Australia Pacific LNG Project

Volume 5: Attachments to EIS

Attachment 15: Terrestrial Ecology - Pipeline

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Executive summary

The terrestrial flora and fauna characteristics of the proposed Australia Pacific LNG gas transmission pipeline (the 'gas pipeline') development from the Australia Pacific LNG gasfields to the proposed LNG Plant site on Curtis Island have been assessed by WorleyParsons. The pipeline route assessed comprised both the main route to Curtis Island plus the Woleebee and Condabri laterals.

The study initially comprised a desktop review of existing data followed by field investigations of the proposed route. The desktop review was undertaken to identify the key terrestrial flora and fauna values of the wider study area (5km corridor either side of the proposed route alignment). This review was based upon existing Commonwealth and State flora and fauna record databases, action plans for various faunal taxonomic groups, botanical and zoological texts, state biodiversity planning assessments, aerial photography and existing Queensland Herbarium mapping.

Information from the desktop review was used to assess the likelihood of those terrestrial ecology values occurring or being potentially impacted upon by the proposed pipeline. Thirty-three days of field assessment were undertaken. During the field survey, 143 flora sites (39 tertiary and 104 quaternary) and 174 fauna sites (63 detailed habitat assessments and 111 general habitat observation sites) were assessed and the floral and faunal characteristics of these sites recorded. The field investigation focused on a 100m wide corridor. However, environmentally sensitive areas in the vicinity of the proposed alignment were also targeted.

The construction of the proposed 40m alignment Right-of-Way (RoW) will disturb a total area of 1,759ha. Of this, approximately 1326ha or 75.4% is considered non-remnant vegetation and 433ha or 24.6% is considered remnant vegetation under the *Vegetation Management Act 1999* (VMA).

The proposed alignment avoids, where possible, endangered regional ecosystems (REs) listed under the VMA and Threatened Ecological Communities (TECs) listed under the *Environment Protection and Biodiversity Conservation Act 1999 (*EPBC Act) by positioning the alignment through existing cleared areas adjacent to or within these remnants. However, the proposed alignment will transect:

- Four endangered REs that correspond to EPBC Act-listed TECs
- One of concern RE that may potentially correspond to an EPBC Act-listed TEC
- One endangered RE that does not correspond to any EPBC Act-listed TEC.

The combined total area of endangered RE transected by the RoW is 2.5ha out of the 433ha of remnant vegetation within the RoW.

Approximately 13.4ha of of concern remnant vegetation occurs within the RoW. This vegetation consists of seven different REs listed under the VMA. The of concern REs occurring within the proposed RoW generally consist of two different regional ecosystems (RE 11.3.4 and RE 11.9.7).

Approximately 417ha of least concern remnant vegetation occurs within the RoW. This vegetation consists of 30 different REs listed under the VMA. The least concern REs are represented by a wide variety of vegetation types.

Database searches identified 89 endangered, vulnerable or rare (EVR) flora species that are known to have ranges that overlap the wider study area. Based solely on habitat preference of these species, the proposed RoW contains potential habitat for 62 species; however, all of the 89 species identified in the database searches have varying potential to occur within the proposed RoW. A lack of identification in the database searches does not necessarily mean that the species will not occur.

Four species of EVR flora were recorded within the vicinity of the proposed RoW during the field surveys. These species were:

- Pedley's wattle *(Acacia pedleyi*) – listed as rare under the *Nature Conservation Act 1992* (NC Act)
- Ooline (*Cadellia pentastylis*) – listed as vulnerable under the NC Act and EPBC Act
- Large-fruited zamia palm (*Cycas megacarpa*) – listed as endangered under the NC Act and EPBC Act
- Smooth-barked bonewood (*Macropteranthes leiocaulis*) – listed as rare under the NC Act.

In addition to the EVR species observed during this field visit, a preliminary terrestrial ecology scouting visit identified small-flowered polianthion (*Polianthion minutiflorum*), listed as vulnerable under both the NC Act and the EPBC Act, within 300m of the alignment.

In addition, 49 regionally significant flora species were identified by database searches from the wider study area. Based solely upon habitat preference of these species, the proposed RoW contains potential habitat for 45 of these species. Nine regionally significant flora species were 7recorded on site during the field survey.

Weed species were observed along the proposed alignment but predominantly in low densities. Eight declared plants under the Queensland *Land Protection (Pest and Stock Route Management) Act 2002* were identified along the corridor in isolated patches. In addition, three Weeds of National Significance were observed within the proposed RoW during the field survey: parthenium weed (*Parthenium hysterophorus*), lantana (*Lantana camara*) and rubber vine (*Cryptostegia grandiflora*).

Potential impacts of the proposed pipeline on flora and vegetation values of the pipeline alignment include loss or damage to significant flora species populations and potential habitat areas, loss or degradation of vegetation communities and the introduction and/or spread of weed species in native vegetated areas. The potential severity of impacts on these values of the alignment are generally considered likely to be low, except for potential impacts on the endangered large-fruited zamia palm (*Cycas megacarpa*) and possibly the rare Pedley's wattle (*Acacia pedleyi*) in the Callide Range (KPs 255-271) and Calliope Range (KPs 281.5-282.1) sections of the alignment. Additional targeted survey of these areas is proposed to quantify the population distribution and extent of these two EVR plants along the alignment. Mitigation measures have been outlined to reduce potential impacts on these and other native plant species and communities.

The desktop fauna assessment identified 711 fauna species that may potentially utilise habitat within the wider study area. These comprised 28 invertebrates, 46 fish, 43 amphibians, 137 reptiles, 362 birds and 95 mammals. During the field assessment 182 terrestrial fauna species were recorded, comprising five amphibians, 19 reptiles, 124 birds and 34 mammals.

Threatened species include those species listed under the EPBC Act and/or NC Act, along with species ranked as High or Critical under the Back on Track species prioritisation framework. Database searches identified 70 EVR fauna species previously recorded from the wider study area, 48 of which could potentially utilise habitats within the pipeline corridor. Five EVR fauna species were recorded along the proposed alignment during the field assessment, as follows:

- Squatter pigeons (*Geophaps scripta scripta*) at five locations along the mainland sections of the alignment
- Glossy black-cockatoo (*Calyptorhynchus lathami*) at KP Con 36.7 (Bottle Tree Creek)

- Beach stone-curlew (*Esacus magnirostris*) and eastern curlew (*Numenius madagascariensis*) both in the vicinity of Laird Point on Curtis Island (approximately KP 356)
- Little pied bat (*Chalinolobus picatus*) at KPs Con 11.5 (Dogwood Creek), Con 36.7 (Bottle Tree Creek) and 103.4 (Fairyland).

A further 95 fauna species of regional significance were identified by the desktop studies (seven fish, 12 amphibians, 15 reptiles, 29 birds and 32 mammals), 85 of which are considered potentially able to utilise habitats within the proposed alignment.

Sixteen broad fauna habitat types (plus cleared non-remnant habitat) were identified as present within the broader study area, of which 14 are transected by the proposed alignment. The locations of each of these habitat types and the significant fauna species that may potentially utilise these habitats have been identified.

Of the 48 EVR fauna species identified as potentially utilising preferred habitat within the proposed pipeline corridor, 31 have the potential to be impacted to some extent by the proposed pipeline, due to potential effects on habitat or direct impacts. These include one butterfly, one fish, two amphibians, 14 reptiles, seven birds and six mammals. Two species are considered potentially sensitive to impacts associated with construction of the proposed pipeline:

- Pale imperial hairstreak (*Jalmenus eubulus)* which is heavily dependent on old-growth brigalow. There is a low probability of this species being present within brigalow habitat along the alignment. Only very small areas of brigalow are proposed to be cleared (1.8ha in total across a number of locations) and the great majority of brigalow habitat proposed to be cleared is disturbed or degraded.
- Beach stone-curlew (*Esacus magnirostris*), which is considered sensitive to human disturbance. This species has been recently recorded utilising saltpan habitat close to the alignment at Friend Point and also at Laird Point on Curtis Island . The beach stone-curlew is a mobile species and impacts from disturbance during construction of the pipeline are only likely to be significant if the work affects nesting, which typically occurs during October to December. Eggs are laid in a scrape in sand at the landward side of beaches.

Another eighteen EVR species (two amphibians, 13 reptiles and three mammals) have the potential to fall into the open trench during construction and become trapped, with the potential for locally-significant high mortality were management measures not applied. Specific recommendations are outlined to reduce the probability and impacts of trenchfall. Other species-specific and general flora and fauna management recommendations are identified that will avoid or minimise potential adverse impacts.

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1 Introduction

WorleyParsons has been commissioned by Australia Pacific LNG Pty Ltd (Australia Pacific LNG) to undertake this terrestrial flora and fauna assessment to support the Environmental Impact Statement for the proposed construction of the Project's gas pipeline as part of the Australia Pacific CSG to LNG Project.

The proposed pipeline will be approximately 450km in length and run from gas fields east of Miles in the Darling Downs to a proposed liquified natural gas (LNG) plant on Curtis Island, near Gladstone in central Queensland. The pipeline alignment comprises three sections: the main line and two lateral pipelines. The Condabri Lateral begins just south of the Warrego Highway, approximately 6km east of Miles and travels generally north for 44km. The Woleebee Lateral begins in the Woleebee gas field approximately 30km south-west of Wandoan and travels east for 37km until it meets the Condabri Lateral approximately 38km north of Miles. The main line begins at the point the two laterals meet and continues north for 358km to the LNG plant on Curtis Island. The location of the pipeline alignment is shown in Figure 11.1. This alignment will require a clearing corridor width of 40m with additional areas possibly required either side of crossings.

The flora and fauna assessment targeted the identification of known and potential occurrences of listed endangered, vulnerable and rare (EVR) flora and fauna species and vegetation communities as listed under the Australian Government *Environment Protection and Biodiversity Act 1999* (EPBC Act), the Queensland *Nature Conservation Act 1992* (NC Act) and the *Vegetation Management Act 1999* (VMA). The assessment also considered regionally significant species and common and general flora and fauna values.

Opportunities for alignment refinements which would minimise impacts to these values were identified in the field and where possible immediately adopted. Potential impacts associated with the refined alignment were then identified as well as appropriate mitigation measures for ecologically sensitive areas. It is possible that further minor refinement of the pipeline alignment in recognition of certain environmental values may occur during the pre-design and design stages of the pipeline project.

The refined alignment and all Kilometre Points (KPs) used in this report are those shown in the Revision 3F Alignment (shown in Figure 1). In this assessment, KPs for the Condabri Lateral are given with the prefix 'Con' (e.g. KP Con 28.5), those for the Woleebee Lateral are given with the prefix 'Wol' (e.g. KP Wol 28.5) and those for the main line are given no prefix (e.g. KP 28.5).

1.1 Scope of works

The goals of this flora and fauna assessment were to:

- Identify the key flora and fauna values of the proposed alignment and wider study area (5km corridor either side of the proposed alignment), through desktop and field studies, including:
  - Ecological communities and Regional Ecosystems (REs)
  - Important fauna habitat types and movement corridors
  - Significant wetland areas
  - Observed and potentially present EVR flora and fauna species
  - Observed and potentially present flora and fauna species of regional significance

  - General flora and fauna values
  - Aquatic flora and fauna species
  - Weeds and animal pest species and infestations
  - Other significant ecological areas.

- Identify potential impacts to these ecological features and values that may result from activities associated with the construction and operation of the pipeline.
- Identify appropriate mitigation measures to help avoid and minimise potential impacts to these ecological features and values.

1.2 Assumptions and limitations

In the preparation of this flora and fauna assessment, the following assumptions and limitations apply.

- The assessment is based on DERM RE mapping (Version 6.0) and Regulated Regrowth Vegetation mapping (Version 2.0) and the RE description database (Version 6.0 November 2009).
- The existing Queensland Herbarium (QH) RE mapping has been used on the basis that it is correct except in those locations where site-specific surveys identified inaccuracies at the local scale. Inaccuracies can occur with Queensland Herbarium RE mapping. For example, small remnants along creeks and road reserves may not be detected and small scale variation within larger remnants may not be recognised. It was not possible to ground-truth all mapped remnant vegetation along the proposed alignment due to time and access constraints.
- Existing QH RE mapping and noted inaccuracies with this mapping have been used to determine proposed clearing requirements for the proposed alignment and existing mapping was used to estimate the total area of each RE type occurring within the wider study area. Fauna habitat mapping has been derived from the same sources and is subject to similar assumptions and limitations. All clearing calculations have been based on a proposed Right-of-Way width of 40m.
- It is recognised that information gained from database searches and included in the desktop components of this assessment has caveats attached to it regarding the robustness or completeness of the information. Queensland Herbarium HERBRECS data are based on specimens actually recorded as present in the given locations. The absence of any specimen records for a particular species from an area does not imply that that species does not occur in that area. Data from the DEWHA EPBC Protected Matters Search are based on a combination of actual records combined with modelled distributions of species according to the ecological characteristics of those species.
- As detailed targeted field surveys were not undertaken, the precautionary approach was adopted throughout this assessment. As such, any species that could potentially occur within the study areas (as identified through ecological databases together with habitat assessments and the knowledge of the flora and fauna by the botanists and fauna ecologists) have been assumed to occur in the study area.

Access constraints meant that some sections of the alignment were not assessed in the field, including substantial areas of remnant vegetation. Key sections that were not assessed in the field included:

- The mainland section of the alignment within the Gladstone State Development Area from the Bruce Highway (KP 325.2) to Friend Point (KP 354.5)
- The Calliope Range (KP 281.5-282.1) at the western end of the Callide Infrastructure Corridor
- KP 114 (Ross Creek) to KP 144 (Horse Creek), east of Cracow

Assessment of these areas has been based on desktop studies only.

The field assessment was carried out during late September and October 2009, with some preliminary assessment on the Curtis Island section of the alignment conducted during April 2009. Little or no rainfall occurred during the great majority of the field assessment and almost all of the creeks were completely dry at the time of the assessment, with the remainder having only small isolated waterholes. As such, the conditions were very poor for surveying some fauna (e.g. amphibians) and flora.

Marine-restricted fauna species such as whales, dolphins, dugong, marine turtles and sea snakes have been excluded from this terrestrial ecology assessment and are addressed in separate reports.

This report focuses on the preferred pipeline alignment as described in the project description, with limited assessment of some proposed sites for construction camps and laydown areas. Locations proposed for other infrastructure such as access roads were not assessed. Compressor station locations were excluded from the scope.

2 Assessment method

2.1 Flora assessment

2.1.1 Determination of flora species and ecological community/regional ecosystem significance level

Significant ecological communities and REs are those listed under the EPBC Act as critically endangered, endangered or vulnerable and/or the VMA as endangered, of concern or least concern. High value regrowth vegetation is defined as that listed under the VMA and significant wetlands include those wetlands listed under the Ramsar convention (of international significance) or within the Directory of Important Wetlands (of national significance). Throughout this assessment the location and extent of REs was determined using Version 6.0 of the RE mapping and the conservation status and description of the REs was determined using Version 6.0 of the Regional Ecosystem Description Database (REDD).

At Threshold REs includes those REs considered at risk of falling into a higher conservation status if clearing continues and are listed under the Regional Vegetation Management Code for South-east Queensland Bioregions and/or the Regional Vegetation Management Code for Brigalow Belt and New England Tablelands Bioregions (DERM 2009a, DERM 2009b). Regrowth Vegetation refers to high value regrowth as described under the VMA.

EVR flora species include those taxa listed under the EPBC Act and/or NC Act as critically endangered, endangered, vulnerable or rare.

Regionally significant flora are defined as those taxa not listed as EVR species under the EPBC Act and/or NC Act, but that have been identified under a non-statutory conservation agreement as having restricted or disjunct geographical distributions or being at the extent of their geographical distribution, rare or poorly known species, poorly conserved species or species with small population sizes (Briggs and Leigh 1995, EPA 2006a, EPA 2006b, EPA 2006c).

Flora species of other conservation significance include those taxa not listed as EVR or Regionally significant species but are afforded protection under a State or Local Government Area permit and species considered of cultural (ANBG 2009; Aboriginal Art Online 2009; Borsboom 2005; Cribb and Cribb 1981; Cribb and Cribb 1974; Kamminga 2002; Lance 1982; Lassak and McCarthy 1983; Low 1989; McDonald et al. 2001), commercial (QDPI 2009) and recreational significance (EPA 2003).

Species listed under the DERM Back on Track species prioritisation framework (DERM 2008) have also been recognised.

All other native flora species are designated as Common.

2.1.2 Determination of weed significance level

The Australian Weeds Strategy (NRMMC 2006) identifies priorities for weed management across the nation with the aim of minimising the impact of weeds on Australia's environmental, economic and social assets.

As part of this, a list of nationally-agreed priority plant species (Weeds of National Significance) has been selected for control and management. Species are selected according to high rankings for invasiveness, potential to spread and impact to socioeconomic and environmental assets.

The Queensland *Land Protection (Pest and Stock Route Management) Act 2002* also identifies target weed species that have, or may potentially have, a serious economic, environmental or social impact. Declared plants are classified into three management priorities, based upon their current extent and potential to spread, including:

- Class 1 plants - weed species that are not commonly present in Queensland and, if introduced, would cause an adverse economic, environmental or social impact. Current infestations in Queensland are subject to eradication from the state and landowners must take reasonable steps to keep their land free of these species.
- Class 2 plants - weed species that are established in Queensland and have, or could have an adverse economic, environmental or social impact. Landowners must take reasonable steps to keep their land free of Class 2 plants.
- Class 3 plants - considered established in Queensland and have, or could potentially have, an economic, environmental or social impact. The primary objective of this listing is to prevent the sale (and therefore spread) of these pests into new areas. Landholders are not required to control these species unless their land is adjacent to an environmentally significant area i.e.
  - A protected area
  - Land dedicated as a reserve for environmental purposes under the Queensland *Land Act 1994*
  - A World Heritage area listed under the World Heritage Convention
  - An area supporting a critically endangered ecological community in the list established under the EPBC Act
  - A declared Ramsar wetland under the EPBC Act
  - An area of high nature conservation value under the VMA
  - An area, other than State-controlled land, identified in a local government's pest management plan as an area that has special environmental significance for native wildlife.

Weeds of National Significance and declared plants of Queensland are considered significant weed species. All other non-native species are considered environmental weed species.

2.1.3 Flora desktop assessment

A desktop review was undertaken to identify the key flora and vegetation values of the wider study area and the likelihood of these values occurring within the project area including:

- Review of the DERM RE (Version 6.0) and Regulated Regrowth Vegetation mapping (Version 2.0) and the RE description database (Version 6.0 November 2009) to identify vegetation communities mapped within the wider study area
- Review of satellite imagery to identify vegetation patterns and key investigation areas and gain an appreciation of the proximity of the proposed project area to sensitive areas
- Review of the DERM Essential Habitat, Queensland Wetland and Environmentally Sensitive Area mapping to identify key ecological values of the wider study area including important habitat areas for EVR flora species, wetlands, marine plant populations, high biodiversity areas and nature refuges

- Review of the Directory of Important Wetlands database to identify nationally important wetlands within the wider study area (Blackman et al. 1999)
- Review of the DEWHA Protected Matters Search Tool to identify all matters of National environmental significance (NES) within the wider study area including Ramsar-listed wetlands, critical habitat areas, threatened ecological communities and flora species and other matters, including conservation areas such as National Parks
- Review of the Queensland Herbarium flora collection records (HERBRECS) and DERM Wildlife Online databases to identify all flora species of conservation significance known or likely to occur within the wider study area
- Review of current plant literature to identify species of other conservation value, including species of cultural, commercial and recreational significance
- Review of the DEEDI Biosecurity Queensland's Annual Pest Distribution Survey mapping to identify significant non-native species known or likely to occur within or adjacent to the project area
- Review of previous studies undertaken within the vicinity of the proposed pipeline, primarily related to the development of other LNG projects within the broader study area (AECOM 2009, Boobook 2009, Shell Australia 2009; Unidel 2009; URS 2009a, URS 2009b).

It is recognised that the information gained from these databases has caveats attached to it regarding the robustness or completeness of the information. HERBRECS data are based almost exclusively on plant specimens actually recorded as 'recent' in the given locations. The absence of any specimen record for a particular species from an area does not imply that that species does not occur in the area. Data from the Protected Matters Search Tool are based on a combination of actual records, primarily from State Government databases, combined with modelled distributions of species according to the ecological characteristics of that species.

Information from the desktop review was collated and assessed to determine the likelihood of key flora values occurring within the proposed project site.

2.1.4 Flora field survey

A flora field survey was undertaken by WorleyParsons' botanists during two separate periods from 26 September – 6 October and 15 October – 30 October, 2009 and included:

- Investigation of the presence/absence or likely presence/absence of EVR flora species and communities identified from the desktop assessment
- Investigation of the presence of regionally significant vegetation communities
- Ground-truthing of 143 sites, mostly within RE types mapped for the RoW (Appendix A provides vegetation assessment proformas). Of these, 39 sites were assessed to the Tertiary level and 104 sites were assessed to the Quaternary level in accordance with the methodology outlined by the Queensland Herbarium (Nelder et al. 2005). Tertiary assessments recorded an inventory of all woody flora species, average height and approximate abundance (including native and exotic flora species). At least one tertiary assessment was undertaken in each RE type mapped within the proposed corridor and sites were established where the characteristics of the transected areas indicated that the greatest chance of detecting significant species and other values would be achieved. Quaternary assessments recorded canopy species only and were undertaken to confirm RE type and boundaries. Multiple survey sites were established within

single RE types where numerous patches were transected or where significant variation was observed between different areas of the same RE type. Survey sites were distributed so as to sample as much environmental variability along the alignment as possible, within practical time and accessibility constraints

- Opportunistic significant species surveys were undertaken during ground-truthing exercises to identify populations and potential habitat areas within the proposed RoW.

Flora species observed on site are provided in Appendix C. EVR species and Regionally significant flora species are discussed in Section 3 and Appendix D.

Ground-truthing surveys were undertaken in accordance with the Queensland Herbarium methodology and data collected are compatible with the Queensland Herbarium's CORVEG database. Information gathered during Tertiary level surveys included:

- Confirmation of mapped RE
- General description of vegetation
- Structural characteristics of vegetation (based upon growth habit, height and canopy cover)
- Groundcover characteristics
- Vegetation conditions (integrity)
- Extent and distribution of weed species and non-weed disturbance (e.g. clearing)
- Dominant species in each structural component of the vegetation
- Patch size and shape
- Landscape characteristics
- Soil and geological characteristics
- Notes on particular sensitivities to the proposed impacts.

Locations of flora field survey sites are largely based upon existing RE mapping and are illustrated in Figure 2 – Figure 17.

GPS co-ordinates were taken using hand held GPS (accuracy +/- 10 m) to assist in validating the existing Queensland Herbarium vegetation mapping. Photographs of vegetation communities traversed were also taken.

2.1.5 Interpretation and documentation

Using information gathered from ground-truthing surveys, the likelihood of potential habitat for EVR flora species occurring within the proposed corridor was determined. Likely impacts on those EVR species for which potential habitat was found to be present were analysed based upon the known ecology of each species.

2.2 Fauna assessment

The fauna assessment consisted of two stages - a desktop study, followed by a field assessment of the proposed alignment. The fauna assessment of the alignment was conducted by WorleyParsons' ecologists.

Nomenclature used in this fauna assessment follows the Australian Faunal Directory (DEWHA 2009) updated with more recent taxonomic reviews where relevant (e.g. Parnaby 2009). Common names are taken from the CSIRO List of Australian Vertebrates (Clayton et al. 2006) where available, or where unavailable are drawn from other recent literature (e.g. Horner 2007, Churchill 2008, Parnaby 2009).

2.2.1 Determination of fauna species significance level

Listed EVR fauna are defined as those taxa listed under the EPBC Act and/or the NC Act as critically endangered, endangered, vulnerable or rare.

DERM has recently developed the Back on Track species prioritisation framework to identify priority flora and fauna species for management and recovery (DERM 2008). Although the majority of fauna species identified as Critical or High priority under the Back on Track framework are also listed EVR fauna, several identified species are not listed under either the EPBC Act or NC Act. Non-listed fauna species identified as High or Critical priority by the Back on Track framework have been included as EVR fauna in this assessment.

Regionally significant fauna are defined as those taxa identified by EPA (2002) as non-EVR priority taxa for the Brigalow Belt South Bioregion and the South-east Queensland Bioregion (for the Curtis Island section of the alignment). Also included in regionally significant fauna are those taxa that have not been listed as EVR fauna under the EPBC Act or NC Act, but have been listed in the relevant Action Plan for their respective taxonomic group as vulnerable, rare, near threatened, insufficiently known or data deficient. Relevant Action Plans consulted to determine status were: Tyler (1997) for frogs, Cogger et al. (1993) for reptiles, Garnett and Crowley (2000) for birds, Maxwell et al. (1996) for monotremes and marsupials, Duncan et al. (1999) for bats and Lee (1995) for rodents.

All other native fauna have been designated as common. This includes those species that have been listed as Migratory species under the EPBC Act, but are not EVR or regionally significant fauna.

2.2.2 Fauna desktop assessment

The desktop study involved a review of published material and searches of relevant databases and archives. This assessment was used to document known records for the study area, identify the potential presence of significant fauna species and assist in targeting areas for field assessment. The desktop components undertaken included:

- Collection and review of existing DERM WildNet data, Birds Australia data, Queensland Museum data and EPBC Protected Matters Search (Appendix E**)** provides the results of these database searches)
- Search of the DOI Wetlands database (Blackman et al. 1999) to identify important wetlands within the wider study area
- Review of the Brigalow Belt South Biodiversity Planning Assessment version 1.3 (EPA 2008a, b, c) and South-east Queensland Biodiversity Planning Assessment version 3.5 (EPA 2006a, b, c) to identify areas that are recognised as State, Regional or Local Biodiversity Significant or flagged as important for their integrated biodiversity values that are within close proximity to the project area
- Review of the DERM Essential Habitat mapping to identify essential habitat areas for EVR fauna species within the wider study area

- Review of the DERM Environmentally Sensitive Area (ESA) mapping to identify key ecologically sensitive areas within the wider study area
- Review of Queensland Herbarium RE mapping for the corridor to establish those vegetation communities mapped by DERM at a scale of 1:100 000, as well as satellite imagery to gain an appreciation of potential fauna habitats and of the Project's proximity to sensitive areas
- Review of the DEEDI Biosecurity Queensland's Annual Pest Distribution Survey mapping to identify significant non-native species known or likely to occur within or adjacent to the project area
- Review of previous studies undertaken within the vicinity of the proposed alignment, primarily related to the development of other LNG projects within the broader study area (AECOM 2009, Boobook 2009, Unidel 2009; URS 2009a, b).

The following texts were also reviewed: Barker et al. (1995), Cogger (2000), Churchill (2008), Duncan et al. (1999), Ehmann (1992), Garnett and Crowley (2002), Johnson (2003), Menkhorst and Knight (2004), Morcombe (2003), Robinson (1998), Tyler and Knight (2009), Van Dyke and Strahan (2008), Wilson (2005a) and Wilson and Swan (2008).

2.2.3 Fauna field assessment

Whereas the desktop assessment investigated fauna values within the wider study area, field studies focused on a 100m wide corridor, but also assessed surrounding areas where relevant (e.g. to identify options for avoiding ecological constraints on the proposed route). Field assessment of the proposed alignment was conducted over several periods in 2009, as follows:

- 14-17 April (Curtis Island, four days as part of LNG plant site surveys)
- 7-8 September (Callide Infrastructure Corridor, 2 days)
- 24 September – 6 October (11 days)
- 16-29 October (13 days)
- 7-9 October 2009 (Curtis Island, 3 days as part of LNG plant site surveys).

No fauna trapping methods such as Elliott trapping, pit fall trapping, hair tube sampling or harp trapping were employed during this assessment. Rather, field surveys focused on habitat assessments of selected sites. Representative habitats along the alignment were selected for inspection. The selection of these sites was based on the following:

- Occurrence of forested patches and other fauna habitats (such as riparian corridors and wetlands) determined from satellite imagery, combined with results of the desktop study
- Preferred habitat for EVR and regionally significant fauna identified from database searches, determined from Queensland Herbarium RE mapping combined with satellite imagery
- Occurrence of endangered and of concern REs (as listed under the VMA) and threatened ecological communities (as listed under the EPBC Act), were identified using the most recent available Queensland Herbarium mapping.

A total of 174 sites were visited and assessed along the proposed alignment, including six sites along the Curtis Island section of the alignment conducted as part of the LNG plant site fauna assessment. Detailed fauna habitat assessments (HA sites) were conducted at 63 sites and general habitat

observations (OB sites) recorded at a further 111 sites. Site locations are described in Appendix 1 - and are shown in Figure 18 – Figure 33.

The primary aim of the field study was to assess the following:

- The presence of suitable habitat for significant fauna species and the likely presence of significant fauna species
- Habitat types / features
- Habitat integrity
- Habitat connectivity
- Significance of habitats.

Assessments of the above attributes were supplemented by opportunistic and dedicated searches for fauna and fauna signs at each site. Survey techniques employed included:

- Visual and audio (e.g. bird and frog calls) identification
- Dedicated searches under rocks, logs, bark and leaf litter for reptiles
- Dedicated searches of likely faunal hotspots such as riparian vegetation, sources of water (e.g. dams, creeks), rocky areas
- Anabat electronic recording of bat calls. A single Anabat unit was used and was set to record all night from approximately dusk until dawn. Analysis and identification of bat calls was carried out by Greg Ford
- Dedicated searches for animal signs (e.g. scats and tracks)
- Opportunistic and incidental observations.

A total of 26 days (plus seven days on Curtis Island, as part of the LNG plant site surveys) were spent assessing fauna habitat and recording fauna during the field study. This included all-night Anabat call recording for microbats at five sites, as follows:

- KP Con 11.5 (Dogwood Creek)
- KP Con 36.7 (Bottle Tree Creek)
- KP 103.4 (Fairyland)
- KP 257.8 (Callide Timber Reserve, Callide Range)
- KP 263.6 (Collards Creek, Callide Range).

2.2.4 Fauna habitat mapping

All REs identified as present within the 10km wide study corridor (centred on the alignment) were stratified into broad faunal habitats, based upon the classification of Major Vegetation Groups and Subgroups identified by the National Vegetation Information System (NVIS) framework, developed for the National Land and Water Resources Audit (NLWRA 2001). Information used to categorise REs into habitats was drawn from the RE descriptions (including landforms) in version 6.0 of the RE Description Database (DERM 2009c), along with data from the *Australian Terrestrial Biodiversity Assessment 2002* (NLWRA 2002). The accuracy of faunal habitat mapping across the 10km wide study corridor is dependent upon the accuracy of the existing RE mapping. Ground-truthing of fauna habitats was only conducted for the 100m wide assessment corridor.

2.2.5 Interpretation and documentation

Using the habitat assessment and field observation data, a determination was made as to whether or not preferred habitat for EVR fauna species was present along the alignment. Likely impacts to those EVR species for which preferred habitat was found to be present were analysed based upon the known ecology of each species.

A precautionary approach has been adopted throughout this assessment. In other words, any species that could potentially occur within the study area (identified through desktop review and habitat assessment, coupled with knowledge of the fauna by the fauna ecologist), have been assumed to occur in the study area. The presence or otherwise of a particular fauna species within the pipeline alignment can only be confirmed by detailed targeted field surveys.

2.2.6 Allocation of fauna sensitivity classes

Listed EVR fauna were allocated to one of four sensitivity classes to describe their potential sensitivity to impacts arising from the proposed pipeline, based on the species' ecology, distribution and the state of existing knowledge regarding the species' ecology and distribution in the wider area. The basis for each sensitivity class is described below.

Class 1 – Significant impact unlikely: Known current range is well outside the route corridor, or the species is relatively widespread, or the species is considered high-mobility or nomadic, or no critical habitat features occur within route corridor. No significant impact is likely to Class 1 species.

Class 2 – Standard mitigation available: The alignment passes through the species' known range and habitat, or the species is relatively widespread but is sedentary or not highly mobile, or roosting/nesting/shelter/other habitat features within route corridor are critical to the species; AND known critical habitat features or known population concentrations can be avoided by minor alignment changes or directional drilling, or fauna retrieval would mitigate trenchfall in relatively widespread species, or other standard mitigation measures (e.g. minimising loss of hollow-bearing trees) would result in acceptable impact minimisation. Class 2 fauna species could potentially be susceptible to significant impacts without mitigation, but the application of standard mitigation measures should result in the reduction of residual impacts to non-significant.

Class 3 – Sensitive to pipeline impacts: The alignment passes through the species' known range and habitat, or the species is relatively widespread but is sedentary or not highly mobile, or roosting/nesting/shelter/other habitat features within route corridor are critical to the species; AND the species has a small total known range, or is a declining species, or is relatively widespread but with rare or patchy occurrence in broadly suitable habitat such as grasslands or woodlands, or the species is reliant on restricted critical habitat features such as rocky outcrops or ephemeral wetlands which are not accurately mapped along the route. Class 3 species may require species-specific mitigation measures to avoid significant impacts or targeted surveys to ascertain their presence or the presence of critical habitat features along the proposed alignment.

Class 4 – Insufficiently known (impact uncertain): The alignment may traverse the species' current range and habitat, but existing knowledge and mapping of species' distribution is insufficiently known to accurately predict; OR existing knowledge of species' ecology or habitat requirements is insufficient to accurately predict whether the species is sensitive to pipeline impacts or whether standard mitigation measures are available. Class 4 species are too poorly understood to accurately predict the likelihood of significant impacts occurring.

3 Existing environment - Flora

The flora characteristics and values of the proposed alignment were identified and are described in the Vegetation Assessment Proformas provided in Appendix A.

The proposed alignment predominantly transverses cleared areas interspersed with patches of remnant vegetation. Of the approximately 563ha of remnant vegetation occurring within the proposed RoW the majority comprises eucalypt-dominated woodlands (378.9ha).

A total of 222 flora species were identified along the proposed alignment during the field survey, including 21 non-native species (refer to Appendix C).

3.1 Ecological communities/regional ecosystems

The ecological communities and REs transected by the proposed alignment are illustrated in Figure 2 – Figure 17 and described in Table 3.1. The area in hectares proposed to be cleared for each RE is described in Table 3.2.

Field surveys found that the vegetation communities present are generally consistent with current DERM mapping. Fourteen inaccuracies were identified within the vicinity of the proposed alignment. These inaccuracies generally related to the scale of DERM mapping (1:100,000) not recognising small scale variation in RE boundaries. The discrepancies observed while conducting field surveys are discussed in detail later in this chapter.

The pipeline alignment has been selected to avoid major watercourses and wetlands. No Ramsar wetlands occur along or adjacent to the proposed alignment. However, two wetland areas listed on the DOI wetlands database, Port Curtis and The Narrows, are transected by the proposed alignment.

Generally the larger ephemeral systems transected by the proposed alignment predominantly exist as dry stream beds with occasional and mainly seasonal flooding overtopping the channel into adjacent floodplains. According to the Queensland Wetland Mapping, the proposed alignment intersects estuarine systems between KP 351.4–356.1, river and creek channel riverine systems at Roche Creek (KP 29.2), lacustrine systems at Dogwood Creek (KP Con 11.1), palustrine systems at KP 305 and many drainage line riverine systems. The more defined creek channel at Roche Creek was observed during field surveys. However, groundtruthing in the vicinity of Dogwood Creek (KP Con 11.1) found no lacustrine wetland systems along the proposed alignment.

Table 3.1 Regional Ecosystems transected by the proposed alignment

RE	REDD Short Description	CTH	VMA	Bio	Wol	Con	MaS	MaN
11.1.2	Samphire forbland on marine clay plains.		LC	NC				x
11.1.4	Mangrove forest/woodland on marine clay plains.		LC	NC				x
11.3.14	*Eucalyptus* spp., *Angophora* spp., *Callitris* spp. woodland on alluvial plains.		LC	NC	x			
11.3.2	*Eucalyptus populnea* woodland on alluvial plains.	E##	OC	OC			x	
11.3.25	*Eucalyptus tereticornis* or *E. camaldulensis* woodland fringing drainage lines.		LC	OC	x		x	x
11.3.26	*Eucalyptus moluccana* or *E. microcarpa* woodland to open forest on margins of alluvial plains.		LC	NC			x	x
11.3.27	Freshwater wetlands		LC	OC	x			
11.3.4	*Eucalyptus tereticornis* and/or *Eucalyptus* spp. tall woodland on alluvial plains.		OC	OC			x	x
11.5.1	*Eucalyptus crebra*, *Callitris glaucophylla*, *Angophora leiocarpa*, *Allocasuarina luehmannii* woodland on Cainozoic sand plains/remnant surfaces.		LC	NC			x	
11.5.21	*Corymbia bloxsomei* +/- *Callitris glaucophylla* +/- *Eucalyptus crebra* +/- *Angophora leiocarpa* woodland on Cainozoic sand plains/remnant surfaces.		LC	NC	x	x		
11.5.4	*Eucalyptus crebra*, *Callitris glaucophylla*, *C. endlicheri*, E. *chloroclada*, *Angophora leiocarpa* on Cainozoic sand plains/remnant surfaces. Deep sands		LC	NC	x	x	x	
11.7.2	*Acacia* spp. woodland on Cainozoic lateritic duricrust. Scarp retreat zone.		LC	NC	x	x	x	
11.7.4	*Eucalyptus decorticans* and/or *Eucalyptus spp.*, *Corymbia spp.*, *Acacia* spp., *Lysicarpus angustifolius* on Cainozoic lateritic duricrust		LC	NC	x	x		
11.7.5	Shrubland on natural scalds on deeply weathered coarse-grained sedimentary rocks.		LC	NC	x		x	
11.7.6	*Corymbia citriodora* or *Eucalyptus crebra* woodland on Cainozoic lateritic duricrust		LC	NC	x		x	

RE	REDD Short Description	CTH	VMA	Bio	Wol	Con	MaS	MaN
11.7.7	*Eucalyptus fibrosa* subsp. *nubila* +/- *Corymbia spp.* +/- *Eucalyptus* spp. on Cainozoic lateritic duricrust		LC	NC	x		x	
11.9.1	*Acacia harpophylla-Eucalyptus cambageana* open forest to woodland on fine-grained sedimentary rocks	E	E	E			x	
11.9.10	*Eucalyptus populnea, Acacia harpophylla* open forest on fine-grained sedimentary rocks.		OC	E		x	x	
11.9.5	*Acacia harpophylla* and/or *Casuarina cristata* open forest on fine-grained sedimentary rocks.	E	E	E		x	x	
11.9.6	*Acacia melvillei +/- A. harpophylla* open forest on fine-grained sedimentary rocks.	E	E	E		x	x	
11.9.7	*Eucalyptus populnea, Eremophila mitchellii* shrubby woodland on fine-grained sedimentary rocks.		OC	OC			x	
11.9.9	*Eucalyptus crebra* woodland on fine-grained sedimentary rocks.		LC	NC				x
11.10.1	*Corymbia citriodora* open forest on coarse-grained sedimentary rocks.		LC	NC		x	x	x
11.10.13	*Eucalyptus spp.* and/or *Corymbia spp.* open forest on scarps and sandstone tablelands.		LC	NC			x	x
11.10.4	*Eucalyptus decorticans*, *Lysicarpus angustifolius* +/- *Eucalyptus spp.*, *Corymbia spp., Acacia spp.* woodland on coarse-grained sedimentary rocks.		LC	NC				x
11.10.7	*Eucalyptus crebra* woodland on coarse-grained sedimentary rocks.		LC	NC			x	
11.10.9	*Callitris glaucophylla* woodland on coarse-grained sedimentary rocks.		LC	NC			x	
11.11.10	*Eucalyptus melanophloia* woodland on deformed and metamorphosed sediments and interbedded volcanics.		OC	OC			x	
11.11.15	*Eucalyptus crebra* woodland on deformed and metamorphosed sediments and interbedded volcanics.		LC	NC			x	x
11.11.18	Semi-evergreen vine thicket on old sedimentary rocks with varying degrees of metamorphism and folding.	E	E	E				x
11.11.3	*Corymbia citriodora*, *Eucalyptus crebra*, *E. acmenoides* open forest on old sedimentary rocks with varying degrees of metamorphism and folding. Coastal ranges		LC	NC				x

RE	REDD Short Description	CTH	VMA	Bio	Wol	Con	MaS	MaN
11.11.4	*Eucalyptus crebra* woodland on old sedimentary rocks with varying degrees of metamorphism and folding. Coastal ranges		LC	NC				x
11.12.1	*Eucalyptus crebra* woodland on igneous rocks.		LC	NC			x	x
11.12.2	*Eucalyptus melanophloia* woodland on igneous rocks.		LC	NC			x	
11.12.21	*Acacia harpophylla* open forest on igneous rocks. Colluvial lower slopes	E	E	E			x	
11.12.3	*Eucalyptus crebra, E. tereticornis*, *Angophora leiocarpa* woodland on igneous rocks especially granite		LC	OC			x	x
11.12.6	*Corymbia citriodora* open forest on igneous rocks (granite)		LC	NC			x	x
12.1.2	Saltpan vegetation including grassland, herbland and sedgeland on marine clay plains.		LC	NC				x
12.3.11	*Eucalyptus tereticornis, Eucalyptus siderophloia, Corymbia intermedia* open forest on alluvial plains near coast.		OC	OC				x
12.3.3	*Eucalyptus tereticornis* woodland to open forest on alluvial plains.		E	E				x
12.3.7	*Eucalyptus tereticornis*, *Melaleuca viminalis*, *Casuarina cunninghamiana* fringing forest.		LC	NC				x
12.11.14	*Eucalyptus crebra*, *E. tereticornis* woodland on metamorphics +/- interbedded volcanics.		OC	OC				x
12.11.6	*Corymbia citriodora, Eucalyptus crebra* open forest on metamorphics +/- interbedded volcanics.		LC	NC				x

*Status: EPBC: E = endangered; E## = endangered only where Weeping Myall *Acacia pendula* occurs; VMA (Vegetation Management Status): E = endangered, OC = of concern,LC = least concern, (T) = At Threshold RE; EPA (Biodiversity Status): E = endangered; OC = of concern, NC = No Concern at Present,

KP = Kilometre Point. Wol = Woleebee Lateral KP (Wol 0 – Wol 37); Con = Condabri Lateral KP (Con 0 – Con 44); MaS = Mainline South KP (0-184); MaN = Mainline North KP (184-359.8).

3.1.1 EPBC Act listed Threatened Ecological Communities and VMA Listed Endangered Regional Ecosystems

Approximately 2.5ha of endangered remnant vegetation occurs within the proposed RoW (Table 3.2). The proposed alignment will transect six endangered REs that correspond to EPBC Act listed Threatened Ecological Communities (TECs), one of concern RE that may potentially correspond to an EPBC Act-listed TEC and one endangered RE that does not correspond to any EPBC Act listed TEC. A full list of endangered REs within the RoW and the areas required for clearing are listed in Table 3.2.

Four REs (11.9.1, 11.9.5, 11.9.6 and 11.12.21) that are listed as endangered under the VMA and are also part of the EPBC-listed endangered TEC "Brigalow (*Acacia harpophylla* Dominant and Co-dominant)" have been mapped within the proposed RoW.

Of particular note is RE 11.9.6 which is listed under the DERM Policy for Vegetation Management Offsets (DERM 2009d) as a critically limited regional ecosystem. This regional ecosystem was mapped as occurring in a mosaic dominated by RE11.9.5 in two locations along the proposed alignment. Along the Woleebee lateral at KP Wol 29.4 - Wol 29.5 a narrow stretch of degraded mosaic RE 11.9.5/11.9.6 occurs within the proposed RoW. The vegetation in this area is a degraded representation of the better quality RE 11.9.5 vegetation located directly to the north. Although the proposed alignment will affect this community, the impact on this community has been reduced by selecting the narrowest location and avoiding the larger and better quality vegetation immediately to the north. The proposed alignment also appears to transect a narrow mosaic of 11.9.5/11.9.6 at KP 7.3. Ground-truthing of vegetation in these areas found that RE 11.9.5 occurs adjacent to but not within the RoW and that 11.9.6 does not occur in the vicinity of the alignment.

Due to the scale of the RE mapping, the proposed alignment appears to transect a narrow corner of endangered RE 11.9.1 at KP 35.8. Ground-truthing of vegetation at this location found that this RE occurs adjacent to but not within the easement corridor.

At the eastern edge of the Woleebee lateral between KPs Wol 34.5 – Wol 35.9, a narrow 5 to10m strip of brigalow (RE 11.9.5) has been correctly mapped as occurring within the proposed RoW. Narrowing the construction corridor to 30 metres and/or positioning the alignment 20m to the north through existing cleared areas will avoid reducing the extent of this isolated remnant.

Inconsistencies in the RE mapping where endangered brigalow communities occur but not correctly mapped were also documented. A 2.25ha patch of the endangered brigalow community (RE 11.9.5) was observed approximately 50m south of KP Wol 6.6 – Wol 6.75. This community was observed and mapped during the vegetation surveys and the proposed alignment was subsequently shifted north to avoid impacting this community. Areas between KPs 40.8 – 41, 38 – 38.45 and east of KP 30 are mapped as of concern sub-dominant mosaic (RE 11.10.9/11.9.7/11.9.10). Ground-truthing of vegetation in these areas found some of these areas to be RE 11.9.5. The largest of these three areas (between KPs 38.05 – 38.45) connects two correctly mapped endangered patches to the west and forms a 240ha remnant of RE 11.9.5. The vegetation in this remnant was of extremely high quality and reducing the size of this remnant patch should be avoided where possible by shifting the alignment to the east into non-remnant vegetation. A small area of 11.9.5 was also observed directly east of KP 30. The proposed alignment is 50m west of this small patch of endangered RE and thus this community will not be affected.

One RE (11.11.18) mapped as present along the alignment is listed as endangered under the VMA and as part of the EPBC-listed TEC "Endangered Semi-Evergreen Vine Thickets of the Brigalow Belt (North and South) and Nandewar Bioregions". This vegetation was mapped in the northern sections

of the site as sub-dominant in a mosaic. Although ground-truthing of this vegetation was not possible due to access constraints, review of aerial photography indicates that the areas of these mosaic communities occurring within the proposed RoW appear to be eucalypt-dominant woodlands, probably RE 11.11.15, and are unlikely to be the semi-evergreen vine thicket vegetation (RE 11.11.18) mapped by DERM. However, confirmation of the RE in this area is required and further survey is recommended.

One RE (11.3.2) mapped within the study area is listed as an of concern RE and, where weeping myall (*Acacia pendula*) occurs, forms part of the EPBC-listed endangered "Weeping Myall Open Woodland of the Darling Riverine Plains and Brigalow Belt South Bioregions". RE 11.3.2 was observed in numerous locations throughout the project area. However, the observed communities contained no significant stands of weeping myall and usually lacked a native understorey. Therefore no EPBC-listed endangered weeping myall open woodland was observed in the vicinity of the alignment.

An additional endangered RE (12.3.3, Forest red-gum (*Eucalyptus tereticornis*) woodland to open forest on alluvial plains) was identified as occurring in mosaic in the eastern sections of the pipeline RoW on Curtis Island between KPs 358.5–358.8. A site inspection conducted to the north of the alignment and a review of the aerial photography indicates that the existing RE mapping for this area is most likely to be correct. This community is not an EPBC Act Listed Ecological Community.

3.1.2 VMA listed Of Concern regional ecosystems

Approximately 13.4ha of remnant of concern vegetation occurs within the proposed RoW (Table 3.2). This vegetation consists of seven different REs listed under the VMA. A full list of of concern REs within the RoW is given in Table 3.1.

The of concern REs occurring within the proposed RoW included 6.7ha of mapped Forest red-gum (Eucalyptus tereticornis) and smooth-barked apple (Angophora floibunda) woodland on alluvial plains (RE 11.3.4) and 5.1ha of mapped poplar box (Eucalyptus populnea), shrubby woodland on fine-grained sedimentary rocks (RE 11.9.7). These two REs were the most commonly observed of concern REs transected by the alignment.

RE 11.3.4 is present at the intersection of Dogwood Creek (KP Con 10.9 – Con 11.6), Pump Creek (KP 182.57– 182.65), Larcom Creek (KPs 320.4–320.5) and a larger section at Targinie Creek (KP 350.6–351), four of the larger watercourses transected by the alignment. RE 11.3.4 also occurs as a sub-dominant in mosaic in some large remnant patches transected by the proposed alignment at (KPs 331.8–332, 332.2–332.4, 333.1–333.4, 347.9–350.1, 351.64–351.69).

The proposed alignment appears to transect an of concern mosaic (11.9.7/11.3.4) dominated by RE 11.9.7 stretching along the western edge of the RoW from KPs 35.8-38.1. Due to the scale of the RE mapping, this section of the alignment has numerous mapping errors. The section stretching from KP 36–37.6 has been selectively cleared in the past, is highly grazed, lacks many mature trees and is not considered to be remnant. As mentioned above, the areas between KP 38–38.45 are mapped as of concern sub-dominant mosaic (RE 11.10.9/11.9.7/11.9.10). Ground-truthing of vegetation in these areas found these to be the endangered RE 11.9.5.

3.1.3 VMA Listed Least Concern Regional Ecosystems

Approximately 417.0ha of least concern remnant vegetation occurs within the proposed RoW (Table 3.2). This vegetation consists of 30 different REs listed under the VMA. A full list of the least concern REs within the proposed RoW and the pproposed clearing areas is included in Table 3.2.

The least concern REs occurring within the proposed RoW included 96.1ha of *Eucalyptus* spp., *Corymbia* spp., *Acacia* spp., budgeroo (*Lysicarpus angustifolius*) on Cainozoic lateritic duricrust (RE 11.7.4) and 42.6ha of mapped lemon-scented spotted gum (*Corymbia citriodora*) open forest on coarse-grained sedimentary rocks (RE 11.10.1). These two REs were the most commonly observed least concern REs located within the RoW.

The largest area of least concern RE located within the proposed RoW was located along the Condabri lateral. Least concern REs with a land zone of 7 (duricrusts and footslopes) and land zone 5 (uniform sand plains) were commonly grouped in this area. The harder lateritic geology is unfavourable for pasture development and consequently these areas have generally undergone less clearing, leaving large remnant patches. The least concern REs 11.7.2, 11.7.4, 11.7.5, 11.7.6, 11.7.7, 11.5.21 and 11.5.4 occurred as stand alone patches and were commonly grouped in different mosaics from KPs Con 2.2–Con 3.6, Con 5.6–Con 8.6, Con 8.9–Con 10.9, Con 11.6–Con 13.7, Con 16.5–Con 24.45, Con 27.2–Con 36.65, Con 37–Con 42, Wol 31.1–Wol 32.5, Wol 32.85–Wol 33.7 and 1- 4.95). A combination of these REs accounted for 46.2% of the area of least concern REs located within the RoW.

A large section of least concern remnant vegetation is located along the Woleebee lateral near Gurulmundi State Forest. This area is dominated by Lemon-scented spotted gum (*Corymbia citriodora*) open forest (RE 11.10.1) occurring in mosaic with sub-dominant RE 11.7.2 located between KPs Wol 0.35–Wol 0.8, Wol 5.4– Wol 10.5. Due to minor errors in the RE mapping, areas mapped as mosaic REs 11.10.1/11.7.2 between KPs Wol 5.35–Wol 5.7 and Wol 2.3–Wol 2.7 were observed to be non-remnant during ground-truthing.

A large area of remnant vegetation is located on sandstone in the central sections of the alignment. This large area of vegetation follows the sandstone belt through to Isla Gorge National Park, located approximately 60km to the north-west. The vegetation located within the RoW in this area is dominated by the following least concern mosaics, as follows:

- REs 11.10.13/11.10.7/11.10.9 located between KPs 90.7-93.35, 97.4-97.9, 98.5-99.9 and 101.4-103.8
- REs 11.7.6/11.7.5 located between KPs 97-97.4, 97.9-98.5 and 99.9-101.4
- REs 11.10.1/11.10.7 located between KPs 89.6-90.7
- REs 11.12.1/11.10.9 located between KPs 103.8-104.3

A large least concern remnant patch of vegetation exists in the western areas of the Callide Range. This area is dominated by steeper slopes of the Callide Range and the alluvial terraces associated with Collards Creek. Vegetation in this area is characterised by these two landforms and often exists as mosaics. The vegetation located within the RoW in this area consists of the following least concern mosaics:

- REs 11.10.13/11.10.4 located between KPs 258.4-259.3
- REs 11.11.15/11.3.25/11.3.4 located between KPs 260-260.3, 260.75-260.9, 262.4-262.6, 263.55-264, 265.4-266.75, 267.5-268.2
- REs 11.11.15/11.11.4 located between KPs 295.3-260, 268.2-271

In addition to the mosaics located within the RoW mentioned above, RE 11.9.9 occurs between KPs 254.4-254.7 and RE 11.10.1 occurs between KPs 254.7-258.4.

Areas mapped by DERM as mosaic REs 11.11.15/11.3.25/11.3.4 between KPs 261.1-261.3, 261.7-261.8, 262.6-263.55 and 264.5-265.4 and areas mapped as mosaic REs 11.11.15/11.11.4 between KPS 261.8-262.4 and 264-264.5 were observed as non-remnant. Ground-truthing of vegetation in these areas found that these REs occur adjacent to but not within the RoW.

On the western side of The Narrows, the proposed alignment transects a large marine clay plain. This area is dominated by RE 11.1.2 (bare mudflats with very isolated individual stunted mangroves) located between KPs 351.4–351.6, 351.7–351.8, 352.3–353.9, 354.05–354.35 and RE 11.1.4 estuarine wetlands (*Rhizophora* spp. open forest) located between KPs 351.8–352.3, 353.9– 354.05, 354.35–354.45.

A bioregional boundary between Curtis Island and the mainland separates the South-east Queensland and Brigalow Belt bioregions. On Curtis Island the proposed RoW occupies 15.3ha of remnant vegetation. The communities within the RoW are dominated by 12.8ha of lemon-scented spotted gum (*Corymbia citriodora*) and narrow-leaved red ironbark (*Eucalyptus crebra*) open forest RE 12.11.6. This least concern community is located between KPs 355.95-356.15, 356.2-357.6, 357.8-358.5 and 359.5-359.8.

Table 3.2 Estimated clearing areas of each RE within the proposed RoW

RE	Description	CTH	VMA	Bio	Area within 5km buffer (ha)	Area within 40 RoW (ha)	% of Area within RoW
Non-rem	Non-remnant Vegetation	n/a	n/a	n/a	272,737.5	1,325.9	75.34
11.1.1	Sporobolus virginicus grassland on marine clay plains		LC	NC	4.96		0.00
11.1.2	*Samphire forbland on marine clay plains*		LC	NC	625.31	9.26	0.53
11.1.4	Mangrove forest/woodland on marine clay plains		LC	NC	796.38	2.44	0.14
11.3.11	Semi-evergreen vine thicket on alluvial plains	E	E	E	1.25		0.00
11.3.14	Eucalyptus spp., Angophora spp., Callitris spp. woodland on alluvial plains.		LC	NC	1,027.05	2.50	0.14
11.3.2	*Eucalyptus populnea woodland on alluvial plains*	E##	OC	OC	880.75	0.35	0.02
11.3.25	*Eucalyptus tereticornis or E. camaldulensis woodland fringing drainage lines*		LC	OC	2,215.42	5.58	0.32
11.3.26	*Eucalyptus moluccana or E. microcarpa woodland to open forest on margins of alluvial plains*		LC	NC	3,912.92	14.43	0.82
11.3.27	*Freshwater wetlands*		LC	OC	4.59	0.94	0.05
11.3.29	Eucalyptus crebra, E. exserta, Melaleuca spp. woodland on alluvial plains		LC	NC	191.81		0.00
11.3.4	*Eucalyptus tereticornis and/or Eucalyptus spp. tall woodland on alluvial plains*		OC	OC	2,877.94	6.70	0.38
11.3.6	*Eucalyptus melanophloia woodland on alluvial plains*		LC	OC	7.68		0.00
11.4.3	*Acacia harpophylla and/or Casuarina cristata shrubby open forest on Cainozoic clay plains*	E	E	E	191.18		0.00

RE	Description	CTH	VMA	Bio	Area within 5km buffer (ha)	Area within 40 RoW (ha)	% of Area within RoW
11.5.1	*Eucalyptus crebra, Callitris glaucophylla, Angophora leiocarpa, Allocasuarina luehmannii woodland on Cainozoic sand plains/remnant surfaces*		LC	NC	5,363.18	8.03	0.46
11.5.2	*Eucalyptus crebra, Corymbia spp., with E. moluccana on lower slopes of Cainozoic sand plains/remnant surfaces*		LC	NC	99.01		0.00
11.5.3	*Eucalyptus populnea +/- E. melanophloia +/- Corymbia clarksoniana on Cainozoic sand plains/remnant surfaces*		LC	NC	48.36		0.00
11.5.4	*Eucalyptus crebra, Callitris glaucophylla, C. endlicheri, E. chloroclada, Angophora leiocarpa on Cainozoic sand plains/remnant surfaces. Deep sands*		LC	NC	2,462.37	10.15	0.58
11.5.5	*Eucalyptus melanophloia, Callitris glaucophylla woodland on Cainozoic sand plains/remnant surfaces. Deep red sands*		LC+	NC	215.70		0.00
11.5.8	*Melaleuca spp., Eucalyptus crebra, Corymbia intermedia woodland on Cainozoic sand plains/remnant surfaces*		LC	NC	284.06		0.00
11.5.9	*Eucalyptus crebra and other Eucalyptus spp. and Corymbia spp. woodland on Cainozoic sand plains/remnant surfaces.*		LC	NC	34.14		0.00
11.5.20	*Eucalyptus moluccana and/or E. microcarpa/ E. pilligaensis +/- E. crebra woodland on Cainozoic sand plains*		LC	NC	636.86		0.00
11.5.21	*Corymbia bloxsomei +/- Callitris glaucophylla +/- Eucalyptus crebra +/- Angophora leiocarpa woodland on Cainozoic sand plains/remnant surfaces*		LC	NC	6,800.33	24.69	1.40
11.7.1	*Acacia harpophylla and/or Casuarina cristata and Eucalyptus thozetiana or E. microcarpa woodland on lower scarp slopes on Cainozoic lateritic duricrust*		LC	OC	254.16		0.00

RE	Description	CTH	VMA	Bio	Area within 5km buffer (ha)	Area within 40 RoW (ha)	% of Area within RoW
11.7.2	*Acacia spp. woodland on Cainozoic lateritic duricrust. Scarp retreat zone*		LC	NC	2,994.58	15.45	0.88
11.7.4	*Eucalyptus decorticans and/or Eucalyptus spp., Corymbia spp., Acacia spp., Lysicarpus angustifolius on Cainozoic lateritic duricrust*		LC	NC	21,887.58	96.09	5.46
11.7.5	*Shrubland on natural scalds on deeply weathered coarse-grained sedimentary rocks*		LC	NC	1,596.88	7.06	0.40
11.7.6	*Corymbia citriodora or Eucalyptus crebra woodland on Cainozoic lateritic duricrust*		LC	NC	13,047.52	19.06	1.08
11.7.7	Eucalyptus fibrosa subsp. nubila +/- Corymbia spp. +/- Eucalyptus spp. on Cainozoic lateritic duricrust		LC	NC	6,397.35	20.21	1.15
11.8.3	*Semi-evergreen vine thicket on Cainozoic igneous rocks.*	E	OC+	OC	30.29		0.00
11.8.4	*Eucalyptus melanophloia woodland on Cainozoic igneous rocks. Hillsides*		LC	NC	344.09		0.00
11.9.1	Acacia harpophylla-Eucalyptus cambageana open forest to woodland on fine-grained sedimentary rocks	E	E	E	189.85		0.00
11.9.2	*Eucalyptus melanophloia +/- E. orgadophila woodland on fine-grained sedimentary rocks*		LC	NC	77.43		0.00
11.9.4	*Semi-evergreen vine thicket or Acacia harpophylla with a semi-evergreen vine thicket understorey on fine grained sedimentary rocks*	E	OC	E	140.74		0.00
11.9.5	*Acacia harpophylla and/or Casuarina cristata open forest on fine-grained sedimentary rocks*	E	E	E	2,538.69	1.65	0.09
11.9.6	Acacia melvillei +/- A. harpophylla open forest on fine-grained sedimentary rocks	E	E*	E	72.68		0.00

RE	Description	CTH	VMA	Bio	Area within 5km buffer (ha)	Area within 40 RoW (ha)	% of Area within RoW
11.9.7	*Eucalyptus populnea, Eremophila mitchellii shrubby woodland on fine-grained sedimentary rocks*		OC	OC	2,506.23	5.06	0.29
11.9.9	*Eucalyptus crebra woodland on fine-grained sedimentary rocks*		LC	NC	972.40	0.99	0.06
11.9.10	*Eucalyptus populnea, Acacia harpophylla open forest on fine-grained sedimentary rocks*		OC	E	242.78	0.29	0.02
11.9.12	*Dichanthium sericeum grassland with clumps of Acacia harpophylla on fine-grained sedimentary rocks*		E	E	185.01		0.00
11.9.13	*Eucalyptus moluccana or E. microcarpa open forest on fine-grained sedimentary rocks*		OC	OC	10.85		0.00
11.10.1	*Corymbia citriodora open forest on coarse-grained sedimentary rocks*		LC	NC	8,502.07	42.58	2.42
11.10.4	*Eucalyptus decorticans, Lysicarpus angustifolius +/- Eucalyptus spp., Corymbia spp., Acacia spp. woodland on coarse-grained sedimentary rocks.*		LC	NC	208.10	0.18	0.01
11.10.7	*Eucalyptus crebra woodland on coarse-grained sedimentary rocks*		LC	NC	1,340.48	3.72	0.21
11.10.8	*Semi-evergreen vine thicket in sheltered habitats on medium to coarse-grained sedimentary rocks*		OC	OC	430.78		0.00
11.10.9	*Callitris glaucophylla woodland on coarse-grained sedimentary rocks*		LC	NC	5,086.41	8.56	0.49
11.10.13	*Eucalyptus spp. and/or Corymbia spp. open forest on scarps and sandstone tablelands*		LC	NC	8,714.73	26.55	1.51
11.11.3	*Corymbia citriodora, Eucalyptus crebra, E. acmenoides open forest on old sedimentary rocks with varying degrees of metamorphism and folding. Coastal ranges*		LC	NC	1,617.31	3.24	0.18

RE	Description	CTH	VMA	Bio	Area within 5km buffer (ha)	Area within 40 RoW (ha)	% of Area within RoW
11.11.4	Eucalyptus crebra woodland on old sedimentary rocks with varying degrees of metamorphism and folding. Coastal ranges		LC	NC	2,391.97	4.92	0.28
11.11.5	*Microphyll vine forest +/- Araucaria cunninghamii on old sedimentary rocks with varying degrees of metamorphism and folding*		LC	NC	677.19		0.00
11.11.9	*Eucalyptus populnea or E. brownii woodland on deformed and metamorphosed sediments and interbedded volcanics*		LC	NC	5.61		0.00
11.11.10	Eucalyptus melanophloia woodland on deformed and metamorphosed sediments and interbedded volcanics		OC	OC	108.08	0.35	0.02
11.11.15	*Eucalyptus crebra woodland on deformed and metamorphosed sediments and interbedded volcanics.*		LC	NC	11,055.00	25.21	1.43
11.11.18	*Semi-evergreen vine thicket on old sedimentary rocks with varying degrees of metamorphism and folding.*	E	E	E	587.58	0.12	0.01
11.12.1	Eucalyptus crebra woodland on igneous rocks		LC	NC	18,885.83	31.92	1.81
11.12.2	*Eucalyptus melanophloia woodland on igneous rocks*		LC	NC	4,341.85	4.30	0.24
11.12.3	*Eucalyptus crebra, E. tereticornis, Angophora leiocarpa woodland on igneous rocks especially granite*		LC	OC	624.30	2.61	0.15
11.12.4	*Semi-evergreen vine thicket and microphyll vine forest on igneous rocks*		LC	OC	296.49		0.00
11.12.5	*Corymbia spp., Lysicarpus angustifolius, Eucalyptus crebra, E. cloeziana woodland on igneous rocks (granite)*		OC	OC	11.46		0.00
11.12.6	Corymbia citriodora open forest on igneous rocks (granite)		LC	NC	7,184.85	12.36	0.70
11.12.14	*Lophostemon spp. woodland on igneous rocks. Coastal hills*		OC	OC	2.81		0.00

RE	Description	CTH	VMA	Bio	Area within 5km buffer (ha)	Area within 40 RoW (ha)	% of Area within RoW
11.12.15	*Allocasuarina torulosa, Livistona decora woodland on igneous rocks. Coastal hills*		OC	OC	52.30		0.00
11.12.17	*Eucalyptus populnea woodland on igneous rocks. Colluvial lower slopes*		E	E	265.78		0.00
11.12.18	*Montane shrubland on igneous rocks.*		OC	OC	14.50		0.00
11.12.21	Acacia harpophylla open forest on igneous rocks. Colluvial lower slopes	E	E	E	509.35	0.08	0.00
12.1.1	*Casuarina glauca open forest on margins of marine clay plains*		OC	E	0.47		0.00
12.1.2	*Saltpan vegetation including grassland, herbland and sedgeland on marine clay plains*		LC	NC	399.87	0.29	0.02
12.1.3	*Mangrove shrubland to low closed forest on marine clay plains and estuaries*		LC	NC	783.04		0.00
12.11.12	Araucarian complex microphyll vine forest on metamorphics +/- interbedded volcanics; northern half of bioregion		OC	OC	8.26		0.00
12.11.14	Eucalyptus crebra, E. tereticornis woodland on metamorphics +/- interbedded volcanics		OC	OC	295.94	0.48	0.03
12.11.17	Eucalyptus acmenoides or E. portuensis open forest on metamorphics +/- interbedded volcanics		OC	OC	10.26		0.00
12.11.18	*Eucalyptus moluccana open forest on metamorphics +/- interbedded volcanics*		LC	NC	161.20		0.00
12.11.20	*Corymbia intermedia, Lophostemon suaveolens woodland on metamorphics +/- interbedded volcanics*		OC	OC	32.43		0.00

RE	Description	CTH	VMA	Bio	Area within 5km buffer (ha)	Area within 40 RoW (ha)	% of Area within RoW
12.11.21	*Allocasuarina luehmannii, Melaleuca nervosa woodland on metamorphics +/- interbedded volcanics*		OC	OC	75.81		0.00
12.11.4	*Semi-evergreen vine thicket on metamorphics +/- interbedded volcanics*		OC	OC	139.51		0.00
12.11.6	*Corymbia citriodora, Eucalyptus crebra open forest on metamorphics +/- interbedded volcanics*		LC	NC	4,139.60	12.77	0.73
12.11.7	Eucalyptus crebra woodland on metamorphics +/- interbedded volcanics		LC	NC	56.65		0.00
12.2.2	*Microphyll/notophyll vine forest on beach ridges*		OC	E	5.11		0.00
12.3.1	*Gallery rainforest (notophyll vine forest) on alluvial plains*		E	E	2.65		0.00
12.3.11	E. tereticornis, Eucalyptus siderophloia, Corymbia intermedia open forest on alluvial plains near coast		OC	OC	89.97	0.19	0.01
12.3.3	Eucalyptus tereticornis woodland to open forest on alluvial plains		E	E	202.08	0.66	0.04
12.3.7	*Eucalyptus tereticornis, Melaleuca viminalis, Casuarina cunninghamiana fringing forest*		LC	NC	264.98	0.88	0.05
12.5.1	*Corymbia citriodora open forest on sub coastal remnant Tertiary surfaces. Usually deep red soils*		LC	NC	272.09		0.00

Status: CTH = EPBC Status, VMA = Vegetation Management Status, Bio = Biodiversity Status, OC = of concern, LC = least concern. E## = endangered only where Weeping Myall *Acacia pendula* occurs, * = Critically Limited Regional Ecosystems, $^{+}$ = At Risk Regional Ecosystems

3.2 DERM Regulated Regrowth

The moratorium on clearing endangered regrowth in Queensland ended on 7 October 2009 and new arrangements for protecting regrowth commenced on 8 October 2009. The 8 October 2009 regrowth vegetation datasets were valid between 8 October and 5 November 2009 and have been superseded by a dataset released by DERM on the 6th of November 2009 (Version 2.0).

