Appendix D Evolve Ecology Report 1

Landsdown Eco-Industrial Precinct, Woodstock

Ecological assessment report

Job Number: VS0366

29/04/2022

Evolve Environmental Solutions Pty. Ltd.

Document Control

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1 Introduction & Purpose

Evolve Environmental Solutions (**Evolve**) was contracted by Calibre Professional Services Pty Ltd (**Calibre**) to conduct an Ecological Survey and Report on the Lansdown Road and Water Pipeline Alignment Project. The aim of the survey was to determine the presence or absence of threatened fauna and flora species, habitat values and breeding places, and potential impact on fish movement at waterway crossings.

Findings of the survey are to support the following relevant approvals/permits as applicable:

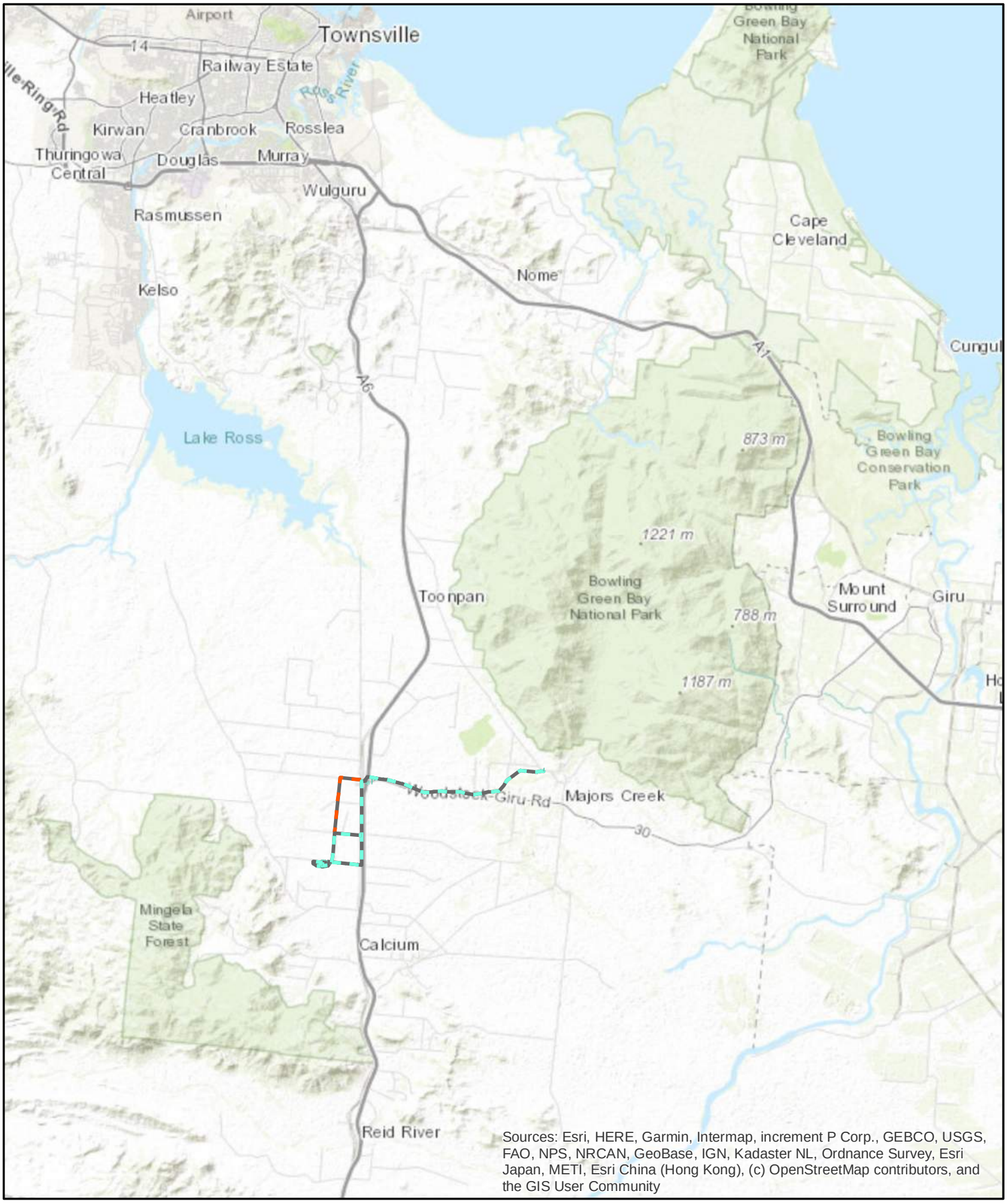
- Vegetation clearing permit under the *Vegetation Management Act 1999*;
- Operational works for taking or interfering with water under the *Water Act 2000* and the *Planning Act 2016*;
- Riverine Protection Permit under the *Water Act 2000*;
- Operational work in a wetland protected area under the *Environmental Protection Act 1994* and *Planning Regulation 2017*;
- Operational Works development approvals for waterway barrier works under the *Fisheries Act 1994*;
- Should Protected Plants be identified during the survey, a Protected Plants Clearing Application under the *Nature Conservation Act 1992*; and
- Self-assessment of activities and impacts to Matters of National Environmental Significance (MNES) to confirm if a referral under the *Environment Protection and Biodiversity Conservation Act 1999* is required.

Survey works are to be undertaken in accordance with relevant Department of Environment and Science or Department of Agriculture and Fisheries methodologies and guidelines as outlined in **Section 3; Ecological Methodology** and should aim to:

- Ground-truth regional ecosystem mapping;
- Assess for the occurrence of Threatened Ecological Communities (TECs);
- Undertake habitat assessments;
- Informal surveys for threatened fauna; and
- Complete waterway assessment suitable for Operational Works development approvals for waterway barrier works.

2 Site Context

The Lansdown Road and Water Pipeline Alignment Project is located approximately 38km South of Townsville along the Flinders Highway. The site traverses the Flinders Highway, Woodstock Giru Road alignments and easements, Ghost Gum Road and Bidwilli Road and associated easements (see **Figure 1**)



Legend

- Water pipeline alignment and dam
- Road Alignment

N

0 5 10 Kilometers

Figure 1 Site Context Lansdown A
19/04/2022

Figure 1: Site Context

EVOLVE environmental solutions

Client: CDM Smith Australia Pty Ltd
Address: Lansdown Eco-Industrial Precinct

3 Ecological Methodology

3.1 Survey Timing

Motion sensor cameras and AudioMoth ecological recording devices were deployed for the duration of survey works. Vegetation surveys and incidental fauna observations were conducted over the entirety of the survey period.

Weather conditions for the assessment dates are provided below in **Table 2**.

Table 1: Weather conditions during site surveys (Source: www.bom.gov.au)

Date	Day	Min Temp (°C)	Max Temp (°C)	Relative Humidity	Rainfall (mm)	MSLP (hPa)
28/03/2022	Monday	23.7	32.7	71	0.4	1009.5
29/03/2022	Tuesday	21.3	35.3	60	0.2	1008.8
30/03/2022	Wednesday	20.3	34.9	35	0	1008.8
31/03/2022	Thursday	17.6	34.5	35	0	1009.0
01/04/2022	Friday	20.1	32.9	62	0	1009.2

Climatic records are drawn from the closest BOM station to the survey area, located in Townsville.

It is noted that rainfall in the region in the time preceding and during the survey works was significantly lower than the long-term average for the region. Based on historical data (1940-2022) February is the month of highest rainfall within the region. Atypically low rainfall may adversely affect the detectability and condition flora and fauna species.

Table 2; Summary statistics from Townsville Aero from 1940-2022

	February	March
Mean maximum temperature (°C)	31.2	30.8
Mean minimum temperature (°C)	24.2	23.0
Mean rainfall (mm)	301.5	191.5
Decile 5 (median) rainfall (mm)	232.2	147.4
Mean number of days of rain ≥1 mm	12.5	9.5

Table 3; Summary statistics from Townsville Aero from 2022

	February	March
Mean maximum temperature (°C)	32.4	33.5
Mean minimum temperature (°C)	24.8	24.5
Total rainfall (mm)	120.2	39.6
Number of days of rain ≥1 mm	7	2

3.2 Survey Equipment Specifications

Table 4; Survey equipment specifications for the devices utilised in-field.

Device Type	Unit Type	Unit Specifications
GPS	Arrow 100 Submeter GNSS Receiver	• Multi-constellation GNSS receiver that utilising differential corrections to achieve sub meter accuracy.
Acoustic recording	AudioMoth Acoustic Device	• Capable of recording at sample rates up to 192kHz • Analog MEMS microphone • Analog pre-amplifier with adjustable gain.
Camera trap	BlazeVideo No Glow Game Field Cameras	• Trigger distance up to 23m when at temperatures below 25°C, full field of view trigger distance at temperatures between 25oC and 60oC. • 70°PIR sensor detect wide and night vision up to 23m • Trigger time in 0.3 second

3.3 Floral Assessment Methodologies

Floral assessment methodologies were carried out as per guidelines published in *Methodology for survey and mapping of regional ecosystems and vegetation communities in Queensland.* Version 5.1. Neldner et. al. (2020) with the following notable deviation:

- Queensland Herbarium Monitoring Site tags or other permeant site tags were not placed at sampling locations.

3.3.1 Secondary Vegetation Surveys

Secondary Vegetation surveys are conducted within a 50m by 10m survey plot, unless otherwise stated.

The following vegetation characteristics are recorded for each survey plot:

- Canopy cover;
- Median canopy height;
- Maximum DBH;
- Shrub canopy cover (is present as a distinct ecological layer);
- Shrub canopy height;
- Stem count of each woody species present within the plot;
- Percentage cover of each ground layer species;
- Percentage cover of; organic litter, bare ground and rock as applicable; and
- Cardinal coordinate (North, South, East, West) photos were taken at each end of the transect.

Canopy cover and shrub cover was assessed using the line intercept method and recorded as a percentage. Shrub canopy ≥2m is recorded as a separate value where a distinct shrub layer is present.

Woody specimens <2m in height are excluded from the woody species stem count.

Ground layer species and cover assessments were conducted within five $1m^2$ sample plots per sample site. Sample plots were located 0, 10m, 20m, 30m and 40m on alternating sides of the plot center line. Germinating tree and shrub specimens are included within the ground layer cover where specimens are ≤1m.

3.3.2 Quaternary Vegetation Surveys

Quaternary Vegetation surveys are conducted as a point assessment.

- The survey point is recorded as a GPS coordinate;
- All species present at the sample point are recorded for each ecological layer;
- Dominant species and the height of the Ecologically dominant layer are recorded; and
- Photos are taken from the survey point facing in each of the four cardinal directions; North, South, East and West.

3.4 Waterway and Wetland Assessment

Waterways and drainage features were walked and captured by GPS. Photo points and aquatic features were noted at certain points along and near the crossing points, additional crossing sections were noted that were not mapped as fisheries waterways but still would meet the definition of a waterway defined by the Department of Agriculture and Fisheries (DAF) as exhibiting at-least one of the following attributes:

1. *Defined bed and banks*
   The bed and banks need to be continuous upstream and downstream of the site rather than isolated and broken sections of a depression.
2. *An extended, if non-permanent, period of flow*
   Flow must continue beyond the duration of a rain event and have some reliability attached to rainfall. There is a need to distinguish between channels that funnel immediate localised rainfall; and waterways where flow has arisen from an upstream catchment.
3. *Flow adequacy*
   The flow needs to be sufficient to sustain basic ecological processes and habitats, and to maintain biodiversity within or across the feature. The adequacy of the flow depends on the ecological function of the channel e.g. waterways that connect to fish habitat like a wetland or waterhole may only need infrequent and short-duration flows to provide connectivity for fish.
4. *Fish habitat at, or upstream of, the site*
   Most instream features provide habitat for fish under adequate flow conditions or, in the case of pools, during dry periods. Therefore, it is important to have some knowledge of the fish species for the site and their habitat use, particularly in headwater streams. Periodic connectivity to upstream and off stream fish habitat are also considered fish habitat.

The Queensland Wetland Definition and Delineation Guideline Part A: A guide to existing wetland definitions and the application of the Queensland Wetlands Program definition is used to identify whether a site should be considered a wetland. The Guideline provides a four-step process for applying the Program's Wetland Definition. This process involves:

1. Knowing and understanding the definition;
2. Planning the investigation of a potential feature;
3. Conducting the investigation and recording information; and
4. Applying the wetland decision tree.

Four factors are considered in defining what is and isn't a wetland: Hydrology, Flora and Fauna, Soils and Non-biotic features.

To be considered a wetland under the definition the water body must meet criteria for the hydrology factor and at least one of the other three factors.

The Aquatic Biodiversity Assessment Mapping Method (AquaBAMM) is a decision support tool that is predominantly used to compare sites within a catchment or geographic area using four measure "categories" - low, medium, high, or very high. Assessment is carried out using a mix of diagnostic assessment (field surveys, broadscale mapping, etc) and expert opinion. An assessment will be carried out against each key criterion using values identified through site specific surveys and review of publicly available information. Based on the data and interpretation from experienced scientists a measurement of low, medium, high, or very high has been attributed for each of the criteria. An overall measurement has been provided using an average of all the criteria.

Site access permissions were not available for the wetland areas mapped and located on Lot 1 RP726632 due to the landholder being uncontactable. The Wetland mapping trigger on Lot 118 EP532, adjacent was ground truthed.

3.5 Fauna Assessment Methodologies

All fauna assessments have been carried out as per survey guidelines published in *Terrestrial Vertebrate Fauna Survey Assessment Guidelines for Queensland.* Eyre et. al. (2018)

3.5.1 Camera Trapping

Seven (7) motion sensor cameras were deployed for four (4) nights in total, in between the 28th of March to the 1st of April. The following methodology was employed during our camera trapping surveys:

- Cameras were installed in key locations on site;
- Cameras securely attached 10 – 50 cm from the ground on a tree or post;
- Cameras were not baited; and
- Cameras were set on the burst function of 3 photos per trigger.

3.5.2 Audio Logging

AudioMoth ecological recording devices were deployed over four nights from 28th of March to the 1st of April.

- Sampling cycle was set to record for 15seconds in every minute between dusk and dawn;
- Sample rate 256kHz; and
- Gain median.

3.5.3 Scat and Sign Search

These searches were conducted incidentally to coincide with systematic surveys and other on-site activities.

- Traces were documented with use of a camera for later confirmation of ID.
- Samples were not removed from site.

In order to understand the overall distribution of survey effort for vegetation and fauna refer to Plan 1 and Plan 2 below.

Plan 1: Field Survey Effort (Vegetation)

Legend

- Water pipeline alignment and dam
- Road
- GPS Tracklog
- Transects
- Quaternary points

N

0 0.150.3 0.6 0.9 1.2 Kilometers

Coordinate System: GDA 1994 MGA Zone 55
Projection: Transverse Mercator

EVOLVE environmental solutions

Issue	Date	Description	Drawn	Checked
A	14/04/2022	Preliminary	AL	AH

Lansdown Eco-Industrial Precinct

Date: 14/04/2022
Plan 1 Field Survey Effort Lansdown A

Plan 2: Field Survey Effort (Fauna)

Legend

- Water pipeline alignment and dam
- Road Alignment
- Audiomoth
- Motion Sensor Camera
- GPS Tracklog

N

0 0.150.3 0.6 0.9 1.2
Kilometers

Coordinate System: GDA 1994 MGA Zone 55
Projection: Transverse Mercator

EVOLVE environmental solutions

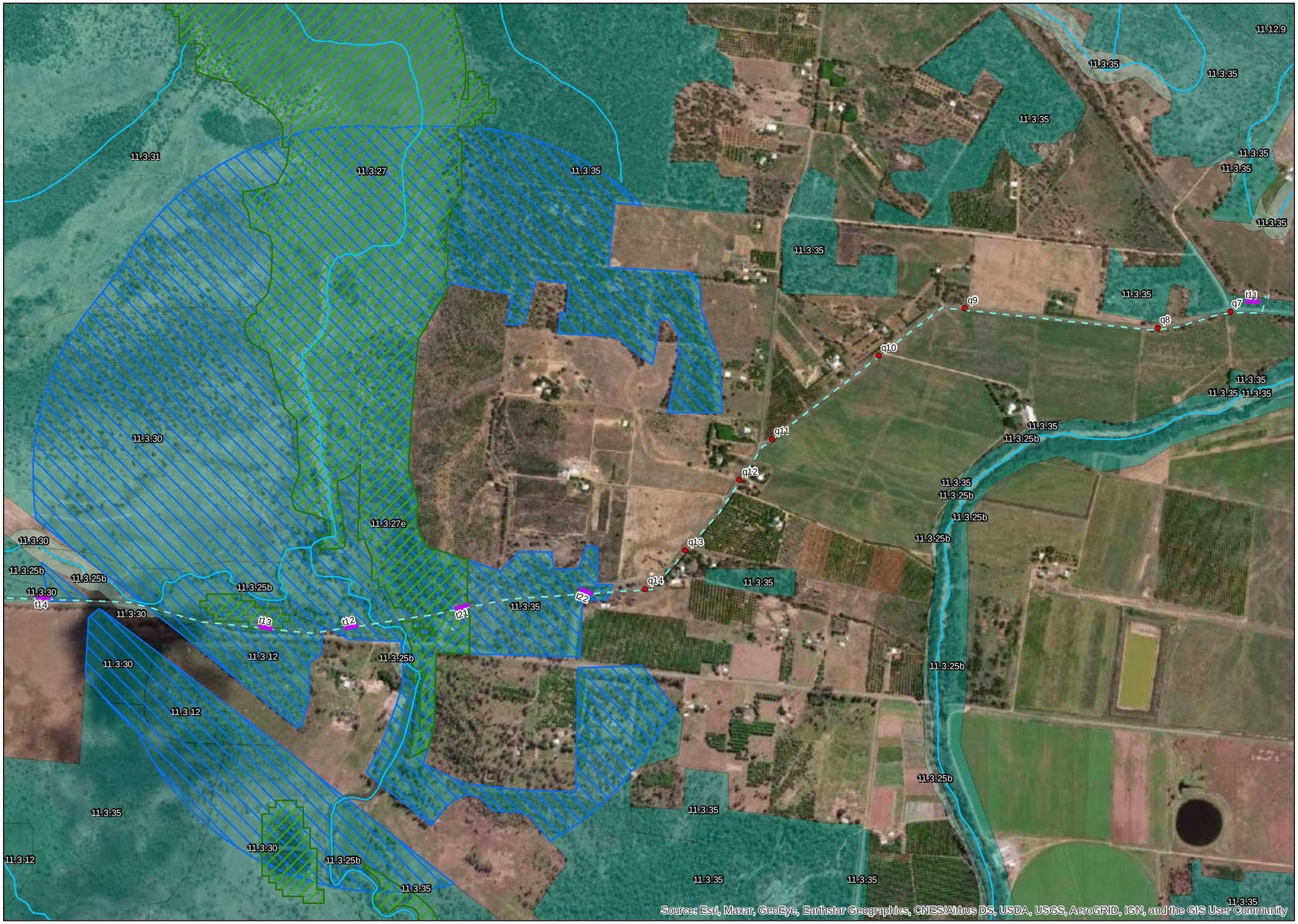
Issue	Date	Description	Drawn	Checked
A	13/04/2022	Preliminary	AL	AH

Lansdown Eco-Industrial Precinct

Date: 13/04/2022

Plan 2 Field Survey Effort Fauna Lansdown A

Plan 3A: Regional Ecosystems



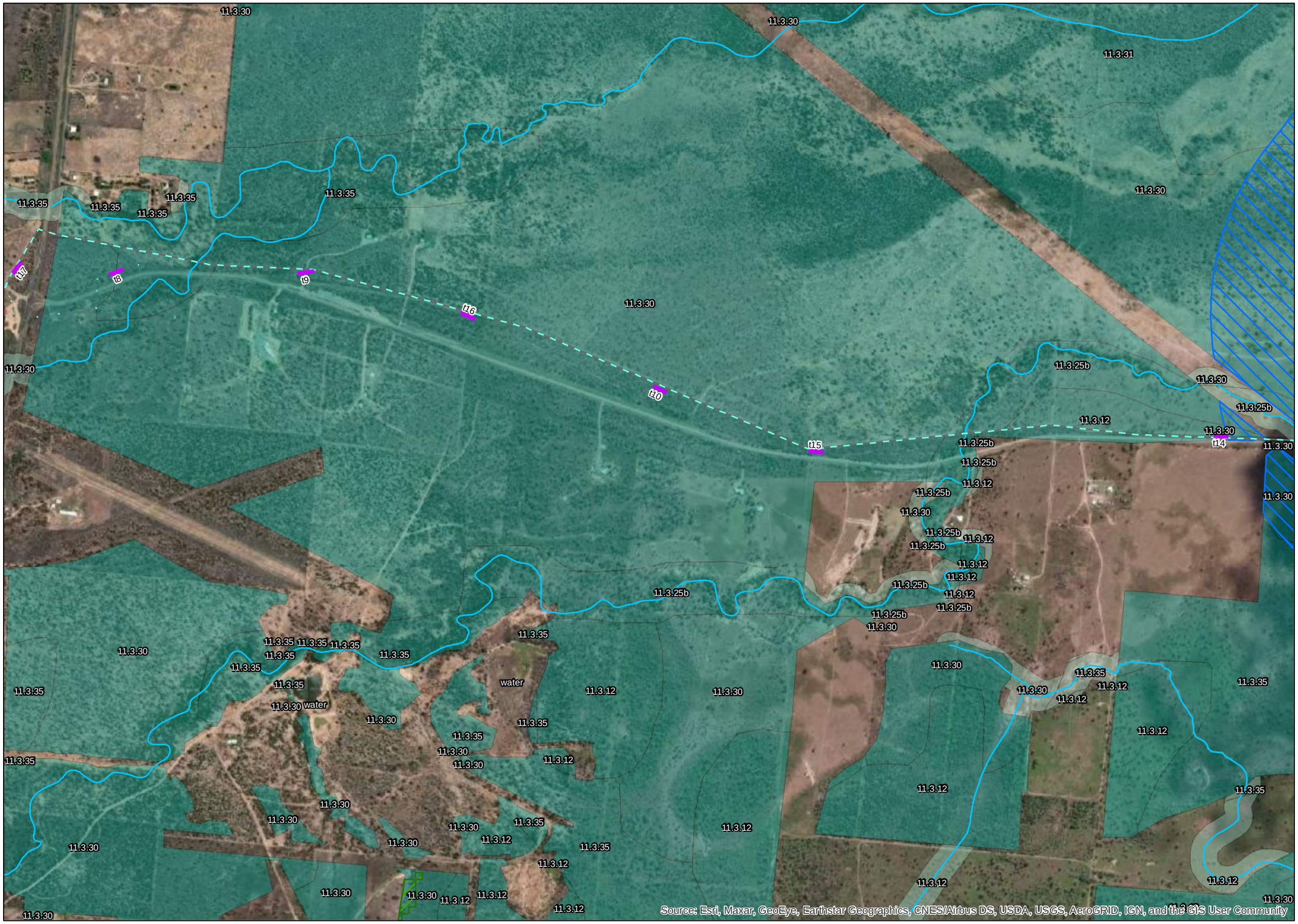
EVOLVE
environmental solutions

Issue	Date	Description	Drawn	Checked
A	13/04/2022	Preliminary	AL	AH

Lansdown Eco-Industrial Precinct

Date: 13/04/2022
Plan 3A RE's Lansdown A

Plan 3B: Regional Ecosystems



Legend

- Water pipeline alignment and dam
- Road Alignment
- Quaternary points
- Transects
- VM Watercourses
- VM Wetlands
- VM Essential Habitat

