any essential habitat on this property will be shown on the vegetation management supporting map in section 5.2.

Essential habitat identifies areas in which species of wildlife that are endangered, vulnerable, rare or near threatened under the *Nature Conservation Act 1992* have been known to occur. These important habitat areas are protected under the VMA.

If essential habitat is identified on this property, the information about the protected wildlife species is provided in Table 6 below (if no table is displayed below, there has not been any essential habitat identified on this property). The species label is shown on the vegetation management supporting map in section 5.2. The essential habitat factors are stated in the columns marked with an asterisk.

Table 6: Endangered, vulnerable, or near threatened wildlife species identified within the property (if no table is shown below, there is no essential habitat identified on the property)

Additional essential habitat information

3.7 Land suitability

Land suitability mapping and information is required if you are applying to clear vegetation for high value or irrigated high value agriculture. Land suitability assessment addresses the capacity of land to sustain specific land uses such as cropping, irrigated agriculture and forestry.

A land suitability map for this property is provided in section 5.3. The map provides detailed land suitability, agricultural land classification, or soil and land resource mapping data where it is available.

The land suitability project that applies to this property is shown in Table 7 and Table 8.

Table 7: Land suitability project details for this property

Project name	Project code	Start date	Scale
Soils and Land Suitability of the Mareeba-Dimbulah Irrigation Area, North Queensland	MDIA	1994-01-01 00:00:00	25000

Table 8: Available land suitability project reports for this property

Project name	Availability of report
Soils and Land Suitability of the Mareeba-Dimbulah Irrigation Area, North Queensland	Available at www.publications.qld.gov.au

3.8 Protected plants

In Queensland, all plants that are native to Australia are protected plants under the *Nature Conservation Act 1992*. The Act endeavours to ensure that protected plants (whole plants or protected plant parts) are not illegally removed from the wild or illegally traded.

Prior to clearing, you must check the flora survey trigger map to determine if the clearing is within a high risk area. The trigger map for this property is provided in section 5.4.

If your property is in a high risk area, a flora survey must be undertaken and a clearing permit may be required for clearing endangered, vulnerable and near threatened plants (EVNT plants) and their supporting habitat.

If a flora survey identifies that EVNT plants are not present or can be avoided by 100m, the clearing activity may be exempt from a permit. An exempt clearing notification form is required. This form can be downloaded at

<http://www.ehp.qld.gov.au/licences-permits/plants-animals/protected-plants/>

In an area other than a high risk area, a clearing permit is only required where a person is, or becomes aware that EVNT plants are present.

Clearing of least concern plants is exempt from requiring a clearing permit within a low risk area.

To be eligible for certain clearing exemptions you need to keep a copy of the map for the area subject to clearing. Protected plants flora survey trigger maps are valid for a period of 12 months from the date of request. After 12 months you will need to obtain a new protected plants flora survey trigger map to determine clearing requirements for your area of interest. This can be accessed online at

<http://www.ehp.qld.gov.au/licences-permits/plants-animals/protected-plants/map-request.php>

For further information or assistance on the protected plants flora survey trigger map for this property, please contact the Department of Environment and Heritage Protection at

palm@ehp.qld.gov.au

3.9 Emissions Reduction Fund (ERF)

The ERF is an Australian Government scheme which offers incentives for businesses and communities across the economy to reduce emissions.

Under the ERF, farmers can earn money from activities such as planting (and keeping) trees, managing regrowth vegetation and adopting more sustainable agricultural practices.

The purpose of a project is to remove greenhouse gases from the atmosphere. Each project will provide new economic opportunities for farmers, forest growers and land managers.

Further information on ERF is available at <https://www.qld.gov.au/environment/land/state/use/carbon-rights/>

4. Contacts for further information

For further information on vegetation management:

Phone 135VEG (135 834)

Email vegetation@dnrm.qld.gov.au

Visit www.dnrm.qld.gov.au/our-department/contact-us/vegetation-contacts to submit an online enquiry.

5. Maps

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

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

and

<http://www.ehp.qld.gov.au/licences-permits/plants-animals/protected-plants/map-request.php>

Regulated vegetation management map

The regulated vegetation management map shows vegetation categories to determine clearing requirements. These maps are updated monthly to show new property maps of assessable vegetation

Vegetation management supporting map

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

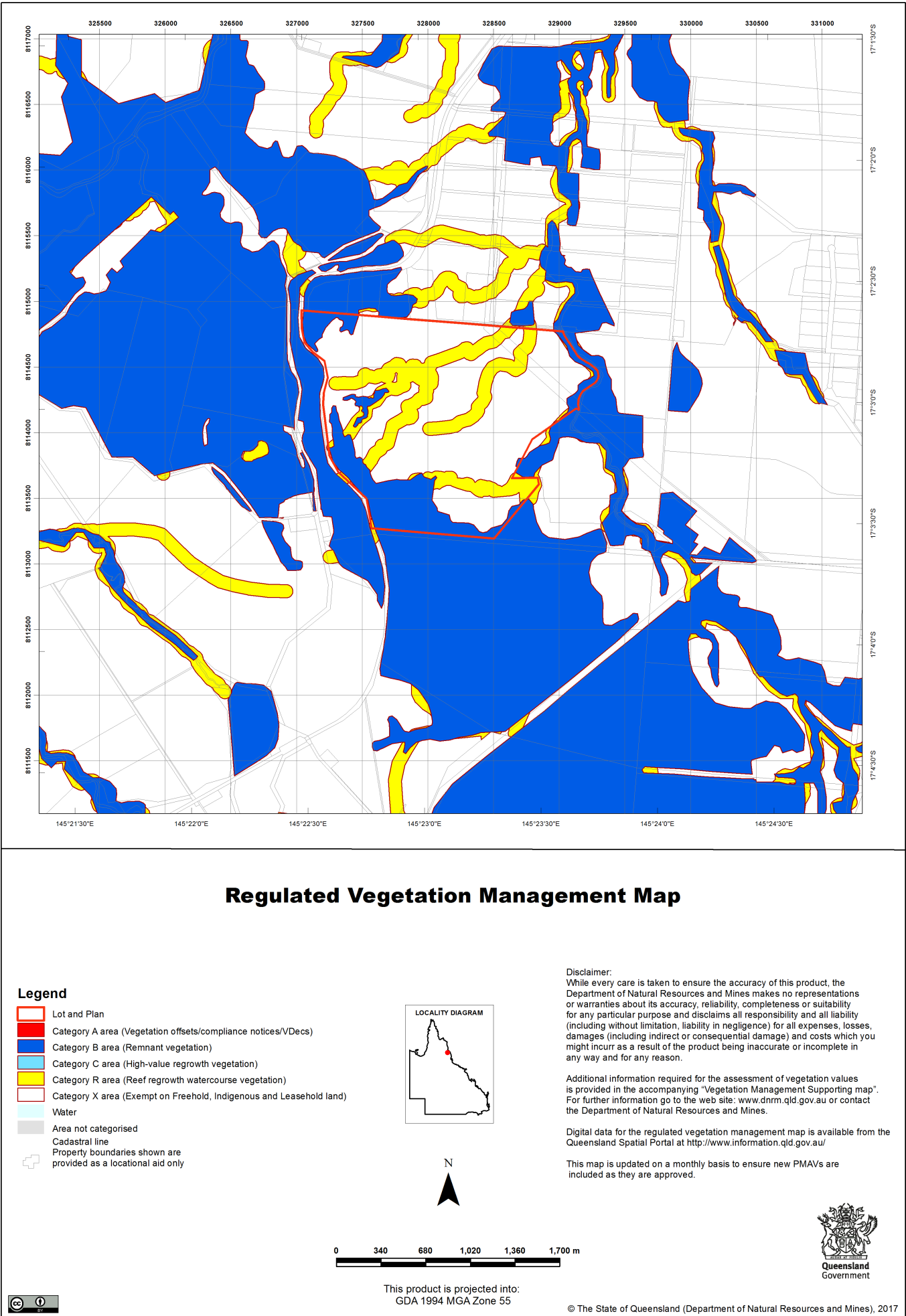
Land suitability map

The land suitability map assists with identifying the land suitability category under the high value and irrigated high value agriculture vegetation clearing purpose.

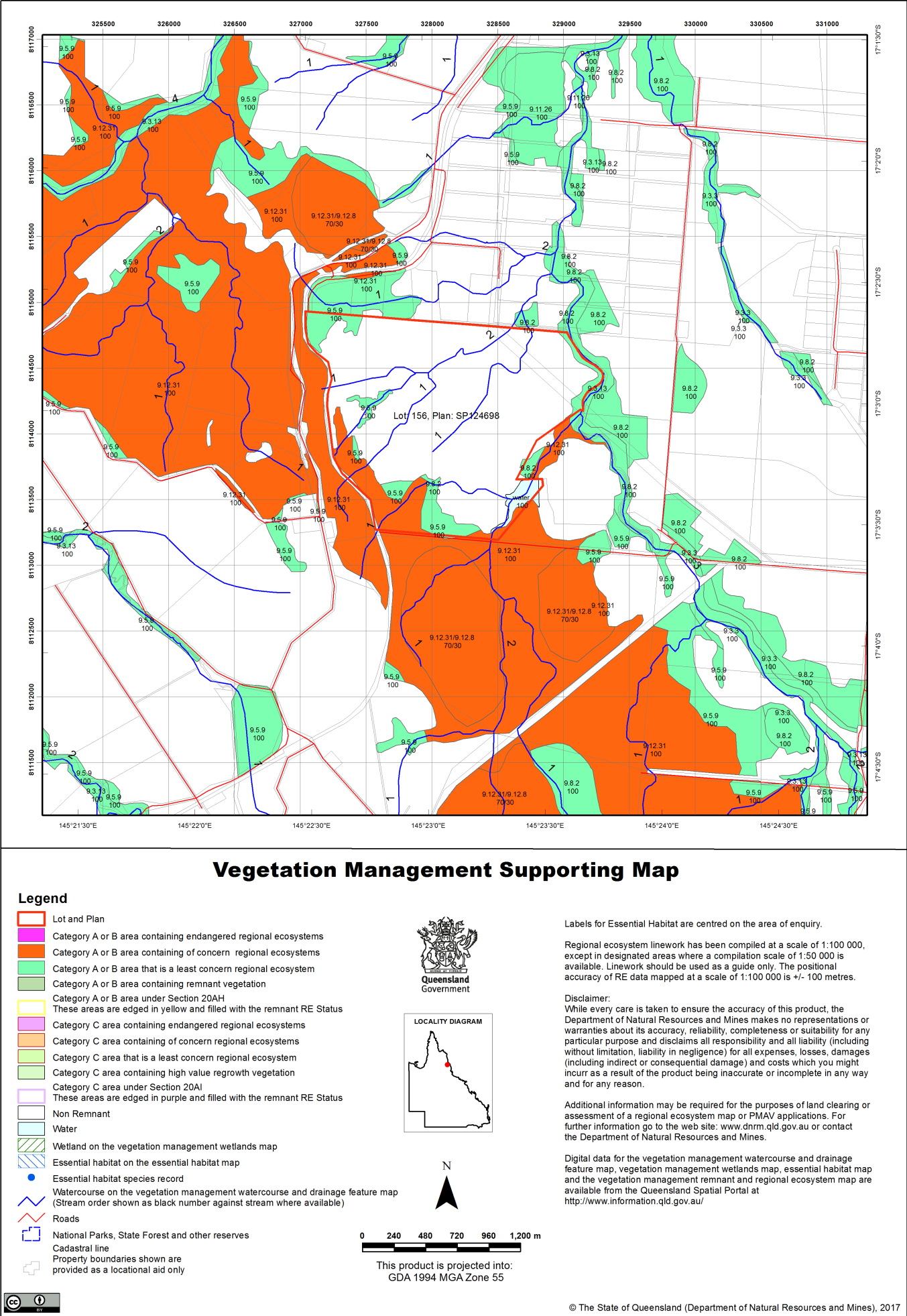
Protected plants map

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

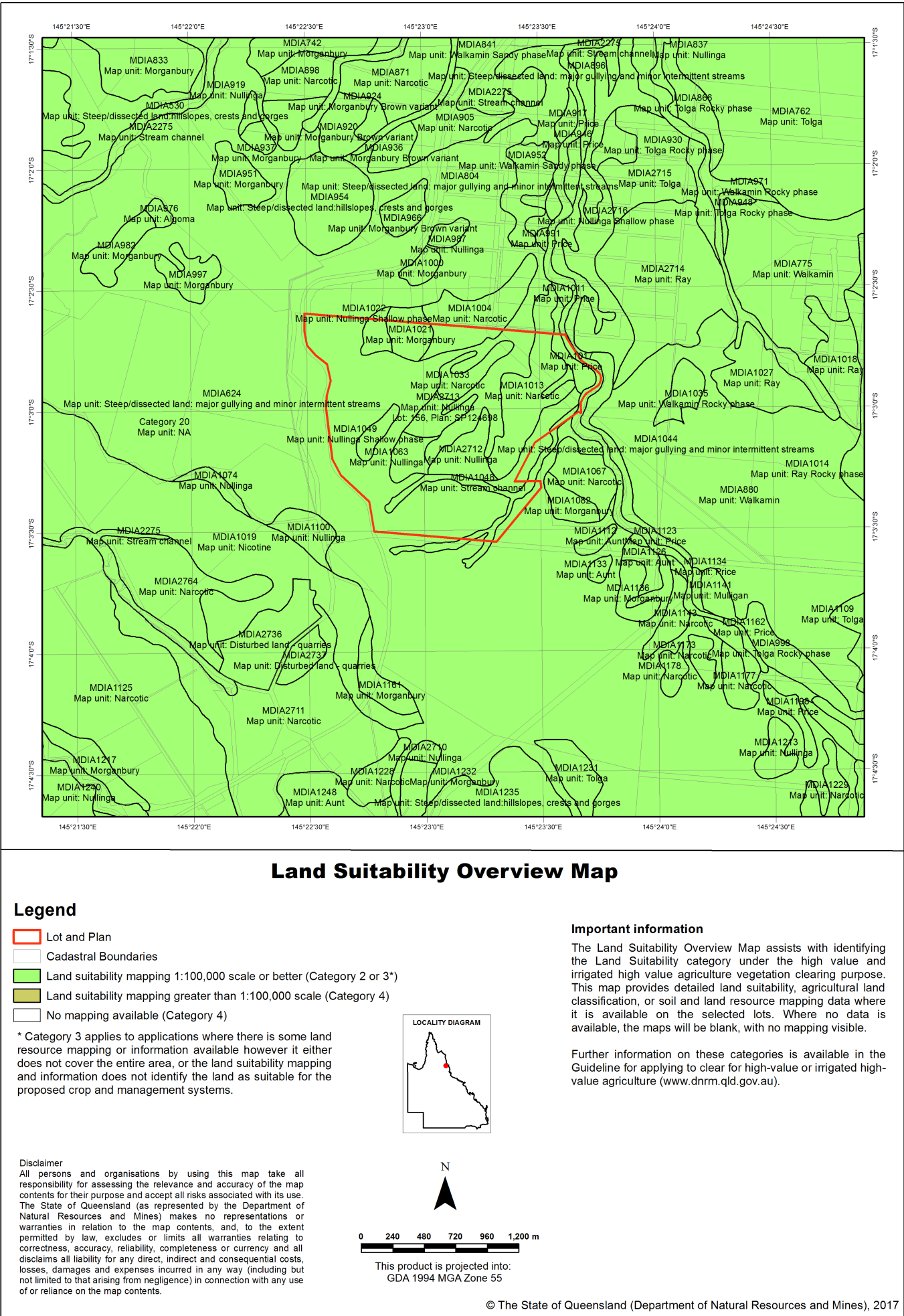
5.1 Regulated vegetation management map



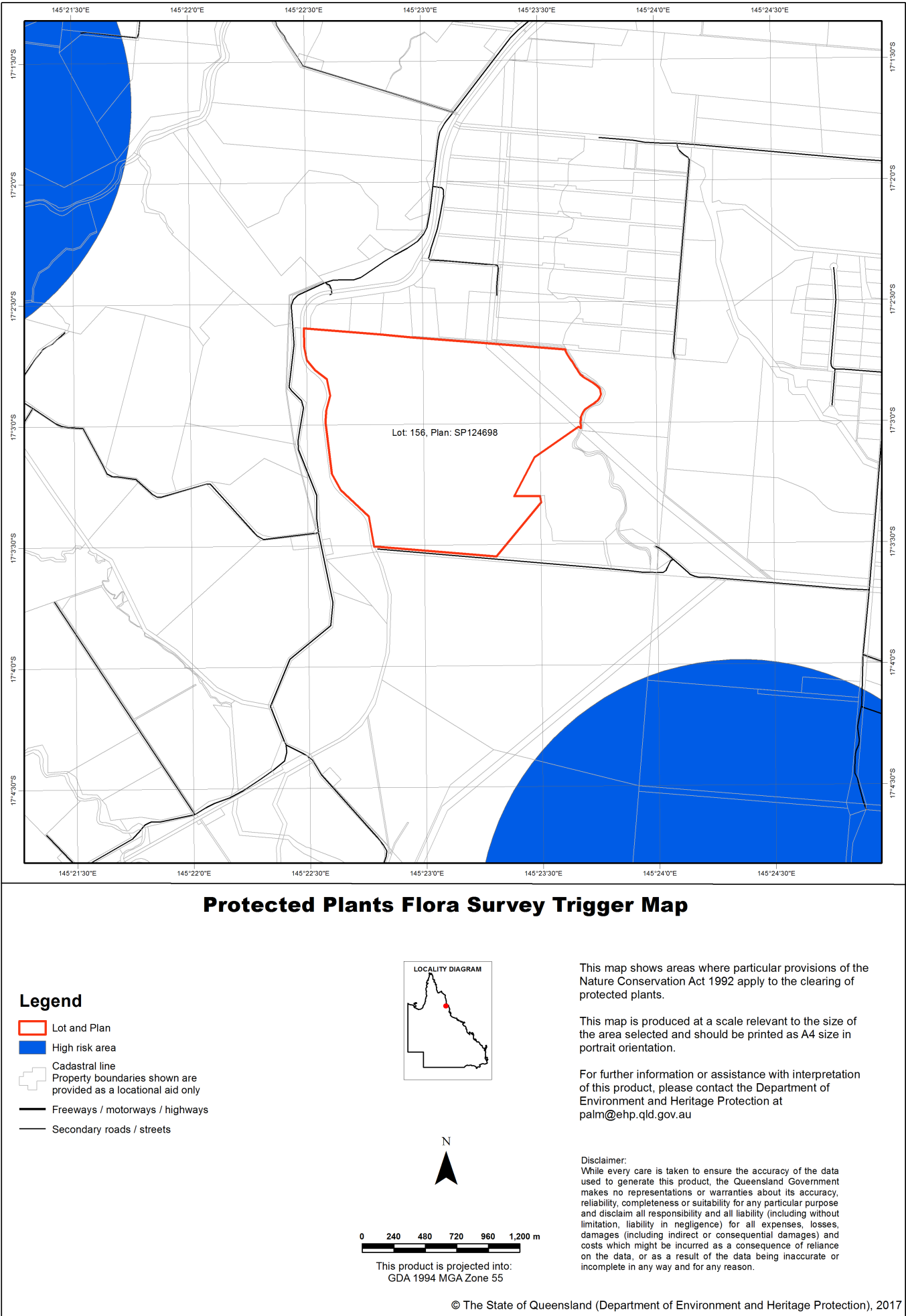
5.2 Vegetation management supporting map



5.3 Land suitability map



5.4 Protected plants map





Queensland Government

Department of Environment and Heritage Protection

Environmental Reports

Matters of State Environmental Significance

Area of Interest: Lot: 156 Plan: SP124698

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 co-ordinates" 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@ehp.qld.gov.au

Disclaimer

Whilst every care is taken to ensure the accuracy of the information provided in this report, the Queensland Government 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 the user may incur as a consequence of the information being inaccurate or incomplete in any way and for any reason.



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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, AOI details

Area of Interest	156SP124698
Size (ha)	267.1
Local Government(s)	MAREEBA SHIRE
Bioregion(s)	Einasleigh Uplands
Subregion(s)	Hodgkinson Basin
Catchment(s)	Barron

Refer to **Map 1** for locality information.

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 Referable Wetlands under the Environmental Protection Regulation 2008;
- Wetlands and watercourses in high ecological value waters defined in the Environmental Protection (Water) Policy 2009, schedule 2;
- Legally secured offset areas.

Refer to **Appendix 1** for a description of MSES categories.

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

MSES Criteria 1 - STATE CONSERVATION AREAS	0.0 ha	0.0%
1.1 Protected Areas	0.0 ha	0.0%
1.2 Marine Parks	0.0 ha	0.0%
1.3 Fish Habitat Areas	0.0 ha	0.0%
MSES Criteria 2 - WETLANDS AND WATERWAYS - area features	0.0 ha	0.0%
MSES Criteria 2 - WETLANDS AND WATERWAYS - linear features	0.0 km	Not applicable
2.1 High Ecological Significance wetlands on the map of Referable Wetlands	0.0 ha	0.0%
2.2 High Ecological Value (HEV) wetlands	0.0 ha	0.0%
2.2 High Ecological Value (HEV) waterways **	0.0 km	Not applicable
2.3 Strategic Environmental Areas (SEA)	0.0 ha	0.0%
MSES Criteria 3 - SPECIES	6.3 ha	2.4%
3.1 Threatened species and Iconic species	6.3 ha	2.4%
MSES Criteria 4 - REGULATED VEGETATION - area features	79.5 ha	29.8%
MSES Criteria 4 - REGULATED VEGETATION - linear features	7.0 km	Not applicable
4.1 Vegetation Management Regional Ecosystems and Remnant Map *	79.5 ha	29.8%
4.2 Vegetation Management Wetland Map *	0.0 ha	0.0%
4.3 Vegetation Management Watercourse Map **	7.0 km	Not applicable
MSES Criteria 5 - OFFSET AREAS	0.0 ha	0.0%
5.1 Legally secured offset areas	0.0 ha	0.0%
Total MSES (criteria 1.1, 1.2, 1.3, 2.1, part of 2.2, 2.3, 3.1, 4.1, 4.2 and 5.1) calculated for area features only	85.8 ha	32.1%

Please note that the area and percent area figures in the table above will not necessarily add up to the "Total MSES" figures due to overlapping values.

*The total extent area of regulated vegetation (Criteria 4.1) may be overestimated due to the presence of dominant and/or subdominant non-regulated regional ecosystems in mixed patches of vegetation, i.e. the total area of mixed vegetated patches is included irrespective of whether the patch consists only partly of endangered, of concern or wetland regional ecosystems.

**The total linear extent of watercourses may be overestimated in some instances, as both banks (rather than the centreline) of waterbodies and larger watercourses where present are mapped by the State, increasing the extent of linear features.

Additional Information with Respect to MSES Values Present

Criteria 1 - State Conservation Areas

1.1 Protected Areas

(no results)

1.2 Marine Parks

(no results)

1.3 Fish Habitat Areas

(no results)

Refer to **Map 2 - MSES Criteria 1 - State Conservation Areas** for an overview of the relevant MSES.

Criteria 2 - Wetlands and Waterways

2.1 High Ecological Significance wetlands on the Map of Referable Wetlands

(no results)

2.2 High Ecological Value (HEV) wetlands

(no results)

2.2 High Ecological Value (HEV) waterways

(no results)

2.3 Strategic Environmental Areas

(no results)

Refer to **Map 3 - MSES Criteria 2 - Wetlands and Waterways** for an overview of the relevant MSES.

Criteria 3 - Species

3.1 Threatened species and Iconic species

Threatened and/or iconic species habitat within the AOI (derived from records/essential habitat mapping)

Threatened wildlife and special least concern wildlife	Classification*
Tachyglossus aculeatus	iconic

*NCA E or V - Endangered or Vulnerable status under the NCA; VMA ehab - VMA essential habitat; Iconic - Iconic species.

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/>

Koala bushland habitat

(no results)

Dugong areas

(no results)

Refer to **Map 4 - MSES Criteria 3 - Species** for an overview of the relevant MSES.

Criteria 4 - Regulated Vegetation

4.1 Endangered and Of Concern regional ecosystems and Category R Regulated Vegetation

Regulated Vegetation Description	Regional Ecosystem Patch	VMA status
rem_oc	9.12.31b/9.12.31a	O-dom
Cat R	None	None

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/>

4.2 Vegetation Management Wetlands

(no results)

Wetlands datasource

Not applicable

4.3 Watercourses shown on the Vegetation Management Watercourse and Drainage Feature Map

A vegetation management watercourse is mapped as present

Watercourses datasource

Vegetation Management Watercourse Map

Refer to **Map 5 - MSES Criteria 4 - Regulated Vegetation** for an overview of the relevant MSES.

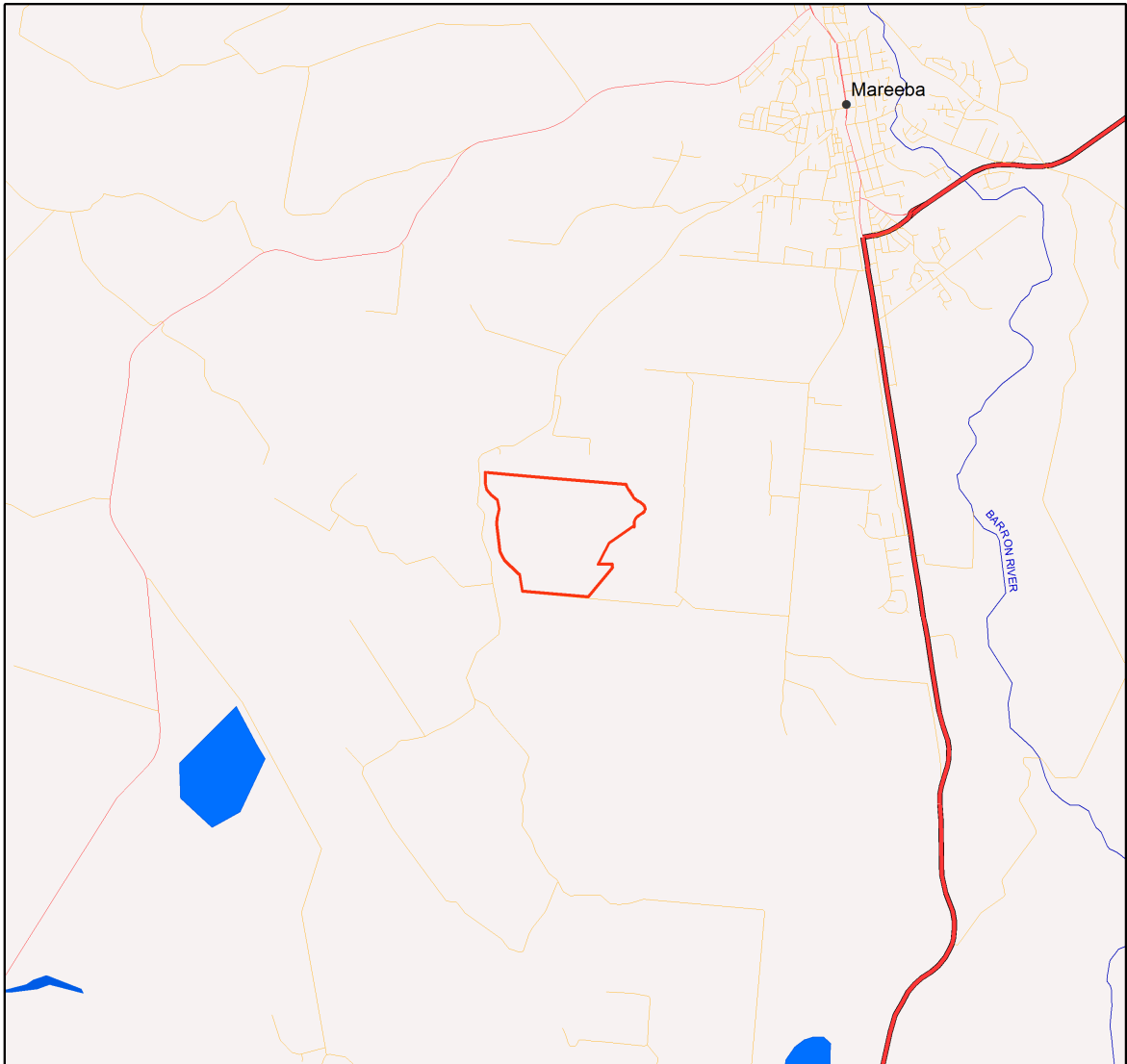
Criteria 5 - Offset Areas

5.1 Legally secured offset areas

(no results)

Refer to **Map 6 - MSES Criteria 5 - Offset Areas** for an overview of the relevant MSES.