The data shown in Table 3.3 has been created using Version 2.0 of the regulated regrowth mapping shows the categories of Regulated Regrowth located within RoW.

Table 3.3 Regulated Regrowth areas within the vicinity of the proposed pipeline

Regrowth category	Area ha
Is a least concern regional ecosystem	50.3
Containing of concern regional ecosystems	54.8
Containing endangered regional ecosystems	26.5
Total regowth with RoW	131.6

The Regulated Regrowth mapping does not identify the individual REs that the regrowth represents but indicates the expected conservation status of the regrowth community. Certain areas of endangered regrowth identified on the Regulated Regrowth mapping were ground-truthed and the identified vegetation represented regrowth communities of Brigalow (RE 11.9.1) at KPs 237 and 258. However, the moratorium expired whilst the flora surveys were being conducted and the mapping changed significantly. Assessment of the mapped Regulated Regrowth communities was therefore minimal.

3.3 EVR flora species

Database searches identified 89 EVR flora species that are known to have ranges that overlap the wider study area, comprising 10 species listed only under the EPBC Act, 56 species listed only under the NC Act and 23 species listed under both. Based solely upon habitat preference of these species, the proposed RoW contains potential habitat for 62 species; however, all of the 89 species identified in the database searches have varying potential to occur within the proposed RoW.

EVR flora species observed within the proposed corridor during the field survey and EVR flora species of the wider study area identified from the Queensland Herbarium HERBRECS, DERM Wildlife Online and DEWHA Protected Matters databases are described in Table 3.4.

Table 3.4 EVR flora species identified by database searches from the wider study area

Botanical name* Common name (Family name)	Cth	Qld	Habitat preference	Likelihood of occurrence^
Cycads and conifers				
Callitris baileyi[2] Bailey's cypress pine (Cupressaceae)		R	Open grassy eucalypt forests of subtropical coastal regions in shallow, often clayey soils in rocky areas of S Qld and N NSW (NSW DEC 2009).	Possible - Soil type and suitable habitat located within the proposed RoW.
Cycas megacarpa[1, 2, 3] large-fruited zamia palm (Cycadaceae)	E	E^^	Spotted gum - ironbark woodlands and open woodlands on rocky substrates derived from acid volcanics, ironstone and mudstone and at 40 to 680m altitude in the Bouldercombe-Woolooga of SE to C Qld (Botanic Gardens Trust 2008).	Known - Observed in numerous locations west of the Callide Range in the northern sections of the project area mostly associated with spotted gum and open woodlands on rocky substrates. Over 100 individuals observed during field visits.
Monocotyledons				
Bothriochloa biloba[2] lobed blue-grass (Poaceae)	V		Cleared eucalypt forests and relict grasslands dominated by purple wiregrass (*Aristida ramosa*), red-leg Grass (*Bothriochloa macra*), pitted bluegrass (*B. decipiens*) and windmill grass (*Chloris truncata*), in heavier-textured soils including brown or black clays, in SE Qld and N NSW (DNR 1999).	Possible - Soil type and suitable habitat located in southern sections of the project area
Bulbophyllum globuliforme[1] miniature moss-orchid (Orchidaceae)	V	R	Epiphyte on the scaly bark of the branches and upper trunk of mature hoop pine (*Araucaria cunninghamii*) trees of subtropical coastal ranges in SE Qld and NE NSW at 500 to 800m altitude (DNR, 1999).	Unlikely - Hoop Pines are unlikely to be present within the RoW.

Botanical name* Common name (Family name)	Cth	Qld	Habitat preference	Likelihood of occurrence^
Cyperus clarus[3] bright flat-sedge (Cyperaceae)		V	Grasslands and open woodlands on basalt derived soils from the Port Curtis, Burnett, Darling Downs, Leichardt, Maranoa and Warrego districts in Qld to near Delungra on the NSW north-west slopes (DERM 2009e).	Possible - Soil type and suitable habitat located in southern sections of the alignment.
Dichanthium queenslandicum[1, 2] king bluegrass (Poaceae)	V	V	Native grasslands on open downs of Emerald and rarely Darling Downs regions of C and SE Qld in black clay soils. Found in association with coolibah grass (*Thellungia advena*), white speargrass (*Aristida leptopoda*), native millet (*Panicum decompositum*), yadbila grass (*P. queenslandicum*), Sweet Signal Grass (*Brachiara eruciformis*), Queensland bluegrass (*Dichanthium sericeum*), golden silky browntop (*Eulalia fulva*) and spring grass (*Eriochloa pseudoacrotricha*) (Sharp and Simon 2002).	Possible - Soil type and suitable habitat located in southern sections of the alignment.
Digitaria porrecta[1] finger panic grass (Poaceae)	E	R	Tropical and subtropical rainforests and sub-humid woodlands of subtropical coastal regions of Qld and NSW (Sharp and Simon 2002).	Unlikely - the pipeline only affects limited coastal regions and tropical and subtropical rainforest are unlikely to occur in the RoW.
Diuris tricolor[1, 2] pink donkey-orchid (Orchidaceae)	V		Sclerophyll forests and ironbark-acacia shrublands in association with white cypress pine, poplar box, gum coolibah (*Eucalyptus intertexta*) and often with a grassy to herbaceous understorey, in sandy soils on flats and small rises and sometimes red earths on coastal ranges of E Aust, from SE Qld to the NSW-VIC border (Stanley and Ross 1989).	Likely - Large remnant communities of suitable habitat located throughout the alignment.
Eriocaulon carsonii[1, 2] salt pipewort (Eriocaulaceae)	E	E	Active or flowing artesian mound springs or the margins of the Great Artesian Basin region of inland of Qld, NSW and SA on fen soils (DERM 2009f).	Unlikely - Artesian mound springs are not present within the RoW.

Botanical name* Common name (Family name)	Cth	Qld	Habitat preference	Likelihood of occurrence^
Eriocaulon carsonii subsp. orientale[3] (Eriocaulaceae)		E	Vents and tails of artesian mound springs on the margins of the Great Artesian Basin in association with vegetation dominated by spring dropseed (*Sporobolus pamalae*), fountain grass (*Pennisetum alopecuroides*), common fringe-rush (*Fimbristylis dichotoma*), smooth flat-sedge (*Cyperus laevigatus*) and water mil-foils (*Myriophyllum* spp.) in CW Qld (Davies et al. 2007).	Unlikely - Artesian mound springs are not present within the RoW.
Homopholis belsonii[1, 2] Belson's panic grass (Poaceae)	V	E	White box (*Eucalyptus albens*) communities and wilga (*Geijera parviflora*) woodlands on rocky hills; belah (*Casuarina cristata*) forests in alluvial soils on flat to undulating lands; poplar box (*E. populnea*) woodlands; and dry woodlands on poor soils derived from basalt at 200 – 520m altitude from S Qld to N NSW. Also recorded in brigalow (*Acacia harpophylla*), myall (*Acacia melvillei*) and weeping myall (*A. pendula*) communities; mountain coolibah (*E. orgadophila*) communities; and on roadsides. (Sharp and Simon 2002).	Likely - Suitable habitat located in the southern sections of the alignment. Observed in numerous locations within the gas fields.
Livistona nitida[3] Carnarvon palm (Arecaceae)		R	Riparian vegetation in the Cracow region of south-central Qld. Known from the junction of Dawson River and Delusion Creek, NW of Cracow (Rodd 1998).	Possible - Some suitable habitat located within the tributaries of the Dawson River in the center sections of the alignment
Paspalidium scabrifolium[2] rough-leaved paspalum (Poaceae)		R	Brigalow (*Acacia harpophylla*) country in coastal regions of north and central Qld (Sharp and Simon 2002).	Possible - Some suitable habitat located in the project area.
Pterostylis cobarensis[1] Cobar greenhood orchid	V		Eucalypt woodlands, open mallee and cypress pine shrubland in skeletal sandy loam soils on low stony ridges and slopes and in association with Morris' grey mallee (*Eucalyptus morrisii*), green mallee (*E. viridis*), gum coolibah (E.	Likely - Large remnant communities of suitable habitat located throughout the alignment.

Botanical name* Common name (Family name)	Cth	Qld	Habitat preference	Likelihood of occurrence^
(Orchidaceae)			*intertexta*), Manara Hills red gum (*E. vicina*), white cypress pine (*Callitris glaucophylla*), wilga (*Geijera parviflora*), belah (*Casuarina cristata*), Spearwood (*Acacia doratoxylon*), cassias (*Senna* spp.) and emu bushes (*Eremophila* spp.) in central eastern Aust (TSSC 2008a).	
Taeniophyllum muelleri[1] minute orchid (Orchidaceae)	V		Epiphyte on branches and branchlets of rainforest trees in coastal regions (PlantNet 2009).	Unlikely - Coastal rainforest habitat unlikely to be present within the RoW.
Dicotyledons				
Acacia barakulensis[3] Waajie wattle (Mimosaceae)		V	Eucalypt communities in sandy soils within Barakula State Forest, S Qld (WWW 2008a).	Likely - Large remnant communities of suitable habitat located throughout the project area. The project area is located within a large remnant patch of vegetation which includes Barakula State Forest.
Acacia calantha[2, 3] Cracow wattle (Mimosaceae)		R	Eucalypt open forests and acacia woodlands with a dense understorey in sands, loams and light clays on sandstone ridges, rocky hillsides and shallow valleys of SC Qld (DNR 1999).	Likely - Suitable habitat likely between KP 89 - KP 105 in the central sections of the alignment.
Acacia chinchillensis[1] Chinchilla wattle (Mimosaceae)	V	V	Layered, open dry sclerophyll forest with mid to dense shrub layers in moderately deep to deep loamy sands to sandy loam soils with sandy clay subsoils in the Chinchilla region of SE Qld. Found on gently undualting flats in association with narrow-leaved red ironbark (*Eucalyptus crebra*), smooth-barked apple (*Angophora leiocarpa*), Pilliga grey box (*E. pilligaensis*), white cypress pine (*Callitris glaucophylla*), black cypress pine (*C. endlicheri*), buloke (*Allocasuarina*	Possible - Some suitable habitat located in the alignment most likley between KP 006 - 011

Botanical name* Common name (Family name)	Cth	Qld	Habitat preference	Likelihood of occurrence^
			luehmannii) and white feather honey-myrtle (*Melaleuca decora*) (TSSC 2008b).	
Acacia curranii[1, 2, 3] curly-barked wattle (Mimosaceae)	V	V	Dry sclerophyll forests and semi-arid woodlands on rocky outcrops of isolated hills and ranges in skeletal soils of the Gurulmundi area in south and central Qld. Also recorded in central NSW (NSW NPWS 2008).	Likely - Suitable habitat located throughout the Gurulmundi area in the south of the alignment.
Acacia eremophiloides[3] sandalwood wattle (Mimosaceae)	V	V	Granite outcrops between 460-550m altitude, SSW of Gayndah, SE Qld (WWW 2009b).	Unlikely - Limited granite outcrops and limited areas higher that 460m located in the alignment.
Acacia pedleyi[2, 3] Pedley's wattle (Mimosaceae)		R	Eucalypt open forests and woodlands in alluvial loams to red clayey loams derived from sandstone and basalt rocks on alluvial flats, hill slopes and on the tops of ridges of the Biloela region in central-eastern Qld. Also recorded as regrowth in areas partially cleared for grazing (DNR 1999).	Known - observed in two locations west of the Callide Range in the northern sections of the alignment.
Acacia pubicosta[2, 3] Biggenden wattle (Mimosaceae)		R	Restricted to the Biggenden area, south-eastern Qld. Confined to rocky slopes (WWW 2009c).	Unlikely - Suitable habitat located throughout the alignment. However, Restricted to the Biggenden area 160km east of the alignment.
Acacia spania[3] western rosewood (Mimosaceae)		R	Monotypic stands surrounded by open eucalypt woodland in shallow red soils in the Emerald district of central Qld (WWW 2009d).	Likely - Suitable habitat located throughout the alignment.
Acacia tenuinervis[3] scrub wattle		R	Eucalypt scrubs and forests in association with tumble-down Ironbark (*Eucalyptus panda*), narrow-leaved red ironbark and poplar box in red earths. Also recorded	Likely - Suitable habitat located throughout the southern sections of the alignment.

Botanical name* Common name (Family name)	Cth	Qld	Habitat preference	Likelihood of occurrence^
(Mimosaceae)			in monotypic stands on ridges and roadsides and in vegetation containing brigalow in SE Qld (DNR, 1999).	
Actephila sessilifolia[2, 3] sessile-leaved actephila (Phyllanthaceae)		R	Notophyll and microphyll vine forests or vine thickets of the Bowling Green Bay-Mount Larcom area in coastal central Qld and in red, talus or granite soils at 30 to 320m altitude (DNR, 1999).	Possible - Some suitable habitat located in the project area, particularly the Mt Larcom area west of Gladstone.
Alyxia magnifolia[2, 3] large-leaf chainfruit (Apocynaceae)		R	Wetter rainforest communities such as complex notophyll and araucarian microphyll vine forests of coastal areas of C and S Qld and N NSW in variety of soils (usually granite or granodiorite substrates) and at 130 to 800m altitude (DNR, 1999; Forster, 1992).	Unlikely - Limited wetter rainforest habitat unlikely to be present wwithin the RoW.
Alyxia sharpei[2, 3] Sharpe's chainfruit (Apocynaceae)		R	Araucarian microphyll vine forests in dark brown soils; complex notophyll vine forests on alluvium adjacent to mangrove swamps and tall open woodlands in association with the shiny-leaved grey ironbark (*Eucalyptus suffulgens*), Moreton Bay ash (*Corymbia tessellaris*), lemon-scented spotted gum (*C. citriodora*), curry myrtle (*Backhousia angustifolia*) in clay-loam soils derived from basalt. Occurs up to 480m altitude in the Port Curtis area, central Qld and also recorded in notophyll scrub dominated by southern siris (*Archidendropsis thozetiana*) (DNR, 1999).	Unlikely - No Araucarian vine forest observed in the RoW.
Apatophyllum teretifolium[3] sandstone prickle bush (Celastraceae)		R	Eucalypt and cypress pine woodlands in association with ironbarks, narrow-leaved white mahogany (*Eucalyptus tenuipes*), budgeroo (*Lysicarpus angustifolius*), white cypress pine (*Callitris glaucophylla*) and black cypress pine (*C. endlicheri*), Henderson's bloodwood (*Corymbia hendersonii*), brown bloodwood (*C. trachyphloia*), spotted gum (*C. citriodora* subsp. *variegata*), Watson's large-fruited yellow jacket (*C. watsoniana*), tea-trees (*Leptospermum* spp.) and rush-leaved wattle (*Acacia juncifolia*), in coarse sandy soils, among rock and along cliff edges on sandstone ridges in C and S Qld. (Eddie 2007).	Likely - Suitable habitat located throughout the alignment.

Botanical name* Common name (Family name)	Cth	Qld	Habitat preference	Likelihood of occurrence^
Atalaya calcicola[2, 3] rock whitewood (Sapindaceae)		R	Deciduous vine thickets in association with broad-leaved bottle tree (*Brachychiton australis*), gyro damson (*Gyrocarpus americanus*), native bauhinia (*Lysiphyllum hookeri*), hard cascarilla tree (*Croton arnhemicus*) and small-leaved coondoo (*Planchonella cotinifolia*) and semi-evergreen vine thickets in association with native bauhinia, batwing coral tree (*Erythrina vespertilio*) and cocky apple (*Planchonia careya*) on hillsides, rocky slopes and rock outcrops (290–500m altitude) on boulders, scree, sandy loams or colluvial soils. Found in eastern coastal regions of Qld (DNR 1999).	Possible - Some suitable habitat scattered in small patches throughout the alignment.
Atalaya collina[1, 2, 3] Yarwun whitewood (Sapindaceae)	E	E	Dry rainforest and SEVT communities in dark clay soils and on hillsides in the Yarwun – Miriam Vale region of C and SE Qld (TSSC 2009a).	Possible - Some suitable habitat scattered in small patches throughout the alignment.
Atalaya rigida[2, 3] veiny whitewood (Sapindaceae)		R	Vine thickets, araucarian microphyll-notophyll vine forests and open forests in red clay soils and black clay loams to 500m altitude of coastal regions in E Qld (DNR 1999, Melzer and Plumb 2007).	Unlikely - Some suitable habitat scattered in small patches throughout the project area. However, no Araucarian vine forest observed in the RoW.
Bertya pedicellata[2, 3] long-stalked bertya (Euphorbiaceae)		R	Open and closed forests on rocky hills of C Qld with shallow skeletal or sandy soils at 320–840m altitude. Found in association with brown bloodwood (*Corymbia trachyphloia*), thread-leaved hopbush (*Dodonaea filifolia*), bendee (*Acacia catenulata*), crooked-veined wattle (*A. julifera* ssp. *curvinervia*) and lancewood (*A. shirleyi*). (DNR 1999).	Possible - Some suitable habitat located in the RoW.
Bosistoa transversa[1,2] / *Bosistoa selwynii1* three-leaved bosistoa /	V		Wet sclerophyll forest, dry sclerophyll forest and rainforest up to 300m in altitude. (DEWHA, 2008).	Possible - Some suitable habitat located in the RoW.

Botanical name* Common name (Family name)	Cth	Qld	Habitat preference	Likelihood of occurrence^
heart-leaved bosistoa (Rutaceae)				
Cadellia pentastylis[1, 2, 3] ooline (Surianaceae)	V	V	Semi-evergreen vine thickets on sandstone and basalt slopes and currawong (*Acacia sparsiflora*), brigalow and belah communities of S-C Qld on undulating clay plains and low hills at altitudes 200 – 500m (DNR, 1999).	Known - observed in one location along west sections of the Woleebee lateral. Located at the base of a sandstone jump-up.
Calytrix gurulmundensis[1, 2, 3] Gurulmundi fringe myrtle (Myrtaceae)	V	V	Hummock grasslands with scattered shrubs or in tall shrublands with eucalypt emergents on low laterised sandstone ridges in well-drained, usually shallow and either gravelly sandy clay or sandy soils of the Gurulmundi and Barakula areas in SE Qld (TSSC 2008c).	Likely - Suitable habitat located in the southern sections of the project area and numerous historic records of this species.
Calytrix islensis[3] Isla Gorge fringe myrtle (Myrtaceae)		R	Little known species of dissected sandstone plateaux in the Isla Gorge in C Qld. Known only from the type locality.	Possible - Some suitable habitat present. However, the project area is located east of the known locality.
Cerbera dumicola[2, 3] native frangipani (Apocynaceae)		R	Open woodlands and forests and occasionally semi-evergreen vine thickets in red and sandy clay soils to 884m altitude (DNR 2008).	Possible - Some suitable habitat scattered in small patches throughout the alignment.
Choricarpia subargentea[3] giant ironwood (Myrtaceae)		R	Microphyll vine forests and rainforests in association with white booyong (*Argyrodendron trifoliolatum*), shatterwood (*Backhousia sciadophora*), silver croton (*Croton insularis*), figs (*Ficus* spp.), crow's ash (*Flindersia australis*), native lime (*Microcitrus australis*), crow's apple (*Owenia vnosa*) and bastard crow's ash (*Pentaceras australe*) on hillslopes and along creeks of the S coast of Qld to	Unlikely - Rainforest habitat unlikely to be located within the RoW.

Botanical name* Common name (Family name)	Cth	Qld	Habitat preference	Likelihood of occurrence^
			500m altitude. (DNR 1999).	
Commersonia argentea[1] commersonia (Sterculiaceae)	V		Eucalypt forests on stony ridges in south and central Qld (TSSC 2008d).	Possible - Suitable habitat throughout the alignment.
Cossinia australiana[1, 2, 3] cossinia (Sapindaceae)	E	E	Araucarian microphyll vine forests and relict semi-evergreen vine thickets in a variety of soils in coastal regions of C Qld at 20–380m altitude. Found in association with prickly alyxia (*Alyxia ruscifolia*), brush caper berry (*Capparis arborea*), grey boxwood (*Drypetes deplanchei*), crow's ash (*Flindersia australis*), crow's apple (*Owenia venosa*), ivorywood (*Siphonodon australis*), native grape (*Cissus oblonga*), burnie vine (*Trophis scandens*) and zigzag vine (*Melodorum leichhardtii*) (DNR 1999).	Unlikely - Some suitable habitat scattered in small patches throughout the project area. However, no Araucarian vine forest observed in the RoW.
Cryptandra ciliata[3] silky cryptandra (Rhamnaceae)		R	Lemon-scented spotted gum (*Corymbia citriodora*) and narrow-leaved red ironbark (*Eucalyptus crebra*) dominated woodlands with tall *Acacia* spp. understorey on lateritic duricrusts in the Gurulmundi area of SW Qld and eucalypt woodlands on rocky and sandy loam soils and lancewood (*Acacia shirleyi*) scrublands and forests and spinifex (*Triodia* spp.) grasslands of inland SE Qld (DNR 1999).	Likely - Large remnant areas of suitable habitat located in the southern sections of the alignment.
Cupaniopsis shirleyana [1, 2, 3] wedge-leaf tuckeroo (Sapindaceae)	V	V^^	Rainforests in a variety of soil types on hillsides, mountain tops, lower slopes of valleys, rocky headlands, stream beds and along riverbanks in central-eastern and SE Qld (TSSC, 2009b).	Possible - Limited rainforest habitat located in the project area. However, possible in the wetter creek lines in the coastal areas near Gladstone.
Dansiea elliptica[2, 3]		R	Coastal notophyll vine forests and semi-evergreen vine thickets in sandy soils at	Unlikely - Limited coastal rainforest habitat

Botanical name* Common name (Family name)	Cth	Qld	Habitat preference	Likelihood of occurrence^
dansiea (Combretaceae)			low altitudes (30 - 150m) in SE Qld and rainforests and rainforest margins at 100-500m altitude in NE Qld. Found in association with crows ash (*Flindersia australis*), belah (*Casuarina cristata*), python tree (*Austromyrtus bidwillii*), grey boxwood (*Drypetes deplanchei*), small-leaved coondoo (*Planchonella cotinifolia*), Burdekin plum (*Pleiogynium timorense*) and brown damson (*Terminalia porphyrocarpa*) (Harden, McDonald and Willliams 2006).	located in the RoW.
Denhamia parvifolia[3] small-leaved denhamia (Celastraceae)	V	V	Semi-evergreen vine thickets, vine scrubs and brigalow (*Acacia harpophylla*) scrub communities in association with shrub persimmon (*Diospyros humilis*), crow's ash (*Flindersia australis*), wilga (*Geijera parviflora*), crow's apple (*Owenia venosa*) and python tree (*Austromyrtus bidwillii*) in fertile, red-brown, sandy, clay loams on hillslopes and crests of variable aspect in the greater Chinchilla area in SE Qld. Also recorded in narrow-leaved red ironbark (*Eucalyptus crebra*) forests (TSSC 2008e).	Possible - Some suitable habitat scattered in small patches throughout the alignment.
Desmodium macrocarpum[2, 3] large-podded tick-trefoil (Fabaceae)		R	Open forests and woodlands and semi-evergreen vine thickets in red earths, rarely sandy clay soils throughout the coastal ranges of E Qld and at altitudes to 884m. Found in association with narrow-leaved red ironbark (*Eucalyptus crebra*), silver-leaved ironbark (*E. melanophloia*), spotted gum (*Corymbia citriodora* subsp. *variegata*), shirley's silver-leaved ironbark (*E. shirleyi*), grey ironbark (*E. siderophloia*) and narrow-leaved white mahogany (*E. teniupes*) (DNR 1999).	Possible - Some suitable habitat scattered in small patches throughout the alignment.
Eucalyptus curtisii[2, 3] Plunkett mallee (Myrtaceae)		R	Monotypic stands of mallee growth in shrublands dominated by banksias and sometimes in association with swamp stringybark (*Eucalyptus conglomerata*), in poorly drained lowland areas and in scattered distribution in more open parts of mixed eucalypt forests dominated by spotted gum (*Corymbia citriodora* subsp. *variegata*), brown bloodwood (*C. trachyphloia*) and black cypress pine (*Callitris endlicheri*) or broad-leaved ironbark (*E. fibrosa*), needlebark (*E. planchoniana*)	Possible - Suitable habitat throughout the alignment.

Botanical name* Common name (Family name)	Cth	Qld	Habitat preference	Likelihood of occurrence^
			and yellow stringybark (*E. acmenoides*), in better drained soils. Found in sandy podosols with impeded drainage, shallow stony soils, clay loams and stony clays with a surface layer of loose stones, on low ridges in SE Qld and up to 457m altitude (Slee et al. 2006).	
Eucalyptus decolor[3] Port Curtis ironbark (Myrtaceae)		R	Open forests and open tall woodlands on ridges, crests and steep hillsides, in grey loams and shallow, sandy soils derived from granite and sandstone, in the Castle Tower National Park-Coast Ranges in C and SE Qld. Found in association with lemon-scented spotted gum (*Corymbia citriodora*), brown bloodwood (*C. trachyphloia*), grey gum (*Eucalyptus major*), gum-topped box (*E. moluccana*), yellow stringybark (*E. acmenoides*), New England blackbutt (*E. campanulata*), Queensland peppermint (*E. exserta*), black she-oak (*Allocasuarina littoralis*), brush box (*Lophostemon confertus*), rock tea-tree (*Leptospermum neglectum*), silver-leaved pomaderris (*Pomaderris argyrophylla*), reedgrass (*Arundinella nepalensis*), poverty grass (*Eremochloa bimaculata*) and turpentine (*Syncarpia glomulifera*). (DNR 1999).	Possible – Known from two very confined locations near the northern sections of the alignment.
Eucalyptus pachycalyx subsp. waajensis[2, 3] pumpkin gum (Myrtaceae)		E	Woodlands in association with narrow-leaved white mahogany (*Eucalyptus tenuipes*), Watson's large-fruited yellow jacket (*Corymbia watsoniana*), red ironbark (*E. sideroxylon*), Cracow ironbark *(E. corynodes*) and broad-leaved yellow bloodwood (*C. petalophylla*) in shallow, sandy soils derived from sandstone or granite on hillsides and ridge tops in the Miles-Taroom-Eidsvold regions of SE Qld (Slee et al. 2006).	Likely - Large remnant areas of suitable habitat located in the southern sections of the alignment.
Eucalyptus rubiginosa[2, 3] Isla Gorge mahogany (Myrtaceae)		R	Woodlands and forests as a co-dominant in association with narrow-leaved white mahogany (*Eucalyptus tenuipes*), lemon-scented spotted gum (*Corymbia citriodora*), Watson's large-fruited yellow jacket (*C. watsoniana*), smooth-topped ironbark (*E. dura*), brown bloodwood (*C. trachyphloia*), Queensland peppermint	Possible - Some suitable habitat present. Known to occur in Isla Gorge National Park and Barakula State Forest.

Botanical name* Common name (Family name)	Cth	Qld	Habitat preference	Likelihood of occurrence^
			(*E. exserta*) and Bailey's stringybark (*E. baileyana*) in shallow, sandy or loamy soils on lateritic, stony sandstone rises or hillsides. Restricted to inland regions of SE Qld (Slee et al. 2006).	
Eucalyptus virens shiny-leaved Ironbark (Myrtaceae)	V	V	Restricted to four disjunct localities near Mt Moffatt in the Carnarvon area, Brovinia area south of Mundubbera, Tara area west of Dalby and Coolmunda Dam east of Inglewood in southern Queensland. Found in woodlands dominated by Queensland peppermint (*Eucalyptus exserta*), smooth-barked apple (*Angophora leiocarpa)*, budgeroo (*Lysicarpus angustifolius*) and woolly she-oak (*Allocasuarina inophloia*), in coarse sandy, skeletal soils on outcropping sandstone escarpments; forests dominated by buloke (*Allocasuarina luehmannii*) and red ironbark (*E. sideroxylon*).	Likely - Anecdotal evidence indicates that this species may occur within the RoW in the central sections of the alignment (but requires field confirmation). Suitable habitat present throughout the central sections.
Floydia praealta[3] ball nut (Proteaceae)	V	V	Riverine and lowland subtropical rainforests of eastern Australia in association with lillypilly (*Acmena smithii*), rough-leaved elm (*Aphananthe phillipensis*), white booyong (*Argyrodendron trifoliatum*), mango-bark (*Canarium australasicum*), native tamarind (*Diploglottis cunninghamii*), scrub poison tree (*Excoecaria dallachyana*), crow's ash (*Flindersia australis*), white beech (*Gmelina leichhardtii*), white silky oak (*Grevillea hilliana*), tulipwood (*Harpullia pendula*), bastard crow's ash (*Pentaceras australe*), blush coondoo (*Planchonella laurifolia*), marara (*Pseudoweinmannia lachnocarpa*), giant water gum (*Syzygium francisii*), small-leaved lillypilly (*S. luehmannii*), durobby (*S. moorei*) and red cedar (*Toona ciliata*) (DNR 1999).	Unlikely - Coastal or riverine rainforest habitat unlikely to be located in the RoW.
Gonocarpus urceolatus[2] gonocarpus (Haloragaceae)		V	Potential habitat may include dusky-leaved ironbark (*E. fibrosa* ssp. *nubila*) woodland on lateritic duricrust (RE11.7.7); gum-topped Ironbox (*E. decorticans*) woodland on lateritic duricrust (RE11.7.4); narrow-leaved red ironbark (*E. crebra*) woodland on sand plains and remnant surface (RE11.5.1); shrublands on natural	Likely - Large remnant areas of suitable habitat located throughout the southern sections of the project area and numerous historic records for this species is within the

Botanical name* Common name (Family name)	Cth	Qld	Habitat preference	Likelihood of occurrence^
			scalds on deeply weathered coarse-grained sedimentary rocks (RE11.7.5); and *Acacia* woodland on lateritic duricrust (RE11.7.2).	vicinity of the alignment.
Gossypium sturtianum[2] Sturt's desert rose (Malvaceae)		R	Occurs in silver-leaved and narrow-leaved red ironbark woodland on ridges and undulating terrain with loamy soil (Eddie 2007).	Possible - Suitable habitat throughout the alignment.
Graptophyllum excelsum[2, 3] scarlet fuchsia (Acanthaceae)		R	Semi-evergreen vine thickets in association with gyro damson (*Gyrocarpus americanus*), native bauhinia (*Lysiphyllum hookeri*), scrub ironwood (*Acacia fasciculifera*) and broad-leaved bottle tree (*Brachychiton australis*) and grassy woodlands in association with Cullen's ironbark (*Eucalyptus cullenii*) and gum-topped bloodwood (*Corymbia erythrophloia*) in soil pockets among rocks and in rock crevices on quite steep, rough, rocky, eroded hillsides. Found in tropical and subtropical coastal regions of CE and NE Qld, from Cape York to Port Curtis, in soils derived from limestone, sandstone and igneous rock (DNR 1999).	Possible - Some suitable habitat scattered in small patches throughout the alignment.
Grevillea hockingsii[2, 3] Hocking's grevillea (Proteaceae)		V	Woodlands and open forests dominated by gum-topped ironbark (*Eucalyptus decorticans*), spotted gum (*Corymbia maculata*), shiny-leaved grey ironbark (*E. suffulgens*) and yellow stringybark (*E. acmenoides*) in red and brown, shallow, sandy or sandy loam soils on hilly sandstone slopes of the Mount Morgan region in C Qld. Also recorded on the edge of soaks containing bottlebrushes (*Melaleuca* spp.) (DNR 1999).	Possible - Suitable habitat throughout the alignment.
Grevillea singuliflora[2] single-flowered grevillea (Proteaceae)		R	Open eucalypt forests of SE Qld, along creekbanks and grassy slopes in shallow, sandy soils and sometimes in association with she-oaks (*Casuarina* spp.) (DNR 1999).	Possible - Suitable habitat throughout the alignment.

Botanical name* Common name (Family name)	Cth	Qld	Habitat preference	Likelihood of occurrence^
Hernandia bivalvis[2, 3] grease nut (Hernandiaceae)		R	Rainforests, vine thickets and microphyll vine forests to 620m altitude on coastal ranges on rock pavements and outcrops in shallow soils (DNR, 1999).	Unlikely - Coastal rainforest habitat unlikely to be located within the RoW.
Homoranthus decumbens[1, 3] decumbent homoranthus (Myrtaceae)	V	V	Mixed *Eucalyptus –Callitris* woodlands and dry sclerophyll forests of S Qld in loose sands, red gravelly soils, stony sodic soils, deep brownish sands, shallow sands overlaying grey brown, silty clays and stony lateritic clays on undulating hills and plains and rarely on low sandstone plateaux (DNR, 1999)	Possible - Suitable habitat throughout the alignment.
Homoranthus papillatus[3] bufferfly homoranthus (Myrtaceae)		R	Heathlands and open eucalypt forests in skeletal soils in soil pockets on granite outcrops and in rock crevices, in the Girraween National Park in S Qld (Craven and Jones, 1991)	Unlikely - Suitable habitat present. However, the project area is not within the vicinity of Girraween National Park.
Indigofera baileyi[2, 3] Bailey's indigo (Fabaceae)		R	Eucalypt forests and woodlands in subtropical coastal regions on sandstone and metamorphic hills up to 590m altitude (NSW Scientific Committee, 2002).	Possible - Suitable habitat throughout the alignment.
Leionema obtusifolium[3] blunt-leaved phebalium (Rutaceae)	V	V	Open forests communities dominated by yellow stringybark (*Eucalyptus acmenoides*), brown bloodwood (*Corymbia trachyphloia*) and smudgy apple (*Angophora woodsiana*) in shallow, dark, well-drained and generally stony soils in hilly terrain on slopes with a southerly aspect (DNR, 1999).	Unlikely - Suitable habitat throughout the alignment. However, it is known from a small area of south-east Queensland, in the Helidon and Ravensbourne areas (Stanley and Ross, 1983)
Leucopogon cuspidatus[1]	V		Stunted open woodlands or shrublands usually dominated by yellow stringybark (*Eucalyptus acmenoides*) and brush box (*Lophostemon confertus*) and with a	Possible - Suitable habitat throughout the alignment.

Botanical name* Common name (Family name)	Cth	Qld	Habitat preference	Likelihood of occurrence^
northern bearded-heath (Ericaceae)			diverse understorey of shrubs and grasses including forest grasstree (*Xanthorrhoea johnsonii*), northern tea-tree (*Leptospermum amboinense*) and hill myrtle (*Babingtonia collina*) in poor skeletal soils, amongst granite or serpeninite outcrops on mountain tops of the C Qld coastal region (Calvert et al. 2005).	
Leucopogon grandiflorus[3] large-flowered bearded-heath (Ericaceae)		R	Eucalypt forests and woodlands in skeletal to deep sands on sandstone cliffs or sandy valley floors at 200 - 720m altitude of inland S Qld and in association with narrow-leaved red ironbark (*Eucalytus crebra*), narrow-leaved white mahogany (*E. tenuipes*), shiny-leaved grey ironbark (*E. suffulgens*), budgeroo (*Lysicarpus angustifolius*), lemon-scented spotted gum (*Corymbia citriodora*), Henderson's bloodwood (*C. hendersonii*), brown bloodwood (*C. trachyphloia*), Watson's large-fruited yellow jacket (*C. watsoniana*), yellow jacket (*C. bunites*), smooth-barked apple (*Angophora leiocarpa*) and curracabah (*Acacia longispicata*) (DNR 1999).	Likely - Large remnant areas of suitable habitat located in the southern sections of the alignment.
Macadamia integrifolia[3] Queensland bush nut (Proteaceae)	V	V	Rainforests on well drained soils on hill crests, hill slopes, scree slopes and foot slopes of coastal areas of S Qld and N NSW and in association with brown pearwood (*Amorphosermum antilogum*), rough-leaved elm (*Aphananthe philippinensis*), white booyong (*Argyrodendron trifoliatum*), rose tamarind (*Arytera divaricata*), native almond (*Bosistoa pentacocca*), union nut (*Bouchardatia neurococca*), hauer (*Dissiliaria baloghioides*), scrub posion tree (*Excoecaria dallachyana*), crow's ash (*Flindersia australis*), tulipwood (*Harpullia pendula*), pear-fruited tamarind (*Msichocarpus pyriformis*), native olive (*Olea paniculata*), blush coondoo (*Planchonella laurifolia*), narrow-leaved gardenia (*Randia chartacea*), red-fruited kurrajong (*Sterculia quadrifida*) and whalebone tree (*Streblus brunonianus*) (DNR 1999).	Unlikely - Rainforest habitat unlikely to be located within the RoW
Macarthuria ephedroides[3]		R	Little known species of rocky sandstone hills of C Qld (Lepschi, 1996).	Possible - Suitable habitat throughout the alignment.

Botanical name* Common name (Family name)	Cth	Qld	Habitat preference	Likelihood of occurrence^
Blackdown Tableland macarthuria (Molluginaceae)				
Macropteranthes fitzalanii[3] northern bonewood (Combretaceae)		R	Coastal notophyll vine forests, microphyll vine forests and littoral rainforests in association with white booyong (*Argyrodendron trifoliatum*), brown tulip oak (*A. polyandrum*), hoop pine (*Araucaria cunninghamii*), prickly fuchsia (*Graptophyllum ilicifolium*), damson (*Terminalia sericocarpa*), cleisanthus (*Cleisanthus dallachyanus*), Eumundi bosistoa (*Bosistoa medicinalis*), threaded boxwood (*Strychnos psilosperma*) and southern siris (*Archidendropsis thozetiana*) in poor soils on rocky outcrops in E Qld, from Rockhampton to Proserpine (DNR, 1999).	Unlikely - Limited coastal rainforest habitat located in the RoW.
Macropteranthes leiocaulis[2, 3] smooth-barked bonewood (Combretaceae)		R	Deciduous vine thickets, semi-evergreen vine thickets and araucarian microphyll vine forests and occasionally forest and woodland habitats in red euchrozems (red, strongly structured clay soils) or sandstone talus in E Qld. Found in association with hoop pine (*Araucaria cunninghamii*), gyro damson (*Gyrocarpus americanus*), broad-leaved bottle tree (*Brachychiton australis*) and Burdekin plum (*Pleiogynium timorense*) (DNR 1999).	Known - Observed in a brigalow community with a vine forest understorey in the central sections of the alignment, East of KP 38.5.
Melaleuca formosa[3] yellow bottlebrush (Myrtaceae)		R	Eucalypt open forests and woodlands and heathland and shrublands in large monotypic stands or less scattered individuals in sandstone and red loam soils of SE Qld and at 840m altitude. Also recorded in dry rainforest margins (DNR, 1999).	Possible - Suitable habitat throughout the alignment.
Melaleuca groveana[2, 3] Grove's paperbark (Myrtaceae)		R	Heathlands and eucalypt woodlands and forests with heathy understorey and occasionally, tall open forests with grassy understorey and microphyll vine forests, on ridges, high mountain slopes and the summits of mountains of subtropical and tropical coastal regions of SE Qld to NE NSW and at 340 - 600m	Possible - Suitable habitat throughout the alignment.

Botanical name* Common name (Family name)	Cth	Qld	Habitat preference	Likelihood of occurrence^
			altitude (DNR, 1999).	
Micromyrtus carinata[2, 3] Gurulmundi heath-myrtle (Myrtaceae)		E	Heathlands and woodlands in association with narrow-leaved white mahogany (*Eucalyptus teniupes*), brown bloodwood (*Corymbia trachyphloia*), wattle (*Acacia julifera* ssp. *julifera*), grevillea (*Grevillea longistyla*) and Gurulmundi Fringe Myrtle (*Calytrix gurulmundensis*), in shallow sandy soils on crests of mountain ranges in a small area NW of Gurulmundi in S Qld (Bean 1997)	Likely - Large remnant areas of suitable habitat located in the southern sections of the alignment.
Micromyrtus patula[3] spreading heath-myrtle (Myrtaceae)		E	Heathlands in association with stunted specimens of Queensland peppermint (*Eucalyptus exserta*) and narrow-leaved white mahogany (*E. tenuipes*) as well as pleasant fringe myrtle (*Babingtonia jucunda*), wattle (*Acacia julifera* ssp. *julifera*), velvet flower (*Keraudrenia corollata*) and thyme honey-myrtle (*Melaleuca thymifolia*), in skeletal soils, on flat rocky platforms of laterised sandstone in the Barakula State Forest in S Qld (Bean 1997).	Likely - Large remnant areas of suitable habitat located in the southern sections of the alignment.
Myriophyllum artesium[2, 3] artesian water-milfoil (Haloragaceae)		E	Wetlands associated with springs emanating from the Great Artesian and associated basins in the Boulia, Clermont-Aramac, Taroom, Quilpie and Eulo districts of C and S Qld (Halford and Fensham 2001).	Unlikely - Artesian mound springs are not present within the RoW.
Notelaea pungens[3] pungent olive (Oleaceae)		R	Open forest and woodland communities dominated by Watson's large-fruited yellow jacket (*Corymbia watsoniana*), lemon-scented spotted gum (*C. citriodora*) and tumble-down Ironbark (*Eucalyptus panda*), in well drained, mostly shallow gravelly clay-loam or sandy soils, in undulating to hilly terrain on either sandstone or granite ridges, in the Eidsvold region of SE Qld (DNR 1999).	Possible - Suitable habitat throughout the alignment.
Oldenlandia gibsonii[3] Gibson's oldenlandia		E	Araucarian microphyll vine forests and dry rainforests in brown loam soils on slopes and scree hillsides in the Calliope region of coastal C Qld (Halford, 1999).	Unlikely - Some suitable habitat scattered in small patches throughout the project area. However, no Araucarian vine forest observed

Botanical name* Common name (Family name)	Cth	Qld	Habitat preference	Likelihood of occurrence^
(Rubiaceae)				in the RoW.
Parsonsia kroombitensis[3] Kroombit Tops monkey rope (Apocynaceae)		V	Low shrubby woodlands dominated by yellow stringybark (*Eucalyptus acmenoides*), thin-leaved stringybark (*E. eugenioides*), Queensland ash (*E. montivaga*), narrow-leaved red ironbark (*E. crebra*) and brown bloodwood (*Corymbia trachyphloia*) and open shrublands and lithophytic vegetation in association with dogwood (*Jacksonia scoparia*), long-leaved waxflower (*Eriostemon myoporoides*), grasstrees (*Xanthorrhoea* spp.), common waxflower (*Hoya australis*) and ferns, at the edges of deep valleys and among outcrops of acidic volcanic rocks of CE Qld (DNR 1999).	Possible - Suitable habitat throughout the alignment.
Parsonsia larcomensis1, 2, 3 Mt Larcom monkey rope (Apocynaceae)	V	V	Open heathlands and shrublands at or near the summits of mountain peaks on cliffs or among outcrops of acid volcanic rocks and serpentinite and in shallow, loamy soils in association with broad-leaved ironbark (*Eucalyptus fibrosa*) at 350 to 750m altitude (DNR, 1999).	Unlikely - Some suitable habitat scattered in small patches throughout the project area. However, this species is generally found at elevations greater than 350m.
Parsonsia lenticellata[3] narrow-leaved parsonsia (Apocynaceae)		R	Vine thickets and rainforest / gallery forests on river terraces and hillslopes and occasionally in eucalypt / paperbark woodlands in the coastal region of central and north Qld (Calvert et al. 2005).	Unlikely - Limited coastal or riverine rainforest habitat located in the RoW.
Phyllanthus sauropodoides[3] glossy-leaved spurge (Phyllanthaceae)		R	Araucarian microphyll vine forests and araucarian notophyll vine forests in alluvium and chocolate soils on the Many Peaks Range in CE Qld and at 120 - 690m altitude (DNR, 1999).	Unlikely - No Araucarian vine forest observed in the RoW.
Polianthion minutiflorum[1,	V	V	Woodlands dominated by shiny-leaved grey ironbark (*Eucalyptus suffulgens*),	Known – Observed in a large remnant patch

Botanical name* Common name (Family name)	Cth	Qld	Habitat preference	Likelihood of occurrence^
[3] small-flowered polianthion (Rhamnaceae)			Gympie messmate (*E. cloeziana*), brown bloodwood (*Corymbia trachyphloia*) and black cypress pine (*Callitris endlicheri*), and in association with Blake's wattle (*Acacia blakei*), Biggenden wattle (*A. pubicosta*), forest boronia (*Boronia rosmaniifolia*), bipinnate boronia (*B. bipinnata*), bitter-pea (*Daviesia filipes*) and triangle-leaved hopbush (*Dodonaea triangularis*), in sandy soils and light, gravelly loams derived from sedimentary rocks, in inland regions of S Qld, and up to 340m altitude (DNR, 1999).	of sandstone in the central sections of the alignment (Boobok, 2009). Suitable habitat throughout the alignment.
Quassia bidwillii 1, 2, 3 quassia (Simaroubaceae)	V	V	Lowland rainforests or rainforest margins and occasionally open forests, woodlands and mangroves in lithosols, skeletal soils, loamy sands, sands, silts and sands with clay subsoils to 617m altitude in coastal regions (DNR 1999).	Unlikely - Limited coastal or riverine rainforest habitat located in the RoW.
Rhaponticum australe[3] austral cornflower (Asteraceae)	V	V	Eucalypt open forest with grassy understory on roadsides and on road reserves with Rhodes grass (*Chloris gayana*), spear thistle (*Cirsium vulgare*), Queensland blue gum (*Eucalyptus tereticornis*) and rough-barked apple (*Angophora floribunda*) on black clay soil and grassland dominated by Queensland bluegrass (*Dichanthium sericeum*) (TSSC 2008f).	Possible - Suitable habitat throughout the alignment.
Rhodamnia angustifolia[3] narrow-leaved turpentine (Myrtaceae)		E	Microphyll vine forests dominated by giant ironwood (*Choricarpia subargentea*), golden shower tree (*Barklya syringifolia*), southern siris (*Archidendropsis thozetiana*), King's myrtle (*Backhousia kingii*), red-fruited kurrajong (*Sterculia quadrifida*) and hoop pine (*Aracuaria cunninghamii*), in reddish or brown loam soils derived from mudstones of Muncon volcanics, on ridges and slopes at the head of Cedar Creek in the Wietalaba SF and at 200-600m altitude, south of Gladstone in CE Qld (Snow and Guymer, 1999).	Unlikely - Microphyll vine forest habitat unlikely to be located within the RoW.
Rutidosis lanata[3]		E	Ecotones of poplar box, brigalow or belah dominated forests, ironbark and currawong forests, box-ironwood forests and eucalypt forests in red-brown	Possible - Suitable habitat throughout the alignment.

Botanical name* Common name (Family name)	Cth	Qld	Habitat preference	Likelihood of occurrence^
red-soil woolly wrinklewort (Asteraceae)			gravelly sands, grey clays, red-brown clay and sandy loams, on flat land and stony red ridges in the Darling Downs district of S Qld and at 280 - 320m altitude (DNR 1999).	
Sannantha brachypoda[3] sannantha (Myrtaceae)		R	Clearings in eucalypt forests with shrubby understorey forest (Willson et al. 2007)	Possible - Suitable habitat throughout the alignment.
Senna acclinis[2, 3] rainforest cassia (Caesalpiniaceae)		R	Deciduous vine thickets, semi-evergreen vine thickets and araucarian microphyll vine forests and occasionally forest and woodland habitats in red euchrozems (red, strongly structured clay soils) or sandstone talus in E Qld. Found in association with hoop pine.	Possible – Known to occur in Gurulmundi State Forest. Some suitable habitat throughout the project area.
Tylophora linearis[1] slender tylophora (Asclepiadaceae)	E		Grows in dry scrub and open forest. Recorded from low-altitude sedimentary flats in dry woodlands of broad-leaved ironbark (*Eucalyptus fibrosa*), red ironbark (*Eucalyptus sideroxylon*), white box (*Eucalyptus albens*), black cypress pine (*Callitris endlicheri*), white cypress pine (*Callitris glaucophylla*) and buloke (*Allocasuarina luehmannii*) (NSW DEC, 1996).	Possible - Suitable habitat throughout the alignment.
Wahlenbergia islensis[3] Australian bluebell (Campanulaceae)		R	Crevices on rock outcrops and on sandstone slopes situated below cliffs, on boulders and low rock faces in association with watercourses in sandstone ranges in Gympie messmate (*Eucalyptus cloeziana*) and lemon-scented spotted gum (*Corymbia citriodora*) woodlands in the Isla and Robinson Gorges and Carnarvon and Chesterton Ranges in inland C Qld (DNR 1999).	Possible - Suitable habitat throughout the central sections of the alignment KP 89 - 105.
Westringia parvifolia[1] small-leaved westringia	V		Mallee, woodlands and forests in association with Baker's mallee (*Eucalyptus bakeri*), green mallee (*E. viridis*) and spinifexes (*Triodia* spp.), in sandy and stony	Unlikely - Suitable habitat throughout the alignment, but > 100km from nearest known

Botanical name* Common name (Family name)	Cth	Qld	Habitat preference	Likelihood of occurrence^
(Lamiaceae)			soils in a small area near Yelarbon and Inglewood in SE Qld (TSSC 2008g)	locality.
Zieria actites[2, 3] Mt Larcom zieria (Rutaceae)		V	Open woodlands and shrublands, in crevices and clefts on exposed outcrops and clifflines on the Targinnie quartz monzonite at 630m altitude and in association with Mount Larcom monkey rope (*Parsonsia larcomensis*), on an isolated peak of Mount Larcom, WNW of Gladstone in C Qld (TSSC 2008h).	Possible - Suitable habitat throughout the project area particularly the Mt Larcom area.

*Source: 1 = EPBC Protected Matters Search Report, 2 = Qld Herbarium HERBRECS Flora Collection Records, 3 = DERM Wildlife Online.

**Status: CTH (EPBC Act): E = endangered, V = vulnerable; Qld (NC Act): E = endangered, V = vulnerable, R = rare, ^^ = Back on Track species.

^Likelihood of Occurrence: Known = Species recorded within the project area; Likely = Species identified by database searches as having geographical range overlapping the wider study area and suitable habitat is mapped within the project area; Possible = Species identified by database searches as having geographical range overlapping the wider study area and sub-optimal habitat or preferred habitat features are mapped within the project area; Unlikely = Species identified by database searches as having geographical range overlapping the wider study area and suitable habitat is not mapped within the proposed project area.

Four species of EVR flora were observed as occurring within the vicinity of the proposed alignment during the field surveys. These species are:

- Pedley's wattle (*Acacia pedleyi*) – listed as rare under the NC Act. This wattle was observed along the western areas of Calliope Range located near to the Dawson Highway and is known to occur within the 50m proposed RoW at KPs 257.1 and 257.8.
- Ooline (*Cadellia pentastylis*) – listed as vulnerable under the NC Act and EPBC. All of the ooline observed were scattered trees in a non-remnant paddock at the base of a sandstone jump-up near KP Wol1.65.
- Large-fruited zamia palm (*Cycas megacarpa*) – listed as endangered under the NC Act and EPBC. This species was identified in numerous locations within the Calliope Range in the northern sections of the proposed alignment and are known to occur with the 50m corridor at KPs (260, 262, 262.1, 266, 268, 269.35, 271.45, 272.1, 272.2 and 275.6). More than 100 individuals were observed within the vicinity of the proposed alignment between KPs 260 – 272.2.
- Smooth-barked bonewood (*Macropteranthes leiocaulis*) – listed as rare under the NC Act. This species was found as one isolated plant located to the west of the proposed RoW at KP 38.1 in an unmapped patch of the endangered RE 11.9.5.

In addition to the EVR species observed during this field visit, a preliminary terrestrial ecology report was complied by Craig Eddie (Boobook) during August 2009. Other EVR species observed during this preliminary survey included small-flowered polianthion (*Polianthion minutiflorum*) - listed as vulnerable under both the NC Act and the EPBC Act. This species was observed 300m east of the proposed alignment at KP 103 in *Corymbia watsoniana* and *Eucalyptus* spp. woodland with an *Acacia* spp. and *Hakea plurinervia* shrublayer and a grassy understorey (Boobook, 2009). Given that this species was observed only 300m from the proposed alignment and large areas of similar habitat exist in the central sections of the site, it is considered likely to occur within the proposed RoW.

This preliminary survey identified a small population of ironbarks which may possibly represent *Eucalyptus virens* shiny-leaved ironbark (listed as endangered under the NC Act and EPBC) located at KP 101.9, 103 and east of 104. However, all populations of this species require field confirmation.

Additional EVR species cracow wattle (*Acacia calantha*), Isla Gorge mahogany (*Eucalyptus rubignosa*) and pumkin gum (*Eucalyptus pachycalyx* subsp. *waajensis*) were also observed during this preliminary field visit. These species were observed further than 5 kilometres from the proposed alignment and are considered possible or likely to occur along the alignment (Table 3.4)

3.4 Regionally Significant Flora Species

A total of 49 regionally significant flora species were identified by database searches from the wider study area. Based solely on habitat preference of these species, the proposed RoW contains potential habitat for 45 species; however, all of the 49 species identified in the database searches have a varying potential to occur within the proposed RoW.

Nine regionally significant species were recorded within the vicinity of the proposed alignment. Regionally significant flora species observed within the proposed corridor during the field surveys and regionally significant flora species of the wider study area identified by database searches are discussed in Table 3.5.

Table 3.5 Regionally significant flora species potentially occurring in the wider pipeline study area

Species	Status	Habitat Preference	Likelihood of occurrence
Acacia aprepta[2, 3] Miles mulga (Mimosaceae)	NPTb	Thickets or dense monotypic populations, in shallow gravelly to sandy loam soils, over sandstone, in the Darling Downs and Maranoa districts of SE Qld (WWW 2008e).	Known - observed in numerous locations in the south of the proposed alignment
Acacia gnidium[2, 3] sandstone wattle (Mimosaceae)	RC-a	Bloodwood dominated woodlands in skeletal soils on sandstone ranges in central Qld (Maslin 2001).	Possible - Suitable habitat along the proposed alignment
Acacia holotricha[2, 3] Duaringa wattle (Mimosaceae)	Ra	Little known species of the Duaringa area in central Qld (WWW 2009d).	Unlikely – Nearest known locality 100kms to the north west
Acacia maranoensis [2] womei (Mimosaceae)	NPT-Sb^^	Poplar box (*Eucalyptus populnea*) woodlands in texture contrast soils in the Roma-Mitchell area of southern Qld (WWW 2009e).	Possible - Suitable habitat along the proposed alignment
Acacia melvillei[2, 3] myall (Mimosaceae)	NPT-Rb	Mixed open woodlands and woodlands, in loam, clay and sandy soils, in SE Qld, central NSW and northern Vic (WWW 2008c).	Likely - Suitable habitat along the proposed alignment
Acacia microsperma[2, 3] bowyakka (Mimosaceae)	NPT-Rb	Monotypic stands or as co-dominant in gidgee (*Acacia cambagei*) or mountain yapunyah (*Eucalyptus thozetiana*) woodlands, in shallow loam or clay soils over weathered rock, in the Adavale-Talwood region of S Qld (WWW 2008d).	Known - observed in the southern sections of the proposed alignment

Species	Status	Habitat Preference	Likelihood of occurrence
Acacia omalophylla[2, 3] Yarran wattle (Mimosaceae)	NPT-Rb	Belah (*Causarina cristata*) communities in brown soils with calcareous nodules, poplar box (*Eucalyptus populnea*) open woodlands in red earths and in various other soil types in semi-arid vegetation types, in central-southern Qld, central NSW and northern Vic (Maslin, 2001).	Likely - Suitable habitat along the proposed alignment
Acacia shirleyi[2, 3] lancewood (Mimosaceae)	NPTb	Monotypic stands and closed forests, low open forests and mixed savannah woodlands, in shallow gravelly or skeletal sandy soils on sandstone and laterite, in semi-arid and temperate areas of inland north-eastern Aust (WWW 2008e).	Known - observed in numerous locations in the southern and central sections of the proposed alignment
Acacia sp. Bulburin2, 3 bulburin wattle (Mimosaceae)	NPT-Rc	Little known species restricted to high altitude country in the Bulburin National Park near Monto in SE Qld (Qld EPA 2006).	Unlikely - Known locality 100km to the east of the proposed alignment
Aristida platychaeta[2, 3] curly wiregrass (Poaceae)	NPTb	Grasslands in cracking clay soils on floodplains in north and central NSW and southern Qld (PlantNet 2007a).	Possible - Suitable habitat along the proposed alignment
Arthropodium strictum[2, 3] chocolate vanilla-lily (Laxmanniaceae)	NPTb	Forests, woodlands and open country in a wide range of soils and aspects in eastern Australia (PlantNet 2007b).	Possible - Suitable habitat along the proposed alignment
Boronia bella[2, 3] beautiful boronia (Rutaceae)	NPT-Rc	Little known species of the Bulburin - Granite Creek - Shoalwater Bay region of ceentral and southern Qld (Duretto 1999).	Unlikely - Closest known locality >100km to the east of the proposed alignment
Callistemon viminalis[2, 3]	Va	Along watercourses, usually in sandstone and granite areas, in southern Qld and northern NSW (Lester, 2008)	Known - observed in numerous locations in along ephemeral streams and drainage lines

Species	Status	Habitat Preference	Likelihood of occurrence
weeping bottlebrush (Myrtaceae)			throughout proposed RoW
Cheilanthes nudiuscula[2, 3] a fern (Adiantaceae)	Ka	Steep, rocky, exposed hillsides and in crevices of rocks or cliffs, often near creeks and gorges in coastal areas of eastern Qld (ANBG 1998).	Possible - Suitable habitat along the proposed alignment
Cinnamomum baileyanum[3] pepperwood (Lauraceae)	RC-a	Rainforests and vine forests in association with Queensland kauri pine (*Agathis robusta*) in southern Qld and in northern Qld in association with spike wattle (*Acacia polystachya*). Found in a broad range of soil types from 30 - 600m altitude (DNR 1999).	Unlikely - Habitat unlikely to be present within the RoW
Corymbia bloxsomei[2, 3] Bloxsome's yellow bloodwood Myrtaceae	NPT-Rb	Forests and woodlands of southern Qld, between Chinchilla and Mundubbera (Slee *et al* 2006).	Known - observed in numerous locations in the south of the proposed alignment
Dichanthium sericeum ssp. polystachyum[2, 3] tassel bluegrass (Poaceae)	NPTb	Open wet grasslands in wet soils in tropical regions of Qld, NT and WA (Simon and Sharp 2002).	Possible - Suitable habitat along the proposed alignment
Dissiliaria muelleri[2, 3] Mueller's redheart (Picrodendraceae)	NPT-Rc	Dry rainforests of central-eastern Qld, from Mount Larcom to Gladstone (Foster 1997).	Possible - Suitable habitat along the proposed alignment
Dodonaea biloba[2, 3] Darling Downs hopbush	NPT, Ra, b	Open forests dominated by buloke (*Allocasuarina luehmannii*), white cypress pine (*Callitris glaucophylla*) and narrow-leaved red ironbark	Known - observed in numerous locations in the south of the proposed alignment

Species	Status	Habitat Preference	Likelihood of occurrence
(Sapindaceae)		(*Eucalyptus crebra*), in grey solodic soils with a silty, sandy overlay and sometimes in association with sticky-leaved wattle (*Acacia ixiophylla*), half-moon wattle (*A. semilunata*), sticky hopbush (*Dodonaea viscosa*) and triangle-leaved hopbush (*D. triangularis*) in southern Qld (West 1987).	
Dodonaea macrossanii[2, 3] inland hopbush (Sapindaceae)	NPT, Ra, b	Cypress pine (*Callitris* spp.) and eucalypt (*Eucalyptus* spp.) dominated woodlands, mallee, ironbark, box and casuarina forests as well as heathlands and spinifex (*Triodia* spp.) grasslands, in various sandy, well-drained soils, on flat terrain in the Darling Downs region of SE Qld and up to 370m altitude (DNR 1999).	Known - observed in numerous locations in the south of the proposed alignment
Ehretia grahamii[2, 3] rough-leaved koda (Boraginaceae)	RC-a	Softwood and brigalow scrublands, vine thickets and microphyll dry rainforests where the mean annual rainfall ranges from 500 - 1000 mm and in soils derived from acid volcanic and neutral alkaline rocks such as basalt, granodiorite, alluvium, quartzose sandstone and granite. Found in coastal regions of central and northern Qld up to 560m altitude (DNR 1999).	Possible - Suitable habitat along the proposed alignment
Eragrostiella bifaria[3] a grass (Poaceae)	K+a	Little known species of NE Qld (Sharp and Simon 2002)	Possible -
Eucalyptus baileyana[3] Bailey's stringybark (Myrtaceae)	NPT-Rb	Dry sclerophyll forests and woodlands in poor, shallow, sandy soils on sandstone in northern NSW and southern Qld (Brooker and Kleinig 1994).	Possible - Suitable habitat along he proposed alignment
Eucalyptus bakeri[2, 3] Baker's mallee	NPTb	Woodland communities in southern and central Qld and northern NSW (Brooker and Kleinig 1994).	Known - observed in the southern locations of the proposed alignment

Species	Status	Habitat Preference	Likelihood of occurrence
(Myrtaceae)			
Eucalyptus camaldulensis[2, 3] river red gum (Myrtaceae)	NPTb	Open forests and woodlands fringing riparian areas in grey heavy clay and brown-red clay soils throughout mainland Aust (Brooker and Kleinig 1994).	Known - observed in numerous locations in the south of the proposed alignment
Eucalyptus corynodes[2, 3] Cracow ironbark (Myrtaceae)	Ra	Forests and woodlands on sandstone and granite ridges in the Cracow region of SE Qld (Brooker and Kleinig 1994).	Known – Observed in a large remnant patch of sandstone in the central sections of the alignment (Boobok, 2009). Suitable habitat throughout the alignment.
Eucalyptus elegans[2, 3] an ironbark (Myrtaceae)	NPTb	Widespread species of grassy and sclerophyll forests and woodlands in shallow, sandy soils of medium fertility of E Australia (PlantNet 2007c).	Possible - Suitable habitat along the proposed alignment. This species is know to be abundant around Miles in RE 11.5.1
Eucalyptus melanoleuca[2, 3] Yarraman ironbark (Myrtaceae)	NPT-R, 3RC-a, b	Open forests, vine thickets, rainforests margins and rainforests of SE Qld, in rich fertile soils and at 300 -840m altitude. Found in association with eucalypts and acacias (DNR 1999).	Possible - Suitable habitat along the proposed alignment
Eucalyptus suffulgens[2, 3] shiny-leaved grey ironbark (Myrtaceae)	NPT-Rb	Forests and woodlands on hills and ranges in central and southern Qld (Brooker and Kleinig 1994).	Possible - Suitable habitat along the proposed alignment
Gompholobium virgatum[3] leafy wedge pea (Fabaceae)	VC-a	Heathlands and wet sclerophyll forests in sandy soils in eastern Australia (PlantNet 2007d)	Unlikely - very limited habitat present within the RoW

Species	Status	Habitat Preference	Likelihood of occurrence
Goodenia macbarronii[2, 3] narrow goodenia (Goodeniaceae)	VC-a	Ephemeral damp or wet sites in moist, sandy soils with impeded drainage from SE Qld to NE Vic (NSW NPWS 2007).	Possible - Suitable habitat along the proposed alignment
Goodenia sp. Mt Castletower[2, 3] Mt Castletower goodenia (Goodeniaceae)	KC-a	Ephemeral damp or wet sites in moist, sandy soils with impeded drainage from SE Qld to NE Vic (Carolin in George 1992.).	Possible - Suitable habitat along the proposed alignment
Grahamia australiana[2, 3] grahamia (Portulacaceae)	NPTb	Arid shrublands in skeletal soils on rocky hillsides and plains in Qld, NSW, NT and SA (PlantNet 2007e).	Possible - Suitable habitat along the proposed alignment
Graptophyllum spinigerum[2, 3] native fuchsia (Acanthaceae)	NPT-Rc	Dry and subtropical rainforests in coastal regions of Qld (Baker 1996).	Possible - Suitable habitat along the proposed alignment
Hemisteptia lyrata[2, 3] a daisy (Asteraceae)	Ka^^	Little known species of Qld and NE NSW (Briggs and Leigh 1995).	Possible - Suitable habitat along the proposed alignment
Heterostemma acuminatum[2, 3] pointed heterostemma (Apocynaceae)	RC-+a	Vine thickets and vine forests in coastal regions in deep sands within humus and on granite and limestone tors and up to 340m altitude (DNR 1999).	Possible - Suitable habitat along the proposed alignment
Homoranthus melanostictus[2]	Ra	Mixed *Eucalyptus-Callitris* woodlands and dry sclerophyll forests of southern Qld in loose sands, red gravelly soils, stony sodic soils, deep	Known – Observed in the southern sections of the alignment.