Regional Ecosystems v12

Vegetation Management Act STATUS

- hvr_end
- hvr_leastc
- hvr_oc
- rem_end
- rem_leastc
- rem_oc

N

0 65 130 260 390 520 650 m

Coordinate System: GDA 1994 MGA Zone 55
Projection: Transverse Mercator

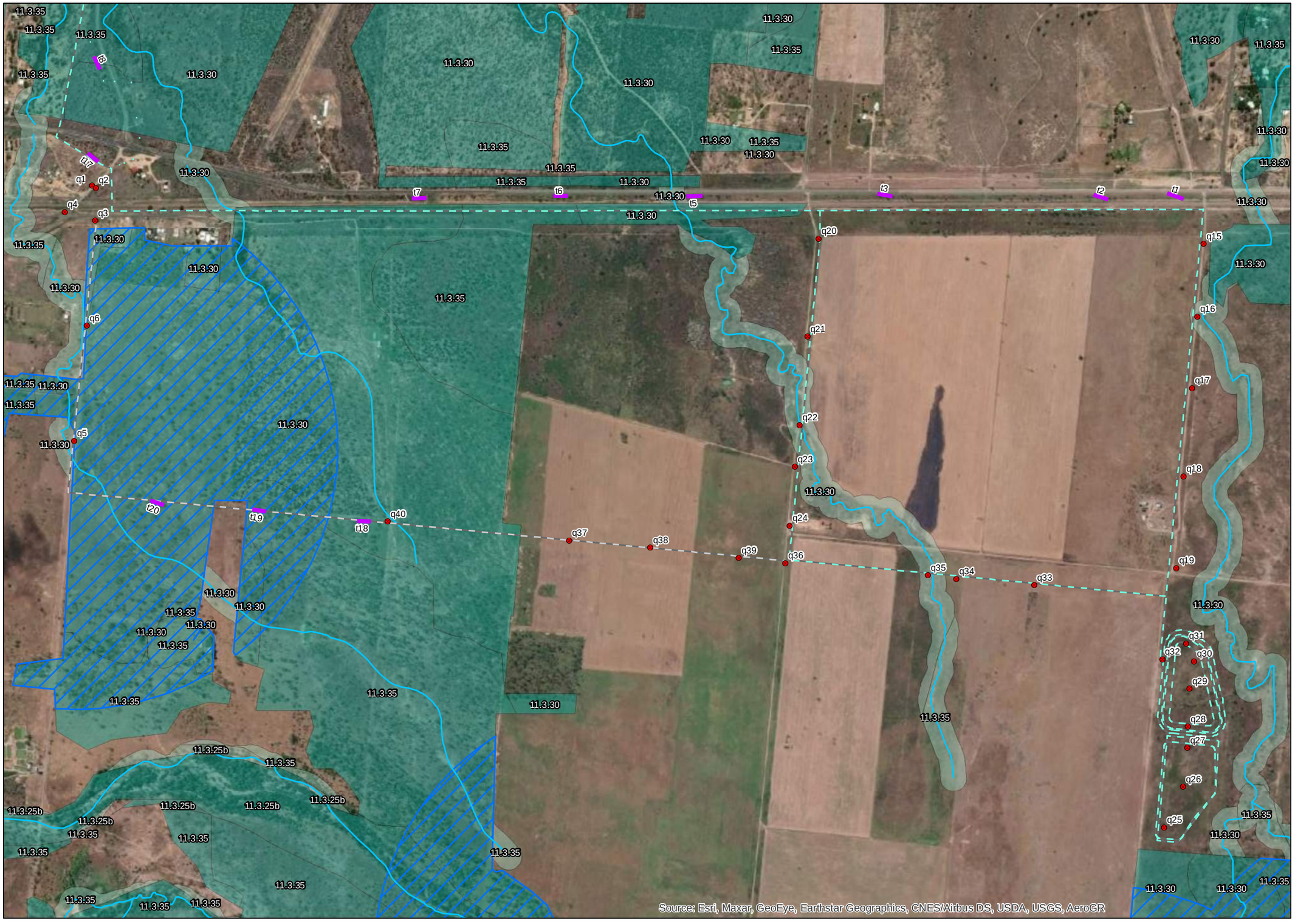
EVOLVE environmental solutions

Issue	Date	Description	Drawn	Checked
A	13/04/2022	Preliminary	AL	AH

Lansdown Eco-Industrial Precinct

Date: 13/04/2022
Plan 3B RE's Lansdown A

Plan 3C: Regional Ecosystems



Legend

- Water pipeline alignment and dam
- Road Alignment
- Quaternary points
- Transects
- VM Watercourses
- VM Wetlands
- VM Essential Habitat

Regional Ecosystems v12

VMA STATUS

- hvr_end
- hvr_leastc
- hvr_oc
- rem_end
- rem_leastc
- rem_oc

N

0 70 140 280 420 560 700 m

Coordinate System: GDA 1994 MGA Zone 55
Projection: Transverse Mercator

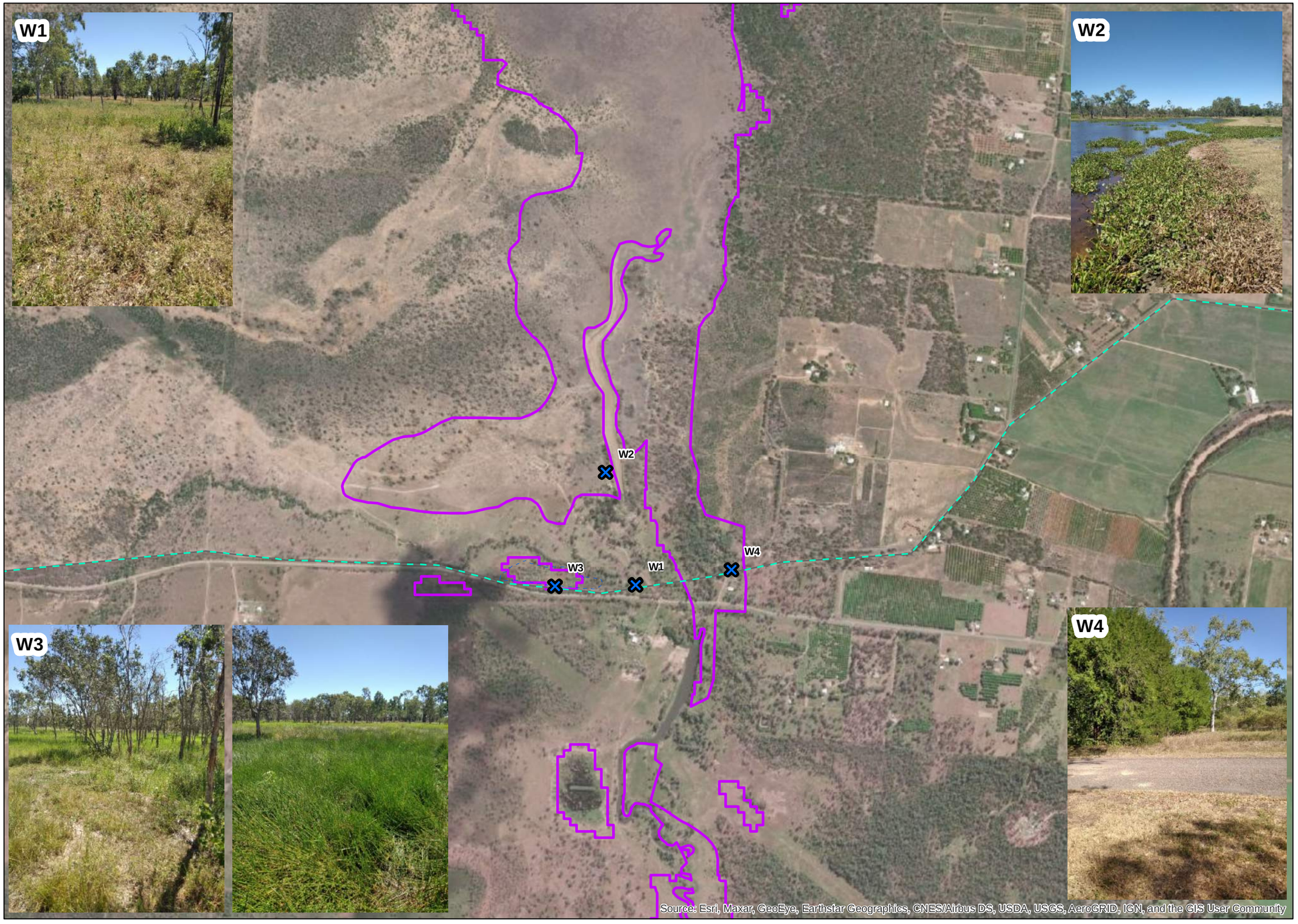
EVOLVE environmental solutions

Issue	Date	Description	Drawn	Checked
A	14/04/2022	Preliminary	AL	AH

Lansdown Eco-Industrial Precinct

Date: 14/04/2022
Plan 3C RE's Lansdown A

Plan 4: Wetland Assessment



Legend

- Water pipeline alignment and dam
- Road Alignment
- t21s; Wetland observation points; wetland; wetland adjacent to pipeline
- Ground-truthed wetland area
- Wetlands of High Ecological Significance

N

0 0.075 0.15 0.3 0.45 0.6
Kilometers

Coordinate System: GDA 1994 MGA Zone 55
Projection: Transverse Mercator

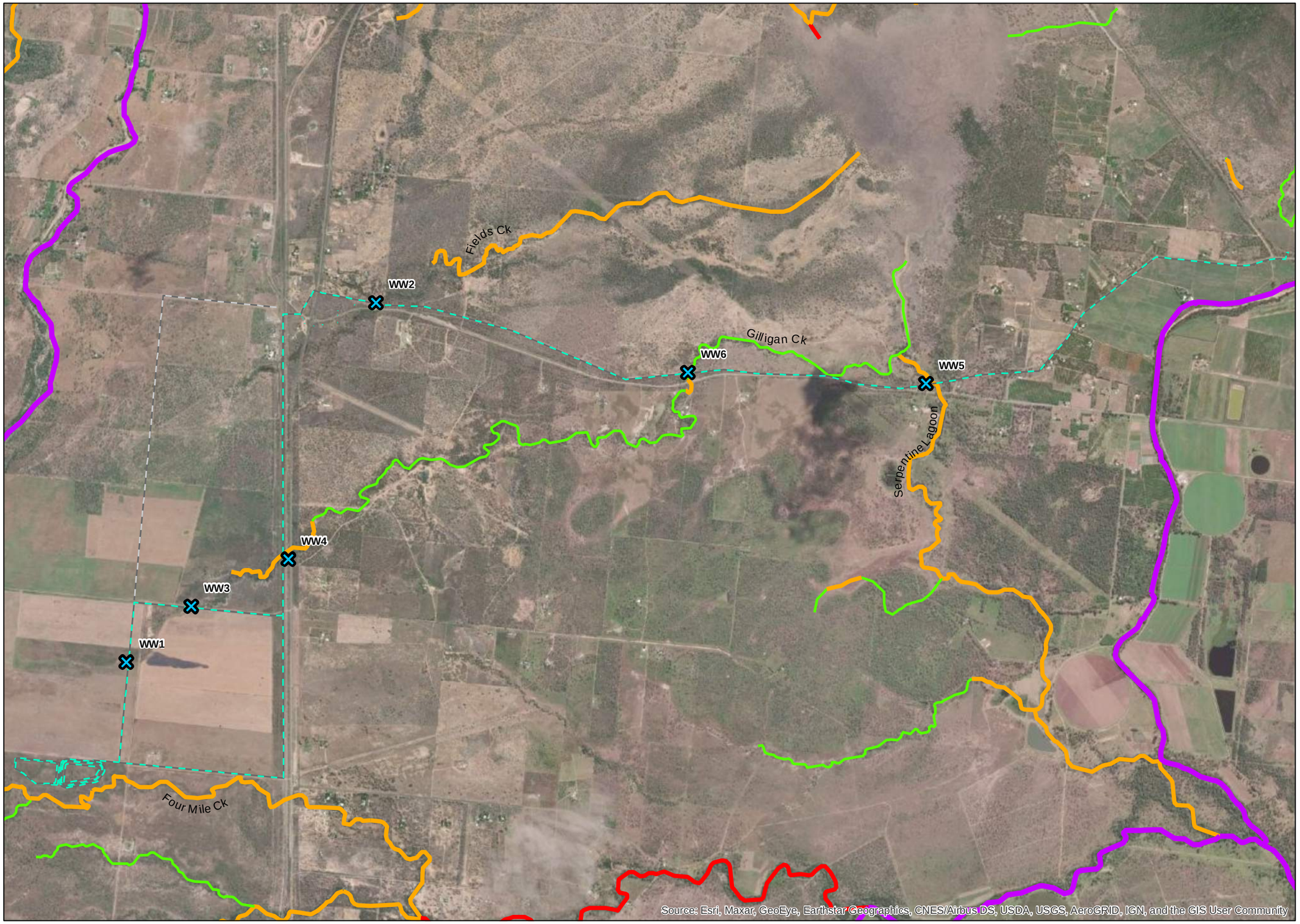
EVOLVE environmental solutions

Issue	Date	Description	Drawn	Checked
A	13/04/2022	Preliminary	AL	AH

Lansdown Eco-Industrial Precinct

Date: 13/04/2022
Plan 4 Wetland Lansdown A

Plan 5A: Fisheries Assessment



Legend

- Water pipeline alignment and dam
- Road Alignment
- Waterway observation points

Qld Waterways for WWBW

Risk of Impact

- 1 - Low
- 2 - Moderate
- 3 - High
- 4 - Major

N

0 0.150.3 0.6 0.9 1.2 Kilometers

Coordinate System: GDA 1994 MGA Zone 55
Projection: Transverse Mercator

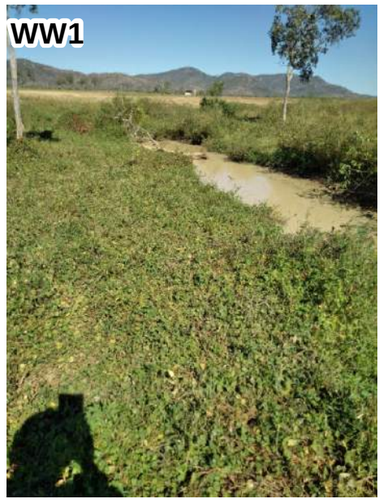
EVOLVE environmental solutions

Issue	Date	Description	Drawn	Checked
A	13/04/2022	Preliminary	AL	AH

Lansdown Eco-Industrial Precinct

Date: 13/04/2022
Plan 5A Fisheries Lansdown A

Plan 5B: Fisheries Assessment - Photo Plan



EVOLVE environmental solutions

Issue	Date	Description	Drawn	Checked
A	13/04/2022	Preliminary	AL	AH

Lansdown Eco-Industrial Precinct

Date: 13/04/2022

Plan 5B Fisheries Lansdown A

4 Ecological survey results

4.1 Flora survey results

Twenty-one secondary transects and forty quaternary transects were conducted across the impact area.

111 different flora species were recorded from the combined flora survey effort. 31 of the recorded species were native and woody species represented 23 of the recorded species. The high proportion of exotic grassy and herbaceous species recorded is reflective of the disturbed state of vegetation within the majority of the surveyed area.

None of the recorded flora species were listed under the *EPBC Act 1999* or *NCA 1992*. For a threatened flora likelihood of occurrence assessment please refer to **Appendix C**.

No Threatened Ecological Communities (TEC's) were flagged as having a probability of occurrence within the project area or buffer area by a PMST report generated for the project (refer to **Appendix D**). On-ground flora surveys of the project area found no evidence of any TEC's or associated Regional Ecosystems.

Sections of the pipeline and road alignment fall within areas of agricultural grazing use as reflected by a high proportion of pastural grass and legume species such as *Stylosanthes scabra* (shrubby stylo). Road reserves within the survey area contain species reflective of the agricultural use of the wider region and weed species typical of disturbed sites such as *Themeda quadrivalvis* (grader grass) and *Leucaena leucocephala* (Leucaena). The majority of this area is mapped as Category X, non-remnant vegetation. All surveyed areas mapped as Category X vegetation were found to contain vegetation values consistent with that mapping.

The majority of the project area is of reduced ecological value due to the extent of grazing and clearing disturbances. Ecological values pertaining to grassland and wetland utilising species including the double-barred finch (*Taeniopygia bichenovii*) which was observed on site, the endangered southern black-throated finch (*Poephila cincta cinta*), endangered eastern star finch (*Neochmia ruficauda ruficauda*) and vulnerable southern squatter pigeon (*Geophaps scripta scripta*).

Table 5: Vegetation mapping assessment

Transect	Mapped RE	Comments on mapping consistency
T1	11.3.35 non-remnant	Tree specimens are largely absent, present specimens are immature *Corymbia dallachiana* with a maximum DBH of 120mm, this vegetative structure is consistent with the non-remnant status of the area. *C. dallachiana* is not expected to occur within the mapped RE 11.3.35, based upon this observation the transect area is non-remnant RE 11.3.30
T2	11.3.35 non-remnant	The presence of *Eucalyptus platyphylla* and *Melaleuca viridiflora* is consistent with RE 11.3.35. The immature size of the observed tree specimens is consistent with the transect areas mapping as non-remnant.
T3	11.3.35 non-remnant	Native tree species present are consistent with mapping as RE 11.3.35, with the exception of *Acacia stenophylla.* Disturbance is evident in the form of a thinned tree layer and lack of native ground cover.
T5	11.3.30 non-remnant	Native tree species present are consistent with Regional Ecosystem mapping. Transect area is highly disturbed by the colonisation of weedy species and lacks mature native woody specimens, consistent with non-remnant mapping.
T6	11.3.35 non-remnant	Present tree species are highly consistent with regional ecosystem mapping. Tree cover is dominated by immature specimens.
T7	11.3.30 non-remnant	Present tree species suggests the transect area belongs to the adjacent mapped RE 11.3.35, however RE assessment is complicated by past vegetation disturbance. Vegetation height and cover is consistent with non-remnant mapping.
T8	11.3.30/11.3.35	Native vegetation cover is consistent with Regional Ecosystem mapping. Two native Cyperus species which are considered wetland indicator species were noted within the ground layer, suggesting seasonal waterlogging of the transect area.
T9	11.3.30	Present native vegetation is consistent with RE 11.3.35, adjacent rather than 11.3.30. Ground layer is disturbed and canopy is largely absent.
T10	11.3.30	Present native woody vegetation suggest that this transect area is located in an ecotone between RE 11.3.30 and RE 11.3.35.
T11	11.3.35	Present native vegetation is highly consistent with RE 11.3.35.
T12	11.3.25b	Present native vegetation is consistent with the mapped RE. RE 11.3.25 is an of concern riverine vegetation community.
T13	11.3.12	Present native vegetation is consistent with the mapped RE and wetland values.
T14	11.3.30	Present native vegetation is consistent with the mapped RE. Ground layer is disturbed.
T15	11.3.30	Present native woody vegetation is consistent with the mapped RE.

Transect	Mapped RE	Comments on mapping consistency
T16	11.3.30	Sample plot is heavily dominated by introduced vegetation in both the ground and upper layers. Sample canopy cover falls below the threshold of 50% cover relative to the benchmark required for remnant status. Limited native vegetation present is consistent with the mapped RE.
T17	11.3.30 non-remnant	Present native woody vegetation is consistent with the mapped RE. Sample canopy cover falls below the threshold required for remnant status as expected based upon non-remnant mapping.
T18	11.3.30	Dominant woody species are consistent with RE mapping as 11.3.30, two specimens associated with RE 11.3.35 were also recorded, considering the proximity of the sample site to the ecosystem boundary (<100m) some level of ecotone is expected.
T19	11.3.35 essential habitat	Present native woody vegetation is consistent with RE 11.3.30 rather than 11.3.35 indicating a discrepancy in regional ecosystem mapping of approximately 100m.
T20	11.3.30 essential habitat	Present native woody vegetation is consistent with RE 11.3.35 rather than 11.3.30 indicating a discrepancy in regional ecosystem mapping.
T21	11.3.27e wetland	Native vegetation, including woody specimens are consistent with RE 11.3.35 mapped adjacent rather than 11.3.27e. No evidence of wetland values were recorded within the transect area.
T22	11.3.35	Native woody vegetation is consistent with vegetation mapping.

All four of the regional ecosystems confirmed to occur within the project area are classed as least concern under the *VMA 1999.*

Some regional ecosystem mapping discrepancies appear to occur between the two dominant Regional Ecosystems within the project area. Both RE 11.3.30 and 11.3.35 are non-wetland ecosystems categorised as Least Concern under the *Vegetation Management Act* (*VMA) 1999*. Mapping discrepancies occurring between the two Regional Ecosystems are as follows:

- T1 and T7 which were confirmed to be non-remnant vegetation appear, based upon present regrowth are more closely aligned to RE 11.3.30 rather than their mapped pre-clear RE of 11.3.35.
- T19 exhibits woody vegetation consistent with RE 11.3.30 rather than RE 11.3.35, indicating a mapping discrepancy of approximately 100m.
- T9 and T20 are mapped as RE 11.3.30 but exhibit vegetation consistent with RE 11.3.35.

Transect twenty-one (T21) is located within an area captured under *VMA 1999* mapping as RE 11.3.27e, a Least Concern palustrine wetland. Vegetation observed within the survey plot was not consistent with these vales, instead belonging to RE 11.3.35 which is mapped as occurring adjacent to the transect area.

Quaternary transects were utilised in areas lacking significant assessable woody vegetation. Of the forty quaternary transects conducted the following two were the only discrepancies noted:

- Q7 falls within remnant mapping but found to be cleared vegetation, the assessment point occurs at the edge of the remnant mapping and represents a discrepancy in the mapped boundary of the remnant vegetation which includes the adjacent roadway.
- Q40 falls within remnant mapping but occurs within a cleared area associated with a dirt access road.

4.1.1 Waterways

Under the *Fisheries Act 1994* a waterway includes a river, creek, stream, watercourse, drainage feature or inlet of the sea. From publicly available information provided by DAF.

To meet the definition of a waterway at least one of the following attributes must be met:

5. *Defined bed and banks*
   The bed and banks need to be continuous upstream and downstream of the site rather than isolated and broken sections of a depression.
6. *An extended, if non-permanent, period of flow*
   Flow must continue beyond the duration of a rain event and have some reliability attached to rainfall. There is a need to distinguish between channels that funnel immediate localised rainfall; and waterways where flow has arisen from an upstream catchment.
7. *Flow adequacy*
   The flow needs to be sufficient to sustain basic ecological processes and habitats, and to maintain biodiversity within or across the feature. The adequacy of the flow depends on the ecological function of the channel e.g. waterways that connect to fish habitat like a wetland or waterhole may only need infrequent and short-duration flows to provide connectivity for fish.
8. *Fish habitat at, or upstream of, the site*
   Most instream features provide habitat for fish under adequate flow conditions or, in the case of pools, during dry periods. Therefore, it is important to have some knowledge of the fish species for the site and their habitat use, particularly in headwater streams. Periodic connectivity to upstream and off stream fish habitat are also considered fish habitat.

One waterway which would be defined as a waterway under the *Fisheries Act 1994* for the purposes of waterway barrier works approval requirements has not yet been mapped due to deficiencies in the input data. This waterway is classified by the *Fisheries Act 1994* as fish habitat and will require waterway barrier works assessment.

Site assessment found six waterway crossing locations that traverse the project area these waterways were assessed using the 4 criteria above along with any other distinguishable features.

Table 6; Waterways assessment

Name	*Defined bed and banks*	*An extended, if non-permanent, period of flow*	*Flow adequacy*	*Fish habitat at, or upstream of, the site*	Distinguishable features
On lot 19 RP901592 (WW1)	Yes – Defined top of bank is approximately 8m in width	Yes –the waterway had pooled water at the crossing point at the time of survey. From aerial imagery which was confirmed onsite the waterway stretches well to the east of the survey location and is the upper reaches of Gilligan creek.	Yes – Crossing point had pooling water at the time of survey. This pooling water would provide adequate habitat to sustain basic ecological function at the time of survey	Yes- pooling water at the survey site would provide adequate, albeit sub-par fish habitat.	Area is void of any timbered vegetation. Groundcover is thick with *Senna spp.*
Unmarked Drainage Feature Up Shoot of Fields Creek (WW2)	Yes - Defined top of bank is approximately 2m in width	No- No water was present during the time of survey. Vegetation species found near bed and banks were not wetland indicator species suggesting the drainage channel has been dry for a long period of time.	No - Crossing point was dry and showed no signs of recent water flow with no wetland water indicator species being found. Bed and bank features show no sign of sediment deposition, alluding to lack of flows over a long period.	No - Upstream and downstream habitats are similar to that of the crossing point. No water pools or wetland indicator species could be found. No deposition of silt or sand bed was located in the watercourse. This portrays a long dry period with no signs of fish habitat.	Area dominated by *Leucaena sp.*
Intersecting Ghost Gum (WW3)	Yes – this waterway has been dissected by Ghost Gum Road. Any flows would have to	Yes – pooled water would suggest that extended periods of	Potentially – pooled water would suggest that flow adequacy would exist. However,	Yes – Waterway three is located in the upper reaches of Gilligan Creek which ultimately flows	Road transects the waterway, no culverts noted.