Maps
Map 1 - Location



Locality Map

Legend

- Lot and Plan
- Towns
- Highway
- Connector
- Street/Local Road
- National Park (Scientific)
- National Park
- National Park (CYPAL)
- Conservation Park
- Resources Reserve
- Forest Reserve
- State Forest
- Timber Reserve
- Nature Refuges
- Lakes and Reservoirs
- Major rivers/creeks
- Queensland



0 0.45 0.9 1.35 1.8 2.25 Kilometers



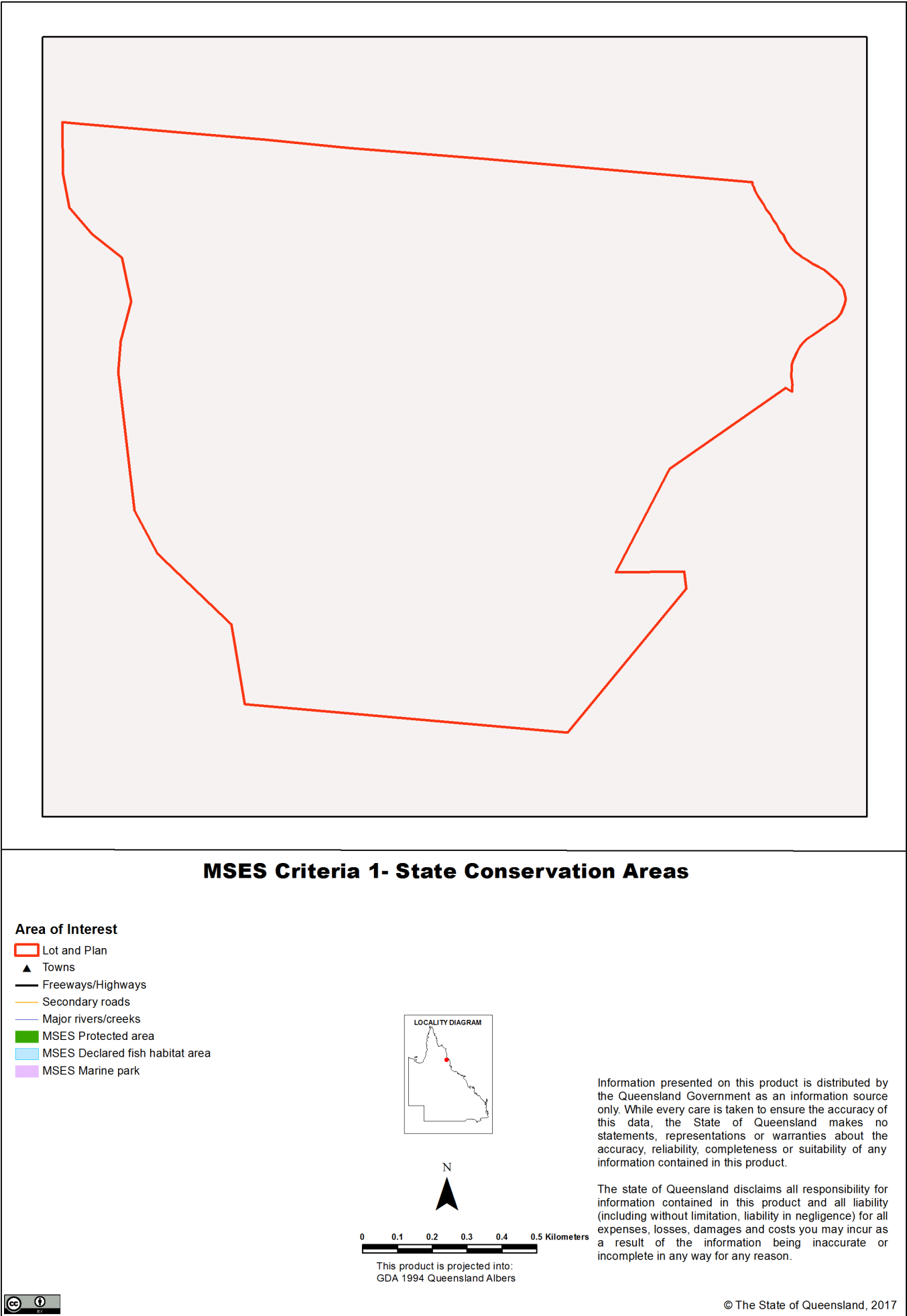
This product is projected into:
GDA 1994 Queensland Albers

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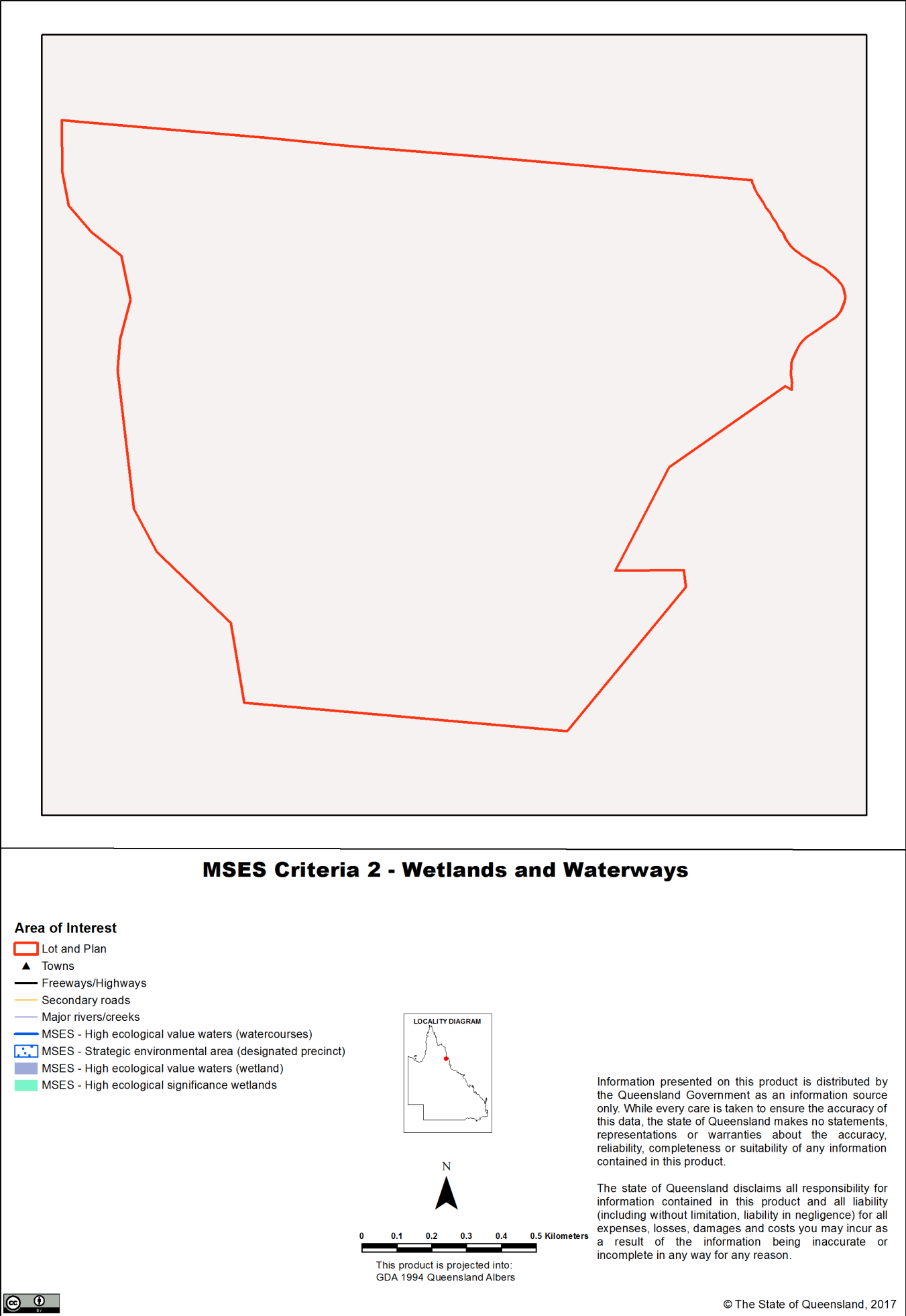
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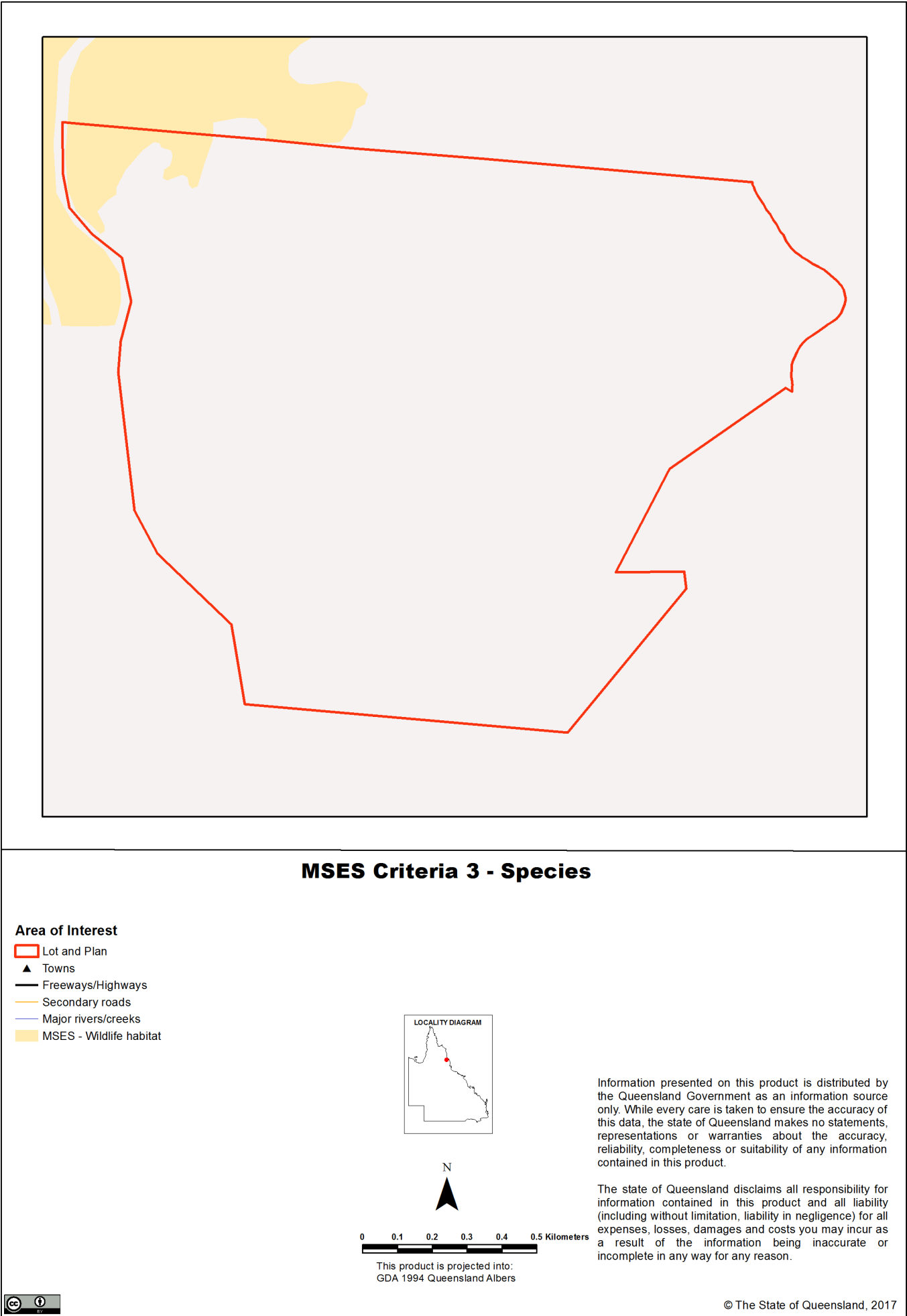
Map 2 - MSES Criteria 1 - State Conservation Areas



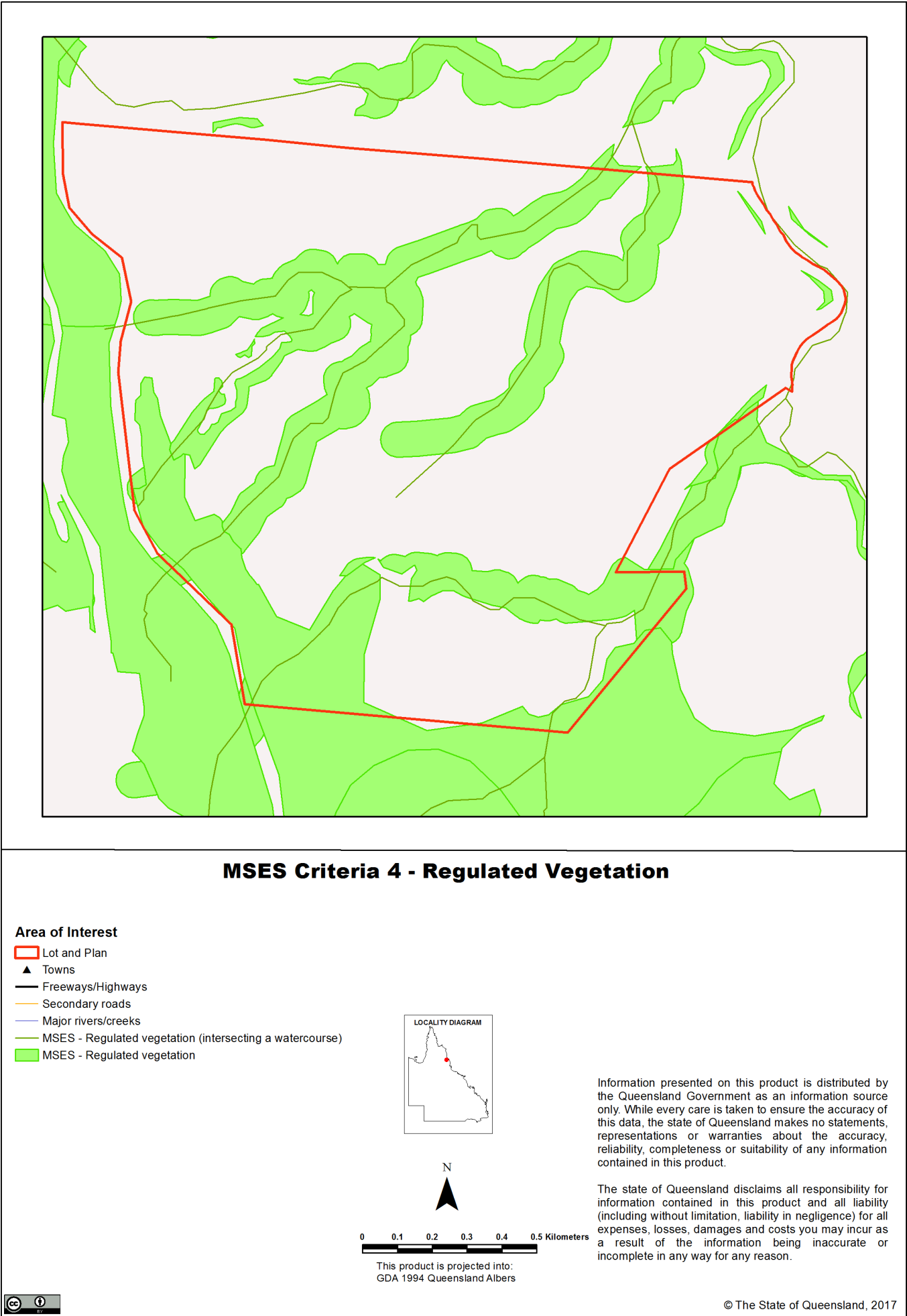
Map 3 - MSES Criteria 2 - Wetlands and Waterways



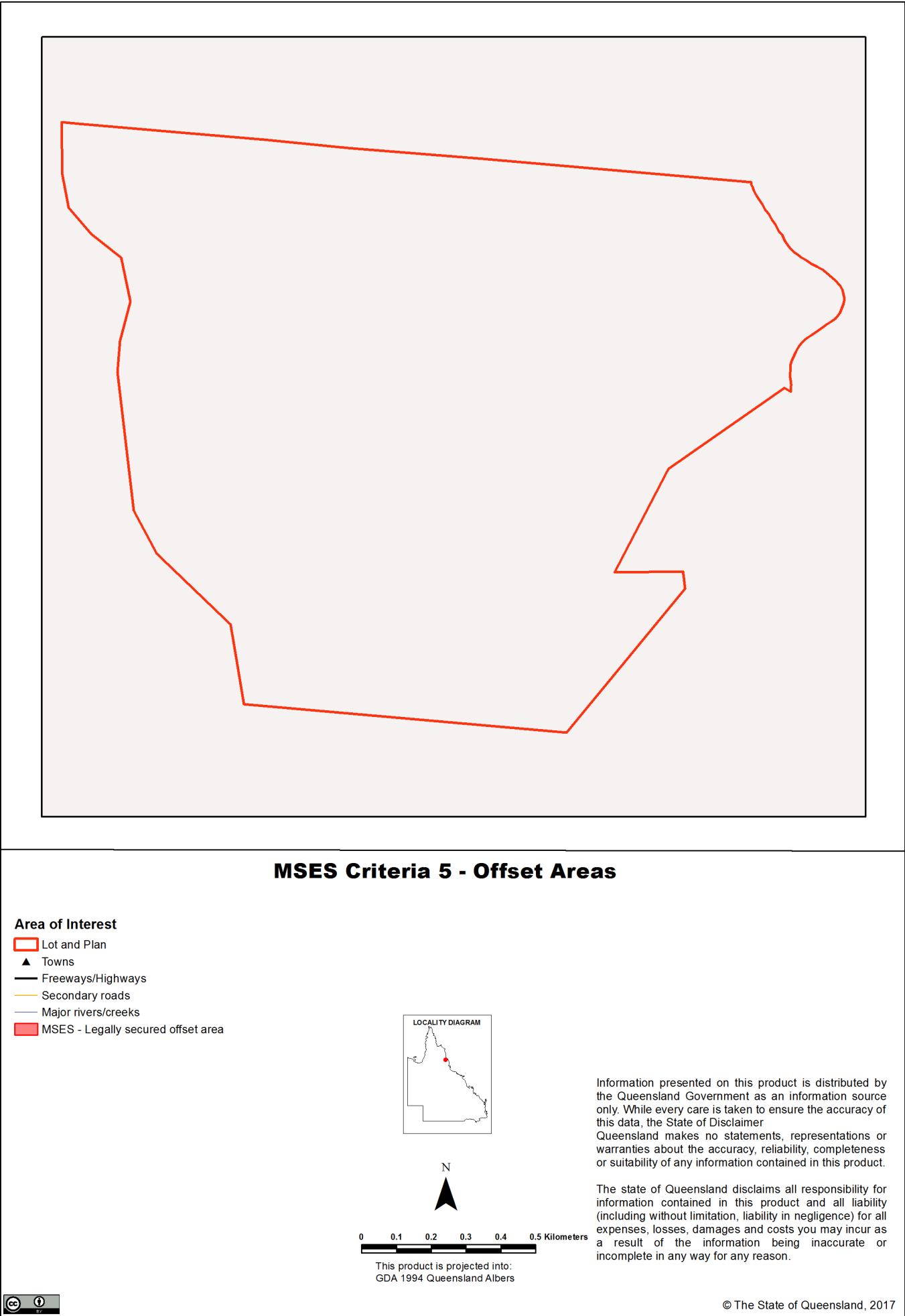
Map 4 - MSES Criteria 3 - Species



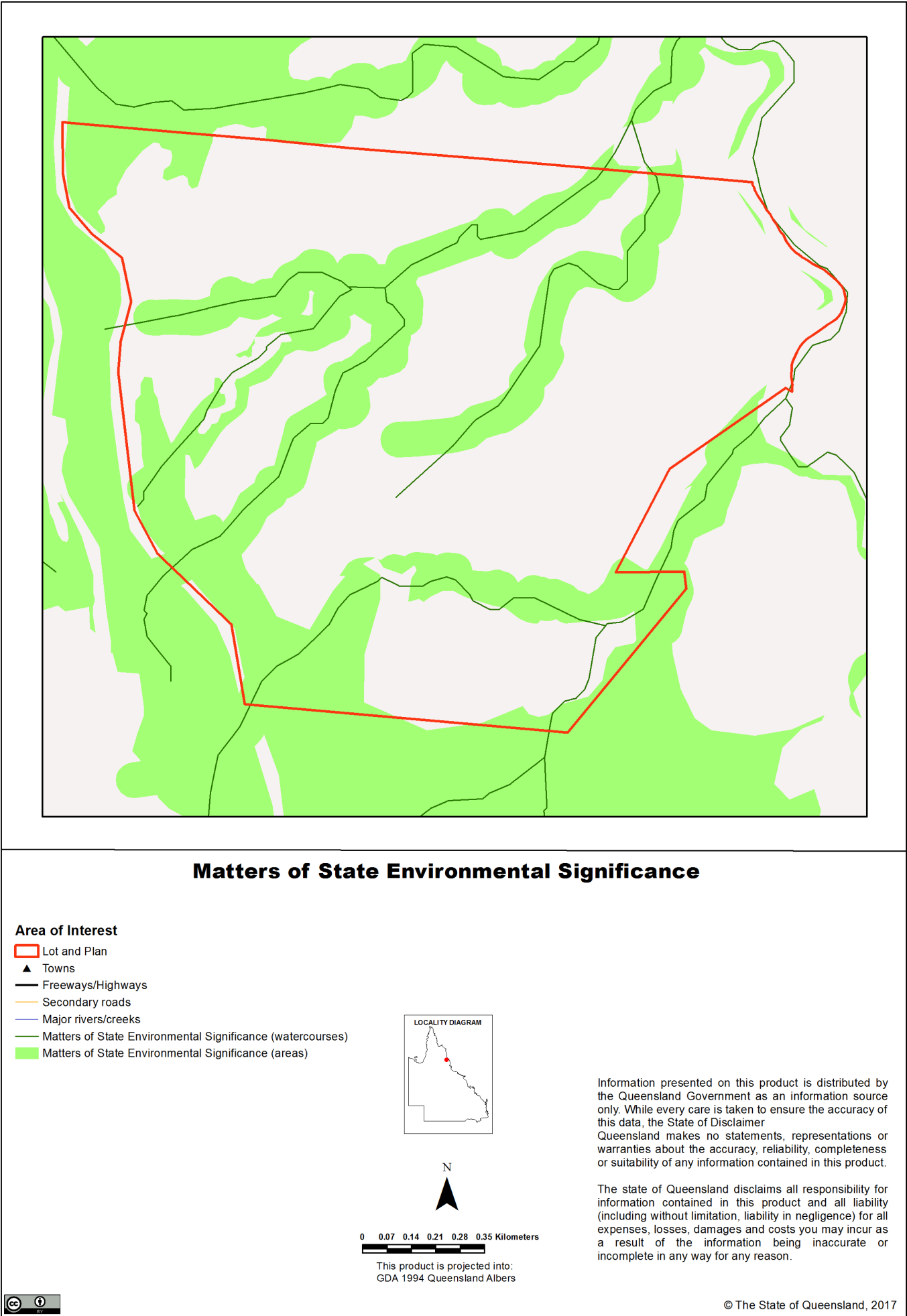
Map 5 - MSES Criteria 4 - Regulated Vegetation



Map 6 - MSES Criteria 5 - Offset Areas



Map 7 - Matters of State Environmental Significance



Appendices

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

Feature Name	Description
1.1 Protected Areas (NCA)	Protected areas under the <i>Nature Conservation Act 1992</i> , except coordinated conservation areas.
1.2 Marine Parks (MPA)	The following State marine parks zones under the <i>Marine Parks Act 2004</i> : <ul style="list-style-type: none"> - Marine National Park zone; - Marine Conservation Park zone; - Scientific Research zone; - Preservation zone; - Buffer zone.
1.3 Fish Habitat Areas (FA)	The following areas under the <i>Fisheries Act 1994</i> including: All fish habitat areas.
2.1 'High Ecological Significance' wetlands on the Map of Referable Wetlands	All natural wetlands that are 'High Ecological Significance' (HES) on the Map of Referable Wetlands. Exclude: any amendments to the Map of Referable Wetlands.
2.2 High Ecological Value (HEV) wetlands and waterways (EP Act)	Natural wetlands and waterways that occur in HEV (maintain) freshwater and estuarine areas under the Environmental Protection (Water) Policy.
2.3 Strategic Environmental Areas (RPI Act)	Designated precinct areas under the <i>Regional Planning Interests Act 2014</i> .
3.1 Threatened species and Iconic species (NCA)	Habitat for: Threatened wildlife under <i>Nature Conservation Act 1992</i> including: 'Endangered' and 'Vulnerable' species. Special least concern animals under the <i>Nature Conservation Act 1992</i> including: Koala (outside SEQ); Echidna and Platypus.
4.1 Vegetation Management Regional Ecosystem and Remnant Map (VMA)	Include VMA 'Endangered' and 'Of Concern' remnant (Category A and B) and high value regrowth (Category C) REs and Category R (GBR regrowth watercourse) areas from the Regulated Vegetation Management Map.
4.2 Vegetation Management Wetland Map (VMA)	Wetlands that are lakes and swamps shown on the Vegetation Management Wetlands Map.
4.3 Vegetation Management Watercourse and Drainage Feature Map (VMA)	Watercourses shown on the Vegetation Management Watercourse and Drainage Feature Map.
5.1 Legally secured offset areas (VMA, EP Act, SPA, TIA, EA)	Offset areas legally secured under a covenant, conservation agreement or development approval condition.

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
- Matters of State environmental significance drainage lines
- Boundaries of the Great Barrier Reef Marine Park

Note: 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.

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.

Underlying data sources used to develop individual releases of compiled MSES mapping include, but are not limited to:

- Regulated vegetation including:

- Regulated Regional Ecosystems and Regrowth
- Regulated Essential habitat
- Regulated Wetlands
- Regulated Watercourses and Drainage
- Former Regrowth

- Queensland Wetland Mapping (v3)

- Essential Habitat Mapping

- Protected Areas

- Marine Parks

- Fish Habitat Areas

- Strategic Environmental Areas

- The Map of Referable Wetlands:

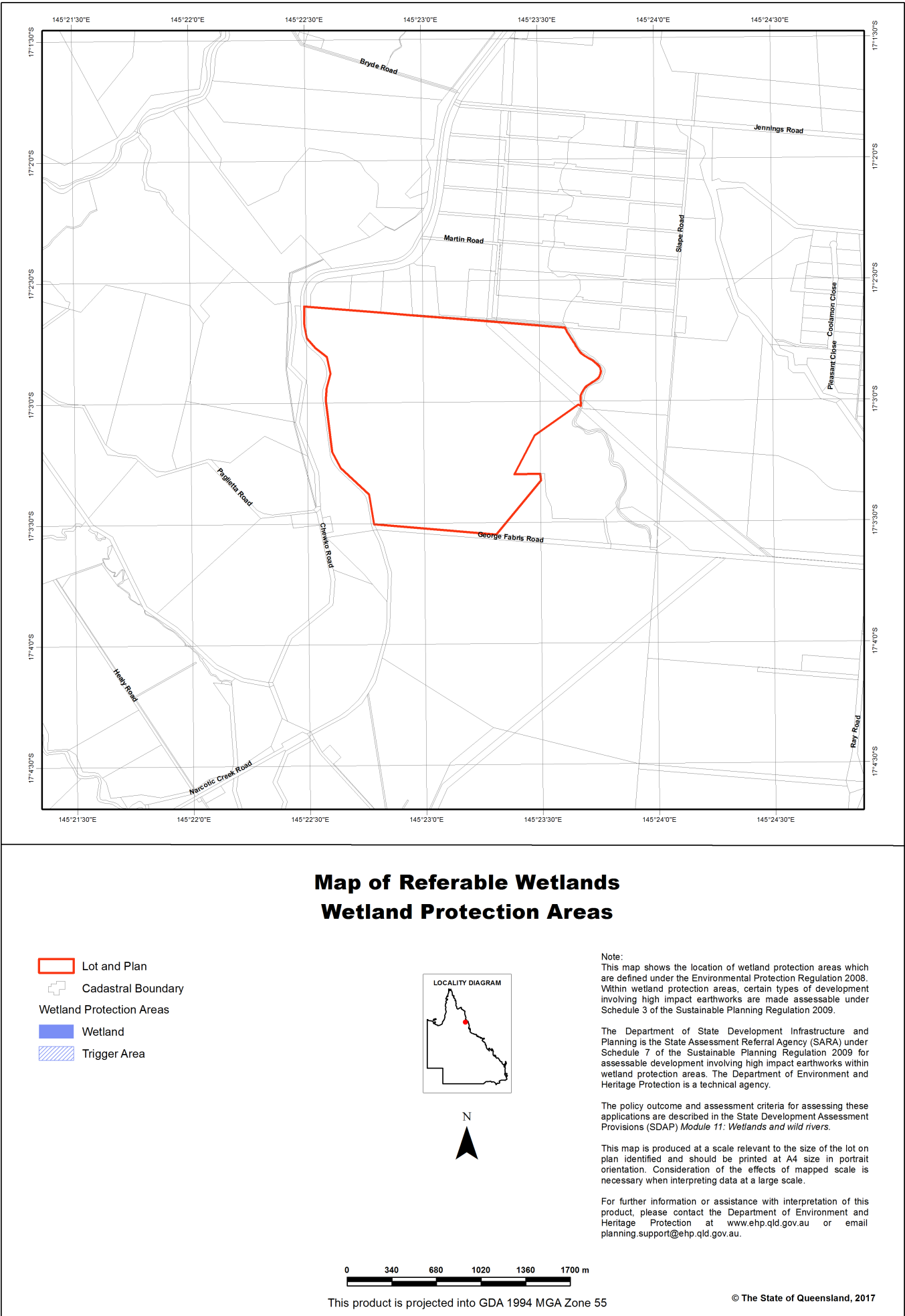
- Wetland Protection Areas (HES wetlands in the GBR)
- Wetland Management Areas (contains other HES wetlands)

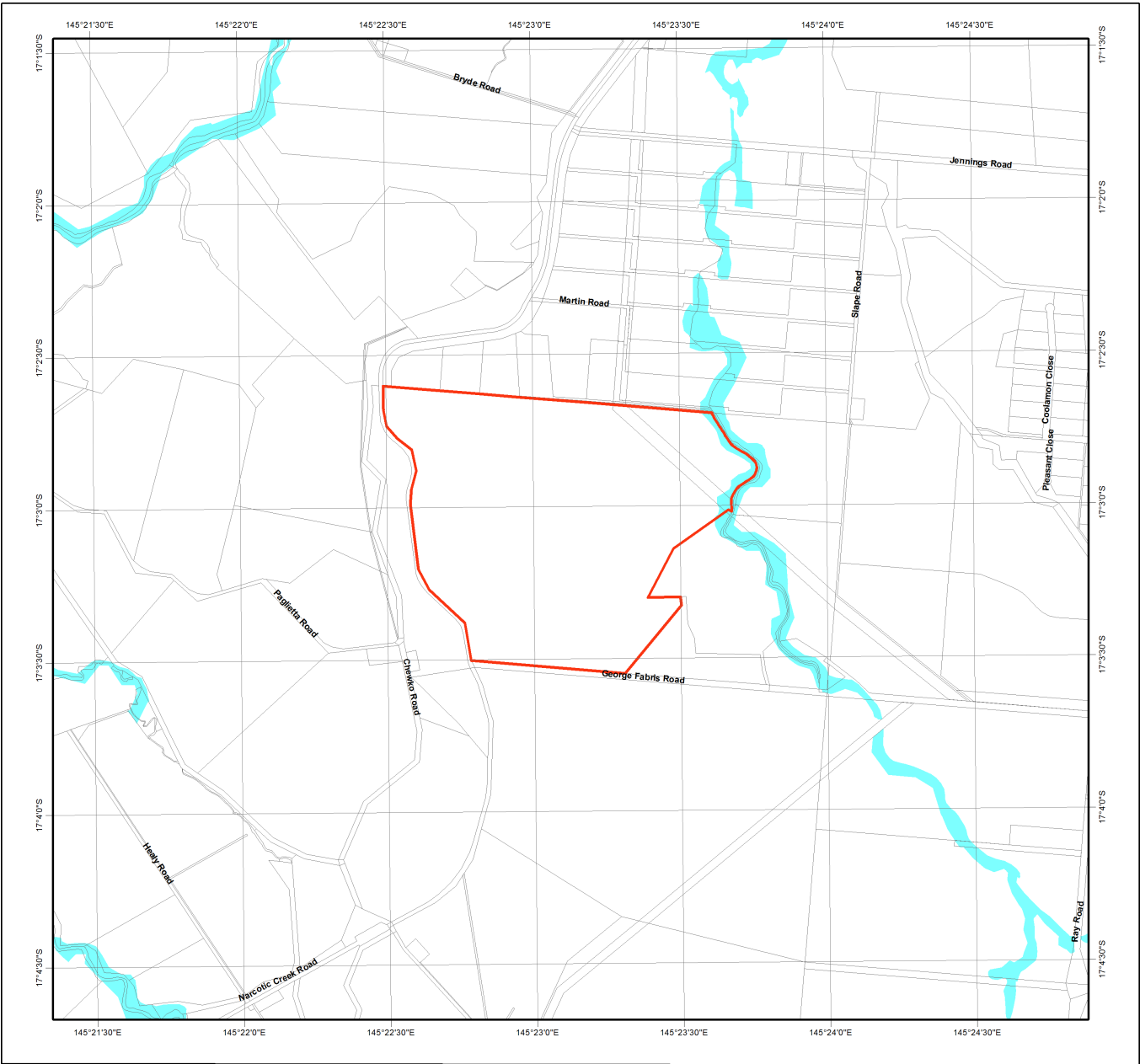
Datasets reflective of the above matters can be downloaded via the Queensland Spatial Catalogue:

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

Appendix 3 - Acronyms and Abbreviations

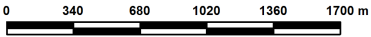
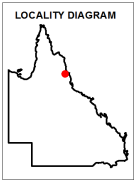
AOI	- Area of Interest
EHP	- Department of Environment and Heritage Protection
EP Act	- <i>Environmental Protection Act 1994</i>
EPP	- Environmental Protection Policy
GDA94	- Geocentric Datum of Australia 1994
GEM	- General Environmental Matters
GIS	- Geographic Information System
MSES	- Matters of State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





Map of Referable Wetlands for the Environmental Protection Act 1994

- Lot and Plan
- Cadastral Boundary
- HES Wetland
- GES Wetland



Note:
This map shows the location of wetlands on the Map of Referable Wetlands which are defined under the Environmental Protection Regulation 2008.