Species	Status	Habitat Preference	Likelihood of occurrence
mouse bush (Myrtaceae)		brownish sands, shallow sands overlaying grey brown, silty clats and stony lateritic clays on undulating hills and plains and rarely on low sandstone plateux (Craven and Jones 1991)	
Micromyrtus capricornia[2, 3] a heath-myrtle (Myrtaceae)	NPTb	Shrublands in association with Queensland peppermint (*Eucalyptus exserta*), silver-leaved ironbark (*E. melanophloia*), narrow-leaved red ironbark (*E. crebra*), brown bloodwood (*Corymbia trachyphloia*), Clarkson's bloodwood (*C. clarksoniana*) and woodland paperbark (*Melaleuca nervosa*), in brown loam to clay soils over laterite in coastal regions of central Qld (Bean 1997).	Likely - Suitable habitat along the proposed alignment
Parsonsia paulforsteri[2, 3] narrow-leaved silkpod (Apocynaceae)	1Ka	Vine thickets and rainforest / gallery forests on river terraces and hillslopes and occasionally in eucalypt / paperbark woodlands in the coastal region of southern Qld (Williams in Orchard 1996)	Possible - Suitable habitat alongt the proposed alignment
Phebalium nottii[2, 3] pink phebalium (Rutaceae)	NPT-Rc	Woodlands and shrublands on sandstone in SE Qld and northern NSW (Lester, 2008)	Possible - Suitable habitat along the proposed alignment
Plectranthus suaveolens[3] scented plectranthus (Lamiaceae)	RC-a	Skeletal soils on rocky outcrops in open forests and heathlands and sometimes on slopes in closed and tall shrublands and hills in wet sclerophyll forests in subtropical coastal ranges at altitudes between 700 - 1200m. Found in association with smooth-topped ironbark (*Eucalyptus dura*), tallowwood (*E. microcorys*), brush box (*Lophostemon confertus*), turpentines (*Syncarpia* spp.), black cypress pine (*Callitris endlicheri*) and lemon-scented tea-tree (*Leptospermum petersonii*) (DNR 1999).	Unlikely - very limited habitat present within the RoW
Poa fordeana[3] a tussock-grass	NPTb	Heavy clay soils and sand banks in wet situations, in low-lying inland areas of SE Australia (Sharp and Simon 2002).	Possible - Suitable habitat along the proposed alignment

Species	Status	Habitat Preference	Likelihood of occurrence
(Poaceae)			
Prostanthera cryptandroides ssp. euphrasioides[2, 3] a mint-bush (Lamiaceae)	Ka	Little known species of inland regions of central and southern Qld and central NSW (Briggs and Leigh 1995).	Possible - Suitable habitat along the proposed alignment
Rumex dumosus[2] wiry dock (Polygonaceae)	NPTb	Native grasslands and grassy woodlands in basalt and basalt-derived alluvial soils in the Darling Downs region of southern Qld and in NSW (EPA 2008).	Possible - Suitable habitat along the proposed alignment
Sarcochilus dilatatus[2, 3] brown butterfly orchid (Orchidaceae)	RC-b	Epiphyte on lower twigs of shrubs and on tree bases in semi-evergreen vine thickets and aracuarian microphyll vine forests on humid slopes and ridges; along watercourses in open forests and woodlands; and moister rainforests in subtropical coastal regions (DNR 1999).	Unlikely - very limited habitat present within the RoW
Solanum lythrocarpum[2, 3] a nightshade (Solanaceae)	NPTb	Little known species restricted to the Comminglah State Forest, near Monto in southern Qld (Bean 2004).	Unlikely - Closest known locality over 100km to the east of the proposed alignment
Sporobolus disjunctus[2, 3] a dropseed (Poaceae)	Ka	Little known species restricted to black cracking clay soils in central and southern qld (Simon and Jacobs 1999)	Possible - Suitable habitat along the proposed alignment
Swainsona swainsonioides[2, 3] downy darling-pea (Fabaceae)	NPTb	Plains in heavy red and back soils in south-eastern Aust (Thompson 1993).	Possible - Suitable habitat along he proposed alignment

Species	Status	Habitat Preference	Likelihood of occurrence
Teucrium sp. Pittsworth[2, 3] Pittsworth germander (Lamiaceae)	NPTb	Cleared pastoral areas in black clay soils and sometimes sandy soils near watercourses in southern Qld and NSW (PlantNet 2007f).	Possible - Suitable habitat along the proposed alignment

*Source: 1 = EPBC Protected Matters Search Report, 2 = Qld Herbarium HERBRECS Flora Collection Records, 3 = DERM Wildlife Online.

**Status: a = CSIRO ROTAP List, b = DERM SEQN Expert Panel Report, c = Vine Forest Plant Atlas of SEQ; 1 = Known from the type collection only, NPT-R = Regionally Significant Non-EVR Priority Taxa, R = rare, K = Poorly Known, PC = Poorly Conserved, WC = Well Conserved, ^^ = Back on Track species.

^Likelihood of Occurrence: Known = Species recorded within the project area; Likely = Species identified by database searches as having geographical range overlapping the wider study area and suitable habitat is mapped within the project area; Possible = Species identified by database searches as having geographical range overlapping the wider study area and sub-optimal habitat or preferred habitat features are mapped within the project area; Unlikely = Species identified by database searches as having geographical range overlapping the wider study area and suitable habitat is not mapped within the proposed project area.

3.5 Other Flora Species of Conservation Significance

3.5.1 Aquatic Flora Species

Field surveys were conducted during mid to late spring which coincides with the end of the dry season in central and southern Queensland. The survey areas along the proposed alignment received little or no rainfall during the two months leading up to the survey: for the months of July and August the Bureau of Meteorology recorded no rain at Thangool Airport (Station 039089) and Theodore (Station 039158) while Miles in the south (station 042023) recorded 1 mm in July and 4 mm in August.

The lack of any substantial rainfall in the lead up to the survey allowed only the most permanent of waterholes to contain water. As a result only two aquatic species were recorded in more permanent watercourses and billabongs transected by the proposed alignment, tussock rush (*Juncus aridicola*) and *Cyperus iria*. It is expected that the more permanent coastal waterways located near Gladstone (not assessed during the field studies) would contain additional aquatic flora species.

3.5.2 Marine Flora Species

Although no flora surveys were conducted in the inter-tidal mudflats on the mainland, surveys were conducted on Curtis Island and North Passage Island. Following a review of aerial photography and RE mapping, the marine flora located on the eastern side of The Narrows is expected to reflect the abundance and diversity of marine species on the western side of The Narrows. Due to a bioregional boundary between Curtis Island and the mainland separating South-east Queensland and the Brigalow Belt bioregions, these vegetation communities will not belong to the same REs.

Marine plants protected under the *Fisheries Act 1994* were recorded in association with the mudflats in the central portion of the site and coastline and on North Passage Island . These species include eastern white mangrove (*Avicennia marina ssp. australasica*), large-leaved orange mangrove (*Bruguiera gymnorhiza*), yellow mangrove (*Ceriops tagal*), long-styled stilt mangrove (*Rhizophora stylosa*), salt couch (*Sporobolus virginicus*), prickly couch (*Zoysia macrantha*), beaded glasswort (*Sarcocornia quinqueflora* ssp*. quinqueflora*), sea purslane (*Sesuvium portulacastrum*) and seablite (*Suaeda australis*).

Two flora species associated with samphire vegetation were identified along the proposed alignment and include soft roly-poly (*Salsola kali*) and ruby saltbush (*Enchylaena tomentosa*). These species are considered marine plants although they were predominantly found on cleared, agricultural land and adjacent areas, throughout the proposed alignment.

3.5.3 Plants of Cultural Significance

Indigenous people of Central Queensland traditionally used native plants for food, medicine, timber and tools. Species with such values were recorded throughout the project area and include:

- Food (seeds, leaves, berries, gum): wattles (*Acacia* spp.), split jack (*Capparis lasiantha*), wild orange (*Capparis canescens*), broad-leaved cherry (*Exocarpus latifolius*), native cherry (*Exocarpus cupressiformis*), currant bush (*Carissa ovata*), sawsedge (*Gahnia aspera*), forest grasstree (*Xanthorrhoea johnsonii*), ruby saltbush (*Enchylaena tomentosa*) and bottle tree (*Brachychiton rupestris*).

- Medicinal (such as stomach ailments, headaches and marine stings): wattles, soap tree (*Alphitonia excelsa*), native quinine (*Petalostigma pubescens*), flax lilies (*Dianella spp.*) and hop bush (*Dodonaea viscosa*)
- Timber and tools (such as utensils, spearthrowers, canoe paddles, boomerangs, fibre, digger sticks, dye): eucalypts (*Eucalyptus* and *Corymbia* spp.), paperbarks and tea-trees (*Melaleuca* and *Leptospermum* spp.), large-leaved orange mangrove, long-styled stilt mangrove, yellow mangrove, native quinine, cockatoo apple, lance-leaved hopbush (*Dodonaea lanceolata*), forest grasstree (*Xanthorrhoea johnsonii*), flax-lilies (*Dianella* spp.), mat-rushes (*Lomandra* spp.), wonga vine (*Pandorea pandorana*) and *Casuarina* and *Allocasuarina* species.

3.5.4 Plants of Commercial Significance

Five plant species recorded within the project area are considered potential commercial resources and their uses are outlined below:

- Pink bloodwood (Corymbia intermedia): engineering (e.g. poles, railway sleepers and mining timbers), construction (e.g. fencing and housing stumps) and other uses such as hardwood manufacture
- Lemon-scented spotted gum (Corymbia citriodora): engineering (e.g. wharf/bridge construction, poles, railway sleepers and mining timbers), construction (e.g. house framing, flooring, fencing and landscaping), decorative (e.g. furniture and joinery) and other uses such as tool handles, agricultural machinery, sporting goods, boat construction and carriage building
- Narrow-leaved red ironbark (Eucalyptus crebra): engineering (e.g. wharf/bridge construction, poles and railway sleepers), construction (e.g. house framing, flooring, fencing and landscaping), and decorative uses such as furniture and joinery
- Queensland blue gum (Eucalyptus tereticornis): engineering (e.g. wharf/bridge construction, poles, railway sleepers and mining timbers), construction (e.g. house framing, flooring, fencing, and landscaping), decorative (e.g. furniture and joinery), other uses such as structural plywood, boat construction and carriage building, and
- Burdekin plum (Pleiogynium timorense): decorative (e.g. cabinet making, umbrella handles and waking sticks) and other uses such as brush stock.
- Cycads: wild harvesting of whole plants for commercial purposes. This process was phased out in December 2005, except for permitted salvage and bio-prospecting (schedule 3 of the Nature Conservation (Protected Plants) Conservation Plan 2000). Under this plan permitted salvage can only occur where the taking of a plant or plant part for a commercial purpose is not the reason for the clearing or disturbance. However, for approved clearing or disturbance under another Act (such as for construction of a dam or road), contingent or operational salvage may be permitted.
- Mangroves: provide breeding and nursery habitat for juvenile commercial fishery species and fishing charter and tourism industries.

3.5.5 Plants of Recreational Significance

Plants of the proposed project area may hold some recreational significance including:

- Fishing: mangrove shrublands/ mudflats provide habitat for mudcrabs, fish and worms

- Boating: shallow waters adjacent the project area provide safe mooring for small craft during heavy weather, and
- Birdwatching/bushwalking: Mudflats and intertidal areas provide habitat for a variety of bird species whilst wooded areas on site provide bushwalking opportunities.

3.6 Significant Weed Species

A total of 21 non-native flora species were identified along the proposed alignment during the field survey including eight declared plants. These species predominantly occur in low densities with denser patches observed along roadside verges. Three Weeds of National Significance (WONS) were observed in scattered locations during the field survey. Of particular note is the presence of parthenium weed (Parthenium hysterophorus) in the north of the study area (KP 320.5). Both Banana Shire Council and Dalby Regional Council spend numerous resources keeping these local government areas free of parthenium weed. The presence of this weed and its control could cause significant expense and health risks for pipeline construction activities. The status and distribution of declared weed species recorded along the proposed alignment are outlined in Table 3.6 and illustrated in Figure 50.

It should be noted that conditions were not optimal for detection of weeds, especially spring-summer annuals. Anecdotal evidence suggests parthenium is present in Collards Creek in the north of the alignment and requires field confirmation after suitable rainfall. It is also noted that giant rat's tail grass (*Sporobolus pyramidalis* and *S. natalensis*) is likely to be present in areas where surveys were not conducted east of the Callide Range. Given that these declared weeds are considered likely to occur along the alignment, it is suggested further weed surveys in these areas are required following substantial rainfall.

Non-declared weeds were also observed along the proposed alignment generally in low densities although some denser patches of Mexican poppy (*Argemone ochroleuca* ssp. *ochroleuca*) were recorded in association with the ephemeral streams throughout the study area, African lovegrass (*Eragrostis curvula*) was observed on light grainte-derived soils of Callide Range and also in disturbed sandy soils between Miles and Gurulmundi. The pasture weed Mayne's pest (*Verbena aristigera*) was observed in most pastures in the central sections of the proposed alignment.

Table 3.6 Declared plants observed along the proposed alignment

Botanical Name	Common Name	CTH*	QLD*	Site Observed (KP)
Bryophyllum delagoense	mother-of-millions	---	2	Identified from four locations (257, 182.6 170, Con 31,Con 35).
Cryptostegia grandiflora	rubber vine	WONS	2	Collards Creek in the Callide Range (267.5, 266 and Curtis Island 356).
Lantana camara	common lantana	WONS	3	Occurs throughout. Prevalent in Callide Range and dry streams to the north of Callide Range.
Lantana montevidensis	creeping Lantana	---	3	Occurs throughout. Prevalent in Callide Range.

Botanical Name	Common Name	CTH*	QLD*	Site Observed (KP)
Macfadyena unguis-cati	cat´s claw creeper	---	3	Occupies many ephemeral streams in the northern and central sections of the proposed alignment. (257, 214, 224.7, 217.6, 239.6).
Opuntia stricta	prickly pear	---	2	Scattered throughout the study area. No dense infestations identified.
Opuntia tomentosa	velvet tree pear	---	2	Scattered throughout the study area. No dense infestations identified.
Parthenium hysterophorus	parthenium	WONS	2	Northern sections within the CIC at KP 320.5.

*CTH (Australian Weeds Strategy): WONS = Weeds of national significance; QLD (Land Protection [Pest and Stock Route Management] Act 2002): 1 = Class 1 declared plant, 2 = Class 2 declared plant, 3 = Class 3 declared plant.

3.7 Proposed laydown areas and camps

In addition to the proposed pieline alignment, seven potential locations for laydown areas and / or work camps were assessed. None of the proposed locations had any remnant vegetation or any important flora or fauna habitat present on the sites. Each location is briefly described below.

3.7.1 Laydown area, Callide Range (KP 262)

The site is a potential laydown area located on the Callide Range west of the Dawson Highway (flora site Q023, Appendix A). The site is dominated by foreign basalt-derived gravel that has been used to suppress regrowth. As a result, weed species dominate the area which is devoid of any mature trees. Ecologically the site would be suitable for a laydown area, provided the endangered large-fruited zamia palm (*Cycas megacarpa*) individuals present adjacent to Collards Creek to the north-east are protected.

3.7.2 Proposed camp – south option (KP 145.3)

This site is one of two adjacent options for a proposed work camp location. It comprises a large flat paddock located east of Defence Road and north of Horse Creek (flora site Q033, Appendix A). This site consists of cleared land used for grazing with occasional scattered trees of dry rainforest / vine forest species. The site slopes gently to the west and contains exposed rocky outcrops in the centre of the site. Ecologically this site would be suitable for a work camp.

3.7.3 Proposed camp – north option (KP 146.1)

This site is an alternative to the site at KP 145.3, and is located just to its north (flora site Q032, Appendix A). The site is predominately cleared land with two small stands of non-remnant dry rainforest / vine forest vegetation. These two stands are isolated and occur in the middle of a large cleared paddock that is currently grazed. The area has a gentle slope to the west and south in places and ecologically would be a suitable site for a laydown area. Of the two options for a work camp at this point along the alignment, the southern option would be preferred as it has less trees, although both sites are suitable.

3.7.4 Proposed camp – north option (KP Con 43.5)

This site is one of three adjacent options for a proposed work camp, located just south of the junction of the Condabri and Woleebee laterals and east of Upper Downfall Creek Road. The site is an open paddock dominated by pasture grasses with some scattered low regrowth brigalow (flora site Q063, Appendix A). A narrow strip of brigalow regrowth occurs along the fence between the site and and the road, but has not been mapped as regulated regrowth. Cracking clay soils and gilgai occur across the site and indicate that the area is likely to suffer waterlogging during high rainfall events. Ecologically this would be a suitable site for a work camp.

3.7.5 Proposed camp – central option (KP Con 42.9)

This site is an alternative to the site at KP Con 43.5, and is located just to its south (flora site Q064, Appendix A). This site is an open paddock dominated by pasture grasses. There are some scattered regrowth brigalow and a small patch of larger trees to the east around some minor farming infrastructure including older cattle yards and feeding troughs. Three large belah trees occur in the west of the site and a narrow strip of brigalow regrowth occurs occurs along the fence between the site and the road in the road reserve, but has not been mapped as regulated regrowth. Soils in the area are cracking clay soils but appear sandier and not as heavy as at the northern option. Ecologically this would be a suitable site for a work camp.

3.7.6 Proposed camp – south option (KP Con 42.1)

This site is an alternative to the sites at KP Con 43.5 and 42.9, and is located just to their south (flora site Q065, Appendix A). The site is an open paddock dominated by pasture grasses. Scattered buloke and eucalypt trees occur across the site, which is adjacent to a large area of remnant ironbark and buloke woodland to the south. Ecologically this site would be suitable for a work camp.

All three potential work camp locations between KP Con 42 – 45.5 are suitable for the proposed work camp, but the northern site is ecologically preferable due to the absence of trees across the site. However, the heavy cracking clay soils and gilgai indicate that wet conditions may present problems at the northern site, and may also provide potential habitat for small ground-dwelling frogs and reptiles.

3.7.7 Laydown area, Wandoan

The site is located just north of the Wandoan airport, adjacent to the Leichhardt Highway 25km west of the mainline alignment and 28km north of the Woleebee lateral. This site is very flat cleared paddock consisting of mostly pasture grasses. There is some immature brigalow regrowth within the road reserve on the east of the Leichhardt Highway, but this regrowth has not been mapped as regulated regrowth. Ecologically this would be a suitable site for a laydown area.

4 Existing environment - Fauna

A review of fauna databases identified a large number of fauna species that have been recorded from, or that may potentially utilise habitat within, the wider area (Appendix E). A total of 711 fauna species were identified from databases (28 invertebrates, 46 fish, 43 amphibians, 137 reptiles, 362 birds and 95 mammals).

During the field assessment 182 terrestrial fauna species were recorded, comprising five amphibians, 19 reptiles, 124 birds and 34 mammals (Appendix 2 -). The results from bat call analysis of Anabat recordings is included in Appendix 3 - .

4.1 EVR Fauna Species

Database searches identified 66 listed EVR fauna species previously recorded from the wider study area, or with geographic ranges that overlap the wider study area (two invertebrates, one fish, four amphibians, 16 reptiles, 31 birds and 12 mammals). The large number of EVR species identified is a function of the considerable length of the alignment and the variety of habitats traversed. Of these species, 22 are listed under both the EPBC Act and NC Act, while five are listed only under the EPBC Act and 39 are listed only under the NC Act. Four additional species (two reptiles, one bird and one mammal) that are not listed under either the EPBC Act or the NC Act have been ranked as High priority under the Back on Track species prioritisation framework, and have therefore been included here as EVR species.

An additional species identified during the field assessment, Troughton's sheathtail bat (*Taphozous troughtoni*), is listed as endangered under the NC Act. This species was formerly believed to be restricted to a few locations around Mt Isa (Thomson et al. 2001). Following a taxonomic revision, however, it is now considered to be the widespread sheathtail bat in inland Queensland, with records previously attributed to the common sheathtail bat (*Taphozous georgianus*) now attributed to Troughton's sheathtail bat (Reardon and Thomson 2002, Churchill 2008). The species is known to occur throughout much of Queensland, from Mt Isa to north of Cooktown and south to at least Taroom. Consequently, no significant impact is likely and this species has not been included amongst the EVR fauna.

Table 4.1 lists the EVR fauna species identified, together with their preferred habitat and an indication as to whether this habitat is present within the proposed alignment. Based on the desktop habitat review, 48 of these 70 EVR species could potentially utilise habitats within the pipeline corridor.

Five EVR fauna species were recorded along the proposed alignment during the field assessment. These were:

- Squatter pigeons (*Geophaps scripta scripta*) were recorded at five locations along the mainland sections of the alignment: Welshs Road , 5km west of KP 35; Crowsdale-Camboon Road at KPs 209.7 and 212.6; the western boundary of the Callide Timber Reserve at KP 254.0; and Duck Holes Road at KP 294.4.
- Two glossy black-cockatoos (*Calyptorhynchus lathami*) were observed flying over Bottle Tree Creek at KP Con 36.7.
- Beach stone-curlew (*Esacus magnirostris*) and eastern curlew (*Numenius madagascariensis*) were both recorded in the vicinity of Laird Point on Curtis Island (approximately KP 356).

- Little pied bat (*Chalinolobus picatus*) was recorded at KPs Con 11.5 (Dogwood Creek), Con 36.7 (Bottle Tree Creek) and 103.4 (Fairyland).

4.2 Regionally Significant Fauna Species

A further 95 fauna species of regional significance were identified (seven fish, 12 amphibians, 15 reptiles, 29 birds and 32 mammals). Of these species, 57 are listed as non-EVR priority taxa within the South-east Queensland bioregion, 18 are listed as priority taxa within the Brigalow Belt South bioregion and 20 are listed as priority taxa within both bioregions or listed in the relevant action plan. Appendix 3 - lists these regionally significant fauna species, together with their preferred habitat and an indication as to whether this habitat is present within the proposed alignment. Based on the desktop habitat review, 85 of these 96 regionally significant species could potentially utilise habitats within the pipeline corridor.

Four fauna species identified as regionally significant within the Brigalow Belt South bioregion were recorded along the mainland sections of the pipeline alignment during the field assessment. These were: hoary wattled bat (*Chalinolobus nigrogriseus*) at KP Con 11.5 (Dogwood Creek), grey-crowned babbler (*Pomatostomus temporalis*) at 15 locations; Australian bustard (*Ardeotis australis*) near KPs 145.3, 175.7, 200.9 and 203.2; and unspotted yellow-sided ctenotus (*Ctenotus ingrami*) beside Collards Creek at KPs 266.6 and 267.5. One species identified as regionally significant within the south-east Queensland bioregion was recorded on Curtis Island: barking owl (*Ninox connivens*).

An additional seven species identified as regionally significant within the South-east Queensland bioregion were recorded along the mainland sections of the alignment: Herbert's rock-wallaby (*Petrogale herberti*), little red flying-fox (*Pteropus scapulatus*), little forest bat (*Vespadelus vulturnus*), Troughton's sheathtail bat (*Taphozous troughtoni*; formerly known as common sheathtail bat *T. georgianus* in Qld), blue-winged kookaburra (*Dacelo leachii*), open-litter rainbow-skink (*Carlia pectoralis*) and dwarf litter-skink (*Menetia timlowi*). These species were only recorded in the Brigalow Belt South bioregion and not within the bioregion for which they are considered significant. Therefore, these do not constitute records of regionally significant species.

4.3 Other Fauna Species of Conservation Significance

An additional 38 bird species listed as Migratory under the EPBC Act were identified as previously recorded from the wider study area, or with geographic ranges that overlap the wider study area (not including EVR or regionally significant fauna also listed as Migratory). These include species listed under the Japan-Australia Migratory Bird Agreement (JAMBA), China-Australia Migratory Bird Agreement (CAMBA), Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA) and the Bonn Convention on the Conservation of Migratory Species. Although these are not EVR fauna, they are considered a Matter of National Environmental Significance under the EPBC Act and may utilise local habitats on a seasonal basis.

These species are listed in Appendix 5 - , together with their preferred habitat and an indication as to whether this habitat is present within the proposed alignment. Based solely on the desktop habitat review, 37 of these 38 listed Migratory species could potentially utilise habitats along the proposed alignment (refer Appendix 5 -).

Seven bird species listed as Migratory were recorded at various locations along the proposed pipeline alignment during the field assessment: rainbow bee-eater (*Merops ornatus*) at 31 locations; satin flycatcher (*Myiagra cyanoleuca*) at KPs 70.0, 257.1, 267.5 and Wol 32.1; rufous fantail (*Rhipidura rufifrons*) at KPs 239.6 and 320.5; and four additional species on Curtis Island: eastern reef egret

(*Egretta sacra*), white-bellied sea-eagle (*Haliaeetus leucogaster*), whimbrel (*Numenius phaeopus*), and Pacific golden plover (*Pluvialis fulva*) (refer Appendix 5 -).

Table 4.1 EPBC and / or NC Act listed fauna species potentially occurring in the wider pipeline study area

Common Name *Scientific Name*	Status*	BoT*	Preferred Habitats	Preferred habitat in corridor	Likelihood of Occurrence**	Source^
Invertebrates						
boggomoss snail *Adclarkia dawsonensis*	CE1	Critical	Alluvial flats, riparian environments and boggomosses (small peat bogs formed by water from aquifers being pushed to the surface through mound springs). Known only from two populations on the Dawson River between Theodore and Taroom, at least 25km west of the alignment.	✓	Unlikely	1,4,6
pale imperial hairstreak *Jalmenus eubulus*	V2		Restricted to brigalow-dominated open forests and woodlands.	✓	Likely	4
Fish						
Murray cod *Maccullochella peelii*	V1	Critical	Freshwaters of the Murray-Darling River drainage in Qld, NSW, Vic and SA, from smaller upland streams to large slow-flowing rivers. Prefers deep holes with cover such as large rocks, fallen trees, stumps and overhanging vegetation.	✓	Possible	1
Frogs						
tusked frog *Adelotus brevis*	V2		Rainforest, wet sclerophyll forest or flooded grassland, close to water. Utilises cover under logs or rocks beside streams, puddles and ditches. Restricted in distribution to eastern Queensland and New South Wales.	✓	Likely	3,4
rough collared frog *Cyclorana verrucosa*	R2		Burrowing frog that breeds in temporary pools, creeks and claypans in wooded or open country. Usually found only after heavy summer rains.	✓	Possible	4

Common Name *Scientific Name*	Status*	BoT*	Preferred Habitats	Preferred habitat in corridor	Likelihood of Occurrence**	Source^
cascade treefrog (Kroombit Tops) *Litoria pearsoniana*	E2		Rainforest gullies with flowing rocky streams above 700 m, breeds in sheltered rock pools. Confined to Kroombit Tops, east of Biloela in Queensland.	No	Unlikely	3,`4
Kroombit tinkerfrog *Taudactylus pleione*	V1 / E2	High	Rocks and leaf litter beside small flowing streams or seepages in rainforest patches and rainforest edges above 500m. Confined to Kroombit Tops, east of Biloela in Queensland.	No	Unlikely	3,4
Reptiles						
common death adder *Acanthophis antarcticus*	R2		A nocturnal cryptic snake which occurs in a range of habitats from inland arid woodlands to wetter coastal forests. Reliant on deep beds of leaf litter for shelter. Widespread but uncommon, recent serious population declines.	✓	Likely	3,4
short-necked worm-skink *Anomalopus brevicollis*		High	Habitat generalist, occurring in dry sclerophyll forest, vine thicket and moist rainforest on rock outcrops. Shelters in leaf litter and under rocks and fallen timber. Often along edges e.g. watercourses or clearings.	✓	Likely	3,4
five-clawed worm-skink *Anomalopus mackayi*	V1 / E2	High	Open grasslands on heavy cracking clay in the Darling Downs. Usually in soil under dead grass. Often on relict roadside verges.	No	Unlikely	1
woma *Aspidites ramsayi*	R2	High	Subtropical to temperate desert and semiarid areas with hummock grasslands, shrub lands and woodlands over sandy plains and cracking black-soil plains.	✓	Possible	4
estuarine crocodile *Crocodylus porosus*	V2		Tropical coasts and coastal rivers and swamps south to about Gladstone, extending well inland via major rivers and billabongs.	✓	Possible	1

Common Name *Scientific Name*	Status*	BoT*	Preferred Habitats	Preferred habitat in corridor	Likelihood of Occurrence**	Source^
yellow-naped snake *Furina barnardi*	R2		Poorly known. Recorded from dry woodlands and rocky outcrops in widely separated Qld locations, shelters under logs and stones and in soil cracks.	✓	Possible	3
collared delma *Delma torquata*	V1&2	High	Open rocky hillsides, with open woodland over a sparse understorey, also heavy black cracking clay soils. Shelters under surface cover such as rocks.	✓	Likely	1,4
ornamental snake *Denisonia maculata*	V1&2		Low-lying areas with cracking clay soils in open forests, woodlands and riparian habitats. Shelters under fallen timber and in soil cracks, and forages for frogs at night.	✓	Likely	1,3
yakka skink *Egernia rugosa*	V1&2		Ground-dwelling, reliant on logs, ground debris and/or burrows for shelter. Widespread but rare. Dry open forests or woodland with dense ground vegetation, rocky areas, fallen timber and other debris.	✓	Likely	1,3
Dunmall's snake *Furina dunmalli*	V1&2		Poorly known, so that preferred habitats are uncertain. Open dry sclerophyll forests and woodlands, especially brigalow, with fallen timber and ground litter on floodplains of cracking clay soils.	✓	Likely	1,3,4
grey snake *Hemiaspis damelii*	E2		Floodplains in the vicinity of watercourses, with open forests and woodlands over cracking clay soils. Shelters under fallen and embedded timber.	✓	Likely	None
Stephens' banded snake *Hoplocephalus stephensii*		High	Rainforest, eucalypt forests and rocky areas along the coast and ranges from the NSW central coast to southern Queensland, with a disjunct population at Kroombit Tops.	✓	Unlikely	3,4
Cooloola snake-skink	R2		Coastal heaths, woodlands, SEVT and rainforests on white sands in Cooloola and Fraser Is areas of SE Qld. Also recorded from KP	✓	Possible	3,4

Common Name *Scientific Name*	Status*	BoT*	Preferred Habitats	Preferred habitat in corridor	Likelihood of Occurrence**	Source^
Ophioscincus cooloolensis			327 and Kroombit Tops.			
short-limbed snake-skink *Ophioscincus truncatus*	R2		Rainforest, wet sclerophyll forests, pockets of moist scrub in dry sclerophyll forest and coastal heathland in SE Qld and NE of NSW. Burrowing species found in moist soil under logs and rocks.	✓	Unlikely	4
brigalow scaly-foot *Paradelma orientalis*	V1&2		Brigalow, callitris and eucalypt woodlands with a sparse grassy understorey. Nocturnal, sheltering under litter and fallen logs during the day.	✓	Likely	1,3,4,6
Fitzroy River turtle *Rheodytes leukops*	V1&2	High	Riverine species dependent on shallow fast-flowing water (riffle zones). Occurs within permanent freshwater riverine reaches and large, isolated permanent waterholes. Confined to Fitzroy and Dawson Rivers and tributaries.	✓	Possible	1,4
golden-tailed gecko *Strophurus taenicauda*	NT		Dry sclerophyll forest, especially mixed brigalow, ironbark and Callitris. Arboreal, shelters under loose bark or in hollows.	✓	Likely	3,4
rusty monitor *Varanus semiremex*	R2	High	Coastal and estuarine mangroves, paperbark forests and associated rivers and lakes up to 70km inland. Occurs along the Queensland coast from Gladstone to Cape York Peninsula.	✓	Likely	3,4
Birds						
grey goshawk *Accipiter novaehollandiae*	R2		Heavy, humid forests and rainforests - utilises eucalypt and paperbark woodlands only where they are dense or form tall galleries along streams.	✓	Likely	2,4
Australian swiftlet *Aerodramus terraereginae*	R2		Aerial forager; flight over coastal ranges/cliffs, woodland, grassland and islands. Breeds in caves in craggy hill and mountain country; coastal belt of forest.	✓	Possible	4

Common Name *Scientific Name*	Status*	BoT*	Preferred Habitats	Preferred habitat in corridor	Likelihood of Occurrence**	Source^
glossy black-cockatoo *Calyptorhynchus lathami*	V2	High	Coastal forest and open inland woodland. Feeds only on seeds of casuarinas such as Black She-oak, Forest Oak or Belah. Nests in hollows.	✓	Known	2,4,5
black-necked stork *Ephippiorhynchus asiaticus*	R2		Lakes, swamps, freshwater pools and mangroves. Nests in trees or large bushes, often over swamps. Widespread but uncommon in N and E Australia.	✓	Likely	2,4
red goshawk *Erythrotriorchis radiatus*	V1 / E2	High	Tropical open woodland, edges of rainforest and dense riparian vegetation. Nests in trees taller than 20m within 1km of a permanent watercourse or wetland. Foraging usually occurs in open forests and gallery forests.	✓	Possible	1,4
beach stone-curlew *Esacus magnirostris*	V2	High	Open undisturbed beaches, islands, reefs and estuarine intertidal sand and mudflats.	✓	Known	4
grey falcon *Falco hypoleucos*	R2		Lightly timbered country of the arid interior, especially stony plains, lightly timbered *Acacia* scrublands and eucalypt-lined river channels. Widespread but rare along inland watercourses. Typically a bird of the arid inland, with the occasional record within the wider study area.	✓	Unlikely	2,3,4
painted honeyeater *Grantiella picta*	R2	High	Forests, woodlands and dry scrublands, dependent on mistletoe berries. Widespread but rare in inland Australia.	✓	Likely	2,4
squatter pigeon (southern) *Geophaps scripta scripta*	V1&2		Open grasslands often in eucalypt woodland. Preference for areas on sandy soil with low gravel ridges and nearby water. Nests on the ground among tall trees along watercourses.	✓	Known	1,4,5
sooty oystercatcher	R2		Rocky headlands, rocky shelves, exposed reefs with rock pools,	✓	Possible	2,4

Common Name *Scientific Name*	Status*	BoT*	Preferred Habitats	Preferred habitat in corridor	Likelihood of Occurrence**	Source^
Haematopus fuliginosus			beaches and muddy estuaries. Breeds in spring and summer almost exclusively on offshore islands and occasionally on isolated promontories.			
swift parrot *Lathamus discolor*	E1&2		Breeds in Tasmania and over-winters in forests and woodlands on the Australian mainland, congregating where eucalypts are flowering profusely. In coastal SEQ, red ironbark/ forest red gum forests and yellow box forest.	✓	Unlikely	1
Lewin's rail *Lewinia pectoralis*	R2		Swamps, lakes, tidal creeks, salt marsh, lush wet pasture or paperbark and other swampy woodland in coastal southern and eastern Australia. Cryptic, hides in thick vegetation.	✓	Possible	2,4
square-tailed kite *Lophoictinia isura*	R2		Widespread but rare bird of prey that prefers a structurally diverse landscape. Sparsely distributed in open eucalypt forests, woodlands and sand plains.	✓	Likely	2,4
southern giant-petrel *Macronectes giganteus*	E1&2		Marine bird occurring in Antarctic to subtropical waters, over seas and inshore waters favouring edges of continental shelf. Shorelines south of Rockhampton. Nests on offshore islands.	No	Unlikely	1
hooded robin (southeast) *Melanodryas cucullata cucullata*		High	Open woodland across inland Australia, including eucalypt woodland, mallee, mulga, heaths. Also semi-cleared farmland.	✓	Possible	3
black-chinned honeyeater *Melithreptus gularis*	R2		Widespread but rare in woodlands across north east and central Queensland in open eucalypt woodland, especially ironbarks and box, paperbarks and tree-lined watercourses of arid areas. Locally nomadic, following food sources.	✓	Likely	2,4
star finch (eastern)	E1&2		Dense coastal forests, scrub and tall rank grass along	✓	Unlikely	1

Common Name *Scientific Name*	Status*	BoT*	Preferred Habitats	Preferred habitat in corridor	Likelihood of Occurrence**	Source^
Neochmia ruficauda ruficauda			watercourses, rush margins of swamps and moist green crops. Very few records since 1990, scattered across central Qld, centred on Rockhampton area.			
turquoise parrot *Neophema pulchella*	R2		Open forest, timbered grasslands and along watercourses in SE Qld and NSW.	✓	Unlikely	4
cotton pygmy-goose *Nettapus coromandelianus*	R2		Freshwater lakes, swamps and large water impoundments. Nests in tree hollows up to 10m above the ground, usually within 20m of water.	No	Unlikely	1,2,4
powerful owl *Ninox strenua*	V2		Eucalypt forests, preferring tall wet forests of ranges, with large territories centred on densely vegetated gullies.	✓	Likely	3,2,4
eastern curlew *Numenius madagascariensis*	R2		Summer non-breeding migrant to eastern and northern Australian coasts. Estuaries, mud flats and soft, sandy beaches.	✓	Known	2,4
plains-wanderer *Pedionomus torquatus*	V1&2		Occurs in natural open grasslands, treeless with patches of open ground; may be lightly grazed. Avoids country where the grass is too tall or dense, or too sparse, low or heavily grazed. Rare, patchy distribution in southern inland Australia.	No	Unlikely	4
marbled frogmouth *Podargus ocellatus plumiferus*	V2		Rainforest and rainforest margins, able to travel several kilometres across unsuitable habitat. Restricted to SE Queensland and NE NSW.	✓	Unlikely	4
Kermadec petrel (western) *Pterodroma neglecta*	V1		Pelagic: forages at sea in tropical and subtropical waters of the South Pacific; nests on high islands among rocks and vegetation.	No	Unlikely	1

Common Name *Scientific Name*	Status*	BoT*	Preferred Habitats	Preferred habitat in corridor	Likelihood of Occurrence**	Source^
neglecta			Extremely rare visitor to the east coast of Qld and NSW.			
Australian painted snipe *Rostratula australis*	V1&2		Shallow muddy freshwater swamps and marshes. Cryptic nomadic bird of shallow wetlands, nests on ground in reeds close to water.	✓	Possible	1,2,4
little tern *Sternula albifrons*	E2	High	Coastal, sheltered environs including estuaries, bays, islets, coastal swamps and lakes. Nests on sandy beaches.	✓	Possible	1,4
freckled duck *Stictonetta naevosa*	R2		Open water species but breeds in densely vegetated freshwater lakes, swamps, creeks and floodwaters with thickets of paperbark, she-oaks and tea-trees as well as inland areas of canegrass and lignum.	No	Unlikely	2,4
radjah shelduck *Tadorna radjah*	R2		Mainly brackish waters, mud banks and mangrove-fringed mouths and lower reaches of tropical rivers. Also lagoons and pools along rivers and swamps. Nests in tree hollows during the wet season.	✓	Possible	2,4
shy albatross *Thalassarche cauta*	V1&2		Pelagic species, feeds in southern Australian continental waters from Fremantle to southern Queensland. Nests on rocky islands in southern Tasmania and Bass Strait.	No	Unlikely	3,4
black-breasted button-quail *Turnix melanogaster*	V1&2	Critical	Semi-evergreen vine-thickets with a closed canopy and deep litter layer, or lantana thickets adjacent to SEVT, in eastern Qld and northern NSW.	✓	Likely	1,2,4
sooty owl *Tyto tenebricosa*	R2		Rainforest and tall wet eucalypt forests along the coastal ranges of SE Australia.	✓	Unlikely	4
Mammals						
large-eared pied bat	V1&2		Dry forests and woodlands, moist eucalypt forests. Roosts in caves	✓	Likely	1

Common Name *Scientific Name*	Status*	BoT*	Preferred Habitats	Preferred habitat in corridor	Likelihood of Occurrence**	Source^
Chalinolobus dwyeri			and mines.			
little pied bat *Chalinolobus picatus*	R2		Poorly known. Dry open forests, open and mulga woodlands, chenopod shrublands, pine forests and mallee close to water. Roosts in caves, rock outcrops, mines, tree hollows and buildings.	✓	Known	3,4,5
northern quoll *Dasyurus hallucatus*	E1		Most abundant in rocky eucalypt woodlands but occurs in a variety of habitats, often near creeklines. Dens in tree hollows and rock crevices.	✓	Likely	1,3,4
spotted-tailed quoll (southern) *Dasyurus maculatus maculatus*	E1 / V2	High	Rainforests and dense woodlands, dens in hollow logs, trees, caves and rock crevices. Uncommon over most of its range, restricted to large forested areas.	✓	Unlikely	3,4
Semon`s leaf-nosed bat *Hipposideros semoni*	E1&2		Rainforests, around dense vegetation and drier open woodlands from Cape York south to Cooktown, with an isolated roost at Kroombit Tops. Roosts in caves, old mines, cracks in rocks and under rock overhangs.	✓	Possible	1,4
south-eastern long-eared bat *Nyctophilus corbeni*	V1&2		River Red Gum forest, semi-arid woodlands and savannas. Roosts in tree hollows, fissures in branches and under sheets of bark. Listed under EPBC Act and NCA Act as *N. timoriensis* (SE form).	✓	Possible	1
yellow-bellied glider (southern) *Petaurus australis australis*		High	Wet and damp sclerophyll forest in eastern Australia. Requires tree hollows for shelter and breeding.	✓	Possible	4
koala	V2		Restricted to eucalypt forests and woodlands of eastern Australia.	✓	Likely	4

Common Name *Scientific Name*	Status*	BoT*	Preferred Habitats	Preferred habitat in corridor	Likelihood of Occurrence**	Source^
Phascolarctos cinereus	(SEQ)		Generally inhabits open eucalypt forests with sparse ground cover and tends to avoid thick forests and steep slopes.			
golden-tipped bat *Phoniscus papuensis*	R2		Specialist feeder on small web building spiders. Occurs in rainforest and adjacent sclerophyll forest.	✓	Likely	3,4
grey-headed flying-fox *Pteropus poliocephalus*	V1	Critical	Roosting camps usually in dense riparian vegetation adjacent to waterbodies. Forages within 15km of camp in flowering trees of rainforests, eucalypts, paperbarks and banksias.	✓	Possible	1,3,4
coastal sheathtail bat *Taphozous australis*	V2	High	Roosts in caves and rock crevices along the coast and on islands along the coast, forages over a range of habitats within a few km of the ocean. Limited to the coast from Shoalwater Bay to Cape York Peninsula.	✓	Unlikely	3,4
false water rat *Xeromys myoides*	V1&2	High	Saline grassland, saltmarsh, mangroves, margins of freshwater swamps close to fore-dunes. Forages in the mangrove on low tides at night. Occurs in coastal areas of the NT and Queensland.	✓	Possible	1

*Status: 1 - EPBC: CE = critically endangered, E = endangered, V = vulnerable. 2 - NC Act: E = endangered; V = vulnerable; R = rare; NT = near threatened. BoT= Back On Track Species Prioritisation Framework Rank.

**Likelihood of Occurrence: Known: species has been recently recorded within pipeline study area; Likely: species is known from the wider study area and preferred habitat is present on site; Possible: species is known from the wider study area and suboptimal habitat is present in the pipeline study area; Unlikely: species is known from the wider study area but suitable habitat is not present in the pipeline study area.

^Source: 1 = EPBC Protected Matters Search, 2 = Birds Australia, 3 = Qld Museum Fauna Collection Records, 4 = DERM Wildlife Online, 5 = WorleyParsons survey.

4.4 Common Fauna Species

All habitats (even cleared and degraded land), provide habitat for a range of common native fauna species. Remnant vegetation provides higher habitat values and thus are likely to have a larger range of more common and abundant species. The desktop study and field survey indicate that the study area is utilised by a large number of common fauna species. A total of 528 common native fauna species were identified as potentially present by the database searches (excluding EVR and regionally significant fauna). These comprised 26 invertebrates, 34 fish, 25 amphibians, 108 reptiles, 294 birds (including the 38 species listed as Migratory under the EPBC Act) and 41 mammals. The complete list of common and significant fauna species identified as potentially present from the database searches is included in Appendix E

Common native fauna species recorded during the field survey totalled 143 species, comprising 4 frogs, 16 reptiles, 116 birds and 7 mammals. A complete list of fauna recorded during the field assessment is included in Appendix 2 - .

4.5 Aquatic Fauna

Review of the Queensland Museum and WildNet fish databases found 46 fish species recorded from watercourses in the wider study area. Three of these are exotic: mosquitofish (*Gambusia holbrooki*), guppy (*Poecilia reticulata*) and goldfish (*Carassius auratus*)

One EVR fish species was identified as occurring in the wider region: Murray cod (*Maccullochella peelii*). Seven species were identified as regionally significant: Agassiz's glassfish (*Ambassis agassizii*), silver perch (*Bidyanus bidyanus*), jungle perch (*Kuhlia rupestris*), southern purple-spotted gudgeon (*Mogurnda adspersa*), southern saratoga (*Scleropages leichardti*) leathery grunter (*Scortum hillii*) and freshwater catfish (*Tandanus tandanus*). The southern saratoga and leathery grunter are endemic to the Fitzroy river catchment. Fish species are addressed in more detail in the aquatic ecology sections of the EIS.

Other aquatic EVR species identified as potentially occurring within the wider area include Fitzroy River turtle (*Rheodytes leukops*), and estuarine crocodile (*Crocodylus porosus*).

The Fitzroy River turtle is a freshwater turtle found only within the Fitzroy River and its tributaries, mainly around Rockhampton. This species is listed as vulnerable under both the EPBC Act and NC Act, and is dependent on riffle zones, especially during times of low flow (Tucker et al. 2001). It favours areas of creeks and rivers that have clear, shallow and fast flowing water with gravel, rock or sand substrate. Virtually all watercourses were completely dry during the field assessment, and the few with any water had been reduced to small muddy waterholes, indicating that the watercourses traversed by the alignment are not high quality habitat for the Fitzroy River turtle.

Estuarine crocodiles are found across northern Australia in fresh and saltwater habitats. In Queensland, they are found mainly in coastal waters between Gladstone and Cape York and throughout the Gulf of Carpentaria. Although the estuarine crocodile lives mainly in the tidal reaches of rivers, it is also common in freshwater lagoons, swamps and beaches. This crocodile also occurs in inland waterways hundreds of kilometres from the sea. The estuarine crocodile is listed as Migratory under the EPBC Act and as vulnerable in Queensland under the NC Act.

4.6 Animal Pest Species

Twenty-one introduced species have been recorded within the wider area, including three fish, one amphibian, seven birds and 10 mammals. These species are included in Appendix E, where they are denoted as introduced species by an asterisk.

The most recent pest distribution maps produced by Biosecurity Queensland indicate that red fox (*Vulpes vulpes*), cat (*Felis catus*), wild dog (*Canis familiaris*), European rabbit (*Oryctolagus cuniculus*), feral pig (*Sus scrofa*) and cane toad (*Rhinella marina*) are all likely to occur along the full length of the alignment (DEEDI 2009).

Eight introduced species were recorded (from visual observation, tracks, scats or sign) along the proposed alignment during the field assessment. Feral pig was recorded at KPs 97.2 and 146.1; goat (*Capra hircus*) at KP 144.1; European rabbit at seven sites; brown hare (*Lepus capensis*) at KPs 232.9 and Con 1.5; feral cattle (*Bos taurus*) and feral horses (*Equus caballus*) on Curtis Island; and cane toad at KPs 70.0 and 234.3 and on Curtis Island. In addition, dingo/wild dog (*Canis lupus dingo/familiaris*, indistinguishable in this assessment) was recorded at nine locations.

Mosquitoes occur along the length of the alignment, particularly in the vicinity of water bodies including the watercourses. The potential to create new mosquito breeding grounds is discussed in Section 6.4.

4.7 Fauna Habitats

A total of 83 different REs were identified from RE mapping as being present within the 10km wide buffer centred on the pipeline corridor. Forty-three of these were identified as transected by the proposed 50m wide pipeline Right of Way (RoW) (refer Section 3.1). Sixteen different broad faunal habitats (plus non-remnant habitat) were identified as present within the 10km buffer, based on stratification of REs into habitats and on field habitat assessments. These are described in Table 4.2, along with the REs to which they correspond (where relevant). Of the 16 habitats identified within the broader corridor, 14 are transected by the proposed alignment RoW. Figure 18 - Figure 33 illustrate the locations of each habitat along the alignment (note: the habitat maps are based on broad faunal habitat locations and may not depict small patches of habitat such as those contained within larger habitat mosaics).

Table 4.2 Faunal habitats transected by the proposed alignment or present within the 5km buffer.

Fauna Habitat	Description	Transected by alignment	% of total alignment
Brigalow / belah	Open forest and woodland dominated by brigalow (*Acacia harpophylla*) and / or belah (*Casuarina cristata*). May include eucalypts such as mountain yapunyah (*Eucalyptus thozetiana*), inland grey box (*E. microcarpa*) or Dawson gum (*E. cambageana*). Corresponds to REs 11.4.3, 11.7.1, 11.9.1, 11.9.5, 11.9.6 and 11.12.21.	Yes	0.10
Semi-evergreen vine thicket and vine forest	Closed forest including semi-evergreen vine thicket, microphyll vine forest and notophyll vine forest. Corresponds to REs 11.3.11, 11.8.3, 11.9.4a, 11.10.8, 11.11.5, 11.11.18, 11.12.4, 12.2.2, 12.3.1, 12.11.4 and 12.11.12.	Yes	0.01
Floodplain eucalypt woodland	Woodland to open forest dominated by Queensland blue gum (*Eucalyptus tereticornis*) on alluvial floodplains. Other eucalypts may also be present. Corresponds to REs 11.3.4, 12.3.3 and 12.3.11.	Yes	0.43
Riparian eucalypt woodland	Queensland blue gum (*E. tereticornis*) or river red gum (*E. camaldulensis*) woodland fringing drainage lines, often with paperbarks or casuarinas. Corresponds to RE 11.3.25 and 12.3.7.	Yes	0.37
Spotted gum woodland	Open forest dominated by spotted/lemon-scented gum (*Corymbia citriodora*). Corresponds to REs 11.10.1 and 11.12.6.	Yes	3.12
Poplar box woodland	Woodland dominated by poplar box (*Eucalyptus populnea*). Corresponds to RE 11.3.2, 11.9.10, 11.9.7, 11.11.9 and 11.12.17.	Yes	0.32
Ironbark woodland	Woodland dominated by ironbarks including narrow-leaved red ironbark (*Eucalyptus crebra*), silver-leaved ironbark (*E. melanophloia*), dusky-leaved ironbark (*Eucalyptus fibrosa* subsp. *nubila*) and gum-topped ironbark (*Eucalyptus decorticans*). Corresponds to REs 11.3.6, 11.5.5, 11.7.7, 11.8.4, 11.9.9, 11.10.4, 11.10.7, 11.11.10, 11.12.1, 11.12.2 and 12.11.7.	Yes	3.51
Mixed eucalypt woodland & open forest	Woodland or open forest dominated by a variety of *Eucalyptus* and / or *Corymbia* species. Corresponds to REs 11.3.9, 11.3.14, 11.3.26, 11.3.29, 11.5.1, 11.5.2, 11.5.3, 11.5.4, 11.5.8, 11.5.9, 11.5.20, 11.5.21, 11.7.4, 11.7.6, 11.9.2, 11.9.13, 11.10.13, 11.11.3, 11.11.4, 11.11.15, 11.12.3, 11.12.5, 12.5.1, 12.11.6, 12.11.14, 12.11.17, 12.11.18 and 12.11.20.	Yes	14.26

Fauna Habitat	Description	Transected by alignment	% of total alignment
Callitris woodland	White cypress pine (*Callitris glaucophylla*) woodland, often with eucalypts such as silver-leaved ironbark (*E. melanophloia*) amongst others. Corresponds to RE 11.10.9.	Yes	0.49
Acacia woodland	Woodland dominated by *Acacia* species. Corresponds to RE 11.7.2.	Yes	0.88
Shrubland	Mixed shrubland including shrubland on natural scalds, brush box (*Lophostemon*) tall shrubland and montane shrubland. Corresponds to REs 11.7.5, 11.12.14 and 11.12.18.	Yes	0.40
Mangroves	Mangrove shrubland to forest on marine clay plains. Corresponds to REs 11.1.4 and 12.1.3.	Yes	0.14
Saltpan	Saltpan vegetation including samphire forbland, *Sporobolus* grassland, herbland and sedgeland on marine clay plains. Corresponds to REs 11.1.1, 11.1.2 and 12.1.2.	Yes	0.68
Freshwater wetlands	Freshwater wetlands including lakes, billabongs, oxbows and depressions on floodplains. Corresponds to RE 11.3.27.	Yes	0.05
Watercourses	Creeks and rivers, both perennial and seasonal. Range from small ephemeral or seasonal drainage lines, through larger creeks often including waterholes, to rivers.	Yes	-
She-oak woodland	Woodland dominated by casuarinas and allocasuarinas, including buloke (*Allocasuarina luehmannii,*), forest she-oak (*Allocasuarina torulosa*) and swamp she-oak (*Casuarina glauca*). Corresponds to REs 11.12.15, 12.1.1 and 12.11.21.	No	0.00
Bluegrass grassland	Queensland bluegrass (*Dichanthium sericeum*) grassland with clumps of brigalow. Corresponds to RE 11.9.3.	No	0.00
Non-remnant	Includes areas of regrowth and non-remnant vegetation as well as cleared land.	Yes	75.39

It should be noted that the fauna habitats mapped for this assessment do not include non-remnant but high-quality regrowth. Significant portions of the alignment are mapped as non-remnant but are vegetated with high-quality regrowth (i.e. not cleared for at least 20 years), as shown by the Regulated Regrowth mapping included on Figure 2 -Figure 17. In total, 164.2ha of high-quality regrowth is transected by the proposed alignment (Table 3.3), comprising 7.5% of the entire alignment length. High-quality regrowth vegetation will have some habitat value for a wide range of fauna, potentially including some EVR species.

4.8 EVR Fauna Species and Habitats

Based on the fauna habitats identified as transected by the proposed alignment (Table 4.2), 48 EVR fauna species could potentially utilise habitat along the alignment. Table 4.3 lists these EVR species and the habitats they could potentially utilise. Note that the alignment traverses a very large area, and extends beyond the known distribution of many of the identified EVR species. Further information on the potential distribution of EVR species is included in Section 6.3.

Table 4.3 Potential habitat utilisation by EVR fauna species

Common name	Brigalow	SEVT	Floodplain	Riparian	Spotted Gum	Poplar Box	Ironbark	Mixed	Callitris	Acacia	Shrub	Mangrove	Saltpan	Wetlands & creeks
Invertebrates														
pale imperial hairstreak	X													
Amphibians														
tusked frog		X	X	X										X
rough collared frog	X	X	X	X		X	X	X	X					X
Reptiles														
collared delma	X		X	X	X	X	X	X	X	X				
ornamental snake	X		X	X				X						
yakka skink	X			X	X	X	X	X	X	X				
Dunmall's snake	X		X	X		X		X						
brigalow scaly-foot	X	X	X	X	X	X	X	X	X	X	X			
grey snake	X		X	X		X								
estuarine crocodile												X	X	X
common death adder	X	X	X	X	X	X	X	X	X	X	X			
short-necked worm-skink	X	X	X	X	X	X	X	X	X	X				
woma	X													
yellow-naped snake	X		X	X	X	X	X	X	X	X	X			
Stephens' banded snake		X		X										

Common name	Brigalow	SEVT	Floodplain	Riparian	Spotted Gum	Poplar Box	Ironbark	Mixed	Callitris	Acacia	Shrub	Mangrove	Saltpan	Wetlands & creeks
Cooloola snake-skink		X												
golden-tailed gecko	X					X	X	X	X	X				
rusty monitor												X		
Birds														
red goshawk			X	X	X	X	X	X						
squatter pigeon (southern)			X			X	X	X	X	X				
Australian painted snipe														X
black-breasted button-quail		X												
little tern												X	X	
glossy black-cockatoo	X			X				X						
beach stone-curlew													X	
powerful owl				X	X			X						
grey goshawk		X	X	X										
Australian swiftlet	X	X	X	X	X	X	X	X	X	X	X	X	X	
black-necked stork												X	X	X
painted honeyeater	X		X	X	X	X	X	X	X					
sooty oystercatcher													X	
Lewin's rail												X		X
square-tailed kite			X	X	X	X	X	X	X	X				
black-chinned honeyeater			X	X			X	X						

Common name	Brigalow	SEVT	Floodplain	Riparian	Spotted Gum	Poplar Box	Ironbark	Mixed	Callitris	Acacia	Shrub	Mangrove	Saltpan	Wetlands & creeks
eastern curlew												X	X	
radjah shelduck												X	X	X
hooded robin (southeast)	X		X	X		X	X	X	X	X				
Mammals														
northern quoll			X	X	X	X	X	X	X	X				
Semon`s leaf-nosed bat		X	X	X	X	X	X	X						
south-eastern long-eared bat	X		X	X	X	X	X	X	X	X				
large-eared pied bat	X		X	X	X	X	X	X	X	X				
grey-headed flying-fox		X	X	X	X		X	X						
false water rat												X	X	
koala			X	X	X	X	X	X						
little pied bat	X	X	X	X	X	X	X	X	X	X				
golden-tipped bat		X		X				X						
yellow-bellied glider (southern)			X	X	X			X						

5 Key Habitats and Significant Ecological Areas

5.1 Biodiversity Planning Assessments

Biodiversity Planning Assessments have been completed for the Brigalow Belt South and South-east Queensland bioregions (EPA 2006, 2008). These assessments have identified the biodiversity significance (State, Regional or Local) of all areas of remnant vegetation within the bioregion, based on a combination of criteria derived from GIS-based spatial data and expert opinion from specialist flora and fauna panels (EPA 2006a, b, c, 2008a, b, c). The biodiversity significance of remnant vegetation transected by the proposed alignment and surrounding areas is shown in Figure 34 – Figure 49. (Note: the most recent Biodiversity Planning Assessments for the bioregions were carried out in 2007 and 2008. The maps showing biodiversity significance should be interpreted together with the habitat maps (Figure 18 – Figure 33), which are based on the more recent vegetation mapping).

Total areas proposed to be cleared are summarised by assessed biodiversity significance in Table 5.1. The great majority (92.6%) of habitat proposed to be cleared along the alignment has been assessed as being of State biodiversity significance.

Table 5.1 Biodiversity significance category areas to be cleared (assuming a 40m RoW)

Biodiversity significance	Total area to be cleared (ha)	% of Total to be cleared
State habitat for EVR taxa	0.48	0.11
State	415.86	92.57
Regional	22.00	4.90
Local or other values	10.91	2.43
Total	449.25	

5.2 Essential Habitat

Essential habitat for EVR flora and fauna comprises vegetation in which an EVR species has been known to occur. Essential habitat in Queensland has been mapped by DERM using biological and/or non-biological habitat requirements of a particular EVR species, termed essential habitat factors. These factors may include vegetation, regional ecosystem, altitude, land zone, soils and position in the landscape. At least three of the essential habitat factors identified for the relevant EVR species must be present for the essential habitat criteria to be met.

Areas of essential habitat in the vicinity of the proposed alignment are shown on Figure 34 – Figure 49. The alignment transects (or passes immediately adjacent to) essential habitat at the following locations (relevant EVR species in brackets):

- KP 254.5 in the vicinity of Kilburnie Road and the Anglo Coal Haul Road, in the Callide Timber Reserve (*Desmodium macrocarpum*);
- KP 266.0 – 268.4 in the vicinity of Collards Creek, Callide Range (large-fruited zamia palm *Cycas megacarpa*);
- KP271.0 in vicinity of Coal Road (large-fruited zamia palm *Cycas megacarpa*);
- KP 281.5 – 282.1 on the Calliope Range (large-fruited zamia palm *Cycas megacarpa*);

- KP 341.5 – 343.0 in the Gladstone State Development Area (native fuchsia (*Graptophyllum excelsum*), smooth-barked bonewood (*Macropteranthes leiocaulis*), wedge-leaf tuckeroo (*Cupaniopsis shirleyana*), cudgerie (*Hernandia bivalves*); and
- KP 357.6-357.8 and KP 358.5-358.8 on Curtis Island (Koala).

5.3 Key Habitats

Two key fauna habitats were identified within the study corridor, based on their significance as habitat for significant fauna, faunal biodiversity values, refugia and wildlife corridors. The values, significance and extent of each key habitat transected by the alignment is discussed below.

5.3.1 Riparian and Floodplain Eucalypt Woodlands

Riparian woodland fringing watercourses and floodplain eucalypt woodland along the proposed alignment comprise a key habitat due to their significance as wildlife corridors and refugia, their high levels of moisture and nutrients and relatively complex vegetation structure. Strips of riparian woodland habitat are particularly significant in the highly cleared and fragmented landscapes comprising much of the alignment, where they may be the only continuous woodlands in largely treeless landscapes. Forest red-gum (*Eucalyptus tereticornis*) typically dominate riparian and floodplain eucalypt woodlands, and hollows in mature trees provide important shelter and nesting sites for a range of arboreal mammals, birds and bats, including significant fauna such as glossy black-cockatoo, south-eastern long-eared bat and little pied bat. Riparian and floodplain eucalypt woodlands also provide habitat for a range of other significant fauna, including Dunmall's snake, turquoise parrot, grey goshawk and black-chinned honeyeater.

Riparian and floodplain eucalypt woodlands support a wide range of resident and nomadic fauna, and many migratory species use this habitat on a seasonal basis, emphasising the significance of these habitats for wildlife migration corridors. These habitats often comprise important wildlife refugia, with many animals moving into them as surrounding areas dry out. Particularly significant are areas where permanent water remains during dry periods, such as waterholes and billabongs.

Narrow bands of riparian and/or floodplain eucalypt woodland habitat are crossed by the alignment at Dogwood Creek (KP Con 11.0-11.7), Roche Creek (KP 29.2), Pump Creek (KP 182.6), Larcom Creek (KP 320.5) and between KPs 358.5 – 358.8 on Curtis Island. Additional unmapped (non-remnant) strips of riparian habitat are crossed at Bungaban Creek (KP 44.4), Cockatoo Creek (KP 69.1), Kroombit Creek (KP 239.6), Callide Creek (KP 242.6), Bell Creek (KP 277.6), Sand Gully (KP 288.1) and Calliope River (294.8).

5.3.2 Brigalow / Belah Remnants

Brigalow (*Acacia harpophylla*) / belah (*Casuarina cristata*) habitats within the study corridor are remnants of a formerly more widespread and now severely cleared and fragmented habitat. Brigalow / belah provides habitat for significant species including rough collared frog, brigalow scaly-foot, golden-tailed gecko, woma and painted honeyeater. Belah is an essential food resource for the glossy black-cockatoo in inland southern Queensland.

In general, the pipeline alignment avoids existing areas of brigalow / belah habitat (see Figure 18 – Figure 33), and minor realignments to further avoid this habitat were made based on field observations. For example, at the eastern end of the Woleebee lateral (KPs Wol 34.5 – Wol 35.9), the alignment was amended to pass to the north of a strip of brigalow / belah habitat. An unmapped 2ha patch of brigalow was observed approximately 50m south of KP Wol 6.6 – Wol 6.75 and the route was

realigned to the north to avoid this patch. Similarly, at KP 237.3 the alignment passes just to the west of two small brigalow patches, also avoiding a narrow shade line of brigalow regrowth. Other minor realignments to avoid brigalow habitat were made at KPs 7.3, 35.8 and 89.0.

There are some small areas of brigalow / belah habitat that are transected by the alignment, with a total proposed clearing area of 1.82ha. These include:

- At KP Wol 29.5 a narrow strip of degraded Brigalow habitat is transected on a low steep scarp. The alignment crosses the narrowest and most degraded point of the habitat, avoiding better quality habitat to the north.
- The alignment traverses the edge of a mapped patch of brigalow habitat at KP 47.8-47.9. This patch could be avoided entirely by realigning the route approximately 50m to the east, through a 40m wide gap in the existing vegetation.
- The alignment passes along the western edge of an unmapped brigalow strip at KP 40.1-40.8, then transects this patch at KP 40.8 – 41.0.
- A larger unmapped patch of brigalow is transected at KP 38.0 – 38.4.

Some additional small areas of brigalow / belah habitat potentially transected by the alignment were unable to be ground-truthed due to access constraints, notably at KP 55.7-56.1 and 124.5-125.0. The first of these was confirmed as comprising brigalow (RE 11.9.5) during surveys for the Surat-Gladstone Pipeline (AECOM 2009). Field verification of these patches should be undertaken prior to construction and, if necessary, minor realignment applied to avoid clearing of these areas.

In each of the above cases, brigalow habitat forms part of the EPBC Act-listed Threatened Ecological Community “Brigalow (*Acacia harpophylla*) dominant and co-dominant”.

5.4 Significant Ecological Areas

Four areas along the proposed alignment have been identified as Significant Ecological Areas because of their integrated flora, fauna and habitat values.

5.4.1 Callide and Calliope Ranges

The Callide Range (KPs 255–271) and Calliope Range (KP 281.5–282.1) comprise a relatively intact tract of remnant vegetation with state-significant corridor values (Figure 51), linking important refugia such as Kroombit Tops to Don River State Forest . A large population of the endangered cycad large-fruited zamia palm (*Cycas megacarpa*) was recorded along Callide Range section of the alignment between KPs 260–272, and this species has also been recorded close to the location where the alignment crosses the Calliope Range (AECOM 2009). Another EVR plant, the rare Pedley’s wattle (*Acacia pedleyi*), was also recorded along the alignment on the Callide Range between KPs 271–272.

5.4.2 Port Curtis and the Narrows

Sensitive intertidal habitat surrounding the crossing from the mainland to Curtis Island comprises part of the Port Curtis wetland, listed as being of national significance in the Directory of Important Wetlands (Blackman et al. 1999). The alignment crosses a large expanse of intertidal saltpan habitat to the west of Friend Point between KPs 351.7–354.4, with several small bands of mangroves. These intertidal flats provide feeding habitat for a range of migratory waders and other shorebirds. Intertidal habitat on the southern side of the Friend Point area has been identified as a major shorebird feed site, while a major shorebird roost site has been identified just adjacent to the alignment on the tip of

Friend Point (EPA 2003). Several EVR species have been recently recorded in or adjacent to this area, including beach stone-curlew and eastern curlew utilising the saltpan habitat (Sandpiper 2009), along with yellow-bellied glider and squatter pigeon in adjacent woodland habitat. The Curtis Island crossing point does not have the extensive saltpan habitat that occurs adjacent to Friend Point, but beach stone-curlew and eastern curlew have also been recently recorded in this area.

5.4.3 Sandstone Belt (Rockybar/Fairyland)

The broad band of remnant vegetation between KPs 90–105 forms a large intact tract of vegetation linking the Expedition, Palmgrove, Isla Gorge and Precipice national parks to a number of state forests including Rockybar SF, Borania SF and Camboon SF. This area has state-significant wildlife corridor values (Figure 51) and includes large areas of rocky sandstone habitat, including shallow gorges, cliffs, outcrops and loose surface rock. . It is known to contain populations of EVR flora species such as small-flowered polianthion (*Polianthion minutiflorum*, recorded in this area during preliminary surveys for the pipeline), Isla Gorge mahogany (*Eucalyptus rubiginosa*), pumpkin gum (*Eucalyptus pachycalyx*) and Cracow wattle (*Acacia calantha*). This area comprises potential habitat for the endangered northern quoll (*Dasyurus hallucatus*), and populations of the vulnerable shiny-leaf ironbark (*Eucalyptus virens*) are possibly present. Little pied bat (*Chalinolobus picatus*) was recorded near the northern edge at KP 103 during the field assessment. The Rockybar/ Fairyland area is also potential habitat for a range of other threatened fauna, including collared delma (*Delma torquata*), yakka skink (*Egernia rugosa*), brigalow scaly-foot (*Paradelma orientalis*), common death adder (*Acanthophis antarcticus*), squatter pigeon (*Geophaps scripta scripta*) and large-eared pied bat (*Chalinolobus dwyeri*).

5.4.4 Gurulmundi – Barakula

The alignment passes through sections of a large tract of remnant habitat to the north of Gurulmundi State Forest between KPs Wol 3.0–Wol 10.5, and south-west of Barakula State Forest at KPs Con 5.5–Con 42 and KPs 1–50.5. This area is part of one of the largest relatively intact patches of remnant habitat in the Brigalow Belt South bioregion and includes areas with state-significant wildlife corridor values (Figure 51). The Woleebee lateral transects an area known for its significant botanical values, with known populations of numerous EVR flora species including curly-barked wattle (*Acacia curranii*), Gurulmundi heath-myrtle (*Micromyrtus carinata*), Gurulmundi fringe myrtle (*Calytrix gurulmundensis*), ooline (*Cadellia pentastylis*), pink donkey-orchid (*Diuris tricolour*) and rainforest cassia (*Senna acclinis*). One of these, ooline (*Cadellia pentastylis*), was recorded in the area during flora surveys. Three EVR fauna species were recorded in this area during the field assessment: glossy black-cockatoo (*Calyptorhynchus lathami*), squatter pigeon (*Geophaps scripta scripta*) and little pied bat (*Chalinolobus picatus*). It is potential habitat for a range of threatened fauna species, including golden-tailed gecko (*Strophurus taenicauda*), yakka skink (*Egernia rugosa*), brigalow scaly-foot (*Paradelma orientalis*) and yellow-bellied glider (*Petaurus australis australis*), as well as a range of threatened plants.