Name	*Defined bed and banks*	*An extended, if non-permanent, period of flow*	*Flow adequacy*	*Fish habitat at, or upstream of, the site*	Distinguishable features
	sheet flow over the unformed road. Defined bed and bank features are present either side of the road. Top of bank to top of bank of bank is estimated to be 8m.	flow would occur at this site.	with the damming of the waterway from the unformed Ghost Gum Road this cannot be hypothesised with any great certainty.	into Serpentine Lagoon. Suitable fish habitat therefore is noted directly upstream of this survey point.	
Rail Corridor (WW4)	Yes - Defined top of bank is present and is estimated at 8m from top of bank to top of bank	No - at the time of survey the area was dry. However, evidence of downstream deposition was found through sandy bed features.	Potentially – due to extremely dry conditions no signs of flow were seen during the survey. However, sand bed deposition does allude to seasonal flow occurring during the wet season.	Yes – Waterway four is the upper reaches of Gilligan creek which ultimately flows into Serpentine Lagoon. Suitable fish habitat therefore is noted directly upstream of this survey point	*Leucaena sp.* Dominated banks
Lagoon Creek (WW5)	Yes – Defined top of bank is present, approximately 15m in distance	Yes - At the time of assessment the crossing area was dry. Both upstream and downstream of the crossing point water permeance was noted. This suggest that flow occurs beyond the initial rain period with adequate structure to allow for water conveyance.	Potentially - At time of assessment there was no flow at the point of assessment. Fringing vegetation indicates that the creek would be wet at least on a semi permeant basis.	Yes - upstream of the crossing point a large lagoon is present which would provide suitable fish habitat.	Site exhibited traditional woody wetland indicator species near and adjacent to the survey point.

Name	*Defined bed and banks*	*An extended, if non-permanent, period of flow*	*Flow adequacy*	*Fish habitat at, or upstream of, the site*	Distinguishable features
Gilligan Creek (WW6)	Yes - Defined top of bank was noted and is estimated to be 8m in width at the point of the water pipeline crossing	No - at the time of survey the area was dry. However, evidence of downstream deposition was found through a sandy bed features.	Potentially – due to extremely dry conditions no signs of flow were seen during the survey. However, sand bed deposition does allude to times for peak flow and movement during the wet season.	Yes - Gilligan creek ultimately flows into Serpentine Lagoon. Suitable fish habitat therefore is noted directly upstream of this survey point	Steep batters at intervals, approximately 1 in 2 slopes. Bed completely void of vegetation. Bed mostly comprised of course sand.

4.1.2 Wetlands

Assessment of the accessible wetland areas has been broken down into four assessment criteria being:

- Hydrology;
- Flora and Fauna;
- Soils; and
- Non-biotic features.

Site access was available for the wetland areas mapped and located on Lot 1 RP726632 due to the landholder being uncontactable for site access permissions. The Wetland mapping trigger on Lot 118 EP532, adjacent was ground truthed. Observations made on Lot 118 EP532 confirming the wetland status as mapped under the MSES High Ecological Significance Wetlands Mapping are outlined in **Table 6**, below.

As Lot 1 RP726632 is adjacent to Lot 118 EP532, falls under the same wetland mapping and displays similar vegetation values based upon aerial imagery it is likely that wetland values exist within Lot 1 RP726632 also. The existence and extent of wetland values within the site however can not be assessed without site access.

Wetland Assessment results were as follows:

Table 7: Wetland assessment

Wetland Name	Hydrology	Flora and Fauna	Soils	Non - Biotic
Wetland on Lot 111 EP532	At the time of survey Hydrological features were difficult to assess due to temporal variability (Dry Weather). Therefore, Q-Imagery has been used along with the other three wetland indicator factures to help assess the hydrological features of the mapped wetland on Lot 118 EP532. Photo QAP5613/ Frame 70 taken on the 25th of May 1998 shows definite signs of inundation in the mapped wetland area on L118 EP532. Due to this evidence, the bordering of both Gilligan Creek and Serpentine Creek Lagoon and the sight depression in the landform the evidence would suggest that in periods of high rainfall the area would see periodic inundation at a minimum and therefore can at a minimum have a hydrological ranking of	Floral composition of the wetland area match that expected to be typically found in wetland (both permeant and ephemeral) environments and along fringing area of wetlands. The upper canopy was dominated by *Melaleuca viridiflora and Lophostemon grandiflorus* With the occasional *Corymbia tessellaris and Pandanus tectorius.* Mid canopy was largely void and ground cover was dominated by varieties of *Juncus sp., Leersia hexandra, Cyperus haspan and Ludwigia octovalis.* All are considered to be wetland indicator species. Common fauna species were located in the vicinity of the wetland area and were as follows: *Platycercus adscitus*	Erosion of uplands and deposition of sediments (sand, silt, clay, gravels) by alluvial processes in relatively low areas have formed alluvial landforms. When flow exceeds the ability of the stream channels to carry the throughput, overbank flow carries sediment away from the channel until the velocity is such that the suspended load is deposited forming alluvial landforms such as levees or alluvial plains. This description of the alluvial plain best describes the wetland area and surrounding environment. Additional surveys for completion of more detailed soil assessments would include Auger samples to better ascertain soil structure and composition	Wetland assessment site was considered slightly lower in elevation when compared to its surrounds suggesting that pooling during periods of rain may occur. No pooling was evident due to the dry climatic conditions during the survey. Little non-biotic features of any great value were noted. Rating = Low

	Ephemeral. The survey was conducted in a time of extreme heat and dryness. Further the climatic condition in months prior saw little in the way significant precipitation. Rating = Medium	*Taeniopygia bichenovii* *Todiramphus sp.* *Microcarbo niger* *Neochmia phaeton* *Rhipidura leucophrys* Whilst these species are not specialised to wetland environments they do generally stay close to water sources, most likely Serpentine lagoon. Additional Amphibian surveys and spotlighting would be helpful to assess any potential wetland specific species. Rating = High (Flora) Rating = Nil (Fauna)	in relation to wetland indicator hierarchy. Rating = Medium	

From the above assessment of the 4 factors in determining a wetland, the subject area matches the characteriestics and description of a wetland as stated in The Queensland Wetland Definition and Delineation Guideline Part A, albeit it in a survey time of suboptimal conditions. The wetland is best described from the current survey as an ephemeral palustrine wetland located in the Great Barrier Reef Catchment. Additional surveys required would be wetland specific fauna surveys to further understand the ecological function of the wetland in relation to aquatic specific fauna. Additional soil surveys would also be of benefit should further detail or specificity be required around soil structure and characteristics on the wetland assessment However fauna assessment would need to wait for a suitable period when the wetland is holding water. These additional surveys will however in no way change the findings of the wetland survey but rather they will help better understand the local importance of the wetland from and ecological standpoint.

Photo Plate 1; Photo QAP5613/ Frame 70 taken on the 25th of May 1998 shows definite signs of inundation in the mapped wetland area (Green Line) on L118 EP532.

4.2 Fauna survey results

Forty (40) fauna species were recorded during the field survey effort, excluding domestic livestock. 36 of the detected species were native. One of the detected species, the Koala (*Phascolarctos cinereus*) is listed as endangered under the *Nature Conservation Act 1992* and the *EPBC Act 1999*.

Photo Plate 2;Double barred finch (Taeniopygia bichenovii) observed foraging within the survey area.

Table 8; Fauna species observations.

Class	Scientific name	Common name	NCA 1992 Status	Observation Source
Amphibia	*Litoria rubella*	Red tree-frog	LC	I
Amphibia	*Rhinella marina*	Cane toad	I	I
Aves	*Accipiter cirrocephalus*	Collared sparrowhawk	LC	I
Aves	*Acridotheres tristis*	Indian myna	I	I
Aves	*Aprosmictus erythropterus*	Red-winged parrot	LC	I
Aves	*Calyptorhynchus banksii*	Red-tailed Black-Cockatoo	LC	I
Aves	*Centropus phasianinus*	Pheasant coucal	LC	I
Aves	*Cinnyris jugularis*	Yellow sunbird	LC	I
Aves	*Corvus coronoides*	Australian raven	LC	I
Aves	*Coturnix chinensis*	King quail	LC	I
Aves	*Cracticus nigrogularis*	Pied butcherbird	LC	I
Aves	*Dacelo novaeguineae*	Laughing Kookaburra	LC	I
Aves	*Egretta novaehollandiae*	White-faced heron	LC	I
Aves	*Entomyzon cyanotis*	Blue-faced honeyeater	LC	I
Aves	*Eolophus roseicapilla*	Gallah	LC	I
Aves	*Geopelia placida*	Peaceful dove	LC	I
Aves	*Grallina cyanoleuca*	Mudlark	LC	I
Aves	*Haliastur sphenurus*	Whistling kite	LC	I
Aves	*Milvus migrans*	Black kite	LC	I
Aves	*Malrus melanocephalus*	Red-backed fairy-wren	LC	I
Aves	*Manorina melanocephala*	Noisy miner	LC	I
Aves	*Merops ornatus*	Rainbow bee-eater	LC	I
Aves	*Microcarbo niger*	Little cormorant	LC	I
Aves	*Neochmia phaeton*	Crimson finch	LC	I
Aves	*Ocyphaps lophotes*	Crested pigeon	LC	I
Aves	*Philemon corniculatus*	Noisy friarbird	LC	I
Aves	*Platycercus adscitus*	Pale-headed rosella	LC	I
Aves	*Rhipidura leucophrys*	Willie wagtail	LC	I
Aves	*Taeniopygia bichenovii*	Double-barred finch	LC	I
Aves	*Threskiornis molucca*	Australian white ibis	LC	I
Aves	*Threskiornis spinicollis*	Straw-necked ibis	LC	I
Aves	*Todiramphus sp.*	Kingfisher	LC	A
Aves	*Trichoglossus moluccanus*	Rainbow lorikeet	LC	I
Aves	*Vanellus miles*	Masked lapwing	LC	I
Mammalia	*Felis catus*	Domestic cat	I	C
Mammalia	*Notamacropus agilis*	Agile wallaby	LC	C, S
Mammalia	*Phascolarctos cinereus*	Koala	E	S
Mammalia	*Rattus sp.*	Rat	I	C
Mammalia	*Sus scrofa*	Feral pig	C3	C
Reptilia	*Lampropholis delicata*	Garden skink	LC	I
Reptilia	*Varanus varius*	Lace monitor	LC	I

Table 9; Key for interpretation of fauna species observations.

Code	Observation source	Code	Species status
A	Audio observation	**E**	Endangered
C	Camera trap	**I**	Introduced (not a prohibited or restricted invasive)
S	Identified from traces	**LC**	Least Concern
I	Incidental observation	**C3**	Restricted Invasive

Multiple finch nests were observed during surveys. None of these nests were in use at the time of survey. The bottle shaped woven grass nest of the black-throated finch (*Poephila cincta*) is similar in appearance to those of the double-barred finch (*Taeniopygia bichenovii*) which was observed during survey effort and the chestnut-breasted manikin (*Lonchura castaneothorax)* and zebra finch (*Taeniopygia guttata*) which may also occur within the impact area. As such it is not possible to determine which species the observed bottle shaped nest belonged to.

Photo Plate 3; Disused finch nest found within the survey area.

Star finches (*Neochmia ruficauda)*, for which potential habitat occurs within the survey area build domed nest with a side entrance of woven grass in shrubs or tall clumps of grass. The eastern subspecies of the star finch (*Neochmia ruficauda ruficauda*) is listed as an endangered species by the *EPBC Act 1999* and the *NCA 1992*.

Land-holders indicated the seasonal presence of black throated finches (*Poephila cincta*) and squatter pigeon (*Geophaps scripta*). In both instances there is an unlisted northern subspecies and a visually similar threatened, southern subspecies which may occur within the survey area due to sub-species range overlap.

For fauna likelihood of occurrence assessments, including those of threatened bird species please refer to **Appendix B** – Fauna likelihood of Occurrence.

5 Conclusion

Evolve Environmental Solutions were commissioned to conduct ecological survey works to support the implementation of the Lansdown Road and Water Pipeline Alignment Project. Site surveys have been conducted to assess the following:

- Vegetation composition;
- Waterway and wetland values; and
- Fauna species presence.

Vegetation surveys found vegetation within the project site to be largely consistent with values mapped under the *VMA 1999*. Some discrepancies were found with regarding the location of boundaries between RE 11.3.30 and RE11.3.35. As these Regional Ecosystems have the same *VMA 1999* class and wetland status, the practical implications of such mapping discrepancies are limited. No areas of Category X, non-remnant vegetation were found to contain vegetation values inconsistent with their categorisation. Small areas of the proposed project impact area (Q7, Q40 and T16) adjacent to roadways and non-remnant vegetation patches that are mapped as remnant vegetation under the *VMA 1999* were found to be non-remnant and cleared of native woody vegetation. One transect area (T21) mapped as RE 11.3.27e wetland was found to contain vegetation consistent with RE 11.3.35 and lacked wetland indicators.

No threatened flora species were located by on-site surveys, flora likelihood of occurrence assessment considered threatened flora species to have an ‘unlikely’ or ‘low’ likelihood of occurrence within the project area (Refer to **Appendix C**)

Additional wetland fauna specific surveys will improve understanding of the ecological function of the wetland in relation to aquatic specific fauna. Wetland specific fauna surveys would need to occur when the wetland is holding water to be effective. Additional wetland surveys will not alter the findings of the wetland survey, only improve understanding the local ecological importance of the wetland in relation to migratory wetland species and fish passage.

The surveyed wetland (refer to section 4.2.2) is best described from the current survey as an ephemeral palustrine wetland located in the Great Barrier Reef Catchment.

Following initial on-site assessment Evolve believe the project site has potentially suitable habitat for multiple MNES fauna species as summarized in **Table 9**. For a full fauna likelihood of occurrence assessment please refer to **Appendix B**.

Table 10; MNES fauna species rated as having a moderate to known likelihood of occurrence.

Class	Scientific name	Common name	EPBC code	EPBC Act Status	Likelihood of occurrence
Aves	*Poephila cincta cincta*	Black Throated Finch (white rumped)	64447	E	High
Aves	*Calidris ferruginea*	Curlew Sandpiper	856	CE Migratory	Moderate
Aves	*Rostratula australis*	Australian Painted Snipe	77037	E	Moderate
Aves	*Geophaps scripta scripta*	Squatter Pigeon (southern)	64440	V	Moderate
Mammalia	*Phascolarctos cinereus*	Koala	85104	E	Known
Mammalia	*Dasyurus hallucatus*	Northern Quoll	331	E	Moderate

As such Evolve recommends that targeted fauna surveys for these species take place to ascertain their presence or absence with a greater degree of certainty, particularly in view of atypically dry climatic conditions in having occurred in February and March, prior to survey works. Finch species and squatter pigeons are known to undergo local seasonal population variation in connection to the availability of water while the curlew sandpiper (*Calidris ferruginea)* and australian painted snipe (*Rostratula australis)* are wetland species.

6 Appendix

6.1 – Appendix A Vegetation Transect Data and Findings

6.1.1 Appendix A; Secondary Vegetation Transect Data and Findings

Transect T1

Mapped RE	11.3.35 non-remnant
Descriptive notes	Vegetated strip between railway and road. Weedy groundcover and limited trees.

EDL	**Height**	16m
	DBH	120mm
	Spread	
Shrub	**Height**	

Woody Species		
Scientific name	**Common name**	**Stem count**
Corymbia dallachiana	Dallachy's ghost gum	3
Stems/ha		60
Native Stems/ha		60

Canopy cover	**Canopy layer**	0*
	Shrub layer	0

*The recorded *C. dallachianas* did not contribute to canopy cover as measured by the line intercept method due to their canopy not projecting over the central transect line.

Ground Cover							
Scientific name	**Common name**	**Sample plot**					
		1	**2**	**3**	**4**	**5**	**Average**
Stylostanthes scabra	Shrubby stylo	5	20	30	90	27	34.4
Paspalum dilatatum	Paspalum	0	1.5	5	1	1.5	1.8
Alternanthera ficoidea	Joseph's coat	0	0	4	0	0	0.8
Panicum laevinode	Pepper grass	2.5	0	0	0	0	0.5
Centrosema molle	Butterfly pea	0	0	1	0	0	0.2
Native Vegetation Cover		2.5	0	0	0	0	0.5
Introduced Vegetation Cover		5	21.5	40	91	28.5	37.2
Litter		77.5	69	57.5	2.5	1.5	41.6
Bare ground		15	7	2.5	6.5	70	20.2
Rock		0	2.5	0	0	0	0.5

Photo Plate 4; Photos taken at the start point of secondary transect 1 (T1) clockwise from top left facing; North, East, South and West, respectively.

Photo Plate 5; Photos taken at the end point of secondary transect 1 (T1) clockwise from top left facing; North, East, South and West, respectively.

Transect T2

Mapped RE	11.3.35 non-remnant
Descriptive notes	Vegetated strip between railway and road. Weedy groundcover and limited trees.

EDL	**Height**	12m
	DBH	160mm
	Spread	
Shrub	**Height**	3.5m

Woody Species		
Scientific name	**Common name**	**Stem count**
Eucalyptus platyphylla	Poplar gum	5
Melia azedarach	White cedar	4
Lophostemon grandiflorus	Northern swamp box	2
Melaleuca viridiflora	Broad-leaved tea tree	1
Ficus opposita	Sandpaper fig	1
Stems/ha		260
Native Stems/ha		260

Canopy cover	**Canopy layer**	17.8%
	Shrub layer	0

Ground Cover							
Scientific name	**Common name**	**Sample plot**					
		1	**2**	**3**	**4**	**5**	**Average**
Panicum maximum var. trichoglume	Green panic	25	77	0	1	60	32.6
Alternanthera ficoidea	Joseph's coat	0	0	20	40	1	12.2
Passiflora foetida	Stinking passionflower	0	15	2.5	0	2.5	4
Tridax procumbens	Coatbuttons	0	0	20	0	0	4
Centrosema molle	Butterfly pea	0	0	56.5	0	0	11.3
Macropitilluim atropurpureum	Siratro	0	2.5	2.5	2.5	2.5	2
Euphorbia hetrophylla	Milkweed	0	2.5	0	1	0	0.7
Sida cordifolia	Flannel weed	0	0	0	2.5	0	0.5
Bidens pillosa	Cobblers pegs	0	1	0	0	0	0.2
Stylostanthes scabra	Shrubby stylo	0	0	1	0	0	0.2

Native Vegetation Cover	0	0	0	0	0	0
Introduced Vegetation Cover	25	97.5	60	47	66	59.1
Litter	70	2.5	40	53	34	39.9
Bare ground	5	0	0	0	0	1
Rock	0	0	0	0	0	0

Photo Plate 6; Photos taken at the start point of secondary transect two (T2) clockwise from top left facing; North, East, South and West, respectively.

Photo Plate 7; Photos taken at the end point of secondary transect two (T2) clockwise from top left facing; North, East, South and West, respectively.

Transect T3

Mapped RE	11.3.35 non-remnant
Descriptive notes	Vegetated strip between railway and road. Weedy groundcover with a high proportion of Grader grass and Guinea grass and limited trees.

EDL	**Height**	18m
	DBH	230mm, 310mm
	Spread	
Shrub	**Height**	2.5m

Woody Species		
Scientific name	**Common name**	**Stem count**
Prosopis sp.	Mesquite	13
Melaleuca nervosa	Fibrebark	8
Acacia stenophylla	Shoestring acacia	3
Corymbia tessellaris	Carbeen	1
Eucalyptus platyphylla	Poplar gum	1
Melaleuca viridiflora	Broad-leaved tea tree	1
Stems/ha		540
Native Stems/ha		527

Canopy cover	**Canopy layer**	18%
	Shrub layer	16%

Ground Cover							
Scientific name	**Common name**	**Sample plot**					
		1	**2**	**3**	**4**	**5**	**Average**
Megathyrsus maximus var. maximus	Guinea grass	0	0	0	95	95	38
Themeda quadrivalvis	Grader grass	1	90	95	0	0	37.2
Alternanthera ficoidea	Joseph's coat	94	0	0	0	0	18.8
Passiflora foetida	Stinking passionflower	0	1	2.5	1	0	0.9
Macropitilluim atropurpureum	Siratro	1	2.5	0	0	0	0.7
Native Vegetation Cover		0	0	0	0	0	0
Introduced Vegetation Cover		96	93.5	97.5	96	95	60.6
Litter		4	6.5	2.5	4	5	4.4
Bare ground		5	0	0	0	0	1
Rock		0	0	0	0	0	0

Photo Plate 8; Photos taken at the start point of secondary transect 3 (T3) clockwise from top left facing; North, East, South and West, respectively.

Photo Plate 9; Photos taken at the end point of secondary transect 3 (T3) clockwise from top left facing; North, East, South and West, respectively.

Transect T5

Mapped RE	11.3.30 non-remnant
Descriptive notes	Vegetated strip between railway and road. Dense cover of Leucaena present and affecting the recruitment of other species.

EDL	**Height**	20m
	DBH	300mm
	Spread	
Shrub	**Height**	8m

Woody Species		
Scientific name	**Common name**	**Stem count**
Leucaena leucocephala	Leucaena	335*
Melaleuca viridiflora	Broad-leaved tea tree	5
Corymbia dallachiana	Dallachy's ghost gum	4
Acacia salicina	Cooba	2
Corymbia tessellaris	Carbeen	1
Stems/ha		6940
Native Stems/ha		240

Canopy cover	**Canopy layer**	2%
	Shrub layer	0.4%

Ground Cover							
Scientific name	**Common name**	**Sample plot**					
		1	**2**	**3**	**4**	**5**	**Average**
Panicum maximum var. trichoglume	Green panic	0	0	0	60	1	12.2
Leucaena leucocephala	Leucaena	3	4	2	2		2.2
Themeda quadrivalvis	Grader grass	0	0	0	0	10	2
Stylostanthes scabra	Shrubby stylo	4	2	0	0	0	1.2
Clitoria ternatea	Asian pigeonwings	0	0	2	1	2	1
Setaria sphacelata	South African pigeon grass	2	2	0	0	0	0.8
Passiflora foetida	Stinking passionflower	0	1	0	1	0	0.4
Macropitilluim atropurpureum	Siratro	0	0	0	1	0	0.2
Plectranthus sp.		0	1	0	0	0	0.2

Melaleuca nervosa	Fibrebark	1	0	0	0	0	0.2
Glycine tabacina	Variable glycine	0	1	0	0	0	0.2
Native Vegetation Cover		1	2	0	1	0	0.8
Introduced Vegetation Cover		9	9	4	65	13	20
Litter		60	50	85	25	25	49
Bare ground		30	39	11	10	62	30.4
Rock		0	0	0	0	0	0

Photo Plate 10; Photos taken at the start point of secondary transect five (T5) clockwise from top left facing; North, East, South and West, respectively.

Photo Plate 11; Photos taken at the end point of secondary transect five (T5) clockwise from top left facing; North, East, South and West, respectively.

Transect T6

Mapped RE	11.3.35 non-remnant
Descriptive notes	Strip vegetation between railway and road. Regenerating woody layer and weedy ground layer with a significant portion of litter.