Wetlands are assessed for ecological significance using the environmental values for wetlands in section 81A of the Environmental Protection Regulation 2008. Wetlands are considered either High Ecological Significance (HES) or of General Ecological Significance (GES) for the purposes of the environmental values.

This map is produced at a scale relevant to the size of the lot on plan identified and should be printed at A4 size in portrait orientation. Consideration of the effects of mapped scale is necessary when interpreting data at a large scale.

For further information or assistance with interpretation of this product, please contact the Department of Environment and Heritage Protection at <www.ehp.qld.gov.au> or email <planning.support@ehp.qld.gov.au>

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This product is projected into GDA 1994 MGA Zone 55

Annex I

Glare Analysis Location Assessment

SOLAR GLARE ASSESSMENT

1. PURPOSE OF ASSESSMENT

This assessment will identify where nominated sensitive receptors are likely to see the Project and assess the potential for glare impact at sensitive receptors.

2. ASSESSMENT APPROACH

The methodology comprises a combination of quantitative and qualitative assessments for glare from the Project. The Quantitative assessment defines the study area and locations from the surrounding landscape that have theoretical visibility of the Project.

Qualitative assessment utilises the Solar Glare Hazard Assessment Tool (SGHAT) developed by Sandi National Laboratory to assess potential glare and ocular impact rating for sensitive receptors (human).

The study area is defined by the components of the Project that are pertinent to glare. These include the photovoltaic arrays and reflectivity parameters of surfaces. The assessment of glare impacts associated with the Project includes the following steps:

- Describe the Project and components that may contribute to glare;
- Describe the environmental factors that contribute to glare;
- Defines the study area;
- Identify receptors within the study area;
- Describe the likely impact to receptors; and
- Describe mitigation measures available for the Project, where required.

3. SOLAR GLARE HAZARD ANALYSIS TOOL (SGHAT)

This Solar Glare Assessment of the Project utilises the Solar Glare Hazard Analysis Tool (SGHAT) developed by Sandi National Laboratory to assess potential glare and ocular impact rating. SGHAT uses latitude and longitudinal coordinates and elevation data from Google Earth in conjunction with proprietary algorithms software to predict the sun position and angle at various times throughout the year.

Project specific information such as the size and orientation of the PV array orientation, surface reflectivity are used as inputs into the SGHAT tool to predict glare potential at a nominated observation points, as well as the magnitude of potential ocular impact based on the scale of effects identified in Figure 2.

To be conservative, a rotation range of 120o (+/- 60o) and a maximum height of 5m was used in all modelling. Refer to Figure 2.

4. ASSESSMENT LOCATIONS

For the purposes of this assessment, 15 observation locations were identified from the visual analysis of the site (refer to Section 3.7.2 of the Planning Report), with five (5) general Observation Points and 10 Residential Observation Points. Refer to Figure 3.

An assessment of each of these observation locations is provided in Table 4.1 on the following pages.

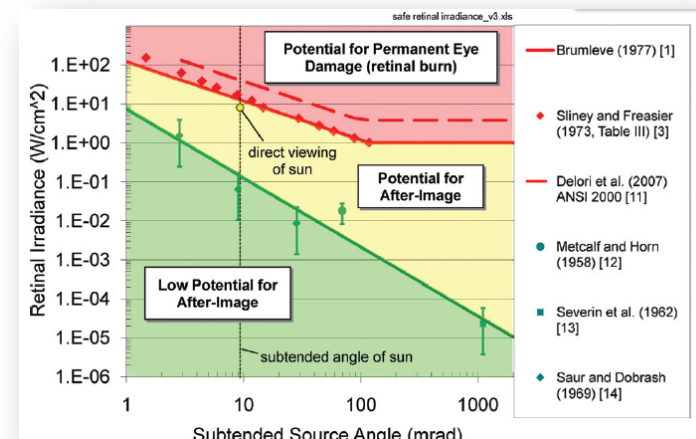


Figure 1: Ocular Impacts and Hazard Ranges

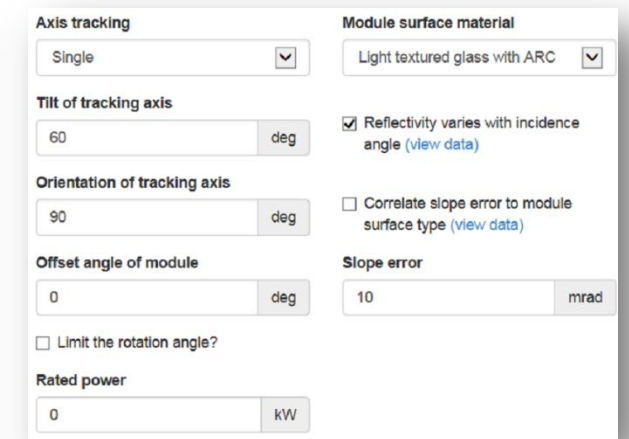


Figure 2: SGHAT Input Data

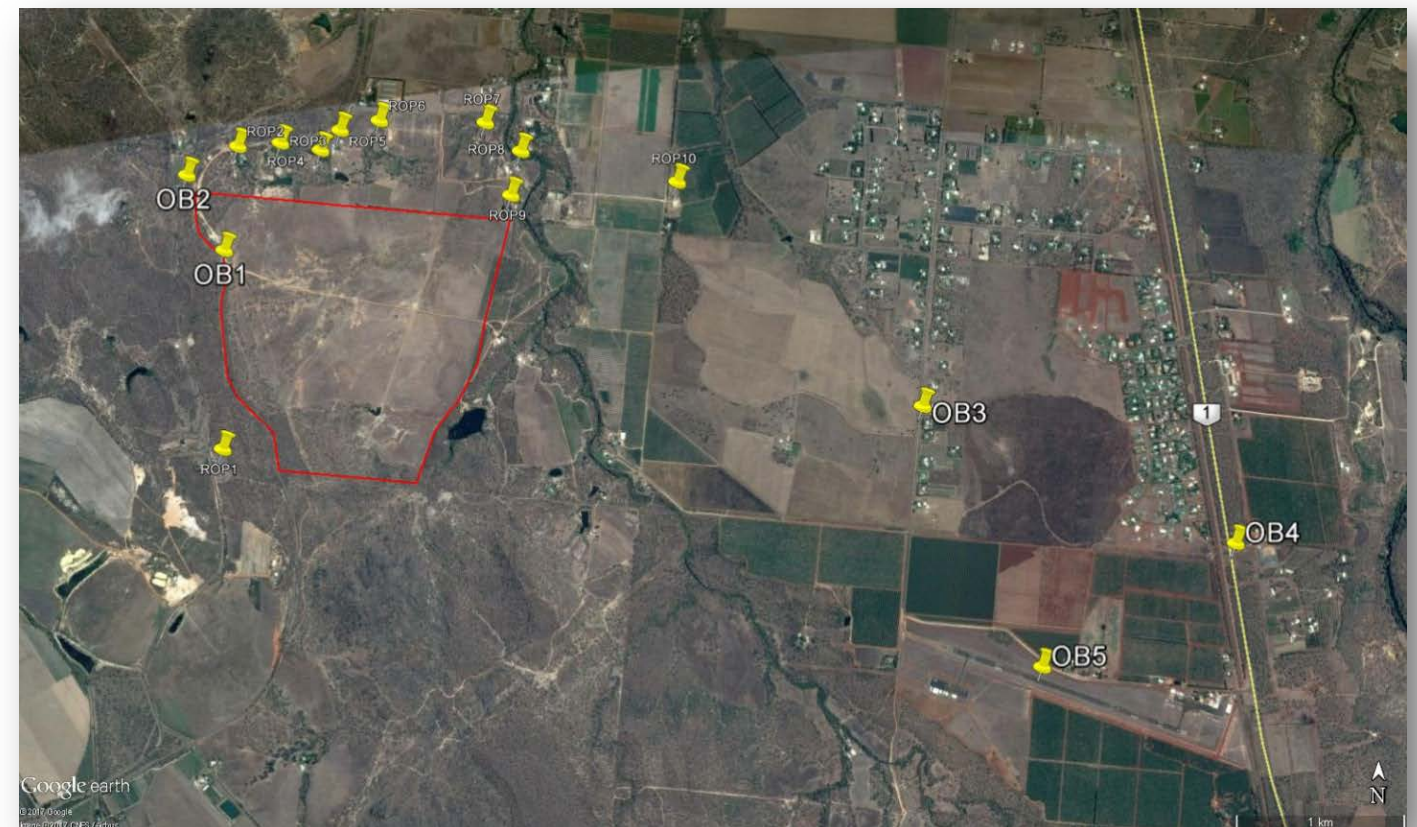

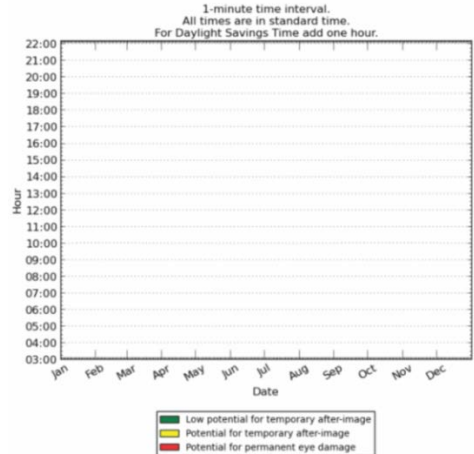

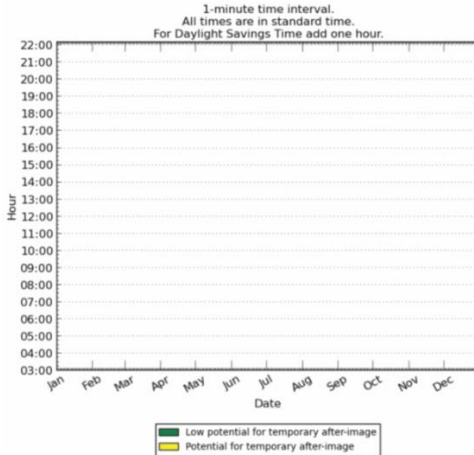

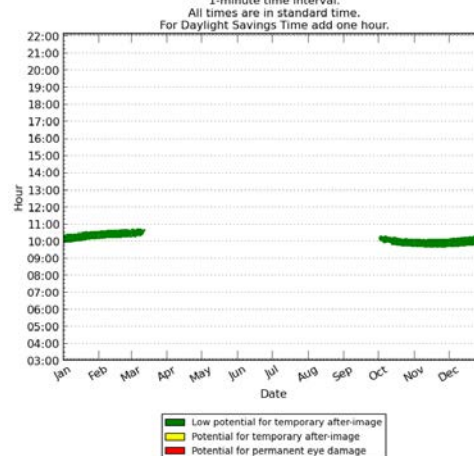

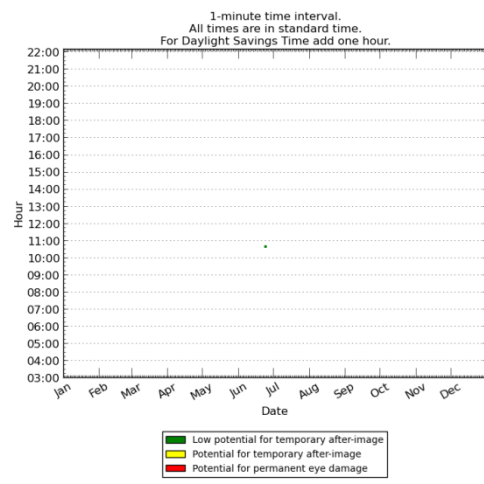

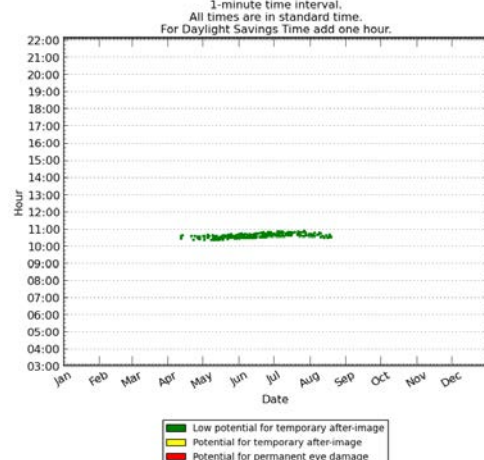

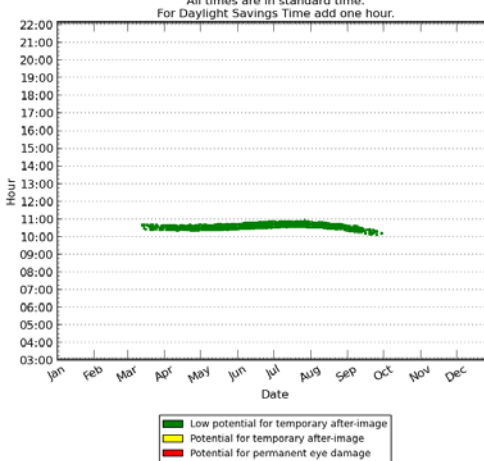



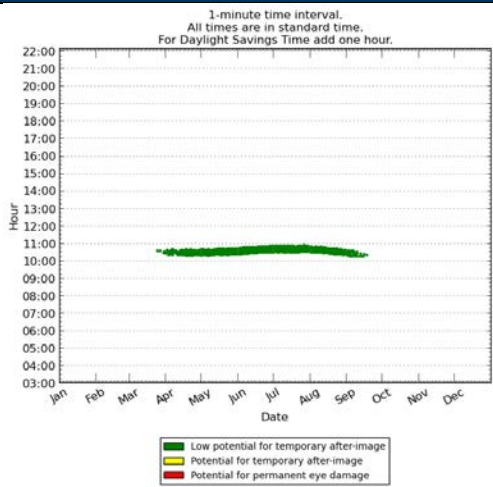

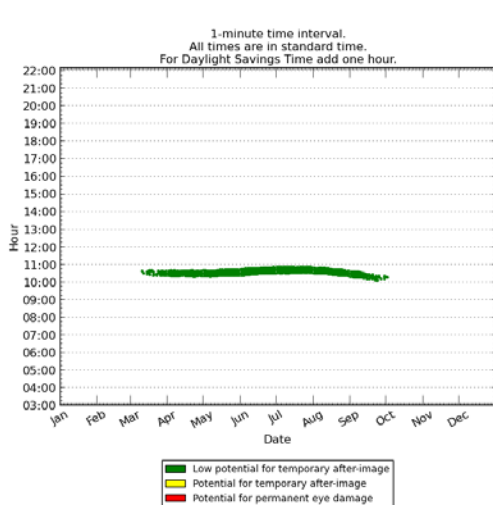

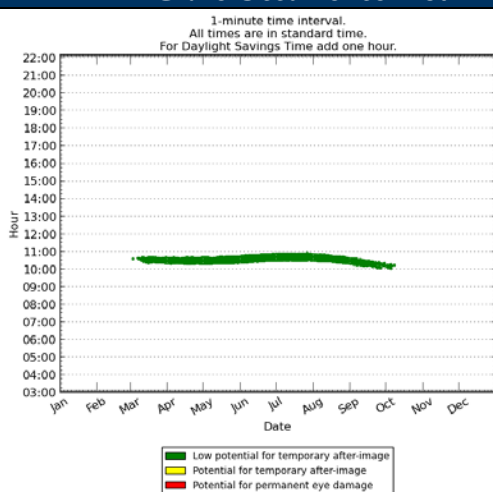
Figure 3: Observation Locations


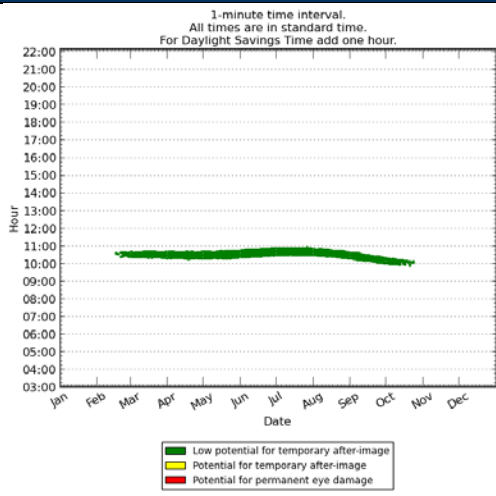

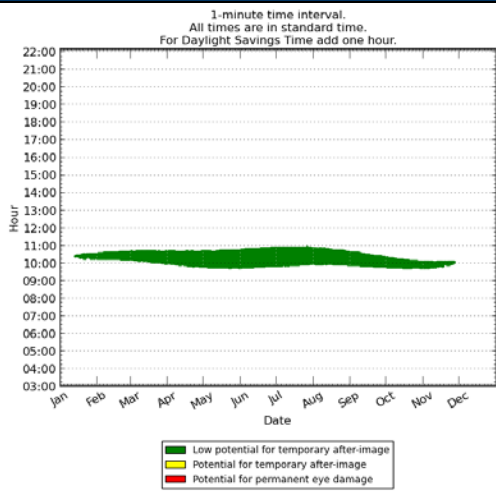

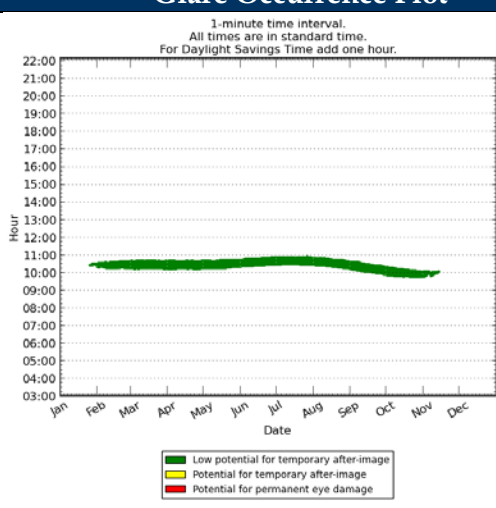
Table 4.1 Assessment Location Analysis

Observation Point 1: Mungana Branch Railway	Glare Occurrence Plot	Status	Assessment Discussion
		No Glare	<p>Observation Point 1 is located on the Mungana Branch railway line approximately 20m west from the nearest site boundary. This location is within an area identified as having visibility of the project within the Visual Impact Assessment map (refer to <i>Figure 3, Section 3.7</i> of the Planning Report).</p> <p>Due to the orientation of the solar PV panels, no glare is experienced in this location.</p>
Observation Point 2: Chewko Road	Glare Occurrence Plot	Status	Assessment Discussion
		No Glare	<p>Observation point 2 is located on Chewko Road approximately 100m west from the nearest site boundary. This location is within an area identified as having visibility of the project within the Visual Impact Assessment map (refer to <i>Figure 3, Section 3.7</i> of the Planning Report).</p> <p>Due to the orientation of the solar PV panels, no glare is experienced in this location.</p>
Observation Point 3: Ray Road	Glare Occurrence Plot	Status	Assessment Discussion
		Glare	<p>Observation Point 3 is located on Ray Road approximately 2.6km east from the nearest site boundary. This location is within an area identified as having visibility of the project within the Visual Impact Assessment map (refer to <i>Figure 3, Section 3.7</i> of the Planning Report).</p> <p>The SGHAT Assessment predicts glare to occur from October to Mid-March between approximately 9:30am and 11:00am. The glare affect is predicted to be a “Low potential for temporary after image”.</p> <p>Although the modelling suggests the facility may be visible from this location due to the elevation of the Project site, given the distance from the facility it is unlikely to be visible to the naked eye and therefore not likely to experience any glare impacts.</p>

Observation Point 4: Kennedy Highway	Glare Occurrence Plot	Status	Assessment Discussion
		Glare	<p>Observation Point 4 is located on Kennedy Highway approximately 4.8km east from the nearest site boundary. This location is within an area identified as having visibility of the project within the Visual Impact Assessment map (refer to <i>Figure 3, Section 3.7</i> of the Planning Report).</p> <p>The SGHAT Assessment predicts glare to occur from November to February between approximately 9:30am and 10:30am. The glare affect is predicted to be a “Low potential for temporary after image”.</p> <p>Although the modelling suggests the facility may be visible from this location due to the elevation of the Project site, given the distance from the facility it is unlikely to be visible to the naked eye and therefore not likely experience any glare impacts.</p>
Observation Point 5: Mareeba Airport	Glare Occurrence Plot	Status	Assessment Discussion
		No Glare	<p>Observation point 5 is located on the Mareeba Airport runway approximately 3.6km east from the nearest site boundary. This location is within an area identified as having visibility of the project within the Visual Impact Assessment map (refer to <i>Figure 3, Section 3.7</i> of the Planning Report).</p> <p>The modelling indicates that no glare impacts will be experienced from this location.</p>
Residential Observation Point 1:	Glare Occurrence Plot	Status	Assessment Discussion
		No Glare	<p>Residential Observation Point 1 is located east of Chewko Road approximately 350m west from the nearest site boundary. This location is within an area identified as having visibility of the project within the Visual Impact Assessment map (refer to <i>Figure 3, Section 3.7</i> of the Planning Report).</p> <p>The modelling indicates that no glare impacts will be experienced from this location.</p>

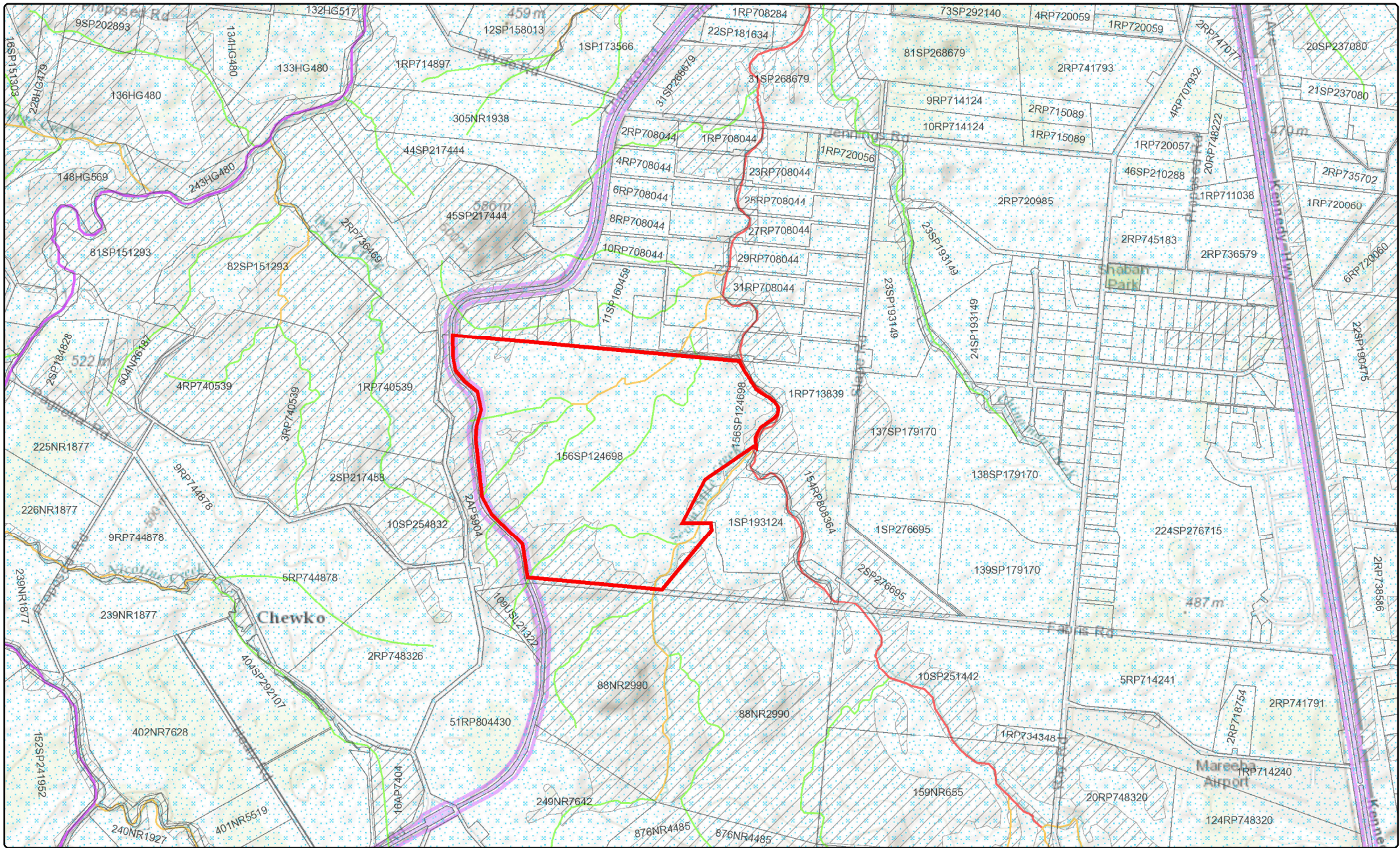
Residential Observation Point 2:	Glare Occurrence Plot	Status	Assessment Discussion
		Glare	<p>Residential Observation Point 2 is located south of Chewko Road approximately 207m north from the nearest site boundary. This location is within an area identified as having visibility of the project within the Visual Impact Assessment map (refer to <i>Figure 3, Section 3.7</i> of the Planning Report).</p> <p>The SGHAT Assessment predicts glare to occur in June between approximately 10:30am. The glare affect is predicted to be a “Low potential for temporary after image”.</p> <p>Given the low potential for impacts and the limited time associated, the existing vegetation screening on the Project site and effected property is considered sufficient for mitigation purposes.</p>
Residential Observation Point 3:	Glare Occurrence Plot	Status	Assessment Discussion
		Glare	<p>Residential Observation Point 3 is located south of Chewko Road approximately 250m north from the nearest site boundary. This location is within an area identified as having visibility of the project within the Visual Impact Assessment map (refer to <i>Figure 3, Section 3.7</i> of the Planning Report).</p> <p>The SGHAT Assessment predicts glare to occur from April to September and between approximately 10:00am and 11:00am. The glare affect is predicted to be a “Low potential for temporary after image”.</p> <p>It is noted that the existing vegetation between the proposed development and residence is likely to filter any low level glare.</p>
Residential Observation Point 4:	Glare Occurrence Plot	Status	Assessment Discussion
		Glare	<p>Residential Observation Point 4 is located south of Chewko Road approximately 210m north from the nearest site boundary. This location is within an area identified as having visibility of the project within the Visual Impact Assessment map (refer to <i>Figure 3, Section 3.7</i> of the Planning Report).</p> <p>The SGHAT Assessment predicts glare to occur from March to October and between approximately 10:00am and 11:00am. The glare affect is predicted to be a “Low potential for temporary after image”.</p> <p>It is noted that the existing vegetation between the proposed development and residence is likely to filter any low level glare.</p>