6 Potential Impacts

6.1 Potential impacts on vegetation and flora

6.1.1 Ecological Communities / Regional Ecosystems

Potential impacts on ecological communities and REs associated with the proposed alignment include:

- Indirect effects - dust, increased edge, fragmentation, root compaction and damage along edge.
- Direct effects – direct loss of extent and distribution of communities

Indirect effects on vegetation communities and regional ecosystems are likely to include increased localised areas of compaction through the use of heavy machinery, fragmentation of remnants, increases in edges, damage along the edges caused by machinery, dust and litter and increased in regional disturbance through the creation of access tracks. The levels of indirect impact on vegetation communities will vary throughout the life of the proposed pipeline and are likely to be highest during the construction and decommissioning stages.

The construction of the proposed 40m RoW will disturb a total area of approximately 1,759ha. Of this, approximately 1,326ha or 75.4% is considered non-remnant and 432.9ha or 24.6% is considered remnant vegetation under the *Vegetation Management Act 1999* (VMA).

To gain an understanding of the surrounding remnant areas, and to determine if the proposed alignment was avoiding remnant vegetation, analysis was conducted on a 10km wide corridor (5km buffer around the proposed alignment) to examine the development at a landscape scale. Of the 434,762ha within the corridor, 272,737ha or 62.7% is non-remnant and 162,025ha or 37.3% is remnant vegetation under the VMA.

This analysis shows that while 24.6% of the proposed 40m RoW contains remnant vegetation, this is considerably less than the 37.3% remnant vegetation in the surrounding area (10km wide corridor). This indicates that the proposed alignment has been selected to avoid, where possible, patches of remnant vegetation and that the effects of the proposed RoW on ecological communities and regional ecosystems has been reduced.

Clearing of remnant vegetation along the proposed alignment represents approximately 0.26 % of the amount of remnant vegetation estimated to occur within the wider study area (10km corridor). Estimated clearing areas of each RE type are outlined in Table 3.2.

6.1.2 Endangered Regional Ecosystems

The proposed RoW contains approximately 2.5ha of endangered REs consisting of 1.7ha of endangered brigalow communities REs (11.9.5 and 11.12.21), 0.7ha of *Eucalyptus tereticornis* woodland to open forest on alluvial plains in the South-East Queensland bioregion (RE 12.3.3) and 0.15ha of semi-evergreen vine thicket (RE 11.11.18) (see Table 3.2). These calculations are based on the worst case scenario; however, where practicable, the proposed clearing width of 40m will be reduced to minimise clearing of these significant communities.

The estimated clearing of endangered REs within the RoW represents 0.053% of the total area of endangered REs in the wider study area (10km corridor). Brigalow communities along the proposed alignment have generally been disturbed, with evidence of clearing and grazing present, and are often only represented by shade lines for cattle.

The alignment has been located, where possible, along existing tracks and fence lines where the canopy thins, reducing the extent of mature vegetation to be cleared. The alignment has also been adjusted to avoid many areas of brigalow and, where avoidance was impossible, the narrowest section of the community was transected. As such, with the implementation of mitigation measures outlined in Section 7, the proposed alignment is not considered to significantly impact endangered REs in the wider study area.

6.1.3 Of Concern Regional Ecosystems

The proposed RoW contains approximately 13.42ha of of concern RE, which includes 6.70ha of RE 11.3.4 and 5.06ha of RE 11.9.7. These two REs account for 88% of the of concern REs within the proposed RoW. The area of of concern REs within the proposed RoW represents 0.17 % of all of concern remnant vegetation within the wider study area.

Of concern REs to be cleared are generally represented by Queensland blue gum and poplar box woodlands. These communities are naturally open communities and are unlikely to be significantly affected by edge effects associated with a clearing easement. Furthermore, the pipeline has been located, where practicable, in areas where the canopy thins to minimise the amount of mature trees requiring removal. This will further reduce the impact of the proposed alignment on this vegetation. With the implementation of mitigation measures outlined in Section 7, the proposed alignment is unlikely to have a significant impact upon of concern RE.

6.1.4 Least concern Regional Ecosystems

The wider study area is characterised by several large patches of least concern RE which are difficult to avoid without significantly increasing the length of the proposed pipeline. The proposed alignment has been located to minimise the amount of least concern RE transected where practicable and, where possible, in existing clearing / disturbed areas to minimise the amount of mature canopy vegetation requiring removal. Creek crossings have been designed to reduce the risk of erosion and stream bed disturbance by aligning these crossings at right angles to the bank.

Approximately 416.95ha (based on a maximum clearing width of 40m) of least concern remnant vegetation is transected by the proposed alignment. This vegetation consists of 30 different REs listed under the VMA. The largest areas of least concern RE located within the proposed RoW were located along the Condabri lateral. The least concern mapped REs 11.7.2, 11.7.4, 11.7.5, 11.7.6, 11.7.7, 11.5.21 and 11.5.4 occurred as stand alone patches and were commonly grouped in different mosaics. Combinations of these REs accounted for 42.72% of the areas of least concern REs located within the RoW.

The 30 different least concern REs transected by the proposed alignment vary from open communities (such as RE 11.12.1) to more closed vegetation communities (such as RE 11.7.5). The recommended mitigation measures outlined in Section 7 will minimise the potential impact of the project on these ecological communities. The proposed pipeline is unlikely to significantly impact upon least concern REs if appropriate mitigation measures to minimise erosion, clearing and weed invasion are implemented.

6.1.5 Reversible versus Irreversible Impacts

Once the pipeline has been constructed, there is potential to allow tree and shrub vegetation to naturally re-establish over the RoW aside for a 10m strip free of trees to protect the pipe from potential root damage and facilitate ongoing pipeline inspection and necessary maintenance. It is

expected that three quarters or more of the pipeline construction footprint will naturally regenerate over the medium term (10-50 years), subject to landholder property management practises.

For example, if 30m of the clearing width is allowed to regenerate, leaving a 10m strip directly over the pipeline, it is possible that the cleared areas identified in this report, as being required for pipeline construction, will be reduced by up to 75% within 10-50 years.

The pipeline is likely to be decommissioned within several decades. Subject to the exception that landholders may, at that future time, choose to manage their properties in a manner that inhibits natural regrowth, the impacts associated with clearing for construction and maintenance of the pipeline are considered to be reversible within all REs.

6.1.6 EVR and Significant Flora Species

Database searches identified 89 EVR flora species and 49 regionally significant flora species that are known to have ranges that overlap the wider study area. Of those, four species of EVR flora and nine species of regionally significant flora were observed within the vicinity of the proposed alignment during the field surveys. There is, however still potential for many additional significant flora species to occur within the proposed alignment, as surveys for significant flora species were opportunistic only and did not thoroughly cover the entire alignment.

Construction and maintenance activities associated with the proposed pipeline have the potential to impact upon these species through:

- Loss and/or harm to significant flora species and populations
- Increased fragmentation and genetic isolation of significant flora species populations
- Loss or degradation of key habitat areas through increasing edge effects and fragmentation, dust emissions and erosion, inappropriate handling and disposal of materials and harmful substances and changes to hydrological regimes and drainage
- Introduction and/or spread of weeds.

Impacts on EVR species identified as present during the flora surveys are summarised in Table 6.1.

Table 6.1 EVR flora species observed within the RoW

Species	Observed	Threat to Survival	Potential Impacts
Acacia pedleyi Pedley's Wattle	Along the western areas of Callide Range in eucalypt woodland and some scrubby vine forest and on the northern and southern sides of the highly disturbed road reserve of the Dawson Highway. Known to occur within the 40m RoW at KPs 257.1 and 257.8.	Threats to the survival of this species are relatively poorly known; however, they are likely to include land clearing, weed invasion, grazing, inappropriate fire regimes and relatively small range restricted to the Calliope and Callide Range.	Potential impacts from pipeline construction are likely to be limited to the direct loss of plants within the RoW and associated infrastructure (e.g. access tracks) and the introduction of weeds.
Cadellia pentastylis ooline	A population of approximately 10 of this species was identified in a grazed paddock at the beginning of the Woleebee Lateral in the southern sections of the proposed alignment and known to occur within the 40m RoW at KP Wol 1.65. All of the ooline observed were in a non-remnant paddock at the base of a sandstone jump-up.	The main identified threats to ooline are localised extinction due to small and scattered populations, inbreeding which threatens genetic diversity in small populations, low seed viability which threatens breeding success and clearing for agriculture (DEWHA 2008).	Impacts from pipeline construction are likely to be limited to the direct loss of plants within the RoW and associated infrastructure (e.g. access tracks). The number of ooline that are likely to be removed by the proposed alignment is less than ten individuals from a grazed paddock with scattered trees.
Cycas megacarpa large-fruited zamia palm	This species was identified in numerous locations within the Callide Range in the northern sections of the proposed alignment. It is known to occur within the 40m RoW at KPs 260, 262, 262.1, 269.35, 271.45, 272.1 and 272.2. This species was rarely observed as a single isolated plant and more than 100 individuals were observed within the vicinity of the proposed alignment between KPs 260 – 272.2.	Known and potential threats include destruction of habitat and individuals due to land clearing, legal harvesting and commercial salvage, illegal destruction and harvesting, loss of genetic variation, loss of insect pollinators, inappropriate fire regimes, timber harvesting and drought (Forster and Holland 2006).	Given the conservation status of this species and the potential for hundereds of plants lost within the RoW there is potential for there to be a significant impact on this species. Specific mitigation measures aare described in Section 7.
Macropteranthes leiocaulis smooth-barked bonewood	One isolated plant was found located to the west of the proposed alignment at KP 38.1 in an incorrectly mapped patch of endangered RE 11.9.5.	Threats to this species are relatively poorly known; however, they are expected to include land clearing of the semi-evergreen vine thicket communities to which it belongs, weed invasion and grazing.	Given that only one individual was observed and it was not observed within the proposed RoW, impacts on this species are expected to be minimal.

6.1.7 Other Flora Species of Conservation Significance

Protected marine plants and aquatic flora species were recorded on site in association with the intertidal areas along the eastern edge of the mainland and the western edge of Curtis Island and on North Passage Island, including mangroves, saltpan species, couch grasses and sedges. The proposed project area also supports a number of culturally, commercially and recreational significant species.

The proposed project has the potential to impact on these species through:

- Loss or harm to individual species and populations
- Loss of cultural, economic and recreational values
- Increased fragmentation of habitats resulting in increased edge effects, particulate matter and modification of hydrological regimes and water quality, and
- Increased competition for resources with the introduction and/or spread of weed species.

6.1.8 Weeds

Movement of personnel, vehicles and equipment associated with construction and operational activities have the potential to facilitate the introduction and / or dispersal of weeds within the Project area and to the surrounding lands. The introduction and / or dispersal of weeds have the potential to increase competition for resources (e.g. space, light, nutrients) with native and pasture / crop species, loss of productivity of the land, reduce natural biodiversity and alter hydrological regimes, fire regimes and geomorphic processes. Weed species may injure livestock or native animals through direct contact with the skin (e.g. open wounds leading to infection) or consumption (e.g. ingestion of toxic parts) and can lead to loss of aesthetic and cultural values.

The introduction and / or dispersal of animal pests may lead to injury or loss of native and livestock animals through increased predation or toxic death through consumption / contact (e.g. cane toads), increase competition for resources including habitat / shelter areas and food and facilitate disease spread. The introduction and / or spread of weeds and animal pests and diseases to adjacent land may also lead to an increase in control measures required by the landholder to maintain the productivity of their land.

Mitigation measures such as weed-free certification of vehicles entering the project area, washdown procedures and weed monitoring programs will assist in minimising the potential for the introduction and / or spread of weeds in the easement and to surrounding lands. Recommended mitigation measures are outlined in Section 7.

6.2 Potential Impacts on Fauna

6.2.1 Potential Impacts on Fauna in General

The pipeline alignment has been selected to avoid as many large and connected areas of vegetation habitat as possible. With a pipeline over 430km in length, it is not possible to avoid all areas that may provide fauna habitat. With successful implementation of appropriate environmental management controls (as recommended in Section 7), potential impacts on fauna species are likely to be limited to direct impacts associated with construction of the proposed pipeline. The pipeline construction will require some clearing of vegetation which equates to a loss of fauna habitat. In relation to common

fauna species, this is unlikely to result in a significant long-term impact, as similar habitats are available in areas adjacent to the proposed alignment and common species would utilise these habitats.

Nevertheless, some potential impacts would remain and these include the following:

- Removal of habitat such as mature vegetation, hollow-bearing trees and fallen logs, and therefore loss of shelter, breeding, nesting, perching and foraging resources
- Disturbance to rocky outcrops and therefore shelter for reptiles and small mammals
- Disturbance to fauna movement corridors and dry season fauna refuges (predominantly associated with creeks and seasonal wetland / waterway areas)
- Unearthing of burrowing fauna species during construction
- Trenchfall - the potential for fauna to fall into and become trapped in the open pipeline trench during construction

Discussion of each of these potential impacts follows. Additional discussion of impacts on intertidal saltpan/saltmarsh and mangrove habitats and associated marine fauna is included in the Marine Ecology report (Volume 5, Attachment 27).

6.2.2 Removal of Mature Vegetation and Tree Hollows

Removal of mature vegetation in general reduces feeding resources and shelter for native fauna species. While it is recognised that the proposed loss of mature vegetation would not be substantial compared to remaining habitat within the surrounding area, much of the fauna habitat within the study corridor has been heavily cleared and is now severely fragmented.

Because the proposed alignment attempts to avoid remnant vegetation as much as possible, relatively small amounts of fauna habitat are proposed to be cleared along most of the alignment, compared to habitat present in the surrounding area. The total areas of each faunal habitat proposed to be cleared were calculated from the RE clearing calculations (assuming a 40m wide RoW), and are shown in Table 6.2. Overall, 435.24ha of all habitats combined would be cleared along the proposed alignment, with the largest amount of any habitat to be cleared being of mixed eucalypt woodland and open forest (250.72ha), followed by ironbark woodland (61.67ha) and spotted gum open forest (54.95ha). Combined, these three habitats comprise 84.4% of all remnant habitat proposed to be cleared along the alignment. Table 6.2 also shows the amount of each habitat to be cleared as a percentage of the total area of that habitat present within a 10km buffer centred on the alignment, with very low percentages in each case. An exception is freshwater wetland habitat: although only a small area (0.94 ha) is transected by the RoW, this comprises 20.5% of freshwater wetland habitat within the 10km buffer.

An important potential impact on fauna is the loss of hollow-bearing trees. A large number of Australian vertebrate fauna species are dependent on tree hollows for shelter and nesting, including (amongst others) parrots, owls, possums, gliders and bats (Gibbons and Lindenmayer, 2002). Mature trees with hollows are a limited resource in many of the rural and grazed lands of Queensland where widespread clearing has removed much of the mature vegetation. The formation of hollows suitable for use by vertebrate fauna does not occur until eucalypts are at least 120 years old, with large hollows rare in those under 220 years old. Therefore, the replacement of lost hollows may not occur for very long periods. Large hollow-bearing trees are especially important habitat in strips of riparian vegetation along watercourses in otherwise cleared land. Even single or widely scattered mature hollow-bearing trees can be important habitat (Gibbons and Boak 2002, Manning and Lindenmayer

2009), for example, for hollow-roosting bats (Lumsden and Bennet, 2003, 2005). Hollow-bearing trees are present in varying but limited numbers in eucalypt woodland habitats along the alignment, with some of the highest-quality hollow-bearing habitat occurring in riparian and floodplain eucalypt woodland along watercourses.

Table 6.2 Habitat Areas (ha) proposed to be cleared (assuming a 40m RoW)

Habitat	Estimated area to be cleared (ha)	Estimated area within 10km wide buffer (ha)	% of area to be cleared
Mixed eucalypt woodland & open forest	250.7	85,209.7	0.29
Ironbark woodland	61.7	32,878.2	0.19
Spotted gum open forest	54.9	15,686.9	0.35
Acacia woodland	15.4	2,994.6	0.52
Saltpan	9.5	1,030.1	1.16
Callitris woodland	8.6	5,086.4	0.17
Riparian woodland	6.5	2,480.4	0.26
Floodplain eucalypt woodland	7.5	3,170.0	0.2.4
Shrubland	7.1	1,614.2	0.44
Poplar box woodland	5.7	3,901.2	0.15
Mangroves	2.4	1,579.4	0.15
Brigalow / belah	1.7	3,755.9.	0.05
Freshwater wetlands	0.9	4.6	20.49
SEVT & vine forest	0.1	2,319.9	< 0.01
Total	432.9	162,025.1*	0.27

* Total remnant habitat within the corridor includes areas of additional habitats (e.g. bluegrass grassland, she-oak woodland) not transected by the proposed pipeline route but present within the 10km buffer.

Fallen logs and dead timber (coarse woody debris) on the ground provide shelter and habitat for a broad range of small ground-dwelling fauna including native rodents, dasyurid marsupials, bandicoots, lizards, snakes, frogs, and some birds (Robinson 1999, Driscoll et al. 2000). Fallen timber may be used as shelter (either underneath timber or within hollow logs) and also as a source of food in the form of invertebrates sheltering under the logs. Large fallen logs also provide essential protection for fauna against bushfire. Loss or removal of fallen timber severely reduces the abundance and diversity of small ground-dwelling fauna. Impacts from removal of dead timber will reverse over time as more dead tree limbs and fallen trees accumulate, but are likely to result in loss of fallen timber-dependent species in the short to medium term (Robinson 1999). Such impacts can be reduced in the short term by collecting dead timber and respreading it over the alignment after construction.

6.2.3 Disturbance to Rocky Outcrops

Rocky outcrops and loose surface rocks provide essential habitat for a wide range of reptiles and amphibians, as well as some small mammals. A number of reptile species are highly dependent on rocks for both protection and the thermal characteristics of rock shelters, and may become locally extinct in areas from which loose rocks and rock outcrops have been removed or destroyed (Shine et al. 1998, Webb and Shine 2000, Shah et al. 2004). Damage or loss of rocky outcrops or loose surface rocks can therefore impact on a range of small ground fauna species. Where rock habitat is limiting, such impacts are likely to result in decline or loss of rock-dependent fauna species, and may be difficult to reverse.

Few large areas of rock outcrops or extensive surface rocks were observed along the proposed alignment. Notable exceptions included extensive rock and low cliffs along the sandstone belt in the vicinity of Rockybar / Fairylands (KPs 90-105), the vicinity of the Cockatoo Creek crossing (KP 69) and a steep jump-up near the Calliope Range at KP 257.7. Herbert's rock wallaby (*Petrogale herberti*) was observed at the last site during field assessments, the only location at which this rock-specialist macropod was observed, and was also recorded at this site during August 2009 (Boobook 2009). Low scarps and jump-ups with significant numbers of loose surface rocks were observed at KPs Con 2.3, Wol 1.6, Wol 12.0 and Wol 29.5.

The Calliope Range itself (KPs 281.5-282.1) was not assessed due to access constraints during the field surveys, but surveys conducted for the Surat-Gladstone Pipeline in this area found extensive steep rocky habitat and the possibility of caves (AECOM 2009). If present, caves may provide habitat for cave-roosting bats, including large-eared pied bat (*Chalinolobus dwyeri*) and Semon`s leaf-nosed bat (*Hipposideros semoni*). Anabat surveys recorded the cave-dependent eastern horseshoe-bat (*Rhinolophus megaphyllus*) at two locations in the Callide Range (KPs 257.8 and 263.6), suggesting there may be suitable cave roost habitat in the vicinity of the alignment. If caves are present, it is likely that this short section of the alignment (approximately 600m) comprises only a small proportion of cave habitat in the clifflines observed in the Callide and Calliope Range sections of the pipeline corridor. Additional survey of the Calliope Range would help determine whether caves are present in this section of the alignment and, if present, whether they are utilised by cave-roosting bats.

6.2.4 Disturbance to Movement Corridors and Dry Season Fauna Refugia

Several large continuous areas of remnant vegetation and habitat are traversed by the proposed alignment. In particular, these are crossed in the vicinity of Barakula State Forest (KPs Con 5.5 – Con 42.0), Gurulmundi State Forest (KPs Wol 3.0 – Wol 10.5), the sandstone belt in the Rockybar / Fairyland area (KPs 89.5 – 105) and the Callide and Calliope Ranges (KPs 255.0 – 271.0, 281.5 – 282.1). Each of these areas has state-significant values as a wildlife corridor on a landscape scale (Figure 51), linking a number of large wildlife refugia across the bioregion, such as the Barakula, Expedition, Isla Gorge and Kroombit Tops regions.

The proposed pipeline easement will contribute to the fragmentation of habitat in these areas. Habitat fragmentation is a major cause of population decline in many wildlife species. Linear clearing corridors such as the proposed pipeline RoW act as a linear barrier to fauna movement that can lead to the subdivision and isolation of fauna populations. The barrier effect of such clearing tends to divide large continuous populations into smaller isolated populations, each of which is more susceptible to extinction than large populations.

It should be noted that these areas are not pristine, and each already has significant linear infrastructure in the vicinity of the pipeline, such as the Dawson Highway (Callide and Calliope Range),

Deearne Road and Cracow Road (Rockybar/Fairyland), Gurulmundi Road (Gurulmundi SF) and Upper Downfall Creek Road (Barakula SF). Nevertheless, clearing along the pipeline RoW in these areas will contribute to the fragmentation of relatively undisturbed habitat.

Between the large remnant corridors listed above, the alignment traverses extensively cleared agricultural land. At a number of locations the route crosses riparian and floodplain eucalypt woodland habitat fringing major and minor watercourses, which have important fauna values as refugia for wildlife during dry periods and for corridors facilitating the movement of migratory and nomadic species. Such refugia and corridors are particularly important where the wider environment of the study corridor is severely fragmented through clearing for agriculture, as is the case for much of the alignment. While some patches of vegetation remain in these fragmented areas, these patches are seldom connected by corridors of sufficient width (e.g. > 100m). Consequently, areas of retained riparian vegetation can provide significant local fauna corridors. Watercourses also provide a source of water and may be the only available water during the dry season. In turn, this provides a refuge for many fauna species. As such, the various watercourses transected and their associated riparian vegetation provide important movement corridors and refugia for a range of fauna, assisting populations to persist in a dry and largely cleared landscape. Fragmentation and disturbance of these habitats may be reversible in the medium to long term by revegetation and habitat rehabilitation programs.

6.2.5 Unearthing of Burrowing Fauna Species during Construction

There is significant potential for direct impact on some fauna species from being unearthed during construction of the pipeline trench. While many larger and more mobile fauna such as birds, macropods and larger reptiles are likely to move away from the disturbance resulting from construction, smaller burrowing fauna (especially nocturnal species) are likely to remain under the surface and therefore risk being dug up and injured or killed. In addition, fauna utilising deep cracks in cracking clay soils for shelter are also vulnerable to this direct impact. A broad range of burrowing and crack-dwelling fauna including frogs, lizards, snakes and small mammals are potentially present along the entire length of the alignment. Significant fauna species vulnerable to being unearthed include small reptiles and amphibians such as rough collared frog, short-necked worm-skink, Cooloola snake-skink, ornamental snake, grey snake and Dunmall's snake.

6.2.6 Trenchfall: The Potential Trap Created by the Open Pipeline Trench

To facilitate the laying of the pipeline, an open trench will be required. The trenching will be progressive and therefore the full length of the pipeline will not be open at any given time. The open trench provides a temporary barrier to fauna movement and there is potential for ground-dwelling fauna to fall into the trench and become trapped and exposed to overheating, dehydration, predation and / or drowning. Fauna entrapment within pipeline trenches has been recognised as a key environmental issue by the Australian Pipeline Industry Association Code of Environmental Practice (APIA 2009).

Published information from other Australian pipeline projects has demonstrated that pipeline trenches can entrap high numbers of a wide diversity of terrestrial animals (including EVR species), particularly reptiles, frogs and small mammals, with the potential for very high levels of mortality (Ayers and Wallace, 1997, Woinarski *et al*., 2000, Doody *et al*., 2003, Wilson and Swan, 2004; Wilson, 2005b). To help reduce potential impacts from trench fall, the length of open trench should be the minimum practicable at any one time. Other mitigation measures to reduce impacts from trenchfall are outlined in Section 7.

6.3 Potential Impacts on EVR Fauna

Of the 48 EVR fauna species identified as potentially utilising preferred habitat within the proposed pipeline corridor, 31 have the potential to be impacted to some extent by the proposed pipeline, due to potential effects on habitat or direct impacts (Table 6.3). These include one butterfly, one fish, two amphibians, 14 reptiles, seven birds and six mammals. Each EVR species identified as potentially utilising habitat within the proposed pipeline alignment is individually discussed in Appendix 11 and potential impacts on these species are described. Species-specific mitigation recommendations required to avoid or minimise potential impacts on these species are also detailed in Appendix 11, where relevant, and are summarised in Section 7.5.

A number of EVR fauna species identified as potentially occurring within the proposed alignment are species that are nomadic, highly mobile or occupy very large home ranges. These include squatter pigeon, black-necked stork, black-chinned honeyeater, glossy black-cockatoo, square-tailed kite and grey-headed flying-fox. Given the relatively small amount of remnant habitat proposed to be cleared by construction of the proposed pipeline compared to surrounding similar habitat (as detailed in Section 6.2.2) and the area over which individuals of these species range, no significant impact is likely upon these species. Several other species are unlikely to be resident and are only occasionally expected to utilise habitats along the alignment, including estuarine crocodile, red goshawk, radjah shelduck and Australian swiftlet.

A number of other EVR fauna species have the potential to be directly impacted if they are present within the pipeline corridor in forest and woodland habitats, but also have preferred habitat types that are well represented in the immediate vicinity of the proposed alignment. These include northern quoll, yellow-bellied glider, false water-rat, little pied bat, brigalow scaly-foot, yakka skink, short-necked worm-skink, golden-tailed gecko and common death adder. Although there is potential for some direct impact on these species, the small amount of habitat to be cleared combined with the implementation of appropriate mitigation recommendations (as provided in Section 7) would result in minimal potential for the proposed pipeline construction to significantly impact these EVR fauna species.

Eighteen EVR species (2 amphibians, 13 reptiles and 3 mammals) are susceptible to falling into the open trench during construction and becoming trapped, potentially resulting in significant mortality at the local level. Specific mitigation actions to reduce the impacts of trenchfall are outlined in Section 7.

The detailed distributions of several EVR fauna species identified are poorly known, as they are particularly secretive or cryptic in their habits. These include collared delma, ornamental snake, Dunmall's snake, grey snake and yellow-naped snake. The only way to determine whether these species are present in their preferred habitat within the study corridor is to conduct detailed targeted fauna surveys. In the absence of such data, it should be assumed that ornamental snake, Dunmall's snake and grey snake are present within their respective broad ranges, especially in remnant woodland and brigalow habitats on cracking clay soils. The distribution and habitat preferences of yellow-naped snake are too poorly understood to predict potential habitat or occurrence along the alignment, but measures to reduce impacts on the other three small snakes are likely to also mitigate impacts on yellow-naped snake, should it be present. Potential impacts on these species are covered in the individual species accounts in Appendix 11.

6.3.1 Sensitive EVR Species

Two EVR species are considered sensitive to potential impacts from construction of the pipeline: pale imperial hairstreak and beach stone curlew.

The pale imperial hairstreak is a threatened butterfly that is restricted to brigalow-dominated woodlands and open-forests, breeds only in old-growth brigalow, and does not recolonise regrowth or areas that have been disturbed (Eastwood et al. 2008). Larvae feed only on brigalow, specialising on small understorey brigalow plants. Populations are believed to have become extinct at a number of historical locations, and the butterfly has not been recorded for several decades or more at other sites (Eastwood et al. 2008). There is a low possibility that pale imperial hairstreak may be present in mature brigalow within the vicinity of the alignment, with most brigalow habitat observed during the field assessment consisting of small and / or disturbed patches. Possible locations include KP 124.5-125.0 (not field-assessed due to access constraints), KP 38.0-38.4 (unmapped brigalow) and adjacent to KP Wol 34.0-36.0. Given that very small areas of potential mature brigalow habitat are proposed to be cleared, the likelihood of significant impact is considered to be low. Nevertheless, targeted surveys in suitable habitat would help determine whether this butterfly is present along or in the vicinity of the alignment.

The beach stone-curlew is a rare bird that occurs around the coast and offshore islands of northern and eastern Australia from northeastern NSW to northwestern WA. It utilises beach and saltpan habitat, nests on the sand and forages in the intertidal zone (Garnett and Crowley 2000). Beach stone-curlews have been recorded close to the alignment on both sides of The Narrows: at Laird Point, near KP 356.0; and in saltpan habitat south of Friend Point near KP 353.6 (Sandpiper 2009). Although considered a highly mobile species, beach-stone curlews are believed to be sensitive to human disturbance, which is considered a significant threat (Garnett and Crowley 2000). Impacts from disturbance during construction of the pipeline are only likely to be significant if the work affects nesting, which typically occurs during October to December. Eggs are usually laid in a scrape in sand at the landward side of beaches (Garnett and Crowley 2000, Geering et al. 2007) and the proposed alignment does not transect any beach habitat. Beach stone-curlews were repeatedly observed in beach habitat at Laird Point, near the proposed crossing point, during the Curtis Island surveys. It is not known whether the species nests in this area. Additional survey during the nesting season would help ascertain the importance of the Laird Point area for this species.

6.4 Potential to Create New Mosquito Breeding Grounds

The potential for the proposed construction to increase breeding sites for mosquitoes relates to altered hydrological regimes which cause water to be retained in environments amenable to mosquito breeding. This may include stored equipment and materials that retain water. Assuming the mitigation measures recommended in Section 7 are successfully implemented there is limited likelihood of increasing mosquito breeding sites.

Table 6.3 EVR fauna potentially impacted by the proposed pipeline

Common Name *Scientific Name*	Ecology and Distribution Notes	HMT*	Sensitivity Class**	Potential Impacts
Invertebrates				
pale imperial hairstreak *Jalmenus eubulus*	Only breeds in old-growth brigalow, and larvae only feed on brigalow. Potentially present in mature brigalow habitat along the route south of the Callide Range (KP 255).	No	3	Habitat loss (old growth brigalow).
Fish				
Murray cod *Maccullochella peelii*	Critical spawning habitat is deeper water and snags. Has suffered a serious decline, particularly in upstream areas. May potentially be present in Dogwood Creek during times of flow.	No	2	Habitat loss (snags, riparian vegetation).
Amphibians				
tusked frog *Adelotus brevis*	Likely to be present in woodland and forest (especially riparian and floodplain woodland) in the northern half of the route.	No	2	Direct impact (unearthing), trenchfall.
rough collared frog *Cyclorana verrucosa*	Burrowing frog, breeds in temporary pools and ponds after heavy rain. Potentially present in woodland habitats and open country in the far south of route, notably areas with cracking clay soils and gilgai (e.g. where the two laterals meet).	No	2	Direct impact (unearthing), trenchfall.
Reptiles				
common death adder *Acanthophis antarcticus*	Reliant on deep beds of leaf litter for shelter. Widespread but rare, recent serious population declines. Potentially present in woodland and open forest habitats along entire route.	No	2	Habitat loss (vegetation and leaf litter), trenchfall.
short-necked worm-skink *Anomalopus brevicollis*	Burrowing skink, shelters under logs, rocks, fallen timber and leaf litter. Potentially present in woodland, open forest and vine thicket habitats north of about KP 90.	No	2	Direct impact (unearthing), habitat loss (vegetation, logs), trenchfall.
woma	Nocturnal, shelters in burrows, hollow logs and thick vegetation. Recently recorded	No	2	Direct impact (unearthing),

Common Name *Scientific Name*	Ecology and Distribution Notes	HMT*	Sensitivity Class**	Potential Impacts
Aspidites ramsayi	between Miles and Condamine. Low possibility of presence in brigalow or woodland habitats in the far southern sections of the route near Miles.			trenchfall.
estuarine crocodile *Crocodylus porosus*	Approaches the southernmost extent of current range in the Gladstone area. Coastal mangrove and saltpan habitat at the Narrows may occasionally be utilised by individuals, but unlikely to be resident.	✓	1	No significant impact.
collared delma *Delma torquata*	Poorly known, scattered records across wider study area. Potentially present in woodland and brigalow habitat along entire alignment.	No	4	Direct impact (unearthing), trenchfall
ornamental snake *Denisonia maculata*	Nocturnal, shelters under logs and ground debris and in soil cracks. Potentially present in brigalow, riparian and floodplain woodland north of about KP 105.	No	4	Direct impact (unearthing), trenchfall
yakka skink *Egernia rugosa*	Ground-dwelling, reliant on logs and ground debris for shelter. Widespread but rare, potentially present in woodland and brigalow habitats along the entire route.	No	2	Direct impact (unearthing), habitat loss (logs), trenchfall.
yellow-naped snake *Furina barnardi*	Very poorly known species, with few records scattered across central and western Qld, including Gladstone area. Potentially present in woodland habitat in northernmost sections of route.	No	4	Direct impact (unearthing), trenchfall.
Dunmall's snake *Furina dunmalli*	Nocturnal, shelters under logs and ground debris and in soil cracks. Potentially present in brigalow and woodland (particularly riparian and floodplain woodland) habitats along the entire route. Poorly known.	No	4	Direct impact (unearthing), habitat loss (logs), trenchfall.
grey snake *Hemiaspis damelii*	Nocturnal, shelters under logs and ground debris and in soil cracks. Recorded east of Miles and potentially present in woodland (particularly riparian and floodplain woodland) habitats in the southernmost sections of the route.	No	4	Direct impact (unearthing), trenchfall.
Cooloola snake-skink *Ophioscincus cooloolensis*	Recorded at Aldoga east of KP 327 in the GSDA, and potentially present in woodland and forest habitats north of about KP 325, especially woodland and vine thicket from KP341-344.	No	2	Direct impact (unearthing), trenchfall.
brigalow scaly-foot	Dependent on logs, rocks and ground debris for shelter. Potentially present in	No	2	Habitat loss (vegetation, logs),

Common Name *Scientific Name*	Ecology and Distribution Notes	HMT*	Sensitivity Class**	Potential Impacts
Paradelma orientalis	woodland, open forest and brigalow habitats along entire route, particularly in the sandstone belt between KP 90-105.			trenchfall.
Fitzroy River turtle *Rheodytes leukops*	Restricted to the Fitzroy-Dawson catchment. May occur in larger watercourses (e.g. Cockatoo Creek, Delusion Creek, Pump Creek, Callide Creek) between KPs 10-280 during times of flow.	No	2	Habitat disturbance (riffle zones and pools, riparian vegetation).
golden-tailed gecko *Strophurus taenicauda*	Woodland-dependent arboreal lizard, shelters under loose bark and in tree hollows. Widespread but uncommon in suitable woodland habitat, particularly Callitris woodland. Potentially present in woodland and brigalow habitats south of Biloela (approximately KP 226).	No	2	Habitat loss (vegetation), trenchfall.
rusty monitor *Varanus semiremex*	Shelters in tree hollows. Potentially present in small areas of mangrove habitat on the shoreline Friend Pt and Curtis Is, between KP 351.5 and 356.	No	2	Habitat loss (mangroves), trenchfall.
Birds				
grey goshawk *Accipiter novaehollandiae*	Prefers mature forests with an open understorey. May utilise heavier vegetation such as vine thickets and riparian woodland along major watercourses in the Gladstone and Curtis Is areas between KP 341 and 359, and also possibly in the south of the route.	✓	2	Habitat loss (dense vegetation).
Australian swiftlet *Aerodramus terraereginae*	Recently recorded on Curtis Is (Sandpiper 2009), Vagrant, well outside normal distribution. May occasionally utilise coastal habitat in the Gladstone area.	✓	1	No significant impact.
glossy black-cockatoo *Calyptorhynchus lathami*	Dependent on hollow trees for nesting, and seeds of casuarinas such as Belah or Forest Oak for food. Recorded at KP Con 36.7 during field surveys and recently recorded on Curtis Is. Likely to utilise brigalow habitat with belah south of the Callide Range, and coastal she-oak forest with forest oak in the Gladstone area.	✓	2	Reduction of feeding resources (Belah), reduction of nest sites (tree hollows).
black-necked stork	A nomadic species that feeds in shallow water, taking reptiles, fish and frogs. Likely	✓	1	No significant impact.

Common Name *Scientific Name*	Ecology and Distribution Notes	HMT*	Sensitivity Class**	Potential Impacts
Ephippiorhynchus asiaticus	to utilise seasonal wetlands and larger watercourses (when flowing) anywhere along the entire route.			
red goshawk *Erythrotriorchis radiatus*	Rarely seen bird of prey that may occasionally utilise woodland and forest habitats anywhere along the route as part of a larger foraging range.	✓	1	No significant impact.
beach stone-curlew *Esacus magnirostris*	Recorded in the vicinity of Laird Point on Curtis Is during field surveys, and recently recorded at Friend Pt near KP 353. Likely to utilise saltpan and mangrove habitat at Friend Pt and Curtis Is between KP 351.5 and 356.	✓	3	Habitat loss (saltmarsh), disturbance.
squatter pigeon (southern) *Geophaps scripta scripta*	Feeds on grass seeds and is nomadic, following feeding resources. Observed during field surveys at 5 locations between KP 35 and 294 and recently recorded near Friend Point at the Narrows. Potentially present in woodland remnants along the entire route, but more likely to be present north of KP 90.	✓	1	No significant impact.
painted honeyeater *Grantiella picta*	Mistletoe-dependent, nomadic. Potentially present in woodlands with mistletoe (especially brigalow habitat) south of about KP 90.	✓	2	Habitat loss (mistletoe)
sooty oystercatcher *Haematopus fuliginosus*	Forages on intertidal flats, typically near rocky shores. Recently recorded on Curtis Is, and may occasionally utilise saltpan habitat at Friend Pt and Curtis Is between KP 351.5 and 356.	No	1	No significant impact.
Lewin's rail *Lewinia pectoralis*	Cryptic bird of wetlands with dense vegetation. Recorded in the Gladstone area and may potentially utilise coastal wetlands near the Narrows.	No	2	Habitat loss (wetland vegetation).
square-tailed kite *Lophoictinia isura*	Widespread but rare bird of prey that hunts over open forests and woodlands. May potentially utilise woodland habitats along entire route as part of its foraging range.	✓	1	No significant impact.
hooded robin (southeast) *Melanodryas cucullata cucullata*	Potentially present in large areas of eucalypt and acacia woodland in the southernmost section of the alignment.	No	2	Habitat loss and fragmentation.
black-chinned	Locally nomadic, following food sources. Widespread but rare in woodlands across	✓	1	No significant impact.

Common Name *Scientific Name*	Ecology and Distribution Notes	HMT*	Sensitivity Class**	Potential Impacts
honeyeater *Melithreptus gularis*	eastern Qld. Potentially present in woodland habitats (especially riparian woodland) along entire route.			
powerful owl *Ninox strenua*	Requires hollows for nesting, large home range, roosts in dense vegetation. Recently recorded on near the alignment on Curtis Is. Likely to utilise forest and woodland habitat for foraging between KP 341-359, and potentially use thicker vegetation such as vine thicket or riparian woodland for roosting.	✓	2	Habitat loss (dense vegetation, hollow trees).
eastern curlew *Numenius madagascariensis*	Recorded in the vicinity of Laird Point on Curtis Is during field surveys, and recently recorded at Friend Pt between KPs 352-354. Likely to utilise saltpan and mangrove habitat at Friend Pt and Curtis Is between KP 351.5 and 356 during summer.	✓	2	No significant impact.
Australian painted snipe *Rostratula australis*	Cryptic nomadic bird of shallow wetlands, nests on the ground in reeds close to water. May potentially utilise seasonal wetlands anywhere along entire route.	✓	1	No significant impact.
little tern *Sterna albifrons*	May occasionally utilise coastal saltpan habitat at the Narrows, between KP 351.5 and 356.2.	✓	1	No significant impact.
radjah shelduck *Tadorna radjah*	May utilise saltpan and mangrove habitat at the Narrows between KP 351.5 and 356. Requires tree hollows for nesting.	✓	1	No significant impact.
black-breasted button-quail *Turnix melanogaster*	Recently recorded in the Aldoga area, and may potentially utilise dense vegetation along the route in the Gladstone area, especially vine thicket remnant habitat and regrowth in the vicinity of KP 341-344.	No	2	Habitat loss (vine thicket).
Mammals				
large-eared pied bat *Chalinolobus dwyeri*	Roosts in small groups in caves and mines, poorly known. Potentially utilises woodland habitats as foraging habitat in the Callide Range (KP 255-282) and sandstone belt KP 90-105).	No	1	No significant impact.
northern quoll *Dasyurus hallucatus*	Potentially present in large areas of undisturbed woodland and forest habitat, particularly rocky habitat in the sandstone belt (KP 90-105).	No	2	Habitat disturbance, trenchfall.

Common Name *Scientific Name*	Ecology and Distribution Notes	HMT*	Sensitivity Class**	Potential Impacts
Semon`s leaf-nosed bat *Hipposideros semoni*	Potentially utilises forest and woodland for foraging in the Callide Range area (KP 254-282). Anabat surveys recorded the eastern horseshoe-bat on the alignment at two locations in the Callide Range, suggesting there may be suitable cave roost habitat in the vicinity of the alignment.	No	1	No significant impact.
south-eastern long-eared bat *Nyctophilus corbeni*	Dependent on tree hollows for roosting. Potentially present in woodland habitats with hollow-bearing trees (particularly riparian and floodplain woodland) south of the Great Dividing Range at about KP 105.	No	2	Loss of roost sites (tree hollows).
yellow-bellied glider (southern) *Petaurus australis australis*	Dens in tree hollows. Feeds on eucalypt sap, nectar, pollen, manna and invertebrates. Large relatively undisturbed areas are required to maintain populations. Recently recorded in mixed eucalypt woodland near KP 351. Potentially present in spotted gum forest, riparian and floodplain eucalypt woodland and mixed eucalypt woodland in the Gurulmundi (KP Wol 3-10.5) and Barakula (KP Con 5.5-42) areas, as well as the Callide Range (KP 255-282) and Gladstone area (KPs 341-359).	No	2	Habitat loss (hollows, feed trees), direct impact during clearing.
koala (SEQ only) *Phascolarctos cinereus*	Potentially present on Curtis Island, particularly in riparian and floodplain woodland which has been mapped as essential habitat.	No	2	Habitat loss, direct impact during clearing, trenchfall.
golden-tipped bat *Phoniscus papuensis*	Roosts in abandoned hanging scrubwren and gerygone nests located in rainforest gullies on small streams. Potentially forages in vine forest, open forest and riparian woodland along the alignment from the Callide Range (KP 255) north to Curtis Is.	No	1	No significant impact
grey-headed flying-fox *Pteropus poliocephalus*	At northern limit of range in Gladstone area. May utilise forest and woodland habitats in the Gladstone and Curtis Is areas of as part of a larger foraging range.	No	1	No significant impact
false water rat *Xeromys my ides*	Not recorded as yet within the vicinity of the alignment, but potentially present in mangroves and adjacent saltpan habitat on the shoreline at the Narrows and Curtis Is, between KP 351.5 and 356.	No	2	Habitat loss (mangroves), trenchfall.

Common Name *Scientific Name*	Ecology and Distribution Notes	HMT*	Sensitivity Class**	Potential Impacts
little pied bat *Chalinolobus picatus*	Widespread but uncommon, roosts in tree hollows and caves. Recorded during surveys on the Condabri lateral and in the sandstone belt. Potentially present in woodland habitats with hollow-bearing trees (particularly riparian and floodplain woodland) south of the Calliope Range (KP 282).	No	2	Loss of roost sites (tree hollows).

HMT* = High Mobility Taxon: EVR fauna with large home ranges (greater than 100ha per reproductive unit), as defined by EPA (2003).

** Sensitivity Class: 1 = Significant impact unlikely; 2 = Standard mitigation available; 3 = Sensitive to pipeline impacts; 4 = Insufficiently known.

7 Mitigation and Rehabilitation Recommendations

Mitigation measures and commitments are discussed in more detail in the Environmental Management Plan for the gas pipeline, including pest and weed Biosecurity Management Plans. The legislative and approval context is outlined in Appendix 6 - .

7.1 Additional Field Survey

Field assessment of the alignment should be conducted between the Bruce Highway (KP 325.2) and Friend Point (KP 354.5). There are a number of potential issues in this area, including habitat for threatened flora and fauna species and the potential presence of EPBC-listed threatened ecological communities (e.g. semi-evergreen vine thicket in the vicinity of KPs 341-344). Satellite imagery indicates that the current alignment avoids some of these areas, but ground-truthing is required to confirm this suggestion.

The endangered large-fruited zamia palm (*Cycas megagcarpa*) was observed at 10 locations along the Callide Range between KPs 260 – 272.2, with more than 100 individuals observed within the vicinity of the proposed alignment. It is likely that additional individuals of this EVR plant are present along the RoW at locations between the sites surveyed. The Calliope Range crossing (KP 281.5-282.1) was not surveyed during the field assessment due to access constraints, but surveys for the Surat-Gladstone Pipeline identified the presence of *Cycas magacarpa* across the range very close to the APLNG alignment (AECOM 2009).

In order to gain an accurate understanding of population numbers and thus the potential impact construction of the proposed pipeline will have on the population as a whole, detailed walk-through surveys for the large-fruited zamia palm should be conducted along the Callide Range (KP 255-271) and Calliope Range (KP 281.5-282.1) to identify the locations of individuals within the vicinity of the alignment.

Pedley's wattle (*Acacia pedleyi*) was observed within the proposed RoW in the Calliope Range between KPs 257-258. A population mapping exercise for this species should be conducted along the Callide Range crossing (KPs 255-271) at the same time as the surveys for *Cycas megacarpa.*

Further surveys for the presence of *Eucalyptus virens* in the central section of the alignment along the sandstone belt (KP 90-105) should be conducted. Little is known about this species and the potential for a population of this species should be confirmed prior to construction of the proposed corridor. This tree species is large and often scattered in distribution, so avoiding direct impact this species may be possible by minor alignment changes and reducing the corridor width in places. The Callide and Calliope Ranges, Port Curtis and the Narrows, Sandstone Belt (Rockybar/Fairyland) and Gurulmundi – Barakula are all identified as sensitive ecological areas in section 5.4. Additional field surveys should be conducted in the four areas because of their integrated flora, fauna and habitat values and likely presence of EVR species.

7.2 Vegetation Communities and Habitat Areas

- The proposed 50m Right-of-Way should be reduced to the minimum required for safe construction, likely to be in the order of 30m, in areas identified as significant vegetation communities or habitat areas.
- Clearing should be limited to the minimum possible extent practicable and existing tracks and cleared areas should be utilised wherever possible

- A buffer of riparian vegetation should be maintained for watercourses, except for removal required to effect crossings of watercourses by the pipeline. If regrowth trees within this buffer require removal, it should be done by hand.
- Clearing of native vegetation in and adjacent to watercourses should be restricted where practicable and any diverted hydrological flows should be reinstated post construction
- Construction activities should be restricted to dry weather conditions where practicable
- Trees should be felled into the construction site or in natural slots between stands of trees to minimise damage to other trees during the clearing process. Machinery contact with standing trees on vegetated margins should be avoided
- All hazardous substances and materials including fuels, oils and chemicals should be stored, handled and disposed of in accordance with standard procedures to minimise potential leakage to the environment, and
- Vegetated buffer areas should be retained and created where practicable. Regeneration and revegetation efforts should be employed in these areas to enhance visual amenity promote native biodiversity, reduce weed invasion and improve habitat quality. Revegetation / reseeding efforts should be based on soil types, existing location vegetation characteristics and endemism of selected species and should involve the implementation of a monitoring program.
- Rehabilitation success should be monitored in accordance with an approved monitoring program. Further rehabilitation works may be required in areas where vegetation establishment has been less than acceptable. Such works should be conducted in consultation with the relevant landholder and should be consistent with Section 4.8 of the Australian Pipeline Industry Association Code of Environmental Practice – Onshore Pipelines (APIA 2009).

7.3 Flora Species

Once additional field surveys have been conducted and the numbers and distribution (and therefore severity of potential impacts) of EVR plants along the RoW are better understood (in particular for the large-fruited zamia palm), a threatened species management plan will be developed. This should include the following combination of actions (where relevant):

- Avoidance: minor realignments should be made to avoid EVR plants where practicable.
- Mitigation: the RoW should be narrowed where practicable to retain EVR plants.
- Translocation: where removal of EVR plants is unavoidable, a translocation strategy should be developed. For the large-fruited zamia palm, this may involve moving then replanting the cycads on the RoW after construction, or translocation to suitable habitat off the RoW.
- Offset: as part of an offset strategy (to be developed in conjunction with DERM), creation of an offset area for the cycads should be investigated. This could also serve as a location for translocated cycads.

Where avoidance is not possible translocation plans should be investigated where EVR flora species populations would be cleared. Plans should include a relocation strategy to translocate existing populations to designated vegetation buffer areas (of suitable habitat) within the project area as well as a reseeding strategy to ensure there is no net loss of significant flora species for the site. A detailed monitoring program should also be included as part of this plan.

Consideration should be given to constructing the pipeline under the Calliope Range (KPs 281.5-282.1) by Horizontal Directional Drilling (HDD) if technically feasible, so as to minimise impacts on the endangered large-fruited zamia palm (*Cycas megacarpa*) population recorded on this section of the alignment. It should be noted that flora studies for the Surat-Gladstone Pipeline EIS have also recommended HDD through this short section of range, immediately adjacent to the APLNG alignment (AECOM 2009).

Pre-clearing surveys should be undertaken prior to all clearing activities within remnant vegetation areas and riparian areas to identify the presence of EVR and other significant flora species. Where populations are identified, the alignment should be realigned or the RoW narrowed where practicable so as to avoid damage or loss of these populations.

7.4 Weeds and Pests

In order to avoid the spread of weeds along the proposed route, a weed management/monitoring plan should be developed and implemented as part of the EMP. This plan should include the following actions:

- Implement vehicle washdown procedures and weed declaration requirements and undertake weed control measures where large infestations of declared plants are identified and restrict access of vehicles and personnel to areas of known noxious weed infestation. Vehicles entering and leaving such areas may need to be rewashed
- Undertake regular monitoring to identify and treat new weed outbreaks and assess current control measures for effectiveness.
- Given that infestations of parthenium weed (*Parthenium hysterophorus*) are located in the northern sections of the proposed alignment, consideration should be given to planning the construction of the pipeline to begin in the south and proceed in a northerly direction. This may minimise the likelihood of spreading parthenium weed into the Banana and Dalby local government areas.

7.5 Fauna Mitigation

Desktop review identified 48 EVR fauna species that could potentially utilise habitat along the pipeline alignment (Table 4.1), of which 31 were identified that could potentially be impacted to some extent by the proposed pipeline. Two species are considered sensitive to impacts from construction of the pipeline (Section 6.3). To avoid or minimise these impacts, mitigation measures are provided in Table 7.1. Section 6.1 also discussed potential impacts of the proposed pipeline on common native fauna. Where appropriate, mitigation and rehabilitation recommendations to avoid or minimise potential impacts on these species are also provided in Table 6.3.

Table 7.1 Fauna Mitigation and Rehabilitation Recommendations

Issue No.	Relevant KP	Issue	Mitigation and Rehabilitation Recommendation
1	115–143 281.5–282.1 325.2–354.5	Additional assessment	Several important sections of the alignment were not field assessed due to access constraints . These included the Calliope Range (KP 281.5 – 282.1), which is likely to contain the EVR plant *Cycas megacarpa*, and from the Bruce Highway (KP 325.2) to Friend Point (KP 354.5). Field assessment of these areas should be undertaken at a stage sufficiently early to allow alignment and design modifications to be carried if required.
2	Full corridor	Removal of mature vegetation	The clearance footprint should be the minimum width required to safely construct the pipeline through all patches of remnant vegetation and fauna habitat. Where possible, trimming of branches should occur rather than tree removal. This will minimise potential impacts on significant fauna species, as well as common native fauna.
3	Full corridor	Clearing of hollow-bearing trees	Hollow-bearing trees are potential nesting and roosting habitat for fauna including yellow-bellied glider, little pied bat, eastern long-eared bat, powerful owl, glossy black-cockatoo, rusty monitor and common arboreal fauna species. All trees that contain hollows should be retained wherever practicable. Where such trees cannot be retained the hollow should be left on the ground adjacent to the cleared corridor to provide habitat for ground-dwelling fauna.
4	Full corridor	Bird and bat nesting and roosting sites	A pre-clearance inspection prior to construction should be conducted to identify potentially important nesting or roosting sites for bird and bat species (e.g. hollow trees, raptor nests). If present, construction should be timed to avoid seasons where nesting and reproduction are concentrated, where practicable.
5	Wol 29.5–29.6 38.0–38.4 40.8–41.0 47.8–47.9 55.7–56.1 124.5–125.0	Clearing of brigalow / belah habitat	The alignment passes through several short sections containing remnant brigalow / belah at the KPs given. Although these areas are small, they are potential habitat for a range of significant species including pale imperial hairstreak, glossy black-cockatoo, rough collared frog, brigalow scaly-foot, golden-tailed gecko, woma and painted honeyeater. The disturbance footprint should be the minimum width required to safely construct the pipeline through sections of brigalow / belah habitat. Following construction, cleared timber should be respread over the easement to provide habitat for ground-dwelling reptile species. Where practicable, minor realignment should be applied to minimise the clearing footprint or avoid the habitat altogether (e.g. KP 47.8-47.9).
6	11.0–11.7, 29.2, 182.6, 320.5, 358.5–358.8	Riparian and floodplain eucalypt woodland	All watercourses with fringing riparian woodland or floodplain eucalypt woodland should be crossed at right angles to minimise the distance transected. Clearing widths should be the minimum practicable within this habitat and the route should be aligned to avoid mature trees with hollows and permanent waterholes and billabongs. Where practicable, construction should occur during the dry season to avoid interruption of drainage.

Issue No.	Relevant KP	Issue	Mitigation and Rehabilitation Recommendation
7	Full corridor	Trenchfall - fauna or livestock trapped in the open pipeline trench	Trenching should occur progressively to minimise the period of time the trench is open and the length of open trench. The length of open trench at any one time should be the minimum practicable. Ramps and trench plugs with slopes of no greater than 50% (APIA 2009) should be located at least every 500m to assist escape for some species. Where possible, trench plugs should coincide with stock and wildlife trails. Small frogs, lizards, snakes and mammals (the species most likely to be impacted in this way) are; however, unlikely to travel such large distances (Doody *et al.* 2003). Depending on weather, either heat and desiccation or drowning are the most likely cause of mortality for these small animals. Therefore, some form of cool insulated cover is needed in the trench, which also allows fauna to climb above any accumulated water. Following the method employed during construction of the North Queensland Gas Pipeline (Wilson and Swan 2004), sawdust-filled hessian sacks used to support pipes prior to laying-in should be soaked in water and placed in pairs at approximately 250m intervals. Branches, ramped gangplanks or similar should also be used to create 'ladders' at regular intervals to assist small fauna to exit the trench (APIA 2009). In selected areas where the risk of entrapment is deemed to be greater than normal, consideration will be given to the use of temporary fencing to exclude access to the trench by livestock and larger native wildlife. In selected areas where the risk of entrapment is deemed to be greater than normal, consideration should be given to the use of temporary fencing to exclude access to the trench by livestock and larger native wildlife (APIA 2009). Suitably trained fauna spotters and handlers should be employed to survey the open trench and remove any trapped fauna species. Such surveillance should occur along the entire length of the trench and not merely those areas described as fauna habitats or sensitive areas, as trench fall can entrap significant numbers of fauna along any part of the trench (Doody *et al.* 2003). Fauna searches should be conducted at least daily. Fauna spotters and handlers should be qualified or appropriately trained to assess and handle any injuries to native fauna or livestock that may occur due to trenchfall. Qualified veterinarian staff employed in the local area should be utilised to assess and treat or euthanase (as necessary) any large native vertebrates or livestock.
8	Full Corridor	Increased vehicular traffic and roadkill	Appropriate measures should be applied to ensure vehicles remain on designated access roads and tracks and within defined pipeline construction area and associated work / camp sites (e.g. workforce education, signs, boundary markers and fences). Vehicle movements should be minimised, especially at night. Vehicles shall travel at appropriate speeds that minimise environmental risks, and measures should be taken to ensure speed limits are appropriate and are being observed. Existing roads and tracks should be utilised for access where practicable (APIA 2009).

Issue No.	Relevant KP	Issue	Mitigation and Rehabilitation Recommendation
9	Full Corridor	Soil compaction effects on burrowing fauna	Soil compaction has the potential to reduce habitat quality for burrowing and crack-utilising fauna, including significant species such as the rough collared frog, short-necked worm-skink, ornamental snake, grey snake and Dunmall's snake. To minimise the extent of compaction, appropriate measures should be applied to ensure vehicles remain on designated access roads and tracks and within the defined pipeline construction area and associated work / camp sites (e.g. workforce education, signs, boundary markers and fences). Vehicle parking should be restricted to the pipeline construction area and other designated areas (APIA 2009).
10	Full corridor	Revegetating corridor (post construction)	Where possible, native shrubs should be allowed to regenerate to reduce the barrier to fauna movement, especially by small ground-dwelling fauna. Spreading of logs, hollows and dead timber across the disturbed areas within woodland fauna habitats should be carried out to facilitate small ground fauna movement. Bare vehicle tracks should be minimised following the rehabilitation of the corridor post-construction. Roads and bare tracks can be barriers to movement of small ground-dwelling fauna species. Ideally, a grassed, winding track and infrequent vehicle access will prevent the establishment of bare vehicle tracks.
11	Full corridor	Mosquito breeding grounds	Equipment and materials used during construction should be stored in a manner that prevents retention of water. Drainage systems should be protected during construction to prevent surface water retention wherever possible. Natural drainage patterns should be protected during construction where possible and reinstated immediately following construction. Specific mosquito control activities will be included in the Draft Construction EMP.

8 Environmental Offsets

Environmental offset policies have been developed at the Commonwealth and State level. Actions that can be considered as environmental offsets are generally categorised into direct and indirect offsets. Direct offsets are aimed at on-ground maintenance and improvement of habitat or landscape values through:

- Long-term protection of existing habitat e.g. acquisition and inclusion of land under protected estate and covenanting arrangements on private land
- Restoration or rehabilitation of existing degraded habitat, or
- Re-establishment of habitat

Indirect offsets are aimed at improving knowledge, understanding and management leading to improved conservation outcomes including:

- Implementation of recovery plan actions including surveys
- Contributions to relevant research or education programs
- Removal of threatening processes
- Contributions to appropriate trust funds or banking schemes that can deliver direct offsets through a consolidation of funds and investment in priority areas, or
- On-going management activities such as monitoring, maintenance, preparation and implementation of management plans etc.

8.1 Environmental Offsets under the EPBC Act

Environmental offsets can be used under the EPBC Act to maintain or enhance the health, diversity and productivity of the environment as it relates to matters protected by the EPBC Act (i.e. matters of NES and more broadly for actions involving the Commonwealth).

Environmental offsets must be selected in accordance with the eight principles of the Draft Policy Statement (DEWHA, 2007):

- Environmental offsets should be targeted to the matter protected by the EPBC Act that is being impacted.
- A flexible approach should be taken to the design and use of environmental offsets to achieve long-term and certain conservation outcomes which are cost effective for proponents.
- Environmental offsets should deliver a real conservation outcome.
- Environmental offsets should be developed as a package of actions - which may include both direct and indirect offsets.
- Environmental offsets should, as a minimum, be commensurate with the magnitude of the impacts of the development and ideally deliver outcomes that are ‘like for like’.
- Environmental offsets should be located within the same general area as the development activity.
- Environmental offsets should be delivered in a timely manner and be long lasting.

- Environmental offsets should be enforceable, monitored and audited.

The principles of the Draft Policy Statement for the use of environmental offsets under the EPBC Act (DEWHA 2007) indicate that offsets should, as a minimum, be commensurate with the magnitude of the impacts of the development and ideally deliver outcomes that are 'like for like'. The draft policy does not provide offset ratios or minimum area for calculations. Nevertheless, it can be assumed that any significant impacts to a Matter of National Environmental Significance will need to be offset in a way that is qualitatively commensurate with the magnitude of the impact. Any offset created under this policy would need to be established in collaboration with DEWHA.

8.2 Queensland Government Environmental Offsets

Under the Queensland Government Environmental Offsets Policy (QGEOP), environmental offsets provide measures to be taken to counterbalance certain unavoidable negative environmental impacts of a particular project and can be applied to several aspects including vegetation management and other environmental management issues such as loss of habitat and biodiversity.

The Environmental Offsets Policy (EPA 2008) provides policies for specific areas of environmental management and outlines the principles in which environmental offsets must be selected i.e.

- Environmental offsets will not replace or undermine existing environmental standards or regulatory requirements, or be used to allow development in areas otherwise prohibited through legislation or policy.
- Environmental impacts must first be avoided, then minimised, before considering the use of offsets for any remaining impact.
- Environmental offsets must achieve an equivalent or better environmental outcome.
- Environmental offsets must provide environmental values as similar as possible to those being lost.
- Environmental offset provision should minimise the time-lag between the impact and delivery of the offset.
- Environmental offsets must provide additional protection to environmental values at risk, or additional management actions to improve environmental values.
- Environmental offsets must be legally secured for the duration of the offset requirement.

The Queensland Government also provides specific-issue offsets policies which provide detailed direction for offsets that address specific environmental issues. Specific-issues offsets policies include, but are not limited to:

- The Policy for Vegetation Management Offsets (DERM 2009d) which provides the criteria for vegetation offsets including limitations of offsets, values and regional ecosystems, ecological equivalence and legal requirements.
- The Nature Conservation (Koala) Conservation Management Program 2006-2016 (EPA 2006c), which provides for the selection and management of koala habitat offsets.

8.2.1 Vegetation management offsets

The Policy for Vegetation Management Offsets (DERM 2009) under the VMA provides criteria for vegetation offsets including limitations of offsets, values and regional ecosystems, ecological equivalence and legal requirements with the intention of:

- Conserving remnant vegetation (including endangered, of concern and not of concern REs) and vegetation in declared areas
- Ensuring clearing activities do not cause land degradation
- Preventing the loss of biodiversity
- Maintaining ecological processes.

The objective of this policy is to ensure the long-term conservation of REs in Queensland and meet the requirements of the regional management code and offsets. Vegetation management offsets must meet the requirements of the criteria outlined in this policy that covers limitations, RE types and values, ecological equivalence, legal security and implementation and management. The minimum requirements for potential offsets to counterbalance proposed clearing impacts from the construction of the pipeline are summarised in Table 8.1

Table 8.1 Minimum requirements for potential vegetation management offsets

Minimum offset requirements
Offset limitations
• An offset area must be land-based, that is, it must not be a financial contribution, and may be located on land owned by the applicant or by a third party • An offset area must not be: – Currently mapped as remnant vegetation, unless it is under threat of clearing (i.e. a valid clearing approved under the VMA exists) or is identified as an advance offset approved under this policy and protected by a legally binding mechanism – On land the subject of an offset arrangement administered any government – Vegetation to be retained under an approval issued under any government Act or a category A, B or C area shown on a property map of assessable vegetation – Regulated regrowth that is a restricted area under the regrowth vegetation code • An offset area may be a category X area shown on a property map of vegetation, regulated regrowth vegetation outside a restricted area or other regrowth vegetation that has the necessary functioning regional ecosystems • An offset area may be used to satisfy other offset requirements under another Act or policy (for example the Biodiversity Offsets policy)
Values and regional ecosystems
• An offset area must be the same broad vegetation group as the area proposed to be impacted • An offset area for endangered and of concern regional ecosystems must be a RE with the same or higher conservation status than the RE proposed to be impacted • An offset area for connectivity must be located within an ecological corridor as defined under this policy or

Minimum offset requirements

adjacent to an existing area of remnant vegetation or a restricted area such as essential regrowth habitat as defined under the regrowth vegetation code

- An offset area for wetlands must be a wetland RE listed in the regional vegetation management code or a RE associated with a natural significant wetland that has the same or higher conservation status than the RE proposed to be impacted
- An offset area for watercourses must be a RE that has the same or higher conservation status than the RE proposed to be impacted and a RE associated with a watercourse at least the same stream order as the watercourse proposed to be impacted

Ecological equivalence

- An offset area must be ecologically equivalent to area proposed to be impacted in terms of strategic position in landscape, species diversity, condition of vegetation, landscape context attributes (such as patch size, connectivity and context) and special values

Legal security

- An offset area must be legally secured by a legally binding mechanism within 4 months of the development approval or consistent with the timeframes identified in a legally binding agreement
- An offset area must be supported by an offset area management plan

For mining activities under the *Environmental Protection Act 1994*, endangered regional ecosystems are recognised based on their biodiversity status as specified in the Regional Ecosystem Description Database (REDD). For other impacts, endangered regional ecosystems are as defined under the *Vegetation Management Act 1999*. It should be noted that Policy for Vegetation Management Offsets does not apply to petroleum activities, because clearing applications under the VMA and *Sustainable Planning Act 2009* are not required.

Using the VMA Status, the proposed RoW will transect approximately 2.8ha of endangered, 16.6ha of of concern and 544ha of not of concern remnant vegetation, representing a wide variety of vegetation types (Table 8.2). Using the biodiversity status for analysis, the proposed RoW will transect approximately 3.3ha of endangered RE (Table 8.2).

Table 8.2 Area and status of endangered and of concern REs proposed to be cleared

Endangered and Of Concern REs	EPBC	QLD VMA	QLD Bio	Area to be Cleared (ha)
11.9.1	E	E	E	0.08
11.9.5	E	E	E	1.51
11.9.6*	E	E	E	0.10
11.11.18	E	E	E	0.15
11.12.21	E	E	E	0.13
11.3.2	E^	OC	OC	0.44
12.3.3		E	E	0.83
11.9.10		OC	E	0.46

Endangered and Of Concern REs	EPBC	QLD VMA	QLD Bio	Area to be Cleared (ha)
11.3.4		OC	OC	7.82
11.9.7		OC	OC	6.68
11.11.10		OC	OC	0.44
12.11.14		OC	OC	0.61
12.3.11		OC	OC	0.23

* Critically limited regional ecosystem (DERM 2009).

^ Endangered under the EPBC Act only where weeping myall woodland is present.

8.2.2 Biodiversity offsets

The objectives of the Queensland Government draft Policy for Biodiversity Offsets (DERM 2008e) are to improve the long-term protection and viability of the State's biodiversity, to increase the area of habitat restored and enhanced and to ensure development in Queensland is ecologically sustainable. It provides criteria for identifying and utilising biodiversity offsets to counterbalance an impact that causes a loss of biodiversity values.

Under the draft policy, biodiversity offsets must achieve an equivalent or better environmental outcome for the biodiversity values impacted and may include direct offsets (such as acquiring lands to be included in a protected estate or rehabilitation and protection of regrowth vegetation), or indirect offsets including removing threats to biodiversity values, providing fauna assisted crossings and implementing actions of a recovery plan, biodiversity action plan or management plan.

The draft Policy for Biodiversity Offsets may provide a useful guide to calculate potential offsets based on the conservation status of the values impacted. However, the policy in its present form is a consultation draft and is subject to considerable change. Therefore, it is not considered further here.

An offsets strategy will be developed for the identification of potential offset areas, in consultation with DERM, consistent with Queensland and Commonwealth offsets policies. Any offsets proposed in the shared Callide Common Infrastructure Corridor east of the Calliope Range will be in consultation with government and where practicable, coordinated with other proponents.