EDL	**Height**	22m
	DBH	260mm
	Spread	
Shrub	**Height**	7m

Woody Species		
Scientific name	**Common name**	**Stem count**
Melaleuca nervosa	Fibrebark	9
Eucalyptus platyphylla	Poplar gum	3
Melaleuca viridiflora	Broad-leaved tea tree	2
Acacia salicina	Cooba	2
Corymbia clarksoniana	Clarkson's bloodwood	1
Native Stems/ha		340

Canopy cover	**Canopy layer**	12%
	Shrub layer	0

Ground Cover							
Scientific name	**Common name**	**Sample plot**					
		1	**2**	**3**	**4**	**5**	**Average**
Themeda quadrivalvis	Grader grass	0	0	10	45	40	19
Mesosphaerum suaveolens	Mint weed	50	0	5	0	1	11.2
Paspalum dilatatum	Paspalum	0	0	2.5	35	10	9.5
Passiflora foetida	Stinking passionflower	1	30	1	0	1	6.6
Stylostanthes scabra	Shrubby stylo	0	0	7.5	1	2	2.1
Melinis repens	Red natal grass	0	10	0	0	0	2
Paspalum dilatatum	Paspalum	2.5	0	0	0	0	0.5
Alternanthera ficoidea	Joseph's coat	1	0	0	0	0	0.2
Macropitilluim atropurpureum	Siratro	0	1	0	0	0	0.2
Native Vegetation Cover		0	0	0	0	0	0
Introduced Vegetation Cover		54.5	41	26	81	54	51.3
Litter		45.5	59	74	19	46	48.7

Bare ground	0	0	0	0	0	0
Rock	0	0	0	0	0	0

Photo Plate 12; Photos taken at the start point of secondary transect six (T6) clockwise from top left facing; North, East, South and West, respectively.

Photo Plate 13; Photos taken at the end point of secondary transect six (T6) clockwise from top left facing; North, East, South and West, respectively.

Transect T7

Mapped RE	11.3.30 non-remnant
Descriptive notes	Disturbed strip of vegetation between roadway and rail line, scattered immature tree cover.

EDL	**Height**	18m
	DBH	240mm
	Spread	
Shrub	**Height**	7m

Woody Species		
Scientific name	**Common name**	**Stem count**
Eremophila mitchellii	False sandalwood	5
Corymbia tessellaris	Carbeen	1
Melaleuca viridiflora	Broad-leaved tea tree	1
Acacia stenophylla	Shoestring acacia	1
Ziziphus mauritiana	Chinee apple	1
Stems/ha		180
Native stems/ha		160

Canopy cover	**Canopy layer**	4%
	Shrub layer	0

Ground Cover							
Scientific name	**Common name**	**Sample plot**					
		1	**2**	**3**	**4**	**5**	**Average**
Themeda quadrivalvis	Grader grass	0	0	0	0	80	16
Heteropogon contortus	Black speargrass	50	0	0	0	0	10
Stylostanthes scabra	Shrubby stylo	4	0	0	45	0	9.8
Leucaena leucocephala	Leucaena	0	5	2.5	2.5	5	3
Tridax procumbens	Coatbuttons	15	0	0	0	0	3
Themeda triandra	Kangaroo grass	0	15	0	0	0	3
Eragrostis pilosa	Soft love grass	10	0	0	0	0	2
Macropitilluim atropurpureum	Siratro	0	0	0	1	5	1.2
Alternanthera ficoidea	Joseph's coat	0	5	0	0	0	1
Chloris gayana	Rhodes grass	0	0	0	0	5	1

Passiflora foetida	Stinking passionflower	2	0	0	1	0	0.6
Asian pigeonwings	Asian pigeonwings	0	1	0	1	0	0.4
Native Vegetation Cover		60	15	0	0	0	15
Introduced Vegetation Cover		21	9	2.5	50.5	95	35.6
Litter		19	34	95	47	7.5	40.5
Bare ground		0	40	2.5	2.5	0	9
Rock		0	0	0	0	0	0

Photo Plate 14; Photos taken at the start point of secondary transect seven (T7) clockwise from top left facing; North, East, South and West, respectively.

Photo Plate 15; Photos taken at the end point of secondary transect seven (T7) clockwise from top left facing; North, East, South and West, respectively.

Transect T8

Mapped RE	11.3.30/11.3.35
Descriptive notes	Scattered native vegetation with grassy ground layer.

EDL	**Height**	12m
	DBH	120mm
	Spread	4m
Shrub	**Height**	4m

Woody Species		
Scientific name	**Common name**	**Stem count**
Eremophila mitchellii	False sandalwood	12
Melaleuca fluviatilis	-	5
Corymbia dallachiana	Dallachy's ghost gum	3
Corymbia tessellaris	Carbeen	1
Ziziphus mauritiana	Chinee apple	1
Stems/ha		440
Native stems/ha		420

Canopy cover	**Canopy layer**	4.6%
	Shrub layer	3%

Ground Cover							
Scientific name	**Common name**	**Sample plot**					
		1	**2**	**3**	**4**	**5**	**Average**
Themeda avenacea	Native oatgrass	40	60	0	2	1	20.6
Stylostanthes scabra	Shrubby stylo	15	5	2	8	25	11
Themeda arguens	Christmas grass	0	0	7.5	5	0	2.5
Cyperus polystachyos	Bunchy sedge	0	0	10	0	0	2
Alternanthera ficoidea	Joseph's coat	0	0	5	0	0	1
Aeschynomene villosa	Villose jointvetch	0	0	4	0	0	0.8
Stachytarpheta cayennensis	Snake weed	0	0	2.5	0	0	0.5
Brunoniella sp.	Blue trumpet	0	0	0	0	2.5	0.5
Cyperus haspan	Sharp edge sedge	0	0	0	0	2	0.4
Native Vegetation Cover		40	60	17.5	7	5.5	26
Introduced Vegetation Cover		15	5	13.5	8	25	13.3
Litter		20	15	40	35	24.5	26.9

Bare ground	15	20	29	50	45	31.8
Rock	0	0	0	0	0	0

Photo Plate 16; Photos taken at the start point of secondary transect eight (T8) clockwise from top left facing; North, East, South and West, respectively.

Photo Plate 17; Photos taken at the end point of secondary transect eight (T8) clockwise from top left facing; North, East, South and West, respectively.

Transect T9

Mapped RE	11.3.30
Descriptive notes	Scattered native vegetation adjacent to road with mixed ground layer.

EDL	**Height**	12m
	DBH	150mm
	Spread	4m
Shrub	**Height**	-

Woody Species		
Scientific name	**Common name**	**Stem count**
Eremophila mitchellii	False sandalwood	8
Acacia stenophylla	Shoestring acacia	3
Corymbia clarksoniana	Clarkson's bloodwood	1
Prosopis sp.	Mesquite	1
Stems/ha		260
Native stems/ha		260

Canopy cover	**Canopy layer**	0
	Shrub layer	2.1%

Ground Cover							
Scientific name	**Common name**	**Sample plot**					
		1	**2**	**3**	**4**	**5**	**Average**
Alternanthera ficoidea	Joseph's coat	60	0	0	0	0	12
Aeschynomene villosa	Villose jointvetch	4	5	2.5	0	0	2.3
Bothriochloa decipiens	Pitted bluegrass	1	0	0	2	90	18.6
Melenis repens	Red natal grass	0	45	0	5	0	10
Stylostanthes scabra	Shrubby stylo	0	2.5	0	30	5	7.5
Eremophila mitchellii	False sandalwood	0	0	10	0	0	2
Themeda quadrivalvis	Grader grass	0	0	87.5	0	0	17.5
Eragrostis pilosa	Soft lovegrass	0	0	0	2	0	0.4
Native Vegetation Cover		1	0	10	4	90	21
Introduced Vegetation Cover		64	52.5	90		5	49.3
Litter		35	47.5	0	61	5	29.7
Bare ground		0	0	0	0	0	0
Rock		0	0	0	0	0	0

Photo Plate 18; Photos taken at the start point of secondary transect nine (T9) clockwise from top left facing; North, East, South and West, respectively.

Photo Plate 19; Photos taken at the end point of secondary transect nine (T9) clockwise from top left facing; North, East, South and West, respectively.

Transect T10

Mapped RE	11.3.30
Descriptive notes	Low scattered native vegetation with mixed, weedy ground layer.

EDL	**Height**	14m
	DBH	200mm
	Spread	7m
Shrub	**Height**	5m

Woody Species		
Scientific name	**Common name**	**Stem count**
Grevillea pteridifolia	Silky grevillea	6
Corymbia dallachiana	Dallachy's ghost gum	5
Eucalyptus platyphylla	Poplar gum	2
Eremophila mitchellii	False sandalwood	2
Acacia stenophylla	Shoestring acacia	1
Stems/ha		320
Native stems/ha		320

Canopy cover	**Canopy layer**	22.6%
	Shrub layer	0

Ground Cover							
Scientific name	**Common name**	**Sample plot**					
		1	**2**	**3**	**4**	**5**	**Average**
Stylostanthes scabra	Shrubby stylo	20	30	30	3	24	21.4
Aeschynomene villosa	Villose jointvetch	1	25	0	0	0	5.2
Panicum larcomianum	-	0	0	0	0	15	3
Brunoniella sp.	Blue trumpet	1	1	4	4	0	2
Cyperus polystachyos	Bunchy sedge	0	4	0	0	0	0.8
Themeda triandra	Kangaroo grass	0	0	0	0	3	0.6
Thaumastochloa pubescens	-	2.5	0	0	0	0	0.5
Passiflora foetida	Stinking passionflower	0	0	2	0	0	0.4
Themeda avenacea	Native oatgrass	0	2	0	0	0	0.4
Native Vegetation Cover		3.5	7	4	4	18	7.3
Introduced Vegetation Cover		21	55	32	3	24	27

Litter	20	18	44	90.5	37	41.9
Bare ground	55.5	20	20	2.5	21	23.8
Rock	0	0	0	0	0	0

Photo Plate 20; Photos taken at the start point of secondary transect ten (T10) clockwise from top left facing; North, East, South and West, respectively.

Photo Plate 21; Photos taken at the end point of secondary transect ten (T10) clockwise from top left facing; North, East, South and West, respectively.

Transect T11

Mapped RE	11.3.35
Descriptive notes	Centre-line of transect located just outside of a vegetated strip adjacent to the road along the centre of the impact area. The 50m by 10m transect area lays partially within an area of cleared grassland and partially within sparse woodland.

EDL	**Height**	18m
	DBH	370mm
	Spread	10m
Shrub	**Height**	4m

Woody Species		
Scientific name	**Common name**	**Stem count**
Eucalyptus platyphylla	Poplar gum	3
Corymbia clarksoniana	Clarkson's bloodwood	2
Corymbia tessellaris	Carbeen	1
Ziziphus mauritiana	Chinee apple	1
Alphitonia excelsa	Soap tree	4
Ficus opposita	Sandpaper fig	2
Stems/ha		260
Native stems/ha		240

Canopy cover	**Canopy layer**	32.4%
	Shrub layer	0

Ground Cover							
Scientific name	**Common name**	**Sample plot**					
		1	**2**	**3**	**4**	**5**	**Average**
Alternanthera ficoidea	Joseph's coat	90	5	1	60	74	46
Malvastrum coromandelianum	Prickly malvastrum	0	1	1	2	0	0.8
Paspalum dilatatum	Paspalum	0	0	1	1	2	0.8
Centrosema molle	Butterfly pea	1	2.5	0	0	0	0.7
Sida cordifolia	Flannel weed	1	1	1	0	0	0.6
Passiflora foetida	Stinking passionflower	0	1	0	0	1	0.4
Macropitilluim atropurpureum	Siratro	1	0	0	0	0	0.2
Sporobolos sp.	Rats tail grass	0	0	1	0	0	0.2
Mesosphaerum suaveolens	Mint weed	0	0	1	0	0	0.2
Native Vegetation Cover		0	0	0	0	0	0

Introduced Vegetation Cover	93	10.5	6	63	77	49.9
Litter	7	89.5	94	37	23	50.1
Bare ground	0	0	0	0	0	0
Rock	0	0	0	0	0	0

Photo Plate 22; Photos taken at the start point of secondary transect eleven (T11) clockwise from top left facing; North, East, South and West, respectively

Photo Plate 23; Photos taken at the end point of secondary transect eleven (T11) clockwise from top left facing; North, East, South and West, respectively.

Transect T12

Mapped RE	11.3.25b
Descriptive notes	Scattered native woody vegetation within cattle pasture.

EDL	**Height**	22m
	DBH	300mm
	Spread	7.5m
Shrub	**Height**	6m

Woody Species		
Scientific name	**Common name**	**Stem count**
Melaleuca viridiflora	Broad-leaved tea tree	7
Corymbia tessellaris	Carbeen	5
Acacia auriculiformis	Ear-pod wattle	3
Corymbia clarksoniana	Clarkson's bloodwood	2
Lophostemon grandiflorus	Northern swamp box	1
Pandanus tectorius	Screw pine	1
Stems/ha		380
Native stems/ha		380

Canopy cover	**Canopy layer**	50.4%
	Shrub layer	15.4%

Ground Cover							
Scientific name	**Common name**	**Sample plot**					
		1	**2**	**3**	**4**	**5**	**Average**
Alternanthera ficoidea	Joseph's coat	20	5	30	15	7	15.4
Paspalum dilatatum	Paspalum	0	0	0	12	3	3
Stylostanthes scabra	Shrubby stylo	2	2	0	3	3	2
Mesosphaerum suaveolens	Mint weed	2	2	2	2	0	1.6
Galactia tenuiflora	Snail flower	0	0	0	0	7.5	1.5
Chloris truncata	Windmill grass	0	1	5	0	0	1.2
Malvastrum coromandelianum	Prickly malvastrum	1	2	0	0	0	0.6
Passiflora foetida	Stinking passionflower	2	0	0	0	0	0.4
Sida cordifolia	Flannel weed	0	0	0	0	2	0.4
Sida rhombifolia	Arrowleaf sida	0	0	0	0	1	0.2
Native Vegetation Cover		0	1	5	0	7.5	2.7
Introduced Vegetation Cover		27	11	32	32	16	23.6

Litter	70	86	58	63	74.5	70.3
Bare ground	0	2	2	2	2	1.6
Rock	0	0	0	0	0	0

Photo Plate 24; Photos taken at the start point of secondary transect twelve (T12) clockwise from top left facing; North, East, South and West, respectively.

Photo Plate 25; Photos taken at the end point of secondary transect twelve (T12) clockwise from top left facing; North, East, South and West, respectively.

Transect T13

Mapped RE	11.3.12
Descriptive notes	Melaleuca viridiflora dominated sparse woodland. Ground layer dominated by native wetland indicator species.

EDL	**Height**	18m
	DBH	200mm
	Spread	6m
Shrub	**Height**	10m

Woody Species		
Scientific name	**Common name**	**Stem count**
Melaleuca viridiflora	Broad-leaved tea tree	47
Corymbia tessellaris	Carbeen	8
Stems/ha		1100
Native stems/ha		1100

Canopy cover	**Canopy layer**	21.8%
	Shrub layer	6.8%

Ground Cover							
Scientific name	**Common name**	**Sample plot**					
		1	**2**	**3**	**4**	**5**	**Average**
Leersia hexandra	Swamp rice grass	0	0	90	90	95	55
Paspalum dilatatum	Paspalum	30	94	3	0	0	25.4
Ageratum conyzoides	Billygoat weed	15	0	0	0	0	3
Cyperus haspan	Sharp edge sedge	0	2	2	2	0	1.2
Alternanthera ficoidea	Joseph's coat	1	0	0	0	0	0.2
Ludwigia octovalvis	Mexican primrose-willow	0	0	0	1	0	0.2
Malvastrum coromandelianum	Prickly malvastrum	1	0	0	0	0	0.2
Passiflora foetida	Stinking passionflower	1	0	0	0	0	0.2
Native Vegetation Cover		0	2	92	93	95	56.7
Introduced Vegetation Cover		48	94	0	0	0	29
Litter		52	4	5	4	5	14
Bare ground		0	0	0	96	0	19.2
Rock		0	0	0	0	0	0

Photo Plate 26; Photos taken at the start point of secondary transect thirteen (T13) clockwise from top left facing; North, East, South and West, respectively.

Photo Plate 27; Photos taken at the end point of secondary transect thirteen (T13) clockwise from top left facing; North, East, South and West, respectively.

Transect T14

Mapped RE	11.3.30
Descriptive notes	Narrow scattered strip of vegetation adjacent to road.

EDL	**Height**	14m
	DBH	120mm
	Spread	
Shrub	**Height**	4m

Woody Species		
Scientific name	**Common name**	**Stem count**
Atalaya hemiglauca	Cattle bush	26
Acacia stenophylla	Shoestring acacia	4
Corymbia dallachiana	Dallachy's ghost gum	2
Cryptostegia grandiflora	India rubber vine	2
Stems/ha		680
Native stems/ha		640

Canopy cover	**Canopy layer**	25.4%
	Shrub layer	8.6%

Ground Cover							
Scientific name	**Common name**	**Sample plot**					
		1	**2**	**3**	**4**	**5**	**Average**
Stylostanthes scabra	Shrubby stylo	17	30	70	85	55	51.4
Paspalum dilatatum	Paspalum	5	0	0	4	5	2.8
Atalaya hemiglauca	Cattle bush	0	0	2	0	0	0.4
Native Vegetation Cover		0	0	2	0	0	0.4
Introduced Vegetation Cover		22		7-	89	60	54.2
Litter		78	35	25	1	23	32.4
Bare ground		0	35	3	10	17	13
Rock		0	0	0	0	0	0

Photo Plate 28; Photos taken at the start point of secondary transect fourteen (T14) clockwise from top left facing; North, East, South and West, respectively.

Photo Plate 29; Photos taken at the end point of secondary transect fourteen (T14) clockwise from top left facing; North, East, South and West, respectively.

Transect T15

Mapped RE	11.3.30
Descriptive notes	Scattered woody vegetation adjacent to road reserve.

EDL	**Height**	12m
	DBH	170mm
	Spread	6m
Shrub	**Height**	5.5m

Woody Species		
Scientific name	**Common name**	**Stem count**
Eremophila mitchellii	False sandalwood	11
Atalaya hemiglauca	Cattle bush	8
Acacia salicina	Cooba	7
Corymbia dallachiana	Dallachy's ghost gum	6
Melaleuca viridiflora	Broad-leaved tea tree	2
Acacia stenophylla	Shoestring acacia	1
Grevillea pteridifolia	Silky grevillea	1
Stems/ha		720
Native stems/ha		720

Canopy cover	**Canopy layer**	16.6%
	Shrub layer	15%

Ground Cover							
Scientific name	**Common name**	**Sample plot**					
		1	**2**	**3**	**4**	**5**	**Average**
Stylostanthes scabra	Shrubby stylo	3	40	30	26	95	38.8
Brunoniella sp.	Blue trumpet	1	0	0	5	0	1.2
Paspalum dilatatum	Paspalum	0	0	0	2	0	0.4
Native Vegetation Cover		1	0	0	5	0	1.2
Introduced Vegetation Cover		3	40	30	28	95	39.2
Litter		95	56	20	64	3	47.6
Bare ground		1	4	50	3	2	12
Rock		0	0	0	0	0	0

Photo Plate 30; Photos taken at the start point of secondary transect fifteen (T15) clockwise from top left facing; North, East, South and West, respectively.

Photo Plate 31; Photos taken at the end point of secondary transect fifteen (T15) clockwise from top left facing; North, East, South and West, respectively.

Transect T16

Mapped RE	11.3.30
Descriptive notes	Scattered woodland with a high proportion of introduced shrub cover.

EDL	**Height**	10m
	DBH	200mm, 150mm
	Spread	
Shrub	**Height**	2m

Woody Species		
Scientific name	**Common name**	**Stem count**
Cryptostegia grandiflora	India rubber vine	14
Corymbia dallachiana	Dallachy's ghost gum	1
Ziziphus mauritiana	Chinee apple	1
Stems/ha		320
Native stems/ha		20

Canopy cover	**Canopy layer**	9%
	Shrub layer	0

Ground Cover							
Scientific name	**Common name**	**Sample plot**					
		1	**2**	**3**	**4**	**5**	**Average**
Aeschynomene villosa	Hairy jointvetch	10	2.5	1	30	1	8.9
Panicum sp.	-	0	0	0	0	35	7
Cyperus haspan	Sharp edge sedge	0	3	30	0	0	6.6
Alternanthera ficoidea	Joseph's coat	0	0	0	25	0	5
Paspalum dilatatum	Paspalum	1.5	0	1	7	5	2.9
Ludwigia octovalvis	Mexican primrose-willow	7.5	0	0	0	0	1.5
Panicum laevinode	Pepper grass	0	0	2	0	0	0.4
Chloris virgata	Feathertop Rhodes grass	0	0	1	0	0	0.2
Echinochloa colona	Awnless banyard grass	0	0	0	1	0	0.2
Native Vegetation Cover		7.5	3	30	0	0	7
Introduced Vegetation Cover		11.5	2.5	5	63	41	24.2
Litter		10	1	2	22	1	7.2

Bare ground	71	93.5	63	15	58	60.1
Rock	0	0	0	0	0	0

Photo Plate 32; Photos taken at the start point of secondary transect sixteen (T16) clockwise from top left facing; North, East, South and West, respectively.

Photo Plate 33; Photos taken at the end point of secondary transect sixteen (T16) clockwise from top left facing; North, East, South and West, respectively.

Transect T17

Mapped RE	11.3.30 non-remnant
Descriptive notes	Low woody vegetation

EDL	**Height**	8m
	DBH	150mm
	Spread	2.5m
Shrub	**Height**	5m

Woody Species		
Scientific name	**Common name**	**Stem count**
Atalaya hemiglauca	Cattle bush	19
Khaya senegalensis	African mahogany	4
Eremophila mitchellii	False sandalwood	2
Acacia stenophylla	Shoestring acacia	2
Ziziphus mauritiana	Chinee apple	2
Acacia salicina	Cooba	1
Cryptostegia grandiflora	India rubber vine	1
Corymbia dallachiana	Dallachy's ghost gum	1
Stems/ha		640
Native Stems/ha		540

Canopy cover	**Canopy layer**	5.4%
	Shrub layer	9.2%

Ground Cover							
Scientific name	**Common name**	**Sample plot**					
		1	**2**	**3**	**4**	**5**	**Average**
Stylostanthes scabra	Shrubby stylo	55	15	75	55	80	56
Paspalum dilatatum	Paspalum	2	7	2	0	0	2.2
Mimosa pudica	Sensitive weed	0	0	0	2	0	0.4
Themeda triandra	Kangaroo grass	0	0	0	2	0	0.4
Alternanthera ficoidea	Joseph's coat	0	1	0	0	0	0.2
Native Vegetation Cover		0	0	0	2	0	0.4
Introduced Vegetation Cover		57	23	77	57	80	58.8
Litter		43	2T	2	2	5	10.8
Bare ground		0	75	21	38	15	29.8
Rock		0	0	0	1	0	0.2

Photo Plate 34; Photos taken at the start point of secondary transect seventeen (T17) clockwise from top left facing; North, East, South and West, respectively.

Photo Plate 35; Photos taken at the end point of secondary transect seventeen (T17) clockwise from top left facing; North, East, South and West, respectively.

Transect T18

Mapped RE	11.3.30
Descriptive notes	Pasture with scattered large native trees.