Residential Observation Point 5:	Glare Occurrence Plot	Status	Assessment Discussion
		Glare	<p>Residential Observation Point 5 is located south of Chewko Road approximately 350m north from the nearest site boundary. This location is within an area identified as having visibility of the project within the Visual Impact Assessment map (refer to <i>Figure 3, Section 3.7</i> of the Planning Report).</p> <p>The SGHAT Assessment predicts glare to occur from March to October and between approximately 10:00am and 11:00am. The glare affect is predicted to be a “Low potential for temporary after image”.</p> <p>It is noted that the existing vegetation between the proposed development and residence is likely to filter any low level glare.</p>
Residential Observation Point 6:	Glare Occurrence Plot	Status	Assessment Discussion
		Glare	<p>Residential Observation Point 6 is located east of Chewko Road approximately 407m north from the nearest site boundary. This location is within an area identified as having visibility of the project within the Visual Impact Assessment map (refer to <i>Figure 3, Section 3.7</i> of the Planning Report).</p> <p>The SGHAT Assessment predicts glare to occur from March to mid-October and between approximately 10:00am and 11:00am. The glare affect is predicted to be a “Low potential for temporary after image”.</p> <p>Existing vegetation on the property is likely to provide effective screening of the Project and any potential glare impacts.</p>
Residential Observation Point 7:	Glare Occurrence Plot	Status	Assessment Discussion
		Glare	<p>Residential Observation Point 7 is located east of Martin Road approximately 480m north from the nearest site boundary. This location is within an area identified as having visibility of the project within the Visual Impact Assessment map (refer to <i>Figure 3, Section 3.7</i> of the Planning Report).</p> <p>The SGHAT Assessment predicts glare to occur from March to mid-October and between approximately 10:00am and 11:00am. The glare affect is predicted to be a “Low potential for temporary after image”.</p> <p>Existing vegetation surrounding the dwelling is likely to provide effective screening of the Project any potential glare impacts.</p>

Residential Observation Point 8:	Glare Occurrence Plot	Status	Assessment Discussion
		Glare	<p>Residential Observation Point 8 is located north of Martin Road approximately 335m north east from the nearest site boundary. This location is within an area identified as having visibility of the project within the Visual Impact Assessment map (refer to <i>Figure 3, Section 3.7</i> of the Planning Report).</p> <p>The SGHAT Assessment predicts glare to occur from February to November and between approximately 9:45am and 11:00am. The glare affect is predicted to be a “Low potential for temporary after image”.</p> <p>Existing vegetation and outbuildings surrounding the dwelling is likely to provide effective screening of the Project any potential glare impacts.</p>
Residential Observation Point 9:	Glare Occurrence Plot	Status	Assessment Discussion
		Glare	<p>Residential Observation Point 9 is located south of Martin Road approximately 60m north east from the nearest site boundary. This location is within an area identified as having visibility of the project within the Visual Impact Assessment map (refer to <i>Figure 3, Section 3.7</i> of the Planning Report).</p> <p>The SGHAT Assessment predicts glare to occur from January to December and between approximately 9:30am and 11:00am. The glare affect is predicted to be a “Low potential for temporary after image”.</p> <p>Existing vegetation surrounding the dwelling is likely to provide effective screening of the Project any potential glare impacts.</p>
Residential Observation Point 10:	Glare Occurrence Plot	Status	Assessment Discussion
		Glare	<p>Residential Observation Point 10 is located east of Slape Road approximately 1km north east from the nearest site boundary. This location is within an area identified as having visibility of the project within the Visual Impact Assessment map (refer to <i>Figure 3, Section 3.7</i> of the Planning Report).</p> <p>The SGHAT Assessment predicts glare to occur from Mid-January to mid-November and between approximately 9:30am and 11:00am. The glare affect is predicted to be a “Low potential for temporary after image”.</p> <p>Although the modelling suggests the facility may be visible from this location due to the elevation of the Project site, given the distance from the facility and vegetation it is unlikely to be visible to the naked eye will reduce any glare impacts.</p>

Annex J

State Development Assessment
Mapping

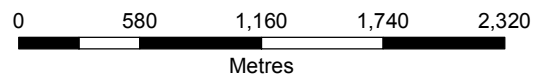


DA Mapping System – Print Screen



Department of
Infrastructure, Local
Government and Planning

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Date: 23/06/2017

Disclaimer:

This map has been generated from the information supplied to the Department of Infrastructure, Local Government and Planning for the purposes of Development Assessment Mapping Online but is a print screen only and should not be used for development application (DA) purposes. For DA purposes the user should use the Print Report function to obtain a list of DA triggers. The map generated has been prepared with due care based on the best available information at the time of publication. The State of Queensland holds no responsibility for any errors, inconsistencies or omissions within this document. Any decisions made by other parties based on this document are solely the responsibility of those parties.

Legend

Drawn Polygon Layer

Override 1

Cadastral (50k)



Cadastral (50k)

Qld waterways for waterway barrier works



1 - Low



2 - Moderate



3 - High



4 - Major

Regulated vegetation management map (Category A and B extract)



Category A on the regulated vegetation management map



Category B on the regulated vegetation management map

Water resource planning area boundaries



Water resource planning area boundaries

Area within 25m of existing railway



Area within 25m of existing railway

Railway



Railway



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Infrastructure, Local
Government and Planning

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Annex K

SDAP Code Assessment

State code 2: Development in a railway environment

Table 2.2.1: Development in a railway environment

Performance outcomes	Acceptable outcomes	Response
Buildings and structures		
All railways		
PO1 The location of buildings, structures, infrastructure, services and utilities does not create a safety hazard in a railway corridor or cause damage to, or obstruct, rail transport infrastructure or other rail infrastructure.	AO1.1 Buildings, structures, infrastructure, services and utilities are not located in a railway corridor. AND	<i>Complies with AO – Project will utilise the existing Cane Road access across the railway infrastructure, with no additional works within the road corridor proposed.</i>
	AO1.2 Buildings, structures, infrastructure, services and utilities can be maintained without requiring access to a railway corridor. AND	<i>Complies with AO – Project will utilise the existing Cane Road access across the railway infrastructure, with no additional works within the road corridor proposed.</i>
	AO1.3 Buildings, structures and infrastructure are set back horizontally a minimum of 3 metres from the outermost projection of overhead line equipment. Note: Section 2.3 of the Guide to Development in a Transport Environment: Rail, Department of Transport and Main Roads, 2015 provides guidance on how to comply with this acceptable outcome. AND	<i>Complies with AO – Project will utilise the existing Cane Road access across the railway infrastructure, with no additional works within the road corridor proposed.</i>
	AO1.4 The lowest part of development in or over a railway is a minimum of: 1. 7.9 metres above the railway track where the proposed development extends along the railway for a distance of less than 40 metres 2. 9 metres above the railway track where the development extends along the railway for a distance of between 40 and 80 metres. AND	<i>Complies with AO – Project will utilise the existing Cane Road access across the railway infrastructure, with no additional works within the road corridor proposed.</i>
	AO1.5 Pipe work, services and utilities: 1. are not attached to rail transport infrastructure or other rail infrastructure 2. do not penetrate through the side of any proposed building element or structure where built to boundary in, over or abutting a railway corridor.	<i>Complies with AO – Project will utilise the existing Cane Road access across the railway infrastructure, with no additional works within the road corridor proposed.</i>
PO2 Buildings and structures are	AO2.1 Buildings and structures are set back horizontally a minimum of 3	<i>Complies with AO – Project will</i>

Performance outcomes	Acceptable outcomes	Response
located to not interfere with, or impede access to, a railway bridge.	metres from a railway bridge. AND	<i>utilise the existing Cane Road access across the railway infrastructure, with no additional works within the road corridor proposed.</i>
	AO2.2 Permanent structures are not located below or abutting a railway bridge. AND	<i>Complies with AO – Project will utilise the existing Cane Road access across the railway infrastructure, with no additional works within the road corridor proposed.</i>
	AO2.3 Temporary activities below or abutting a railway bridge do not impede access to a railway corridor. Note: Temporary activities below or abutting a railway bridge could include, for example, car parking or outdoor storage.	<i>Complies with AO – Project will utilise the existing Cane Road access across the railway infrastructure, with no additional works within the road corridor proposed.</i>
P03 Development does not add or remove loading that will cause damage to rail transport infrastructure or a railway corridor. Note: To demonstrate compliance with this performance outcome, it is recommended a RPEQ certified geotechnical assessment, prepared in accordance with the Guide to Development in a Transport Environment: Rail, Department of Transport and Main Roads 2015 is provided.	No acceptable outcome is prescribed.	<i>Complies with PO – Project will utilise the existing Cane Road access across the railway infrastructure, with no additional works within the road corridor proposed.</i>
P04 Development above a railway is designed to enable natural ventilation and smoke dispersion in the event of a fire emergency. Note: To demonstrate compliance with the performance outcome it is recommended the applicant contact	No acceptable outcome is prescribed.	<i>Complies with PO – Project will utilise the existing Cane Road access across the railway infrastructure, with no additional works within the road corridor proposed.</i>

Performance outcomes	Acceptable outcomes	Response
the Queensland Fire and Emergency Service and relevant railway manager to determine the fire scenarios to be used to inform ventilation design. Modelling of smoke dispersion should also be undertaken by a RPEQ to predict the spread of combustion products and inform the ventilation design. Section 5.1 – Development over a railway of the Guide to Development in a Transport Environment: Rail, Department of Transport and Main Roads, 2015, provides guidance on how to comply with this acceptable outcome.		
<p>PO5 Construction activities do not cause ground movement or vibration impacts in a railway corridor.</p> <p>Note: To demonstrate compliance with this performance outcome, it is recommended a RPEQ certified geotechnical assessment, prepared in accordance with section 2.7 of the Guide to Development in a Transport Environment: Rail, Department of Transport and Main Roads, 2015 is provided.</p>	No acceptable outcome is prescribed.	<i>Complies with PO - Construction activities associated with the project will not cause movement or vibration impacts in the railway corridor.</i>
<p>PO6 Buildings and structures in a railway corridor are designed and constructed to remain structurally sound in the event of a derailed train.</p>	<p>AO6.1 Buildings and structures, in a railway corridor including piers or supporting elements, are designed and constructed in accordance with Civil Engineering Technical Requirement – CIVIL-SR-012 Collision protection of supporting elements adjacent to railways, Queensland Rail, 2011, AS5100 Bridge design and AS1170 Structural design actions.</p> <p>Note: Section 3.2 of the Guide to Development in a Transport Environment:</p>	<i>Complies with AO – Project will utilise the existing Cane Road access across the railway infrastructure, with no additional works within the road corridor proposed.</i>

Performance outcomes	Acceptable outcomes	Response
	Rail, Department of Transport and Main Roads, 2015 provides guidance on how to comply with this acceptable outcome.	
PO7 Buildings and structures in high risk locations and where also located within 10 metres of the centreline of the nearest railway track are designed and constructed to remain structurally sound in the event of a derailed train.	<p>AO7.1 Buildings and structures, in a railway corridor including piers or supporting elements, are designed and constructed in accordance with Civil Engineering Technical Requirement CIVIL-SR-012 Collision protection of supporting elements adjacent to railways, Queensland Rail, 2011, AS5100 Bridge design and AS1170 Structural design actions.</p> <p>Note: Section 3.2 of the Guide to Development in a Transport Environment: Rail, Department of Transport and Main Roads, 2015 provides guidance on how to comply with this acceptable outcome.</p>	<i>Complies with AO – Project will utilise the existing Cane Road access across the railway infrastructure, with no additional works within the road corridor proposed.</i>
PO8 Buildings and structures in a railway corridor are designed and constructed to prevent projectiles from being thrown onto a railway.	<p>AO8.1 Buildings and structures in a railway corridor include throw protection screens in accordance with the relevant provisions of the Civil Engineering Technical Requirement – CIVIL-SR-005 Design of buildings over or near railways, Queensland Rail, 2011, and the Civil Engineering Technical Requirement – CIVIL-SR-008 Protection screens, Queensland Rail.</p> <p>AND</p>	<i>Complies with AO – Project will utilise the existing Cane Road access across the railway infrastructure, with no additional works within the road corridor proposed.</i>
	<p>AO8.2 Road, pedestrian and bikeway bridges over a railway include throw protection screens in accordance with the relevant provisions of the Civil Engineering Technical Requirement – CIVIL-SR-005 Design of buildings over or near railways, Queensland Rail, 2011, and the Civil Engineering Technical Requirement – CIVIL-SR-008 Protection screens, Queensland Rail.</p> <p>Note: Section 2.4 of the Guide to Development in a Transport Environment: Rail, Department of Transport and Main Roads, 2015, provides guidance on how to comply with this outcome.</p>	<i>Complies with AO – Project will utilise the existing Cane Road access across the railway infrastructure, with no additional works within the road corridor proposed.</i>
PO9 Buildings, and structures, other than accommodation activities, are designed and constructed to prevent projectiles from being thrown onto a railway from any publicly accessible areas located within 20 metres from the centreline of the nearest railway track.	AO9.1 Publically accessible areas located within 20 metres from the centreline of the nearest railway track do not directly overlook a railway. OR	<i>Complies with AO – Project will utilise the existing Cane Road access across the railway infrastructure, with no additional works within the road corridor proposed.</i>
	AO9.2 Buildings and structures are designed to ensure publically accessible areas located within 20 metres of the centreline of the nearest railway track and that overlook the railway include throw protection screens in accordance with the relevant provisions of the Civil Engineering	<i>Complies with AO – Project will utilise the existing Cane Road access across the railway infrastructure, with no additional works within the road</i>

Performance outcomes	Acceptable outcomes	Response
	<p>Technical Requirement – CIVIL-SR-005 Design of buildings over or near railways, Queensland Rail, 2011, and the Civil Engineering Technical Requirement – CIVIL-SR-008 Protection screens, Queensland Rail.</p> <p>Note: Section 2.4 of the Guide to Development in a Transport Environment: Rail, Department of Transport and Main Roads, 2015, provides guidance on how to comply with this outcome.</p>	<i>corridor proposed.</i>
Filling, excavation and retaining structures		
<p>PO10 Filling, excavation and retaining structure do not interfere with, or result in damage to, infrastructure or services in a railway corridor.</p> <p>Note: Information on the location of services and public utility plants railway corridor can be obtained from the railway manager. Where development will impact on an existing or future service or public utility plant in a railway corridor such that the service or public utility plant will need to be relocated, the alternative alignment must comply with the standards and design specifications of the relevant service or public utility provider, and any costs of relocation are to be borne by the developer.</p>	No acceptable outcome is prescribed.	<i>Complies with PO – The Project does not involve filling, excavation or retaining structures which interfere with, or result in damage to, infrastructure or services within the rail corridor. Earthworks associated with the Project are limited to that required for piling of the supporting structures for the PV arrays and foundations for ancillary infrastructure such as the control building, inverter buildings, battery storage and substation.</i>
<p>PO11 Filling, excavation, building foundations and retaining structures do not undermine, or cause subsidence of, a railway corridor.</p> <p>Note: To demonstrate compliance with this performance outcome, it is</p>	No acceptable outcome is prescribed.	<i>Complies with PO - Earthworks associated with the Project are limited to that required for piling of the supporting structures for the PV arrays and foundations for ancillary infrastructure such as the control building, inverter buildings, battery</i>

Performance outcomes	Acceptable outcomes	Response
recommended a RPEQ certified geotechnical assessment is provided, prepared in accordance with section 2.7 of the Guide to Development in a Transport Environment: Rail, Department of Transport and Main Roads, 2015.		<i>storage and substation. The proposed works will not impact the railway corridor.</i>
<p>PO12 Filling and excavation, building foundations and retaining structures do not cause ground water disturbance in a railway corridor.</p> <p>Note: To demonstrate compliance with this performance outcome, it is recommended a RPEQ certified geotechnical assessment is provided, prepared in accordance with section 2.7 of the Guide to Development in a Transport Environment: Rail, Department of Transport and Main Roads, 2015.</p>	No acceptable solution is prescribed.	<i>Complies with PO – The railway corridor is upstream of the Project and will therefore not experience any groundwater impacts associated with the project.</i>
<p>PO13 Excavation, boring, piling, blasting or fill compaction during construction of a development does not result in ground movement or vibration impacts that would cause damage or nuisance to a railway corridor, rail transport_infrastructure or railway works.</p> <p>Note: To demonstrate compliance with this performance outcome, it is recommended a RPEQ certified geotechnical assessment is provided, prepared in accordance with section 2.7 of the Guide to Development in a</p>	No acceptable outcome is prescribed.	<i>Complies with PO – Earthworks associated with the Project are limited to that required for piling of the supporting structures for the PV arrays and foundations for ancillary infrastructure such as the control building, inverter buildings, battery storage and substation. The proposed works will not impact the railway corridor.</i>

Performance outcomes	Acceptable outcomes	Response
Transport Environment: Rail, Department of Transport and Main Roads, 2015.		
PO14 Filling and excavation material does not cause an obstruction or nuisance in a railway corridor.	AO14.1 Development does not store fill, spoil or any other material in, or adjacent to, a railway corridor.	<i>Complies with AO – No fill, spoil or any other material will be stored near the railway corridor.</i>
Stormwater and drainage		
PO15 Development does not result in an actionable nuisance or worsening of stormwater, flooding or drainage impacts in a railway corridor. Note: Section 2.8 of the Guide to Development in a Transport Environment: Rail, Department of Transport and Main Roads, 2015, provides guidance on how to comply with this performance outcome.	No acceptable outcome is prescribed.	<i>Complies with PO – The railway corridor is upstream of the Project with the proposed works not involving any works that would result in any stormwater impacts within the rail corridor.</i>
PO16 Run-off from the development site during construction of development does not cause siltation of stormwater infrastructure affecting a railway corridor.	AO16.1 Run-off from the development site during construction of development is not discharged to stormwater infrastructure in a railway corridor.	<i>Complies with PO – The railway corridor is upstream of the Project with the proposed works not involving any works that would result in any stormwater impacts within the rail corridor.</i>
Access		
PO17 Development prevents unauthorised access to a railway corridor.	AO17.1 Where development is abutting a railway corridor fencing is provided along the property boundary with the railway corridor in accordance with the railway manager's standards. Note: It is recommended the applicant contact the railway manager for advice regarding applicable fencing standards. AND	<i>Complies with PO – Given the rural nature of the area, no fences are proposed between the rail corridor and the Project site.</i>
	AO17.2 A road barrier designed in accordance with Civil Engineering Technical Requirement – CIVIL-SR-007 Design and selection criteria for road/rail interface barriers, Queensland Rail 2011, and certified by an RPEQ, is installed along any roads abutting a railway corridor.	<i>Complies with PO – The project will utilise the existing access from Cane Road which is an existing unsealed public road.</i>

Performance outcomes	Acceptable outcomes	Response
	<p>AND</p> <p>AO17.3 Proposed vehicle manoeuvring areas, driveways, loading areas or carparks abutting a railway corridor include rail interface barriers.</p> <p>Note: Section 2.4 of the Guide to Development in a Transport Environment: Rail, Department of Transport and Main Roads, 2015, provides guidance on how to comply with acceptable outcome 16.3.</p>	<i>Complies with AO – No vehicle manoeuvring areas, driveways, loading areas or car parks are proposed abutting the rail corridor.</i>
PO18 Development does not obstruct existing access to a railway corridor.	AO18.1 Development is sited and designed to ensure existing authorised access points and access routes for maintenance and emergency works to a railway corridor are clear from obstructions at all times.	<i>Complies with AO</i>
PO19 Access to a railway corridor does not create a safety hazard for users of a railway, or result in a worsening of operating conditions on a railway.	AO19.1 Development does not require a new railway crossing. AND	<i>Complies with AO – Existing railway crossing infrastructure is sufficient for the project.</i>
	AO19.2 Development does not propose new or temporary structures or works connecting to rail transport infrastructure or other rail infrastructure. AND	<i>Complies with AO</i>
	AO19.3 Vehicle access points achieve sufficient clearance from a railway level crossing in accordance with AS1742.7:2016 – Manual of uniform traffic control devices, Part 7: Railway crossings, by providing minimum 5 metres clearance from the edge running rail (outer rail), plus the length of the largest vehicle anticipated on-site. Note: Section 2.2 of the Guide to Development in a Transport Environment: Rail, Department of Transport and Main Roads, 2015, provides guidance on how to comply with this acceptable outcome.	<i>Complies with PO – The vehicle access location is via the existing pavement crossing at Cane Road. A Traffic Impact Assessment has been prepared which demonstrates the proposed development will not result in a safety hazard of worsening of operating conditions on the railway. Refer to Annex G.</i>
PO20 Development does not damage or interfere with public passenger transport infrastructure, public passenger services or pedestrian and cycle access to public passenger transport infrastructure and public passenger services.	AO20.1 Development does not necessitate the relocation of existing public passenger transport infrastructure. AND	<i>Complies with AO</i>
	AO20.2 Vehicular access and associated road access works for a development is not located within 5 metres of existing public passenger transport infrastructure. AND	<i>Complies with AO – The proposed upgrades to the Chewko and Cane Road intersection is more than 5 metres from the railway. No other works within the railway corridor are proposed.</i>
	AO20.3 On-site vehicle circulation is designed give priority to entering vehicles at all times so vehicles using a vehicular access do not obstruct	<i>Complies with AO – Sufficient road width is provided on Cane Road to</i>

Performance outcomes	Acceptable outcomes	Response
	public passenger transport infrastructure and public passenger services or obstruct pedestrian or cyclist access to public passenger transport infrastructure and public passenger services. AND	<i>ensure two-way access at all times. A Traffic Management Plan will be implemented during the construction of the facility to maintain a safe and efficient road and rail network. Refer to Annex G – Traffic Impact Assessment.</i>
	AO20.4 The normal operation of public passenger transport infrastructure or public passenger services is not interrupted during construction of the development.	<i>Not Applicable</i>
Planned upgrades		
PO21 Development does not impede delivery of planned upgrades of rail transport infrastructure.	AO21.1 Development is not located on land identified by the Department of Transport and Main Roads as land required for planned upgrades to rail transport infrastructure. Note: Land required for the planned upgrade of rail transport infrastructure is identified in the DA mapping system. OR	<i>Complies with AO</i>
	AO21.2 Development is sited and designed so that permanent buildings, structures, infrastructure, services or utilities are not located on land identified by the Department of Transport and Main Roads as land required for the planned upgrade of rail transport infrastructure.	<i>Complies with AO</i>
	OR all of the following acceptable outcomes apply: AO21.3 Structures and infrastructure located on land identified by the Department of Transport and Main Roads as land required for the planned upgrade of a of rail transport infrastructure are able to be readily relocated or removed without materially affecting the viability or functionality of the development. AND	<i>Not Applicable</i>
	AO21.4 Development does not involve filling and excavation of, or material changes to, land required for a planned upgrade of rail transport infrastructure. AND	<i>Complies with AO</i>
	AO21.5 Land is able to be reinstated to the pre-development condition at the completion of the use.	<i>Complies with AO</i>

Performance outcomes	Acceptable outcomes	Response
Network safety		
<p>PO22 Development involving dangerous goods adjacent to a railway corridor does not adversely impact on the safety or operations of a railway.</p> <p>Note: Development involving dangerous goods, or hazardous chemicals above the threshold quantities listed in table 5.2 of the Model Planning Scheme Development Code for Hazardous Industries and Chemicals, Office of Industrial Relations, Department of Justice and Attorney-General, 2016, should demonstrate that impacts on a railway from a fire, explosion, spill, gas emission or dangerous goods incident can be appropriately mitigated.</p> <p>Section 2.6 – Dangerous goods and fire safety of the Guide to Development in a Transport Environment: Rail, Department of Transport and Main Roads, 2015, provides guidance on how to comply with this performance outcome.</p>	<p>AO22.1 Development does not involve handling or storage of hazardous chemicals above the threshold quantities listed in table 5.2 of the Model Planning Scheme Development Code for Hazardous Industries and Chemicals, Office of Industrial Relations, Department of Justice and Attorney-General, 2016.</p>	<p><i>Complies with AO</i></p>
<p>PO23 Development does not adversely impact on the safety of a railway crossing.</p> <p>Note: It is recommended a traffic impact assessment be prepared to demonstrate compliance with this performance outcome. An impact on</p>	<p>AO23.1 Development does not require a new railway crossing. OR</p>	<p><i>Complies with AO – The existing access crossing is considered sufficient for the proposed use – Refer to the Traffic Impact Assessment, provided as Annex G.</i></p>
	<p>AO23.2 A new railway crossing is grade separated.</p> <p>Note: It is recommended a traffic impact assessment be prepared to</p>	<p><i>Not Applicable</i></p>

Performance outcomes	Acceptable outcomes	Response
<p>a level crossing may require an Australian Level Crossing Assessment Model (ALCAM) assessment to be undertaken.</p> <p>Section 2.2 – Railway crossing safety of the Guide to Development in a Transport Environment: Rail, Department of Transport and Main Roads, 2015, provides guidance on how to comply with this performance outcome.</p>	<p>demonstrate compliance with this acceptable outcome. An impact on a level crossing may require an Australian Level Crossing Assessment Model (ALCAM) assessment to be undertaken. Section 2.2 – Railway crossing safety of the Guide to Development in a Transport Environment: Rail, Department of Transport and Main Roads, 2015, provides guidance on how to comply with this acceptable outcome.</p>	
	<p>OR all of the following acceptable outcomes apply:</p> <p>AO23.3 Upgrades to a level crossing are designed and constructed in accordance with AS1742.7 – Manual of uniform traffic control devices, Part 7: Railway crossings and applicable railway manager's standard drawings. AND</p>	<i>Not Applicable</i>
	<p>AO23.4 Vehicle access points achieve sufficient clearance from a level crossing in accordance with AS1742.7 – Manual of uniform traffic control devices, Part 7: Railway crossings by providing a minimum clearance of 5 metres from the edge running rail (outer rail) plus the length of the largest vehicle anticipated on-site. AND</p>	<i>Complies with AO – Refer to Traffic Impact Assessment provided as Annex G.</i>
	<p>AO23.5 On-site vehicle circulation is designed to give priority to entering vehicles at all times to ensure vehicles do not queue in a railway crossing.</p>	<i>Complies with AO – Sufficient road width is provided on Cane Road to ensure two-way access at all times. A Traffic Management Plan will be implemented during the construction of the facility to maintain a safe and efficient road and rail network. Refer to Annex G – Traffic Impact Assessment.</i>

Table 2.2.2: Environmental emissions

Performance outcomes	Acceptable outcomes	Response
Noise		
Accommodation activities		
PO24 Development involving: 1. an accommodation activity; or	AO24.1 A noise barrier or earth mound is provided which is designed, sited and constructed:	<i>Not Applicable</i>

Performance outcomes	Acceptable outcomes	Response
2. land for a future accommodation activity minimises noise intrusion from a railway or type 2 multi-modal corridor in habitable rooms.	<p>1. to meet the following external noise criteria at all facades of the building envelope:</p> <ul style="list-style-type: none"> a. ≤ 65 dB(A) L_{eq} (24 hour) façade corrected b. ≤ 87 dB(A) (single event maximum sound pressure level) façade corrected <p>2. in accordance with the Civil Engineering Technical Requirement – CIVIL-SR-014 Design of noise barriers adjacent to railways, Queensland Rail, 2011.</p> <p>Note: To demonstrate compliance with the acceptable outcome, it is recommended a RPEQ certified noise assessment report be provided. The noise assessment report should be prepared in accordance with the State Development Assessment Provisions Supporting Information – Community Amenity (Noise), Department of Transport and Main Roads, 2013. If the building envelope is unknown, the deemed-to-comply setback distances for buildings stipulated by the local planning instrument or relevant building regulations should be used. In some instances, the design of noise barriers and mounds to achieve the noise criteria above the ground floor may not be reasonable or practicable. In these instances, any relaxation of the criteria is at the discretion of the Department of Transport and Main Roads.</p>	
	<p>OR all of the following acceptable outcomes apply:</p> <p>AO24.2 Buildings which include a habitable room are setback the maximum distance possible from a railway or type 2 multi-modal corridor. AND</p>	<i>Not Applicable</i>
	<p>AO24.3 Buildings are designed and oriented so that habitable rooms are located furthest from a railway or type 2 multi-modal corridor. AND</p>	<i>Not Applicable</i>
	<p>AO24.4 Buildings (other than a relevant residential building or relocated building) are designed and constructed using materials which ensure that habitable rooms meet the following internal noise criteria:</p>	<i>Not Applicable</i>