9 Conclusion

Subject to the assumptions and limitations identified in Section 1.2 and given the successful implementation of the mitigation and rehabilitation recommendations provided in Section 7, this assessment has found that there is generally low potential for the pipeline to have a significant impact on EVR, regionally significant or common flora species, fauna species, Ecological Communities / REs or ecologically sensitive areas. Further survey has been recommended to quantify potential impacts on two EVR plants large-fruited zamia palm (*Cycas megacarpa*) (listed as endangered under the EPBC Act and NC Act) and Pedley's wattle (*Acacia pedleyi*) (rare under the NC Act), to determine whether the proposed pipeline will have a significant impact on either of these species. Additional survey has also been recommended, particularly for EVR plants, in the larger vegetated tracts including sections identified as significant ecological areas.

A number of opportunities to reduce potential impacts have been identified. With the exception of design and construction amendments that may be required (subject to the results of further field surveys) to minimise impacts on the two plants listed above (e.g. realignments, HDD under the Calliope Range), the location of the proposed alignment is considered to be appropriate from the perspective of minimising potential ecological impacts.

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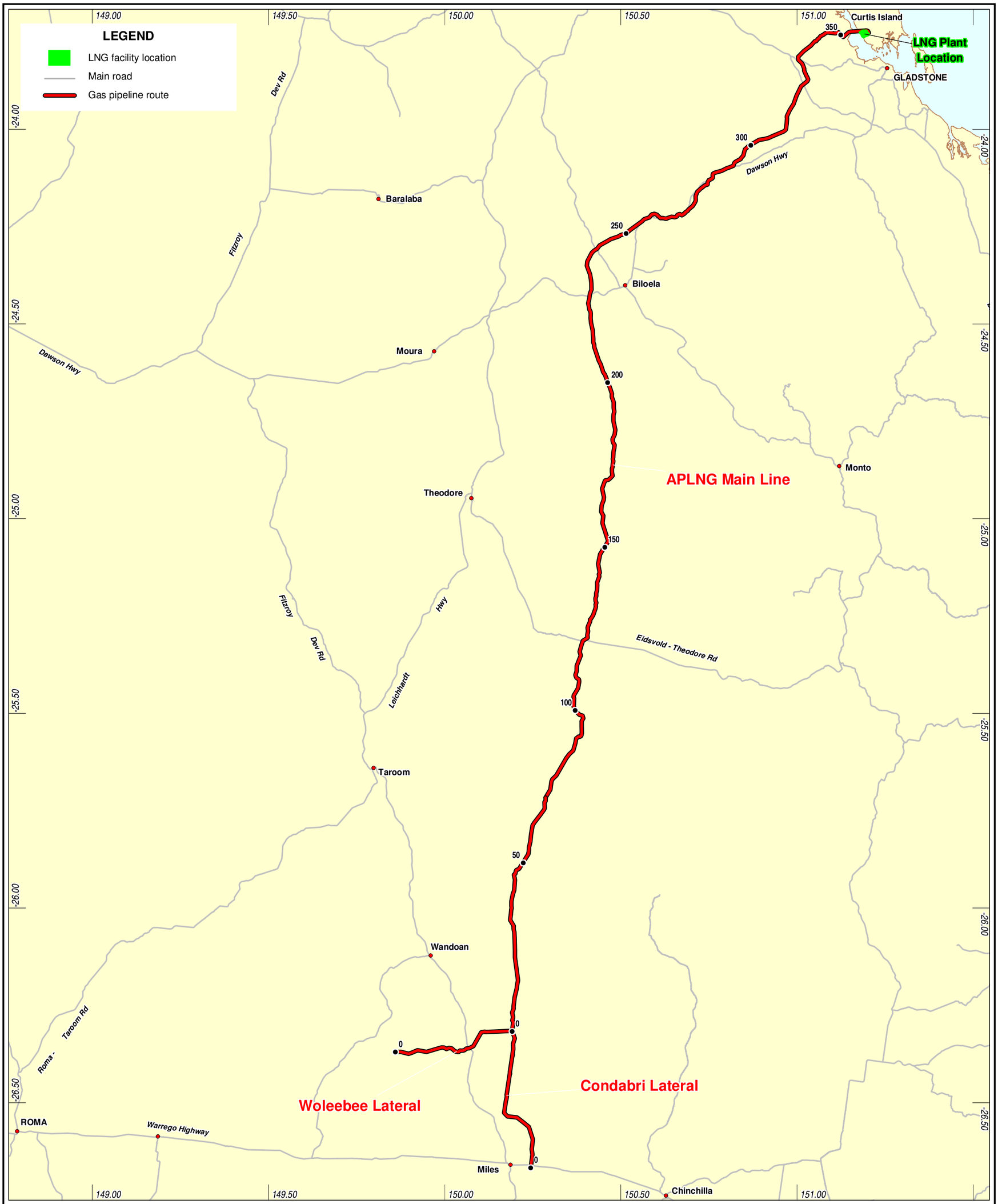
Figures



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Gas pipeline route provided by Origin Energy 03/11/2009

Rev	Date	Revision Description	ORIG	CHK	ENG	APPD
1	09/03/2010	Re-issued for use	GSB	MZ	SH	RB
0	03/03/2010	Issued for use	NA	KM	SH	RB

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AUSTRALIA PACIFIC LNG

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AUSTRALIA PACIFIC LNG PROJECT

Figure 1: Location Map

Project No: 301001-00448	Figure: 00448-00-EN-DAL-0271	Rev: 1

Compiled by BRISBANE INFRASTRUCTURE GIS SECTION

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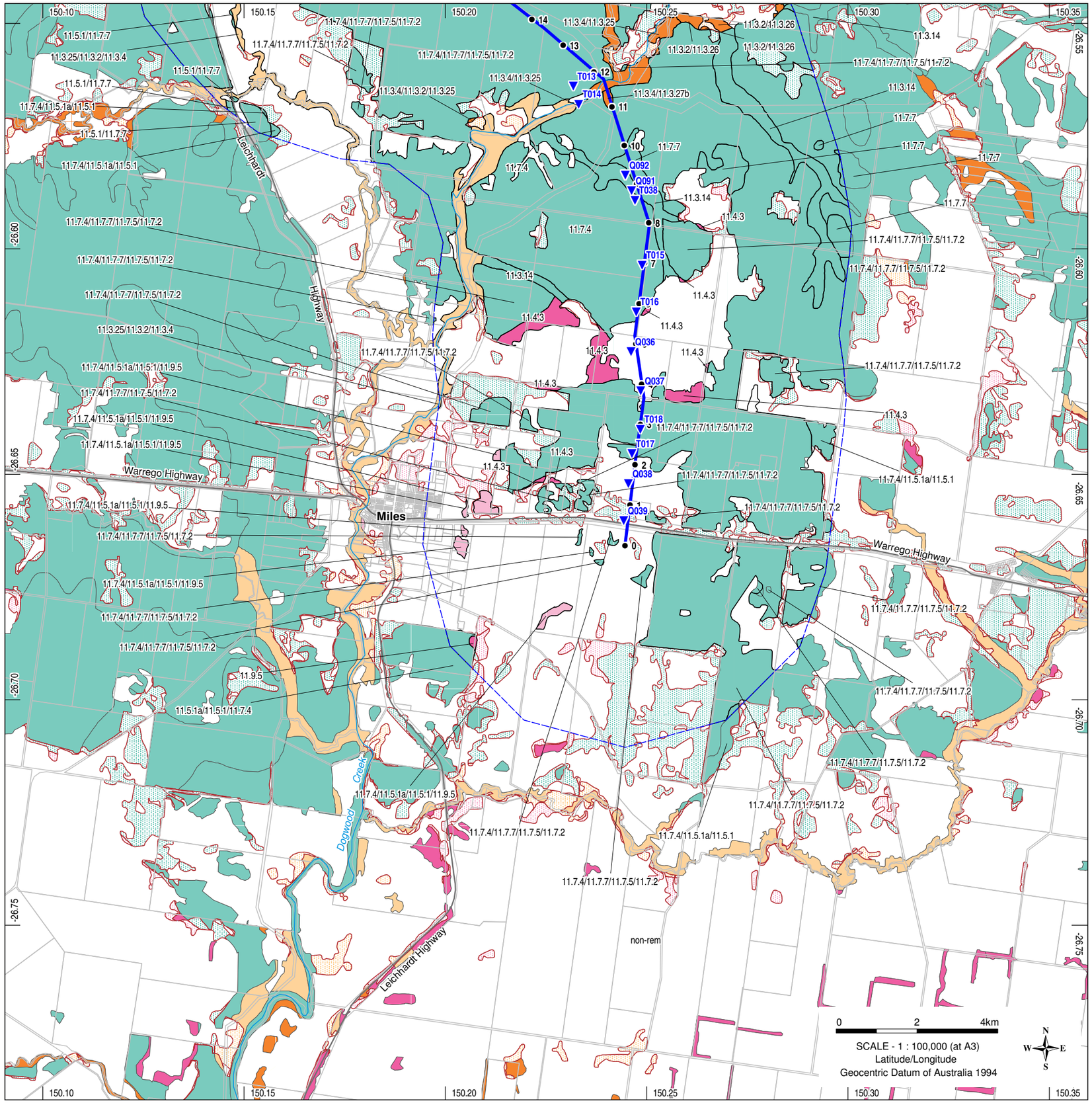

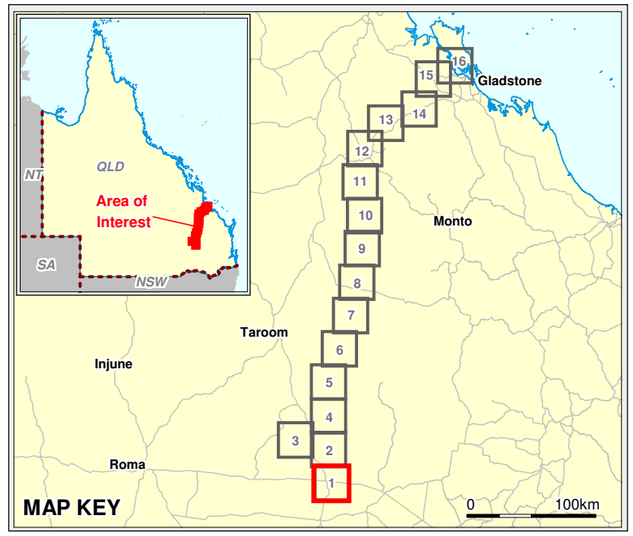

LEGEND

- Major Drainage
- Road
- Railway
- Gas pipeline route and kilometre point
- Flora Site
- Cadastral Parcel
- Pipeline buffer (5km)

Regional Ecosystems - Version 6

Remnant vegetation containing endangered regional ecosystems

- Dominant
- Sub-dominant

Remnant vegetation containing of concern regional ecosystems

- Dominant
- Sub-dominant
- Remnant vegetation that is a least concern regional ecosystem
- Non - remnant

High Value Regrowth Vegetation - Version 2

- High value regrowth vegetation containing Endangered regional ecosystems
- High value regrowth vegetation containing Of Concern regional ecosystems
- High value regrowth vegetation that is a Least Concern regional ecosystem

Rev	Date	Revision Description	KM	MZ	SCH	RB
0	22/02/2010	Issued for use	ORIG	CHK	ENG	APPD

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AUSTRALIA PACIFIC LNG

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AUSTRALIA PACIFIC LNG PROJECT

Figure 2: Regional Ecosystem Mapping V6.0 and flora sites

Project No: 301001-00448	Figure: 00448-00-EN-DAL-0255	Rev: 0

Compiled by BRISBANE INFRASTRUCTURE GIS SECTION

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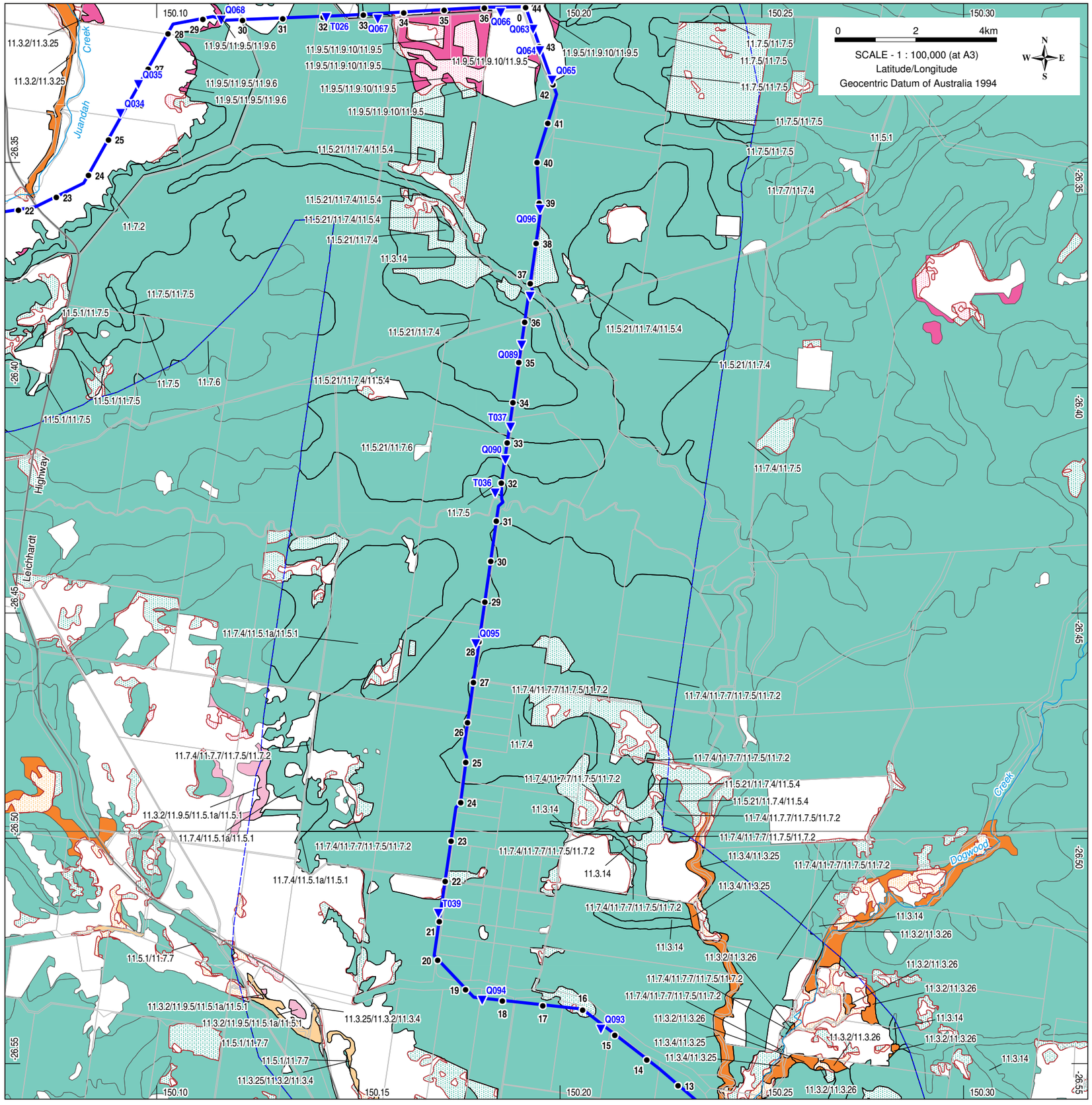

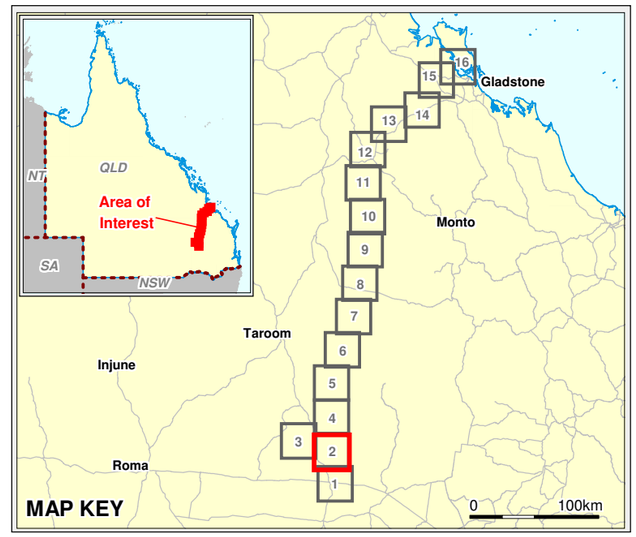

LEGEND

- Major Drainage
- Road
- Railway
- Gas pipeline route and kilometre point (10)
- Flora Site
- Cadastral Parcel
- Pipeline buffer (5km)

Regional Ecosystems - Version 6

Remnant vegetation containing endangered regional ecosystems

- Dominant
- Sub-dominant

Remnant vegetation containing of concern regional ecosystems

- Dominant
- Sub-dominant
- Remnant vegetation that is a least concern regional ecosystem
- Non - remnant

High Value Regrowth Vegetation - Version 2

- High value regrowth vegetation containing Endangered regional ecosystems
- High value regrowth vegetation containing Of Concern regional ecosystems
- High value regrowth vegetation that is a Least Concern regional ecosystem

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Figure 3: Regional Ecosystem Mapping V6.0 and flora sites

Project No: 301001-00448	Figure: 00448-00-EN-DAL-0256	Rev: 0

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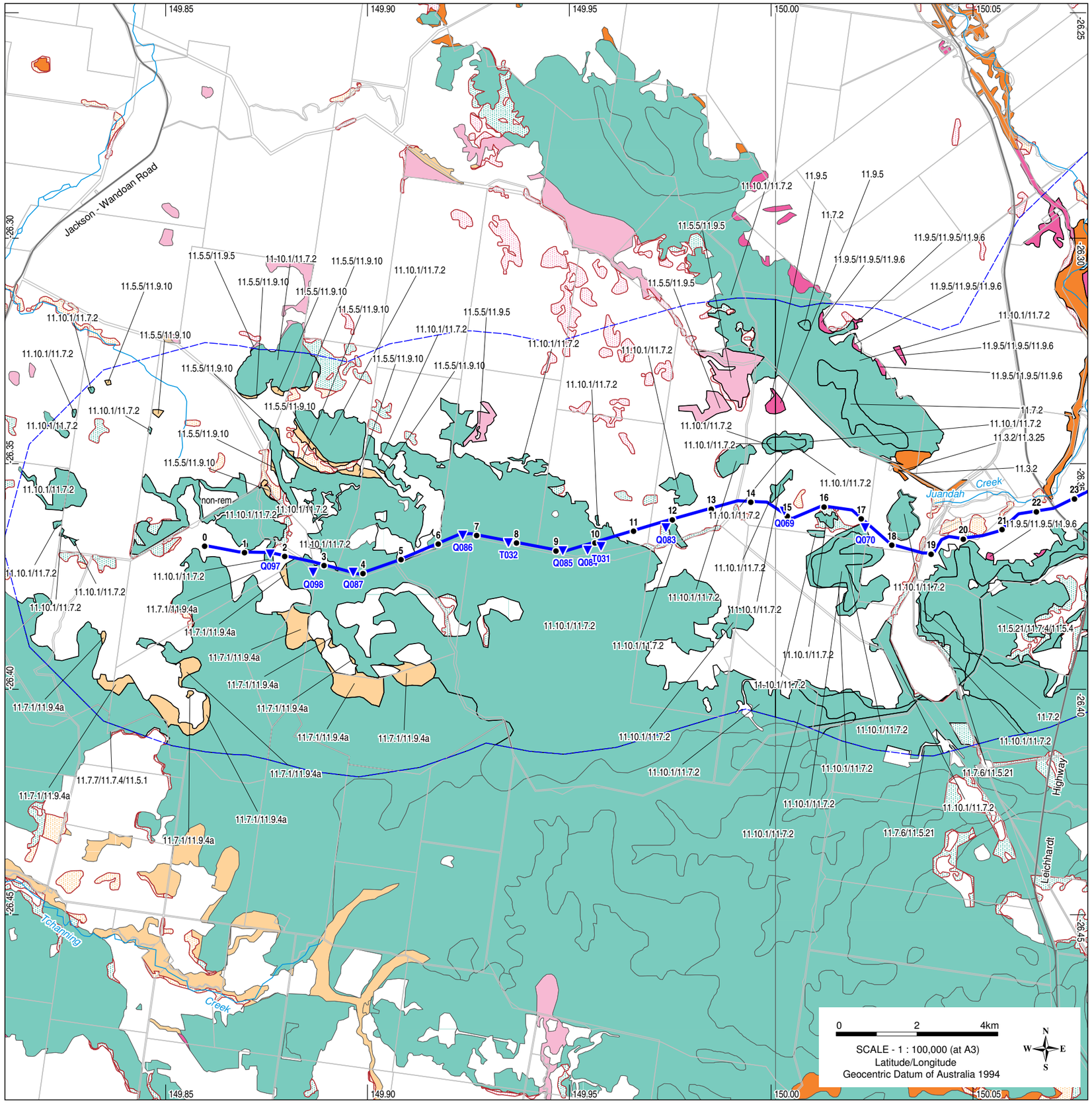

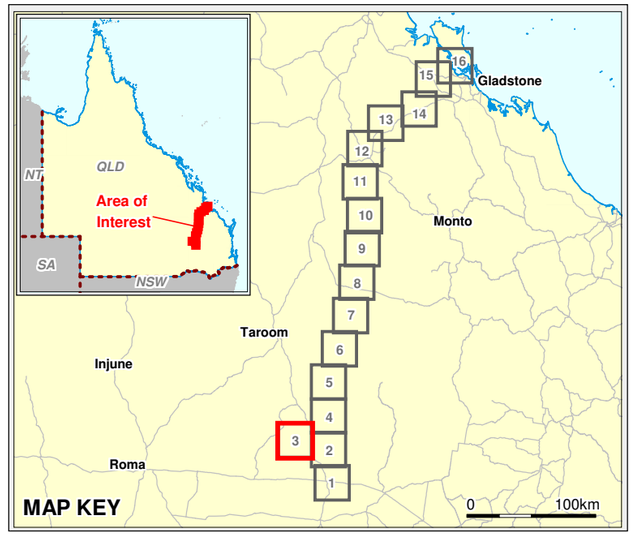

LEGEND

- Major Drainage
- Road
- Railway
- Gas pipeline route and kilometre point
- Flora Site
- Cadastral Parcel
- Pipeline buffer (5km)

Regional Ecosystems - Version 6

Remnant vegetation containing endangered regional ecosystems

- Dominant
- Sub-dominant

Remnant vegetation containing of concern regional ecosystems

- Dominant
- Sub-dominant
- Remnant vegetation that is a least concern regional ecosystem
- Non - remnant

High Value Regrowth Vegetation - Version 2

- High value regrowth vegetation containing Endangered regional ecosystems
- High value regrowth vegetation containing Of Concern regional ecosystems
- High value regrowth vegetation that is a Least Concern regional ecosystem

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Figure 4: Regional Ecosystem Mapping V6.0 and flora sites

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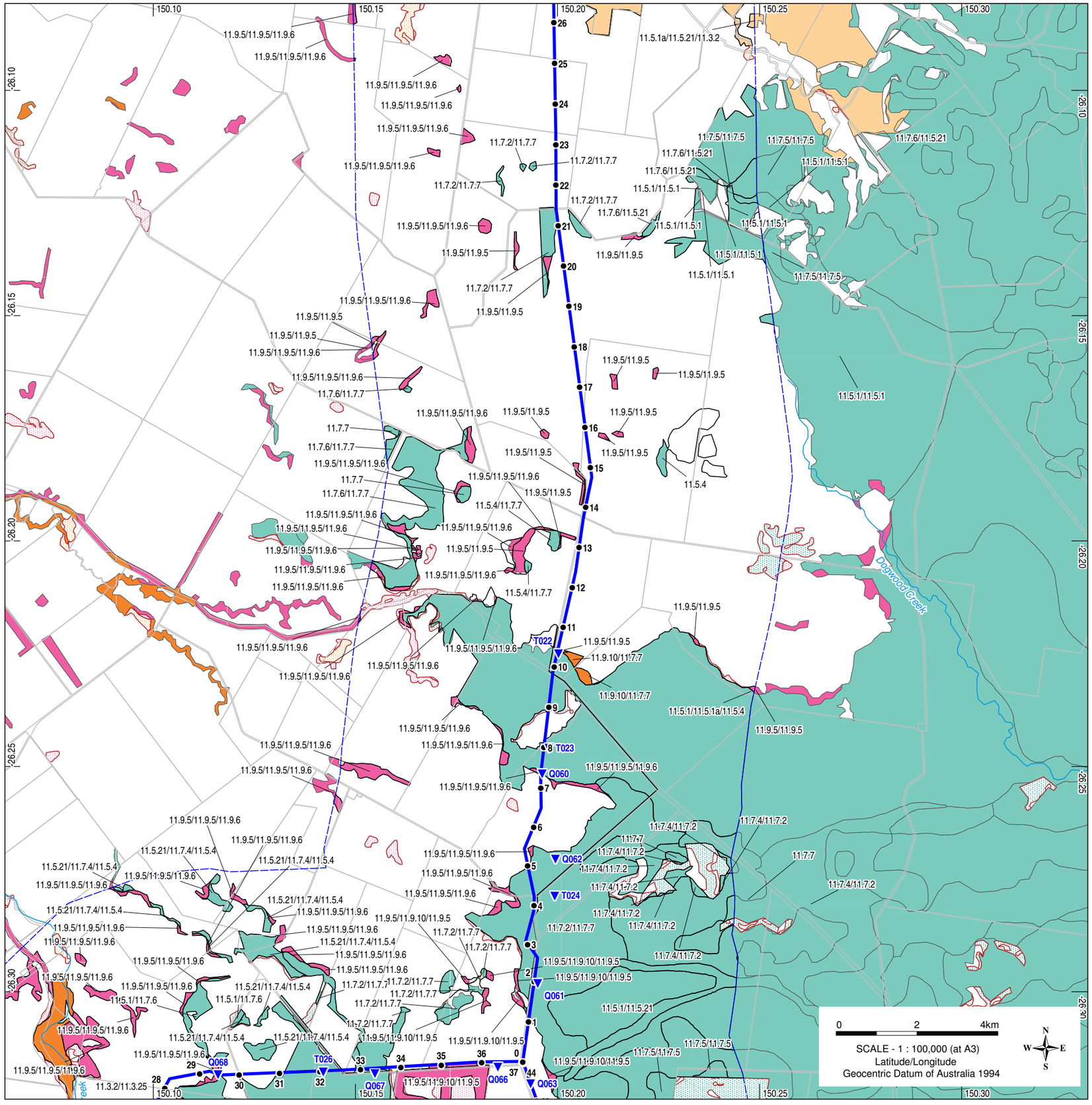

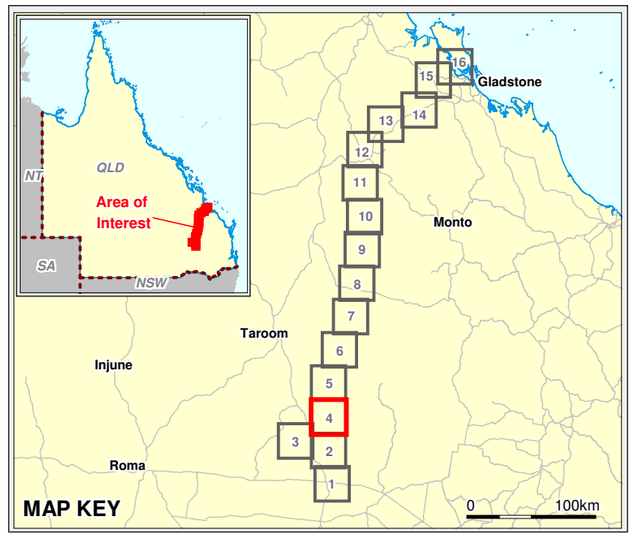

LEGEND

- Major Drainage
- Road
- Railway
- Gas pipeline route and kilometre point
- Flora Site
- Cadastral Parcel
- Pipeline buffer (5km)

Regional Ecosystems - Version 6

Remnant vegetation containing endangered regional ecosystems

- Dominant
- Sub-dominant

Remnant vegetation containing of concern regional ecosystems

- Dominant
- Sub-dominant
- Remnant vegetation that is a least concern regional ecosystem
- Non - remnant

High Value Regrowth Vegetation - Version 2

- High value regrowth vegetation containing Endangered regional ecosystems
- High value regrowth vegetation containing Of Concern regional ecosystems
- High value regrowth vegetation that is a Least Concern regional ecosystem

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Figure 5: Regional Ecosystem Mapping V6.0 and flora sites

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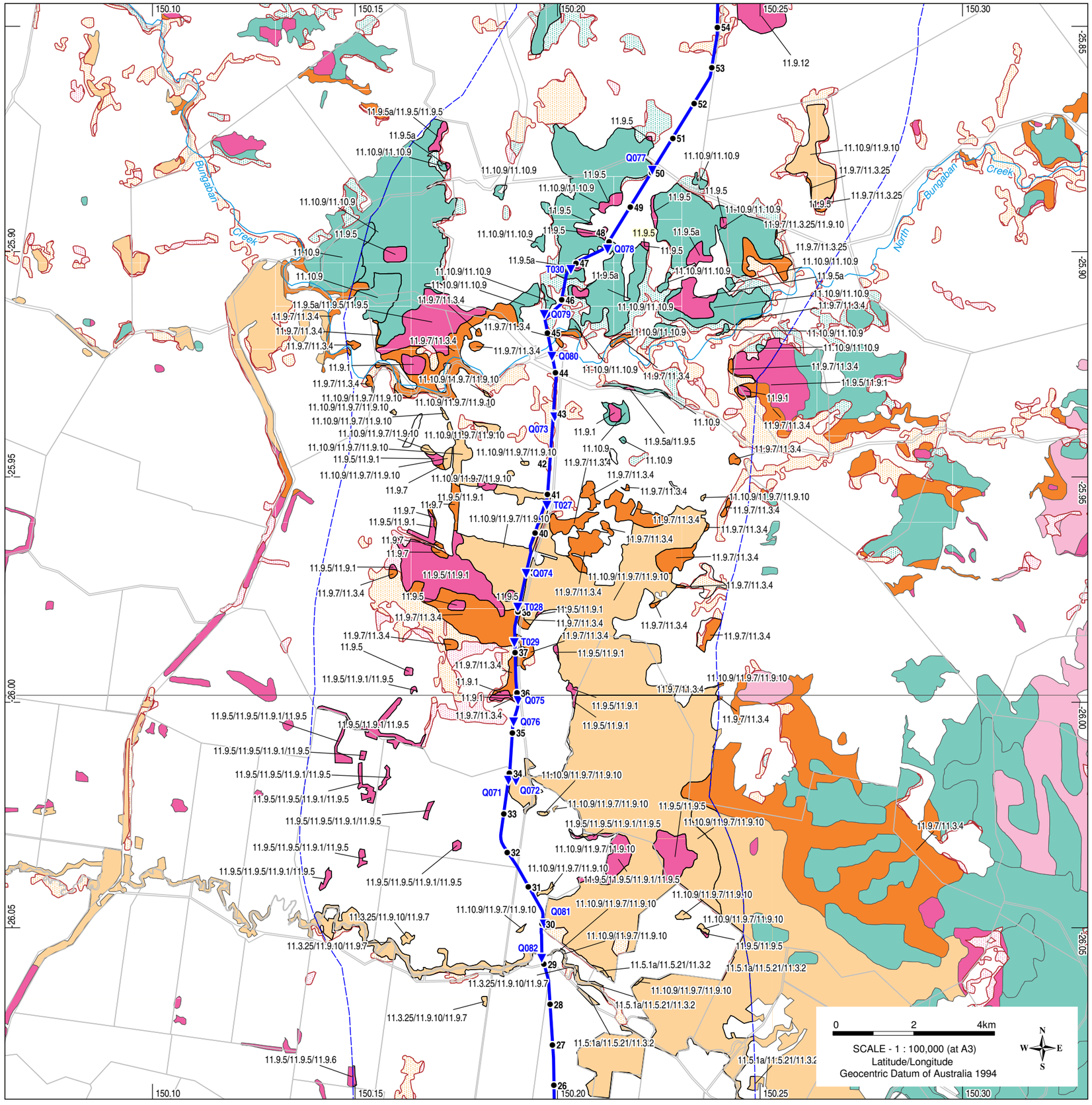

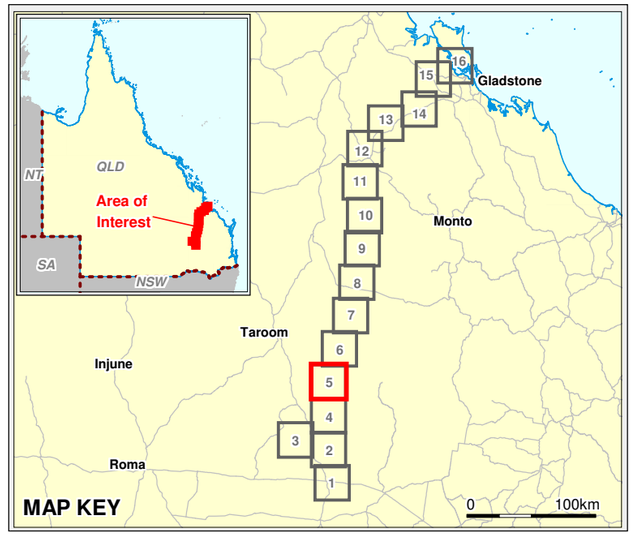

LEGEND

- Major Drainage
- Road
- Railway
- Gas pipeline route and kilometre point
- Flora Site
- Cadastral Parcel
- Pipeline buffer (5km)

Regional Ecosystems - Version 6

Remnant vegetation containing endangered regional ecosystems

- Dominant
- Sub-dominant

Remnant vegetation containing of concern regional ecosystems

- Dominant
- Sub-dominant
- Remnant vegetation that is a least concern regional ecosystem
- Non - remnant

High Value Regrowth Vegetation - Version 2

- High value regrowth vegetation containing Endangered regional ecosystems
- High value regrowth vegetation containing Of Concern regional ecosystems
- High value regrowth vegetation that is a Least Concern regional ecosystem

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Figure 6: Regional Ecosystem Mapping V6.0 and flora sites

Project No: 301001-00448	Figure: 00448-00-EN-DAL-0259	Rev: 0

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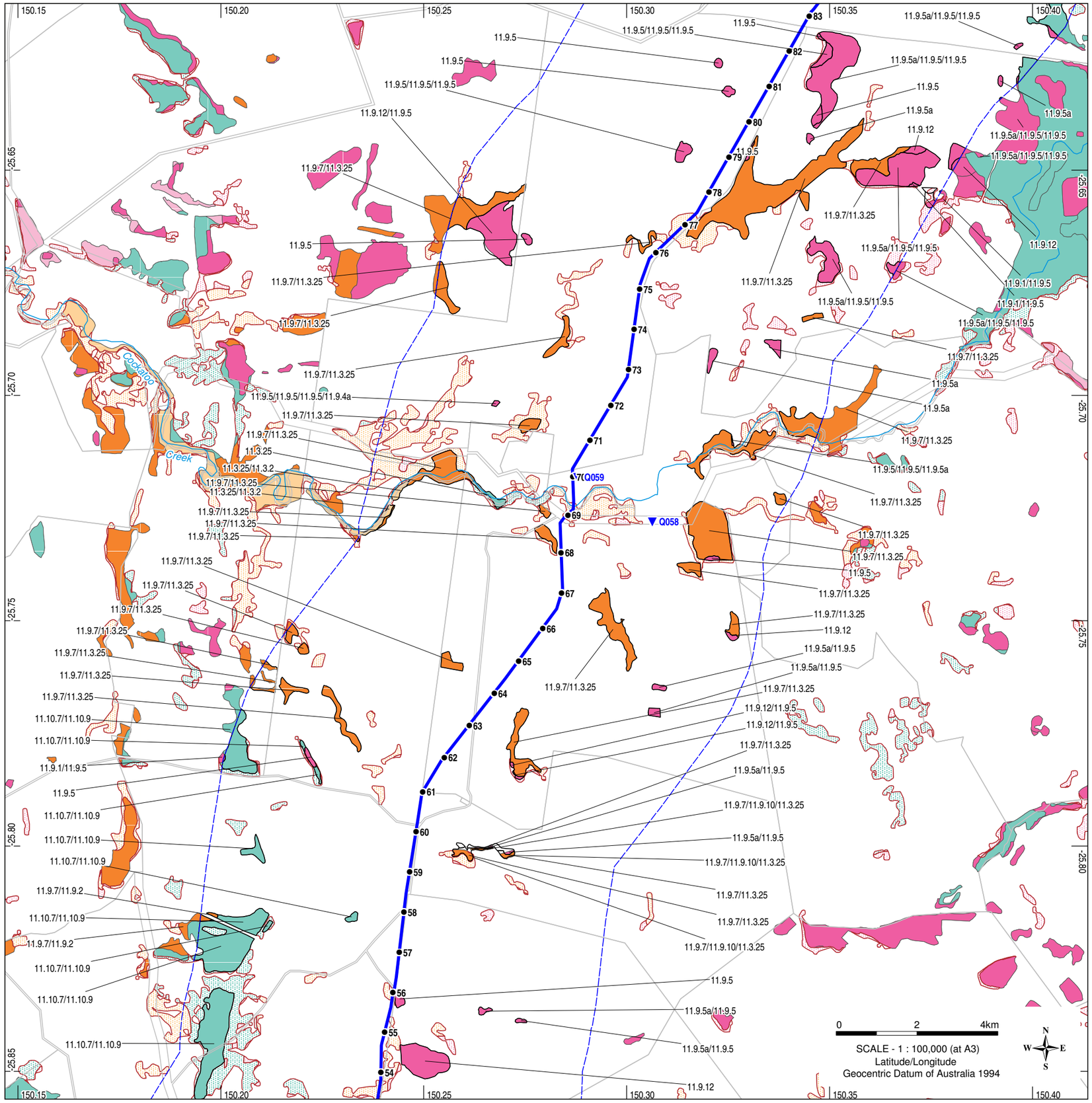

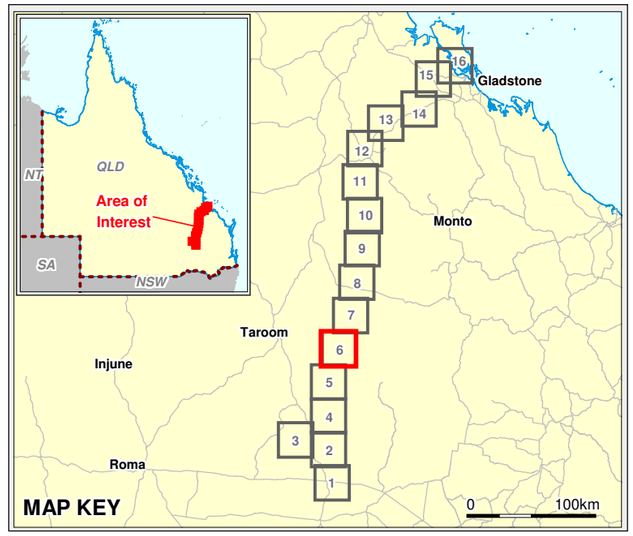

LEGEND

- Major Drainage
- Road
- Railway
- Gas pipeline route and kilometre point
- Flora Site
- Cadastral Parcel
- Pipeline buffer (5km)

Regional Ecosystems - Version 6

Remnant vegetation containing endangered regional ecosystems

- Dominant
- Sub-dominant

Remnant vegetation containing of concern regional ecosystems

- Dominant
- Sub-dominant
- Remnant vegetation that is a least concern regional ecosystem
- Non - remnant

High Value Regrowth Vegetation - Version 2

- High value regrowth vegetation containing Endangered regional ecosystems
- High value regrowth vegetation containing Of Concern regional ecosystems
- High value regrowth vegetation that is a Least Concern regional ecosystem

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Figure 7: Regional Ecosystem Mapping V6.0 and flora sites

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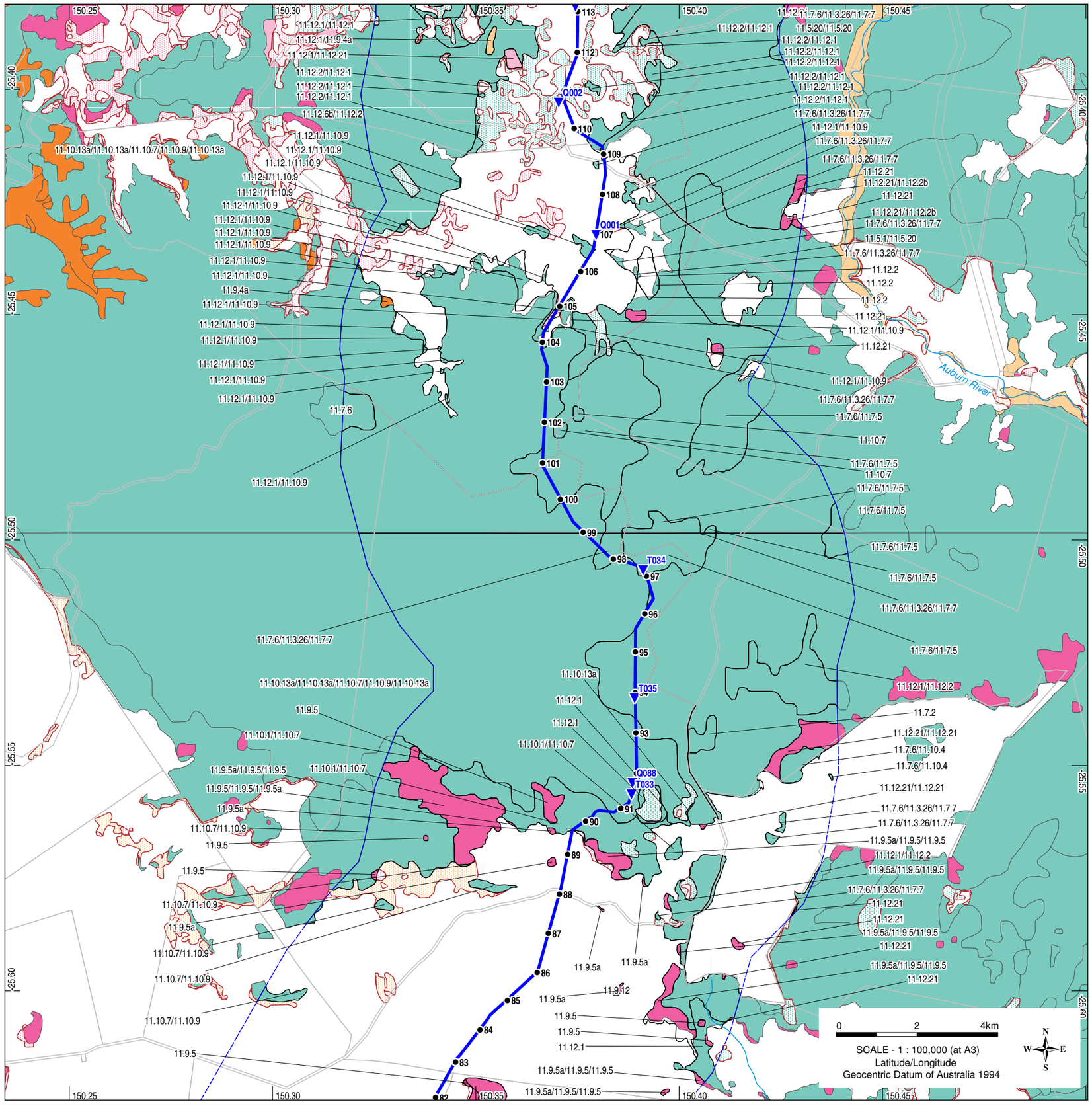

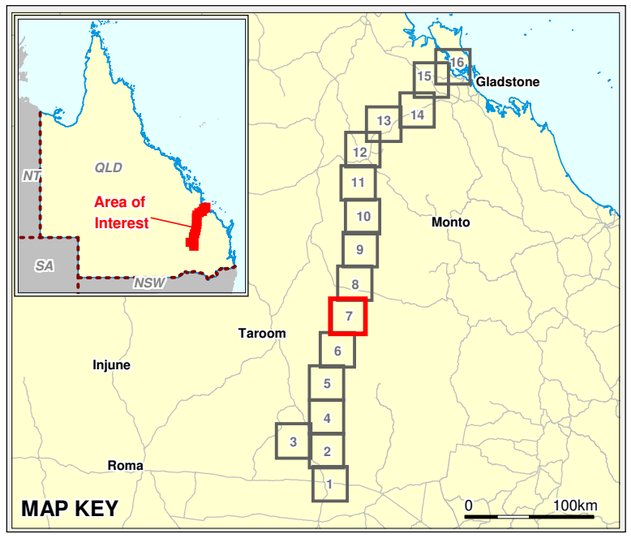

LEGEND

- Major Drainage
- Road
- Railway
- Gas pipeline route and kilometre point
- Flora Site
- Cadastral Parcel
- Pipeline buffer (5km)

Regional Ecosystems - Version 6

Remnant vegetation containing endangered regional ecosystems

- Dominant
- Sub-dominant

Remnant vegetation containing of concern regional ecosystems

- Dominant
- Sub-dominant

- Remnant vegetation that is a least concern regional ecosystem
- Non - remnant

High Value Regrowth Vegetation - Version 2

- High value regrowth vegetation containing Endangered regional ecosystems
- High value regrowth vegetation containing Of Concern regional ecosystems
- High value regrowth vegetation that is a Least Concern regional ecosystem

Rev	Date	Revision Description	JMM	MZ	SCH	RB
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Figure 8: Regional Ecosystem Mapping V6.0 and flora sites

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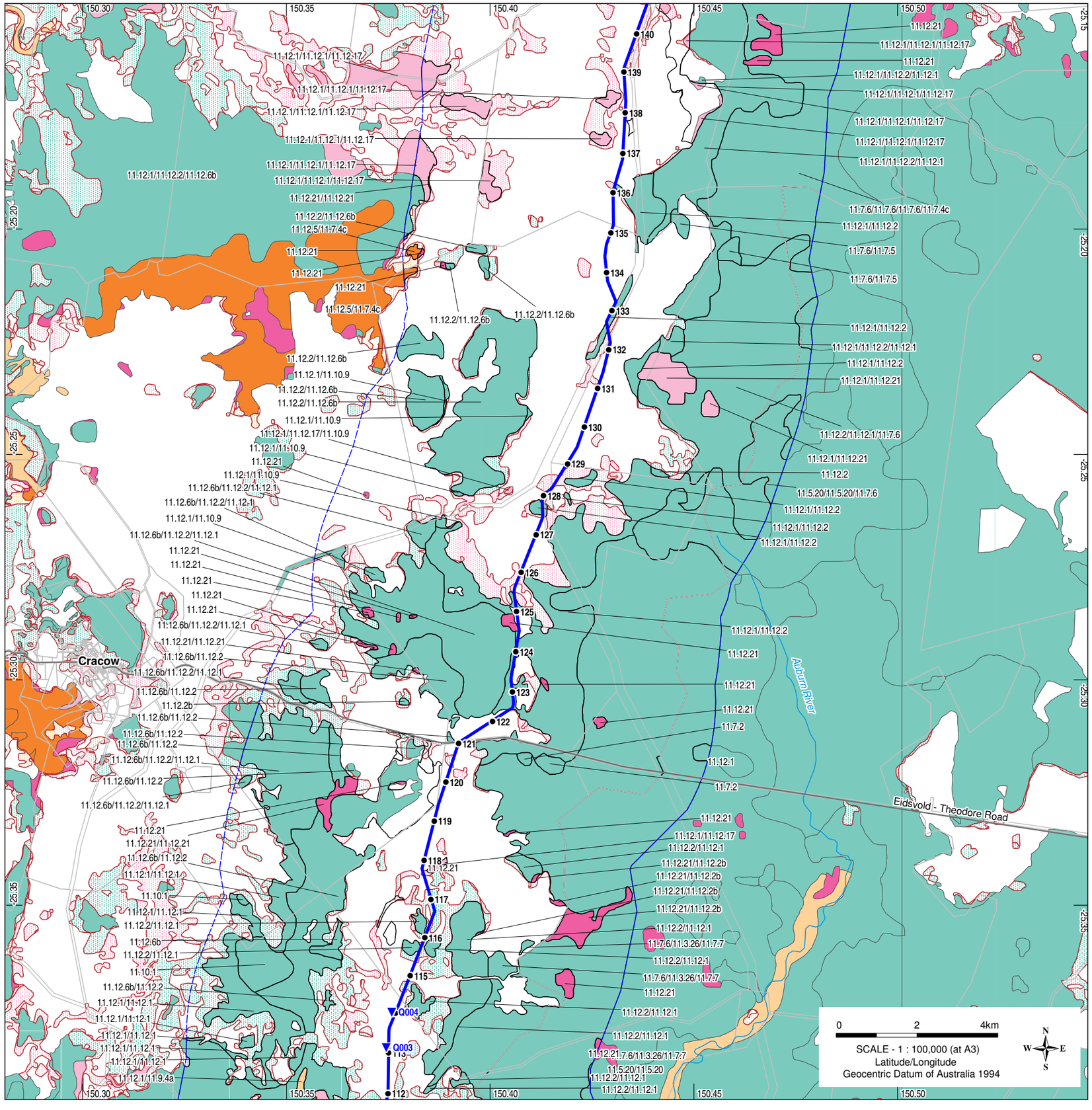
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11.12.21
11.12.21/11.12.21
11.12.6b/11.12.2
11.12.1/11.12.1
11.10.1
11.12.1/11.12.1
11.12.2/11.12.1
11.12.6b
11.12.2/11.12.1
11.10.1
11.12.6b/11.12.2
11.12.1/11.12.1
11.12.1/11.12.1
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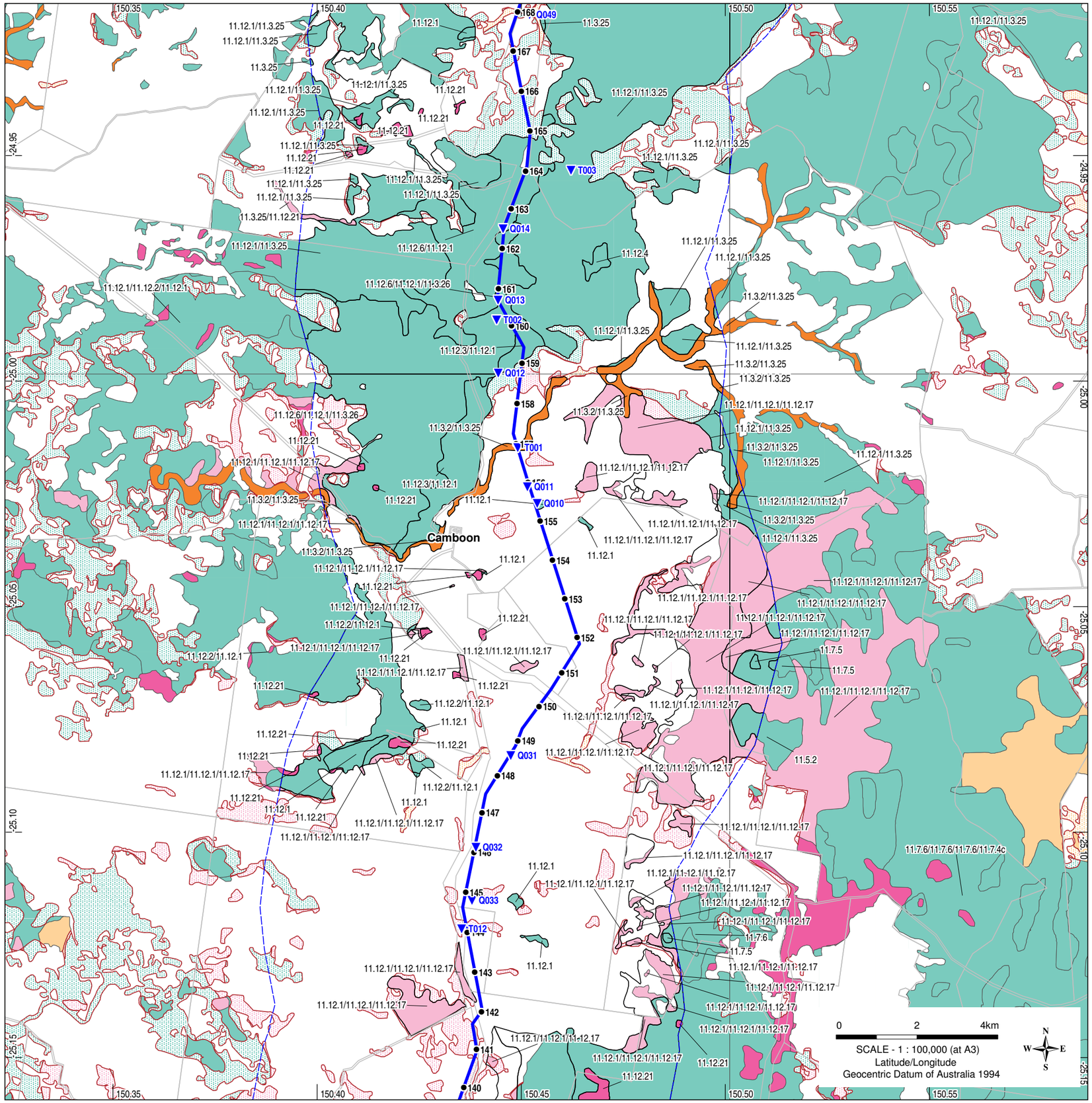

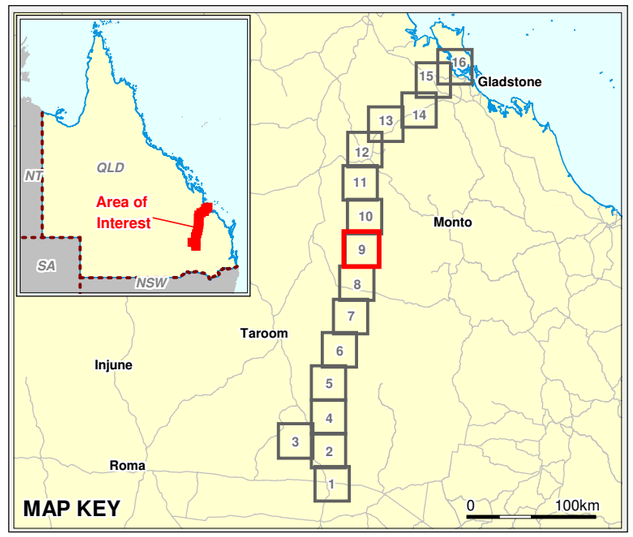

LEGEND

- Major Drainage
- Road
- Railway
- Gas pipeline route and kilometre point
- Flora Site
- Cadastral Parcel
- Pipeline buffer (5km)

Regional Ecosystems - Version 6

Remnant vegetation containing endangered regional ecosystems

- Dominant
- Sub-dominant

Remnant vegetation containing of concern regional ecosystems

- Dominant
- Sub-dominant
- Remnant vegetation that is a least concern regional ecosystem
- Non - remnant

High Value Regrowth Vegetation - Version 2

- High value regrowth vegetation containing Endangered regional ecosystems
- High value regrowth vegetation containing Of Concern regional ecosystems
- High value regrowth vegetation that is a Least Concern regional ecosystem

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Figure 10: Regional Ecosystem Mapping V6.0 and flora sites

Project No: 301001-00448	Figure: 00448-00-EN-DAL-0263	Rev: 0

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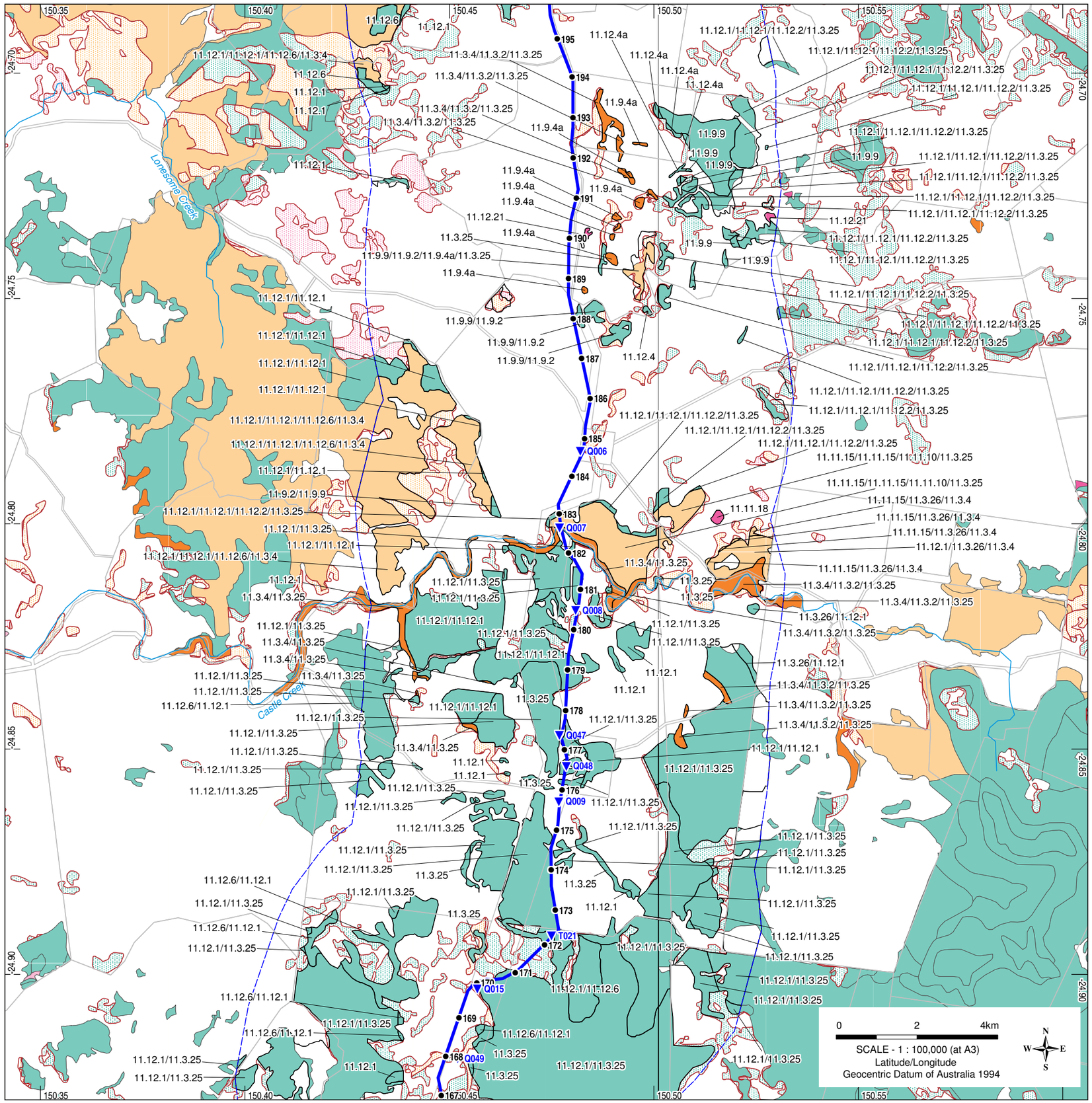

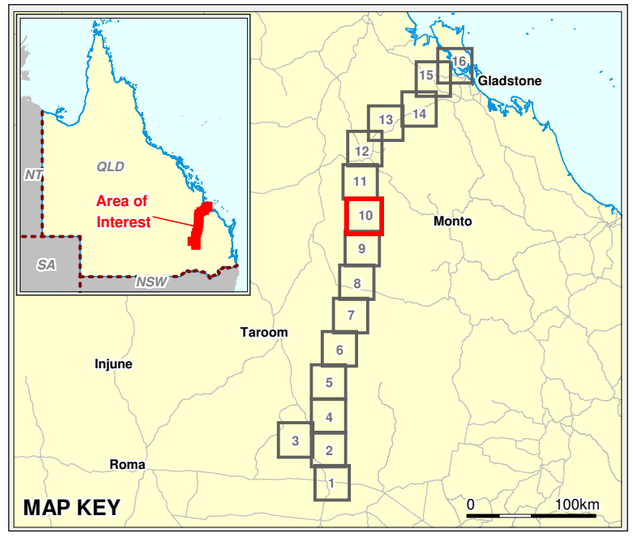

LEGEND

- Major Drainage
- Road
- Railway
- Gas pipeline route and kilometre point (10)
- Flora Site
- Cadastral Parcel
- Pipeline buffer (5km)

Regional Ecosystems - Version 6

Remnant vegetation containing endangered regional ecosystems

- Dominant
- Sub-dominant

Remnant vegetation containing of concern regional ecosystems

- Dominant
- Sub-dominant
- Remnant vegetation that is a least concern regional ecosystem
- Non - remnant

High Value Regrowth Vegetation - Version 2

- High value regrowth vegetation containing Endangered regional ecosystems
- High value regrowth vegetation containing Of Concern regional ecosystems
- High value regrowth vegetation that is a Least Concern regional ecosystem

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Figure 11: Regional Ecosystem Mapping V6.0 and flora sites

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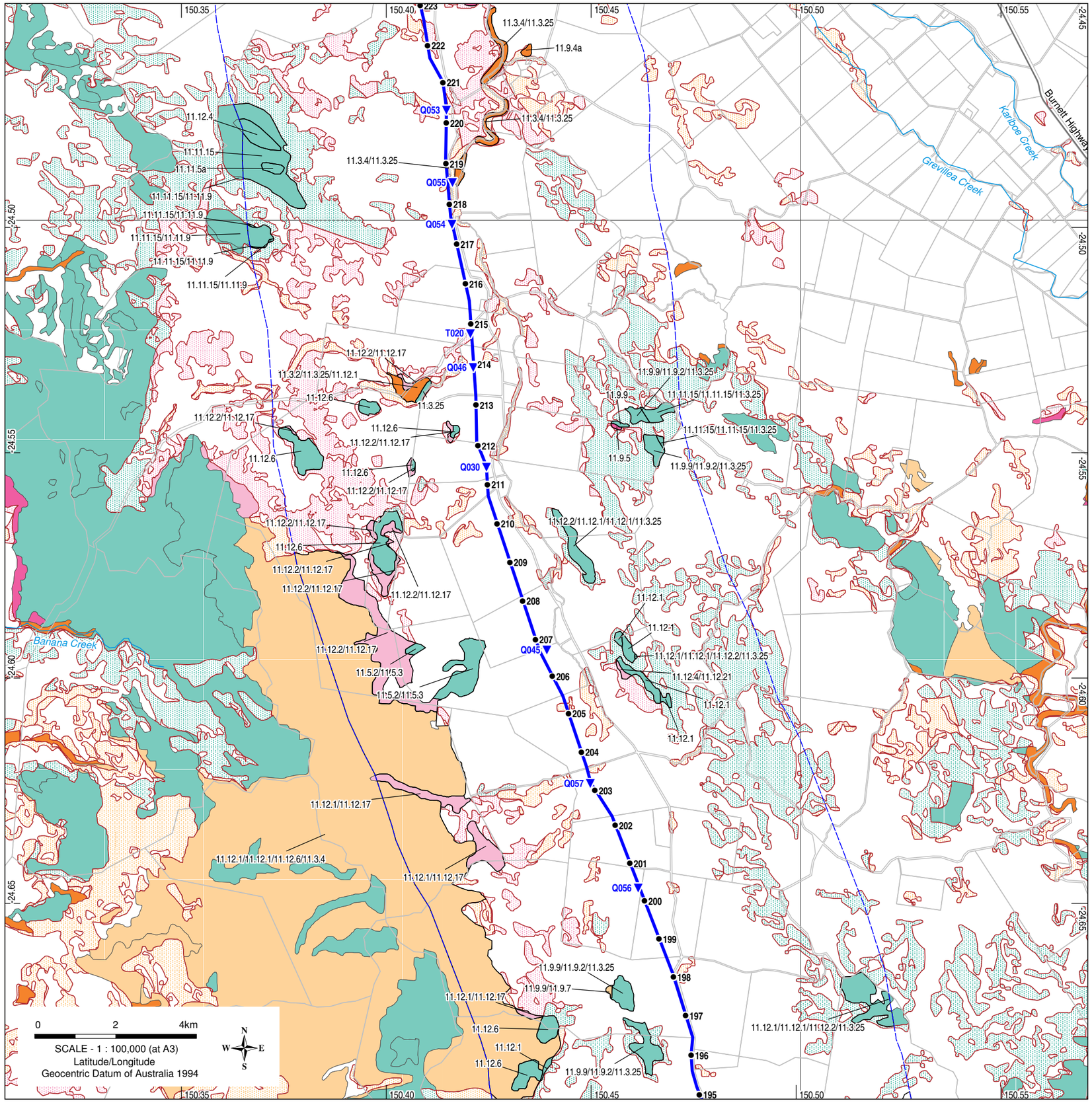

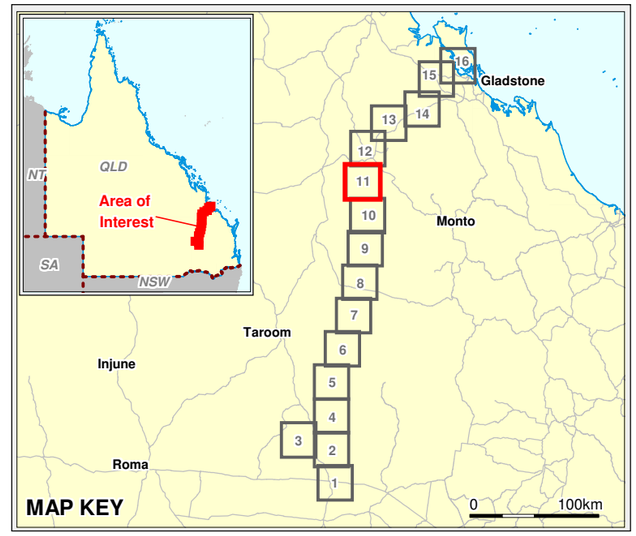

LEGEND

- Major Drainage
- Road
- Railway
- Gas pipeline route and kilometre point
- Flora Site
- Cadastral Parcel
- Pipeline buffer (5km)

Regional Ecosystems - Version 6

Remnant vegetation containing endangered regional ecosystems

- Dominant
- Sub-dominant

Remnant vegetation containing of concern regional ecosystems

- Dominant
- Sub-dominant
- Remnant vegetation that is a least concern regional ecosystem
- Non - remnant

High Value Regrowth Vegetation - Version 2

- High value regrowth vegetation containing Endangered regional ecosystems
- High value regrowth vegetation containing Of Concern regional ecosystems
- High value regrowth vegetation that is a Least Concern regional ecosystem

Rev	Date	Revision Description	ORIG	CHK	ENG	APPD
0	24/02/2010	Issued for use	NA	MZ	SCH	RB

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Figure 12: Regional Ecosystem Mapping V6.0 and flora sites