EDL	**Height**	19m
	DBH	230mm
	Spread	
Shrub	**Height**	6m

Woody Species		
Scientific name	**Common name**	**Stem count**
Corymbia dallachiana	Dallachy's ghost gum	3
Corymbia tessellaris	Carbeen	1
Melaleuca viridiflora	Broad-leaved tea tree	1
Stems/ha		100
Native stems/ha		100

Canopy cover	**Canopy layer**	29.6%
	Shrub layer	0

Ground Cover							
Scientific name	**Common name**	**Sample plot**					
		1	**2**	**3**	**4**	**5**	**Average**
Stylostanthes scabra	Shrubby stylo	90	60	20	1	90	52.2
Alternanthera ficoidea	Joseph's coat	1	1	30	95	0	25.4
Paspalum dilatatum	Paspalum	5	5	0	0	1	2.2
Sida sp.	Native sida	0	0	2	1	2	1
Chamaecrista rotundifolia	Wynn cassia	1	1	0	0	1	0.6
Sida acuta	Common wireweed	1	0	0	0	1	0.4
Mesosphaerum suaveolens	Mint weed	0	0	1	0	1	0.4
Boerhavia sp.	-	1	0	0	0	0	0.2
Malvastrum coromandelianum	Prickly malvastrum	0	0	1	0	0	0.2
Native Vegetation Cover		1	0	0	0	0	0.2
Introduced Vegetation Cover		98	66	54	97	96	82.4
Litter		1	17	34	3	3	11.6
Bare ground		0	16	12	0	1	5.8
Rock		0	0	0	0	0	0

Photo Plate 36; Photos taken at the start point of secondary transect eighteen (T18) clockwise from top left facing; North, East, South and West, respectively.

Photo Plate 37; Photos taken at the end point of secondary transect eighteen (T18) clockwise from top left facing; North, East, South and West, respectively.

Transect	T19

Mapped RE	11.3.35 (essential habitat)
Descriptive notes	Pasture adjacent to dirt road

EDL	**Height**	29m
	DBH	475mm
	Spread	
Shrub	**Height**	-

Woody Species		
Scientific name	**Common name**	**Stem count**
Eucalyptus crebra	Narrow-leaved ironbark	2
Stems/ha		40
Native stems/ha		40

Canopy cover	**Canopy layer**	19%
	Shrub layer	0

Ground Cover							
Scientific name	**Common name**	**Sample plot**					
		1	**2**	**3**	**4**	**5**	**Average**
Stylostanthes scabra	Shrubby stylo	85	84.5	67	90	5	66.3
Chamaecrista rotundifolia	Wynn cassia	0	0	1.5	1	67	13.9
Chloris truncata	Windmill grass	2.5	4	0	1	1	1.7
Themeda quadrivalvis	Grader grass	0	7.5	0	0	0	1.5
Paspalum dilatatum	Paspalum	1	2	1	0	2	1.2
Mesosphaerum suaveolens	Mint weed	0	0	0	2	3	1
Panicum sp.		0	0	3	0	0	0.6
Panicum laevinode	Pepper grass	0	0	0	1.5	0	0.3
Native Vegetation Cover							
Introduced Vegetation Cover							
Litter		0	0	7	2.5	20	5.9
Bare ground		11.5	10	20.5	2	2	9.2
Rock		0	0	0	0	0	0

Photo Plate 38; Photos taken at the start point of secondary transect nineteen (T19) clockwise from top left facing; North, East, South and West, respectively.

Photo Plate 39; Photos taken at the end point of secondary transect nineteen (T19) clockwise from top left facing; North, East, South and West, respectively.

Transect	T20

Mapped RE	11.3.30 (essential habitat)
Descriptive notes	Pasture adjacent to dirt road, limited native tree cover.

EDL	**Height**	18m
	DBH	180mm
	Spread	
Shrub	**Height**	2.5m

Woody Species		
Scientific name	**Common name**	**Stem count**
Eucalyptus platyphylla	Poplar gum	2
Ziziphus mauritiana	Chinee apple	2
Corymbia clarksoniana	Clarkson's bloodwood	1
Stems/ha		100
Native stems/ha		60

Canopy cover	**Canopy layer**	17.8%
	Shrub layer	0

Ground Cover							
Scientific name	**Common name**	**Sample plot**					
		1	**2**	**3**	**4**	**5**	**Average**
Stylostanthes scabra	Shrubby stylo	5	20	30	90	27	34.4
Paspalum dilatatum	Paspalum	0	1.5	5	1	1.5	1.8
Alternanthera ficoidea	Joseph's coat	0	0	4	0	0	0.8
Panicum laevinode	Pepper grass	2.5	0	0	0	0	0.5
Centrosema molle	Butterfly pea	0	0	1	0	0	0.2
Native Vegetation Cover		2.5	0	0	0	0	0.5
Introduced Vegetation Cover		5	21.5	40	91	28.5	37.2
Litter		77.5	69	57.5	2.5	1.5	41.6
Bare ground		15	7	2.5	6.5	70	20.2
Rock		0	2.5	0	0	0	0.5

Photo Plate 40; Photos taken at the start point of secondary transect 20 (T20) clockwise from top left facing; North, East, South and West, respectively.

Photo Plate 41; Photos taken at the end point of secondary transect twenty (T20) clockwise from top left facing; North, East, South and West, respectively.

Transect T21

Mapped RE	11.3.27e (wetland)
Descriptive notes	Pasture with mature native trees.

EDL	**Height**	23m
	DBH	350mm
	Spread	
Shrub	**Height**	-

Woody Species		
Scientific name	**Common name**	**Stem count**
Eucalyptus platyphylla	Poplar gum	2
Eucalyptus tereticornis	Forest red gum	2
Corymbia clarksoniana	Clarkson's bloodwood	1
Stems/ha		100
Native stems/ha		100

Canopy cover	**Canopy layer**	46.6%
	Shrub layer	0

Ground Cover							
Scientific name	**Common name**	**Sample plot**					
		1	**2**	**3**	**4**	**5**	**Average**
Chamaecrista rotundifolia	Wynn cassia	90	0	0	0	0	18
Bothriochloa decipiens	Pitted bluegrass	0	0	0	2	30	6.4
Alternanthera ficoidea	Joseph's coat	0	2	17	3	0	4.4
Macropitilluim atropurpureum	Siratro	0	0	1	2.5	1	0.9
Mesosphaerum suaveolens	Mint weed	0	3	1.5	0	0	0.9
Sida hackettiana	Native sida	0	0	0	2	0	0.4
Tridax procumbens	Coatbuttons	2	0	0	0	0	0.4
Urochloa subquadripara	Signal grass	0	0	1.5	0	0	0.3
Cynodon dactylon	Common couch	1	0	0	0	0	0.2
Panicum maximum var. trichoglume	Green panic	0	1	0	0	0	0.2
Native Vegetation Cover		0	0	0	4	30	7
Introduced Vegetation Cover		93	5	21	5.5	1	25.1
Litter		7	94	79	90.5	67	67.5

Bare ground	0	0	0	0	2	0.4
Rock	0	0	0	0	0	0

Photo Plate 42; Photos taken at the start point of secondary transect twenty-one (T21) clockwise from top left facing; North, East, South and West, respectively.

Photo Plate 43; Photos taken at the end point of secondary transect twenty-one (T21) clockwise from top left facing; North, East, South and West, respectively.

Transect	T22

NB. Transect 22 was 44m in length rather than 50m due to patch size constraints.

Mapped RE	11.3.35
Descriptive notes	Native woody vegetation strip between roadway and pasture with weedy ground layer.

EDL	**Height**	24m
	DBH	300mm
	Spread	7m
Shrub	**Height**	5m

Woody Species		
Scientific name	**Common name**	**Stem count**
Corymbia tessellaris	Carbeen	13
Melaleuca fluviatilis	-	8
Ziziphus mauritiana	Chinee apple	4
Eucalyptus platyphylla	Poplar gum	4
Acacia auriculiformis	Ear-pod wattle	3
Melia azedarach	White cedar	1
Melaleuca viridiflora	Broad-leaved tea tree	1
Stems/ha		680
Native stems/ha		600

Canopy cover	**Canopy layer**	69.6%
	Shrub layer	4.2%

Ground Cover							
Scientific name	**Common name**	**Sample plot**					
		1	**2**	**3**	**4**	**5**	**Average**
Mesosphaerum suaveolens	Mint weed	0	55	0	0	25	16
Stylostanthes scabra	Shrubby stylo	0	0	0	0	3	0.6
Alternanthera ficoidea	Joseph's coat	3	0	80	0	2.5	17.1
Macropitilluim atropurpureum	Siratro	1	2.5	0	2	2.5	1.6
Passiflora foetida	Stinking passionflower	0	1.5	0	0	2	0.7
Urena lobata	Urena burr	0	1.5	0	2	2	1.1
Chamaecrista rotundifolia	Wynn cassia	2	0	0	0	0	0.4
Chloris truncata	Windmill grass	10	0	0	0	0	2
Corrymbia tesselaris	Moreton Bay ash	0	10	0	0	0	2

Commelina cyanacea	Scurvey weed	0	0	0	1.5	0	0.3
Cynodon dactylon	Common couch	0	1	0	0	0	0.2
Gophrena celosioides	Gomphrena weed	1	0	0	0	0	0.2
Panicum maximum var. trichoglume	Green panic	0	0	0	3	0	0.6
Passiflora subrosa	Corky passionfruit	0	0	0	1	0	0.2
Tridax procumbens	Coatbuttons	1	0	0	0	0	0.2
Bothriochloa decipiens	Pitted bluegrass	1	0	0	0	0	0.2
Native Vegetation Cover		11	10	0	1.5	0	4.5
Introduced Vegetation Cover		8	61.5	80	8	37	38.9
Litter		74	28.5	20	88.5	63	54.8
Bare ground		7	0	0	2	0	1.8
Rock		0	0	0	0	0	0

Photo Plate 44; Photos taken at the start point of secondary transect twenty-two (T22) clockwise from top left facing; North, East, South and West, respectively.

Photo Plate 45; Photos taken at the end point of secondary transect twenty-two (T22) clockwise from top left facing; North, East, South and West, respectively.

6.1.2 Appendix A; Quaternary Vegetation Transect Data and Findings

Table 11; Key for interpretation of Quaternary Vegetation survey data.

Key;
Introduced flora species
Native flora species
Dominant species at sample location

Table 12; Floral species observation data for quaternary vegetation survey point one (Q1)

Quaternary	Q1	
Mapped RE	11.3.30 non-remnant	
Observed RE	11.3.30 non-remnant	
Ground layer	**Shrub layer**	**Canopy layer**
Eragrostis pilosa	*Cassia foetida*	*Corymbia dallachiana;* 22m high, 300mm DBH
Alternanthera ficoidea	*Leucaena leucocephala*	
Heteropogon contortus		
Paspalum dilatatum		
Passiflora foetida		
Sida acuta		
Stylostanthes scabra		

Photo Plate 46; Photos taken at quaternary assessment point one (Q1) clockwise from top left facing; North, East, South and West, respectively.

Table 13; Floral species observation data for quaternary vegetation survey point two (Q2)

Quaternary	Q2	
Mapped RE	11.3.30 non-remnant	
Observed RE	11.3.30 non-remnant	
Ground layer	**Shrub layer**	**Canopy layer**
Alternanthera ficoidea	*Planchonia careya*	*Corymbia dallachiana;* 22m high, 270mm DBH
Chloris gayana	*Melaleuca viridiflora*	
Clitoria ternatea		
Eragrostis pilosa		
Macroptilium lathyroides		
Mesosphaerum suaveolens		
Passiflora foetida		
Stylostanthes scabra		

Photo Plate 47; Photos taken at quaternary assessment point two (Q2) clockwise from top left facing; North, East, South and West, respectively.

Table 14; Floral species observation data for quaternary vegetation survey point three (Q3)

Quaternary	Q3	
Mapped RE	11.3.30 non-remnant	
Observed RE	Land-zone and non-remnant status consistent, assessable woody vegetation absent.	
Ground layer	**Shrub layer**	**Canopy layer**
Chloris gayana	-	-
Eragrostis pilosa		
Leucaena leucocephala		
Sida cordifolia		
Stylostanthes scabra		
Themeda avenacea		
Themeda triandra		

Photo Plate 48; Photos taken at quaternary assessment point three (Q3) clockwise from top left facing; North, East, South and West, respectively.

Table 15; Floral species observation data for quaternary vegetation survey point four (Q4)

Quaternary	Q4	
Mapped RE	11.3.35 non-remnant	
Observed RE	Land-zone and non-remnant status consistent, assessable woody vegetation absent.	
Ground layer	**Shrub layer**	**Canopy layer**
Alternanthera ficoidea	-	-
Chloris gayana		
Eclipta prostrata		
Propsis sp.		
Oxalis sp.		
Stylostanthes scabra		

Photo Plate 49; Photos taken at quaternary assessment point four (Q4) clockwise from top left facing; North, East, South and West, respectively.

Table 16; Floral species observation data for quaternary vegetation survey point five (Q5)

Quaternary	Q5	
Mapped RE	11.3.30	
Observed RE	Land-zone consistent, assessable woody vegetation absent. Non-remnant vegetation.	
Ground layer	**Shrub layer**	**Canopy layer**
Alternanthera ficoidea	-	-
Chloris gayana		
Heteropogon contortus		
Macropitilluim atropurpureum		
Mesosphaerum suaveolens		
Paspalum dilatatum		
Sida cordifolia		
Stylostanthes scabra		
Urena lobata		

Photo Plate 50; Photos taken at quaternary assessment point five (Q5) clockwise from top left facing; North, East, South and West, respectively.

Table 17; Floral species observation data for quaternary vegetation survey point five (Q5)

Quaternary	Q6	
Mapped RE	11.3.30	
Observed RE	Land-zone and non-remnant status consistent, assessable woody vegetation absent.	
Ground layer	**Shrub layer**	**Canopy layer**
Chamaecrista rotundifolia	-	-
Alternanthera ficoidea		
Chloris gayana		
Rottboellia cochinchinensis		
Macroptilium lathyroides		
Sida acuta		
Sida hackettiana		
Small spiny shrub		
Stylostanthes scabra		

Photo Plate 51; Photos taken at quaternary assessment point six (Q6) clockwise from top left facing; North, East, South and West, respectively.

Table 18; Floral species observation data for quaternary vegetation survey point seven (Q7)

Quaternary	Q7	
Mapped RE	11.3.35	
Observed RE	Present vegetation consistent with non-remnant RE 11.3.35	
Ground layer	**Shrub layer**	
Malvastrum coromandelianum	-	
Alternanthera ficoidea		
Desmodium sp.		
Macropitilluim atropurpureum		
Paspalum dilatatum		
Sida cordifolia		
Tridax procumbens		

Photo Plate 52; Photos taken at quaternary assessment point seven (Q7) clockwise from top left facing; North, East, South and West, respectively.

Table 19; Floral species observation data for quaternary vegetation survey point.

Quaternary	Q8	
Mapped RE	11.3.35 non-remnant	
Observed RE	Land-zone and non-remnant status consistent, assessable woody vegetation absent.	
Ground layer	**Shrub layer**	**Canopy layer**
Tribulus terrestris	-	-
Alternanthera ficoidea		
Chamaesyce hirta		
Chloris truncata		
Desmodium sp.		
Heteropogon contortus		
Malvastrum coromandelianum		
Paspalum dilatatum		
Passiflora foetida		
Tridax procumbens		

Photo Plate 53; Photos taken at quaternary assessment point eight (Q8) clockwise from top left facing; North, East, South and West, respectively.

Table 20; Floral species observation data for quaternary vegetation survey point nine (Q9)

Quaternary	Q9	
Mapped RE	11.3.35 non-remnant	
Observed RE	Land-zone and non-remnant status consistent, assessable woody vegetation absent.	
Ground layer	**Shrub layer**	**Canopy layer**
Paspalum dilatatum	-	-
Alternanthera ficoidea		
Convolvulus sp.		
Bothriochloa decipiens fluff		
Calyptocarpus vialis		
Chamaesyce hirta		
Chloris gayana		
Conyza bonariensis		
Desmodium sp.		
Bothriochloa bladhii		
Tridax procumbens		

Photo Plate 54; Photos taken at quaternary assessment point nine (Q9) clockwise from top left facing; North, East, South and West, respectively.

Table 21; Floral species observation data for quaternary vegetation survey point ten (Q10)

Quaternary	Q10	
Mapped RE	11.3.35 non-remnant	
Observed RE	Land-zone and non-remnant status consistent, assessable woody vegetation absent.	
Ground layer	**Shrub layer**	**Canopy layer**
Alternanthera ficoidea	-	-
Chamaecrista rotundifolia		
Chloris gayana		
Desmodium sp.		
Erogrostis brownii		
Gophrena celosioides		
Indigofera spicata		
Paspalum dilatatum		
Tridax procumbens		

Photo Plate 55; Photos taken at quaternary assessment point ten (Q10) clockwise from top left facing; North, East, South and West, respectively.

Table 22; Floral species observation data for quaternary vegetation survey point eleven (Q11)

Quaternary	Q11	
Mapped RE	11.3.35 non-remnant	
Observed RE	Land-zone and non-remnant status consistent, assessable woody vegetation absent.	
Ground layer	**Shrub layer**	**Canopy layer**
Alternanthera ficoidea	-	-
Boerhavia sp.		
Chloris truncata		
Chloris virgata		
Euphorbia hirta		
Bothriochloa bladhii		
Macroptilium lathyroides		
Paspalum dilatatum		
Tridax procumbens		

Photo Plate 56; Photos taken at quaternary assessment point eleven (Q11) clockwise from top left facing; North, East, South and West, respectively.

Table 23; Floral species observation data for quaternary vegetation survey point twelve (Q12)

Quaternary	Q12	
Mapped RE	11.3.35 non-remnant	
Observed RE	Land-zone and non-remnant status consistent, assessable woody vegetation absent.	
Ground layer	**Shrub layer**	**Canopy layer**
Bothriochloa bladhii	*Brachychiton rupestris**	-
Chloris virgata	*Carica papaya**	
Erogrostis brownii	*Morus alba**	
Gophrena celosioides	*Plumeria sp.**	
Tribulus terrestris		
Tridax procumbens		

*Tree and shrub species have been planted along property boundary.

Photo Plate 57; Photos taken at quaternary assessment point twelve (Q12) clockwise from top left facing; North, East, South and West, respectively.

Table 24; Floral species observation data for quaternary vegetation survey point thirteen (Q13)

Quaternary	Q13	
Mapped RE	11.3.35 non-remnant	
Observed RE	Land-zone and non-remnant status consistent.	
Ground layer	**Shrub layer**	**Canopy layer**
Cynodon dactylon	-	*Lophostemon grandiflora*
Alternanthera ficoidea		*Melaleuca viminalis*
Bothriochloa decipiens		
Modiola caroliniana		
Paspalum dilatatum		

Photo Plate 58; Photos taken at quaternary assessment point thirteen (Q13) clockwise from top left facing; North, East and South respectively. The westward direction lies toward the sealed road.

Table 25; Floral species observation data for quaternary vegetation survey point.

Quaternary	**Q14**	
Mapped RE	11.3.35 non-remnant	
Observed RE	Woody vegetation and non-remnant status consistent.	
Ground layer	**Shrub layer**	**Canopy layer**
Urena lobata	*Khaya senegalensis*	*Eucalyptus platyphylla*
Alternanthera ficoidea	*Acacia auriculiformis*	*Lophostemon grandiflora*
Macropitilluim atropurpureum	*Acacia salicina*	
Paspalum dilatatum	*Corymbia tessellaris*	
Passiflora foetida	*Melaleuca viridiflora*	

Photo Plate 59; Photos taken at quaternary assessment point fourteen (Q14) clockwise from top left facing; North, East, South and West, respectively.

Table 26; Floral species observation data for quaternary vegetation survey point, note no Shrub or canopy layers were present.

Quaternary	Q15	
Mapped RE	11.3.30 non-remnant	
Observed RE	Land-zone and non-remnant status consistent, assessable woody vegetation absent.	
Ground layer	**Shrub layer**	**Canopy layer**
Alternanthera ficoidea	-	-
Aeschynomene villosa		
Chloris gayana		
Macroptilium lathyroides		
Malvastrum coromandelianum		
Setaria sphacelata		
Stylostanthes scabra		

Photo Plate 60; Photos taken at quaternary assessment point fifteen (Q15) clockwise from top left facing; North, East, South and West, respectively.

Table 27; Floral species observation data for quaternary vegetation survey point.

Quaternary	Q16	
Mapped RE	11.3.30 non-remnant	
Observed RE	Land-zone and non-remnant status consistent, woody vegetation consistent with proximity to waterway.	
Ground layer	**Shrub layer**	**Canopy layer**
Macropitilluim atropurpureum		*Lophostemon grandiflora;* 10m high, 350mm DBH
Cymbopogon refractus		
Malvastrum coromandelianum		*Melaleuca viridiflora;* 9m high, 200mm DBH
Mesosphaerum suaveolens		
Sida cordifolia		
Stylostanthes scabra		

Photo Plate 61; Photos taken at quaternary assessment point sixteen (Q16) clockwise from top left facing; North, East, South and West, respectively.

Table 28; Floral species observation data for quaternary vegetation survey point.

Quaternary	Q17	
Mapped RE	11.3.30 non-remnant	
Observed RE	Land-zone and extant native vegetation consistent with mapping as non-remnant RE 11.3.30	
Ground layer	**Shrub layer**	**Canopy layer**
Stylostanthes scabra	*Melaleuca viridiflora*	*Acacia stenophylla;* 14m high, 350mm DBH
Alternanthera ficoidea		
Chloris truncata		
Chloris virgata		
Cymbopogon refractus		
Malvastrum coromandelianum		
Panicum laevinode		
Paspalum dilatatum		
Sida cordifolia		

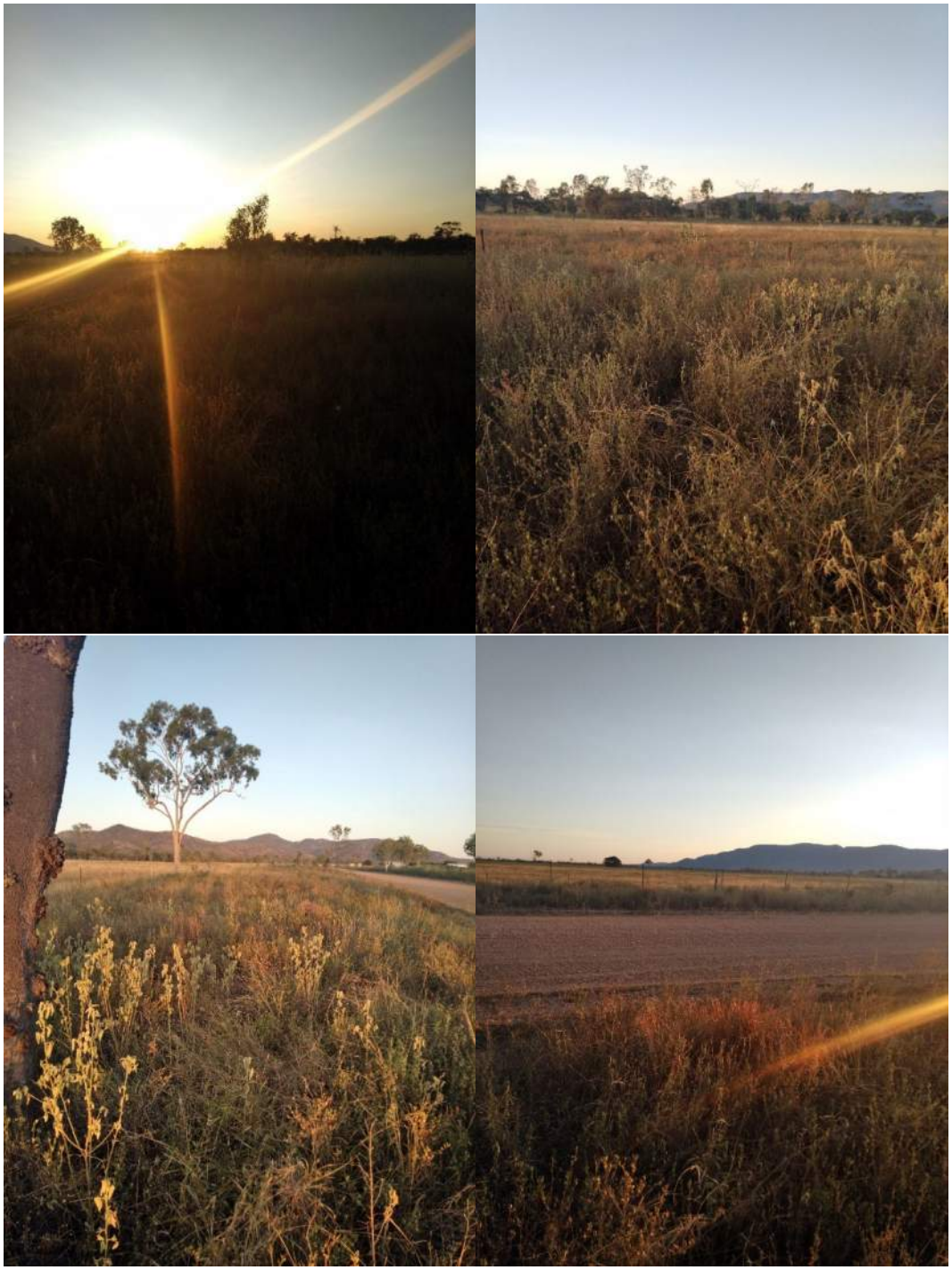


Photo Plate 62; Photos taken at quaternary assessment point seventeen (Q17) clockwise from top left facing; North, East, South and West, respectively.