Performance outcomes	Acceptable outcomes	Response
	<p>1. ≤45 dB(A) single event maximum sound pressure level.</p> <p>Statutory note: Noise levels from railways or type 2 multi-modal corridors are to be measured in accordance with AS1055.1–1997 Acoustics – Description and measurement of environmental noise.</p> <p>Note: To demonstrate compliance with the acceptable outcome, it is recommended that a RPEQ certified noise assessment report be provided. The noise assessment report should be prepared in accordance with the State Development Assessment Provisions Supporting Information – Community Amenity (Noise), Department of Transport and Main Roads, 2013.</p> <p>Habitable rooms of relevant residential buildings located within a transport noise corridor must comply with the Queensland Development Code MP4.4 Buildings in a transport noise corridor, Queensland Government, 2015.</p> <p>Transport noise corridors are mapped on the State Planning Policy Interactive Mapping System.</p>	
PO25 Development involving an accommodation activity minimises noise intrusion from a railway or type 2 multi-modal corridor in outdoor spaces for passive recreation.	AO25.1 A noise barrier or earth mound is provided which is designed, sited and constructed: <ol style="list-style-type: none"> to meet the following external noise criteria in outdoor spaces for passive recreation: <ol style="list-style-type: none"> ≤62 dB(A) L_{eq} (24 hour) free field ≤84 dB(A) (single event maximum sound pressure level) free field in accordance with the Civil Engineering Technical Requirement – CIVIL-SR-014 Design of noise barriers adjacent to railways, Queensland Rail, 2011. <p>OR</p>	Not Applicable
	AO25.2 Each dwelling has access to an outdoor space for passive recreation which is shielded from a railway or type 2 multi-modal corridor by a building, a solid gap-free fence, or other solid gap-free structure. AND	Not Applicable

Performance outcomes	Acceptable outcomes	Response
	AO25.3 Each dwelling with a balcony directly exposed to noise from a railway or type 2 multi-modal corridor has a continuous solid gap-free balustrade (other than gaps required for drainage purposes to comply with the Building Code of Australia).	<i>Not Applicable</i>
Child care centres and educational establishments		
PO26 Development involving a: 1. child care centre; or 2. educational establishment minimises noise intrusion from a railway or type 2 multi-modal corridor in indoor education areas and indoor play areas.	AO26.1 A noise barrier or earth mound is provided which is designed, sited and constructed: 1. to meet the following external noise criteria at all facades of the building envelope: a. ≤ 65 dB(A) L_{eq} (1 hour) façade corrected (maximum hour during opening hours) b. ≤ 87 dB(A) (single event maximum sound pressure level) façade corrected 2. in accordance with the Civil Engineering Technical Requirement – CIVIL-SR-014 Design of noise barriers adjacent to railways, Queensland Rail, 2011. Note: To demonstrate compliance with the acceptable outcome, it is recommended that a RPEQ certified noise assessment report be provided. The noise assessment report should be prepared in accordance with the State Development Assessment Provisions Supporting Information – Community Amenity (Noise), Department of Transport and Main Roads, 2013. If the building envelope is unknown, the deemed-to-comply setback distances for buildings stipulated by the local planning instrument or relevant building regulations should be used.	<i>Not Applicable</i>
	OR all of the following apply: AO26.2 Buildings which include an indoor education area, indoor play area or sleeping room are setback furthest from a railway or type 2 multi-modal corridor as possible. AND	<i>Not Applicable</i>
	AO26.3 Buildings are designed and oriented so that indoor education areas, indoor play areas or sleeping rooms are located	<i>Not Applicable</i>

Performance outcomes	Acceptable outcomes	Response
	furthest from a railway or type 2 multi-modal corridor. AND	
	AO26.4 Buildings are designed and constructed using materials which ensure indoor education areas and indoor play areas meet the following internal noise criteria: 1. ≤50 dB(A) single event maximum sound pressure level. AND	
	AO26.5 Buildings are designed and constructed using material which ensure sleeping rooms in a child care centre meet the following internal noise criteria: 1. ≤45 dB(A) single event maximum sound pressure level. Statutory note: Noise levels from railways or type 2 multi-modal corridors are measured in accordance with AS1055.1–1997 Acoustics – Description and measurement of environmental noise. Note: To demonstrate compliance with the acceptable outcome, it is recommended that a RPEQ certified noise assessment report be provided. The noise assessment report should be prepared in accordance with the State Development Assessment Provisions Supporting Information – Community Amenity (Noise), Department of Transport and Main Roads, 2013.	<i>Not Applicable</i>
PO27 Development involving a: 1. child care centre; or 2. educational establishment minimises noise intrusion from a railway or type 2 multi-modal corridor in outdoor education areas and outdoor play areas.	AO27.1 A noise barrier or earth mound is provided which is designed, sited and constructed: 1. to meet the following external noise criteria in each outdoor education area or outdoor play area: a. ≤62 dB(A) L_{eq} (24 hour) free field (between 6am and 6pm) b. ≤84 dB(A) (single event maximum sound pressure level) free field 2. in accordance with the Civil Engineering Technical Requirement – CIVIL-SR-014 Design of noise barriers adjacent to railways, Queensland Rail, 2011. Note: To demonstrate compliance with the acceptable outcome, it is	<i>Not Applicable</i>

Performance outcomes	Acceptable outcomes	Response
	recommended that a RPEQ certified noise assessment report be provided. The noise assessment report should be prepared in accordance with the State Development Assessment Provisions Supporting Information – Community Amenity (Noise), Department of Transport and Main Roads, 2013. OR	
	AO27.2 Each outdoor education area and outdoor play area is shielded from noise generated from a railway or type 2 multi-modal corridor by a building, a solid gap-free fence, or other solid gap-free structure.	<i>Not Applicable</i>
Hospitals		
PO28 Development involving a hospital minimises noise intrusion from a railway or a type 2 multi-modal corridor in patient care areas.	AO28.1 Hospitals are designed and constructed using materials which ensure ward areas meet the following internal noise criteria: 1. ≤45 dB(A) single event maximum sound pressure level. AND	<i>Not Applicable</i>
	AO28.2 Hospitals are designed and constructed using materials which ensure patient care areas (other than ward areas) meet the following internal noise criteria: 1. ≤50 dB(A) single event maximum sound pressure level. Statutory note: Noise levels from railways or type 2 multi-modal corridors are measured in accordance with AS1055.1–1997 Acoustics – Description and measurement of environmental noise. Note: To demonstrate compliance with the acceptable outcome, it is recommended that a RPEQ certified noise assessment report be provided. The noise assessment report should be prepared in accordance with the State Development Assessment Provisions Supporting Information – Community Amenity (Noise), Department of Transport and Main Roads, 2013.	<i>Not Applicable</i>
Vibration		

Performance outcomes	Acceptable outcomes	Response
Hospitals		
PO29 Development involving a hospital located within 25 metres of the centreline of the nearest railway track minimises vibration impacts from a railway or type 2 multi-modal corridor in patient care areas.	AO29.1 Hospitals are designed and constructed to ensure vibration in the treatment area of a patient care area does not exceed a vibration dose value of $0.1\text{m/s}^{1.75}$. AND	<i>Not Applicable</i>
	AO29.2 Hospitals are designed and constructed to ensure vibration in the ward area of a patient care area does not exceed a vibration dose value of $0.4\text{m/s}^{1.75}$. Note: To demonstrate compliance with the acceptable outcome, it is recommended that a RPEQ certified vibration assessment report be provided.	<i>Not Applicable</i>
Air and light		
PO30 Development involving an accommodation activity minimises air quality impacts from a railway in outdoor spaces for passive recreation.	AO30.1 Each dwelling has access to an outdoor space for passive recreation that is shielded from a railway by a building, a solid gap-free fence, or other solid gap-free structure.	<i>Not Applicable</i>
PO31 Development involving a: 1. child care centre; or 2. educational establishment minimises air quality impacts from a railway in outdoor education areas and outdoor play areas.	AO31.1 Each outdoor education area and outdoor play area is shielded from a railway by a building, a solid gap-free fence, or other solid gap-free structure.	<i>Not Applicable</i>
PO32 Development involving an accommodation activity or hospital minimises lighting impacts from a railway.	AO32.1 Buildings for an accommodation activity or hospital are designed to minimise the number of windows or transparent/translucent panels facing a railway. OR	<i>Not Applicable</i>
	AO32.2 Windows facing a railway include treatments to block light from a railway.	<i>Not Applicable</i>

Annex L

Mareeba Shire Planning Scheme
Code Assessment

6.2.9 Rural zone code

6.2.9.1 Application

- (1) This code applies to assessing development where:
 - (a) located in the Rural zone; and
 - (b) it is identified in the assessment criteria column of an assessment table in Part 5 of the planning scheme.

6.2.9.2 Purpose

- (1) The purpose of the Rural zone code is to:
 - (a) provide for rural uses including cropping, intensive horticulture, intensive animal industries, animal husbandry, animal keeping and other primary production activities;
 - (b) provide opportunities for non-rural uses that are compatible with agriculture, the environmental features, and landscape character of the rural area where the uses do not compromise the long-term use of the land for rural purposes;
 - (c) protect or manage significant natural resources and processes to maintain the capacity for primary production.
- (2) Mareeba Shire Council's purpose of the Rural zone code is to recognise the importance of primary production to the economy of the region and to maintain and strengthen the range of primary industries which contribute to the rural economy.

The purpose of the Rural zone code is to:

- (a) recognise the diversity of rural uses that exists throughout the region;
 - (b) protect the rural character of the region;
 - (c) provide facilities for visitors and tourists that are accessible and offer a unique experience;
 - (d) protect the infrastructure of the Mareeba-Dimbulah Irrigation Scheme Area from development which may compromise long term use for primary production;
 - (e) maintain distinct boundaries between the rural areas and the villages, towns and urban areas of the region;
 - (f) provide for a range of uses, compatible and associated with rural or ecological values including recreational pursuits and tourist activities;
 - (g) prevent adverse impacts of development on ecological values;
 - (h) preserve land in large holdings; and
 - (i) facilitate the protection of strategic corridors across the landscape which link remnant areas of intact habitat and transport corridors.
- (3) The purpose of the Rural zone code will be achieved through the following overall outcomes:
 - (a) Areas for use for primary production are conserved and fragmentation below economically viable lot sizes is avoided;
 - (b) The establishment of a wide range of rural pursuits is facilitated, including cropping, intensive horticulture, forestry, intensive animal industries, animal husbandry and animal keeping and other compatible primary production uses;
 - (c) The establishment of extractive industries, mining and associated activities and alternative forms of energy generation is appropriate where environmental impacts and land use conflicts are minimised;

- (d) Uses that require isolation from urban areas as a consequence of their impacts such as noise or odour may be appropriate where land use conflicts are minimised;
- (e) Development is reflective of and responsive to the environmental constraints of the land;
- (f) Residential and other development is appropriate only where directly associated with the rural nature of the zone;
- (g) Low-impact tourism and recreation activities do not compromise the long-term use of the land for rural purposes;
- (h) The viability of both existing and future rural uses and activities is protected from the intrusion of incompatible uses;
- (i) Visual impacts of clearing, building, materials, access ways and other aspects of development are minimised or appropriately managed;
- (j) Adverse impacts of development both on-site and from adjoining areas are avoided and any impacts are minimised through location, design, operation and management; and
- (k) Natural features such as creeks, gullies, waterways, wetlands and bushland are retained, managed, enhanced and separated from adjacent development.

6.2.9.3 Criteria for assessment

Table 6.2.9.3—Rural zone code - For self-assessable and assessable development

Performance outcomes	Acceptable outcomes	Complies	Comments
For self-assessable and assessable development			
Height			
PO1 Building height takes into consideration and respects the following: (a) the height of existing buildings on adjoining premises; (b) the development potential, with respect to height, on adjoining premises; (c) the height of buildings in the vicinity of the site; (d) access to sunlight and daylight for the site and adjoining sites; (e) privacy and overlooking; and (f) site area and street frontage length.	AO1.1 Development, other than buildings used for rural activities, has a maximum building height of: (a) 8.5 metres; and (b) 2 storeys above ground level.	✓	Complies – The maximum height of the facility is 5 metres.
	AO1.2 Buildings and structures associated with a rural activity including machinery, equipment, packing or storage buildings do not exceed 10 metres in height.	✓	Refer to Section 3.2 of Planning Report
Siting, where not involving a Dwelling house			
<i>Note—Where for Dwelling house, the setbacks of the Queensland Development Code apply.</i>			
PO2 Development is sited in a manner that considers and respects: (a) the siting and use of adjoining premises; (b) access to sunlight and daylight for the site and adjoining sites; (c) privacy and overlooking; (d) air circulation and access to natural breezes; (e) appearance of building bulk; and (f) relationship with road	AO2.1 Buildings and structures include a minimum setback of: (a) 40 metres from a frontage to a State-controlled road; and (b) 10 metres from a boundary to an adjoining lot.	✓	Refer to Proposal Plans provided as Annex A
	AO2.2 Buildings and structures, where for a Roadside stall, include a minimum setback of 0 metres from a frontage to a road that is not a State-controlled road.	N/A	

Performance outcomes	Acceptable outcomes	Complies	Comments
corridors.	AO2.3 Buildings and structures, except where a Roadside stall, include a minimum setback of: (a) 10 metres from a frontage to a sealed road that is not a State-controlled road; and (b) 100 metres from a frontage to any other road that is not a State-controlled road;	✓	Refer to Proposal Plans provided as Annex A
For assessable development			
Site cover			
PO4 Buildings and structures occupy the site in a manner that: (a) makes efficient use of land; (b) is consistent with the bulk and scale of buildings in the surrounding area; and (c) appropriately balances built and natural features.	AO4 No acceptable outcome is provided.	✓	Complies
PO5 Development complements and integrates with the established built character of the Rural zone, having regard to: (a) roof form and pitch; (b) eaves and awnings; (c) building materials, colours and textures; and (d) window and door size and location.	AO5 No acceptable outcome is provided.	✓	Complies
Amenity			

Performance outcomes	Acceptable outcomes	Complies	Comments
PO6 Development must not detract from the amenity of the local area, having regard to: (a) noise; (b) hours of operation; (c) traffic; (d) advertising devices; (e) visual amenity; (f) privacy; (g) lighting; (h) odour; and (i) emissions.	AO6 No acceptable outcome is provided.	✓	Complies – Refer to the Traffic Impact Assessment (Annex G) and Glare Assessment Annex I)
PO7 Development must take into account and seek to ameliorate any existing negative environmental impacts, having regard to: (a) noise; (b) hours of operation; (c) traffic; (d) advertising devices; (e) visual amenity; (f) privacy; (g) lighting; (h) odour; and (i) emissions.	AO7 No acceptable outcome is provided.	✓	Complies. Refer to above response to PO6

8.2.1 Agricultural land overlay code

8.2.1.1 Application

- (1) This code applies to assessing development where:
 - (a) land the subject of development is located within the agricultural land areas identified on the **Agricultural land overlay maps (OM-001a-n)**; and
 - (b) it is identified in the assessment criteria column of an assessment table in Part 5 of the planning scheme.

Note—Agriculture is appropriately reflected in Overlay Map 1 and is required to be mapped by State Government in response to Economic Growth State Interests.

8.2.1.2 Purpose

- (1) The purpose of the Agricultural land overlay code is to protect or manage important agricultural areas, resources, and processes which contribute to the shire's capacity for primary production.
- (2) The purpose of the code will be achieved through the following overall outcomes:
 - (a) The alienation, fragmentation or reduction in primary production potential of land within the 'Class A' area or 'Class B' area is avoided, except where:
 - (i) an overriding need exists for the development in terms of public benefit,
 - (ii) no suitable alternative site exists; and
 - (iii) the fragmentation or reduced production potential of agricultural land is minimised;
 - (b) 'Class A' areas and 'Class B' areas continue to be used primarily for more intensive agricultural activities which utilise the land quality provided in these areas;
 - (c) Grazing on very large land holdings is maintained as the dominant rural activity in the 'Broadhectare rural' area; and
 - (d) Land with the 'Broadhectare rural' area is maintained in its current configuration.

8.2.1.3 Criteria for assessment

Table 8.2.1.3 – Agricultural land overlay code - For self-assessable and assessable development

Performance outcomes	Acceptable outcomes	Complies	Comments
For self-assessable and assessable development			
PO1 The fragmentation or loss of productive capacity of land within the 'Class A' area or 'Class B' area identified on the Agricultural land overlay maps (OM-001a-n) is avoided unless: (a) an overriding need exists for the development in terms of public benefit; (b) no suitable alternative site exists; and (c) loss or fragmentation is minimised to the extent possible.	AO1 Buildings and structures are not located on land within the 'Class A' area or 'Class B' area identified on the Agricultural land overlay maps (OM-001a-n) unless they are associated with: (a) animal husbandry; or (b) animal keeping; or (c) cropping; or (d) dwelling house; or (e) home based business; or (f) intensive animal industry (only where for feedlotting); or (g) intensive horticulture; or (h) landing; or (i) roadside stalls; or (j) winery.	PO	The Project represents a temporary use (25 year lifespan) of the land, with the nature of the use resulting in minimal ground disturbance, therefore not impacting the viability of the land for future agricultural uses once the facility is decommissioned.

Performance outcomes	Acceptable outcomes	Complies	Comments
For assessable development			
PO2 Sensitive land uses in the 'Class A' area, 'Class B' area or the 'Broadhectare rural' area identified on the Agricultural land overlay maps (OM-001a-n) are designed and located to: <ul style="list-style-type: none"> (a) avoid land use conflict; (b) manage impacts from agricultural activities, including chemical spray drift, odour, noise, dust, smoke and ash; (c) avoid reducing primary production potential; and (d) not adversely affect public health, safety and amenity. 	AO2 No acceptable outcome is provided.	PO	Refer to above response to PO1
PO3 Development in the 'Class A' area or 'Class B' area identified on the Agricultural land overlay maps (OM-001a-n) : <ul style="list-style-type: none"> (a) ensures that agricultural land is not permanently alienated; (b) ensures that agricultural land is preserved for agricultural purposes; and (c) does not constrain the viability or use of agricultural land. 	AO3 No acceptable outcome is provided.	PO	Refer to response to PO1
If for Reconfiguring a lot			
PO4 The 'Broadhectare rural area' identified on the Agricultural land overlay maps (OM-001a-n) is retained in very large rural holdings viable for broad scale grazing and	AO4 Development does not involve the creation of a new lot within the 'Broadhectare rural' area identified on the Agricultural land overlay maps (OM-001a-n) .	N/A	

Performance outcomes	Acceptable outcomes	Complies	Comments
associated activities.			
PO5 Reconfiguring a lot in the 'Class A' area, 'Class B' area or the 'Broadhectare rural' area identified on the Agricultural land overlay maps (OM-001a-n) that is severed by a gazetted road occurs only where it does not fragment land used for agricultural purposes.	AO5 No acceptable outcome is provided.	PO	The creation of the new lot for the purposes of the substation has been strategically located in an isolated part of the site between the property boundary and existing electricity infrastructure
PO6 Any Reconfiguring a lot in the 'Class A' area, 'Class B' area or the 'Broadhectare rural' area identified on the Agricultural land overlay maps (OM-001a-n) , including boundary realignments, only occurs where it: (a) improves agricultural efficiency; (b) facilitates agricultural activity; or (c) facilitates conservation outcomes; or (d) resolves boundary issues where a structure is built over the boundary line of two lots.	AO6 No acceptable outcome is provided.	×	Refer to above response to PO5

8.2.2 Airport environs overlay code

8.2.2.1 Application

- (1) This code applies to assessing development where:
 - (a) land the subject of development is affected by a constraint category identified on the **Airport environs overlay maps (OM-002a-f)**; and
 - (b) it is identified in the assessment criteria column of an assessment table in Part 5 of the planning scheme.

Note—Strategic airports and aviation facilities are appropriately reflected in Overlay Map 2 and is required to be mapped by State Government in response to Infrastructure State Interests.

8.2.2.2 Purpose

- (1) The purpose of the Airport environs overlay code is to protect the current and ongoing operations of established airports, aerodromes and aviation infrastructure in Mareeba Shire.
- (2) The purpose of the code will be achieved through the following overall outcomes:
 - (a) The ongoing operation of Mareeba Airport and its associated infrastructure are protected from incompatible development;
 - (b) Aerodromes in Chillagoe and Dimbulah are maintained to support recreation, mining and rural uses;
 - (c) Operational airspace is protected;
 - (d) Threats to aviation safety such as bird and bat strike and distraction or blinding of pilots are avoided or minimised;
 - (e) State significant aviation facilities associated with the Mareeba Airport are protected from encroachment by sensitive land uses; and
 - (f) Development in the vicinity of airports, aerodromes and aviation infrastructure does not compromise public safety.

8.2.2.3 Criteria for assessment

Table 8.2.2.3 - Airport environs overlay code - For self-assessable and assessable development

Performance outcomes	Acceptable outcomes	Complies	Comments
For self-assessable and assessable development			
Protection of operational airspace			
PO1 Development does not interfere with movement of aircraft or the safe operation of an airport or aerodrome where within the: (a) Airport environs: OLS area of Mareeba Airport identified on Airport environs overlay map (OM-002c) ; or (b) Airport environs: OLS area of Cairns Airport identified on Airport environs overlay map (OM-002c.1) ; or (c) 'Airport environs: Airport buffer - 1 kilometre' of an aerodrome identified on Airport environs overlay map (OM-002f) ; or (d) 'Airport environs: Airport buffer - 3 kilometres' of an aerodrome identified on Airport environs overlay map (OM-002f) .	AO1.1 Development does not exceed the height of the Obstacle Limitation Surface (OLS) where located within the Airport environs: OLS area of: (a) Mareeba Airport identified on Airport environs overlay map (OM-002c) ; or (b) Cairns Airport identified on Airport environs overlay map (OM-002c.1) .	✓	Complies
	AO1.2 Development has a maximum height of 10 metres where within the 'Airport environs: Airport buffer - 1 kilometre' of an aerodrome identified on Airport environs overlay map (OM-002f) .	N/A	
	AO1.3 Development has a maximum height of 15 metres where within the 'Airport environs: Airport buffer - 3 kilometres' of an aerodrome identified on Airport environs overlay map (OM-002f) .	N/A	
Lighting			
PO2 Development does not include lighting that: (a) has the potential to impact on	AO2 Development within the 'Airport environs: Distance from airport - 6 kilometres' area for Mareeba	PO	The solar PV panels are directed upwards, however they are designed to absorb as much light as possible and will be less reflective than water.

Performance outcomes	Acceptable outcomes	Complies	Comments
<p>the efficient and safe operation of Mareeba Airport or an aerodrome; or</p> <p>(b) could distract or confuse pilots.</p>	<p>Airport identified on Airport environs overlay map (OM-002b) or the 'Airport environs: Airport buffer - 3 kilometres' of an aerodrome identified on Airport environs overlay map (OM-002f) does not:</p> <p>(a) involve external lighting, including street lighting, that creates straight parallel lines of lighting that are more than 500 metres long; and</p> <p>(b) does not contain reflective cladding upwards shining lights, flashing lights or sodium lights.</p>		

Performance outcomes	Acceptable outcomes	Complies	Comments
Noise exposure			
PO3 Development not directly associated with Mareeba Airport is protected from aircraft noise levels that may cause harm or undue interference.	AO3 Sensitive land uses are acoustically insulated to at least the minimum standards specified by AS2021 Acoustics - Aircraft Noise Intrusion - Building Siting and Construction where located within the 'Airport environs: 20-25 ANEF' area identified on Airport environs overlay map (OM-002d) .	N/A	
Public safety			
PO4 Development does not compromise public safety or risk to property.	AO4 Development is not located within the 'Airport environs: Mareeba Airport public safety area' identified on Airport environs overlay map (OM-002e) .	✓	Complies
State significant aviation facilities associated with Mareeba Airport			
PO5 Development does not impair the function of state significant aviation facilities by creating: (a) physical obstructions; or (b) electrical or electro-magnetic interference; or (c) deflection of signals.	AO5.1 Development within 'Airport environs: Zone B (600 metre buffer)' for the 'Saddle Mountain VHF' facility identified on Airport environs overlay map (OM-002a.1) does not exceed a height of 640 metres AHD.	N/A	
	AO5.2 Development within 'Airport environs: Zone B (4,000 metre buffer)' for the 'Hahn Tableland Radar (RSR)' facility identified on Airport environs overlay map (OM-002a) does not exceed a height of 950 metres AHD, unless	N/A	

Performance outcomes	Acceptable outcomes	Complies	Comments
	associated with Hann Tableland Radar facility.		
	AO5.3 Building work does not occur within 'Airport environs: Zone A (200 metre buffer)' of the 'Bibbohra CVOR' facility identified on Airport environs overlay map (OM-002a) unless associated with the Bibbohra CVOR facility.	N/A	
	AO5.4 Development within 'Airport environs: Zone B (1,500 metre buffer)' of the 'Bibbohra CVOR' facility identified on Airport environs overlay map (OM-002a) , but outside 'Zone A (200 metre buffer)' identified on Airport environs overlay map (OM-002a) , does not include: (a) the creation of a permanent or temporary physical line of sight obstruction above 13 metres in height; or (b) overhead power lines exceeding 5 metres in height; or (c) metallic structures exceeding 7.5 metres in height; or (d) trees and open lattice towers exceeding 10 metres in height; or (e) wooden structures exceeding 13 metres in height.	N/A	
For assessable development			
Mareeba Airport			

Performance outcomes	Acceptable outcomes	Complies	Comments
Protection of operational airspace			
PO6 Development within the vicinity of Mareeba Airport or an aerodrome does not interfere with the: (a) movement of aircraft; or (b) safe operation of the airport or facility.	AO6.1 Development involving sporting and recreational aviation activities such as parachuting, hot air ballooning or hang gliding, does not occur within the Airport environs: OLS area of: (a) Mareeba Airport identified on Airport environs overlay map (OM-002c) ; or (b) Cairns Airport identified on Airport environs overlay map (OM-002c.1) .	N/A	
	AO6.2 Development involving temporary or permanent aviation activities does not occur within the 'Airport environs: Airport buffer - 3 kilometres' of an aerodrome identified on Airport environs overlay map (OM-002f) .	N/A	
PO7 Development does not affect air turbulence, visibility or engine operation in the operational airspace of Mareeba Airport or regional aerodromes.	AO7 Development does not result in the emission of a gaseous plume, at a velocity exceeding 4.3 metres per second, or smoke, dust, ash or steam within: (a) the Airport environs: OLS area of Mareeba Airport identified on Airport environs overlay map (OM-002c) ; or (b) the Airport environs: OLS area of Cairns Airport identified on Airport environs overlay map (OM-	N/A	

Performance outcomes	Acceptable outcomes	Complies	Comments
	(c) 002c.1); or the 'Airport environs: Airport buffer - 1 kilometre' of a regional aerodrome identified on Airport environs overlay map (OM-002f) .		

Performance outcomes	Acceptable outcomes	Complies	Comments
Managing bird and bat strike hazard to aircraft			
PO8 Development in the environs of Mareeba Airport or an aerodrome does not contribute to the potentially serious hazard from wildlife (bird or bat) strike.	AO8.1 Development within the 'Airport environs: Distance from airport - 8 kilometres' Bird and bat strike zone of Mareeba Airport identified on Airport environs overlay map (OM-002b) or the 'Airport environs: Airport buffer - 3 kilometres' of an aerodrome identified on Airport environs overlay map (OM-002f) provides that potential food and waste sources are covered and collected so that they are not accessible to wildlife.	✓	Complies
	AO8.2 Development within the 'Airport environs: Distance from airport - 3 kilometres' Bird and bat strike zone of Mareeba Airport identified on Airport environs overlay map (OM-002b) or the 'Airport environs: Airport buffer - 1 kilometre' of an aerodrome identified on Airport environs overlay map (OM-002f) does not include: (a) food processing; or (b) abattoir; or (c) intensive horticulture; or (d) intensive animal husbandry; or (e) garden centre; or (f) aquaculture.	✓	Complies
	AO8.3 Putrescible waste disposal sites do not occur within the 'Airport	N/A	

Performance outcomes	Acceptable outcomes	Complies	Comments
	<p>environs: Distance from airport - 13 kilometres' Bird and bat strike zone of:</p> <p>(a) Mareeba Airport identified on Airport environs overlay map (OM-002b); or</p> <p>(b) Cairns Airport identified on Airport environs overlay map (OM-002b.1).</p>		

8.2.3 Bushfire hazard overlay code

8.2.3.1 Application

- (1) This code applies to assessing development where:
 - (a) land the subject of development is located within a Bushfire hazard area and Potential impact buffer (100 metres) identified on the **Bushfire hazard overlay maps (OM-003a-o)**; and
 - (b) it is identified in the assessment criteria column of an assessment table in Part 5 of the planning scheme.

Note—Natural hazards are appropriately reflected in Overlay Maps 3, 6 and 8 and are required to be mapped by State Government in response to Hazard and Safety State Interests.

8.2.3.2 Purpose

- (1) The purpose of the Bushfire hazard overlay code is to minimise the threat of bushfire to people and property.
- (2) The purpose of the code will be achieved through the following overall outcomes:
 - (a) Development in a Bushfire hazard area is compatible with the nature of the hazard;
 - (b) The number of people and properties subject to bushfire hazards are minimised through appropriate building design and location;
 - (c) Development does not result in a material increase in the extent, duration or severity of bushfire hazard; and
 - (d) Appropriate infrastructure is available to emergency services in the event of a bushfire.