Project No: 301001-00448	Figure: 00448-00-EN-DAL-0265	Rev: 0

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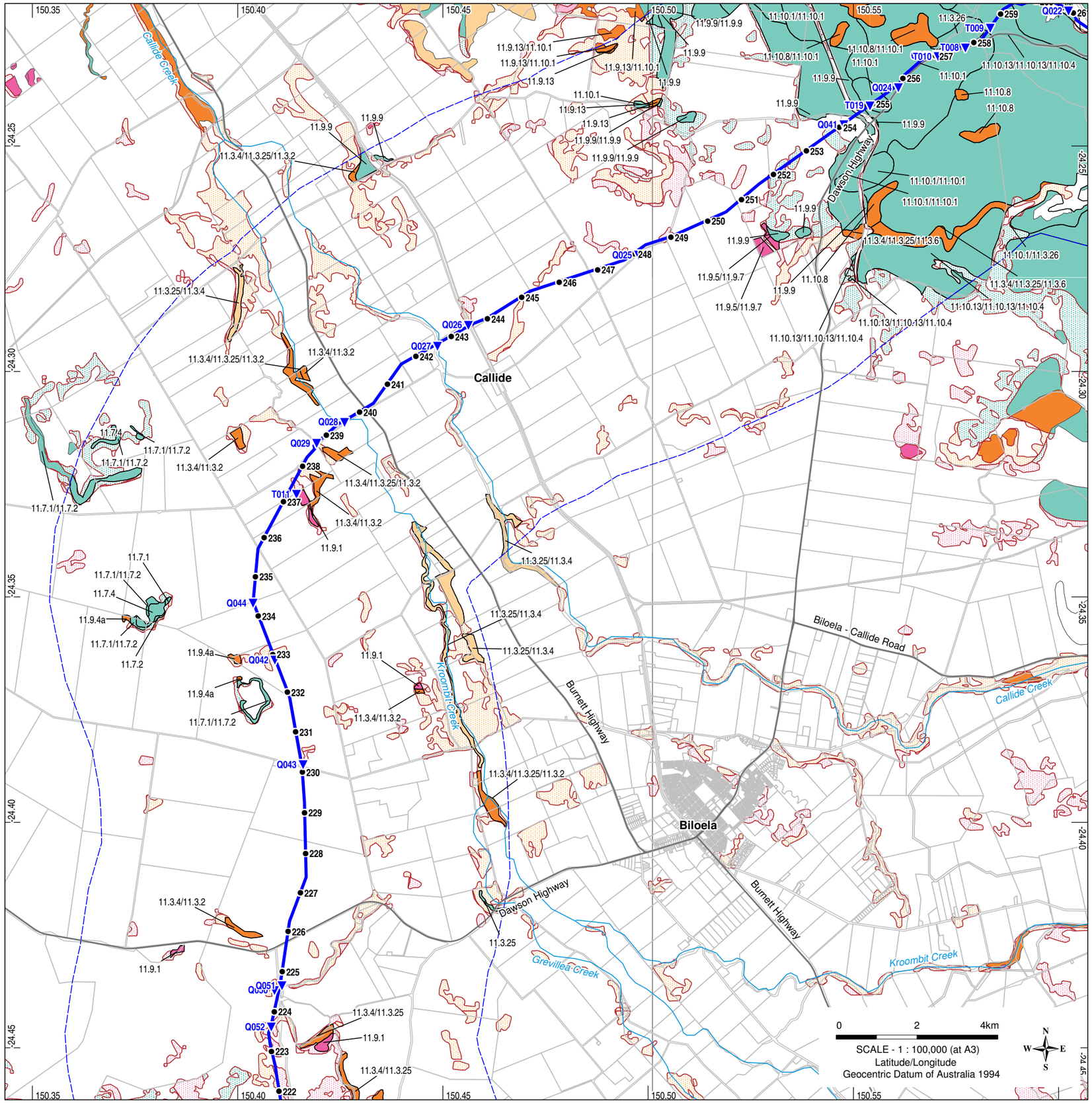

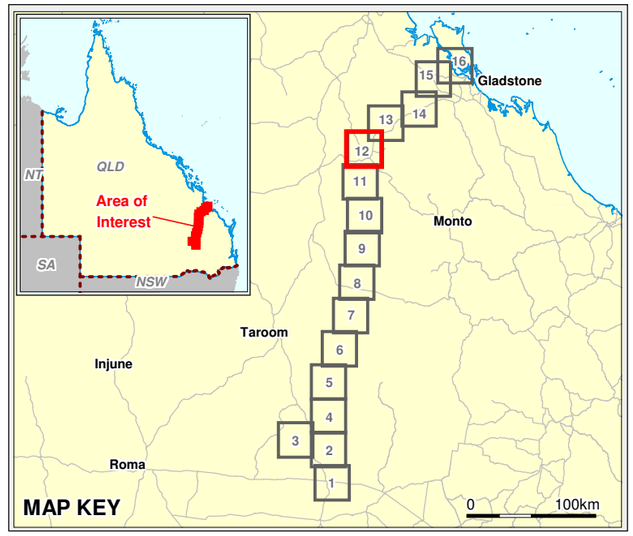

LEGEND

- Major Drainage
- Road
- Railway
- Gas pipeline route and kilometre point (10)
- Flora Site
- Cadastral Parcel
- Pipeline buffer (5km)

Regional Ecosystems - Version 6

Remnant vegetation containing endangered regional ecosystems

- Dominant
- Sub-dominant

Remnant vegetation containing of concern regional ecosystems

- Dominant
- Sub-dominant
- Remnant vegetation that is a least concern regional ecosystem
- Non - remnant

High Value Regrowth Vegetation - Version 2

- High value regrowth vegetation containing Endangered regional ecosystems
- High value regrowth vegetation containing Of Concern regional ecosystems
- High value regrowth vegetation that is a Least Concern regional ecosystem

Rev	Date	Revision Description				
0	24/02/2010	Issued for use	NA	MZ	SCH	RB

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Figure 13: Regional Ecosystem Mapping V6.0 and flora sites

Project No: 301001-00448	Figure: 00448-00-EN-DAL-0266	Rev: 0

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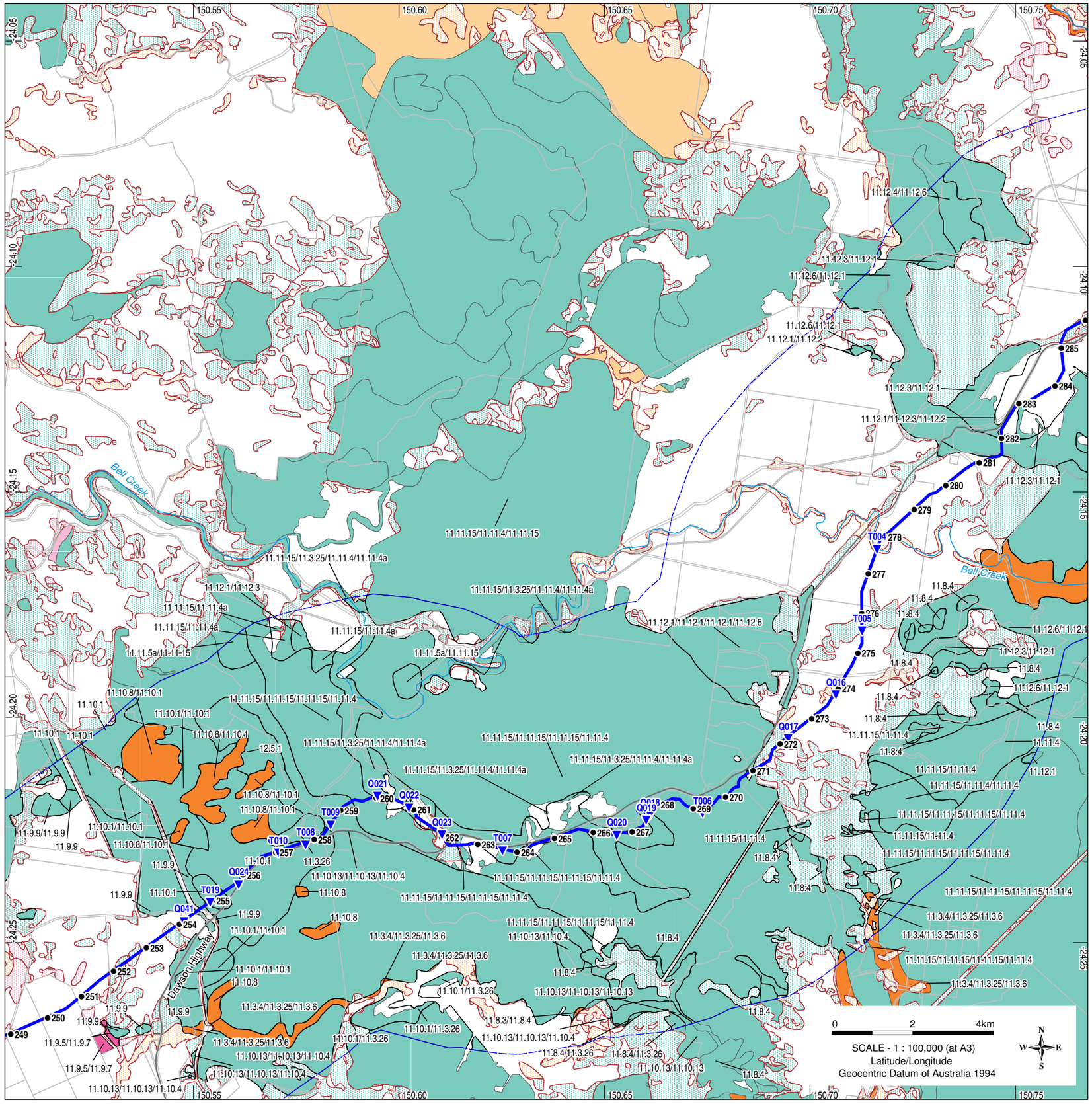

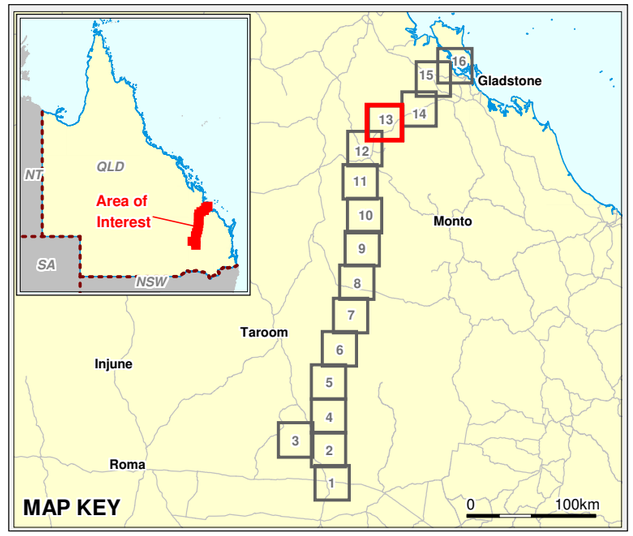

LEGEND

- Major Drainage
- Road
- Railway
- Gas pipeline route and kilometre point (10)
- Flora Site
- Cadastral Parcel
- Pipeline buffer (5km)

Regional Ecosystems - Version 6

Remnant vegetation containing endangered regional ecosystems

- Dominant
- Sub-dominant

Remnant vegetation containing of concern regional ecosystems

- Dominant
- Sub-dominant
- Remnant vegetation that is a least concern regional ecosystem
- Non - remnant

High Value Regrowth Vegetation - Version 2

- High value regrowth vegetation containing Endangered regional ecosystems
- High value regrowth vegetation containing Of Concern regional ecosystems
- High value regrowth vegetation that is a Least Concern regional ecosystem

Rev	Date	Revision Description	ORIG	CHK	ENG	APPD
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Figure 14: Regional Ecosystem Mapping V6.0 and flora sites

Project No: 301001-00448	Figure: 00448-00-EN-DAL-0267	Rev: 0

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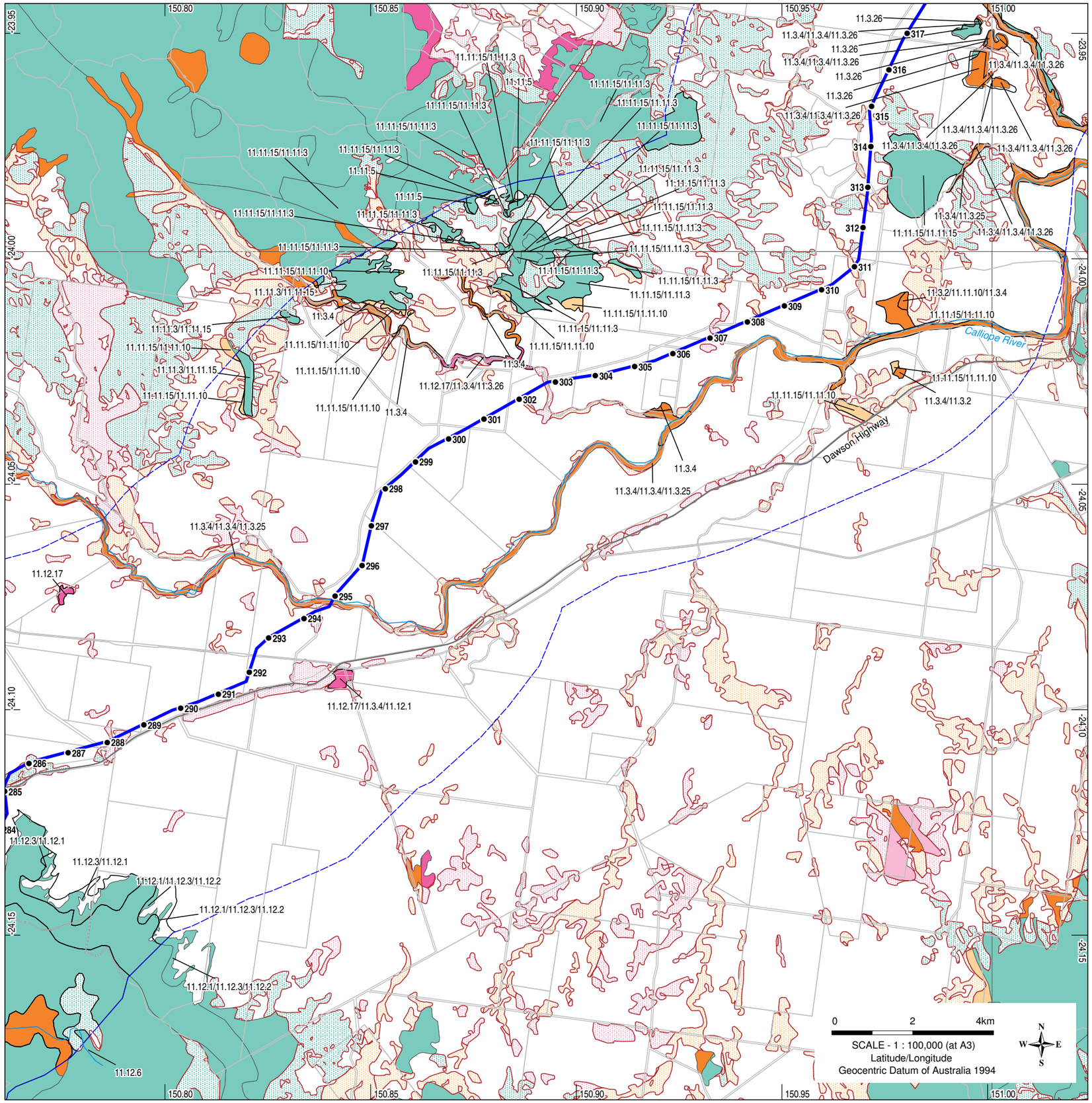
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11.11.15/11.11.3
11.11.5
11.11.15/11.11.3
11.11.15/11.11.3
11.11.15/11.11.3
11.11.15/11.11.3
11.11.15/11.11.3
11.11.15/11.11.3
11.11.15/11.11.3
11.11.15/11.11.3
11.11.15/11.11.3
11.11.15/11.11.10
11.11.15/11.11.3
11.11.15/11.11.3
11.11.15/11.11.3
11.11.15/11.11.3
11.11.15/11.11.3
11.11.15/11.11.3
11.11.15/11.11.10
11.11.15/11.11.3
11.11.15/11.11.10
11.11.15/11.11.10
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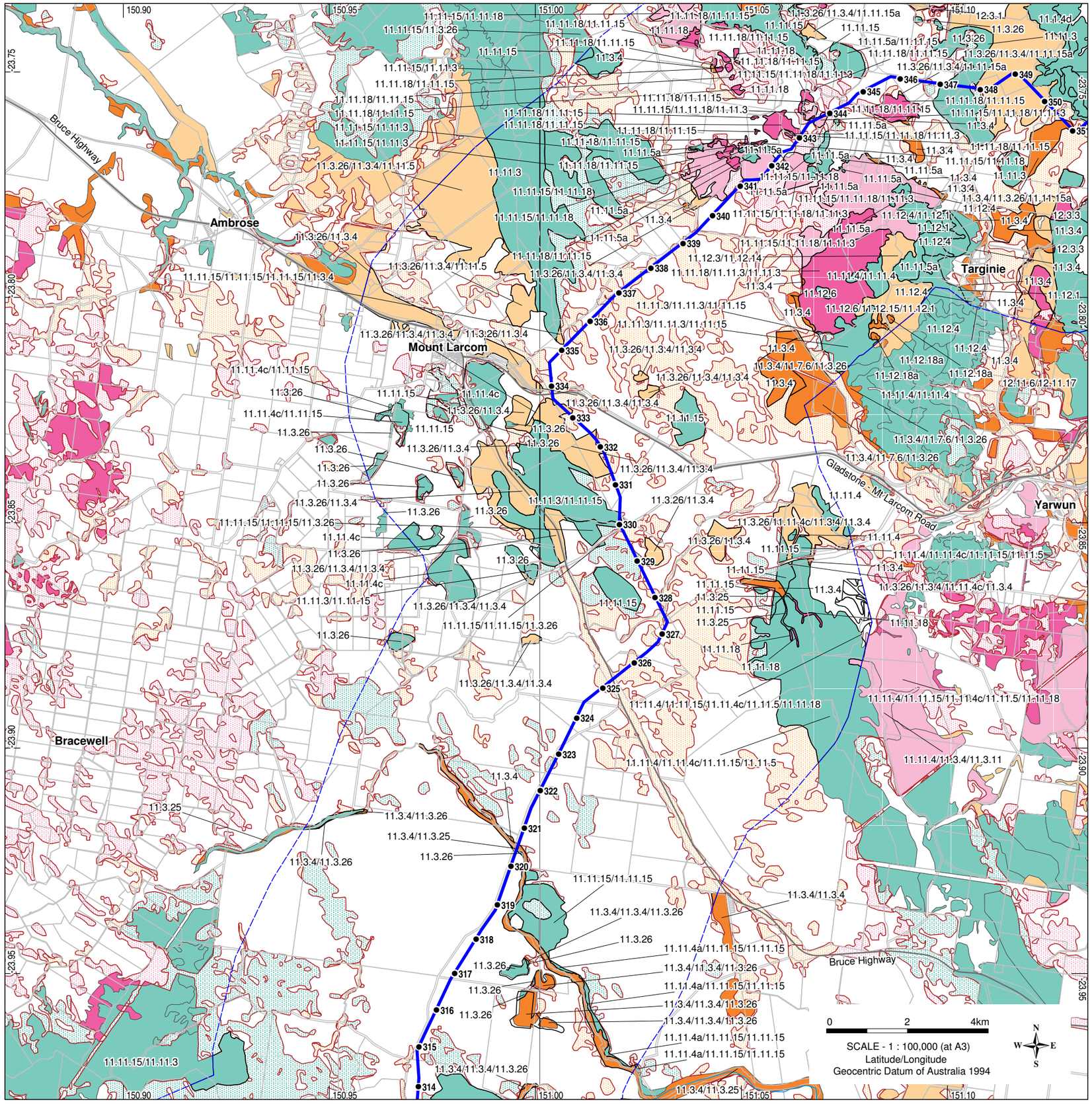

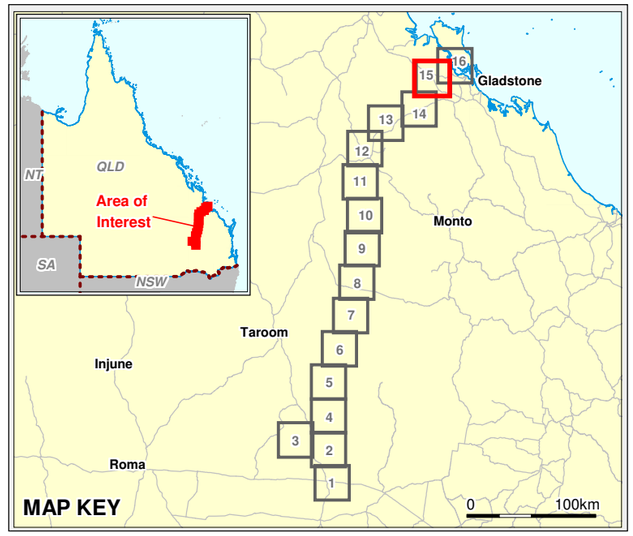

LEGEND

- Major Drainage
- Road
- Railway
- Gas pipeline route and kilometre point (10)
- Flora Site
- Cadastral Parcel
- Pipeline buffer (5km)

Regional Ecosystems - Version 6

Remnant vegetation containing endangered regional ecosystems

- Dominant
- Sub-dominant

Remnant vegetation containing of concern regional ecosystems

- Dominant
- Sub-dominant
- Remnant vegetation that is a least concern regional ecosystem
- Non - remnant

High Value Regrowth Vegetation - Version 2

- High value regrowth vegetation containing Endangered regional ecosystems
- High value regrowth vegetation containing Of Concern regional ecosystems
- High value regrowth vegetation that is a Least Concern regional ecosystem

Rev	Date	Revision Description	KM	MZ	SCH	RB
0	24/02/2010	Issued for use	ORIG	CHK	ENG	APPD

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Figure 16: Regional Ecosystem Mapping V6.0 and flora sites

Project No: 301001-00448	Figure: 00448-00-EN-DAL-0269	Rev: 0

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REFER TO INSET

Targinie

Yarwun

Gladstone - Mt Larcom Road

ocean

INSET

0 2 4km

SCALE - 1 : 100,000 (at A3)
Latitude/Longitude
Geocentric Datum of Australia 1994

N W E S

0 1km

MAP KEY

NT QLD SA NSW

Area of Interest

Gladstone

Monto

Taroom

Injune

Roma

0 100km

LEGEND

- Major Drainage
- Road
- Railway
- Gas pipeline route and kilometre point (10)
- Flora Site
- Cadastral Parcel
- Pipeline buffer (5km)

Regional Ecosystems - Version 6

Remnant vegetation containing endangered regional ecosystems

- Dominant
- Sub-dominant

Remnant vegetation containing of concern regional ecosystems

- Dominant
- Sub-dominant
- Remnant vegetation that is a least concern regional ecosystem
- Non - remnant

High Value Regrowth Vegetation - Version 2

- High value regrowth vegetation containing Endangered regional ecosystems
- High value regrowth vegetation containing Of Concern regional ecosystems
- High value regrowth vegetation that is a Least Concern regional ecosystem

Rev	Date	Revision Description	ORIG	CHK	ENG	APPD
0	25/02/2010	Issued for use	KM	MZ	SCH	RB

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Figure 17: Regional Ecosystem Mapping V6.0 and flora sites

Project No: 301001-00448	Figure: 00448-00-EN-DAL-0270	Rev: 0

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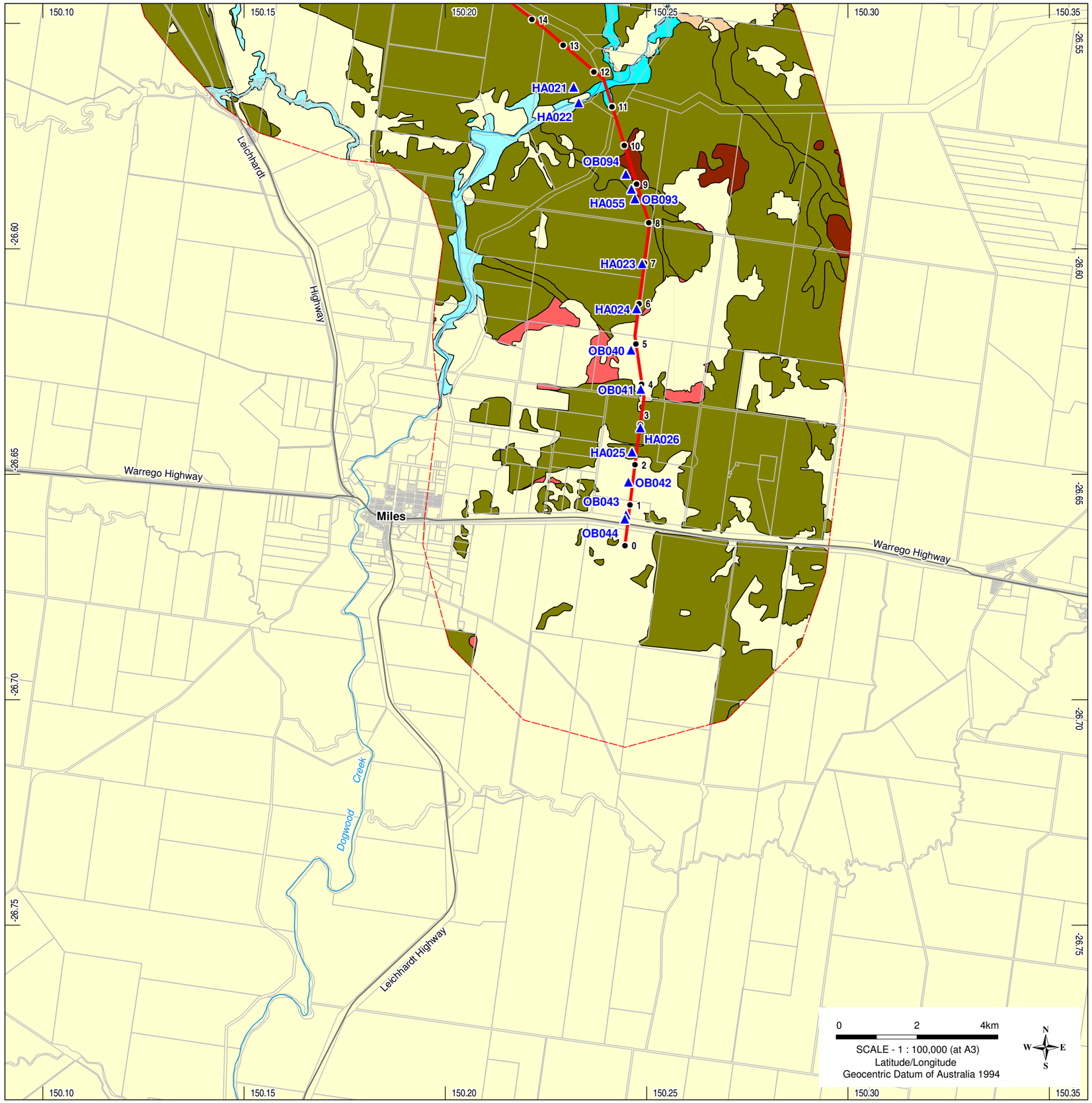

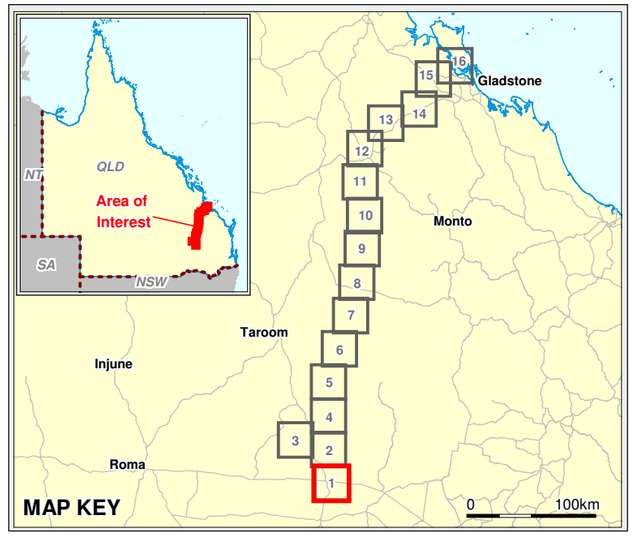

LEGEND

- Fauna Site
- Squatter Pigeon
- Glossy Black Cockatoo
- Major Drainage
- Road
- Railway
- Cadastral Parcel
- Pipeline buffer (5km)
- Gas pipeline route and kilometre point

Faunal Habitat

- Acacia woodland
- Bluegrass grassland
- Brigalow / Belah
- Callitris woodland
- Floodplain eucalypt woodland
- Ironbark woodland
- Mangroves
- Mixed eucalypt woodland & open forest
- Poplar box woodland
- Riparian woodland
- Saltpan
- SEVT & vine forest
- She-oak woodland
- Shrubland
- Spotted gum open forest

Rev	Date	Revision Description	ORIG	CHK	ENG	APPD
0	15/02/2010	Issued for use	NA	KM	SCH	RB

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Figure 18: Faunal Habitat and Fauna Sites

Project No: 301001-00448	Figure: 00448-00-EN-DAL-0255	Rev: 0

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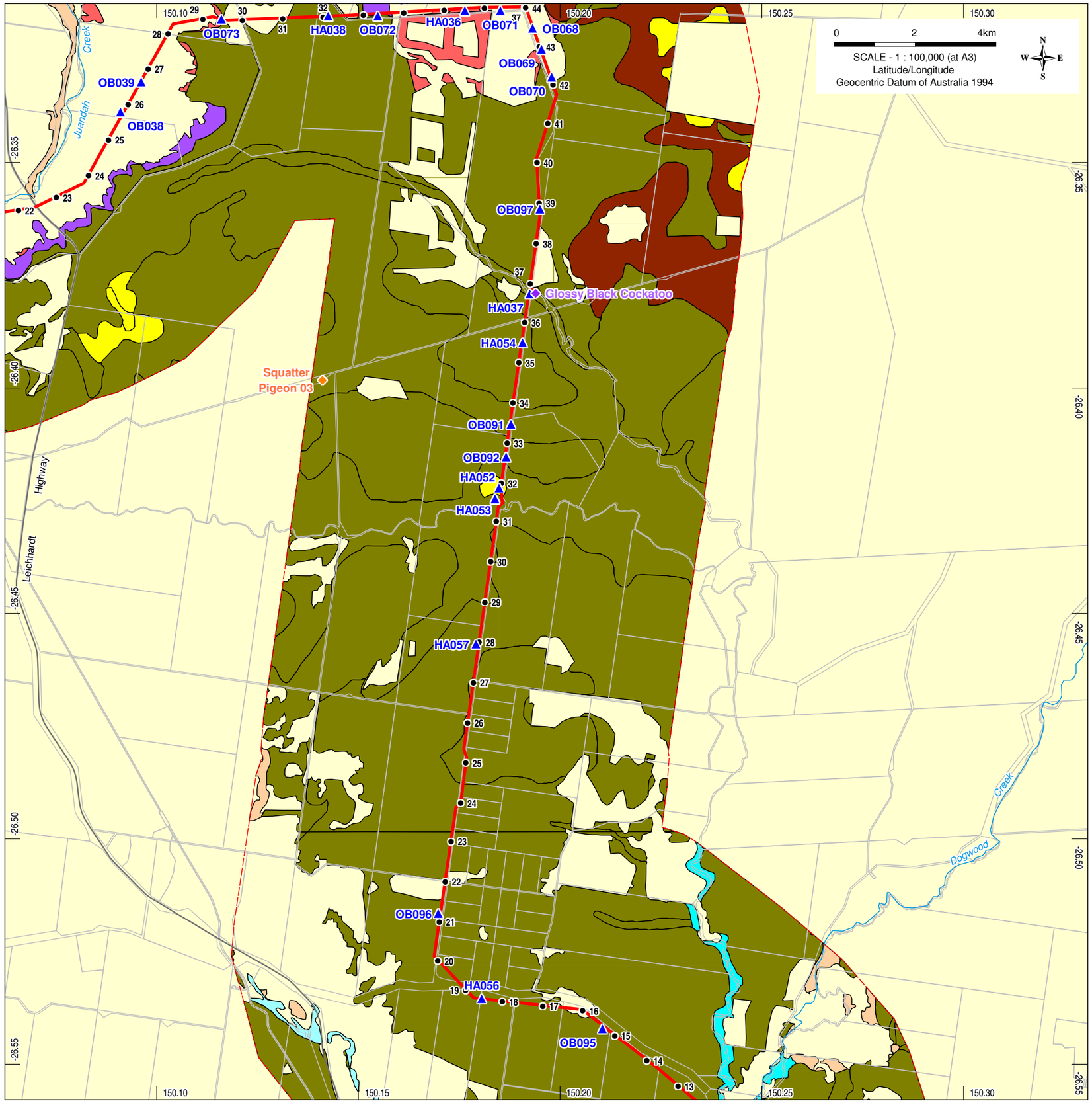

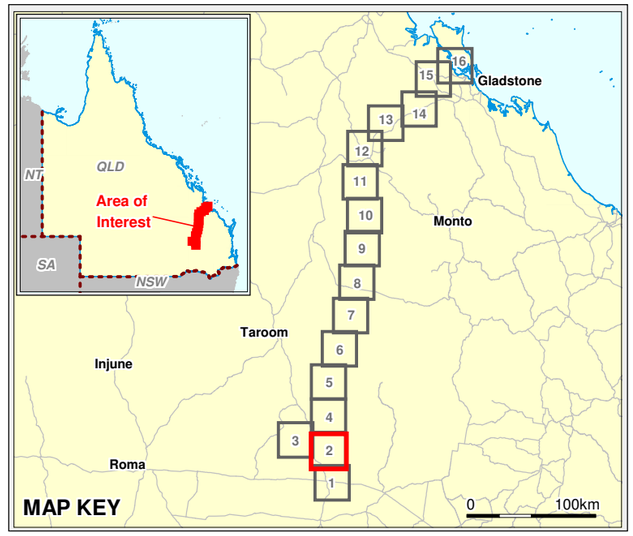

LEGEND

- Fauna Site
- Squatter Pigeon
- Glossy Black Cockatoo
- Major Drainage
- Road
- Railway
- Cadastral Parcel
- Pipeline buffer (5km)
- Gas pipeline route and kilometre point

Faunal Habitat

- Acacia woodland
- Bluegrass grassland
- Brigalow / Belah
- Callitris woodland
- Floodplain eucalypt woodland
- Ironbark woodland
- Mangroves
- Mixed eucalypt woodland & open forest
- Poplar box woodland
- Riparian woodland
- Saltpan
- SEVT & vine forest
- She-oak woodland
- Shrubland
- Spotted gum open forest

Rev	Date	Revision Description	ORIG	CHK	ENG	APPD
0	15/02/2010	Issued for use	NA	KM	SCH	RB

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Figure 19: Faunal Habitat and Fauna Sites

Project No: 301001-00448	Figure: 00448-00-EN-DAL-0256	Rev: 0

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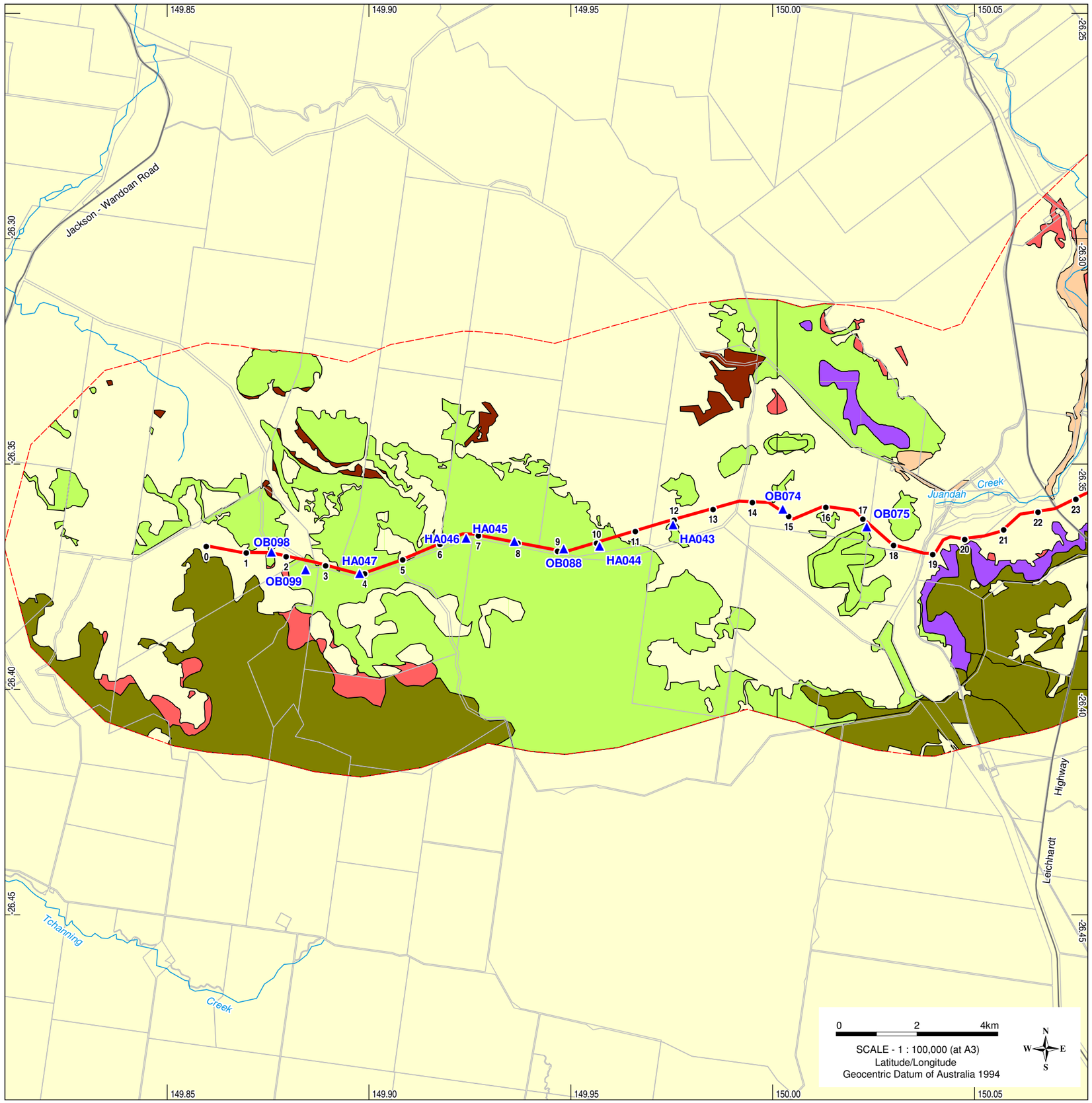

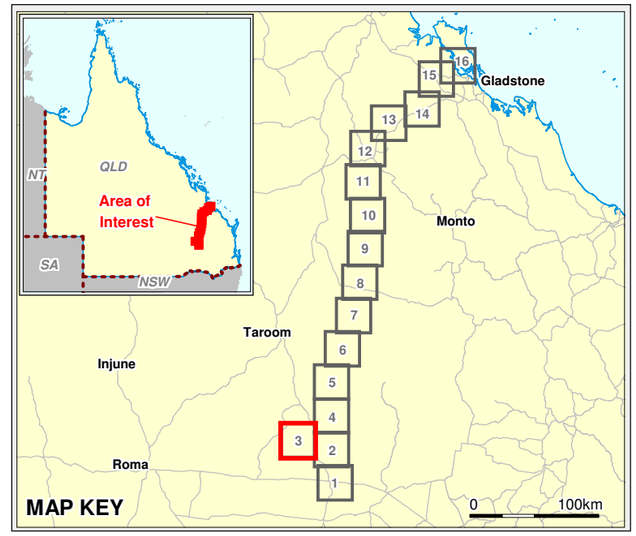

LEGEND

- Fauna Site
- Squatter Pigeon
- Glossy Black Cockatoo
- Major Drainage
- Road
- Railway
- Cadastral Parcel
- Pipeline buffer (5km)
- Gas pipeline route and kilometre point (10)

Faunal Habitat

- Acacia woodland
- Bluegrass grassland
- Brigalow / Belah
- Callitris woodland
- Floodplain eucalypt woodland
- Ironbark woodland
- Mangroves
- Mixed eucalypt woodland & open forest
- Poplar box woodland
- Riparian woodland
- Saltpan
- SEVT & vine forest
- She-oak woodland
- Shrubland
- Spotted gum open forest

Rev	Date	Revision Description	ORIG	CHK	ENG	APPD
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Figure 20: Faunal Habitat and Fauna Sites

Project No: 301001-00448	Figure: 00448-00-EN-DAL-0257	Rev: 0

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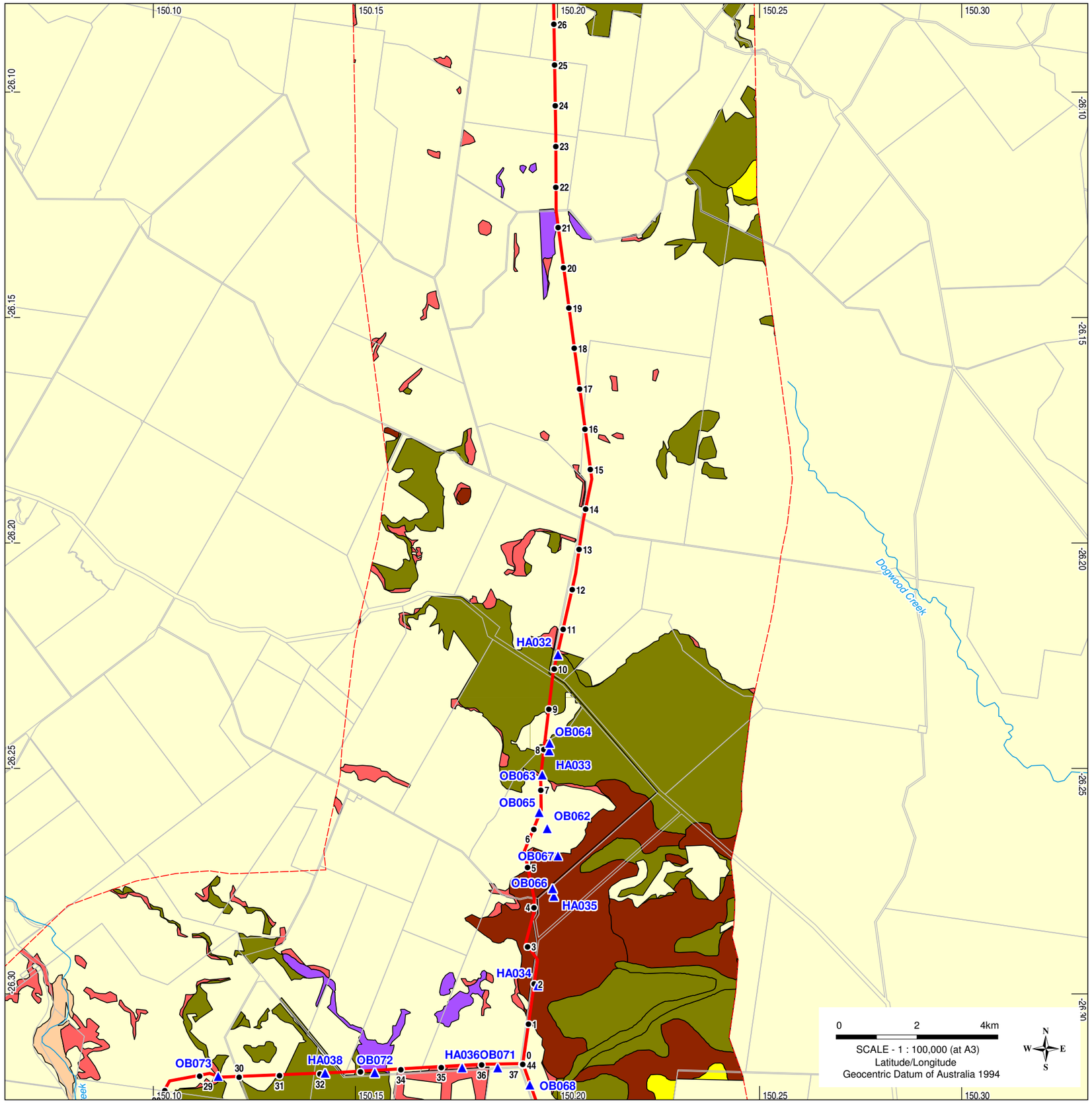

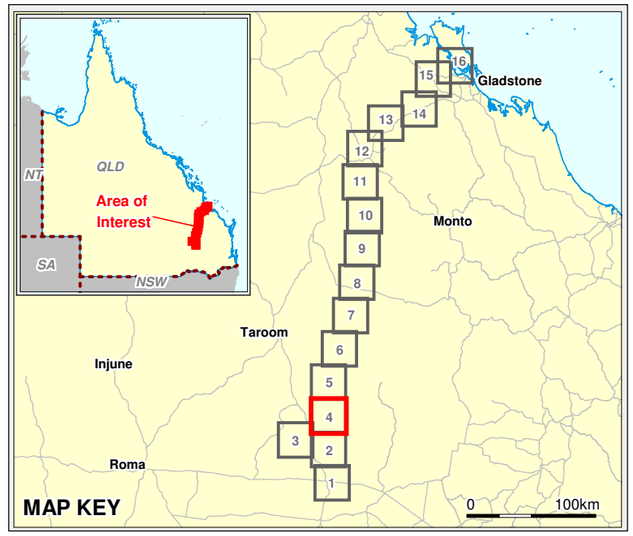

LEGEND

- Fauna Site
- Squatter Pigeon
- Glossy Black Cockatoo
- Major Drainage
- Road
- Railway
- Cadastral Parcel
- Pipeline buffer (5km)
- Gas pipeline route and kilometre point

Faunal Habitat

- Acacia woodland
- Bluegrass grassland
- Brigalow / Belah
- Callitris woodland
- Floodplain eucalypt woodland
- Ironbark woodland
- Mangroves
- Mixed eucalypt woodland & open forest
- Poplar box woodland
- Riparian woodland
- Saltpan
- SEVT & vine forest
- She-oak woodland
- Shrubland
- Spotted gum open forest

Rev	Date	Revision Description	ORIG	CHK	ENG	APPD
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Figure 21: Faunal Habitat and Fauna Sites

Project No: 301001-00448	Figure: 00448-00-EN-DAL-0258	Rev: 0

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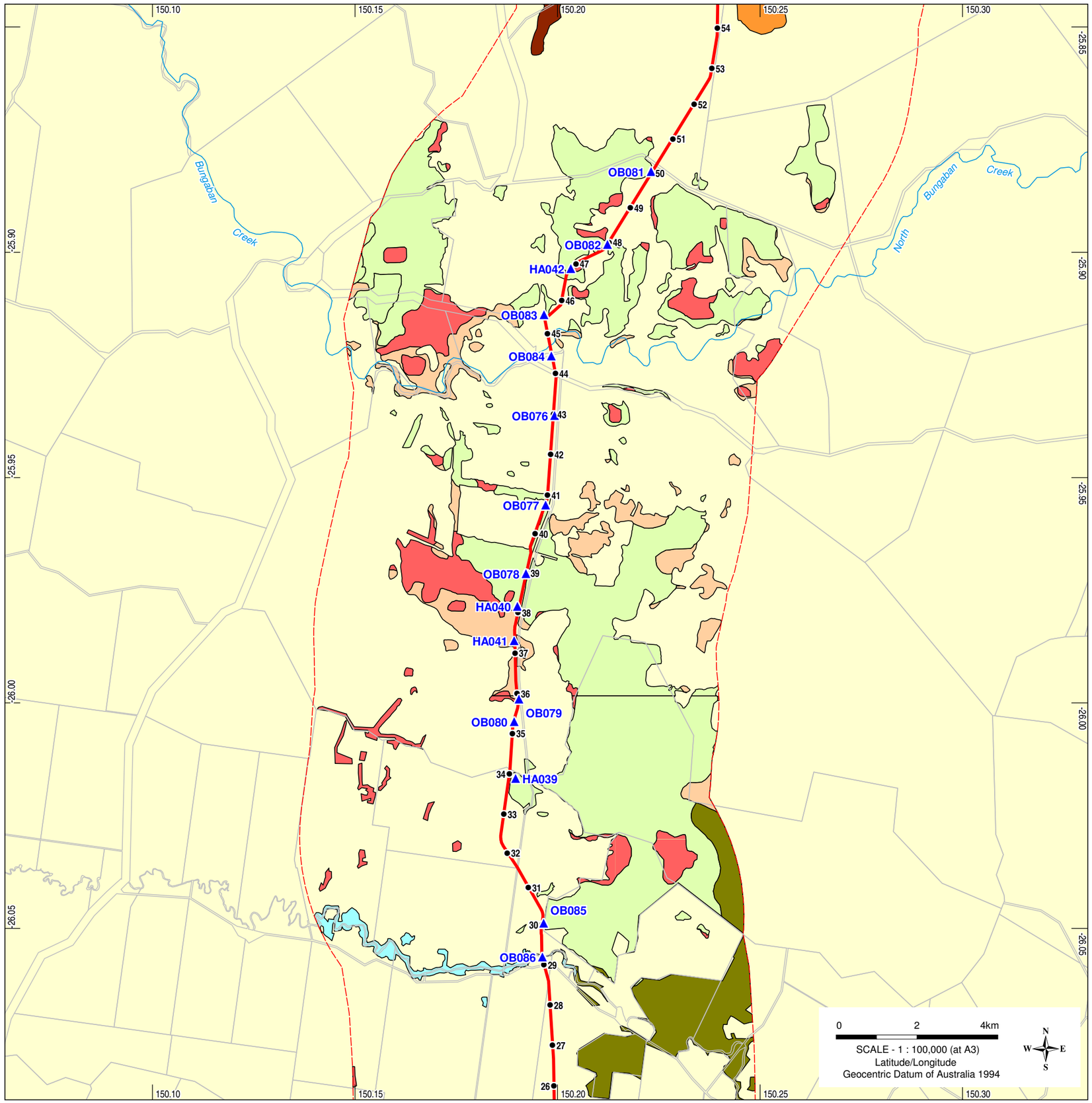

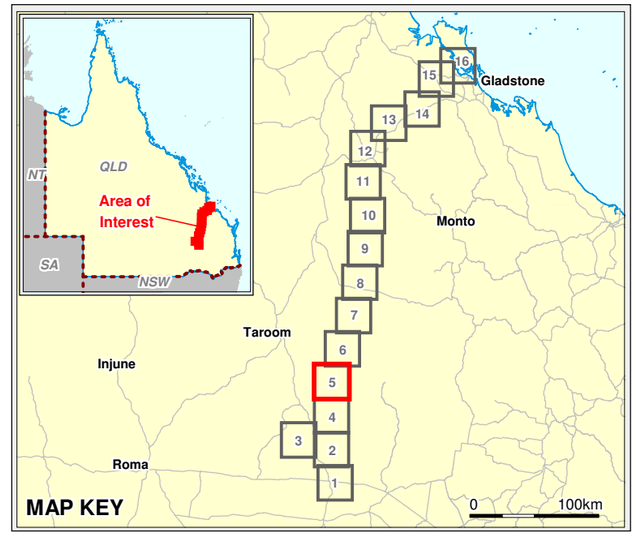

LEGEND

- Fauna Site
- Squatter Pigeon
- Glossy Black Cockatoo
- Major Drainage
- Road
- Railway
- Cadastral Parcel
- Pipeline buffer (5km)
- Gas pipeline route and kilometre point (10)

Faunal Habitat

- Acacia woodland
- Bluegrass grassland
- Brigalow / Belah
- Callitris woodland
- Floodplain eucalypt woodland
- Ironbark woodland
- Mangroves
- Mixed eucalypt woodland & open forest
- Poplar box woodland
- Riparian woodland
- Saltpan
- SEVT & vine forest
- She-oak woodland
- Shrubland
- Spotted gum open forest

Rev	Date	Revision Description	NA	KM	SCH	RB
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Figure 22: Faunal Habitat and Fauna Sites

Project No: 301001-00448	Figure: 00448-00-EN-DAL-0259	Rev: 0

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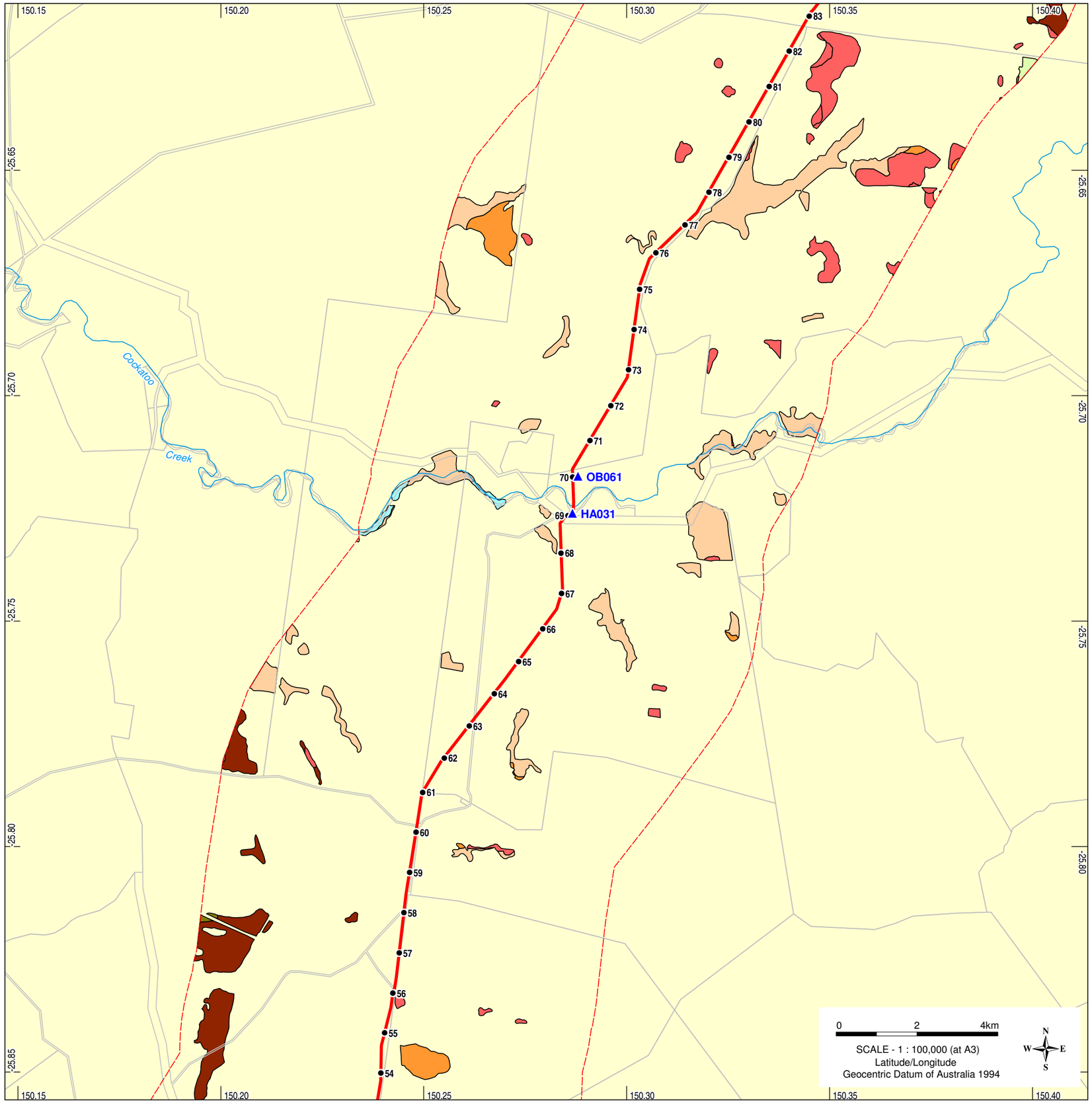

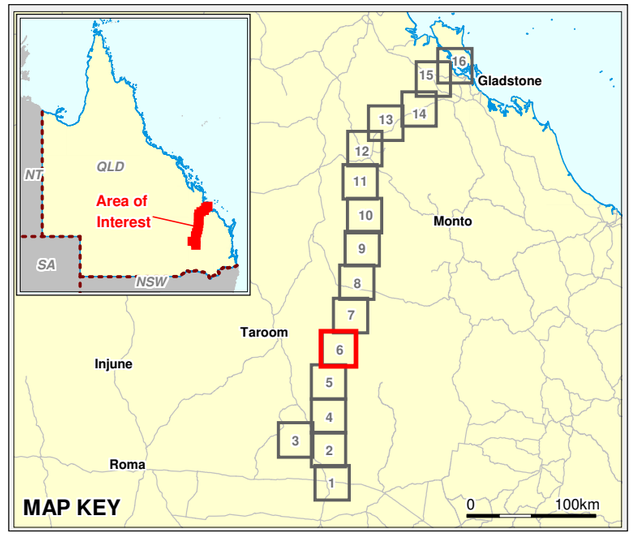

LEGEND

- Fauna Site
- Squatter Pigeon
- Glossy Black Cockatoo
- Major Drainage
- Road
- Railway
- Cadastral Parcel
- Pipeline buffer (5km)
- Gas pipeline route and kilometre point (10)

Faunal Habitat

- Acacia woodland
- Bluegrass grassland
- Brigalow / Belah
- Callitris woodland
- Floodplain eucalypt woodland
- Ironbark woodland
- Mangroves
- Mixed eucalypt woodland & open forest
- Poplar box woodland
- Riparian woodland
- Saltpan
- SEVT & vine forest
- She-oak woodland
- Shrubland
- Spotted gum open forest

Rev	Date	Revision Description	ORIG	CHK	ENG	APPD
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Figure 23: Faunal Habitat and Fauna Sites

Project No: 301001-00448	Figure: 00448-00-EN-DAL-0260	Rev: 0

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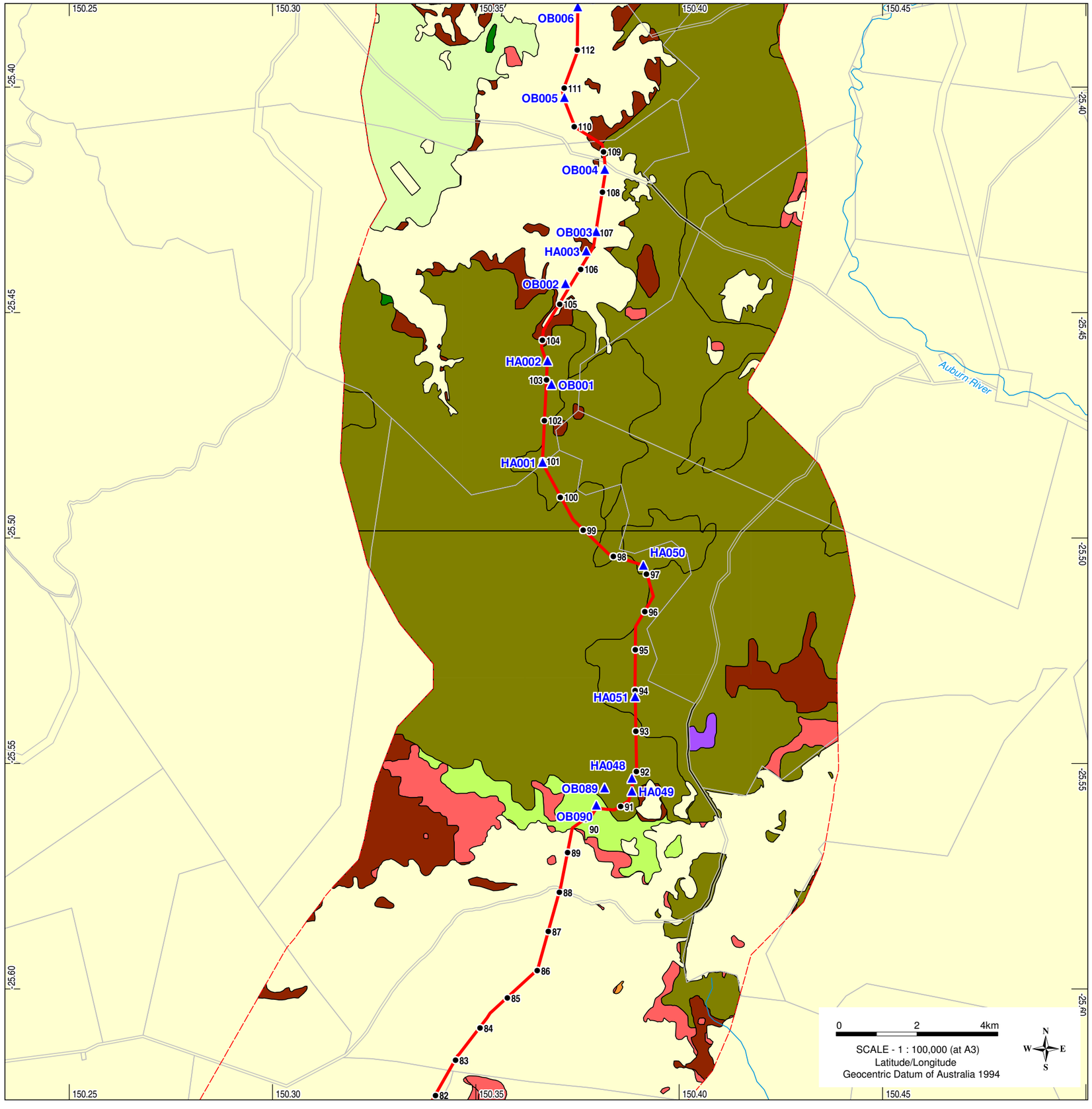

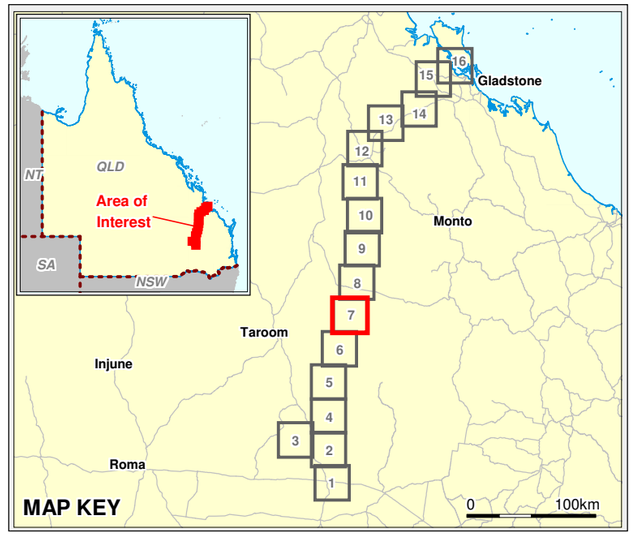

LEGEND

- Fauna Site
- Squatter Pigeon
- Glossy Black Cockatoo
- Major Drainage
- Road
- Railway
- Cadastral Parcel
- Pipeline buffer (5km)
- Gas pipeline route and kilometre point

Faunal Habitat

- Acacia woodland
- Bluegrass grassland
- Brigalow / Belah
- Callitris woodland
- Floodplain eucalypt woodland
- Ironbark woodland
- Mangroves
- Mixed eucalypt woodland & open forest
- Poplar box woodland
- Riparian woodland
- Saltpan
- SEVT & vine forest
- She-oak woodland
- Shrubland
- Spotted gum open forest

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Figure 24: Faunal Habitat and Fauna Sites

Project No: 301001-00448	Figure: 00448-00-EN-DAL-0261	Rev: 0

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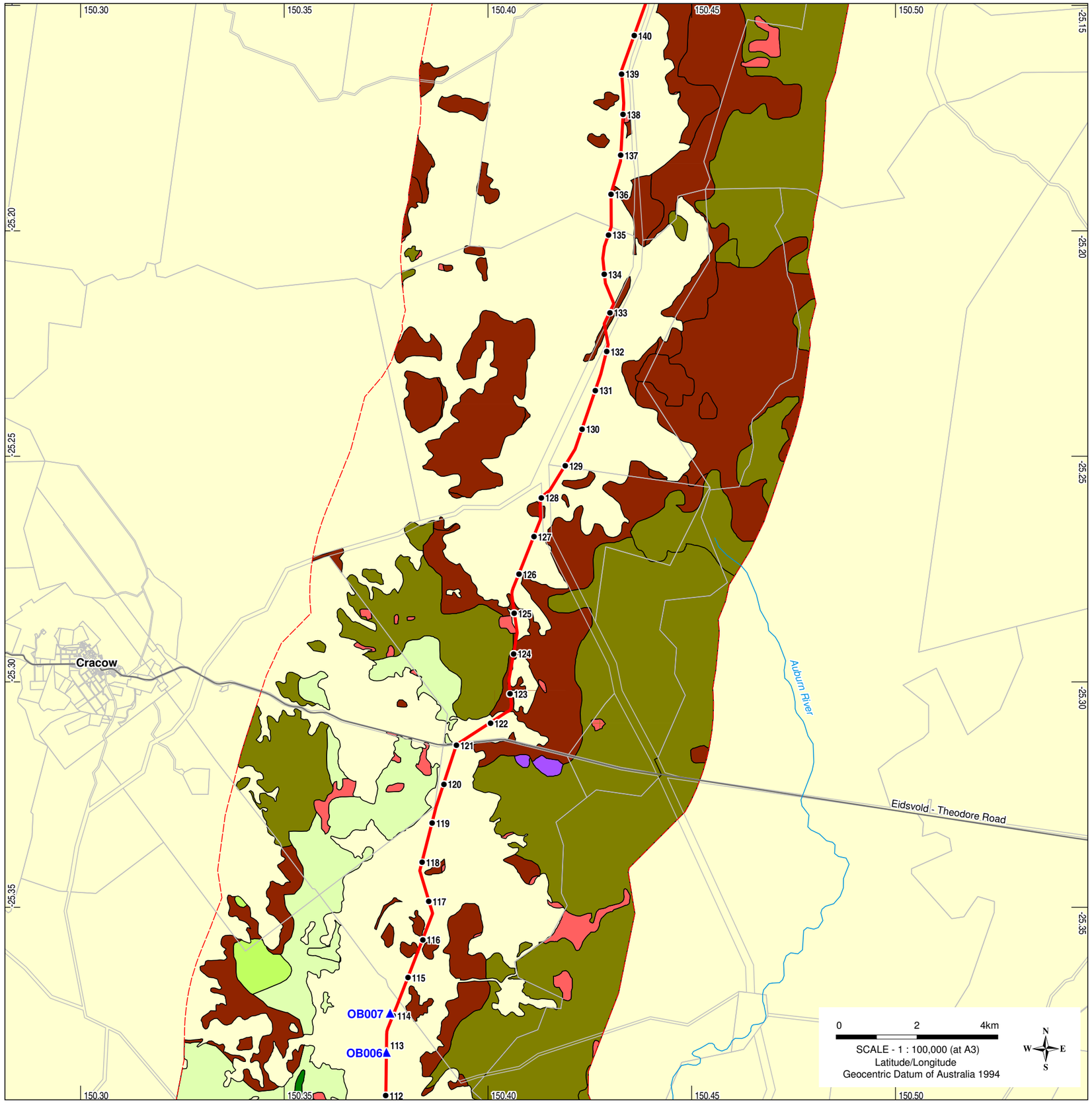

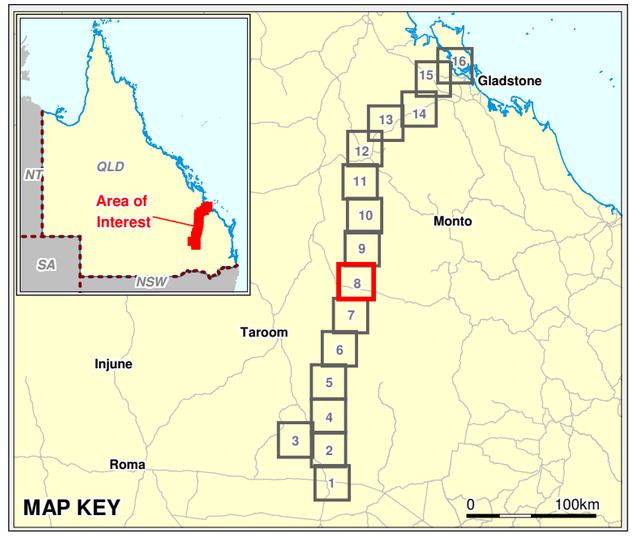

LEGEND

- Fauna Site
- Squatter Pigeon
- Glossy Black Cockatoo
- Major Drainage
- Road
- Railway
- Cadastral Parcel
- Pipeline buffer (5km)
- Gas pipeline route and kilometre point (10)