Table 29; Floral species observation data for quaternary vegetation survey point.

Quaternary	Q18	
Mapped RE	11.3.30 non-remnant	
Observed RE	Land-zone and extant native vegetation consistent with mapping as non-remnant RE 11.3.30	
Ground layer	**Shrub layer**	**Canopy layer**
Aeschynomene villosa	*Corymbia dallachiana;* 4m tall	-
Alternanthera ficoidea		
Chloris virgata	*Melaleuca bracteate;* 1.5m tall	
Cymbopogon refractus		
Panicum laevinode		
Sida acuta		
Stylostanthes scabra		
Themeda avenacea		

Photo Plate 63; Photos taken at quaternary assessment point eighteen (Q18) clockwise from top left facing; North, East, South and West, respectively.

Table 30; Floral species observation data for quaternary vegetation survey point, note the absence of shrub and canopy layers.

Quaternary	Q19	
Mapped RE	11.3.30 non-remnant	
Observed RE	Land-zone and non-remnant status consistent, assessable woody vegetation absent.	
Ground layer	**Shrub layer**	**Canopy layer**
Alternanthera ficoidea	-	-
Aeschynomene villosa		
Clitoria ternatea		
Macroptilium lathyroides		
Malvastrum coromandelianum		
Paspalum dilatatum		
Sida hackettiana		
Stylostanthes scabra		

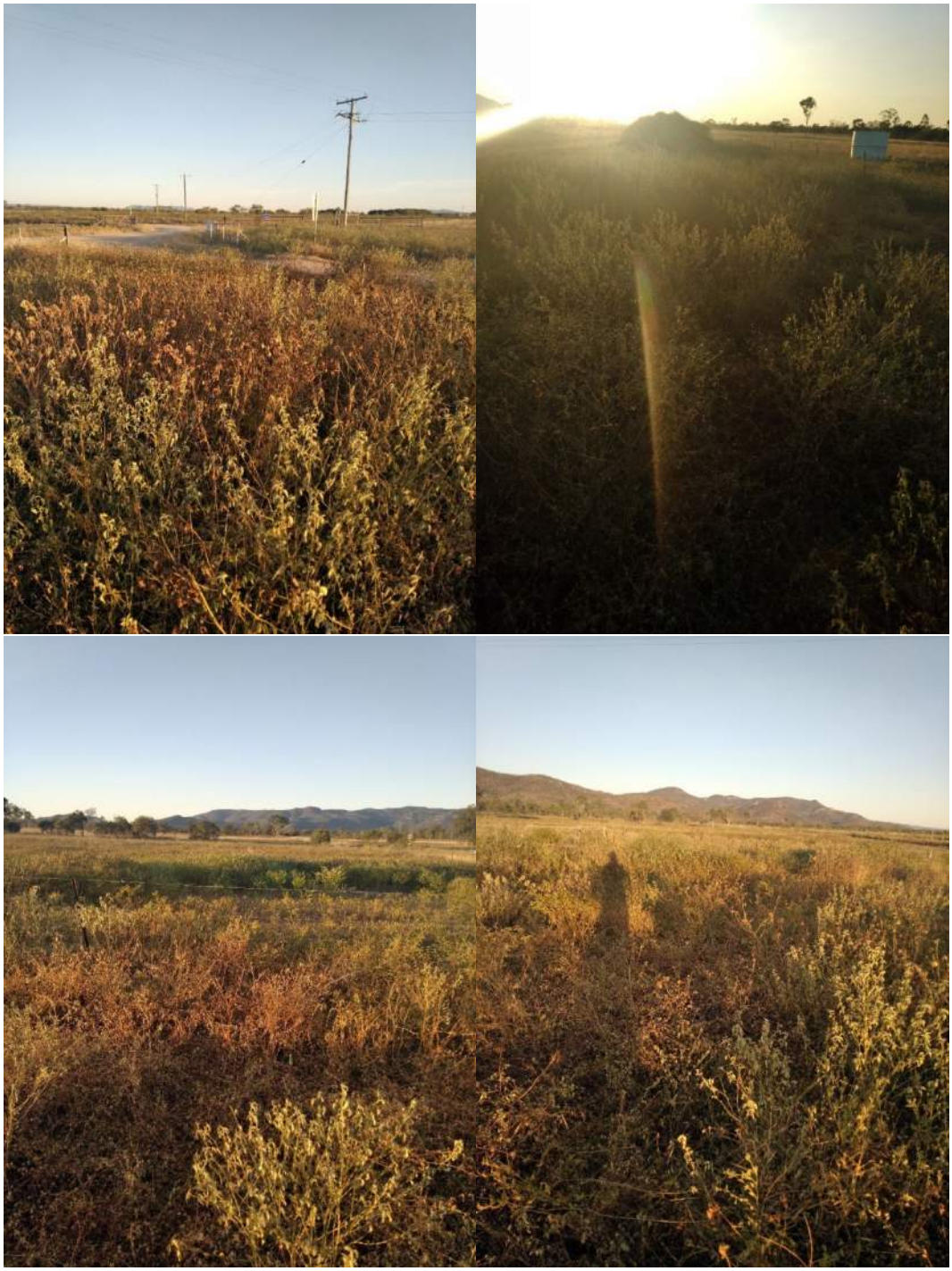


Photo Plate 64; Photos taken at quaternary assessment point nineteen (Q19) clockwise from top left facing; North, East, South and West, respectively.

Table 31; Floral species observation data for quaternary vegetation survey point.

Quaternary	Q20	
Mapped RE	11.3.35 non-remnant	
Observed RE	Land-zone and non-remnant status consistent, assessable woody vegetation absent.	
Ground layer	**Shrub layer**	**Canopy layer**
Aeschynomene villosa	-	-
Alternanthera ficoidea		
Convolvulus sp.		
Malvastrum coromandelianum		
Mesosphaerum suaveolens		
Paspalum dilatatum		
Senna hirsuta		
Senna obtusifolia		

Photo Plate 65; Photos taken at quaternary assessment point twenty (Q20) clockwise from top left facing; North, East, South and West, respectively.

Table 32; Floral species observation data for quaternary vegetation survey point.

Quaternary	Q21	
Mapped RE	11.3.35 non-remnant	
Observed RE	Land-zone and non-remnant status consistent, assessable woody vegetation absent.	
Ground layer	**Shrub layer**	**Canopy layer**
Alternanthera ficoidea	-	-
Centrosema molle		
Malvastrum coromandelianum		
Mesosphaerum suaveolens		
Senna obtusifolia		
Sida hackettiana		
Stylostanthes scabra		

Photo Plate 66; Photos taken at quaternary assessment point twenty-one (Q21) clockwise from top left facing; North, East, South and West, respectively.

Table 33; Floral species observation data for quaternary vegetation survey point.

Quaternary	Q22	
Mapped RE	11.3.35 non-remnant	
Observed RE	Land-zone and non-remnant status consistent, assessable woody vegetation absent.	
Ground layer	**Shrub layer**	**Canopy layer**
Alternanthera ficoidea	*Leucaena leucocephala*;	-
Aeschynomene villosa	7m tall, 100mm DBH	
Bothriochloa decipiens	*Ziziphus mauritiana*;	
Echinochloa colona	7m tall, 120mm DBH	
Ipomea sp.		
Sida hackettiana		

Photo Plate 67; Photos taken at quaternary assessment point twenty-two (Q22) clockwise from top left facing; North, East, South and West, respectively.

Table 34; Floral species observation data for quaternary vegetation survey point.

Quaternary	Q23	
Mapped RE	11.3.35 non-remnant	
Observed RE	Land-zone and non-remnant status consistent, assessable woody vegetation absent.	
Ground layer	**Shrub layer**	**Canopy layer**
Aeschynomene villosa	-	-
Alternanthera ficoidea		
Bothriochloa decipiens		
Malvastrum coromandelianum		
Paspalum dilatatum		
Senna obtusifolia		
Sida acuta		

Photo Plate 68; Photos taken at quaternary assessment point twenty-three (Q23) clockwise from top left facing; North, East, South and West, respectively.

Table 35; Floral species observation data for quaternary vegetation survey point.

Quaternary	Q24	
Mapped RE	11.3.35 non-remnant	
Observed RE	Land-zone and non-remnant status consistent, assessable woody vegetation absent.	
Ground layer	**Shrub layer**	**Canopy layer**
Aeschynomene villosa	-	-
Alternanthera ficoidea		
Chloris truncata		
Chloris virgata		
Boerhavia sp.		
Malvastrum coromandelianum		
Sida hackettiana		

Photo Plate 69; Photos taken at quaternary assessment point twenty-four (Q24) clockwise from top left facing; North, East, South and West, respectively.

Table 36; Floral species observation data for quaternary vegetation survey point.

Quaternary	Q25	
Mapped RE	11.3.30 non-remnant	
Observed RE	Land-zone and non-remnant status consistent, assessable woody vegetation absent.	
Ground layer	**Shrub layer**	**Canopy layer**
Stylostanthes scabra	-	*Acacia stenophylla*; 8m tall
Paspalum dilatatum		
Senna obtusifolia		*Acacia salicina*; 9m tall, 280mm DBH
Sida cordifolia		

Photo Plate 70; Photos taken at quaternary assessment point twenty-five (Q25) clockwise from top left facing; North, East, South and West, respectively.

Table 37; Floral species observation data for quaternary vegetation survey point, note the lack of native species.

Quaternary	Q26	
Mapped RE	11.3.30 non-remnant	
Observed RE	Land-zone and non-remnant status consistent, assessable woody vegetation absent.	
Ground layer	**Shrub layer**	**Canopy layer**
Stylostanthes scabra	-	-
Paspalum dilatatum		
Senna obtusifolia		
Sida cordifolia		

Photo Plate 71; Photos taken at quaternary assessment point twenty-six (Q26) clockwise from top left facing; North, East, South and West, respectively.

Table 38; Floral species observation data for quaternary vegetation survey point.

Quaternary	Q27	
Mapped RE	11.3.30 non-remnant	
Observed RE	Land-zone and non-remnant status consistent, assessable woody vegetation absent.	
Ground layer	**Shrub layer**	**Canopy layer**
Eragrostis pilosa	-	*Acacia salicina*; 5m tall, 320mm DBH
Aeschynomene villosa		
Paspalum dilatatum		
Stylostanthes scabra		

Photo Plate 72; Photos taken at quaternary assessment point twenty-seven (Q27) clockwise from top left facing; North, East, South and West, respectively.

Table 39; Floral species observation data for quaternary vegetation survey point.

Quaternary	Q28	
Mapped RE	11.3.30 non-remnant	
Observed RE	Land-zone and non-remnant status consistent, assessable woody vegetation absent.	
Ground layer	**Shrub layer**	**Canopy layer**
Stylostanthes scabra	*Ziziphus mauritiana*; 3m tall	*Acacia stenophylla*; 9m tall, 170mm DBH
Malvastrum coromandelianum		
Paspalum dilatatum		
Sida cordifolia		

Photo Plate 73; Photos taken at quaternary assessment point twenty-eight (Q28) clockwise from top left facing; North, East, South and West, respectively.

Table 40; Floral species observation data for quaternary vegetation survey point.

Quaternary	Q29	
Mapped RE	11.3.30 non-remnant	
Observed RE	Land-zone and non-remnant status consistent, assessable woody vegetation absent.	
Ground layer	**Shrub layer**	**Canopy layer**
Alternanthera ficoidea	*Melaleuca bracteate*; 1m tall	*Acacia stenophylla*; 19m tall, 250mm DBH
Chloris virgata		
Sida acuta		
Sida cordifolia		
Stylostanthes scabra		

Photo Plate 74; Photos taken at quaternary assessment point twenty-nine (Q29) clockwise from top left facing; North, East, South and West, respectively.

Table 41; Floral species observation data for quaternary vegetation survey point.

Quaternary	Q30	
Mapped RE	11.3.30 non-remnant	
Observed RE	Land-zone and non-remnant status consistent, assessable woody vegetation absent.	
Ground layer	**Shrub layer**	**Canopy layer**
Bothriochloa decipiens	*Melaleuca bracteate*; 1m tall	*Acacia salicina*; 8m tall, 150mm DBH
Eragrostis pilosa		
Stylostanthes scabra		
Themeda avenacea		

Photo Plate 75; Photos taken at quaternary assessment point thirty (Q30) clockwise from top left facing; North, East, South and West, respectively.

Table 42; Floral species observation data for quaternary vegetation survey point.

Quaternary	Q31	
Mapped RE	11.3.30 non-remnant	
Observed RE	Land-zone and non-remnant status consistent, assessable woody vegetation absent.	
Ground layer	**Shrub layer**	**Canopy layer**
Stylostanthes scabra	-	-
Bothriochloa decipiens		
Erogrostis brownii		
Sida hackettiana		

Photo Plate 76; Photos taken at quaternary assessment point thirty-one (Q31) clockwise from top left facing; North, East, South and West, respectively.

Table 43; Floral species observation data for quaternary vegetation survey point.

Quaternary	Q32	
Mapped RE	11.3.30 non-remnant	
Observed RE	Land-zone and non-remnant status consistent, assessable woody vegetation absent.	
Ground layer	**Shrub layer**	**Canopy layer**
Alternanthera ficoidea	*Melaleuca bracteate*; 0.75m tall	-
Chloris virgata		
Centrosema molle	*Ziziphus mauritiana*; 2.5m tall	
Malvastrum coromandelianum		
Senna obtusifolia		
Sida cordifolia		

Photo Plate 77; Photos taken at quaternary assessment point thirty-two (Q32) clockwise from top left facing; North, East, South and West, respectively.

Table 44; Floral species observation data for quaternary vegetation survey point, note the lack of native species.

Quaternary	Q33	
Mapped RE	11.3.35 non-remnant	
Observed RE	Land-zone and non-remnant status consistent, assessable woody vegetation absent.	
Ground layer	**Shrub layer**	**Canopy layer**
Alternanthera ficoidea	*Ziziphus mauritiana*; 2.5m tall	-
Clitoria ternatea		
Macropitilluim atropurpureum		
Malvastrum coromandelianum		
Paspalum dilatatum		
Senna obtusifolia		

Photo Plate 78; Photos taken at quaternary assessment point thirty-three (Q33) clockwise from top left facing; North, East, South and West, respectively.

Table 45; Floral species observation data for quaternary vegetation survey point.

Quaternary	Q34	
Mapped RE	11.3.35 non-remnant	
Observed RE	Land-zone and non-remnant status consistent, assessable woody vegetation absent.	
Ground layer	**Shrub layer**	**Canopy layer**
Alternanthera ficoidea	-	-
Centrosema molle		
Macropitilluim atropurpureum		
Malvastrum coromandelianum		
Mesosphaerum suaveolens		
Senna obtusifolia		
Setaria sphacelata		

Photo Plate 79; Photos taken at quaternary assessment point thirty-four (Q34) clockwise from top left facing; North, East, South and West, respectively.

Table 46; Floral species observation data for quaternary vegetation survey point.

Quaternary	Q35	
Mapped RE	11.3.35 non-remnant	
Observed RE	Land-zone and non-remnant status consistent, assessable woody vegetation absent.	
Ground layer	**Shrub layer**	**Canopy layer**
Aeschynomene villosa	*Melaleuca bracteate*; 1m tall	-
Alternanthera ficoidea		
Bothriochloa decipiens		
Macropitilluim atropurpureum		
Sida hackettiana		
Stylostanthes scabra		
Themeda avenacea		

Photo Plate 80; Photos taken at quaternary assessment point thirty-five (Q35) clockwise from top left facing; North, East, South and West, respectively.

Table 47; Floral species observation data for quaternary vegetation survey point.

Quaternary	Q36	
Mapped RE	11.3.30 non-remnant	
Observed RE	Land-zone and non-remnant status consistent, assessable woody vegetation absent.	
Ground layer	**Shrub layer**	**Canopy layer**
Alternanthera ficoidea	-	-
Chloris virgata		
Clitoria ternatea		
Malvastrum coromandelianum		
Paspalum dilatatum		
Sida acuta		

Photo Plate 81; Photos taken at quaternary assessment point thirty-six (Q36) clockwise from top left facing; North, East, South and West, respectively.

Table 48; Floral species observation data for quaternary vegetation survey point.

Quaternary	Q37	
Mapped RE	11.3.35 non-remnant	
Observed RE	Land-zone and non-remnant status consistent, assessable woody vegetation absent.	
Ground layer	**Shrub layer**	**Canopy layer**
Alternanthera ficoidea	-	-
Chloris truncata		
Senna obtusifolia		
Malvastrum coromandelianum		
Paspalum dilatatum		

Photo Plate 82; Photos taken at quaternary assessment point thirty-seven (Q37) clockwise from top left facing; North, East, South and West, respectively.

Table 49; Floral species observation data for quaternary vegetation survey point, note the lack of native species and shrub or canopy layers.

Quaternary	Q38	
Mapped RE	11.3.30 non-remnant	
Observed RE	Land-zone and non-remnant status consistent, assessable woody vegetation absent.	
Ground layer	**Shrub layer**	**Canopy layer**
Alternanthera ficoidea	-	-
Digitaria ciliaris		
Malvastrum coromandelianum		
Paspalum dilatatum		
Senna obtusifolia		

Photo Plate 83; Photos taken at quaternary assessment point thirty-eight (Q38) clockwise from top left facing; North, East, South and West, respectively.

Table 50; Floral species observation data for quaternary vegetation survey point.

Quaternary	Q39	
Mapped RE	11.3.30 non-remnant	
Observed RE	Land-zone and non-remnant status consistent, assessable woody vegetation absent.	
Ground layer	**Shrub layer**	**Canopy layer**
Alternanthera ficoidea	-	-
Malvastrum coromandelianum		
Paspalum dilatatum		
Senna obtusifolia		

Photo Plate 84; Photos taken at quaternary assessment point thirty-nine (Q39) clockwise from top left facing; North, East, South and West, respectively.

Table 51; Floral species observation data for quaternary vegetation survey point.

Quaternary	Q40	
Mapped RE	11.3.30	
Observed RE	11.3.30 non-remnant/category x vegetation Woody vegetation absent.	
Ground layer	**Shrub layer**	**Canopy layer**
Alternanthera ficoidea	-	-
Chloris truncata		
Chloris virgata		
Malvastrum coromandelianum		
Stylostanthes scabra		

Photo Plate 85; Photos taken at quaternary assessment point forty (Q40) clockwise from top left facing; North, East, South and West, respectively.

6.2 Appendix B – Fauna Likelihood of Occurrence

Table 52: Fauna likelihood of occurrence assessment

Class	Family	Scientific Name	Common Name	EPBC Act Status	NC Act Status	Habitat	Likelihood of occurrence
Amphibia	Microhylidae	*Cophixalus mcdonaldi*	Mt Elliot Nursery-frog	CE	CE	Resides in subtropical or tropical moist lowland forests. Eggs laid in a small cluster under leaf litter and logs and guarded by the male. Tadpoles do not swim in water, rather they hatch from the egg as small frogs. Found in a small area called Bowling Green Bay National Park on Mt Elliott, south-east of Townsville in northern Queensland.	Unlikely No previous records within the locality. Species habitat (subtropical or tropical moist lowland forests) does not occur within the impact area.
Aves	Accipitridae	*Erythrotriorchis radiatus*	Red Goshawk	V	E	A wide ranging and highly mobile species generally observed over eucalypt habitats. This species prefers forest and woodland with a mosaic of vegetation types, large prey populations (birds) and permanent water. The vegetation types include eucalypt woodland, open forest, tall open forest, gallery rainforest, swamp sclerophyll forest and rainforest	Low No previous records within the locality. Species habitat occurs within the impact area.
Aves	Apodidae	*Apus pacificus*	Fork-tailed swift	-	SL	The Fork-tailed Swift is almost exclusively aerial, flying from 1 m to at least 300 m above ground. In Australia, they mostly occur over inland plains but sometimes above foothills or in coastal areas. Often occur over cliffs and beaches and also over islands and sometimes well out to sea. They mostly occur over dry or open	Moderate Previously recorded within the locality and species habitat occurs within the impact area.

Class	Family	Scientific Name	Common Name	EPBC Act Status	NC Act Status	Habitat	Likelihood of occurrence
						habitats, including riparian woodland and tea-tree swamps, low scrub, heathland or saltmarsh. They are also found at treeless grassland and sandplains covered with spinifex, open farmland and inland and coastal sand-dunes. The sometimes occur above rainforests, wet sclerophyll forest or open forest or plantations of pines They often occur in areas of updraughts, especially around cliffs. They probably roost aerially, but are occasionally observed to land and have been recorded roosting in trees, using a bare exposed branch emergent above the foliage.	
Aves	Columbidae	*Geophaps scripta scripta*	Squatter Pigeon (southern)	V	V	This species inhabits open grasslands and woodlands typically with a native understorey although may occur in artificial pasture.	Moderate Previously recorded within the locality and habitat values occur within the proposed impact area.
Aves	Charadriidae	*Charadrius leschenaultii*	Greater Sand Plover	V	V	In the non-breeding grounds in Australasia, the species is almost entirely coastal, inhabiting littoral and estuarine habitats. They mainly occur on sheltered sandy, shelly or muddy beaches with large intertidal mudflats or sandbanks, as well as sandy estuarine lagoons, and inshore reefs, rock platforms, small rocky islands or sand cays on coral reefs. Occasionally recorded on near-coastal saltworks and saltlakes, including marginal saltmarsh,	Low No previous records within the locality. Limited marginal habitat (freshwater wetland) occurs within the proposed impact area.

Class	Family	Scientific Name	Common Name	EPBC Act Status	NC Act Status	Habitat	Likelihood of occurrence
						and on brackish swamps. They seldom occur at shallow freshwater wetlands.	
Aves	Charadriidae	*Pluvialis fulva*	Pacific golden plover	-	SL	In non-breeding grounds in Australia this species usually inhabits coastal habitats, though it occasionally occurs around inland wetlands. Pacific Golden Plovers usually occur on beaches, mudflats and sandflats in sheltered areas including harbours, estuaries and lagoons, and also in evaporation ponds in saltworks. Sometimes recorded on islands, sand and coral cays and exposed reefs and rocks. They are less often recorded in terrestrial habitats, usually wetlands such as fresh, brackish or saline lakes, billabongs, pools, swamps and wet claypans, especially those with muddy margins and often with submerged vegetation or short emergent grass. Other terrestrial habitats inhabited include short (or, occasionally, long) grass in paddocks, crops or airstrips, or ploughed or recently burnt areas, and they are very occasionally recorded well away from water	Moderate Previously recorded within the locality and marginal habitat occurs within the proposed impact area.
Aves	Estrildidae	*Poephila cincta cincta*	Elack-throated finch (white-rumped subspecies)	E	E	The Black-throated Finch (southern) occurs mainly in grassy, open woodlands and forests, typically dominated by Eucalyptus, Corymbia and Melaleuca, and occasionally in tussock grasslands or other habitats (for example freshwater wetlands), often along or near watercourses, or in the vicinity of water.	High Species recorded within the proposed impact area. Species habitat values including essential habitat vales occur within the proposed impact are.