8.2.3.3 Criteria for assessment

Table 8.2.3.3—Bushfire hazard overlay code — For self-assessable and assessable development

Performance outcomes	Acceptable outcomes	Complies	Comments
For self-assessable and assessable development			
Water supply for fire-fighting purposes			
PO1 Development where within a 'Bushfire hazard area' and 'Potential impact buffer (100 metres)' identified on the Bushfire hazard overlay maps (OM-003a-o) maintains the safety of people and property by providing an adequate, accessible and reliable water supply for fire-fighting purposes which is safely located and has sufficient flow and pressure characteristics. <i>Note— A Bushfire hazard management plan must be prepared by suitably qualified persons in seeking to demonstrate compliance with the Performance outcome.</i>	Where within a 'Bushfire hazard area' and 'Potential impact buffer (100 metres)' identified on the Bushfire hazard overlay maps (OM-003a-o) AO1.1 Where in a reticulated water service area, the on-site water supply has flow and pressure characteristics of 10 litres a second at 200 kPa. OR	N/A	
	AO1.2 Where access to the reticulated water network is not available, a minimum on site water storage of 5,000 litres is provided that must comprise: (a) a separate tank; or (b) a reserve section in the bottom part of the main water supply tank; or (c) a dam; or (d) a swimming pool. <i>Note—Where a water tank is provided for fire-fighting purposes it is fitted with standard rural fire brigade fittings and the tank is provided with a hardstand area for heavy vehicles.</i>	✓	Appropriate water storage can be provided for fire fighting purposes, if required

Performance outcomes	Acceptable outcomes	Complies	Comments
For assessable development			
Land use			
<p>PO2 Development within a 'Bushfire hazard area' and 'Potential impact buffer (100 metres)' identified on the Bushfire hazard overlay maps (OM-003a-o) is appropriate to the bushfire hazard risk having regard to the:</p> <ul style="list-style-type: none"> (a) the bushfire risk compatibility of development; (b) the vulnerability of and safety risk to persons associated with the use; and (c) consequences of bushfire in regard to impacts on essential infrastructure, buildings and structures. <p><i>Note— A Bushfire hazard management plan must be prepared by suitably qualified persons in seeking to demonstrate compliance with the Performance outcome.</i></p>	<p>AO2 All buildings, structures, infrastructure and facilities associated with the following uses are located outside any area of the site located within a 'Bushfire hazard area' and a 'Potential impact buffer (100 metres)' identified on the Bushfire hazard overlay maps (OM-003a-o):</p> <ul style="list-style-type: none"> (a) child care centre; or (b) community care centre; or (c) correctional facility; or (d) educational establishment; or (e) emergency services; or (f) hospital; or (g) hostel; or (h) residential care facility; or (i) retirement facility; or (j) shopping centre; or (k) tourist park; or (l) tourist attraction. 	N/A	
Lot design			
<p>PO3 Reconfiguring a lot within a 'Bushfire hazard area' and 'Potential impact buffer (100 metres)' identified on the Bushfire hazard overlay maps (OM-003a-o) minimises the potential adverse impacts of bushfire on the safety of people, property and the environment through lot design that:</p>	<p>Where within a 'Bushfire hazard area' and 'Potential impact buffer (100 metres)' identified on the Bushfire hazard overlay maps (OM-003a-o)</p> <p>AO3.1 No new lots are created.</p>	✓	Proposed new substation lot not located in Bushfire hazard area.

Performance outcomes	Acceptable outcomes	Complies	Comments
<p>(a) is responsive to the nature and extent of bushfire risk; and</p> <p>(b) allows efficient emergency access to buildings for fire-fighting appliances.</p> <p><i>Note— A Bushfire hazard management plan must be prepared by suitably qualified persons in seeking to demonstrate compliance with the Performance outcome.</i></p>	<p>OR</p> <p>AO3.2 All lots include a building envelope that achieves a radiant heat flux level of 29kW/m² at the perimeter of the building envelope.</p> <p><i>Note—Where a radiant heat flux of 29kW/m² is achieved and this relies on cleared or maintained land external to the land the subject of the development application it must be demonstrated that land external to the site will be maintained to a standard that does not exceed the level of bushfire hazard identified in a Bushfire hazard management plan.</i></p>		

Performance outcomes	Acceptable outcomes	Complies	Comments
Firebreaks and access			
<p>PO4 In a 'Bushfire hazard area' and 'Potential impact buffer (100 metres)' identified on the Bushfire hazard overlay maps (OM-003a-o), vehicular access is designed to mitigate against bushfire hazard by:</p> <ul style="list-style-type: none"> (a) ensuring adequate access for fire-fighting and other emergency vehicles; (b) ensuring adequate access for the evacuation of residents and emergency personnel in an emergency situation, including alternative safe access routes should access in one direction be blocked in the event of a fire; and (c) providing for the separation of developed areas and adjacent bushland. <p>Note—Where it is not practicable to provide firebreaks in accordance with A04.2 Fire Maintenance Trails are provided in accordance with the following:</p> <ul style="list-style-type: none"> i. located as close as possible to the boundaries of the lot and the adjoining hazardous vegetation; ii. the minimum cleared width not less than 6 metres; iii. the formed width is not less than 2.5 metres; iv. the formed gradient is not 	<p>AO4.1 In a 'Bushfire hazard area' and 'Potential impact buffer (100 metres)' identified on the Bushfire hazard overlay maps (OM-003a-o), roads are designed and constructed:</p> <ul style="list-style-type: none"> (a) with a maximum gradient of 12.5%; (b) to not use cul-de-sacs; and (c) a constructed road width and weather standard complying with Planning Scheme Policy 4 - FNQROC Regional Development Manual. 	✓	Internal access roads are proposed to be constructed within the bushfire buffer area and will be designed to allow emergency vehicle access where required.
	<p>AO4.2 In a 'Bushfire hazard area' and 'Potential impact buffer (100 metres)' identified on the Bushfire hazard overlay maps (OM-003a-o), firebreaks are provided:</p> <ul style="list-style-type: none"> (a) consisting of a perimeter road that separates lots from areas of bushfire hazard; (b) a minimum cleared width of 20 metre; (c) a maximum gradient of 12.5%; and (d) a constructed road width and weather standard complying with Planning Scheme Policy 4 - FNQROC Regional Development Manual. 	✓	Bushfire buffers are provided to mapped Category B vegetation and within the bushfire hazard area. Refer to Proposal Plans provided as Annex A .

Performance outcomes	Acceptable outcomes	Complies	Comments
<p>v. greater than 15%; vehicular access is provided at both ends;</p> <p>vi. passing bays and turning areas are provided for fire-fighting appliances located on public land.</p> <p>Note— A Bushfire hazard management plan must be prepared by suitably qualified persons in seeking to demonstrate compliance with the Performance outcome.</p>			
Hazardous materials			
<p>PO5 Public safety and the environment are not adversely affected by the detrimental impacts of bushfire of hazardous materials manufactured or stored in bulk.</p> <p>Note— A Bushfire hazard management plan must be prepared by suitably qualified persons in seeking to demonstrate compliance with the Performance outcome.</p>	<p>AO5 The processing or storage of dangerous goods or hazardous materials is not undertaken in a 'Bushfire hazard area' and a 'Potential impact buffer (100 metres)' identified on the Bushfire hazard overlay maps (OM-003a-o).</p>	N/A	

Performance outcomes	Acceptable outcomes	Complies	Comments
Landscaping			
<p>P06 Landscaping within a 'Bushfire hazard area' and a 'Potential impact buffer (100 metres)' identified on the Bushfire hazard overlay maps (OM-003a-o) does not result in a material increase in the extent, duration or severity of bushfire hazard having regard to:</p> <ul style="list-style-type: none"> (a) fire ecology; (b) slope of site; and (c) height and mix of plant species. <p>Note—Frost hollows and the associated grass kill facilitates a rapid curing of fuel and exacerbates bushfire hazard.</p> <p>Note— A Bushfire hazard management plan must be prepared by suitably qualified persons in seeking to demonstrate compliance with the Performance outcome.</p>	<p>AO6 No acceptable outcome is provided.</p>	PO	Project does not include landscaping within the bushfire hazard area.
Infrastructure			
<p>P07 Infrastructure services located in a 'Bushfire hazard area' and a 'Potential impact buffer (100 metres)' identified on the Bushfire hazard overlay maps (OM-003a-o) are protected from damage or destruction in the event of a bushfire.</p> <p><i>Note— A Bushfire hazard</i></p>	<p>AO7 The following infrastructure services are located below ground:</p> <ul style="list-style-type: none"> (a) water supply; (b) sewer; (c) electricity; (d) gas; and (e) telecommunications 	✓	The Project does not involve the provision of above ground infrastructure services within the bushfire hazard area.

Performance outcomes	Acceptable outcomes	Complies	Comments
<i>management plan must be prepared by suitably qualified persons in seeking to demonstrate compliance with the Performance outcome.</i>			
Private driveways			
<p>PO8 All premises located in a 'Bushfire hazard area' and a 'Potential impact buffer (100 metres)' identified on the Bushfire hazard overlay maps (OM-003a-o) are provided with vehicular access that enables safe evacuation for occupants and easy access by fire-fighting appliances.</p> <p><i>Note— A Bushfire hazard management plan must be prepared by suitably qualified persons in seeking to demonstrate compliance with the Performance outcome.</i></p>	<p>AO8 Private driveways:</p> <ul style="list-style-type: none"> (a) do not exceed a length of 60 metres from the street frontage; (b) do not exceed a gradient of 12.5%; (c) have a minimum width of 3.5 metres; (d) have a minimum vertical clearance of 4.8 metres; (e) accommodate turning areas for fire-fighting appliances in accordance with the Queensland Fire and Emergency Services' Fire Hydrant and Vehicle Access Guidelines; and (f) serve no more than three dwellings or buildings. 	✓	Internal access roads are proposed to be constructed within the bushfire buffer area and will be designed to allow emergency vehicle access where required.

8.2.4 Environmental significance overlay code

8.2.4.1 Application

- (1) This code applies to assessing development where:
 - (a) land the subject of development is affected by a constraint category identified on the **Environmental significance overlay maps (OM-004a-z)**; and
 - (b) it is identified in the assessment criteria column of an assessment table in Part 5 of the planning scheme.

Note—Biodiversity and Water quality are appropriately reflected in Overlay Map 4 and is required to be mapped by State Government in response to Environment and Heritage State Interests.

8.2.4.2 Purpose

- (1) The purpose of the Environmental significance overlay code is to identify and protect matters of environmental significance, which include matters of state environmental significance (MSES) as defined under the state planning policy.

The Environmental significance overlay code ensures that:

- (a) waterways and high ecological significance wetlands are protected and enhanced to maintain ecosystem services and hydrological processes and provide aquatic habitat for flora and fauna; and
 - (b) the environmental values of regulated vegetation, wildlife habitat, protected areas and legally secured offset areas are protected and managed.
- (2) The purpose of the code will be achieved through the following overall outcomes:
 - (a) the biodiversity values, ecosystem services and climate change resilience of areas of environmental significance are protected, managed and enhanced;
 - (b) the biodiversity values of protected areas and legally secured offset areas are protected from development unless overriding community need is demonstrated;
 - (c) development is located, designed and managed to minimise the edge effects of development on areas of regulated vegetation and wildlife habitat;
 - (d) areas of regulated vegetation and wildlife habitat are managed to minimise biodiversity losses;
 - (e) development maintains, protects and enhances a regional network of vegetated corridors that assist in wildlife movement and contribute to the maintenance of habitat and biological diversity;
 - (f) development is appropriately setback from waterways and high ecological significance wetlands to minimise direct and indirect impacts on water quality and biodiversity; and
 - (g) riparian vegetation and vegetation associated with high ecological significance wetlands is protected and enhanced to improve water quality and natural ecosystem function.

8.2.4.3 Criteria for assessment

Table 8.2.4.3A - Environmental significance overlay code - For self-assessable and assessable development

Performance outcomes	Acceptable outcomes	Complies	Comments
For self-assessable and assessable development			
Regulated vegetation			
<p>PO1 Vegetation clearing in areas mapped as 'Regulated vegetation' identified on the Environmental Significance Overlay Maps (OM-004a-o) is avoided unless:</p> <ul style="list-style-type: none"> (a) it is demonstrated that the area does not support regulated vegetation as mapped; (b) the loss or reduction in regulated vegetation is for community infrastructure and associated access facilities that cannot be avoided; (c) wildlife interconnectivity is maintained or enhanced at a local and regional scale; and (d) the loss or reduction in regulated vegetation is minimised and any residual impacts are offset. <p><i>Note—A supporting Ecological Assessment Report is prepared in accordance with Planning Scheme Policy 2 – Ecological Assessment Reports.</i></p> <p><i>Note—Refer to Ecological corridors identified on SFM001-009 in consideration of wildlife connectivity at a regional scale.</i></p>	<p>AO1.1 No clearing of native vegetation is undertaken within areas of 'Regulated vegetation' identified on the Environmental Significance Overlay Maps (OM-004a-o).</p>	PO	<p>The Project does not involve the clearing of Category B vegetation, however the clearing of Category R regulated regrowth vegetation associated with the waterways within the site are proposed to be cleared, in accordance with the 'Managing Category R regrowth vegetation – A self-assessable code' which allows clearing of up to 10 metres from the top of bank for the mapped vegetation areas.</p>
PO2	AO2	PO	The Project includes a minimum setback of 20

Performance outcomes	Acceptable outcomes	Complies	Comments
<p>Development on sites adjacent to areas of 'Regulated vegetation' identified on the Environmental Significance Overlay Maps (OM-004a-o) protects the environmental significance of regulated vegetation and:</p> <ul style="list-style-type: none"> (a) does not interrupt, interfere, alter or otherwise impact on underlying natural ecosystem processes such as water quality, hydrology, geomorphology and biophysical processes; (b) does not negatively impact the movement of wildlife at a local or regional scale; and (c) avoids noise, light, vibration or other edge affects, including weed and pest incursion on identified environmental values. <p>Note—A supporting Ecological Assessment Report is prepared in accordance with Planning Scheme Policy 2 – Ecological Assessment Reports.</p> <p>Note—Refer to Ecological corridors identified on SFM001-009 in consideration of wildlife connectivity at a regional scale.</p>	<p>Development (excluding roads, earthworks, drainage infrastructure and underground infrastructure) is not located within 20 metres of 'Regulated vegetation' areas identified on the Environmental Significance Overlay Maps (OM-004a-o).</p>		<p>metres to Category B vegetation, with a 15m setback provided to the Category 2 waterway on the site, however a setback to Category R regulated regrowth vegetation for the Category 1 waterways has not been provided in order to maximum the development footprint and viability of the Project.</p>

Performance outcomes	Acceptable outcomes	Complies	Comments
Regulated vegetation intersecting a watercourse			
<p>PO3 Vegetation clearing in areas mapped as 'Regulated vegetation intersecting a watercourse', identified as 'Waterway' and 'Waterway buffer' on the Environmental Significance - Waterway Overlay Maps (OM-004p-z) is avoided unless wildlife interconnectivity between habitats is maintained or enhanced at a local and regional scale, to the extent that migration or normal movement of significant species between habitats or normal gene flow between populations is not inhibited.</p> <p>Note—A supporting Ecological Assessment Report is prepared in accordance with Planning Scheme Policy 2 – Ecological Assessment Reports.</p> <p>Note—Refer to Ecological corridors identified on SFM001-009 in consideration of wildlife connectivity at a regional scale.</p>	<p>Where within a 'Waterway buffer' on Environmental Significance - Waterway Overlay Maps (OM-004p-z)</p> <p>AO3.1 A minimum setback in accordance with Table 8.2.4.3B is provided between development and the top of the high bank of a 'Waterway' identified on the Environmental Significance - Waterway Overlay Maps (OM-004p-z).</p> <p>Where within a 'Waterway buffer' on Environmental Significance - Waterway Overlay Maps (OM-004p-z)</p> <p>AO3.2 No clearing of native vegetation is undertaken within the minimum setback identified at AO3.1.</p>	<p>✓</p> <p>PO</p>	<p>Refer to Annex A Proposal Plans</p> <p>The Project involves clearing of Category R vegetation up to 10 metres from the top of bank. Refer to Annex H Ecological Assessment.</p>
Waterways and wetlands			

Performance outcomes	Acceptable outcomes	Complies	Comments
PO4 'High ecological significance wetlands' identified on the Environmental Significance Overlay Maps (OM-004a-o) and 'Waterways' on Environmental Significance - Waterway Overlay Maps (OM-004p-z) and are protected by: (a) maintaining adequate separation distances between waterways/wetlands and development; (b) maintaining and enhancing aquatic and terrestrial habitat including vegetated corridors to allow for native fauna (terrestrial and aquatic) movement; (c) maintaining waterway bank stability by minimising bank erosion and slumping; (d) maintaining water quality by providing buffers to allow filtering of sediments, nutrients and other pollutants; and	Where within a 'Waterway buffer' on Environmental Significance - Waterway Overlay Maps (OM-004p-z) AO4.1 A minimum setback in accordance with Table 8.2.4.3B is provided between development and the top of the high bank of a 'Waterway' identified on the Environmental Significance - Waterway Overlay Maps (OM-004p-z) .	✓	Refer to Annex A Proposal Plans
	Where within a 'High ecological significance wetland buffer' on Environmental Significance Overlay Maps (OM-004a-o) AO4.2 A minimum buffer of 200 metres is provided between development and the edge of a 'High ecological significance wetland' identified on the Environmental Significance Overlay Maps (OM-004a-o) .	N/A	

Performance outcomes	Acceptable outcomes	Complies	Comments
<p>(e) retaining and improving existing riparian vegetation and existing vegetation associated with a wetland.</p> <p><i>Note—A supporting Ecological Assessment Report is prepared in accordance with Planning Scheme Policy 2 – Ecological Assessment Reports.</i></p>	<p>Where within a 'Waterway buffer' on Environmental Significance - Waterway Overlay Maps (OM-004p-z) or 'High ecological significance wetland buffer' on Environmental Significance Overlay Maps (OM-004a-o) AO4.3</p> <p>No stormwater is discharged to a 'Waterway' on Environmental Significance - Waterway Overlay Maps (OM-004p-z) or 'High ecological significance wetland' identified on the Environmental Significance Overlay Maps (OM-004a-o).</p> <p><i>Note— An alternative outcome is required to demonstrate that the ecological impacts of stormwater discharge to a 'Waterway' or 'High ecological significance wetland' are mitigated in accordance with PO3 through appropriate stormwater management / treatment (where possible).</i></p>	PO	Refer to Annex H Ecological Assessment

Performance outcomes	Acceptable outcomes	Complies	Comments
	<p>Where within a 'Waterway buffer' on Environmental Significance - Waterway Overlay Maps (OM-004p-z) or 'High ecological significance wetland buffer' on Environmental Significance Overlay Maps (OM-004a-o)</p> <p>AO4.4</p> <p>No wastewater is discharged to a 'Waterway' on Environmental Significance - Waterway Overlay Maps (OM-004p-z) or 'High ecological significance wetland' identified on the Environmental Significance Overlay Map (OM-004a-z).</p> <p><i>Note— A alternative outcome is required to demonstrate that the ecological impacts of wastewater discharge to a 'Waterway' or 'High ecological significance wetland' are mitigated in accordance with PO3 through appropriate wastewater management / treatment (where possible).</i></p>	✓	Complies

Performance outcomes	Acceptable outcomes	Complies	Comments
For assessable development			
Wildlife Habitat			
<p>PO5 Development within a 'Wildlife habitat' area identified on the Environmental Significance Overlay Maps (OM-004a-o):</p> <ul style="list-style-type: none"> (a) protects and enhances the habitat of Endangered, Vulnerable and Near Threatened (EVNT) species and local species of significance; (b) incorporates siting and design measures to protect and retain identified ecological values and underlying ecosystem processes within or adjacent to the development site; (c) maintains or enhances wildlife interconnectivity at a local and regional scale; and (d) mitigates the impact of other forms of potential disturbance (such as presence of vehicles, pedestrian use, increased exposure to domestic animals, noise and lighting impacts) to protect critical life stage ecological processes (such as feeding, breeding or roosting). <p><i>Note—Development applications must identify any EVNT species or their habitats that may be affected by the proposal. In particular, applications are to identify and describe how the development avoids adverse impacts</i></p>	<p>AO5 No acceptable outcome is provided</p>	N/A	Project infrastructure not within the Wildlife habitat area.

Performance outcomes	Acceptable outcomes	Complies	Comments
<p>on ecological processes within or adjacent to the development area.</p> <p><i>Note—A supporting Ecological Assessment Report is prepared in accordance with Planning Scheme Policy 2 – Ecological Assessment Reports.</i></p> <p><i>Note—Refer to Ecological corridors identified on SFM001-009 in consideration of wildlife connectivity at a regional scale.</i></p>			
Legally secured offset areas			
<p>PO6 Development within a 'Legally secured offset area' identified on the Environmental Significance Overlay Maps (OM-004a-o) or other known Legally Secured Offset Area is consistent with the binding requirements of the offset and does not prejudice, undermine, or negatively impact the inherent ecological values, including all naturally occurring native flora, fauna and their habitat within the Legally Secured Offset Area.</p> <p><i>Note—A supporting Ecological Assessment Report is prepared in accordance with Planning Scheme Policy 2 – Ecological Assessment Reports.</i></p>	<p>AO6 No acceptable outcome is provided.</p>	N/A	

Performance outcomes	Acceptable outcomes	Complies	Comments
Protected areas			
<p>P07 Development within a 'Protected area' identified on the Environmental Significance Overlay Maps (OM-004a-o) is consistent with the values of the Protected Area and:</p> <ul style="list-style-type: none"> (a) supports the inherent ecological and community values of the Protected Area asset; (b) maintains or enhances wildlife interconnectivity at a local and regional scale; and (c) does not prejudice, undermine, or negatively impact the inherent ecological values, including all naturally occurring native flora, fauna and their habitat within the Protected Area. <p>Note—A supporting Ecological Assessment Report is prepared in accordance with Planning Scheme Policy 2 – Ecological Assessment Reports.</p>	<p>A07 No acceptable outcome is provided</p>	N/A	

Table 8.2.4.3B - Setback and buffer distances from waterways

Stream order	Setback and buffer from waterways
1	10 metres from top of high bank
2-4	25 metres from top of high bank
5 or more	50 metres from top of high bank

Note—The stream order of a 'waterway' is to be determined on a case by case basis.

8.2.5 Extractive resources overlay code

8.2.5.1 Application

- (1) This code applies to assessing development where:
 - (a) land the subject of development is affected by a constraint category identified on the **Extractive resources overlay maps (OM-005a-e)**; and
 - (b) it is identified in the assessment criteria column of an assessment table in Part 5 of the planning scheme.

Note—Mining and extractive industry is appropriately reflected in the Strategic Framework Maps and Overlay Map 5 and is required to be mapped by State Government in response to Economic Growth State Interests.

8.2.5.2 Purpose

- (1) The purpose of the Extractive resources overlay code is to protect significant extractive resources and associated haulage routes to ensure that current and future extraction of resources is not compromised.
- (2) The purpose of the code will be achieved through the following overall outcomes:
 - (a) Development in a 'Key resource processing area' or a 'Local resource area' does not compromise existing or future extractive operations;
 - (b) Development for Extractive industry within a 'Key resource processing area' or a 'Local resource area' ensures that adverse impacts from the use do not extend beyond the identified separation area;
 - (c) Uses incompatible with the adverse impacts of Extractive industry do not develop in a 'Key resource separation area' or a 'Local resource separation area';
 - (d) Development in a 'Key resource separation area' or a 'Local resource separation area' does not compromise the function of the separation area as a buffer between extractive industry and incompatible uses.
 - (e) 'Key resource transport routes' are protected and maintained; and
 - (f) Development considers the existing and future use of 'Key resource processing areas', 'Local resource areas', 'Key resource separation areas', 'Local resource separation areas' and 'Key resource transport routes' for Extractive industry and associated activities.

8.2.5.3 Criteria for assessment

Table 8.2.5.3 - Extractive resources overlay code - For self-assessable and assessable development

Performance outcomes	Acceptable outcomes	Complies	Comments
For self-assessable and assessable development			
Haulage route			
PO1 Vehicular access to a 'Key resource transport route' identified on Extractive resources overlay map (OM-005e) does not adversely affect the safety or efficiency of the route for the existing or future transportation of extractive resources from a 'Key resource processing area' identified on Extractive resources overlay map (OM-005e) .	AO1.1 No additional access to a 'Key resource transport route' identified on Extractive resources overlay map (OM-005e) is provided.	PO	The Project involves the use of Chewko Road to access the site, which will be impacted during the construction period. However based on the Traffic Impact Assessment prepared for the Project, the impacts on the Key Resource Area will be minimal. Refer to Annex G
	AO1.2 Development does not result in an increase in the number of vehicles accessing the site from a 'Key resource transport route' identified on Extractive resources overlay map (OM-005e) .	PO	Refer to above response to PO1

Performance outcomes	Acceptable outcomes	Complies	Comments
PO2 Development is appropriately located to minimise potential amenity impacts from the use of a 'Key resource transport route' identified on Extractive resources overlay map (OM-005e) for the existing or future transportation of extractive resources from a 'Key resource processing area' identified on Extractive resources overlay map (OM-005e) .	AO2.1 Sensitive land uses susceptible to heavy vehicle traffic impacts are setback 100 metres from any frontage to a 'Key resource transport route' identified on Extractive resources overlay map (OM-005e) .	N/A	
	AO2.2 New lots are not created wholly within 100 metres from any frontage to a 'Key resource transport route' identified on Extractive resources overlay map (OM-005e) .	✓	Complies
For assessable development			
Key resource area			
PO3 Development in a 'Key resource processing area' or a 'Local resource area' identified on Extractive resources overlay map (OM-005e) does not compromise existing or future extractive operations.	AO3 No acceptable outcome is provided.	✓	Refer to above response to PO1
Separation area			
PO4 Development in a 'Key resource separation area' or a 'Local resource separation area' identified on Extractive resources overlay map (OM-005e) does not compromise the function of the separation area as a buffer between Extractive industry and incompatible uses.	AO4 The number of people living, working or congregating in a 'Key resource separation area' or a 'Local resource separation area' identified on Extractive resources overlay map (OM-005e) does not increase, unless these people are directly associated with the use of a 'Key resource processing area' or a	✓	Complies

Performance outcomes	Acceptable outcomes	Complies	Comments
	'Local resource area' for Extractive industry.		
PO5 Development of Extractive industry in a 'Key resource separation area' or a 'Local resource separation area' identified on Extractive resources overlay map (OM-005e) does not result in adverse impacts beyond the separation area, having regard to: (a) noise; (b) dust; (c) ground vibrations; and (d) air blast overpressure .	AO5 No acceptable outcome is provided.	N/A	

8.2.8 Hill and slope overlay code

8.2.8.1 Application

- (1) This code applies to assessing development where:
 - (a) land the subject of development is located within a 'Hill and slope area' identified on the **Hill and slope overlay maps (OM-008a-o)**;
and
 - (b) it is identified in the assessment criteria column of an assessment table in Part 5 of the planning scheme.

Note—Natural hazards are appropriately reflected in Overlay Maps 3, 6 and 8 and are required to be mapped by State Government in response to Hazard and Safety State Interests.

8.2.8.2 Purpose

- (1) The purpose of the Hill and slope overlay code is to ensure the ongoing stability of land within a hill and slope area to prevent risk to people or property.
- (2) The purpose of the code will be achieved through the following overall outcomes:
 - (a) Development is located to avoid sloping land where practical; and
 - (b) Development on sloping land maintains slope stability and does not increase the potential for erosion or landslide.

8.2.8.3 Criteria for assessment

Table 8.2.8.3 – Hill and slope overlay code - For assessable development

Performance outcomes	Acceptable outcomes	Complies	Comment
For assessable development			
Slope stability			
<p>PO1 Where clearing of vegetation, building work or filling or excavation occurs on land within a 'Hill and slope area' identified on the Hill and slope overlay maps (OM-008a-o), a geotechnical report is prepared in accordance with Planning Scheme Policy 5 - Preparation of Geotechnical Reports that demonstrates:</p> <ul style="list-style-type: none"> (a) the long term stability of the development site; (b) development will not be adversely affected by landslide activity originating on sloping land above the development site; and (c) development will not adversely affect other property outside the development site through landslide activity or alterations to surface or groundwater. 	<p>AO1 No acceptable outcome is provided.</p>	<p>PO</p>	<p>The Project will not involve the clearing of vegetation within 10 metre of the top-of-bank of the mapped waterways, and therefore reducing any impacts associated with bank stability.</p>

Performance outcomes	Acceptable outcomes	Complies	Comment
PO2 Development is designed and located to ensure that the use can appropriately function in the 'Hill and slope area' identified on the Hill and slope overlay maps (OM-008a-o) having regard to: (a) the nature and scale of the proposed use; (b) the gradient of the land; (c) the extent of land disturbance proposed; (d) stormwater discharge and its potential for erosion.	AO2.1 Development for a Child care centre or Educational establishment is not located on land in a 'Hill and slope area' identified on the Hill and slope overlay maps (OM-008a-o) .	N/A	
	AO2.2 Development is not located on land with a gradient of greater than 25%.	✓	Complies
	AO2.3 No lot less than 2,000m ² is created in a 'Hill and slope area' identified on the Hill and slope overlay maps (OM-008a-o) . Note – Where a minimum lot size of less than 2,000m ² applies under the Reconfiguring a lot code, the lot size requirements of the Hill and slope overlay code prevail.	✓	Complies
Community infrastructure and essential services			
PO3 Community infrastructure and essential services located within a 'Hill and slope area' identified on the Hill and slope overlay maps (OM-008a-o) are able to function effectively during and immediately after landslide events.	AO3 No acceptable outcome is provided.	PO	The Project site will function effectively during and immediately after localised landslip events associated with the mapped waterways on the site.

8.2.9 Regional infrastructure corridors and substations overlay code

8.2.9.1 Application

- (1) This code applies to assessing development where:
 - (a) land the subject of development is affected by a constraint category identified on the **Regional infrastructure corridors and substations overlay maps (OM-009a-d)**; and
 - (b) it is identified in the assessment criteria column of an assessment table in Part 5 of the planning scheme.