Faunal Habitat

- Acacia woodland
- Bluegrass grassland
- Brigalow / Belah
- Callitris woodland
- Floodplain eucalypt woodland
- Ironbark woodland
- Mangroves
- Mixed eucalypt woodland & open forest
- Poplar box woodland
- Riparian woodland
- Saltpan
- SEVT & vine forest
- She-oak woodland
- Shrubland
- Spotted gum open forest

Rev	Date	Revision Description	ORIG	CHK	ENG	APPD
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Figure 25: Faunal Habitat and Fauna Sites

Project No: 301001-00448	Figure: 00448-00-EN-DAL-0262	Rev: 0

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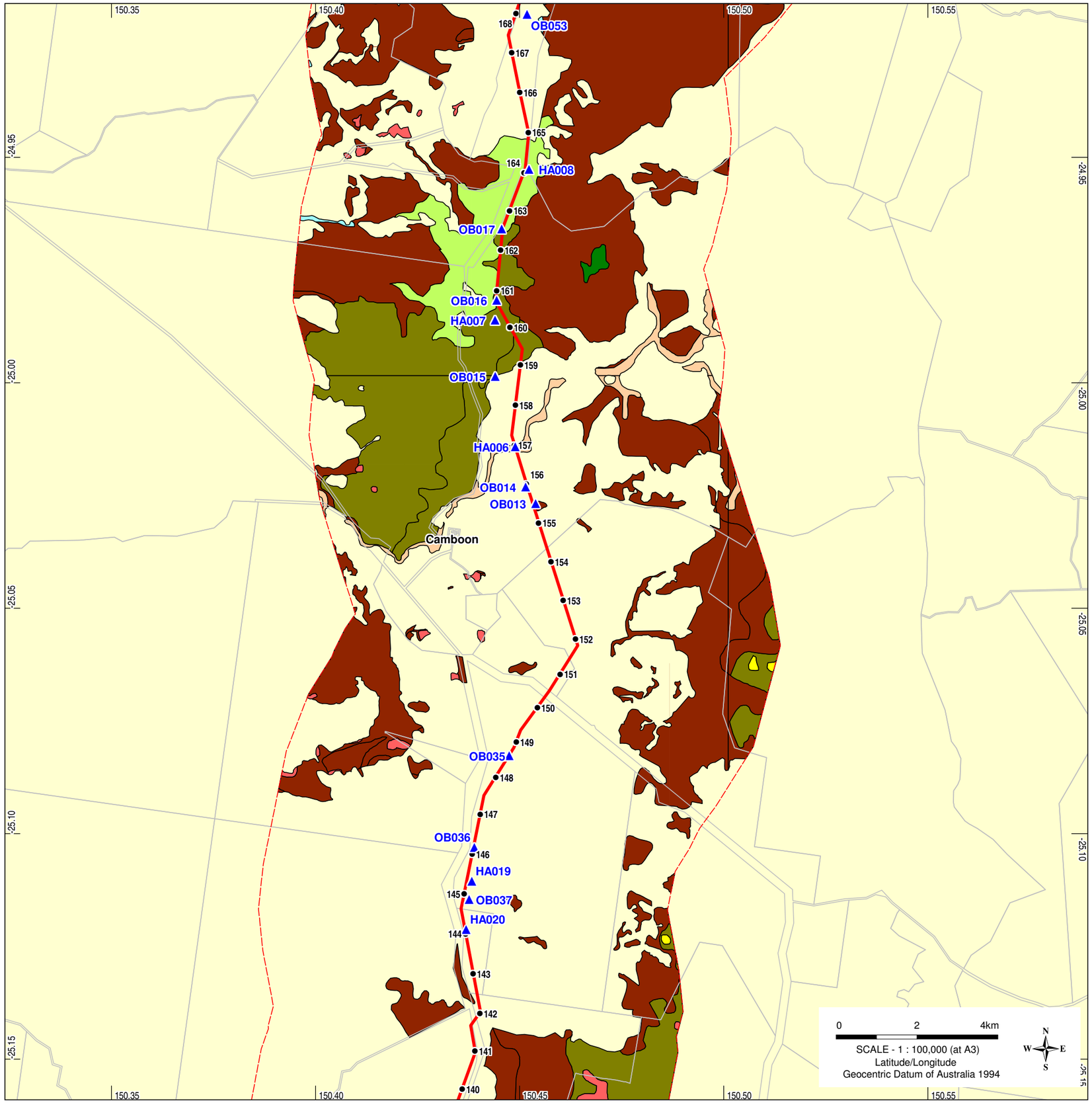

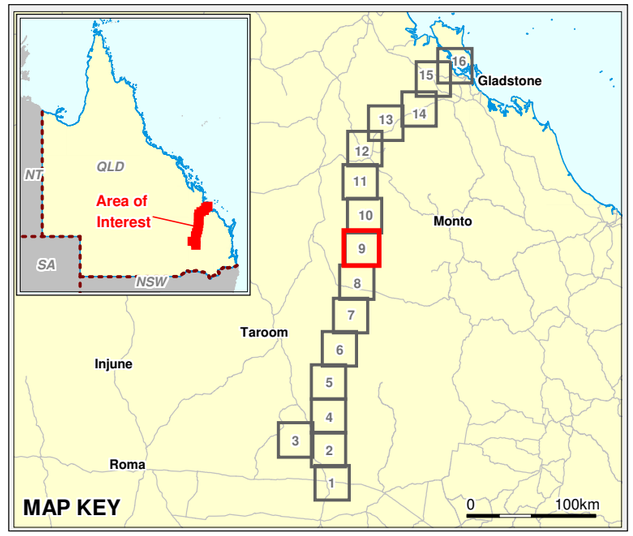

LEGEND

- Fauna Site
- Squatter Pigeon
- Glossy Black Cockatoo
- Major Drainage
- Road
- Railway
- Cadastral Parcel
- Pipeline buffer (5km)
- Gas pipeline route and kilometre point (10)

Faunal Habitat

- Acacia woodland
- Bluegrass grassland
- Brigalow / Belah
- Callitris woodland
- Floodplain eucalypt woodland
- Ironbark woodland
- Mangroves
- Mixed eucalypt woodland & open forest
- Poplar box woodland
- Riparian woodland
- Saltpan
- SEVT & vine forest
- She-oak woodland
- Shrubland
- Spotted gum open forest

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Figure 26: Faunal Habitat and Fauna Sites

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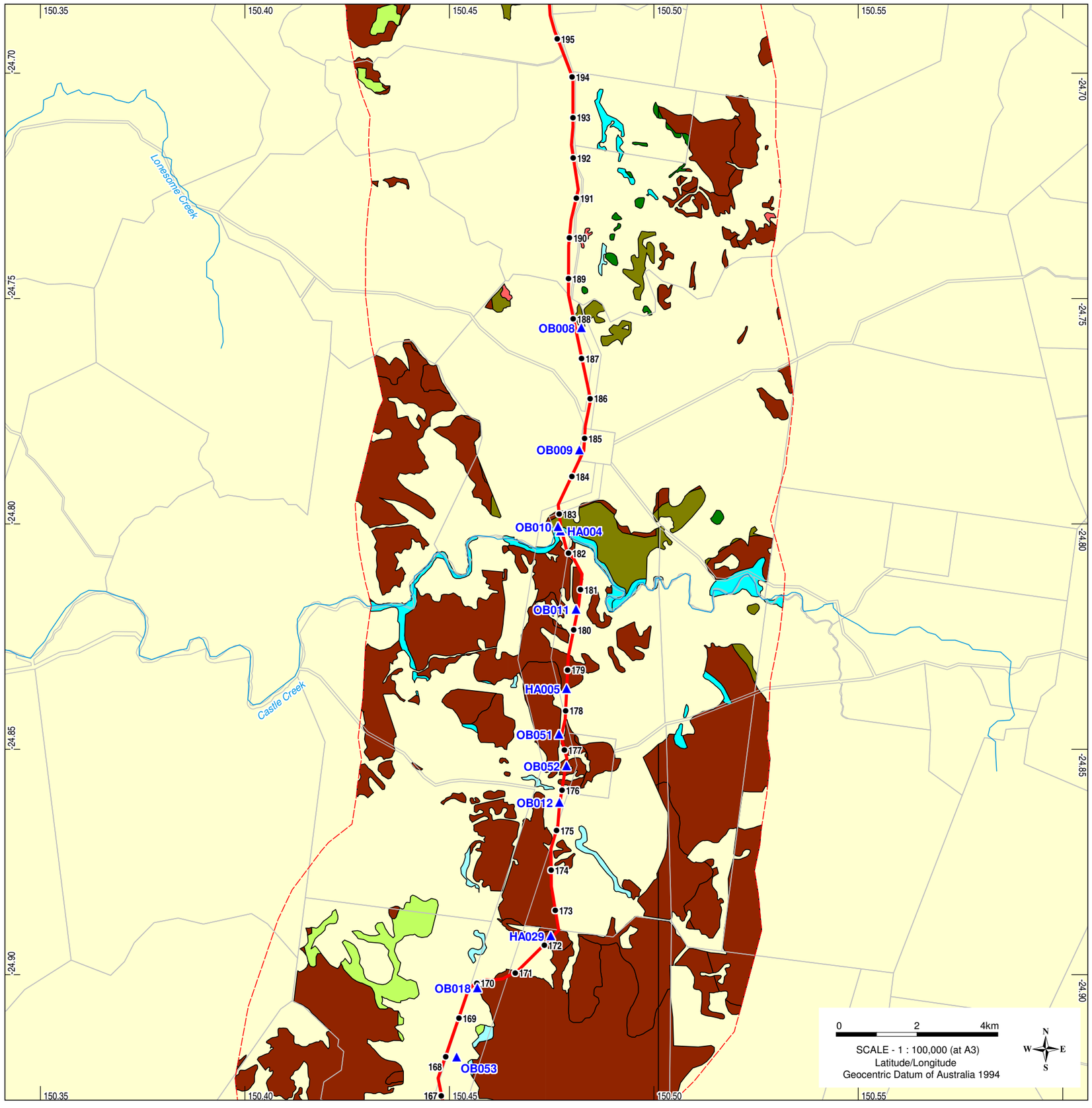

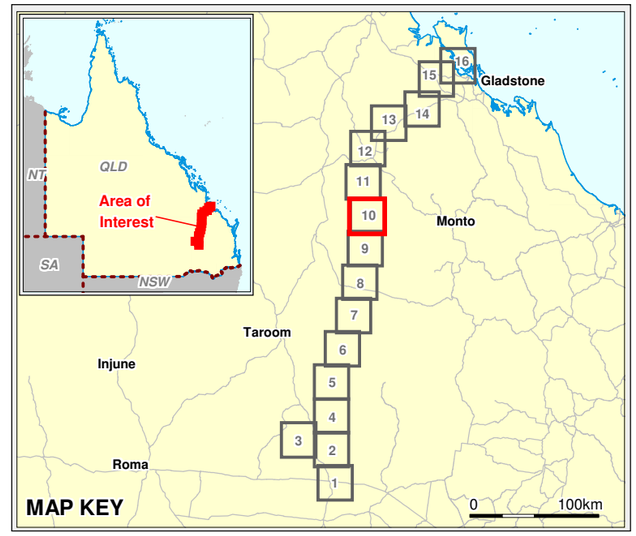

LEGEND

- Fauna Site
- Squatter Pigeon
- Glossy Black Cockatoo
- Major Drainage
- Road
- Railway
- Cadastral Parcel
- Pipeline buffer (5km)
- Gas pipeline route and kilometre point (10)

Faunal Habitat

- Acacia woodland
- Bluegrass grassland
- Brigalow / Belah
- Callitris woodland
- Floodplain eucalypt woodland
- Ironbark woodland
- Mangroves
- Mixed eucalypt woodland & open forest
- Poplar box woodland
- Riparian woodland
- Saltpan
- SEVT & vine forest
- She-oak woodland
- Shrubland
- Spotted gum open forest

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Figure 27: Faunal Habitat and Fauna Sites

Project No: 301001-00448	Figure: 00448-00-EN-DAL-0264	Rev: 0

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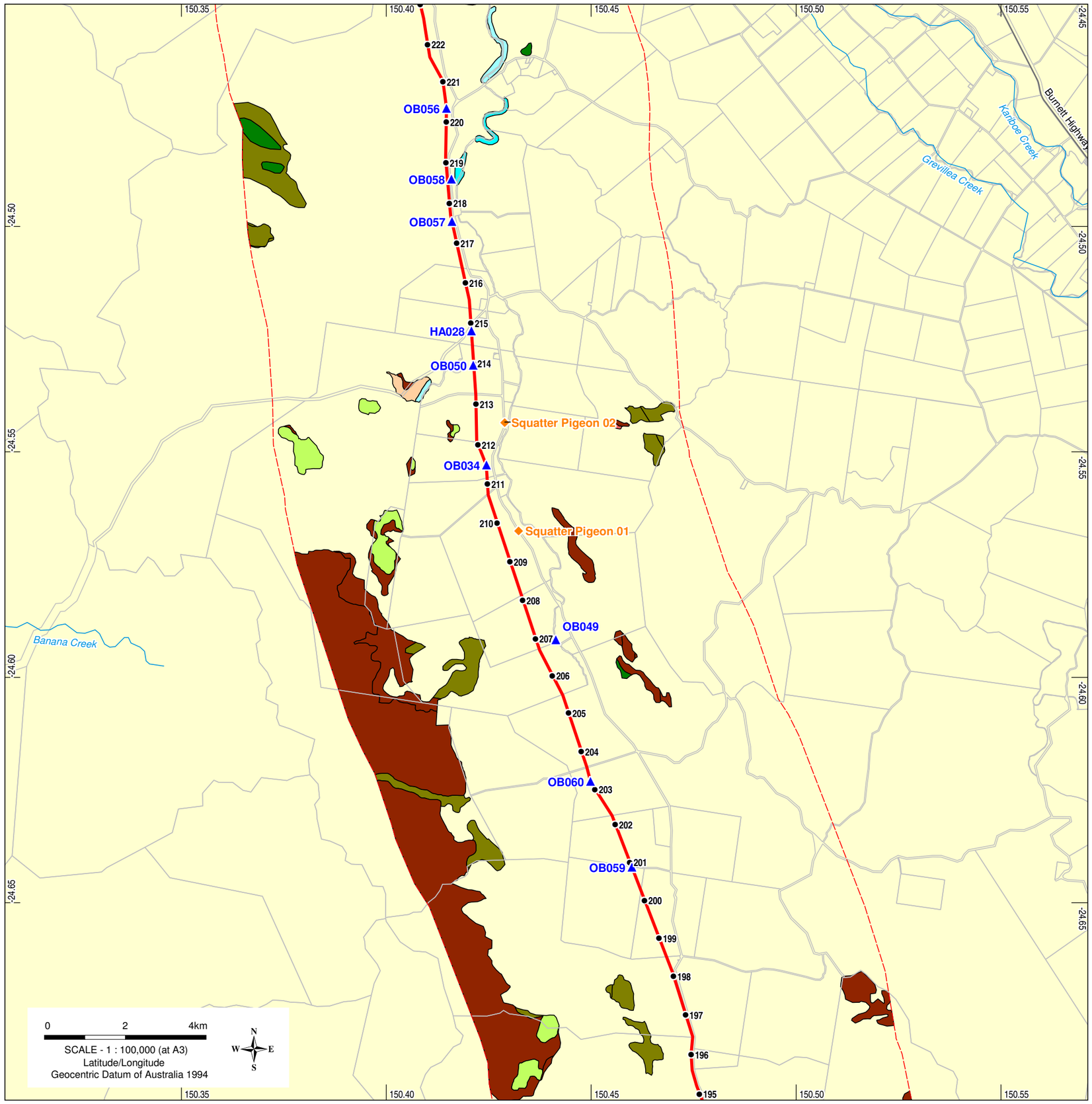

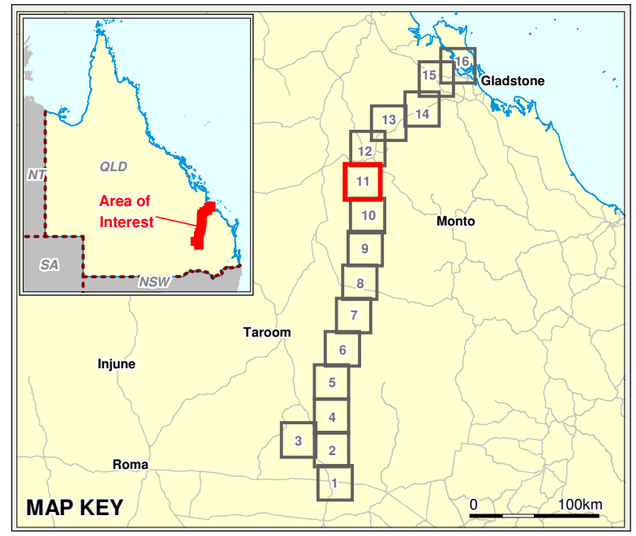

LEGEND

- Fauna Site
- Squatter Pigeon
- Glossy Black Cockatoo
- Major Drainage
- Road
- Railway
- Cadastral Parcel
- Pipeline buffer (5km)
- Gas pipeline route and kilometre point (10)

Faunal Habitat

- Acacia woodland
- Bluegrass grassland
- Brigalow / Belah
- Callitris woodland
- Floodplain eucalypt woodland
- Ironbark woodland
- Mangroves
- Mixed eucalypt woodland & open forest
- Poplar box woodland
- Riparian woodland
- Saltpan
- SEVT & vine forest
- She-oak woodland
- Shrubland
- Spotted gum open forest

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Figure 28: Faunal Habitat and Fauna Sites

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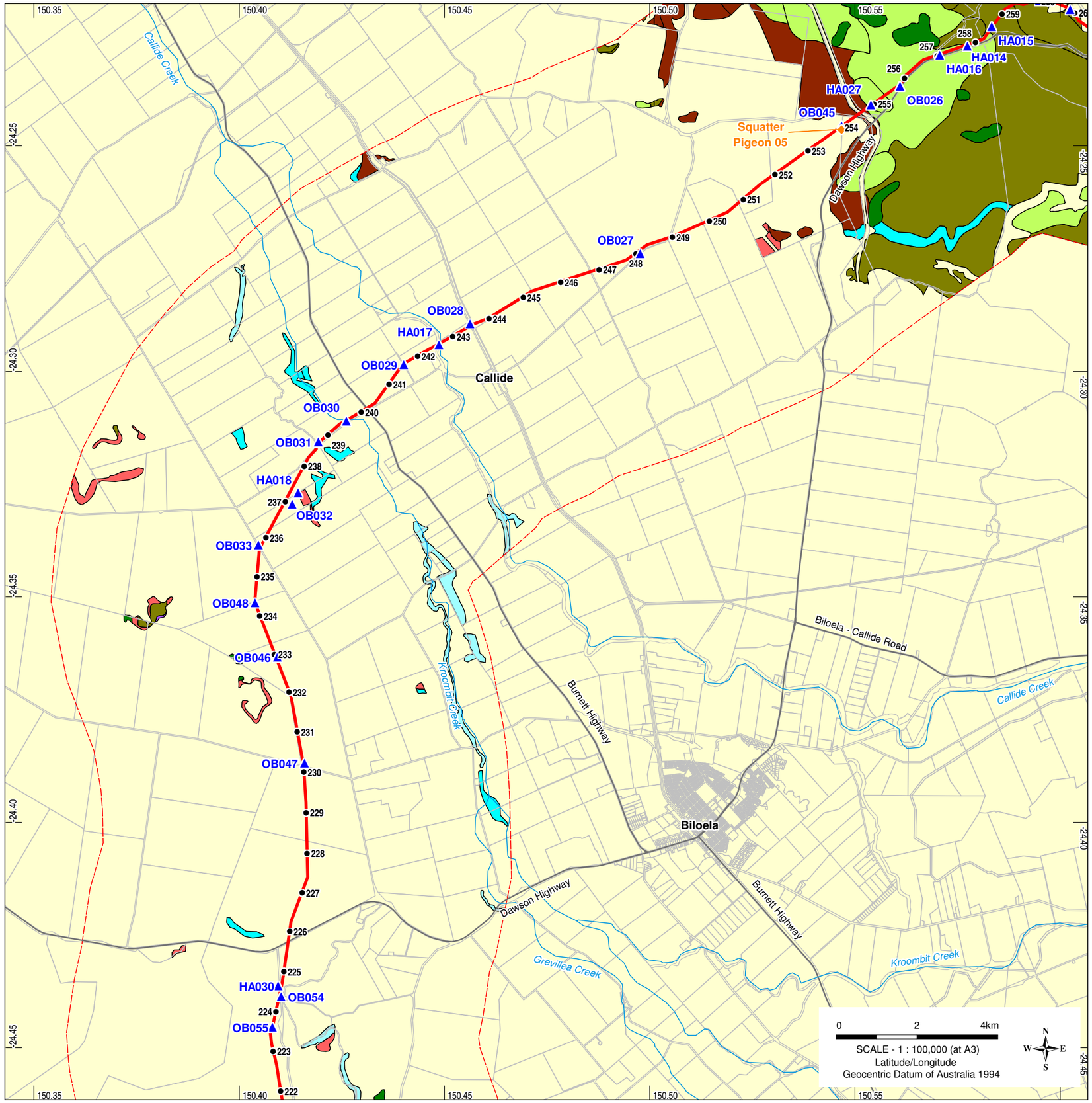

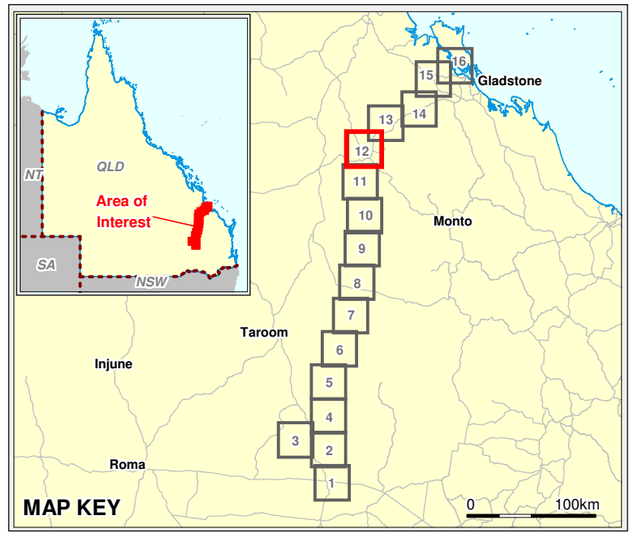

LEGEND

- Fauna Site
- Squatter Pigeon
- Glossy Black Cockatoo
- Major Drainage
- Road
- Railway
- Cadastral Parcel
- Pipeline buffer (5km)
- Gas pipeline route and kilometre point

Faunal Habitat

- Acacia woodland
- Bluegrass grassland
- Brigalow / Belah
- Callitris woodland
- Floodplain eucalypt woodland
- Ironbark woodland
- Mangroves
- Mixed eucalypt woodland & open forest
- Poplar box woodland
- Riparian woodland
- Saltpan
- SEVT & vine forest
- She-oak woodland
- Shrubland
- Spotted gum open forest

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Figure 29: Faunal Habitat and Fauna Sites

Project No: 301001-00448	Figure: 00448-00-EN-DAL-0266	Rev: 0

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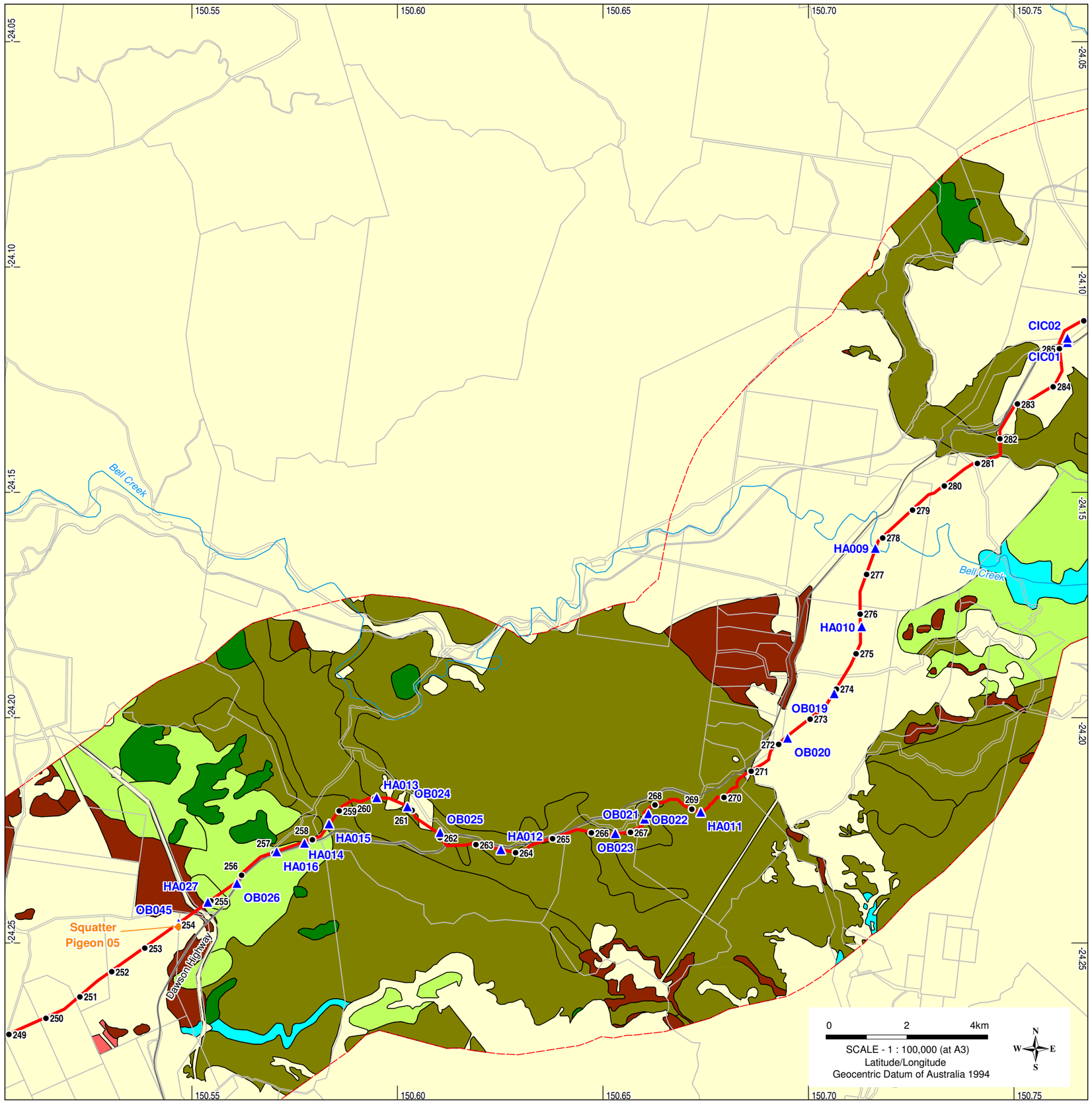

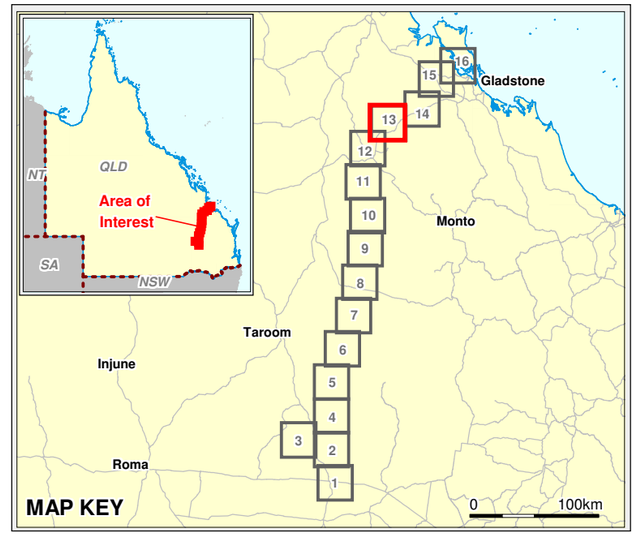

LEGEND

- Fauna Site
- Squatter Pigeon
- Glossy Black Cockatoo
- Major Drainage
- Road
- Railway
- Cadastral Parcel
- Pipeline buffer (5km)
- Gas pipeline route and kilometre point (10)

Faunal Habitat

- Acacia woodland
- Bluegrass grassland
- Brigalow / Belah
- Callitris woodland
- Floodplain eucalypt woodland
- Ironbark woodland
- Mangroves
- Mixed eucalypt woodland & open forest
- Poplar box woodland
- Riparian woodland
- Saltpan
- SEVT & vine forest
- She-oak woodland
- Shrubland
- Spotted gum open forest

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Figure 30: Faunal Habitat and Fauna Sites

Project No: 301001-00448	Figure: 00448-00-EN-DAL-0267	Rev: 0

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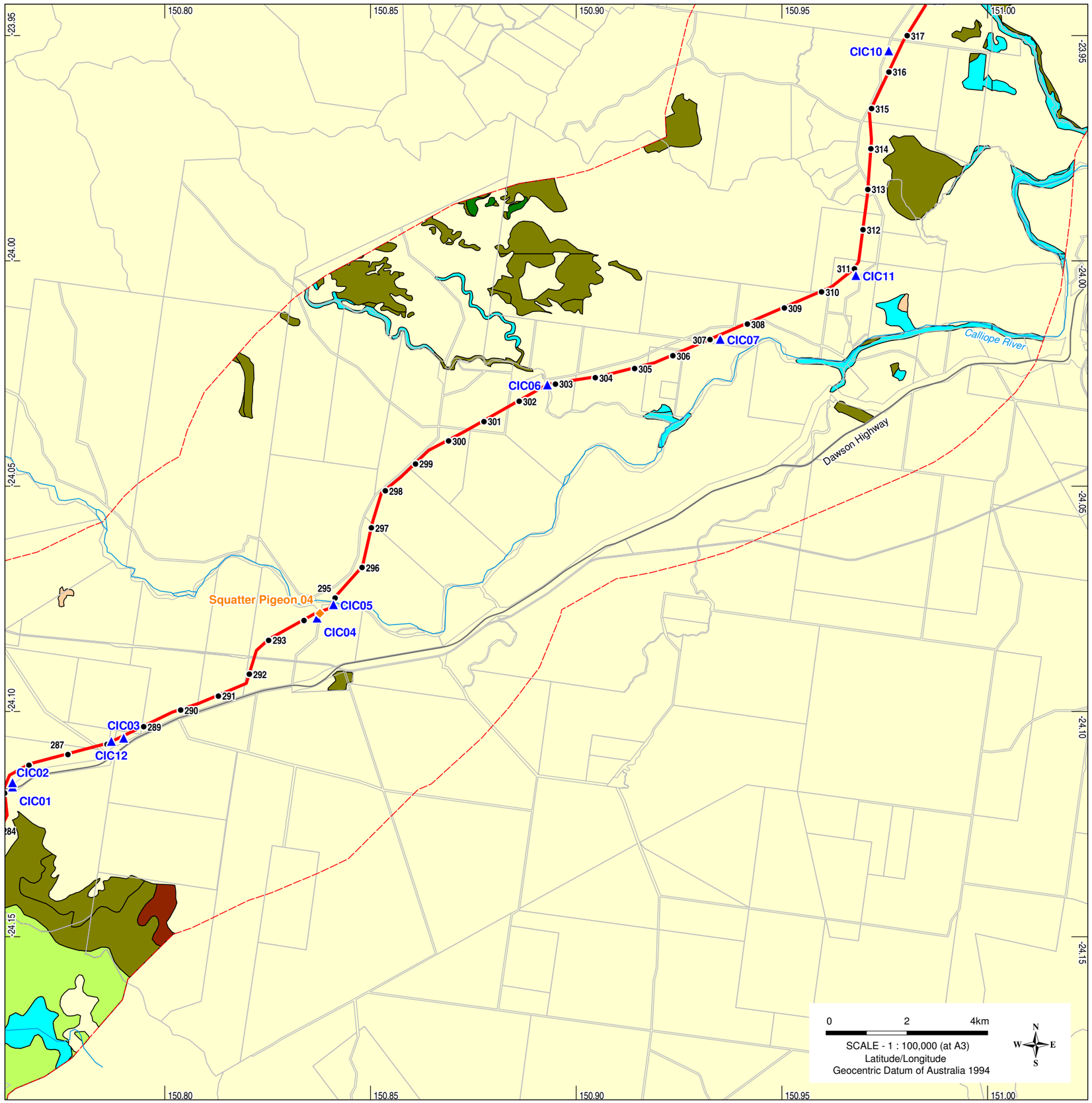

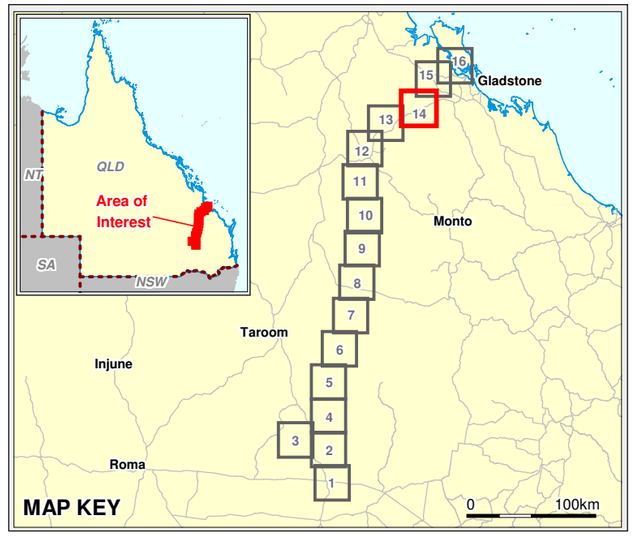

LEGEND

- Fauna Site
- Squatter Pigeon
- Glossy Black Cockatoo
- Major Drainage
- Road
- Railway
- Cadastral Parcel
- Pipeline buffer (5km)
- Gas pipeline route and kilometre point

Faunal Habitat

- Acacia woodland
- Bluegrass grassland
- Brigalow / Belah
- Callitris woodland
- Floodplain eucalypt woodland
- Ironbark woodland
- Mangroves
- Mixed eucalypt woodland & open forest
- Poplar box woodland
- Riparian woodland
- Saltpan
- SEVT & vine forest
- She-oak woodland
- Shrubland
- Spotted gum open forest

Rev	Date	Revision Description	ORIG	CHK	ENG	APPD
0	16/02/2010	Issued for use	NA	KM	SCH	RB

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Figure 31: Faunal Habitat and Fauna Sites

Project No: 301001-00448	Figure: 00448-00-EN-DAL-0268	Rev: 0

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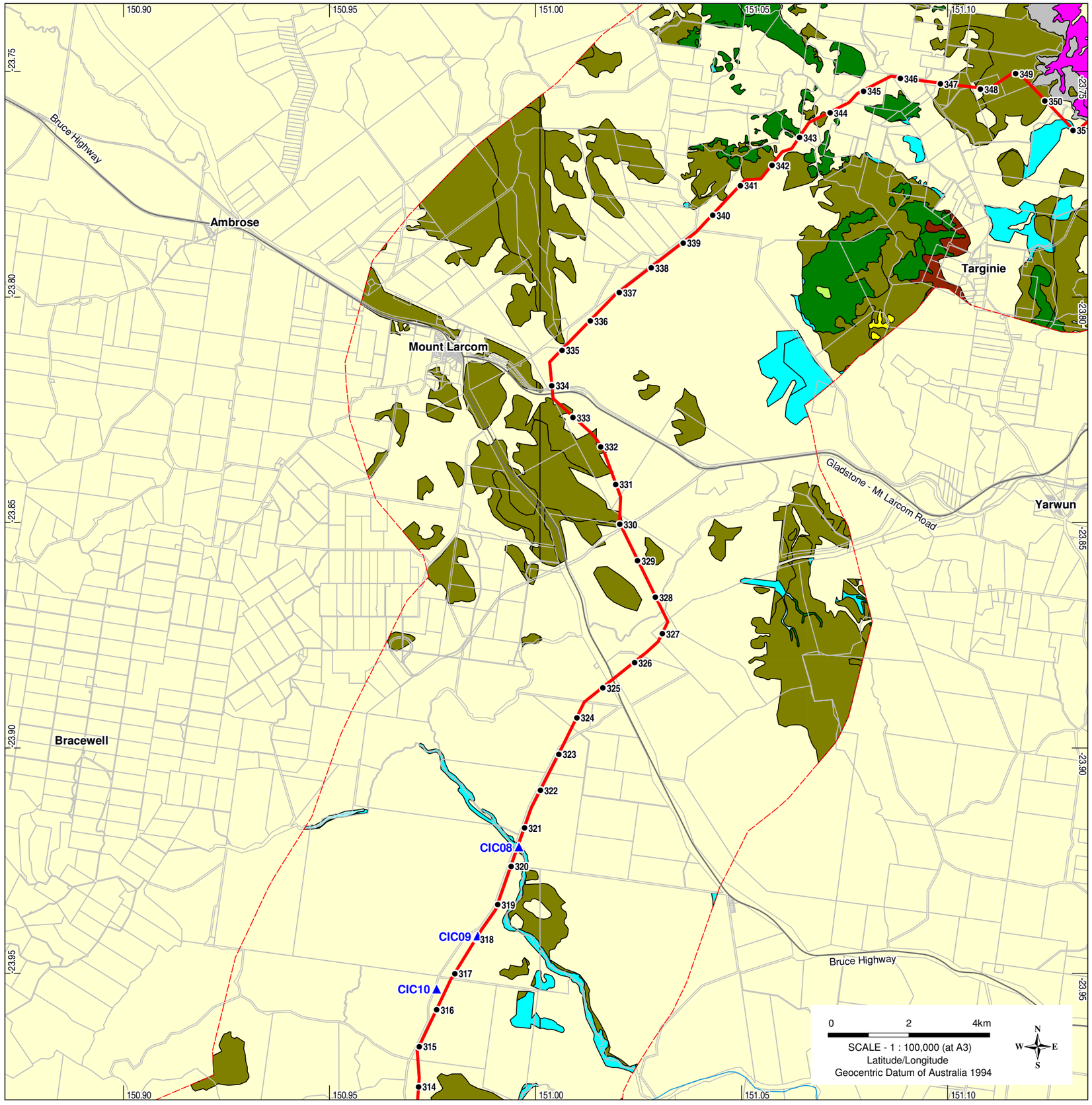

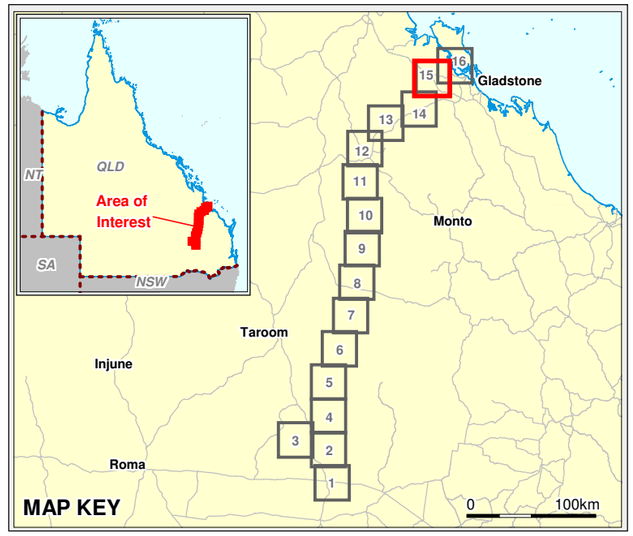

LEGEND

- Fauna Site
- Squatter Pigeon
- Glossy Black Cockatoo
- Major Drainage
- Road
- Railway
- Cadastral Parcel
- Pipeline buffer (5km)
- Gas pipeline route and kilometre point (10)

Faunal Habitat

- Acacia woodland
- Bluegrass grassland
- Brigalow / Belah
- Callitris woodland
- Floodplain eucalypt woodland
- Ironbark woodland
- Mangroves
- Mixed eucalypt woodland & open forest
- Poplar box woodland
- Riparian woodland
- Saltpan
- SEVT & vine forest
- She-oak woodland
- Shrubland
- Spotted gum open forest

Rev	Date	Revision Description	ORIG	CHK	ENG	APPD
0	16/02/2010	Issued for use	NA	KM	SCH	RB

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Figure 32: Faunal Habitat and Fauna Sites

Project No: 301001-00448	Figure: 00448-00-EN-DAL-0269	Rev: 0

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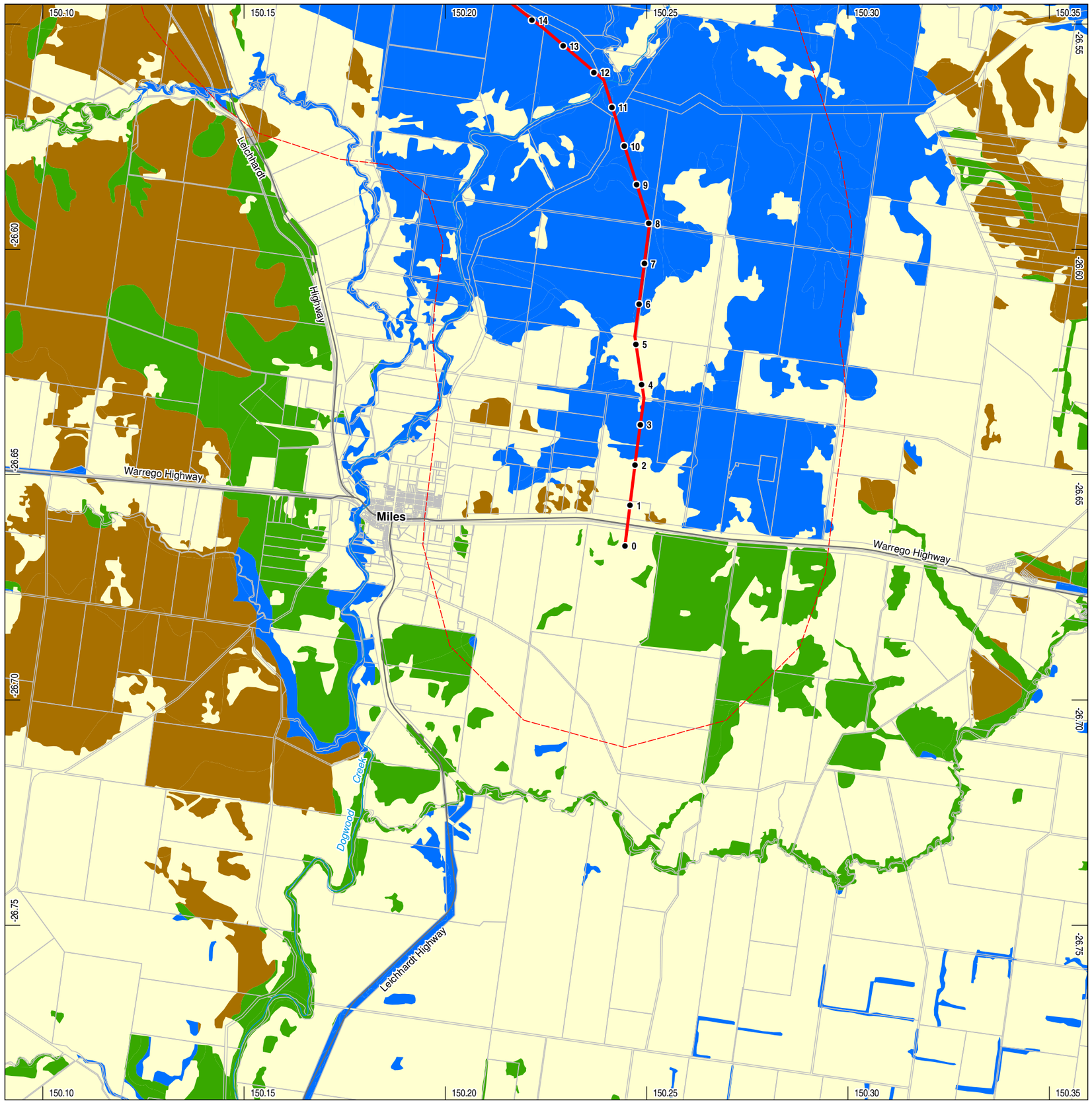

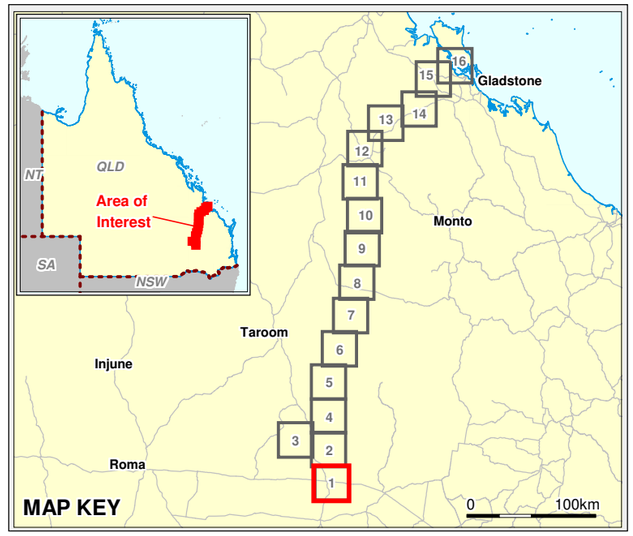

LEGEND

- Major Drainage
- Road
- Railway
- Gas pipeline route and kilometre point (10)
- Cadastral Parcel
- Pipeline buffer (5km)

Essential Habitats

- Vegetation Management Act Essential Habitat - Version 3.0
- Essential Regrowth Habitat for Threatened Fauna – Version 3.0

Biodiversity Planning Assessment

- State Habitat for EVR taxa
- State
- Regional
- Non Bioregion Ecosystem
- Local or Other Values

0 2 4km

SCALE - 1 : 100,000 (at A3)
Latitude/Longitude
Geocentric Datum of Australia 1994

N W E S

Rev	Date	Revision Description	ORIG	CHK	ENG	APPD
0	22/02/2010	Issued for use	KM	MZ	SCH	RB

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Figure 34: Biodiversity Planning Assessment

Project No: 301001-00448	Figure: 00448-00-EN-DAL-0255	Rev: 0

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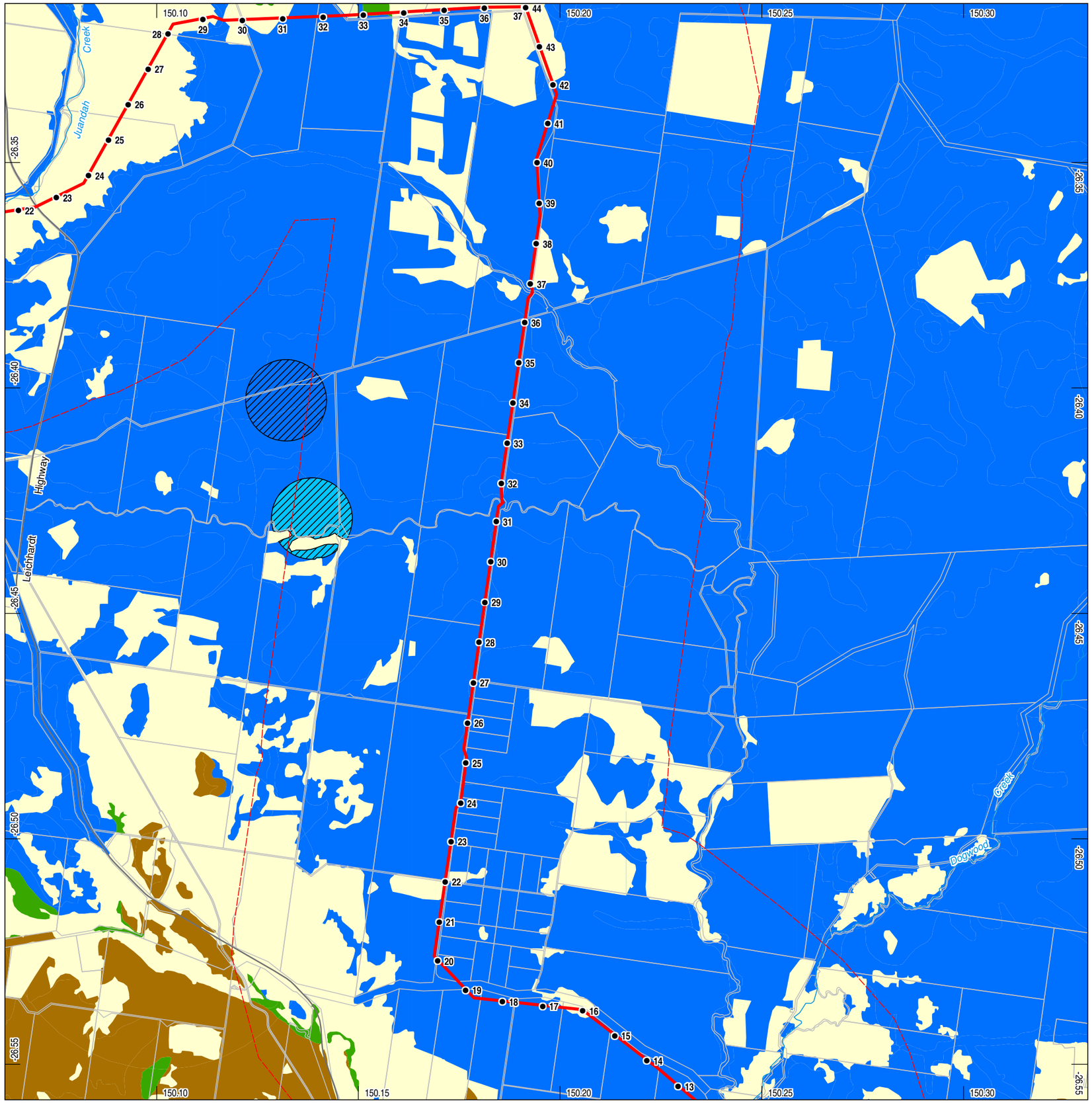

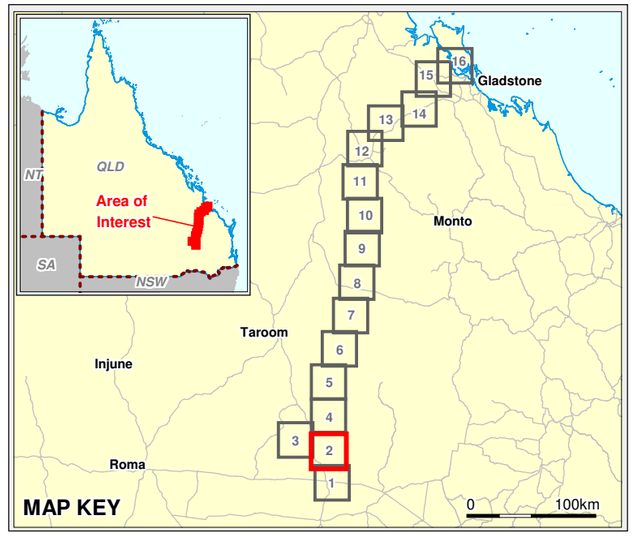

LEGEND

- Major Drainage
- Road
- Railway
- Gas pipeline route and kilometre point
- Cadastral Parcel
- Pipeline buffer (5km)

Essential Habitats

- Vegetation Management Act Essential Habitat - Version 3.0
- Essential Regrowth Habitat for Threatened Fauna – Version 3.0

Biodiversity Planning Assessment

- State Habitat for EVR taxa
- State
- Regional
- Non Bioregion Ecosystem
- Local or Other Values

0 2 4km

SCALE - 1 : 100,000 (at A3)
Latitude/Longitude
Geocentric Datum of Australia 1994

N W E S

Rev	Date	Revision Description	ORIG	CHK	ENG	APPD
0	23/02/2010	Issued for use	NA	MZ	SCH	RB

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Figure 35: Biodiversity Planning Assessment

Project No: 301001-00448	Figure: 00448-00-EN-DAL-0256	Rev: 0

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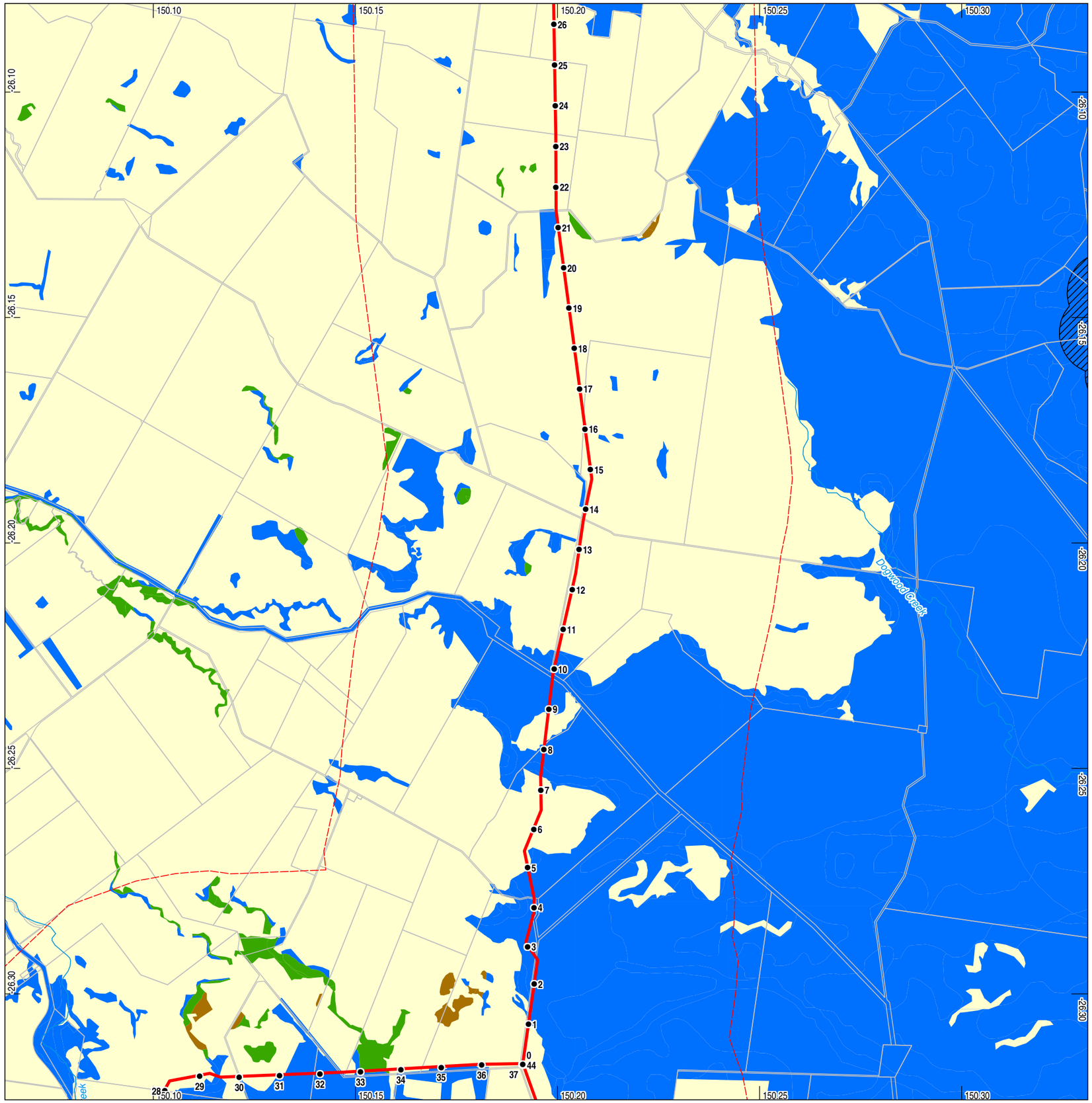

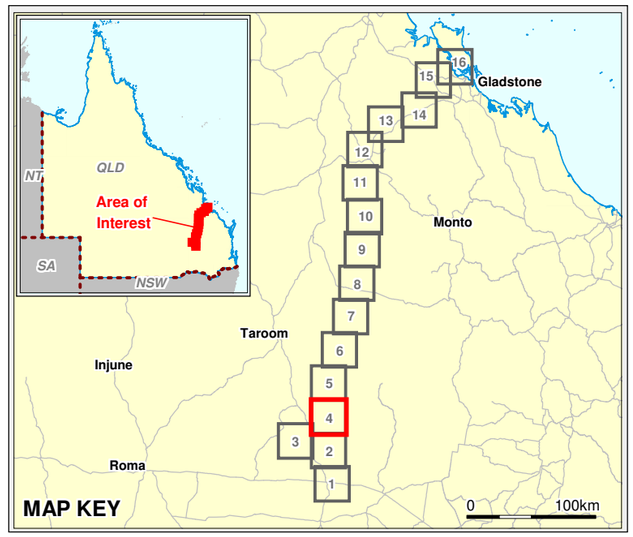

LEGEND

- Major Drainage
- Road
- Railway
- Gas pipeline route and kilometre point
- Cadastral Parcel
- Pipeline buffer (5km)

Essential Habitats

- Vegetation Management Act Essential Habitat - Version 3.0
- Essential Regrowth Habitat for Threatened Fauna – Version 3.0

Biodiversity Planning Assessment

- State Habitat for EVR taxa
- State
- Regional
- Non Bioregion Ecosystem
- Local or Other Values

0 2 4km

SCALE - 1 : 100,000 (at A3)
Latitude/Longitude
Geocentric Datum of Australia 1994

N W E S

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0	23/02/2010	Issued for use	NA	MZ	SCH	RB

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Figure 37: Biodiversity Planning Assessment

Project No: 301001-00448	Figure: 00448-00-EN-DAL-0258	Rev: 0

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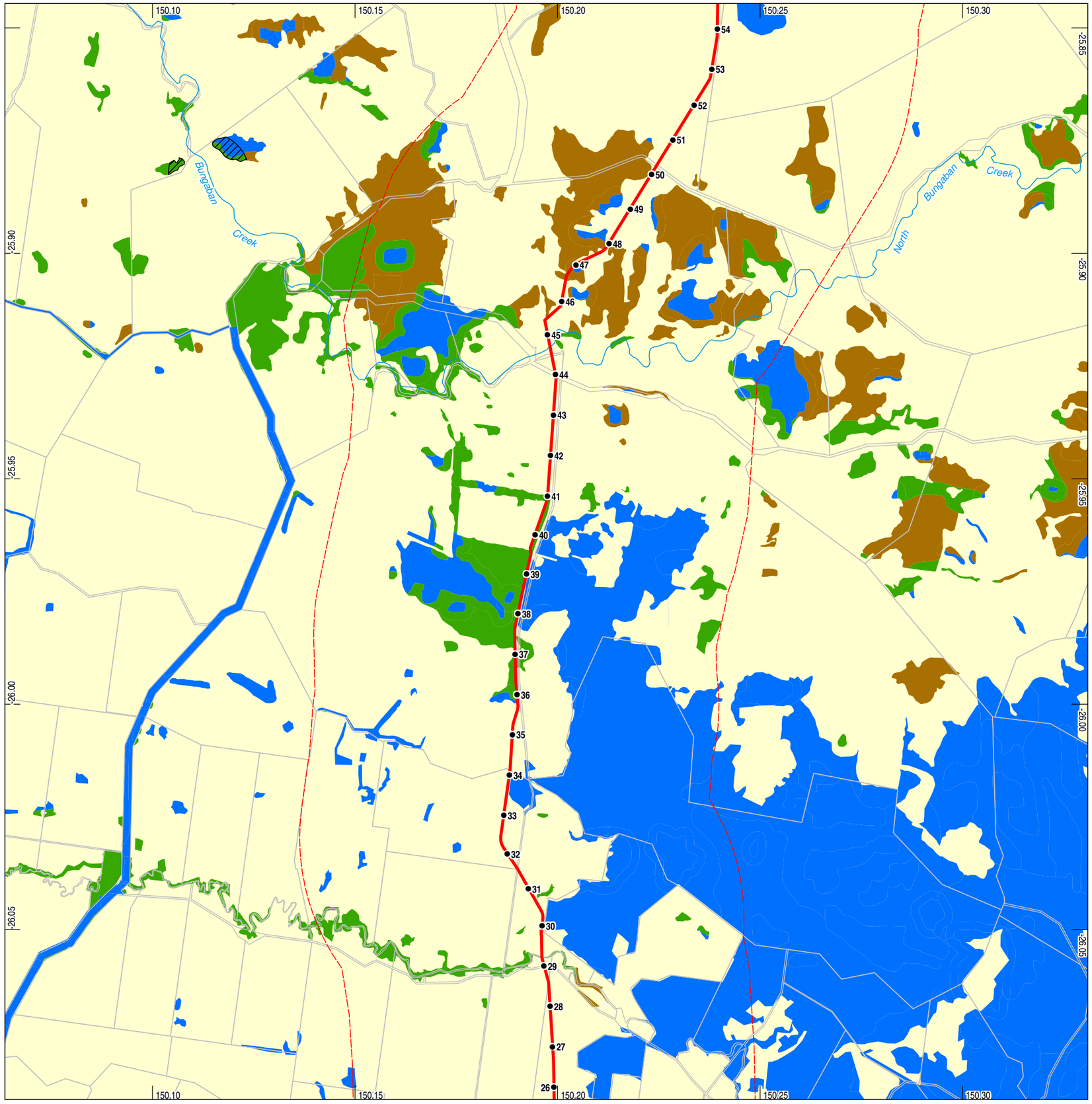

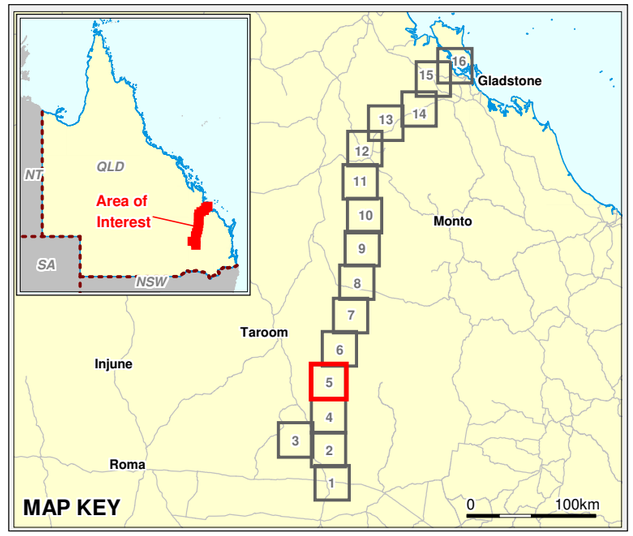

LEGEND

- Major Drainage
- Road
- Railway
- Gas pipeline route and kilometre point (10)
- Cadastral Parcel
- Pipeline buffer (5km)

Essential Habitats

- Vegetation Management Act Essential Habitat - Version 3.0
- Essential Regrowth Habitat for Threatened Fauna – Version 3.0

Biodiversity Planning Assessment

- State Habitat for EVR taxa
- State
- Regional
- Non Bioregion Ecosystem
- Local or Other Values

0 2 4km

SCALE - 1 : 100,000 (at A3)
Latitude/Longitude
Geocentric Datum of Australia 1994

N W E S

Rev	Date	Revision Description	ORIG	CHK	ENG	APPD
0	23/02/2010	Issued for use	NA	MZ	SCH	RB

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Figure 38: Biodiversity Planning Assessment

Project No: 301001-00448	Figure: 00448-00-EN-DAL-0259	Rev: 0

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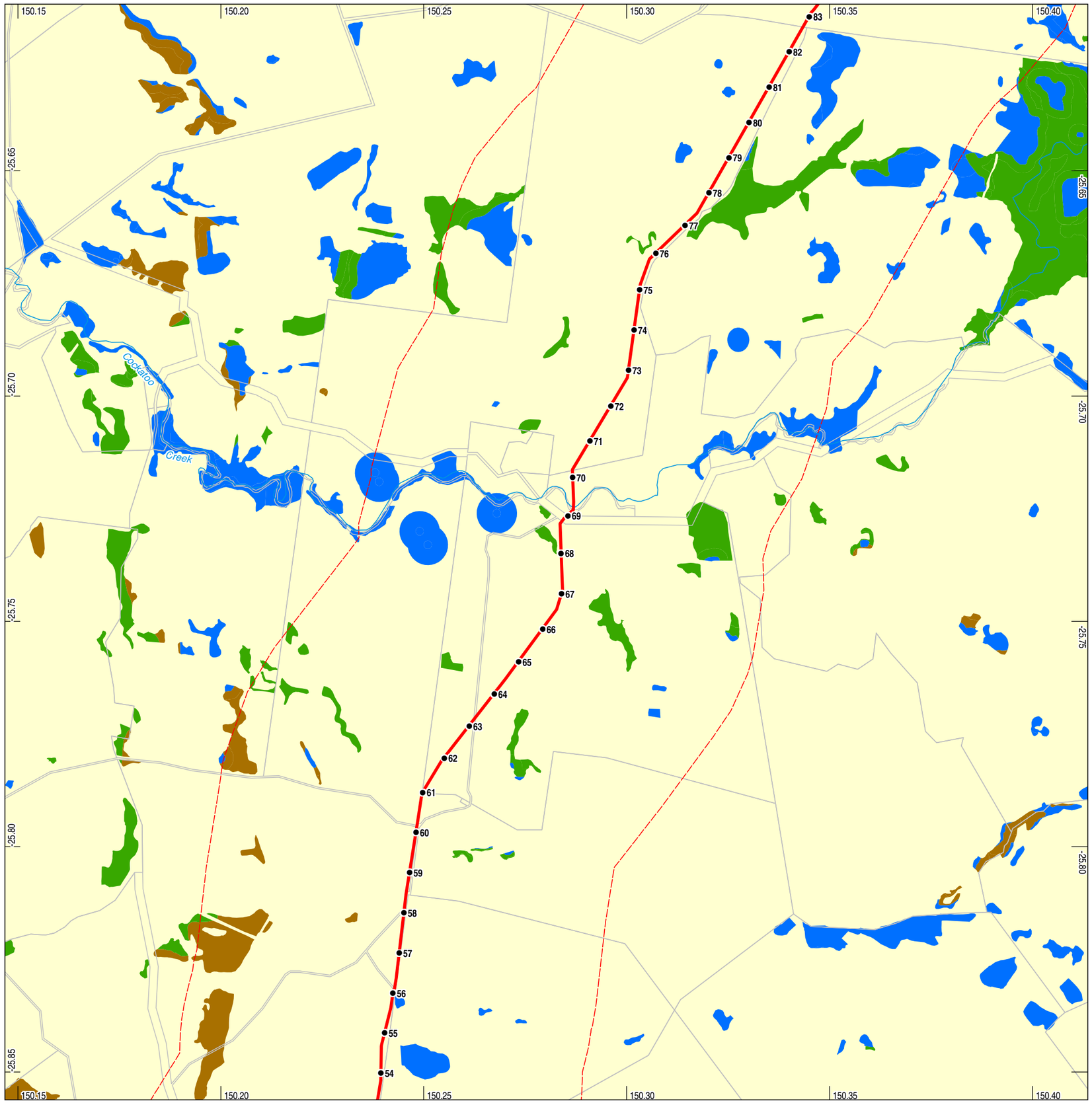