Class	Family	Scientific Name	Common Name	EPBC Act Status	NC Act Status	Habitat	Likelihood of occurrence
						It occurs at two general locations: in the Townsville region, where it is considered to be locally common at a few sites around Townsville and Charters Towers; and at scattered sites in central-eastern Queensland (between Aramac and Great Basalt Wall National Park). It has been absent from Brisbane and its surrounds since the 1930s.	
Aves	Falconidae	*Falco hypoleucos*	Grey falcon	V	V	Usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast. Also occurs near wetlands where surface water attracts prey. Preys primarily on birds, especially parrots and pigeons, using high-speed chases and stoops; reptiles and mammals are also taken. Like other falcons it utilises old nests of other birds of prey and ravens, usually high in a living eucalypt near water or a watercourse; peak laying season is in late winter and early spring; two or three eggs are laid. The nests chosen are usually in the tallest trees along watercourses, particularly River Red Gum (*Eucalyptus camaldulensis*) and Coolibah (*E. coolabah*).	Low No species records within the locality. Potential habitat is present within the proposed impact area and surrounds.
Aves	Laridae	*Gelochelidon nilotica*	Gull-billed tern	-	SL	Inhabits shallow wetlands, including coastal or inland lakes, swamps and lagoons, as well as sheltered bays and	Moderate Species previously recorded within the locality and

Class	Family	Scientific Name	Common Name	EPBC Act Status	NC Act Status	Habitat	Likelihood of occurrence
						estuaries, where it forages for insects and small fish.	potential habitat is present within the subject area.
Aves	Laridae	*Hydroprogne caspia*	Caspian tern	-	SL	Found mostly in sheltered coastal embayments (harbours, lagoons, inlets, bays, estuaries and river deltas) and those with sandy or muddy margins are preferred. Also occur on near-coastal or inland terrestrial wetlands that are either fresh or saline, especially lakes (including ephemeral lakes), waterholes, reservoirs, rivers and creeks. They also use artificial wetlands, including reservoirs, sewage ponds and saltworks. In offshore areas the species prefers sheltered situations, particularly near islands, and is rarely seen beyond reefs Large numbers may shelter along the coast, behind coastal sand-dunes or coastal lakes during rough weather, and have been recorded inland after storms.	Moderate Species previously recorded within the locality and potential habitat is present within the subject area.
Aves	Monarchidae	*Monarcha melanopsis*	Black-faced monarch	-	SL	The Black-faced Monarch mainly occurs in rainforest ecosystems, including semi-deciduous vine-thickets, complex notophyll vine-forest, tropical (mesophyll) rainforest, subtropical (notophyll) rainforest, mesophyll (broadleaf) thicket/shrubland, warm temperate rainforest, dry (monsoon) rainforest and (occasionally) cool temperate rainforest.	Moderate Species previously recorded within the locality and marginal potential habitat is present within the subject area.

Class	Family	Scientific Name	Common Name	EPBC Act Status	NC Act Status	Habitat	Likelihood of occurrence
						The species also occurs in selectively logged and 20—30 years old regrowth rainforest, nearby open eucalypt forests, especially in gullies with a dense, shrubby understorey as well as in dry sclerophyll forests and woodlands, often with a patchy understorey. The species especially occurs in 'marginal' habitats during winter or during passage (migration) Other areas in which the Black-faced Monarch may be found include: gullies in mountain areas or coastal foothills softwood scrub dominated by Brigalow, coastal scrub dominated by Coast Banksia (Banksia integrifolia) and Southern Mahogany (*Eucalyptus botryiodes*), occasionally among mangroves and sometimes in suburban parks and gardens.	
Aves	Monarchidae	*Symposiachrus trivirgatus*	Spectacled monarch	-	SL	Prefers thick understorey in rainforests, wet gullies and waterside vegetation, as well as mangroves and other densely vegetated areas.	Moderate. Species previously recorded within the locality; marginal habitat is present within the project area.
Aves	Ploceidae	*Neochmia ruficauda ruficauda*	Star Finch (eastern)	E	E	The Star Finch (eastern) occurs mainly in grasslands and grassy woodlands that are located close to bodies of fresh water, including areas dominated by grasses where the native vegetation has been partially cleared. The species also	Low No previous species records within the locality. Suitable grassland habitat present within the project area.

Class	Family	Scientific Name	Common Name	EPBC Act Status	NC Act Status	Habitat	Likelihood of occurrence
						occurs in cleared or suburban areas such as along roadsides and in towns	
Aves	Rhipiduridae	*Rhipidura rufifrons*	Rufous fantail	-	SL	In east and south-east Australia, the Rufous Fantail mainly inhabits wet sclerophyll forests, often in gullies dominated by eucalypts, usually with a dense shrubby understorey often including ferns. They also occur in subtropical and temperate rainforests. 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, 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 Paperbarks.	Moderate. Species previously recorded within the locality; marginal habitat is present within the project area.
Aves	Rostratulidae	*Rostratula australis*	Australian Painted Snipe	E	E	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. Typical sites include those with rank emergent tussocks of grass, sedges, rushes or	Moderate Species previously recorded within the locality and potential habitat (wetland) is present within the subject area.

Class	Family	Scientific Name	Common Name	EPBC Act Status	NC Act Status	Habitat	Likelihood of occurrence
						reeds, or samphire; often with scattered clumps of lignum *Muehlenbeckia* or canegrass or sometimes tea-tree (*Melaleuca*). The Australian Painted Snipe sometimes utilises areas that are lined with trees, or that have some scattered fallen or washed-up timber	
Aves	Scolopacidae	*Calidris ferruginea*	Curlew Sandpiper	CE	CE	Curlew Sandpipers mainly occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and also around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms. They are also recorded inland, though less often, including around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand. They occur in both fresh and brackish waters. In Queensland, scattered records occur in the Gulf of Carpentaria, with widespread records along the coast south of Cairns.	Moderate Species previously recorded within the locality and potential habitat (wetland) is present within the subject area.
Aves	Scolopacidae	*Gallinago hardwickii*	Latham's snipe	-	SL	In Australia, Latham's Snipe occurs in permanent and ephemeral wetlands up to 2000 m above sea-level. They usually inhabit open, freshwater wetlands with low, dense vegetation (e.g. swamps, flooded grasslands or heathlands, around bogs and other water bodies. However, they can also occur in habitats with saline or brackish water, in modified or artificial habitats, and in	Moderate. Species previously recorded within the locality; species habitat values are present within the project area.

Class	Family	Scientific Name	Common Name	EPBC Act Status	NC Act Status	Habitat	Likelihood of occurrence
						habitats located close to humans or human activity	
Aves	Scolopacidae	*Numenius madagascariensis*	Eastern Curlew	CE	E	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. Occasionally, the species occurs on ocean beaches (often near estuaries), and coral reefs, rock platforms, or rocky islets. The birds are often recorded among saltmarsh and on mudflats fringed by mangroves, and sometimes use the mangroves. The birds are also found in saltworks and sewage farms.	Low Species not previously recorded within the locality. Site and local connectivity contains marginal (freshwater wetland) habitat.
Aves	Threskiornithidae	*Plegadis falcinellus*	Glossy ibis	-	SL	The Glossy Ibis' preferred habitat for foraging and breeding are fresh water marshes at the edges of lakes and rivers, lagoons, flood-plains, wet meadows, swamps, reservoirs, sewage ponds, rice-fields and cultivated areas under irrigation. The species is occasionally found in coastal locations such as estuaries, deltas, saltmarshes and coastal lagoons.	Moderate. Species previously recorded within the locality; species habitat values are present within the project area.
Aves	Tytonidae	*Tyto novaehollandiae kimberli*	Masked Owl (northern)	V	V	In northern Australia, the Masked Owl has been recorded from riparian forest, rainforest, open forest, Melaleuca swamps and the edges of mangroves, as well as along the margins of sugar cane fields.	Low Species not recorded within the locality. Species habitat values occur within the proposed impact area.

Class	Family	Scientific Name	Common Name	EPBC Act Status	NC Act Status	Habitat	Likelihood of occurrence
Aves	Apodidae	*Hirundapus caudacutus*	White-throated Needletail	V	V	Almost exclusively aerial. Most often recorded above wooded areas, including open forest and rainforest, also commonly occur over heathland.	Low. Species not previously recorded within the locality. Potential habitat present within the proposed impact area.
Mammalia	Phascolarctidae	*Phascolarctos cinereus*	Koala	E	E	Open forest and woodland where food trees are present.	Known Trace evidence of species presence located during on-ground surveys. Species recorded within the locality, species habitat values occur within the proposed impact area.
Mammalia	Dasyuridae	*Dasyurus hallucatus*	Northern Quoll	E	-	The Northern Quoll occupies a diversity of habitats across its range which includes rocky areas, eucalypt forests and woodlands, rainforests, sandy lowlands and beaches, shrubland, grassland and desert. 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.	Moderate Species previously recorded within proximity (8km) to the proposed impact area.
Mammalia	Emballonuridae	*Saccolaimus saccolaimus nudicluniatus*	Bare-rumped Sheath-tailed Bat	V	E	The Bare-rumped Sheathtail Bat occurs mostly in lowland areas, typically in a range of woodland, forest and open environments.	Low Species not recorded within the locality. Potential species habitat values occur within the proposed impact area.

Class	Family	Scientific Name	Common Name	EPBC Act Status	NC Act Status	Habitat	Likelihood of occurrence
						The Bare-rumped Sheathtail Bat has been suggested to forage over habitat edges such as the edge of rainforest and in forest clearings.	
Mammalia	Megadermatidae	*Macroderma gigas*	Ghost Bat	V	E	Ghost Bat roost in caves, old mine tunnels and in deep cracks in rocks. A preference is given to sites with a complex of shafts or cavities and several openings to the outside. They usually roost in colonies. Built environments may be used as feeding grounds	Unlikely Species not recorded within the locality. No suitable roosting habitat was located within the proposed impact area.
Reptillia	Scincidae	*Egernia rugosa*		V	V	The Yakka Skink is known to occur in open dry sclerophyll forest, woodland and scrub. Commonly found in cavities under and between partly buried rocks, logs or tree stumps, root cavities and abandoned animal burrows. The species often takes refuge in large hollow logs and has been known to excavate deep burrow systems, sometimes under dense ground vegetation in cleared habitat, this species can persist where there are shelter sites such as raked log piles, deep gullies, tunnel erosion/sinkholes and rabbit warrens. This species is not generally found in trees or rocky habitats	Low No previous records of the species within the locality. Proposed impact area contains marginal habitat.

6.3 Appendix C – Flora Likelihood of Occurrence.

Table 53: Flora likelihood of occurrence assessment.

Family	Scientific Name	Common Name	EPBC Act Status	NC Act Status	Habitat	Likelihood of occurrence
Orchidaceae	*Bulbophyllum globuliforme*	Miniature Moss-orchid	V	NT	The Miniature Moss-orchid is a host-specific species, only growing on the Hoop Pine, where it colonises the upper branches of mature trees. The Hoop Pine occurs in upland (usually 100-900 m above sea level) subtropical rainforest communities.	Unlikely Not previously recorded within the impact area and surrounds. Dependent on Hoop pine, which are not present within the impact area or surrounds.
Poaceae	*Dichanthium setosum*	Bluegrass	V	-	*Dichanthium setosum* is associated with heavy basaltic black soils and red-brown loams with clay subsoil. Associated species include White Box (*Eucalyptus albens*), Silver-leaved Ironbark (*Eucalyptus melanophloia*), Yellow Box (*Eucalyptus melliodora*), Manna Gum (*Eucalyptus viminalis*), Amulla (*Myoporum debile*), Purple Wire-grass (*Aristida ramosa*), Kangaroo Grass (*Themeda triandra*), Fine-leaved Tussock-grass (*Poa sieberiana*), Red-leg Grass (*Bothriochloa ambigua*), Pitted Blue-grass (*Bothriochloa decipiens*), Macrozamia stenomera, Small Woolly Burr-medic (*Medicago minima*), Scaly Buttons (*Leptorhynchos squamatus*), *Lomandra* aff. longifolia, Australian Bugle (*Ajuga australis*), Bogan-flea (*Calotis hispidula*) and *Austrodanthonia* spp., *Dichopogon* spp., *Brachyscome* spp., *Vittadinia* spp., *Wahlenbergia* spp. and *Psoralea* spp. Often found in moderately disturbed areas such as cleared woodland, grassy roadside remnants and highly disturbed pasture. The species may tolerate or benefit from disturbance, otherwise,	Low Not previously recorded within the proposed impact area or surrounds. Potential habitat and two associated species (*Themeda triandra* and *Bothriochloa decipiens*) were recorded by on-site surveys.

Family	Scientific Name	Common Name	EPBC Act Status	NC Act Status	Habitat	Likelihood of occurrence
					disturbance is indicative of threatening processes in its habitat,	
Myrtaceae	*Eucalyptus paedoglauca*	Mt Stuart Ironbark	V	V	Grows in remnant vegetation on Mount Stuart and a few other hills near Townsville	Unlikely Not previously recorded within the impact area and surrounds. Recorded from hillslopes not found within the impact area.
Myrtaceae	*Eucalyptus raveretiana*	Black ironbox	V	-	Eucalyptus raveretiana grows along watercourses and occasionally on river flats. It occurs in open forest or woodland communities. The species prefers sites with moderately fertile soil and adequate sub-soil moisture. The alluvial soils in which it grows are sands, loams, light clays or cracking clays.	Low Not previously recorded within the impact area and surrounds. Potential habitat occurs within the proposed impact area.
Apocynaceae	*Marsdenia brevifolia*	-	V	V	North of Rockhampton, M. brevifolia grows on serpentine rock outcrops or crumbly black soils derived from serpentine in eucalypt woodland, often with Broad-leaved Ironbark (*Eucalyptus fibrosa*) and *Corymbia xanthope*. At Hidden Valley near Paluma, plants grow in woodland on granite soils dominated by Granite Ironbark (*E. granitica*), Rustyjacket (*C. leichhardtii*) and White Mahogany (*E. acmenoides*). On Magnetic Island the species occurs in open forest on dark acid agglomerate soils dominated by Narrow-leafed Ironbark (*E. drepanophylla*).	Unlikely Not previously recorded within the impact area and surrounds. No potential habitat observed within the impact area and surrounds.
Euphorbiaceae	*Omphalea celata*	-	V	V	Occurs in fragmented semi evergreen vine thicket or araucarian microphyll vine forest. Recorded along watercourses in steep sided gorges and gullies on weathered metamorphic or granitic soils. Associated species include *Eucalyptus raveretiana*, *E. tereticornis, Lysiphyllum hooker*i and *Ficus opposita*.	Unlikely Not previously recorded within the impact area and surrounds. Limited very marginal habitat present within the impact area and surrounds.

Family	Scientific Name	Common Name	EPBC Act Status	NC Act Status	Habitat	Likelihood of occurrence
Fabaceae	*Tephrosia leveillei* *Syn. Tephrosia flagellaris*	-	V	-	*Tephrosia leveillei* has been recorded include occurring within the following habitat; • Cullen's Ironbark (*Eucalyptus cullenii*) woodland on alluvial plains • Gum-topped Bloodwood (*Corymbia erythrophloia*) and Cooktown Ironwood (*Erythrophleum chlorostachys*) woodland with Bushman's Clothes-peg (Grevillea glauca) • *Eucalyptus spp*. and *Corymbia spp*. tall open forest over dense Bunch Spear-grass (*Heteropogon contortus*) on red sand.	Unlikely Not previously recorded within the impact area and surrounds. Limited very marginal habitat present within the impact area and surrounds.

6.4 Appendix D – Protected Matters Report

Australian Government
Department of Agriculture, Water and the Environment

EPBC Act Protected Matters Report

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

Report created: 19-Apr-2022

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

Caveat
Acknowledgements

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	27
Listed Migratory Species:	18

Other Matters Protected by the EPBC Act

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

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

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

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	23
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	2
Regional Forest Agreements:	None
Nationally Important Wetlands:	1
EPBC Act Referrals:	7
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands)		[Resource Information]
Ramsar Site Name	Proximity	Buffer Status
Bowling green bay	10 - 20km upstream from Ramsar site	In feature area

Listed Threatened Species			[Resource Information]
Status of Conservation Dependent and Extinct are not MNES under the EPBC Act. Number is the current name ID.			
Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat may occur within area	In feature area
Erythrotriorchis radiatus Red Goshawk [942]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Neochmia ruficauda ruficauda Star Finch (eastern), Star Finch (southern) [26027]	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Numenius madagascariensis			
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Poephila cincta cincta			
Southern Black-throated Finch [64447]	Endangered	Species or species habitat known to occur within area	In feature area
Rostratula australis			
Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area	In feature area
Tyto novaehollandiae kimberli			
Masked Owl (northern) [26048]	Vulnerable	Species or species habitat likely to occur within area	In feature area
FROG			
Cophixalus mcdonaldi			
McDonald's Frog, Mt Elliot Nursery-frog [1791]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
MAMMAL			
Dasyurus hallucatus			
Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat likely to occur within area	In feature area
Hipposideros semoni			
Semon's Leaf-nosed Bat, Greater Wart-nosed Horseshoe-bat [180]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Macroderma gigas			
Ghost Bat [174]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Petauroides volans			
Greater Glider [254]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)			
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rhinolophus robertsi Large-eared Horseshoe Bat, Greater Large-eared Horseshoe Bat [87639]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Saccolaimus saccolaimus nudicluniatus Bare-rumped Sheath-tailed Bat, Bare-rumped Sheathtail Bat [66889]	Vulnerable	Species or species habitat likely to occur within area	In feature area
PLANT			
Bulbophyllum globuliforme Miniature Moss-orchid, Hoop Pine Orchid [6649]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Dichanthium setosum bluegrass [14159]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Eucalyptus paedoglauca Mt Stuart Ironbark [56188]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Eucalyptus raveretiana Black Ironbox [16344]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Marsdenia brevifolia [64585]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Omphalea celata [64586]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Tephrosia leveillei [16946]	Vulnerable	Species or species habitat may occur within area	In feature area
REPTILE			
Egernia rugosa Yakka Skink [1420]	Vulnerable	Species or species habitat may occur within area	In feature area

Listed Migratory Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Apus pacificus](#) Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Marine Species			
[Crocodylus porosus](#) Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
[Cuculus optatus](#) Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat known to occur within area	In feature area
[Hirundapus caudacutus](#) White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Monarcha melanopsis](#) Black-faced Monarch [609]		Species or species habitat known to occur within area	In feature area
[Motacilla flava](#) Yellow Wagtail [644]		Species or species habitat likely to occur within area	In feature area
[Myiagra cyanoleuca](#) Satin Flycatcher [612]		Species or species habitat known to occur within area	In feature area
[Rhipidura rufifrons](#) Rufous Fantail [592]		Species or species habitat known to occur within area	In feature area
[Symposiachrus trivirgatus as Monarcha trivirgatus](#) Spectacled Monarch [83946]		Species or species habitat known to occur within area	In feature area
Migratory Wetlands Species			
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area	In feature area

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

Other Matters Protected by the EPBC Act

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

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Apus pacificus](#) Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
[Bubulcus ibis as Ardea ibis](#) Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]		Species or species habitat likely to occur within area	In feature area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
[Chalcites osculans as Chrysococcyx osculans](#) Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area	In feature area
[Charadrius leschenaultii](#) Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat may occur within area	In feature area
[Gallinago hardwickii](#) Latham's Snipe, Japanese Snipe [863]		Species or species habitat known to occur within area overfly marine area	In feature area
[Haliaeetus leucogaster](#) White-bellied Sea-Eagle [943]		Breeding known to occur within area	In feature area
[Hirundapus caudacutus](#) White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area overfly marine area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area overfly marine area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area	In buffer area only
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Symposiachrus trivirgatus as Monarcha trivirgatus Spectacled Monarch [83946]		Species or species habitat known to occur within area overfly marine area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat may occur within area overfly marine area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Reptile			
Crocodylus porosus			
Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area	In feature area

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Bowling Green Bay	National Park	QLD	In buffer area only
Serpentine	Nature Refuge	QLD	In feature area

Nationally Important Wetlands		[Resource Information]
Wetland Name	State	Buffer Status
The Serpentine Aggregation	QLD	In feature area

EPBC Act Referrals				[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Gas pipeline	2002/728	Controlled Action	Post-Approval	In feature area
Queensland Pacific Metals - Townsville Energy Chemicals Hub TECH Project	2021/9033	Controlled Action	Assessment Approach	In feature area
Not controlled action				
Haughton Pipeline Duplication Project, QLD	2015/7606	Not Controlled Action	Completed	In buffer area only
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
Majors Creek Solar Farm, south of Townsville, Queensland	2017/7963	Not Controlled Action	Completed	In feature area
Toonpan Water Treatment Plant and Distribution Pipeline	2007/3675	Not Controlled Action	Completed	In buffer area only
Not controlled action (particular manner)				
275kV Transmission Line from Ross substation to Strathmore Substation (approx 180km)	2008/4390	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only

Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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

4 LIMITATIONS

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

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

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

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

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

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

Acknowledgements

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

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

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

Please feel free to provide feedback via the Contact Us page.