Note—Energy is appropriately reflected in Overlay Map 9 and is required to be mapped by State Government in response to Infrastructure State Interests.

8.2.9.2 Purpose

- (1) The purpose of the Regional infrastructure corridors and substations overlay code is to ensure that:
 - (a) 'Stock routes' facilitate the proper and safe movement of stock and maintain public health and safety; and
 - (b) 'Major electricity infrastructure' and 'Substations' are protected from development that may prejudice its ongoing operation.
- (2) The purpose of the code will be achieved through the following overall outcomes:
 - (a) 'Stock routes' are maintained free of impediments, obstructions or diversions;
 - (b) development, other than for rural activities, is not located where it will increase the health and safety risk of people by exposure to vector borne disease; and
 - (c) 'Major electricity infrastructure' and 'Substations' are appropriately separated from other land uses.

8.2.9.3 Criteria for assessment

Table 8.2.9.3 – Regional infrastructure corridors and substations overlay code - For self-assessable and assessable development

Performance outcomes	Acceptable outcomes	Complies	Comments
For self-assessable and assessable development			
Where on land comprising or adjoining a stock route			
PO1 Development maintains: (a) the operational efficiency and safety of a 'Stock route' identified on the Regional infrastructure corridors and substations overlay maps (OM-009a-d) ; and (b) public health and safety.	AO1.1 Buildings and structures are setback from a 'Stock route' identified on the Regional infrastructure corridors and substations overlay maps (OM-009a-d) : (a) where in the Conservation zone, Rural zone or Rural residential zone and on a site with a land area of 2 hectares or greater, a minimum of: (i) 50 metres where involving Accommodation activities; or (ii) 20 metres where not involving Accommodation activities; or (b) a minimum of 6 metres otherwise.	N/A	
	AO1.2 Any new access from a road servicing a 'Stock route' identified on the Regional infrastructure corridors and substations overlay maps (OM-009a-d) includes a gate or grid to prevent stock entry to premises.	N/A	

Performance outcomes	Acceptable outcomes	Complies	Comments
	AO1.3 Boundary fencing to prevent stock entry to premises is maintained along a 'Stock route' identified on the Regional infrastructure corridors and substations overlay maps (OM-009a-d) .	N/A	
Where on land comprising or adjoining major electricity infrastructure or a substation			
PO2 Development: (a) allows for the continued operation of the 'Major electricity infrastructure' or 'Substation' identified on the Regional infrastructure corridors and substations overlay maps (OM-009a-d) ; and (b) is located and designed to ensure a high quality of amenity is achieved for the use.	AO2.1 Where involving Forestry for wood production, development is setback 1.5 times the maximum anticipated height of the tree at harvest from 'Major electricity infrastructure' identified on the Regional infrastructure corridors and substations overlay maps (OM-009a-d) .	N/A	
	AO2.2 Buildings and structures are setback a minimum of 20 metres from 'Major electricity infrastructure' or a 'Substation' identified on the Regional infrastructure corridors and substations overlay maps (OM-009a-d) .	PO	The Project involves the construction of a substation which will directly connect the facility with the existing transmission infrastructure.

9.3.4 Energy and infrastructure activities code

9.3.4.1 Application

- (1) This code applies to assessing development where:
 - (a) involving Energy and infrastructure activities; and
 - (b) it is identified in the assessment criteria column of an assessment table in Part 5 of the planning scheme.

9.3.4.2 Purpose

- (1) The purpose of the Energy and infrastructure activities code is to ensure the appropriate location, planning, design, installation and operation of Energy and infrastructure activities to meet community standards and minimise any adverse impacts on nearby land uses and the natural environment. Renewable energy facility development will aim to achieve social, environmental and economic benefits to the community at both the local and regional level.
- (2) The purpose of the code will be achieved through the following overall outcomes:
 - (a) Energy and infrastructure activities meet the needs of the local and regional community through safe, accessible and convenient points of service;
 - (b) Energy and infrastructure activities are designed to promote improved sustainability and efficient use of resources;
 - (c) Energy and infrastructure activities are co-located where appropriate.
 - (d) Energy and infrastructure activities are consistent with industry standards and objectives;
 - (e) Energy and infrastructure activities minimise any negative impacts to public health, safety and the environment;
 - (f) Energy and infrastructure activities are located, designed and operated to address and minimise potential impacts on environmental, economic and social values;
 - (g) Any variation to existing amenity, visual, light, noise, electromagnetic interference and aircraft safety conditions or circumstances as a result of the Renewable energy facility is maintained within acceptable limits.
 - (h) Renewable energy facilities are located within an area which provides economically viable resources;
 - (i) Renewable energy facilities are operated in accordance with site-specific management plans that adequately control and monitor variable impacts such as turbine noise, shadow flicker, bird strike, maintenance and environmental management over the operational life of the facility;
 - (j) Renewable energy facilities takes comprehensive account of national and/or state government recognised scientific knowledge and standards and are commensurate with significance, magnitude and extent of both direct and non-direct impacts; and
 - (k) Comprehensive site rehabilitation is carried out at the end of the operational life of the Energy and infrastructure activity to restore the site to its pre-development state.

9.3.4.3 Criteria for assessment

Table 9.3.4.3—Energy and infrastructure activities code - For self-assessable and assessable development

Performance outcomes	Acceptable outcomes	Complies	Comments
For self-assessable and assessable development			
Design			
PO1 Cable connections between infrastructure within and external to the facility are designed to ensure visual clutter is minimised.	AO1 Cable connections between infrastructure are located underground.	PO	Connections between the facility and substation will be underground, connection to the grid will be above ground.
PO2 The Energy and infrastructure activity is appropriately designed to ensure public safety is maintained.	AO2.1 Security fencing with a minimum height of 1.8 metres is provided around perimeter of the proposed energy and infrastructure facility.	✓	Security fencing is proposed around sensitive infrastructure associated with the facility.
	AO2.2 Warning or information signs are erected to the perimeter security fence.	✓	Warnings and information signs will be used where required for health and safety purposes.
If for Telecommunications facility			
PO3 Telecommunication facilities are integrated with the built and natural environment to ensure they are not visually dominant or obtrusive.	AO3.1 Telecommunication facilities are located: (a) underground; or (b) aboveground where: (i) with other telecommunications facilities; (ii) in or on an existing building or structure; and (iii) in areas where the predominant land uses are telecommunication	N/A	

Performance outcomes	Acceptable outcomes	Complies	Comments
	facilities, industrial or commercial uses.		
	AO3.2 Telecommunication facilities: (a) include external finishes, materials and colours which blend into the visual landscape and prevent recognition of the building or structure as a Telecommunications facility; or (b) integrated within an existing building or structure by: (i) concealment as an integral part of the building or structure; and (ii) not increasing the bulk of the building or structure which it is a part of; or (iii) being co-located within existing communication facilities.	N/A	

Performance outcomes	Acceptable outcomes	Complies	Comments
For assessable development			
Location, site suitability and design			
PO4 Energy and infrastructure activities are appropriately located and designed: <ul style="list-style-type: none"> (a) to ensure the privacy and amenity of existing land uses in the surrounding area is not adversely impacted; (b) to ensure public health and safety is not adversely impacted; (c) having regard to the existing built and natural character of the immediate vicinity; (d) to allow direct connection to existing high voltage electricity infrastructure; (e) where sufficient resources are available to make the activity viable; and (f) considering the visibility of the activity in the surrounding area. 	AO4 No acceptable outcome is provided.	PO	Complies – The facility has been located and designed taking into consideration the environmental constraints of the site. An assessment of the visual impact and potential glare impacts has been undertaken which indicates the amenity of the area will not be adversely impacted. Refer to Section 3.7 of the Planning Report and Annex I .
Noise impacts			
PO5 Energy and infrastructure activities are designed to ensure that existing urban and rural uses are not subject to unacceptable noise emissions, having regard to: <ul style="list-style-type: none"> (a) potential nuisance; and (b) risk to human health or wellbeing. 	AO5 No acceptable outcome is provided.	PO	The facility will not result in activities that cause unacceptable noise emissions. It is reasonable to expect that noise impacts may be experienced during the construction period.
Shadow impacts			
PO6 Buildings or structures associated with	AO6 No acceptable outcome is	✓	The facility will not result in shadowing impacts.

Performance outcomes	Acceptable outcomes	Complies	Comments
the Energy and infrastructure activity do not cast shadows that would cause the amenity of surrounding premises, or the useability of public open space, to be unacceptably reduced.	provided.		
Radio frequency emissions			
P07 Radiofrequency emission levels from equipment and infrastructure associated with an Energy and infrastructure activity have no adverse impact on: (a) human health and safety; and (b) existing television or radio reception or transmission.	A07 No acceptable outcome is provided.	N/A	

Performance outcomes	Acceptable outcomes	Complies	Comments
Construction management			
PO8 Construction of Energy and infrastructure activities is carried out in accordance with an approved Construction Management Plan which contains management controls to ensure: <ul style="list-style-type: none"> (a) any adverse impact on the amenity or privacy of an existing use in the immediate surrounds of the site is minimised; (b) disruption to public facilities, such as roads and open space, is minimised; and (c) construction occurs in a timely manner. 	AO8 No acceptable outcome is provided.	PO	A Construction Management Plan will be prepared prior to construction of the facility, if required.
Operational and maintenance management			
PO9 The operation and maintenance of Energy and infrastructure activities is carried out in accordance with an approved Operations and Maintenance Plan which contains management controls to ensure: <ul style="list-style-type: none"> (a) any impact on the surrounding area is not increased in intensity or severity during the operation of the facility; (b) the ongoing monitoring of operations with respect to emissions levels; and (c) ongoing maintenance is undertaken to provide for efficient operation. 	AO9 No acceptable outcome is provided.	PO	Operations of the facility will be carried out in accordance with an Operations and Maintenance Plan, if required.
Decommissioning and rehabilitation			

Performance outcomes	Acceptable outcomes	Complies	Comments
<p>PO10 Comprehensive site decommissioning and rehabilitation is carried out when the Energy and infrastructure activity is discontinued to restore the site to its pre-development state, allowing future land uses that are consistent with the character and use of the immediate surrounds. The site is rehabilitated through the:</p> <ul style="list-style-type: none"> (a) removal of all infrastructure and facilities associated with the Energy and infrastructure activity; (b) landscaping and planting of the site in a manner which is consistent with the landscape character within the immediate vicinity; and (c) restoration of any built or natural on-site features that existed prior to the site's use for the Energy and infrastructure activity. 	<p>AO10 No acceptable outcome is provided.</p>	<p>PO</p>	<p>A Decommissioning and Rehabilitation Plan will be prepared prior to the cessation of the use, if required.</p>

Performance outcomes	Acceptable outcomes	Complies	Comments
If for Renewable energy facility			
PO11 The Renewable energy facility has environmental, economic and social benefits at both a local and regional scale throughout its operational life.	AO11 No acceptable outcome is provided.	✓	Complies – The facility will provide approximately 250 jobs during construction and will provide enough green energy to power 21,000 homes and save 100,000 tonnes of greenhouse gas emissions throughout the 25 years life of the facility.
PO12 Shadow flicker from a Renewable energy facility that has the potential to impact on urban and rural uses does not result in unacceptable levels of impacts on existing amenity, relating to unfettered access to sunlight absent shadow flicker.	AO12 Modelled blade shadow flicker impacts do not exceed 30 hours per annum and 30 minutes/day at existing urban or rural developments.	N/A	There will be no shadow flicker associated with the ongoing operation of the facility.
PO13 Audible and inaudible noise emissions resulting from a Renewable energy facility do not result in unacceptable impact(s): (a) on the ability to enjoy the expected level of acoustic amenity anticipated for the zone and/or precinct; (b) to human or animal health.	AO13 No acceptable outcome is provided.	PO	The facility will not result in unacceptable noise emissions
PO14 The siting of renewable energy facilities and associated infrastructure takes account of and is sensitive to existing urban and rural development, environment, heritage, landscape and scenic values.	AO14 No acceptable outcome is provided.	✓	Complies – the facility is proposed to be located in a rural locality, with existing vegetation surrounding the property likely to screen the facility from external to the site.
PO15 The material, finish and colour of a Renewable energy facility (including associated infrastructure) minimises visual impacts on the landscape	AO15 No acceptable outcome is provided.	✓	Complies – The solar PV panels are designed to absorb as much light as possible with non-reflective finishes provided for the supporting structures.

Performance outcomes	Acceptable outcomes	Complies	Comments
setting.			
PO16 Site access: (a) for construction of the facility does not adversely alter the existing natural drainage pattern; (b) services are co-located within accesses where possible and desirable; (c) is controlled and managed by a Construction Management Plan during construction; and (d) is controlled and managed by a Maintenance Management Plan during operation.	AO16 No acceptable outcome is provided.	PO	Site access utilises the existing access location, with construction to be in accordance with a Construction Management Plan, if required.

9.4.2 Landscaping code

9.4.2.1 Application

This code applies where it is identified in the assessment criteria column of an assessment table in Part 5 of the planning scheme.

9.4.2.2 Purpose

- (1) The purpose of the Landscaping code is to ensure all development is landscaped to a standard that:
 - (a) complements the scale and appearance of the development;
 - (b) protects and enhances the amenity and environmental values of the site;
 - (c) complements and enhances the streetscape and local landscape character; and
 - (d) ensures effective buffering of incompatible land uses to protect local amenity.
- (2) The purpose of the code will be achieved through the following overall outcomes:
 - (a) Landscaping is a functional part of development design and is commensurate with the intended use;
 - (b) Landscaping accommodates the retention of existing significant on site vegetation where appropriate and practical;
 - (c) Landscaping treatments complement the scale, appearance and function of the development;
 - (d) Landscaping contributes to an attractive streetscape;
 - (e) Landscaping enhances the amenity and character of the local area;
 - (f) Landscaping enhances natural environmental values of the site and the locality;
 - (g) Landscaping provides effective screening both on site, if required, and between incompatible land uses;
 - (h) Landscaping provides shade in appropriate circumstances;
 - (i) Landscape design enhances personal safety and reduces the potential for crime and vandalism; and
 - (j) Intensive land uses incorporate vegetated buffers to provide effective screening of buildings, structures and machinery associated with the use.

9.4.2.3 Criteria for assessment

Table 9.4.2.3A—Landscaping code - For self-assessable and assessable development

Performance outcomes	Acceptable outcomes	Complies	Comments
For self-assessable and assessable development			
PO1 Development, other than in the Rural zone, includes landscaping that: <ul style="list-style-type: none"> (a) contributes to the landscape character of the Shire; (b) compliments the character of the immediate surrounds; (c) provides an appropriate balance between built and natural elements; and (d) provides a source of visual interest. 	AO1 Development, other than in the Rural zone, provides: <ul style="list-style-type: none"> (a) a minimum of 10% of the site as landscaping; (b) planting in accordance with Planning Scheme Policy 6 - Landscaping and preferred plant species; (c) for the integration of retained significant vegetation into landscaping areas; (d) on-street landscaping works in accordance with the Design Guidelines set out in Section D9 Landscaping, of the Planning Scheme Policy 4 - FNQROC Regional Development Manual. <p>Note—Where development exceeds a site cover of 90%, areas of landscaping may be provided above</p>	N/A	

Performance outcomes	Acceptable outcomes	Complies	Comments
	ground level to achieve a total supply of landscaping equivalent to 10% of the site area.		
PO2 Development, other than in the Rural zone, includes landscaping along site frontages that: <ul style="list-style-type: none"> (a) creates an attractive streetscape; (b) compliments the character of the immediate surrounds; (c) assists to break up and soften elements of built form; (d) screen areas of limited visual interest or servicing; (e) provide shade for pedestrians; and (f) includes a range and variety of planting. 	AO2 Development, other than in the Rural zone, includes a landscape strip along any site frontage: <ul style="list-style-type: none"> (a) with a minimum width of 2 metres where adjoining a car parking area; (b) with a minimum width of 1.5 metres in all other locations; and (c) in accordance with Planning Scheme Policy 6 - Landscaping and preferred plant species. Note—Where development is setback from a frontage less than 1.5 metres, the setback area is provided as a landscape strip	N/A	
PO3 Development includes landscaping and fencing along side and rear boundaries that: <ul style="list-style-type: none"> (a) screens and buffer land uses; (b) assists to break up and soften elements of built form; 	AO3.1 Development provides landscape treatments along side and rear boundaries in accordance with Table 9.4.2.3B .	✓	The Project does not include the provision for additional landscaping works associated with the development as it is considered the existing vegetation which is being retained on the property, along with vegetation present surrounding adjacent residential dwellings is sufficient to screen the facility and filter any low potential glare impacts.
	AO3.2	×	Refer to response to PO3 above.

Performance outcomes	Acceptable outcomes	Complies	Comments
(c) screens areas of limited visual interest; (d) preserves the amenity of sensitive land uses; and (e) includes a range and variety of planting.	Shrubs and trees provided in landscape strips along side and rear boundaries: (a) are planted at a maximum spacing of 1 metre; (b) will grow to a height of at least 2 metres; (c) will grow to form a screen of no less than 2 metres in height; and (d) are mulched to a minimum depth of 0.1 metres with organic mulch.		
	AO3.3 Any landscape strip provided along a side or rear boundary is designed in accordance with Planning Scheme Policy 6 - Landscaping and preferred plant species.	x	Refer to response to PO3 above.
PO4 Car parking areas are improved with a variety of landscaping that: (a) provides visual interest; (b) provides a source of shade for pedestrians; (c) assists to break up and soften elements; and (d) improves legibility.	AO4.1 Landscaping is provided in car parking areas which provides: (a) a minimum of 1 shade tree for every 4 parking spaces, or part thereof, where the car parking area includes 12 or more spaces; (b) a minimum of 1	x	Car parking associated with the operation of the facility will be minimal as the facility only requires 1-2 people on-site during operation. No landscaping is proposed.

Performance outcomes	Acceptable outcomes	Complies	Comments
	<p>shade tree for every 6 parking spaces, or part thereof, otherwise; and</p> <p>(c) where involving a car parking area in excess of 500m²:</p> <p>(i) shade structures are provided for 50% of parking spaces; and</p> <p>(ii) a minimum of 10% of the parking area as landscaping.</p> <p>Note—Where a shade structure is provided over part of a car parking area, shade tree planting is not required in this area of the car parking area.</p>		
	<p>AO4.2</p> <p>Landscaping in car parking areas is designed in accordance with Planning Scheme Policy 6 - Landscaping and preferred plant species.</p>	×	Refer to response to PO4 above.
<p>PO5</p> <p>Landscaping areas include a range and variety of planting that:</p> <p>(a) is suitable for the intended purpose and local conditions;</p>	<p>AO5.1</p> <p>Plant species are selected from the Plant Schedule in Planning Scheme Policy 6 - Landscaping and preferred</p>	×	No planting proposed as part of development

Performance outcomes	Acceptable outcomes	Complies	Comments
(b) contributes to the natural character of the Shire; (c) includes native species; (d) includes locally endemic species, where practical; and (e) does not include invasive plants or weeds.	plant species.		
	AO5.2 A minimum of 25% of (new and existing) plants is provided as larger, advanced stock with a minimum plant height of 0.7 metres and mulched to a minimum depth of 0.1 metres with organic mulch.	×	No planting proposed as part of development
PO6 Landscaping does not impact on the ongoing provision of infrastructure and services to the Shire.	AO6.1 Tree planting is a minimum of (a) 2 metres from any underground water, sewer, gas, electricity or telecommunications infrastructure; and (b) 4 metres from any inspection chamber.	N/A	
	AO6.2 Vegetation below or within 4 metres of overhead electricity lines and power poles has a maximum height of 3.5 metres at maturity.	N/A	
	AO6.3 Vegetation adjoining an electricity substation boundary, at maturity, will have: (a) a height of less than 4 metres; and (b) no foliage within 3	✓	Complies

Performance outcomes	Acceptable outcomes	Complies	Comments
	metres of the substation boundary, unless the substation has a solid wall along any boundary.		
For assessable development			
PO7 Landscaping areas are designed to: <ul style="list-style-type: none"> (a) be easily maintained throughout the ongoing use of the site; (b) allow sufficient area and access to sunlight and water for plant growth; (c) not cause a nuisance to occupants of the site or members of the public; and (d) maintain or enhance the safety of pedestrians through the use of Crime Prevention Through Environmental Design principles. 	AO7 No acceptable outcome is provided.	×	No planting proposed as part of development

Table 9.4.2.3B—Side and rear boundary landscape treatments

Location or use	Landscape Minimum Width	Strip Minimum Height	Fencing	Extent of treatment
Where car parking, servicing or manoeuvring areas adjoin a side or rear boundary	1 metre	Not applicable		To the extent these areas adjoin the boundary
Where involving a use other than a dwelling house on a site with a common boundary with land in the Low density residential zone, the Medium density residential zone or the Rural residential zone:	1.5 metres	1.8 metres		Along the common boundary.
Development for an industrial activity which has a common boundary with land not within the Industry zone	2 metres	1.8 metres		Along the common boundary
Development involving (a) Tourist park not in the Rural zone (b) Sales office (c) Multiple dwelling (d) Residential care facility; or (e) Dual occupancy	Not applicable	1.8 metres		Along all side and rear boundaries and between dwellings for a Dual occupancy.
Development involving (a) Tourist park in the Rural zone (b) Service station (c) Car wash; or (d) Utility installation	2 metres	Not applicable		Along all side and rear boundaries
For: (a) waste storage; (b) equipment; (c) servicing areas; and (d) private open space and site facilities associated with Caretaker's accommodation.	Not applicable	1.8 metres		To prevent visibility

Note—Where more than one landscape treatment is applicable to a development in the above table, the development is to provide a landscape treatment that satisfies all applicable minimum specifications.

9.4.3 Parking and access code

9.4.3.1 Application

This code applies to assessing development where it is identified in the assessment criteria column of an assessment table in Part 5 of the planning scheme.

9.4.3.2 Purpose

- (1) The purpose of the Parking and access code is to ensure:
 - (a) parking areas are appropriately designed, constructed and maintained;
 - (b) the efficient functioning of the development and the local road network; and
 - (c) all development provides sufficient parking, loading/service and manoeuvring areas to meet the demand generated by the use.
- (2) The purpose of the code will be achieved through the following overall outcomes:
 - (a) Land uses have a sufficient number of parking and bicycle spaces designed in a manner to meet the requirements of the user;
 - (b) Parking spaces and associated manoeuvring areas are safe, functional and provide equitable access;
 - (c) Suitable access for all types of vehicles likely to utilise a parking area is provided in a way that does not compromise the safety and efficiency of the surrounding road network;
 - (d) Premises are adequately serviced to meet the reasonable requirements of the development; and
 - (e) End of trip facilities are provided by new major developments to facilitate alternative travel modes.

9.4.3.3 Criteria for assessment

Table 9.4.3.3A—Parking and access code – For self-assessable and assessable development

Performance outcomes	Acceptable outcomes	Complies	Comments
For self-assessable and assessable development			
Car parking spaces			
PO1 Development provides sufficient car parking to accommodate the demand likely to be generated by the use, having regard to the: <ul style="list-style-type: none"> (a) nature of the use; (b) location of the site; (c) proximity of the use to public transport services; (d) availability of active transport infrastructure; and (e) accessibility of the use to all members of the community. 	AO1 The number of car parking spaces provided for the use is in accordance with Table 9.4.3.3B . <i>Note—Car parking spaces provided for persons with a disability are to be considered in determining compliance with AO1.</i>	PO	The facility will be provided with permanent car parking to cater for the ongoing maintenance of the facility, with temporary on-site parking provided during the construction period.

Performance outcomes	Acceptable outcomes	Complies	Comments
Vehicle crossovers			
PO2 Vehicle crossovers are provided to:: (a) ensure safe and efficient access between the road and premises; (b) minimize interference with the function and operation of roads; and (c) minimise pedestrian to vehicle conflict.	AO2.1 Vehicular access to/from Council roads is designed and constructed in accordance with the Standard drawings in Planning Scheme Policy 4 - FNQROC Regional Development Manual.	✓	Complies with PO - Vehicle access will utilize the existing access tracks where possible, with no tracks to be constructed fit-for-purpose to allow safe and efficient access within the facility.
	AO2.2 Development on a site with two or more road frontages provides vehicular access from: (a) the primary frontage where involving Community activities or Sport and recreation activities, unless the primary road frontage is a State-controlled road; or (b) from the lowest order road in all other instances.	N/A	
	AO2.3 Vehicular access for particular uses is provided in accordance with Table 9.4.3.3E .	N/A	
PO3 Access, manoeuvring and car parking areas include appropriate pavement treatments having regard to:	AO3 Access, manoeuvring and car parking areas include pavements that are	✓	Complies with PO - Access, manoeuvring and car parking areas will be designed to include appropriate pavement treatments having regard to the anticipated traffic volume and nature of the use.

Performance outcomes	Acceptable outcomes	Complies	Comments
(a) the intensity of anticipated vehicle movements; (b) the nature of the use that they service; and (c) the character of the surrounding locality.	constructed in accordance with Table 9.4.3.3C .		
For assessable development			
Parking area location and design			
PO4 Car parking areas are located and designed to: (a) ensure safety and efficiency in operation; and (b) be consistent with the character of the surrounding locality.	AO4.1 Car parking spaces, access and circulation areas have dimensions in accordance with AS/NZS 2890.1 Off-street car parking.	✓	Complies with AO – car parking will comply with relevant standards
	AO4.2 Disabled access and car parking spaces are located and designed in accordance with AS/NZS 2890.6 Parking facilities - Off-street parking for people with disabilities.	✓	Complies with PO – disabled car parking designed in accordance with the relevant standards will not be provided, having regard for the nature or the use. However, sufficient access and manvouring area will be provided in the event disabled access is required.
	AO4.3 The car parking area includes designated pedestrian routes that provide connections to building entrances.	✓	Complies with AO – Safe and efficient pedestrian access between the carpark and other relevant facilities will be provided where appropriate.
	AO4.4 Parking and any set down areas are: (a) wholly contained within the site; (b) visible from the street where involving	✓	Complies

Performance outcomes	Acceptable outcomes	Complies	Comments
	<p>Commercial activities, Community activities, Industrial activities or a use in the Recreation and open space zone;</p> <p>(c) are set back behind the main building line where involving a Dual occupancy, Multiple dwelling, Residential care facility or Retirement facility; and</p> <p>(d) provided at the side or rear of a building in all other instances.</p>		
Site access and manoeuvring			
<p>PO5 Access to, and manoeuvring within, the site is designed and located to:</p> <p>(a) ensure the safety and efficiency of the external road network;</p> <p>(b) ensure the safety of pedestrians;</p> <p>(c) provide a functional and convenient layout; and</p> <p>(d) accommodate all vehicles intended to use the site.</p>	<p>AO5.1 Access and manoeuvrability is in accordance with :</p> <p>(a) AS28901 – Car Parking Facilities (Off Street Parking); and</p> <p>(b) AS2890.2 – Parking Facilities (Off-street Parking) Commercial Vehicle Facilities.</p> <p>Note—Proposal plans should include turning circles designed in accordance with AP34/95 (Austroads 1995) Design Vehicles and Turning Path</p>	✓	Complies with AO – The parking and access will be designed to comply with the relevant standards, where required.

Performance outcomes	Acceptable outcomes	Complies	Comments
	Templates.		
	AO5.2 Vehicular access has a minimum sight distance in accordance with Part 5 of AUSTROADS.	✓	Complies – refer to Annex G Traffic Impact Assessment
	AO5.3 Vehicular access is located and designed so that all vehicles enter and exit the site in a forward gear.	✓	Complies
	AO5.4 Pedestrian and cyclist access to the site: (a) is clearly defined; (b) easily identifiable; and (c) provides a connection between the site frontage and the entrance to buildings and end of trip facilities (where provided).	N/A	

Performance outcomes	Acceptable outcomes	Complies	Comments
PO6 Development that involves an internal road network ensures that it's design: <ul style="list-style-type: none"> (a) ensure safety and efficiency in operation; (b) does not impact on the amenity of residential uses on the site and on adjoining sites, having regard to matters of: <ul style="list-style-type: none"> (i) hours of operation; (ii) noise (iii) light; and (iv) odour; (c) accommodates the nature and volume of vehicle movements anticipated to be generated by the use; (d) allows for convenient access to key on-site features by pedestrians, cyclists and motor vehicles; and (e) in the Rural zone, avoids environmental degradation. 	AO6.1 Internal roads for a Tourist park have a minimum width of: <ul style="list-style-type: none"> (a) 4 metres if one way; or (b) 6 metres if two way. 	N/A	
	AO6.2 For a Tourist park, internal road design avoids the use of cul-de-sacs in favour of circulating roads, where unavoidable, cul-de-sacs provide a full turning circle for vehicles towing caravans having: <ul style="list-style-type: none"> (a) a minimum approach and departure curve radius of 12 metres; and (b) a minimum turning circle radius of 8 metres. 	N/A	
	AO6.3 Internal roads are imperviously sealed and drained, apart from those for an Energy and infrastructure activity or Rural activity.	N/A	
	AO6.4 Speed control devices are installed along all internal roads, apart from those for an Energy and infrastructure activity or	N/A	

Performance outcomes	Acceptable outcomes	Complies	Comments
	Rural activity, in accordance with Complete Streets.		
	AO6.5 Internal roads, apart from those for an Energy and infrastructure activity or Rural activity, are illuminated in accordance with AS 4282 (as amended) - Control of Obtrusive effects of outdoor lighting.	N/A	
	AO6.6 Where involving an accommodation activity, internal roads facilitate unobstructed access to every dwelling, accommodation unit, accommodation site and building by emergency services vehicles.	N/A	
	AO6.7 For an Energy and infrastructure activity or Rural activity, internal road gradients: (a) are no steeper than 1:5; or (b) are steeper than 1:5 and are sealed.	✓	Complies with AO – Internal access roads are unlikely to be steeper than 1:5, however if applicable, access can be sealed if required.