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6.5 Appendix E – WildNet Species List

Queensland Government

WildNet species list

Search Criteria: Species List for a Specified Point
Species: All
Type: All
Queensland status: All
Records: All
Date: All
Latitude: -19.605
Longitude: 146.85
Distance: 8
Email: ahutchinson@evolveenvironmental.com.au
Date submitted: Friday 25 Mar 2022 10:31:48
Date extracted: Friday 25 Mar 2022 10:40:04

The number of records retrieved = 279

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	amphibians	Bufonidae	*Rhinella marina*	cane toad	Y			5
animals	amphibians	Hylidae	*Cyclorana alboguttata*	greenstripe frog		C		1
animals	amphibians	Hylidae	*Cyclorana novaehollandiae*	eastern snapping frog		C		1
animals	amphibians	Hylidae	*Litoria caerulea*	common green treefrog		C		3
animals	amphibians	Hylidae	*Litoria fallax*	eastern sedgefrog		C		1
animals	amphibians	Hylidae	*Litoria inermis*	bumpy rocketfrog		C		1
animals	amphibians	Hylidae	*Litoria rothii*	northern laughing treefrog		C		1
animals	amphibians	Hylidae	*Litoria rubella*	ruddy treefrog		C		4
animals	amphibians	Limnodynastidae	*Limnodynastes terraereginae*	scarlet sided pobblebonk		C		2/2
animals	amphibians	Limnodynastidae	*Platyplectrum ornatum*	ornate burrowing frog		C		1
animals	birds	Acanthizidae	*Gerygone olivacea*	white-throated gerygone		C		7
animals	birds	Acanthizidae	*Gerygone palpebrosa*	fairy gerygone		C		2
animals	birds	Acanthizidae	*Smicrornis brevirostris*	weebill		C		1
animals	birds	Accipitridae	*Accipiter cirrocephalus*	collared sparrowhawk		C		1
animals	birds	Accipitridae	*Accipiter fasciatus*	brown goshawk		C		10
animals	birds	Accipitridae	*Accipiter novaehollandiae*	grey goshawk		C		1
animals	birds	Accipitridae	*Aquila audax*	wedge-tailed eagle		C		13
animals	birds	Accipitridae	*Aviceda subcristata*	Pacific baza		C		4
animals	birds	Accipitridae	*Circus approximans*	swamp harrier		C		6
animals	birds	Accipitridae	*Circus assimilis*	spotted harrier		C		8
animals	birds	Accipitridae	*Elanus axillaris*	black-shouldered kite		C		17
animals	birds	Accipitridae	*Haliaeetus leucogaster*	white-bellied sea-eagle		C		20
animals	birds	Accipitridae	*Haliastur indus*	brahminy kite		C		3
animals	birds	Accipitridae	*Haliastur sphenurus*	whistling kite		C		50
animals	birds	Accipitridae	*Hieraaetus morphnoides*	little eagle		C		1
animals	birds	Accipitridae	*Milvus migrans*	black kite		C		63
animals	birds	Acrocephalidae	*Acrocephalus australis*	Australian reed-warbler		C		1
animals	birds	Aegothelidae	*Aegotheles cristatus*	Australian owlet-nightjar		C		1
animals	birds	Alaudidae	*Mirafra javanica*	Horsfield's bushlark		C		11
animals	birds	Alcedinidae	*Ceyx azureus*	azure kingfisher		C		2
animals	birds	Anatidae	*Anas gracilis*	grey teal		C		9
animals	birds	Anatidae	*Anas superciliosa*	Pacific black duck		C		40
animals	birds	Anatidae	*Aythya australis*	hardhead		C		13
animals	birds	Anatidae	*Chenonetta jubata*	Australian wood duck		C		7
animals	birds	Anatidae	*Cygnus atratus*	black swan		C		18
animals	birds	Anatidae	*Dendrocygna arcuata*	wandering whistling-duck		C		15
animals	birds	Anatidae	*Dendrocygna eytoni*	plumed whistling-duck		C		20
animals	birds	Anatidae	*Nettapus coromandelianus*	cotton pygmy-goose		C		12
animals	birds	Anatidae	*Nettapus pulchellus*	green pygmy-goose		C		13
animals	birds	Anhingidae	*Anhinga novaehollandiae*	Australasian darter		C		37
animals	birds	Anseranatidae	*Anseranas semipalmata*	magpie goose		C		37
animals	birds	Apodidae	*Aerodramus terraereginae*	Australian swiftlet		C		1
animals	birds	Apodidae	*Apus pacificus*	fork-tailed swift		SL		1
animals	birds	Ardeidae	*Ardea alba modesta*	eastern great egret		C		34
animals	birds	Ardeidae	*Ardea intermedia*	intermediate egret		C		25
animals	birds	Ardeidae	*Ardea pacifica*	white-necked heron		C		24

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Ardeidae	*Bubulcus ibis*	cattle egret		C		13
animals	birds	Ardeidae	*Egretta garzetta*	little egret		C		9
animals	birds	Ardeidae	*Egretta novaehollandiae*	white-faced heron		C		29
animals	birds	Ardeidae	*Ixobrychus flavicollis*	black bittern		C		1
animals	birds	Ardeidae	*Nycticorax caledonicus*	nankeen night-heron		C		4
animals	birds	Artamidae	*Artamus cinereus*	black-faced woodswallow		C		41
animals	birds	Artamidae	*Artamus leucorynchus*	white-breasted woodswallow		C		38
animals	birds	Artamidae	*Artamus personatus*	masked woodswallow		C		2
animals	birds	Artamidae	*Artamus superciliosus*	white-browed woodswallow		C		3
animals	birds	Artamidae	*Cracticus nigrogularis*	pied butcherbird		C		32
animals	birds	Artamidae	*Cracticus torquatus*	grey butcherbird		C		11
animals	birds	Artamidae	*Gymnorhina tibicen*	Australian magpie		C		45
animals	birds	Artamidae	*Strepera graculina*	pied currawong		C		13
animals	birds	Burhinidae	*Burhinus grallarius*	bush stone-curlew		C		3
animals	birds	Cacatuidae	*Cacatua galerita*	sulphur-crested cockatoo		C		33
animals	birds	Cacatuidae	*Calyptorhynchus banksii*	red-tailed black-cockatoo		C		36
animals	birds	Cacatuidae	*Eolophus roseicapilla*	galah		C		1
animals	birds	Cacatuidae	*Nymphicus hollandicus*	cockatiel		C		4
animals	birds	Campephagidae	*Coracina maxima*	ground cuckoo-shrike		C		1
animals	birds	Campephagidae	*Coracina novaehollandiae*	black-faced cuckoo-shrike		C		41
animals	birds	Campephagidae	*Coracina papuensis*	white-bellied cuckoo-shrike		C		47
animals	birds	Campephagidae	*Edolisoma tenuirostre*	common cicadabird		C		2
animals	birds	Campephagidae	*Lalage leucomela*	varied triller		C		2
animals	birds	Campephagidae	*Lalage tricolor*	white-winged triller		C		31
animals	birds	Caprimulgidae	*Caprimulgus macrurus*	large-tailed nightjar		C		2
animals	birds	Casuariidae	*Dromaius novaehollandiae*	emu		C		1
animals	birds	Charadriidae	*Elseyornis melanops*	black-fronted dotterel		C		10
animals	birds	Charadriidae	*Pluvialis fulva*	Pacific golden plover		SL		1
animals	birds	Charadriidae	*Vanellus miles*	masked lapwing		C		35
animals	birds	Ciconiidae	*Ephippiorhynchus asiaticus*	black-necked stork		C		15
animals	birds	Cisticolidae	*Cisticola exilis*	golden-headed cisticola		C		24
animals	birds	Columbidae	*Columba livia*	rock dove	Y			1
animals	birds	Columbidae	*Geopelia cuneata*	diamond dove		C		8
animals	birds	Columbidae	*Geopelia humeralis*	bar-shouldered dove		C		18
animals	birds	Columbidae	*Geopelia placida*	peaceful dove		C		66
animals	birds	Columbidae	*Geophaps scripta*	squatter pigeon		C		17
animals	birds	Columbidae	*Ocyphaps lophotes*	crested pigeon		C		45
animals	birds	Columbidae	*Phaps chalcoptera*	common bronzewing		C		2
animals	birds	Coraciidae	*Eurystomus orientalis*	dollarbird		C		22
animals	birds	Corcoracidae	*Corcorax melanorhamphos*	white-winged chough		C		4
animals	birds	Corcoracidae	*Struthidea cinerea*	apostlebird		C		21
animals	birds	Corvidae	*Corvus coronoides*	Australian raven		C		31
animals	birds	Corvidae	*Corvus orru*	Torresian crow		C		24
animals	birds	Corvidae	*Corvus sp.*			C		1
animals	birds	Cuculidae	*Cacomantis flabelliformis*	fan-tailed cuckoo		C		6
animals	birds	Cuculidae	*Cacomantis pallidus*	pallid cuckoo		C		13

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Cuculidae	*Cacomantis variolosus*	brush cuckoo		C		21
animals	birds	Cuculidae	*Centropus phasianinus*	pheasant coucal		C		33
animals	birds	Cuculidae	*Chalcites basalis*	Horsfield's bronze-cuckoo		C		8
animals	birds	Cuculidae	*Chalcites lucidus*	shining bronze-cuckoo		C		1
animals	birds	Cuculidae	*Chalcites minutillus*	little bronze-cuckoo		C		8
animals	birds	Cuculidae	*Chalcites minutillus russatus*	Gould's bronze-cuckoo		C		4
animals	birds	Cuculidae	*Eudynamys orientalis*	eastern koel		C		11
animals	birds	Cuculidae	*Scythrops novaehollandiae*	channel-billed cuckoo		C		11
animals	birds	Dicruridae	*Dicrurus bracteatus*	spangled drongo		C		41
animals	birds	Estrildidae	*Heteromunia pectoralis*	pictorella mannikin		C		8
animals	birds	Estrildidae	*Lonchura castaneothorax*	chestnut-breasted mannikin		C		25
animals	birds	Estrildidae	*Lonchura punctulata*	nutmeg mannikin	Y			4
animals	birds	Estrildidae	*Neochmia modesta*	plum-headed finch		C		25
animals	birds	Estrildidae	*Neochmia phaeton*	crimson finch		C		3
animals	birds	Estrildidae	*Neochmia temporalis*	red-browed finch		C		1
animals	birds	Estrildidae	*Poephila cincta cincta*	black-throated finch (white-rumped subspecies)		E	E	21
animals	birds	Estrildidae	*Taeniopygia bichenovii*	double-barred finch		C		48
animals	birds	Estrildidae	*Taeniopygia guttata*	zebra finch		C		30
animals	birds	Eurostopodidae	*Eurostopodus argus*	spotted nightjar		C		4
animals	birds	Eurostopodidae	*Eurostopodus mystacalis*	white-throated nightjar		C		1
animals	birds	Falconidae	*Falco berigora*	brown falcon		C		25
animals	birds	Falconidae	*Falco cenchroides*	nankeen kestrel		C		22
animals	birds	Falconidae	*Falco longipennis*	Australian hobby		C		6
animals	birds	Falconidae	*Falco peregrinus*	peregrine falcon		C		4
animals	birds	Gruidae	*Antigone rubicunda*	brolga		C		13
animals	birds	Halcyonidae	*Dacelo leachii*	blue-winged kookaburra		C		54
animals	birds	Halcyonidae	*Dacelo novaeguineae*	laughing kookaburra		C		31
animals	birds	Halcyonidae	*Todiramphus macleayii*	forest kingfisher		C		46
animals	birds	Halcyonidae	*Todiramphus pyrrhopygius*	red-backed kingfisher		C		15
animals	birds	Halcyonidae	*Todiramphus sanctus*	sacred kingfisher		C		27
animals	birds	Hirundinidae	*Hirundo neoxena*	welcome swallow		C		10
animals	birds	Hirundinidae	*Petrochelidon ariel*	fairy martin		C		20
animals	birds	Hirundinidae	*Petrochelidon nigricans*	tree martin		C		13
animals	birds	Jacanidae	*Irediparra gallinacea*	comb-crested jacana		C		93
animals	birds	Laridae	*Gelochelidon nilotica*	gull-billed tern		SL		2
animals	birds	Laridae	*Hydroprogne caspia*	Caspian tern		SL		6
animals	birds	Maluridae	*Malurus melanocephalus*	red-backed fairy-wren		C		30
animals	birds	Megaluridae	*Cincloramphus cruralis*	brown songlark		C		1
animals	birds	Megaluridae	*Cincloramphus mathewsi*	rufous songlark		C		21
animals	birds	Megaluridae	*Cincloramphus timoriensis*	tawny grassbird		C		6
animals	birds	Megapodiidae	*Alectura lathami*	Australian brush-turkey		C		5
animals	birds	Meliphagidae	*Conopophila rufogularis*	rufous-throated honeyeater		C		20
animals	birds	Meliphagidae	*Entomyzon cyanotis*	blue-faced honeyeater		C		33
animals	birds	Meliphagidae	*Lichmera indistincta*	brown honeyeater		C		33
animals	birds	Meliphagidae	*Manorina flavigula*	yellow-throated miner		C		22

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Meliphagidae	*Manorina melanocephala*	noisy miner		C		1
animals	birds	Meliphagidae	*Meliphaga lewinii*	Lewin's honeyeater		C		7
animals	birds	Meliphagidae	*Melithreptus albogularis*	white-throated honeyeater		C		44
animals	birds	Meliphagidae	*Melithreptus gularis*	black-chinned honeyeater		C		8
animals	birds	Meliphagidae	*Myzomela obscura*	dusky honeyeater		C		1
animals	birds	Meliphagidae	*Myzomela sanguinolenta*	scarlet honeyeater		C		1
animals	birds	Meliphagidae	*Philemon buceroides*	helmeted friarbird		C		6
animals	birds	Meliphagidae	*Philemon citreogularis*	little friarbird		C		40
animals	birds	Meliphagidae	*Philemon corniculatus*	noisy friarbird		C		14
animals	birds	Meliphagidae	*Ramsayornis fasciatus*	bar-breasted honeyeater		C		3
animals	birds	Meliphagidae	*Ramsayornis modestus*	brown-backed honeyeater		C		22
animals	birds	Meliphagidae	*Stomiopera flava*	yellow honeyeater		C		51
animals	birds	Meropidae	*Merops ornatus*	rainbow bee-eater		C		51
animals	birds	Monarchidae	*Grallina cyanoleuca*	magpie-lark		C		68
animals	birds	Monarchidae	*Monarcha melanopsis*	black-faced monarch		SL		2
animals	birds	Monarchidae	*Myiagra inquieta*	restless flycatcher		C		9
animals	birds	Monarchidae	*Myiagra rubecula*	leaden flycatcher		C		32
animals	birds	Monarchidae	*Symposiachrus trivirgatus*	spectacled monarch		SL		1
animals	birds	Motacillidae	*Anthus novaeseelandiae*	Australasian pipit		C		19
animals	birds	Nectariniidae	*Cinnyris jugularis*	olive-backed sunbird		C		26
animals	birds	Nectariniidae	*Dicaeum hirundinaceum*	mistletoebird		C		15
animals	birds	Neosittidae	*Daphoenositta chrysoptera*	varied sittella		C		2
animals	birds	Oriolidae	*Oriolus sagittatus*	olive-backed oriole		C		19
animals	birds	Oriolidae	*Sphecotheres vieilloti*	Australasian figbird		C		11
animals	birds	Otididae	*Ardeotis australis*	Australian bustard		C		22
animals	birds	Pachycephalidae	*Colluricincla megarhyncha*	little shrike-thrush		C		8
animals	birds	Pachycephalidae	*Pachycephala rufiventris*	rufous whistler		C		25
animals	birds	Pardalotidae	*Pardalotus punctatus*	spotted pardalote		C		1
animals	birds	Pardalotidae	*Pardalotus striatus*	striated pardalote		C		35
animals	birds	Pelecanidae	*Pelecanus conspicillatus*	Australian pelican		C		15
animals	birds	Petroicidae	*Microeca fascinans*	jacky winter		C		9
animals	birds	Petroicidae	*Microeca flavigaster*	lemon-bellied flycatcher		C		32
animals	birds	Petroicidae	*Petroica goodenovii*	red-capped robin		C		1
animals	birds	Petroicidae	*Poecilodryas superciliosa*	white-browed robin		C		1
animals	birds	Phalacrocoracidae	*Microcarbo melanoleucos*	little pied cormorant		C		31
animals	birds	Phalacrocoracidae	*Phalacrocorax carbo*	great cormorant		C		9
animals	birds	Phalacrocoracidae	*Phalacrocorax sulcirostris*	little black cormorant		C		26
animals	birds	Phalacrocoracidae	*Phalacrocorax varius*	pied cormorant		C		2
animals	birds	Phasianidae	*Pavo cristatus*	Indian peafowl	Y			1
animals	birds	Phasianidae	*Synoicus ypsilophorus*	brown quail		C		8
animals	birds	Podargidae	*Podargus strigoides*	tawny frogmouth		C		2
animals	birds	Podicipedidae	*Podiceps cristatus*	great crested grebe		C		6
animals	birds	Podicipedidae	*Tachybaptus novaehollandiae*	Australasian grebe		C		11
animals	birds	Pomatostomidae	*Pomatostomus temporalis*	grey-crowned babbler		C		7
animals	birds	Psittacidae	*Aprosmictus erythropterus*	red-winged parrot		C		18
animals	birds	Psittacidae	*Melopsittacus undulatus*	budgerigar		C		8

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Psittacidae	*Platycercus adscitus*	pale-headed rosella		C		47
animals	birds	Psittacidae	*Trichoglossus chlorolepidotus*	scaly-breasted lorikeet		C		20
animals	birds	Psittacidae	*Trichoglossus moluccanus*	rainbow lorikeet		C		28
animals	birds	Ptilonorhynchidae	*Chlamydera nuchalis*	great bowerbird		C		21
animals	birds	Rallidae	*Fulica atra*	Eurasian coot		C		4
animals	birds	Rallidae	*Gallinula tenebrosa*	dusky moorhen		C		1
animals	birds	Rallidae	*Porphyrio melanotus*	purple swamphen		C		1
animals	birds	Recurvirostridae	*Himantopus himantopus*	black-winged stilt		C		2
animals	birds	Rhipiduridae	*Rhipidura albiscapa*	grey fantail		C		33
animals	birds	Rhipiduridae	*Rhipidura leucophrys*	willie wagtail		C		47
animals	birds	Rhipiduridae	*Rhipidura rufifrons*	rufous fantail		SL		3
animals	birds	Rhipiduridae	*Rhipidura rufiventris*	northern fantail		C		1
animals	birds	Scolopacidae	*Gallinago hardwickii*	Latham's snipe		SL		2
animals	birds	Strigidae	*Ninox boobook*	southern boobook		C		4
animals	birds	Strigidae	*Ninox connivens*	barking owl		C		11
animals	birds	Threskiornithidae	*Platalea flavipes*	yellow-billed spoonbill		C		17
animals	birds	Threskiornithidae	*Platalea regia*	royal spoonbill		C		20
animals	birds	Threskiornithidae	*Plegadis falcinellus*	glossy ibis		SL		4
animals	birds	Threskiornithidae	*Threskiornis molucca*	Australian white ibis		C		33
animals	birds	Threskiornithidae	*Threskiornis spinicollis*	straw-necked ibis		C		48
animals	birds	Turnicidae	*Turnix maculosus*	red-backed button-quail		C		5
animals	birds	Turnicidae	*Turnix pyrrhothorax*	red-chested button-quail		C		2
animals	birds	Turnicidae	*Turnix velox*	little button-quail		C		1
animals	birds	Tytonidae	*Tyto javanica*	eastern barn owl		C		4
animals	mammals	Dasyuridae	*Dasyurus hallucatus*	northern quoll		C	E	7
animals	mammals	Macropodidae	*Lagorchestes conspicillatus*	spectacled hare-wallaby		C		1
animals	mammals	Macropodidae	*Macropus giganteus*	eastern grey kangaroo		C		2
animals	mammals	Macropodidae	*Notamacropus agilis*	agile wallaby		C		1
animals	mammals	Macropodidae	*Notamacropus parryi*	whiptail wallaby		C		1
animals	mammals	Peramelidae	*Isoodon macrourus*	northern brown bandicoot		C		1
animals	mammals	Suidae	*Sus scrofa*	pig	Y			2
animals	reptiles	Agamidae	*Diporiphora australis*	tommy roundhead		C		1
animals	reptiles	Chelidae	*Chelodina canni*	Cann's longneck turtle		C		1
animals	reptiles	Chelidae	*Emydura macquarii krefftii*	Krefft's river turtle		C		1/1
animals	reptiles	Colubridae	*Tropidonophis mairii*	freshwater snake		C		1
animals	reptiles	Diplodactylidae	*Amalosia rhombifer*	zig-zag gecko		C		1/1
animals	reptiles	Diplodactylidae	*Diplodactylus platyurus*	eastern fat-tailed gecko		C		1/1
animals	reptiles	Diplodactylidae	*Oedura castelnaui*	northern velvet gecko		C		1/1
animals	reptiles	Elapidae	*Cryptophis nigrostriatus*	black-striped snake		C		1/1
animals	reptiles	Elapidae	*Furina diadema*	red-naped snake		C		1/1
animals	reptiles	Elapidae	*Pseudonaja nuchalis sensu lato*	western brown snake		C		1
animals	reptiles	Elapidae	*Suta suta*	myall snake		C		1/1
animals	reptiles	Gekkonidae	*Heteronotia binoei*	Bynoe's gecko		C		1
animals	reptiles	Pygopodidae	*Delma tincta*	excitable delma		C		1/1
animals	reptiles	Pygopodidae	*Lialis burtonis*	Burton's legless lizard		C		1/1
animals	reptiles	Scincidae	*Praeteropus gowi*	speckled worm-skink		C		1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	reptiles	Typhlopidae	*Anilios affinis*	small-headed blind snake		C		4/4
animals	reptiles	Typhlopidae	*Anilios ligatus*	robust blind snake		C		1/1
animals	reptiles	Varanidae	*Varanus scalaris*	spotted tree monitor		C		1/1
animals	reptiles	Varanidae	*Varanus tristis*	black-tailed monitor		C		1
animals	uncertain	Indeterminate	*Indeterminate*	Unknown or Code Pending				1/1
plants	land plants	Amaranthaceae	*Amaranthus spinosus*	needle burr	Y			1/1
plants	land plants	Amaranthaceae	*Gomphrena humilis*			C		1/1
plants	land plants	Apocynaceae	*Cryptostegia grandiflora*	rubber vine	Y			2
plants	land plants	Apocynaceae	*Vincetoxicum erectum*			C		1/1
plants	land plants	Apocynaceae	*Wrightia saligna*			C		1/1
plants	land plants	Asteraceae	*Chromolaena odorata*	Siam weed	Y			1/1
plants	land plants	Asteraceae	*Cyanthillium cinereum*			C		1/1
plants	land plants	Asteraceae	*Pterocaulon serrulatum var. serrulatum*			C		1/1
plants	land plants	Chenopodiaceae	*Chenopodium murale*	green fat-hen	Y			1/1
plants	land plants	Convolvulaceae	*Polymeria marginata*			C		1/1
plants	land plants	Cyperaceae	*Cyperus distans*			C		1/1
plants	land plants	Cyperaceae	*Cyperus platystylis*			C		1/1
plants	land plants	Cyperaceae	*Cyperus procerus*			C		1/1
plants	land plants	Cyperaceae	*Fimbristylis littoralis*			C		1/1
plants	land plants	Lamiaceae	*Clerodendrum floribundum*			C		1/1
plants	land plants	Leguminosae	*Acacia salicina*	doolan		C		1/1
plants	land plants	Leguminosae	*Acaciella*					1/1
plants	land plants	Leguminosae	*Acaciella angustissima*	white ball acacia	Y			5/5
plants	land plants	Leguminosae	*Albizia*					1/1
plants	land plants	Leguminosae	*Archidendropsis thozetiana*			C		1/1
plants	land plants	Leguminosae	*Butea monosperma*		Y			1/1
plants	land plants	Leguminosae	*Cajanus marmoratus*			C		1/1
plants	land plants	Leguminosae	*Cajanus scarabaeoides var. scarabaeoides*			C		1/1
plants	land plants	Leguminosae	*Crotalaria goreensis*	gambia pea	Y			1/1
plants	land plants	Leguminosae	*Erythrina vespertilio subsp. vespertilio*			C		1/1
plants	land plants	Leguminosae	*Galactia*					1/1
plants	land plants	Leguminosae	*Glycine tomentella*	woolly glycine		C		1/1
plants	land plants	Leguminosae	*Leucaena leucocephala*		Y			7
plants	land plants	Leguminosae	*Senegalia*					1/1
plants	land plants	Leguminosae	*Senna occidentalis*	coffee senna	Y			1/1
plants	land plants	Lentibulariaceae	*Utricularia aurea*	golden bladderwort		SL		1/1
plants	land plants	Lythraceae	*Ammannia multiflora*	jerry-jerry		C		1/1
plants	land plants	Myrtaceae	*Eucalyptus brownii*	Reid River box		C		1/1
plants	land plants	Myrtaceae	*Eucalyptus xanthoclada*	yellow-branched ironbark		C		1/1
plants	land plants	Myrtaceae	*Lophostemon confertus x Lophostemon grandiflorus*			C		1/1
plants	land plants	Myrtaceae	*Melaleuca nervosa*			C		1/1
plants	land plants	Poaceae	*Aristida warburgii*			C		1/1
plants	land plants	Poaceae	*Cenchrus caliculatus*	hillside burrgrass		C		1/1
plants	land plants	Poaceae	*Eragrostis parviflora*	weeping lovegrass		C		1/1
plants	land plants	Poaceae	*Oryza*					2/2
plants	land plants	Poaceae	*Oryza australiensis*			C		2/2

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	land plants	Rhamnaceae	*Ventilago viminalis*	supplejack		C		1/1
plants	land plants	Rhamnaceae	*Ziziphus mauritiana*	Indian jujube	Y			2
plants	land plants	Solanaceae	*Nicotiana glauca*	tree tobacco	Y			1/1
plants	land plants	Sparrmanniaceae	*Grewia*					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 (EX), Extinct in the Wild (PE), Critically Endangered (CR), Endangered (E), Vulnerable (V), Near Threatened (NT), Special Least Concern (SL) and Least Concern (C).

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

Records - The first number indicates the total number of records of the taxon (wildlife records and species listings for selected areas).
This number is output as 99999 if it equals or exceeds this value. A second number located after a / indicates the number of specimen records for the taxon.
This number is output as 999 if it equals or exceeds this value.

6.6 Appendix F - Bibliography

Eyre TJ, Ferguson DJ, Hourigan CL, Smith GC, Mathieson MT, Kelly, AL, Venz MF, Hogan, LD & Rowland, J. 2018. *Terrestrial Vertebrate Fauna Survey Assessment Guidelines for Queensland.* Department of Environment and Science, Queensland Government, Brisbane.

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