Performance outcomes	Acceptable outcomes	Complies	Comments
Servicing			
PO7 Development provides access, maneuvering and servicing areas on site that: <ul style="list-style-type: none"> (a) accommodate a service vehicle commensurate with the likely demand generated by the use; (b) do not impact on the safety or efficiency of internal car parking or maneuvering areas; (c) do not adversely impact on the safety or efficiency of the road network; (d) provide for all servicing functions associated with the use; and (e) are located and designed to minimise their impacts on adjoining sensitive land uses and streetscape quality. 	AO7.1 All unloading, loading, service and waste disposal areas are located: <ul style="list-style-type: none"> (a) on the site; (b) to the side or rear of the building, behind the main building line; (c) not adjacent to a site boundary where the adjoining property is used for a sensitive use. 	✓	Complies
	AO7.2 Unloading, loading, service and waste disposal areas allow service vehicles to enter and exit the site in a forward gear.	✓	Complies
	AO7.3 Development provides a servicing area, site access and maneuvering areas to accommodate the applicable minimum servicing vehicle specified in Table 9.4.3.3B .	✓	Capable of Complying with AO
Maintenance			
PO8 Parking areas are used and maintained for their intended purpose.	AO8.1 Parking areas are kept and used exclusively for parking and are maintained in a suitable condition for	✓	Capable of Complying with AO

Performance outcomes	Acceptable outcomes	Complies	Comments
	parking and circulation of vehicles.		
	AO8.2 All parking areas will be compacted, sealed, drained, line marked and maintained until such time as the development ceases.	✓	Complies with PO – car parking and access will be maintained to a standard which is fit-for-purpose and does not cause nuisance to the surrounding area.
End of trip facilities			
PO9 Development within the Centre zone; Industry zone or Emerging community zone provides facilities for active transport users that:	AO9.1 The number of bicycle parking spaces provided for the use is in accordance with Table 9.4.3.3D .	N/A	
(a) meet the anticipated demand generated from the use; (b) comprise secure and convenient bicycle parking and storage; and (c) provide end of trip facilities for all active transport users.	AO9.2 End of trip facilities are provided in accordance with Table 9.4.3.3D .	N/A	
If for Educational establishment or Child care centre where involving more than 100 vehicle movements per day or Renewable energy facility, Sport and recreation activities or Tourist park			
PO10 The level of traffic generated by the development on the surrounding local road network must not result in unacceptable impacts on adjacent land and local road users.	AO10 A traffic impact report is prepared by a suitably qualified person that identifies: <ul style="list-style-type: none"> (a) the expected traffic movements to be generated by the facility; (b) any associated impacts on the road network; and 	N/A	

Performance outcomes	Acceptable outcomes	Complies	Comments
	(c) any works that will be required to address the identified impacts.		
If for Educational establishment or Child care centre where involving more than 100 vehicle movements per day or Renewable energy facility, Sport and recreation activities or Tourist park			
PO11 The level of traffic generated by the development on the surrounding local road network must not result in unacceptable impacts on adjacent land and local road users.	AO11 A traffic impact report is prepared by a suitably qualified person that identifies: (d) the expected traffic movements to be generated by the facility; (e) any associated impacts on the road network; and (f) any works that will be required to address the identified impacts.	N/A	

Table 9.4.3.3B—Vehicle Parking and Service Vehicle Space Requirements

Definition	Minimum number of Car parking spaces	Minimum Service Vehicle Space Provision
Renewable energy facility	As determined by Council.	As determined by Council.

Note—Any use not herein defined - as determined by Council.

Table 9.4.3.3C—Pavement Standards for Access, Manoeuvring and Car Parking areas

Zone	Compacted Gravel Base (minimum thickness)	Surfacing Options
All development other than dwelling house		
All zones other than the Conservation zone or the Rural zone	75mm	Reinforced concrete with a minimum thickness of: <ul style="list-style-type: none"> • 100mm for parking areas; and • 150mm for access ways.
	150mm	Asphalt with a minimum thickness of 25mm
	150mm	Two coat sprayed bitumen seal
	150mm	Concrete pavers
Conservation zone or Rural zone	Not applicable	Minimum 150mm thickness compacted gravel suitable for all weather and dust free

Note—Where more than one surfacing option is listed, any one of the treatments listed may be provided.

Table 9.4.3.3D—Bicycle Parking and End of Trip Facility Requirements

Not Applicable

Table 9.4.3.3E—Vehicular Access for Specific Uses

Not Applicable

9.4.4 Reconfiguring a lot code

9.4.4.1 Application

- (1) This code applies to assessing development where:
 - (a) for Reconfiguring a lot; and
 - (b) it is identified in the assessment criteria column of an assessment table in Part 5 of the planning scheme.

9.4.4.2 Purpose

- (1) The purpose of the Reconfiguring a lot code is to ensure that land is:
 - (a) arranged in a manner which is consistent with the intended scale and intensity of development within the area;
 - (b) provided with access to appropriate movement and open space networks; and
 - (c) contributes to housing diversity and accommodates a range of land uses.
- (2) The purpose of the code will be achieved through the following overall outcomes:
 - (a) Subdivision of land achieves the efficient use of land and the efficient provision of infrastructure and transport services;
 - (b) Lots are of a suitable size and shape for the intended or potential use having regard to the purpose and overall outcomes of the relevant zone or precinct.
 - (c) Subdivision of land creates lots with sufficient area and dimensions to accommodate the ultimate use, meet user requirements, protect environmental features and account for site constraints;
 - (d) A range and mix of lot sizes is provided to facilitate a variety of industry and housing types;
 - (e) Subdivision design incorporates a road network that provides connectivity and circulation for vehicles and provide safe and efficient access for pedestrians, cyclists and public transport;
 - (f) Subdivision design provides opportunities for walking and cycling for recreation and as alternative methods of travel;
 - (g) Subdivision of land provides and integrates a range of functional parkland, including local and district parks and open space links for the use and enjoyment of the residents of the locality and the shire;
 - (h) Subdivision of land contributes to an open space network that achieves connectivity along riparian corridors and between areas with conservation values;
 - (i) Subdivision within the Rural zone maintains rural landholdings in viable parcels; and
 - (j) Land in historical townships is not reconfigured to be used for urban purposes.

9.4.4.3 Criteria for assessment

Table 9.4.4.3A—Reconfiguring a lot code – For assessable development

Performance outcomes	Acceptable outcomes	Complies	Comments
Area and frontage of lots			
PO1 Lots include an area and frontage that: <ul style="list-style-type: none"> (a) is consistent with the design of lots in the surrounding area; (b) allows the desired amenity of the zone to be achieved; (c) is able to accommodate all buildings, structures and works associated with the intended land use; (d) allow the site to be provided with sufficient access; (e) considers the proximity of the land to: <ul style="list-style-type: none"> (i) centres; (ii) public transport services; and (iii) open space; and (f) allows for the protection of environmental features; and (g) accommodates site constraints. 	AO1.1 Lots provide a minimum area and frontage in accordance with Table 9.4.4.3B .	✓	Complies with PO – The Project will result in the creation of a new lot to facilitate the connection to the grid network via a substation. The new lot will be located adjacent to the existing high voltage transmission lines and will integrate with the existing infrastructure.
Existing buildings and easements			
PO2 Reconfiguring a lot which contains existing land uses or existing buildings and structures ensures: <ul style="list-style-type: none"> (a) new lots are of sufficient area and dimensions to accommodate existing land uses, buildings and structures; and (b) any continuing use is not 	AO2.1 Each land use and associated infrastructure is contained within its individual lot.	✓	Complies
	AO2.2 All lots containing existing buildings and structures achieve the setback	✓	Complies

Performance outcomes	Acceptable outcomes	Complies	Comments
compromised by the reconfiguration.	requirements of the relevant zone.		
PO3 Reconfiguring a lot which contains an existing easement ensures: <ul style="list-style-type: none"> (a) future buildings, structures and accessways are able to be sited to avoid the easement; and (b) the reconfiguration does not compromise the purpose of the easement or the continued operation of any infrastructure contained within the easement. 	AO3 No acceptable outcome is provided.	✓	Complies
Boundary realignment			
PO4 The boundary realignment retains all attendant and existing infrastructure connections and potential connections.	AO4 No acceptable outcome is provided.	N/A	

Performance outcomes	Acceptable outcomes	Complies	Comments
Access and road network			
PO5 Access to a reconfigured lot (including driveways and paths) must not have an adverse impact on: <ul style="list-style-type: none"> (a) safety; (b) drainage; (c) visual amenity; (d) privacy of adjoining premises; and (e) service provision. 	AO5 No acceptable outcome is provided.	✓	Complies – the new lot will be provided with access from the existing access location off Cane Road, with the benefit of an easement over Lot 156
PO6 Reconfiguring a lot ensures that access to a lot can be provided that: <ul style="list-style-type: none"> (a) is consistent with that provided in the surrounding area; (b) maximises efficiency and safety; and (c) is consistent with the nature of the intended use of the lot. <p>Note—The Parking and access code should be considered in demonstrating compliance with PO6.</p>	AO6 Vehicle crossover and access is provided in accordance with the design guidelines and specifications set out in Planning Scheme Policy 4 – FNQROC Regional Development Manual.	✓	Complies with PO – Access will be consistent with that required to service the intended use of the new lot and lease area
PO7 Roads in the Industry zone are designed having regard to: <ul style="list-style-type: none"> (a) the intended use of the lots; (b) the existing use of surrounding land; (c) the vehicular servicing requirements of the intended use; (d) the movement and turning requirements of B-Double vehicles. 	AO7 No acceptable outcome is provided.	N/A	

Performance outcomes	Acceptable outcomes	Complies	Comments
Note—The Parking and access code should be considered in demonstrating compliance with PO7.			
Rear lots			
PO8 Rear lots are designed to: (a) provide a high standard of amenity for residents and other users of the site; (b) provide a high standard of amenity for adjoining properties; and (c) not adversely affect the safety and efficiency of the road from which access is gained.	AO8.1 Rear lots are designed to facilitate development that adjoins or overlooks a park or open space.	N/A	
	AO8.2 No more than two rear lots are created behind any lot with a road frontage.	N/A	
	AO8.3 Access to lots is via an access strip with a minimum width of: (a) 4 metres where in the Low density residential zone or Medium density residential zone; or (b) 8 metres otherwise.	N/A	
	AO8.4 A single access strip is provided to a rear lot along one side of the lot with direct frontage to the street. Note—Figure A provides further guidance in relation to the desired outcome.	N/A	
	AO8.5 No more than 1 in 10 lots	N/A	

Performance outcomes	Acceptable outcomes	Complies	Comments
	created in a new subdivision are rear lots.		
	AO8.6 Rear lots are not created in the Centre zone or the Industry zone.	N/A	
Crime prevention and community safety			
PO9 Development includes design features which enhance public safety and seek to prevent opportunities for crime, having regard to: (a) sightlines; (b) the existing and intended pedestrian movement network; (c) the existing and intended land use pattern; and (d) potential entrapment locations.	AO9 No acceptable outcome is provided.	N/A	
Pedestrian and cycle movement network			
PO10 Reconfiguring a lot must assist in the implementation of a Pedestrian and cycle movement network to achieve safe, attractive and efficient pedestrian and cycle networks.	AO10 No acceptable outcome is provided.	N/A	
Public transport network			
PO11 Where a site includes or adjoins a future public transport corridor or future public transport site identified through a structure planning process, development: (a) does not prejudice the future provision of the identified	AO11 No acceptable outcome is provided.	N/A	

Performance outcomes	Acceptable outcomes	Complies	Comments
(b) infrastructure; appropriately treats the common boundary with the future corridor; and (c) provides opportunities to integrate with the adjoining corridor where a it will include an element which will attract pedestrian movement.			
Residential subdivision			
P012 Residential lots are: (a) provided in a variety of sizes to accommodate housing choice and diversity; and (b) located to increase variety and avoid large areas of similar lot sizes.	AO12 No acceptable outcome is provided.	N/A	

Performance outcomes	Acceptable outcomes	Complies	Comments
Rural residential zone			
PO13 New lots are only created in the Rural residential zone where land is located within the 4,000m ² precinct, the 1 hectare precinct or the 2 hectare precinct.	AO13 No acceptable outcome is provided.	N/A	
Additional provisions for greenfield development only			
PO14 The subdivision design provides the new community with a local identity by responding to: (a) site context (b) site characteristics (c) setting (d) landmarks (e) natural features; and (f) views.	AO14 No acceptable outcome provided.	N/A	
PO15 The road network is designed to provide a high level of connectivity, permeability and circulation for local vehicles, public transport, pedestrians and cyclists.	AO15 No acceptable outcome provided.	N/A	
PO16 The road network is designed to: (a) minimise the number of cul-de-sacs; (b) provide walkable catchments for all residents in cul-de-sacs; and (c) include open cul-de-sacs heads. Note—Figure B provides further guidance in relation to the desired outcome.	AO16 No acceptable outcome provided.	N/A	

Performance outcomes	Acceptable outcomes	Complies	Comments
PO17 Reconfiguring a lot provides safe and convenient access to the existing or future public transport network.	AO17 The subdivision locates 90% of lots within 400 metres walking distance of a future public transport route.	N/A	
PO18 The staging of the lot reconfiguration prioritises delivery of link roads to facilitate efficient bus routes.	AO18 No acceptable outcome provided.	N/A	
PO19 Provision is made for sufficient open space to: (a) meet the needs of the occupiers of the lots and to ensure that the environmental and scenic values of the area are protected; (b) retain riparian corridors, significant vegetation and habitat areas and provides linkages between those areas; and (c) meet regional, district and neighbourhood open space requirements.	AO19.1 A minimum of 10% of the site area is dedicated as open space.	N/A	
	AO19.2 A maximum of 30% of the proposed open space can consist of land identified as significant vegetation or riparian corridor buffer.	N/A	
PO20 A network of parks and community land is provided: (a) to support a full range of recreational and sporting activities; (b) to ensure adequate pedestrian, cycle and vehicle access; (c) which is supported by appropriate infrastructure and embellishments; (d) to facilitate links between public	AO20 No acceptable outcome is provided.	N/A	

Performance outcomes	Acceptable outcomes	Complies	Comments
(e) open spaces; which is co-located with other existing or proposed community infrastructure; (f) which is consistent with the preferred open space network; and (g) which includes a diversity of settings;			

Table 9.4.4.3B—Minimum area and dimensions for Reconfiguring a lot

Zone	Type	Minimum area	Minimum frontage
Rural	All lots	60 hectares	400 metres

Figure A – Examples of access to rear lots

Not Applicable

Figure B – Example of cul-de-sac design

Not Applicable

9.4.5 Works, services and infrastructure code

9.4.5.1 Application

- (1) This code applies to assessing development where it is identified in the assessment criteria column of an assessment table in Part 5 of the planning scheme.

9.4.5.2 Purpose

- (1) The purpose of the Works, services and infrastructure code is to ensure that all development is appropriately serviced by physical infrastructure, public utilities and services and that work associated with development is carried out in a manner that does not adversely impact on the surrounding area.
- (2) The purpose of the code will be achieved through the following overall outcomes:
 - (a) Development provides an adequate, safe and reliable supply of potable, fire-fighting and general use water in accordance with relevant standards;
 - (b) Development provides for the treatment and disposal of wastewater and ensures there are no adverse impacts on water quality, public health, local amenity or ecological processes;
 - (c) Development provides for the disposal of stormwater and ensures that there are no adverse impacts on water quality or ecological processes;
 - (d) Development connects to the road network and any adjoining public transport, pedestrian and cycle networks while ensuring no adverse impacts on the safe, convenient and efficient operation of these networks;
 - (e) Development provides electricity and telecommunications services that meet its desired requirements;
 - (f) Development is connected to a nearby electricity network with adequate capacity without significant environment, social or amenity impact;
 - (g) Development does not affect the efficient functioning of public utility mains, services or installations;
 - (h) Infrastructure dedicated to Council is cost effective over its life cycle;
 - (i) Work associated with development does not cause adverse impacts on the surrounding area; and
 - (j) Development prevents the spread of weeds, seeds or other pests.

9.4.5.3 Criteria for assessment

Table 9.4.5.3 - Works, services and infrastructure code – For self-assessable and assessable development

Performance outcomes	Acceptable outcomes	Complies	Comments
For self-assessable and assessable development			
Water supply			
PO1 Each lot has an adequate volume and supply of water that: (a) meets the needs of users; (b) is adequate for fire-fighting purposes; (c) ensures the health, safety and convenience of the community; and (d) minimises adverse impacts on the receiving environment.	AO1.1 Development is connected to a reticulated water supply system in accordance with the Design Guidelines and Specifications set out in the Planning Scheme Policy 4 – FNQROC Regional Development Manual other than where located: (a) in the Conservation zone, Rural zone or Rural residential zone; and (b) outside a reticulated water supply service area.	N/A	
	AO1.2 Development, where located outside a reticulated water supply service area and in the Conservation zone, Rural zone or Rural residential zone is provided with: (a) a bore or bores are provided in accordance with the	✓	Complies with PO – on-site water storage will be provided of sufficient capacity to cater for the intended use.

Performance outcomes	Acceptable outcomes	Complies	Comments
	Design Guidelines set out in the Planning Scheme Policy 4 – FNQROC Regional Development Manual; or (b) on-site water storage tank/s: (i) with a minimum capacity of 90,000L; (ii) fitted with a 50mm ball valve with a camlock fitting; and (iii) which are installed and connected prior to the occupation or use of the development.		
Wastewater disposal			
PO2 Each lot provides for the treatment and disposal of effluent and other waste water that: (a) meets the needs of users; (b) is adequate for fire-fighting purposes; (c) ensures the health, safety and convenience of the community;	AO2.1 Development is connected to a reticulated sewerage system in accordance with the Design Guidelines and Specifications set out in the Planning Scheme Policy 4 – FNQROC Regional Development Manual other	N/A	

Performance outcomes	Acceptable outcomes	Complies	Comments
(d) and minimises adverse impacts on the receiving environment.	than where located: (a) in the Conservation zone, Rural zone or Rural residential zone; and (b) outside a reticulated sewerage service area.		
	AO2.2 An effluent disposal system is provided in accordance with ASNZ 1547 On-Site Domestic Wastewater Management (as amended) where development is located: (a) in the Conservation zone, Rural zone or Rural residential zone; and (b) outside a reticulated sewerage service area.	✓	Complies – An effluent disposal system will be provided in accordance with the relevant standards, should amenities be provided on the site.
Stormwater infrastructure			
PO3 Stormwater infrastructure is designed and constructed to collect and convey the design storm event to a lawful point of discharge in a manner that mitigates impacts on life and property.	AO3.1 Where located within a Priority infrastructure area or where stormwater infrastructure is available, development is connected to Council's stormwater network in accordance with the Design Guidelines and Specifications set out in the Planning Scheme Policy 4	N/A	

Performance outcomes	Acceptable outcomes	Complies	Comments
	– FNQROC Regional Development Manual.		
	AO3.2 On-site drainage systems are constructed: (a) to convey stormwater from the premises to a lawful point of discharge; and (b) in accordance with the Design Guidelines and Specifications set out in the Planning Scheme Policy 4 – FNQROC Regional Development Manual.	✓	Capable of Complying - subject to detailed design which will involve future operational works.
Electricity supply			
PO4 Each lot is provided with an adequate supply of electricity	AO4 The premises: (a) is connected to the electricity supply network; or (b) has arranged a connection to the transmission grid; or (c) where not connected to the network, an independent energy system with sufficient capacity to service the development (at near average energy	✓	Complies

Performance outcomes	Acceptable outcomes	Complies	Comments
	<p>demands associated with the use) may be provided as an alternative to reticulated electricity where:</p> <ul style="list-style-type: none"> (i) it is approved by the relevant regulatory authority; and (ii) it can be demonstrated that no air or noise emissions; and (iii) it can be demonstrated that no adverse impact on visual amenity will occur. 		
Telecommunications infrastructure			
PO5 Each lot is provided with an adequate supply of telecommunication infrastructure	AO5 Development is provided with a connection to the national broadband network or telecommunication services.	✓	Capable of complying – The facility will be connected to the telecommunications network as required.
Existing public utility services			
PO6 Development and associated works do not affect the efficient functioning of public utility mains, services or	AO6 Public utility mains, services are relocated, altered or repaired in	✓	Capable of complying if required.

Performance outcomes	Acceptable outcomes	Complies	Comments
installations.	association with the works so that they continue to function and satisfy the relevant Design Guidelines and Specifications set out in the Planning Scheme Policy 4 – FNQROC Regional Development Manual.		

Performance outcomes	Acceptable outcomes	Complies	Comments
Excavation or filling			
PO7 Excavation or filling must not have an adverse impact on the: (a) streetscape; (b) scenic amenity; (c) environmental values; (d) slope stability; (e) accessibility; or (f) privacy of adjoining premises.	AO7.1 Excavation or filling does not occur within 1.5 metres of any site boundary.	✓	Complies
	AO7.2 Excavation or filling at any point on a lot is to be no greater than 1.5 metres above or below natural ground level.	✓	Complies with PO – excavation and filling may involve works greater than 1.5 metres, however this will be subject to a further operational works application following detailed design of the facility.
	AO7.3 Earthworks batters: (a) are no greater than 1.5 metres in height; (b) are stepped with a minimum width 2 metre berm; (c) do not exceed a maximum of two batters and two berms (not greater than 3.6 metres in total height) on any one lot; (d) have a slope no greater than 1 in 4; and (e) are retained.	✓	Complies with PO – excavation and filling may involve works greater than 1.5 metres, however this will be subject to a further operational works application following detailed design of the facility.
	AO7.4 Soil used for filling or spoil from excavation is not stockpiled in locations that can be viewed from: (a) adjoining premises;	✓	Capable of complying

Performance outcomes	Acceptable outcomes	Complies	Comments
	<p>or</p> <p>(b) a road frontage, for a period exceeding 1 month from the commencement of the filling or excavation.</p>		
	<p>AO7.5 All batters and berms to be constructed in accordance with the Design Guidelines and Specifications set out in the Planning Scheme Policy 4 – FNQROC Regional Development Manual.</p>	✓	Capable of complying – refer to above response.
	<p>AO7.6 Retaining walls have a maximum height of 1.5 metres and are designed and constructed in accordance with the Design Guidelines and Specifications set out in the Planning Scheme Policy 4 – FNQROC Regional Development manual.</p>	✓	Complies with AO – No retaining walls are proposed at this stage, however should they be part of the detailed design, this will be subject to a further operational works application.
	<p>AO7.7 Excavation or filling at any point on a lot is to include measures that protect trees at the foot or top of cut or fill batters by the use of appropriate retaining methods and sensitive earth removal or placement</p>	✓	Complies – Excavation and filling will not occur within 10 metres of the top of bank of the waterways mapped as containing category R vegetation. Refer to Ecological Assessment provided as Annex H .

Performance outcomes	Acceptable outcomes	Complies	Comments
	and in accordance with the Design Guidelines and Specifications set out in the Planning Scheme Policy 4 – FNQROC Regional Development manual.		
For assessable development			
Transport network			
PO8 The development has access to a transport network of adequate standard to provide for the safe and efficient movement of vehicles, pedestrians and cyclists.	AO8.1 Vehicle access, crossovers, road geometry, pavement, utilities and landscaping to the frontage/s of the site are designed and constructed in accordance with the Design Guidelines and Specifications set out in the Planning Scheme Policy 4 – FNQROC Regional Development manual.	✓	Complies with PO – The facility will be provided with access which is of an adequate standard to provide safe and efficient movement within the site.
	AO8.2 Development provides footpath pavement treatments in accordance with Planning Scheme Policy 9 – Footpath Paving.	N/A	
Public infrastructure			
PO9 The design, construction and provision of any infrastructure that is to be dedicated to Council is cost effective over its life cycle and incorporates	AO9 Development is in accordance with the Design Guidelines and Specifications set out in the	N/A	

Performance outcomes	Acceptable outcomes	Complies	Comments
provisions to minimise adverse impacts.	Planning Scheme Policy 4 – FNQROC Regional Development Manual.		
Stormwater quality			
PO10 Development has a non-worsening effect on the site and surrounding land and is designed to: <ul style="list-style-type: none"> (a) optimise the interception, retention and removal of waterborne pollutants, prior to the discharge to receiving waters; (b) protect the environmental values of waterbodies affected by the development, including upstream, on-site and downstream waterbodies; (c) achieve specified water quality objectives; (d) minimise flooding; (e) maximise the use of natural channel design principles; (f) maximise community benefit; and (g) minimise risk to public safety. 	AO10.1 The following reporting is prepared for all Material change of use or Reconfiguring a lot proposals: <ul style="list-style-type: none"> (a) a Stormwater Management Plan and Report that meets or exceeds the standards of design and construction set out in the Queensland Urban Drainage Manual (QUDM) and the Design Guidelines and Specifications set out in the Planning Scheme Policy 4 – FNQROC Regional Development Manual; and (b) an Erosion and Sediment Control Plan that meets or exceeds the Soil Erosion and Sedimentation Control Guidelines (Institute of 	✓	Complies with PO – A Stormwater Management Plan has not been prepared at this stage of the development. Stormwater management will be designed following the detailed design of the facility and will form part of a further operational works application for the project.

Performance outcomes	Acceptable outcomes	Complies	Comments
	<p>Engineers Australia), including:</p> <ul style="list-style-type: none"> (i) drainage control; (ii) erosion control; (iii) sediment control; and (iv) water quality outcomes. 		
	<p>AO10.2 For development on land greater than 2,500m² or that result in more than 5 lots or more than 5 dwellings or accommodation units, a Stormwater Quality Management Plan and Report prepared and certified by a suitably qualified design engineer (RPEQ) is prepared that demonstrates that the development:</p> <ul style="list-style-type: none"> (a) meets or exceeds the standards of design and construction set out in the Urban Stormwater Quality Planning Guideline and the Queensland Water Quality Guideline; (b) is consistent with any 	✓	Complies with PO – Refer to above response.

Performance outcomes	Acceptable outcomes	Complies	Comments
	<p>local area stormwater water management planning;</p> <p>(c) accounts for development type, construction phase, local climatic conditions and design objectives; and</p> <p>(d) provides for stormwater quality treatment measures reflecting land use constraints, such as soil type, landscape features (including landform), nutrient hazardous areas, acid sulfate soil and rainfall erosivity.</p>		
<p>PO11 Storage areas for stormwater detention and retention:</p> <p>(a) protect or enhance the environmental values of receiving waters;</p> <p>(b) achieve specified water quality objectives;</p> <p>(c) where possible, provide for recreational use;</p> <p>(d) maximise community benefit; and</p> <p>(e) minimise risk to public safety.</p>	<p>AO11 No acceptable outcome is provided.</p>	✓	Complies with PO – Refer to above response.
Excavation or filling			

Performance outcomes	Acceptable outcomes	Complies	Comments
PO12 Traffic generated by filling or excavation does not impact on the amenity of the surrounding area.	AO12.1 Haul routes used for transportation of fill to or from the site only use major roads and avoid residential areas.	✓	Complies – The project will utilize the existing identified heavy haulage route being Chewko Road. Refer to Annex G –Traffic Impact Assessment
	AO12.2 Transportation of fill to or from the site does not occur: (a) within peak traffic times; and (b) before 7am or after 6pm Monday to Friday; (c) before 7am or after 1pm Saturdays; and (d) on Sundays or Public Holidays.	✓	Capable of Complying

Performance outcomes	Acceptable outcomes	Complies	Comments
PO13 Air pollutants, dust and sediment particles from excavation or filling, do not cause significant environmental harm or nuisance impacts.	AO13.1 Dust emissions do not extend beyond the boundary of the site.	✓	Complies with AO – Dust suppression measures will be implemented as part of a Construction Management Plan to ensure dust emissions do not extend beyond the boundary of the site.
	AO13.2 No other air pollutants, including odours, are detectable at the boundary of the site.	✓	Complies
	AO13.3 A management plan for control of dust and air pollutants is prepared and implemented.	✓	Complies – a Construction Management Plan will be implemented which includes dust suppression measures.
PO14 Access to the premises (including driveways and paths) does not have an adverse impact on: (a) safety; (b) drainage; (c) visual amenity; and (d) privacy of adjoining premises.	AO14 Access to the premises (including all works associated with the access): (a) must follow as close as possible to the existing contours; (b) be contained within the premises and not the road reserve, and (c) are designed and constructed in accordance with the Design Guidelines and Specifications set out in the Planning Scheme Policy 4 – FNQROC Regional Development manual.	✓	Complies – subject to detailed design.

Performance outcomes	Acceptable outcomes	Complies	Comments
Weed and pest management			
PO15 Development prevents the spread of weeds, seeds or other pests into clean areas or away from infested areas.	AO15 No acceptable outcome is provided.	✓	Capable of Complying
Contaminated land			
PO16 Development is located and designed to ensure that users and nearby sensitive land uses are not exposed to unacceptable levels of contaminants	AO16 Development is located where: (a) soils are not contaminated by pollutants which represent a health or safety risk to users; or (b) contaminated soils are remediated prior to plan sealing, operational works permit, or issuing of building works permit.	✓	Complies
Fire services in developments accessed by common private title			
PO17 Fire hydrants are located in positions that will enable fire services to access water safely, effectively and efficiently.	AO17.1 Fire hydrants are located in accessways or private roads held in common private title at a maximum spacing of: (a) 120 metres for residential development; and (b) 90 metres for any other development.	N/A	

Performance outcomes	Acceptable outcomes	Complies	Comments
	AO17.2 Fire hydrants are located at all intersections of accessways or private roads held in common private title.	N/A	

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