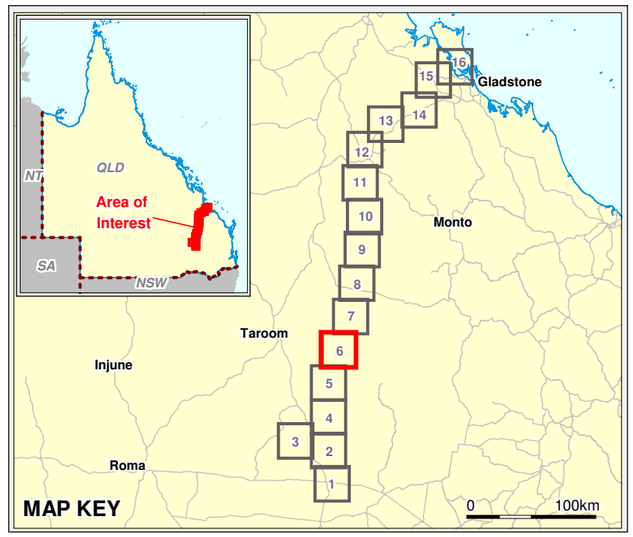

LEGEND

- Major Drainage
- Road
- Railway
- Gas pipeline route and kilometre point (10)
- Cadastral Parcel
- Pipeline buffer (5km)

Essential Habitats

- Vegetation Management Act Essential Habitat - Version 3.0
- Essential Regrowth Habitat for Threatened Fauna – Version 3.0

Biodiversity Planning Assessment

- State Habitat for EVR taxa
- State
- Regional
- Non Bioregion Ecosystem
- Local or Other Values

0 2 4km

SCALE - 1 : 100,000 (at A3)
Latitude/Longitude
Geocentric Datum of Australia 1994

N W E S

Rev	Date	Revision Description	ORIG	CHK	ENG	APPD
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Figure 39: Biodiversity Planning Assessment

Project No: 301001-00448	Figure: 00448-00-EN-DAL-0260	Rev: 0

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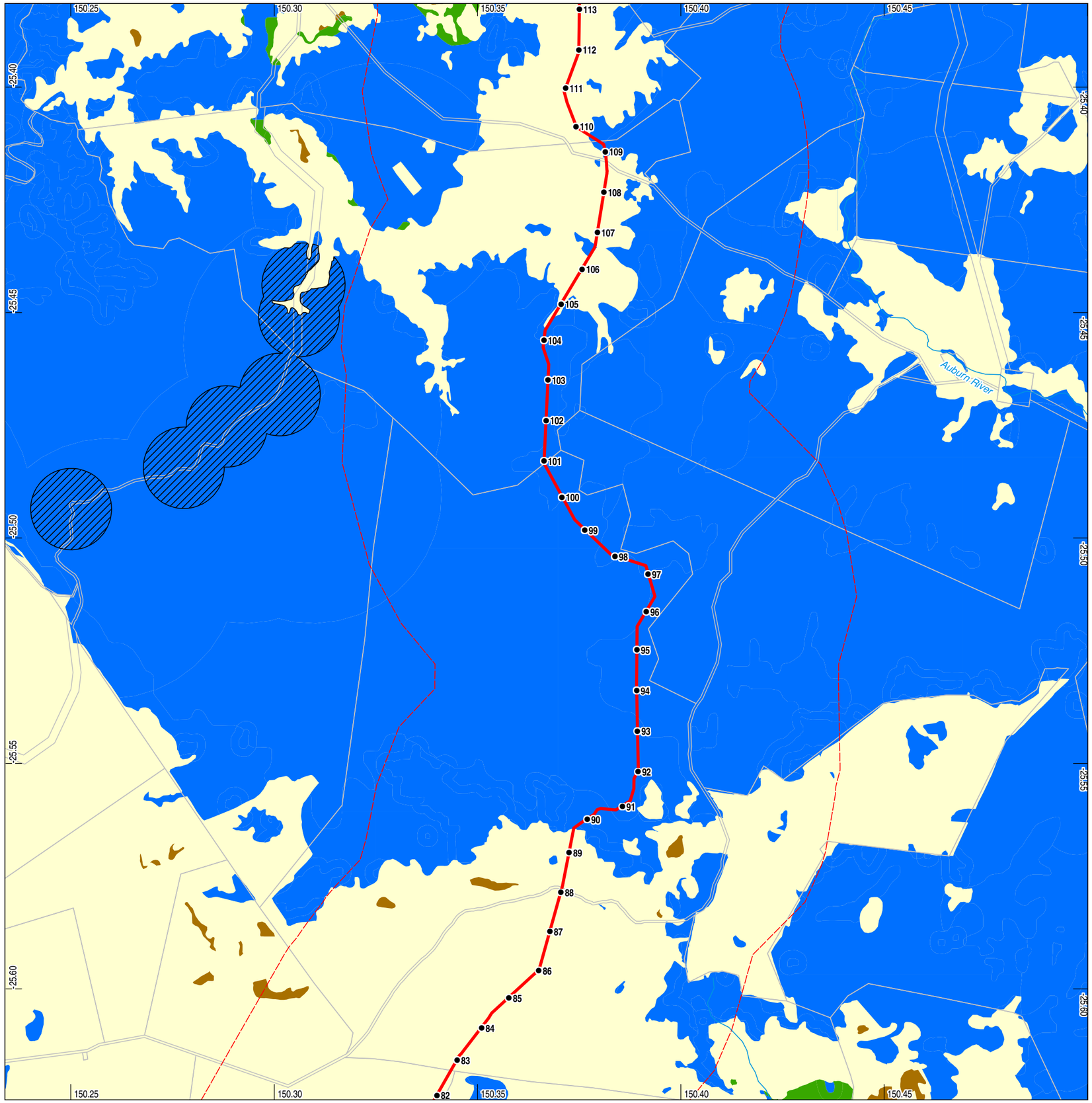

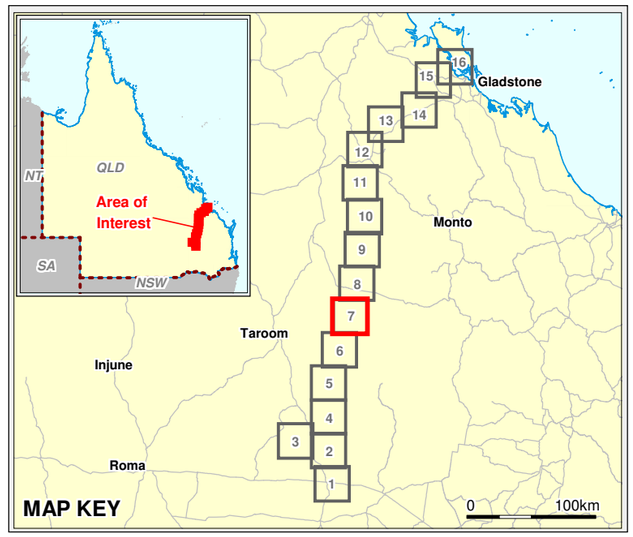

LEGEND

- Major Drainage
- Road
- Railway
- Gas pipeline route and kilometre point (10)
- Cadastral Parcel
- Pipeline buffer (5km)

Essential Habitats

- Vegetation Management Act Essential Habitat - Version 3.0
- Essential Regrowth Habitat for Threatened Fauna – Version 3.0

Biodiversity Planning Assessment

- State Habitat for EVR taxa
- State
- Regional
- Non Bioregion Ecosystem
- Local or Other Values

0 2 4km

SCALE - 1 : 100,000 (at A3)
Latitude/Longitude
Geocentric Datum of Australia 1994

N W E S

Rev	Date	Revision Description	ORIG	CHK	ENG	APPD
0	24/02/2010	Issued for use	JMM	MZ	SCH	RB

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Figure 40: Biodiversity Planning Assessment

Project No: 301001-00448	Figure: 00448-00-EN-DAL-0261	Rev: 0

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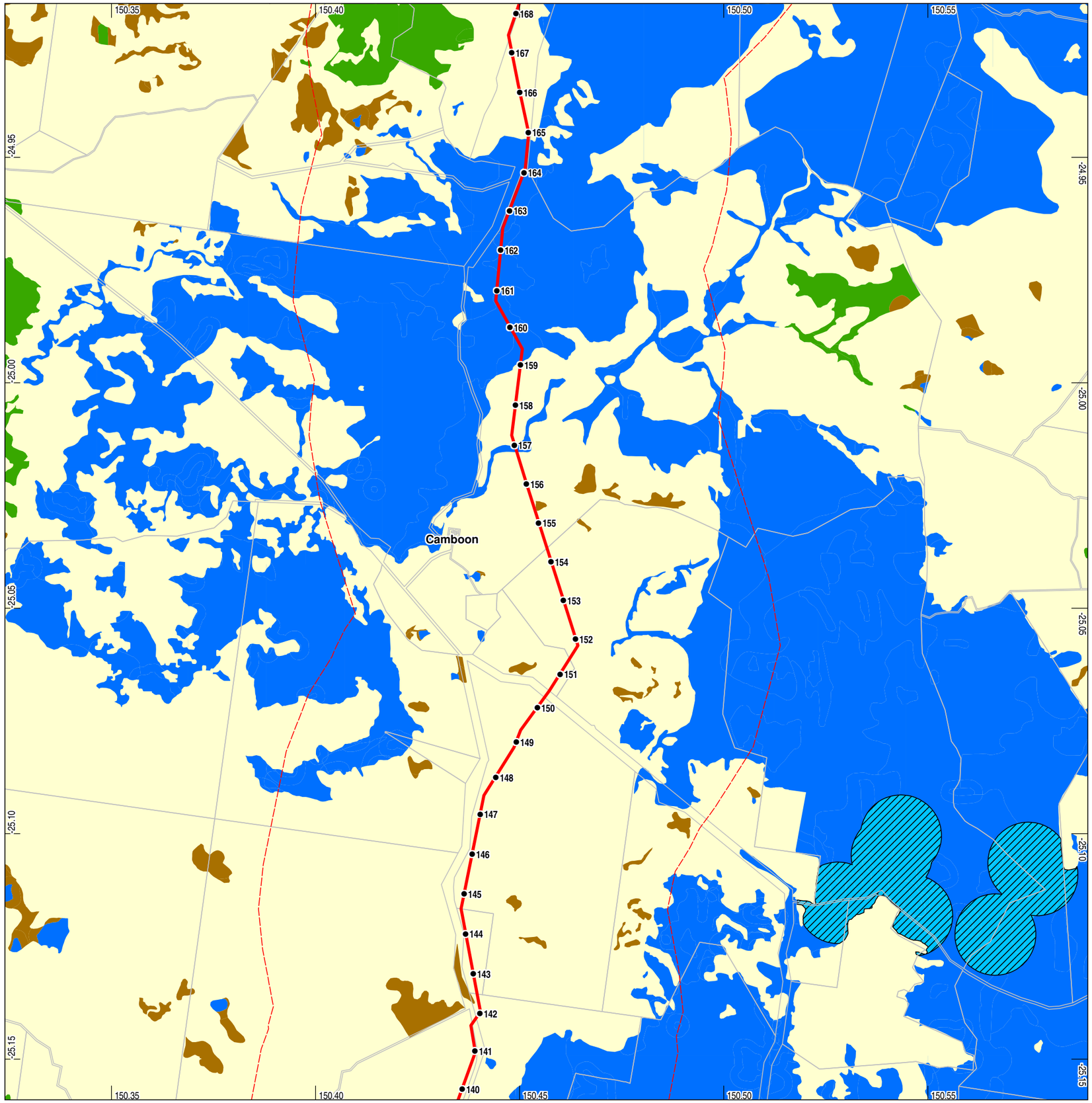

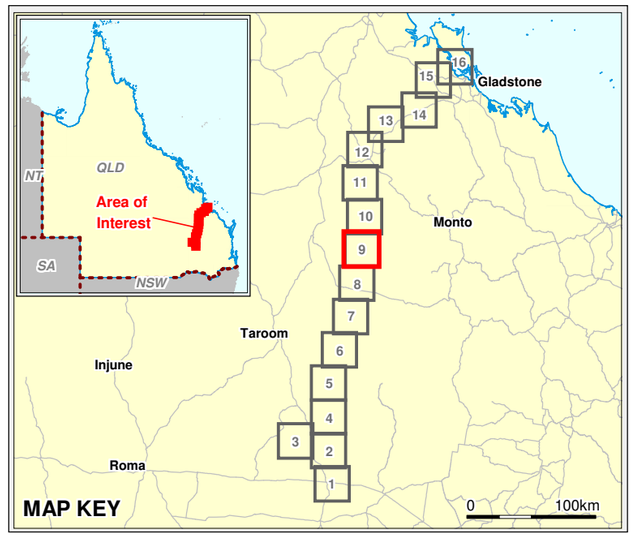

LEGEND

- Major Drainage
- Road
- Railway
- Gas pipeline route and kilometre point (10)
- Cadastral Parcel
- Pipeline buffer (5km)

Essential Habitats

- Vegetation Management Act Essential Habitat - Version 3.0
- Essential Regrowth Habitat for Threatened Fauna – Version 3.0

Biodiversity Planning Assessment

- State Habitat for EVR taxa
- State
- Regional
- Non Bioregion Ecosystem
- Local or Other Values

0 2 4km

SCALE - 1 : 100,000 (at A3)
Latitude/Longitude
Geocentric Datum of Australia 1994

N W E S

Rev	Date	Revision Description	ORIG	CHK	ENG	APPD
0	24/02/2010	Issued for use	NA	MZ	SCH	RB

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AUSTRALIA PACIFIC LNG PTY LIMITED

AUSTRALIA PACIFIC LNG PROJECT

Figure 42: Biodiversity Planning Assessment

Project No: 301001-00448	Figure: 00448-00-EN-DAL-0263	Rev: 0

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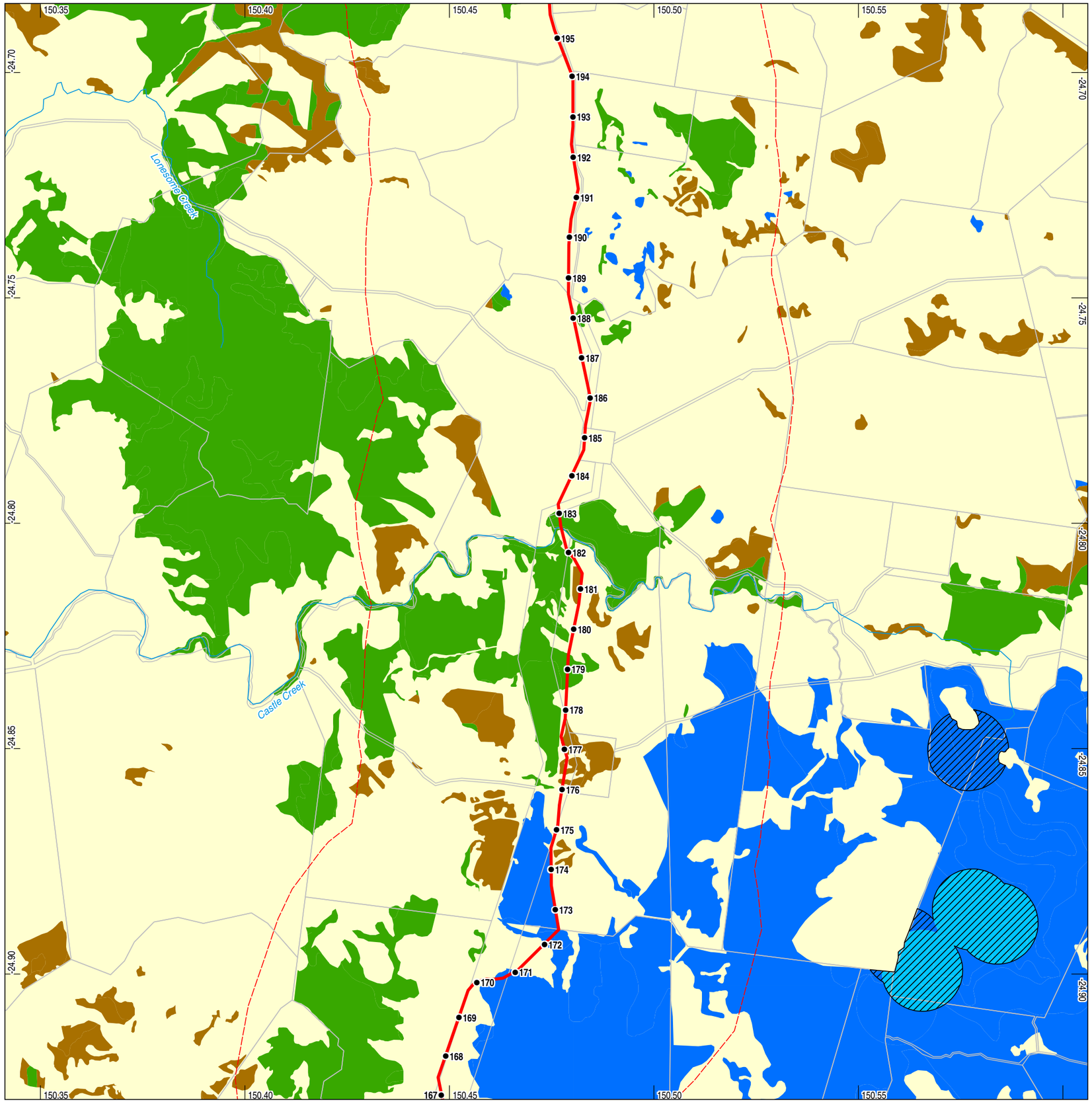

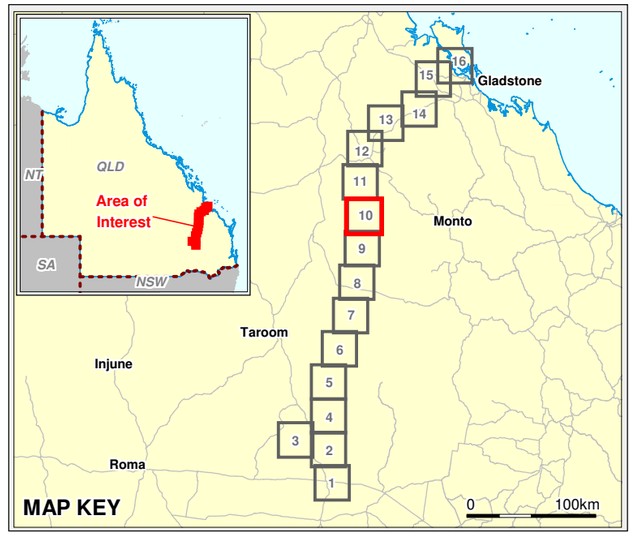

LEGEND

- Major Drainage
- Road
- Railway
- Gas pipeline route and kilometre point (10)
- Cadastral Parcel
- Pipeline buffer (5km)

Essential Habitats

- Vegetation Management Act Essential Habitat - Version 3.0
- Essential Regrowth Habitat for Threatened Fauna – Version 3.0

Biodiversity Planning Assessment

- State Habitat for EVR taxa
- State
- Regional
- Non Bioregion Ecosystem
- Local or Other Values

0 2 4km

SCALE - 1 : 100,000 (at A3)
Latitude/Longitude
Geocentric Datum of Australia 1994

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Rev	Date	Revision Description	ORIG	CHK	ENG	APPD
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Figure 43: Biodiversity Planning Assessment

Project No: 301001-00448	Figure: 00448-00-EN-DAL-0264	Rev: 0

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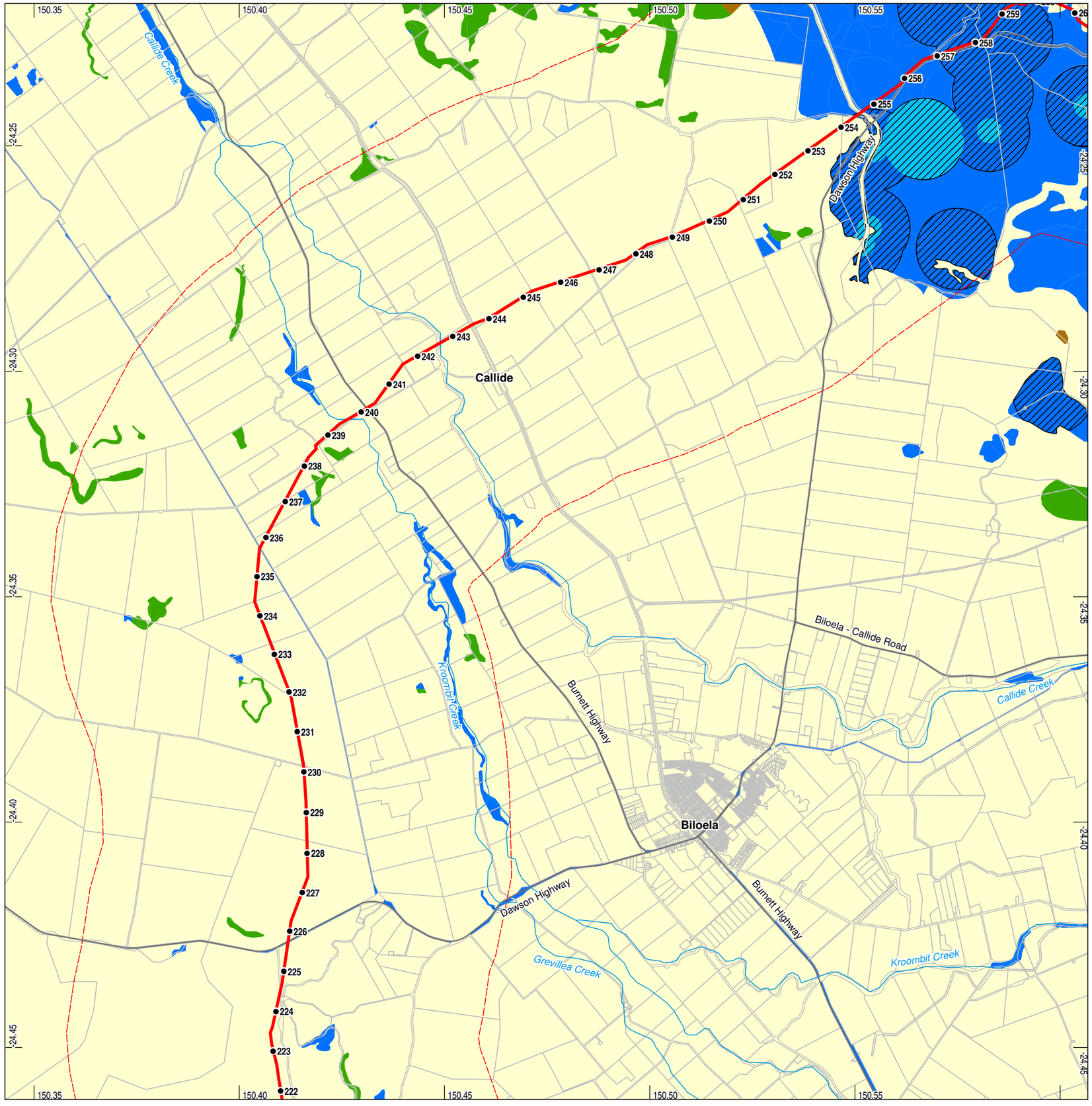

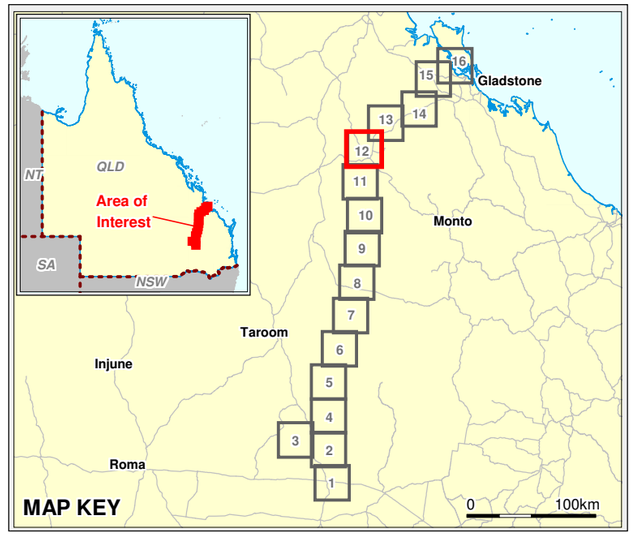

LEGEND

- Major Drainage
- Road
- Railway
- Gas pipeline route and kilometre point (10)
- Cadastral Parcel
- Pipeline buffer (5km)

Essential Habitats

- Vegetation Management Act Essential Habitat - Version 3.0
- Essential Regrowth Habitat for Threatened Fauna – Version 3.0

Biodiversity Planning Assessment

- State Habitat for EVR taxa
- State
- Regional
- Non Bioregion Ecosystem
- Local or Other Values

0 2 4km

SCALE - 1 : 100,000 (at A3)
Latitude/Longitude
Geocentric Datum of Australia 1994

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Figure 45: Biodiversity Planning Assessment

Project No: 301001-00448	Figure: 00448-00-EN-DAL-0266	Rev: 0

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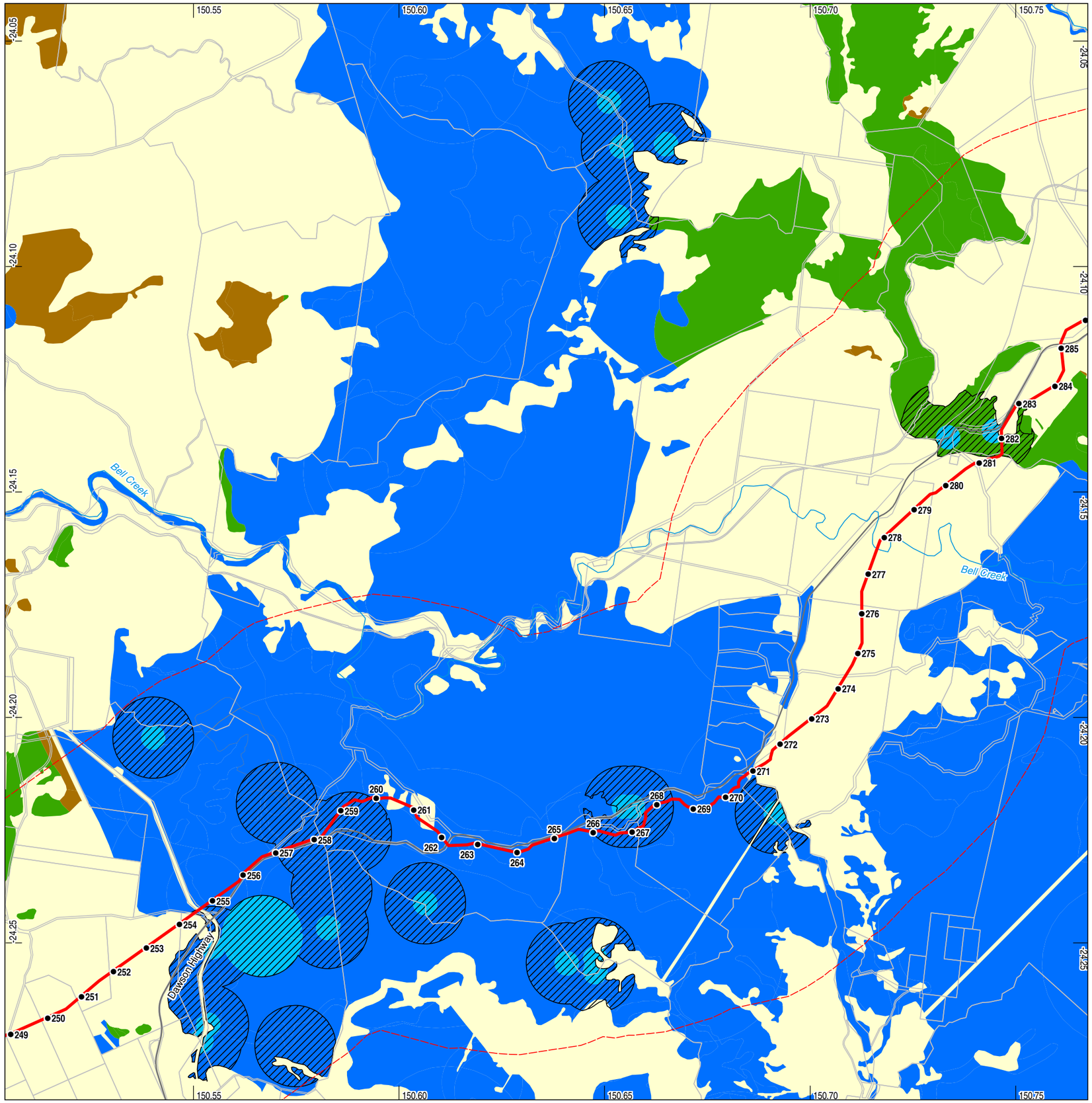

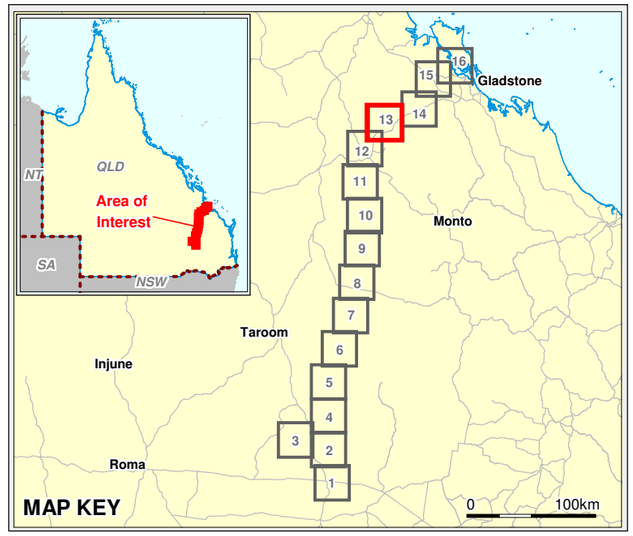

LEGEND

- Major Drainage
- Road
- Railway
- Gas pipeline route and kilometre point (10)
- Cadastral Parcel
- Pipeline buffer (5km)

Essential Habitats

- Vegetation Management Act Essential Habitat - Version 3.0
- Essential Regrowth Habitat for Threatened Fauna – Version 3.0

Biodiversity Planning Assessment

- State Habitat for EVR taxa
- State
- Regional
- Non Bioregion Ecosystem
- Local or Other Values

0 2 4km

SCALE - 1 : 100,000 (at A3)
Latitude/Longitude
Geocentric Datum of Australia 1994

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Rev	Date	Revision Description	ORIG	CHK	ENG	APPD
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Figure 46: Biodiversity Planning Assessment

Project No: 301001-00448	Figure: 00448-00-EN-DAL-0267	Rev: 0

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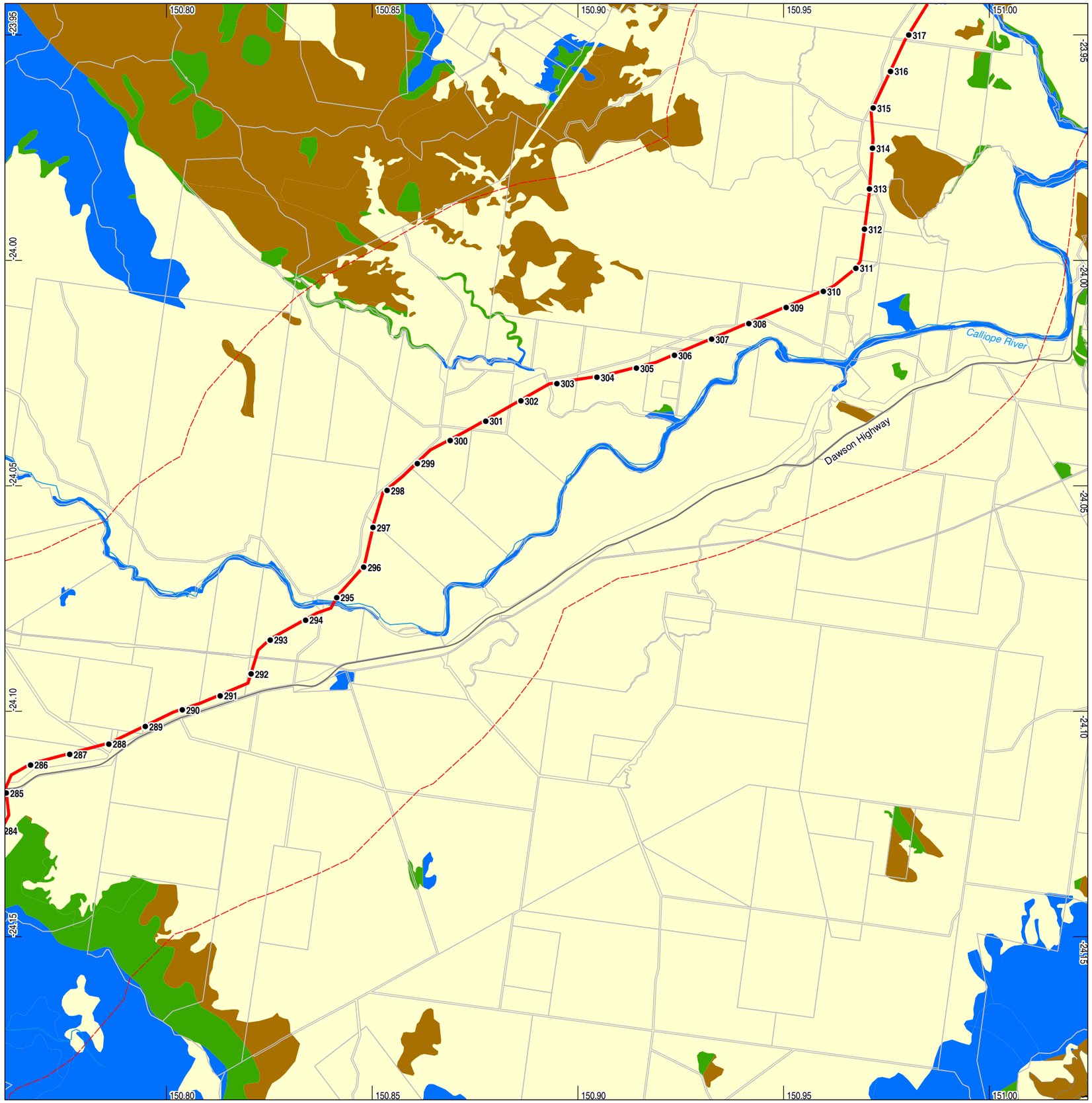

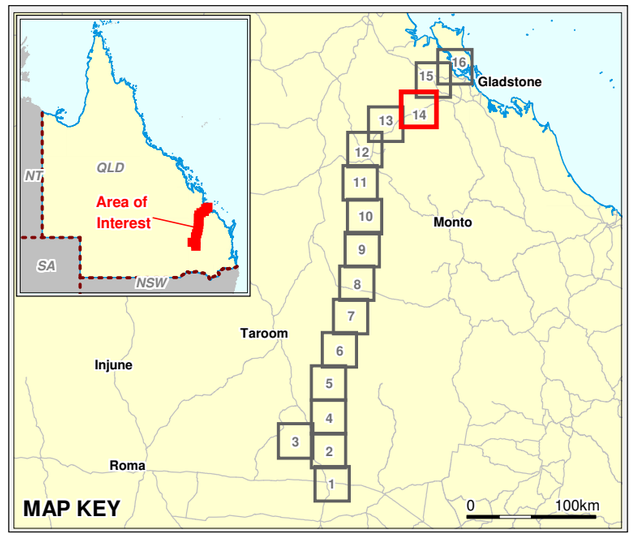

LEGEND

- Major Drainage
- Road
- Railway
- Gas pipeline route and kilometre point (10)
- Cadastral Parcel
- Pipeline buffer (5km)

Essential Habitats

- Vegetation Management Act Essential Habitat - Version 3.0
- Essential Regrowth Habitat for Threatened Fauna – Version 3.0

Biodiversity Planning Assessment

- State Habitat for EVR taxa
- State
- Regional
- Non Bioregion Ecosystem
- Local or Other Values

0 2 4km

SCALE - 1 : 100,000 (at A3)
Latitude/Longitude
Geocentric Datum of Australia 1994

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Figure 47: Biodiversity Planning Assessment

Project No: 301001-00448	Figure: 00448-00-EN-DAL-0268	Rev: 0

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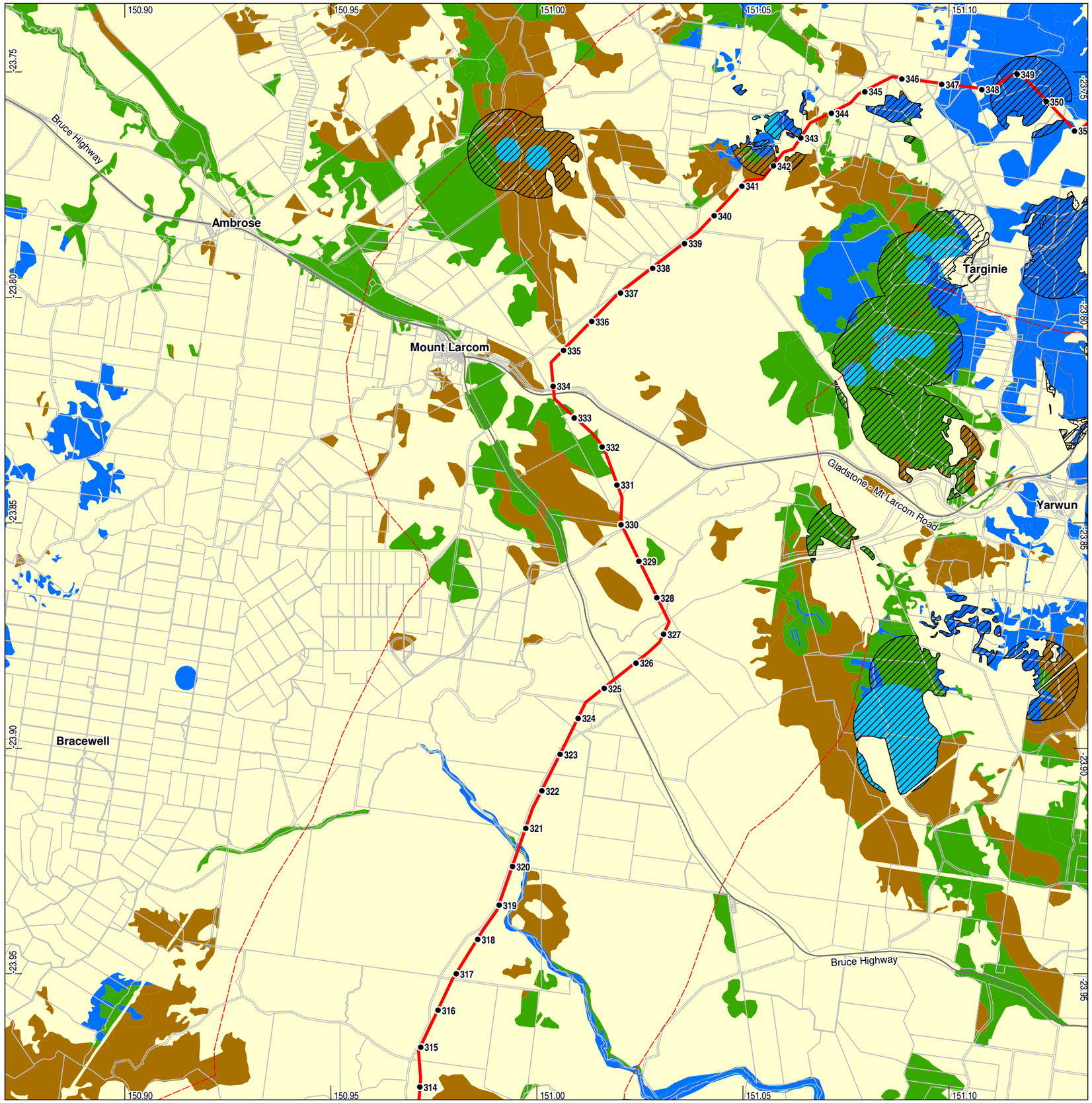

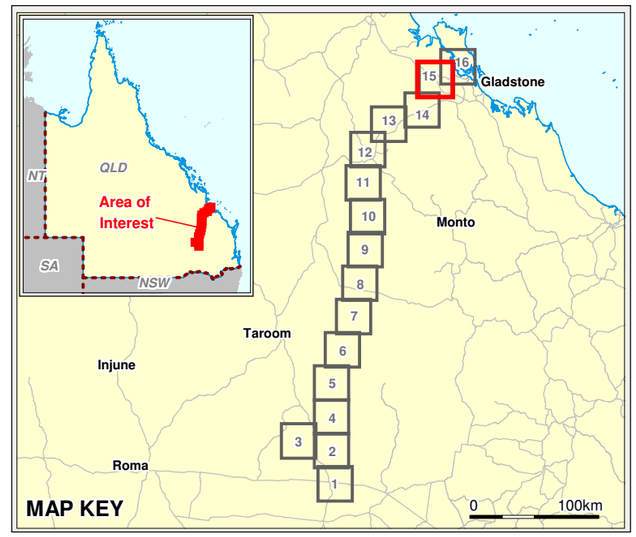

LEGEND

- Major Drainage
- Road
- Railway
- Gas pipeline route and kilometre point (10)
- Cadastral Parcel
- Pipeline buffer (5km)

Essential Habitats

- Vegetation Management Act Essential Habitat - Version 3.0
- Essential Regrowth Habitat for Threatened Fauna – Version 3.0

Biodiversity Planning Assessment

- State Habitat for EVR taxa
- State
- Regional
- Non Bioregion Ecosystem
- Local or Other Values

0 2 4km

SCALE - 1 : 100,000 (at A3)
Latitude/Longitude
Geocentric Datum of Australia 1994

Rev	Date	Revision Description	ORIG	CHK	ENG	APPD
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Figure 48: Biodiversity Planning Assessment

Project No: 301001-00448	Figure: 00448-00-EN-DAL-0269	Rev: 0

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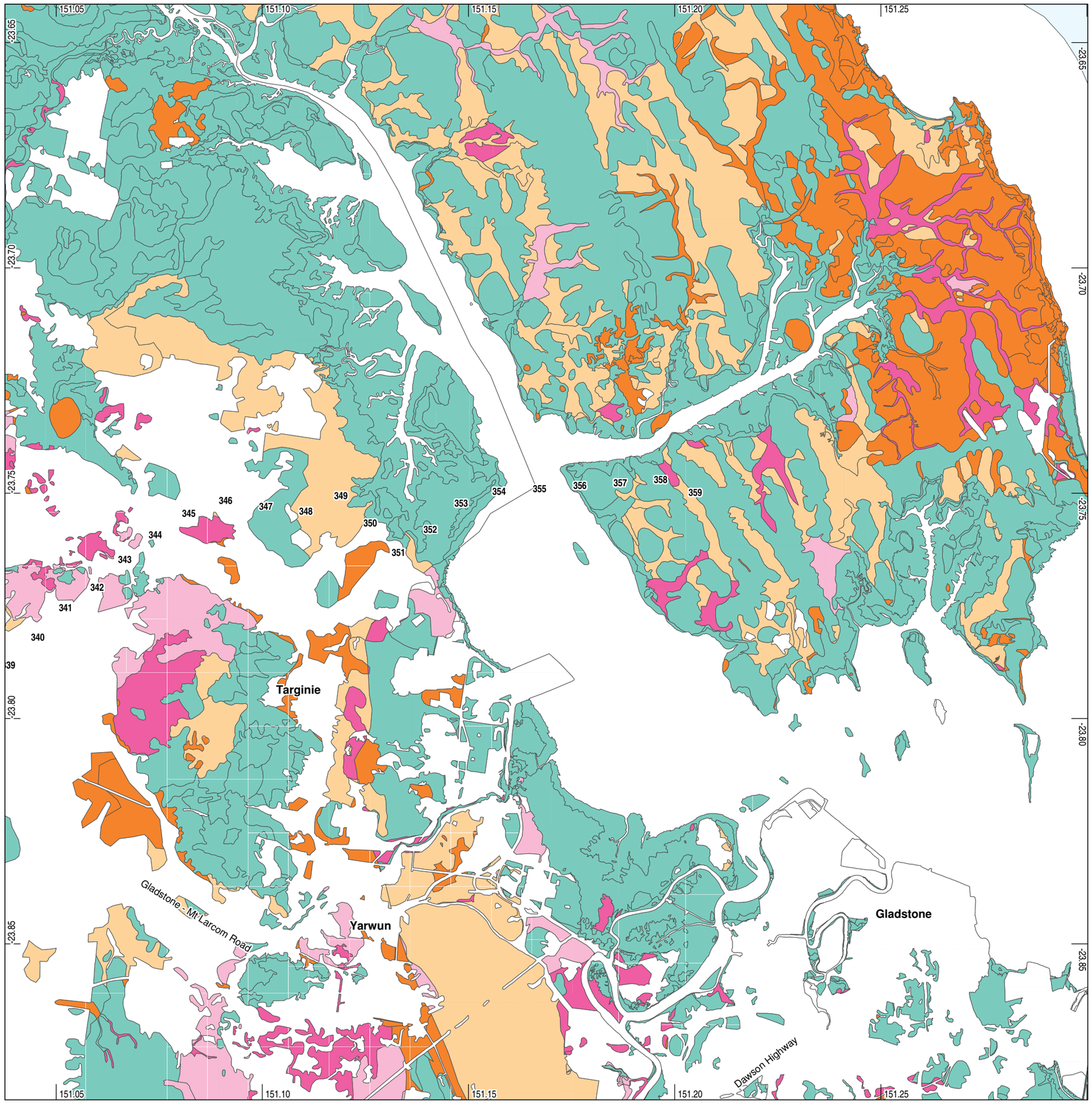

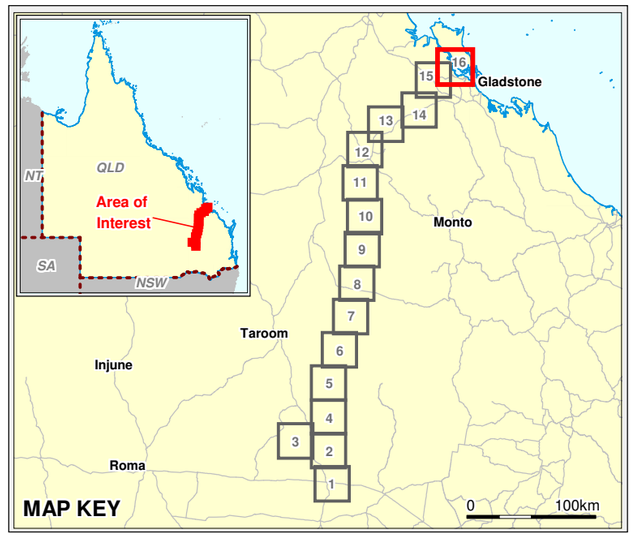

LEGEND

- Major Drainage
- Road
- Railway
- Gas pipeline route and kilometre point (10)
- Cadastral Parcel
- Pipeline buffer (5km)

Essential Habitats

- Vegetation Management Act Essential Habitat - Version 3.0
- Essential Regrowth Habitat for Threatened Fauna – Version 3.0

Biodiversity Planning Assessment

- State Habitat for EVR taxa
- State
- Regional
- Non Bioregion Ecosystem
- Local or Other Values

0 2 4km

SCALE - 1 : 100,000 (at A3)
Latitude/Longitude
Geocentric Datum of Australia 1994

N W E S

Rev	Date	Revision Description	ORIG	CHK	ENG	APPD
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Figure 49: Biodiversity Planning Assessment

Project No: 301001-00448	Figure: 00448-00-EN-DAL-0270	Rev: 0

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LEGEND

- Mother-Of-Millions *(Bryophyllum delagoense)*
- Rubber Vine *(Cryptostegia grandiflora)*
- Cat's Claw Creeper *(Macfadyena unguis-cati)*
- Creeping Lantana *(Lantana montevidensis)*
- Common Lantana *(Lantana camara)*
- Parthenium *(Parthenium hysterophorus)*
- LNG plant location
- Road
- Gas pipeline route

Note: Common Tree Pear (opuntia stricta) and Velvert Tree Pear (Opuntia Tomentosa) were observed throughout the Alignment corridor.

149.00 149.50 150.00 150.50 151.00

-24.00 -24.50 -25.00 -25.50 -26.00 -26.50

Curtis Island
LNG Plant Location
GLADSTONE
350
300
250
200
150
100
50
0
0
0
Dawson Hwy
Baralaba
Biloela
Moura
Monto
APLNG Main Line
Theodore
Fitzroy Dev Rd
Leichhardt Hwy
Eidsvold - Theodore Rd
Taroom
Wandoan
Roma - Taroom Rd
Woleebee Lateral
Condabri Lateral
ROMA
Warrego Highway
Miles
Chinchilla

N W E S

0 25 50km

SCALE - 1:1,000,000 (at A3)

Latitude / Longitude
Geocentric Datum of Australia 1994

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0	17/11/2009	Issued for use	JM	MZ		RB

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Figure 50: Declared Plants Observed Within The Alignment Corridor

Project No: 301001-00448	Figure: 00448-00-EN-DAL-0408	Rev: 1

Compiled by BRISBANE INFRASTRUCTURE GIS SECTION

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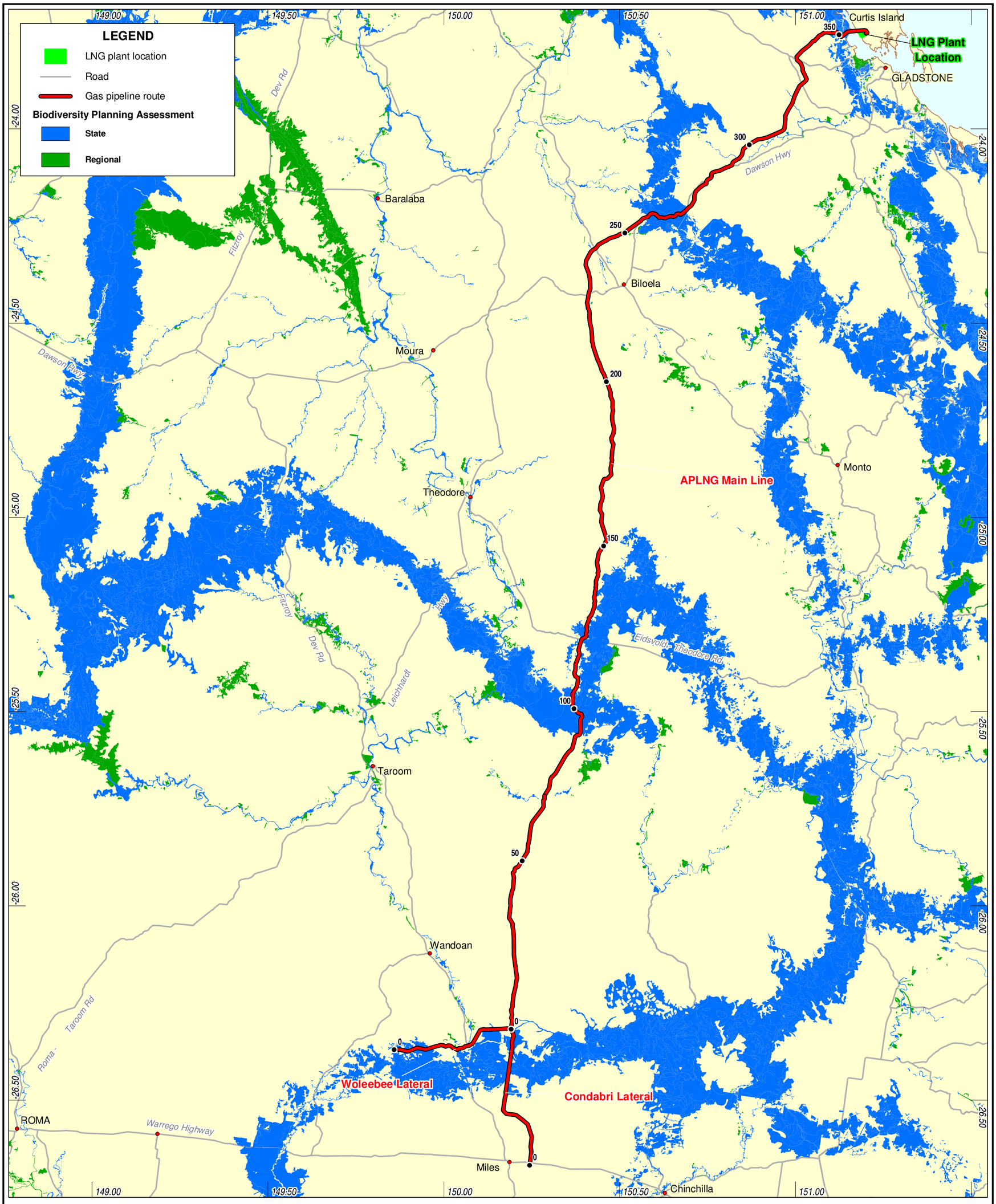

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Rev	Date	Revision Description	ORIG	CHK	ENG	APPD
0	17/02/2010	Issued for use	JC	MZ		

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Figure 51: Wildlife Corridor Map

Project No: 301001-00448	Figure: 00448-00-EN-DAL-0409	Rev: 0

Compiled by BRISBANE INFRASTRUCTURE GIS SECTION

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Appendix A Abreviations

BBS	Brigalow Belt South
BPA	Biodiversity Planning Assessment
CAMBA	China - Australia Migratory Bird Agreement
DERM	Queensland Department of Environment and Resource Management
DEWHA	Commonwealth Department of Environment, Water, Heritage and the Arts
DOI wetlands	Directory of Important wetlands
DPI&F	Queensland Department of Primary Industries and Fisheries
EP Act	Queensland *Environmental Protection Act 1994*
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
EPP	Environmental Protection Policy
ERA	Environmentally Relevant Activity
ESA	Environmentally Sensitive Area
EVR	Threatened species listed under the EPBC Act and / or NC Act as critically endangered, endangered, vulnerable or rare
Fisheries Act	Queensland *Fisheries Act 1994*
JAMBA	Japan - Australia Migratory Bird Agreement
KP	Kilometre Point
LP(P&SRM)A	Queensland *Land Protection (Pest and Stock Route Management) Act 2002*
NC Act	Queensland *Nature Conservation Act 1992*
NES	National Environmental Significance
QH	Queensland Herbarium
Petroleum Act	Queensland *Petroleum and Gas (Production and Safety) Act 2004*
RE	Regional Ecosystem
REDD	Regional Ecosystem Description Database
ROKAMBA	Republic of Korea - Australia Migratory Bird Agreement
ROTAP	Rare or Threatened Australian Plants database
RoW	Right of Way
VMA	Queensland *Vegetation Management Act 1999*
wider study area	5km either side of the proposed route
WONS	Weeds of National Significance

Appendix B Vegetation Assessment Proformas

VEGETATION SURVEY

T001

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.7.6**
EPBC Status:	
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.7.5/11.7.6
Width of Vegetation:	>300m
Total Area of Vegetation:	>50ha

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP 101
Photo Numbers:	011 - 012
Datum:	WGS84
Easting / Northing (Precision):	56J 0235228 7178939 (+/-5m)

Vegetation Community Description

Eucalyptus crebra dominated woodland to 15 – 20m tall with *Corymbia citriodora* on mid to upper slope of sandstone hills. Sparse midstorey to 8 – 10m tall of canopy recruits. Gully adjacent. Dense to open shrublayer 1 – 3m tall dominated by *Acacia falcata, Acacia spectadbilis*, *Acacia podalyriifolia* and canopy recruits. Dense groundlayer to 1 – 0.5m tall dominated by *Triodia scariosa*.
Good condition. Evidence of recent fire and disused vehicle.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m²/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	S2	T3	S1
Eucalyptus crebra	D		18	12		2				8	1		
Corymbia citriodora	A		20	12		2				2			
Acacia podalyriifolia						3							
Acacia falcata						2							
Acacia spectadbilis						3							
Acacia decora						2							
Dodonaea triangularis						1							
Lepidosperma laterale								0.7					
Gahnia aspera								0.7					
Sida rhombifolia								0.8					
Abuliton spp.								1.0					
Dianella brevipedunculata								0.7					
Triodia scariosa								1.0					
% Rock	5 - 10												
% Bare ground	<5												
% Leaf litter	15 – 20												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T001

Topography , Soils and Geology	
Landform Situation:	Hills and Tablelands
Erosional Landform Pattern:	n/a
Slope Type:	Gently inclined
Altitude:	423m
Soils:	Observation (reliability low)
Soil Colour:	Pale Brown
Soil Texture:	Sandy
Geology:	Inferred (reliability high)
Geology:	
Geology Formation / Rock Type:	Sedimentary

Community Health and Condition	
Overall Health:	**Good**
Weed Species:	-
Weed Cover (%):	n/a
Disturbance:	Fire, Grazing
Disturbance Cover (%):	-

Survey Details	
Project Number:	301001–00448/1BV4010
Recorder/s:	Amy Kruger
Field Site Number:	AQT001
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	25/09/2009 (12:36)

VEGETATION SURVEY

T002

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.10.13a/11.10.7**
EPBC Status:	
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.10.13a/11.10.13a/11.10.7/11.10.9/11.10.13a
Width of Vegetation:	>300m
Total Area of Vegetation:	>50ha

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP 103.5
Photo Numbers:	020 – 021
Datum:	WGS84
Easting / Northing (Precision):	56J 0235358 7181515 (+/-5m)

Vegetation Community Description

Open forest to woodland to 15 – 20m tall on lower slope. Canopy is dominated by *Eucalyptus crebra* with *Corymbia bunites*, *Eucalyptus cloeziana, Brachychiton populneus.* Sparse midstorey to 10 – 12m tall of canopy recruits.
Dense shrublayer to 1 – 3m of Acacia species. Dense groundlayer of native grasses to 1m tall.
Some logs and stags present.
Good condition. Some fire and track disturbance.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m²/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	S2	T3	S1
Eucalyptus crebra	D		18	10						4	2		
Eucalyptus cloeziana	A		18	10						3			
Coymbia bunites	A		15	10						1	3		
Brachychiton populneus	A		18							1			
Acacia spectabilis						4							
Acacia decora						3							
Acacia falcata						3							
Triodia scariosa								1					
% Rock	0												
% Bare ground	5												
% Leaf litter	10 – 20												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T002

Topography , Soils and Geology	
Landform Situation:	Hills and tablelands
Erosional Landform Pattern:	n/a
Slope Type:	Very gently inclined
Altitude:	380m
Soils:	Observation (reliability low)
Soil Colour:	Brown
Soil Texture:	Sandy
Geology:	Inferred (reliability high)
Geology:	Sandstone
Geology Formation / Rock Type:	Sedimentary

Community Health and Condition	
Overall Health:	**Good**
Weed Species:	-
Weed Cover (%):	n/a
Disturbance:	Fire and tracks
Disturbance Cover (%):	5

Survey Details	
Project Number:	301001–00448/1BV4010
Recorder/s:	Amy Kruger
Field Site Number:	AQT002
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	25/09/2009 (15:15)

VEGETATION SURVEY

T003

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.12.1/11.10.9**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.12.1/11.10.9
Width of Vegetation:	>300m
Total Area of Vegetation:	>50ha

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP 106.6
Photo Numbers:	022 – 023
Datum:	WGS84
Easting / Northing (Precision):	56J 0236264 7184234

Vegetation Community Description

Eucalyptus crebra woodland to 10 – 12m tall on upper slopes of small rise. Canopy is open with occasional *Brachychiton populneus* present. Very sparse midstorey of canopy recruits to 5 – 8m tall. Sparse shrublayer of *Geijera parviflora, Opuntia tomentosa, Petalostigma pubescens* and *Callitris glaucophylla*. Dense ground layer to 1m tall.
Good condition some logs and stags present.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m²/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	S2	T3	S1
Eucalyptus crebra			10							9			
Brachychiton populneus			10	6									
Callitris glaucophylla						3							
Petalostigma pubescens						1							
Geijera parviflora						1							
Opuntia tomentosa						1							
Aristida calycina								0.5					
Sclerolaena spp.								0.5					
Acacia decora						1							
Lomandra spp.								0.3					
Dianella revolute								0.5					
Cassytha lasiantha						0.7							
Hibbertia spp.								0.1					
% Rock	10												
% Bare ground	<5												
% Leaf litter	<5												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T003

Topography , Soils and Geology	
Landform Situation:	Hills and tablelands
Erosional Landform Pattern:	n/a
Slope Type:	Gently inclined
Altitude:	364m
Soils:	Observation (reliability low)
Soil Colour:	Pale Brown
Soil Texture:	Sandy
Geology:	Inferred (reliability high)
Geology:	
Geology Formation / Rock Type:	Igneous / sedimentary

Community Health and Condition	
Overall Health:	**Good**
Weed Species:	*Opuntia tomentosa*
Weed Cover (%):	<5
Disturbance:	-
Disturbance Cover (%):	n/a

Survey Details	
Project Number:	301001–00448/1BV4010
Recorder/s:	Amy Kruger
Field Site Number:	AQT003
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	26/09/2009 (10:30)

VEGETATION SURVEY

T004

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.3.25**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.3.4 / 11.3.25
Width of Vegetation:	>30m
Total Area of Vegetation:	>50ha

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP 182.6
Photo Numbers:	059 - 060
Datum:	WGS84
Easting / Northing (Precision):	56J 0244953 7254696 (+/-5m)

Vegetation Community Description

Creekline dominated by *Melaleuca bracteata, M. viminalis* and *M. nodosa* to 4 – 8m tall. Dense canopy. Sparse grassy layer of native species, becoming more dense on the banks. Average to good condition with evidence of rabbit diggings and weeds (mostly *Bryophyllum delagoense*).
This is a break in the canopy (200m) up and down stream of the site which is dominated by *Eucalyptus tereticornis* to 15 – 20m tall. With a mid-dense to sparse melaleuca midstorey and sparse groundcover.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m²/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	S2	T3	S1
Melaleuca bracteata	D			5									
Melaleuca viminalis	C			6									
Melaleuca nodosa	C			5									
Eucalyptus tereticornis			18										
Heteropogon contortus								1					
Aristida spp.								1					
Themeda arguens								1					
Bryophyllum delagoense								0.2					
% Rock	0												
% Bare ground	0												
% Leaf litter	<5												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T004

Topography , Soils and Geology	
Landform Situation:	Channel
Erosional Landform Pattern:	n/a
Slope Type:	Level
Altitude:	300m
Soils:	Observation (reliability low)
Soil Colour:	Yellow
Soil Texture:	Sandy
Geology:	Inferred (reliability high)
Geology:	Alluvial
Geology Formation / Rock Type:	Unconsolidated

Community Health and Condition	
Overall Health:	**Average to Good**
Weed Species:	*Bryophyllum delagoense*
Weed Cover (%):	<5
Disturbance:	Rabbit diggings, weeds
Disturbance Cover (%):	<5

Survey Details	
Project Number:	301001–00448/1BV4010
Recorder/s:	Amy Kruger
Field Site Number:	AQT004
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	27/09/2009 (13:36)

VEGETATION SURVEY

T005

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.3.2/11.3.25**
EPBC Status:	**n/a**
VMA Status:	**Of Concern**
EPA Status:	**Of Concern**
DNRW Mapped as:	11.3.2/11.3.25
Width of Vegetation:	170m
Total Area of Vegetation:	<50ha

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP157
Photo Numbers:	P004 – P006
Datum:	UTM
Easting / Northing (Precision):	56J 0242574 7231027

Vegetation Community Description

Site is mapped as RE 11.3.2 / 11.3.25. Site is a disturbed dry ephemeral drainage line. The stream bed itself consists of RE 11.3.25 and the upper terraces are representative of RE 11.3.2. The vegetation was dominated by *Melaleuca trichostachya* to a height of 8m with some scattered *Eucalyptus melanophloia* emerging. The upper terraces were dominated by *Eucalyptus populnea* with a shrub layer consisting of mostly *Eremophila mitchellii*.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m²/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	T2	T3	S1
Eucalyptus tereticornis	S		15							7			
Eucalyptus melanophloia	A		15							1			
Melaleuca trichostachya	D				4							**3**	
Geijera parviflora	A						3						
Goodenia rotundifolia								0.3					
Opuntia stricta	##							0.5					
Lomandra spp.								0.5					
Aristida spp.								0.5					
Themeda triandra								0.5					
% Rock	0												
% Bare ground	10												
% Leaf litter	10												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T005

Topography , Soils and Geology	
Landform Situation:	D - Gully / Drainage Line. (Ephemeral and currently dry)
Erosional Landform Pattern:	Undulating Hills
Slope Type:	Gently Inclined
Altitude:	340 - 360
Soils:	Observation (reliability low)
Soil Colour:	Brown Red
Soil Texture:	Sandy
Geology:	Inferred (reliability high)
Geology Code:	
Geology Formation / Rock Type:	Unconsolidated

Community Health and Condition	
Overall Health:	**Moderate**
Weed Species:	*Opuntia stricta*
Weed Cover (%):	< 5%
Disturbance:	Grazing and Vehicle tracks
Disturbance Cover (%):	5%

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	1T1.1
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	29/09/2009

VEGETATION SURVEY

T006

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.12.6**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.12.6/11.12.1/11.3.26
Width of Vegetation:	>2km
Total Area of Vegetation:	>100ha

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 160.3
Photo Numbers:	P011
Datum:	UTM
Easting / Northing (Precision):	56J 0241992 7234164

Vegetation Community Description

Woodland consisting of predominately *Eucalyptus crebra* and *Eucalyptus tereticornis*. Other trees include *Corymbia erythrophloia* and *Corymbia tessellaris*. Shrub layer mostly consists of *Alphitonia excelsa*. *Aristida* spp. dominated the ground stratum

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m²/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	T2	T3	S1
Eucalyptus crebra	D		18							1	2		
Eucalyptus tereticornis	S			15							1		
Corymbia erythrophloia	S			12							1		
Eucalyptus moluccana	A		18							1			
Alphitonia excelsa	A				5								
Acacia leiocalyx					5								
Acacia stenophylla					5								
Eremophila mitchellii							2						
Opuntia stricta	##						1						
Lomandra multiflora								0.5					
Arundinella nepalensis								0.5					
Aristida caput-medusae								0.5					
% Rock	0												
% Bare ground	20												
% Leaf litter	10												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T006

Topography , Soils and Geology	
Landform Situation:	Slope / Hill
Erosional Landform Pattern:	Undulating Rises
Slope Type:	Gently to Moderately inclined
Altitude:	420 - 440
Soils:	Observation (reliability low)
Soil Colour:	Light Brown
Soil Texture:	Loamy
Geology:	Inferred (reliability high)
Geology Code:	Granite
Geology Formation / Rock Type:	Igneous Rocks Intrusive

Community Health and Condition	
Overall Health:	**Good**
Weed Species:	*Opuntia stricta*
Weed Cover (%):	< 5
Disturbance:	-
Disturbance Cover (%):	0

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	1T1.2
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	29/09/2009

VEGETATION SURVEY

T007

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.12.6**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.12.6 / 11.12.1
Width of Vegetation:	5km
Total Area of Vegetation:	>50 ha

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 164
Photo Numbers:	P015
Datum:	UTM
Easting / Northing (Precision):	56J 0242764 7237874

Vegetation Community Description

Eucalyptus moluccana dominated woodland. The vegetation in this area is generally thicker and could be considered an open forest. Other tree species include *Eucalyptus crebra*. Shrub layer dominated by acacia species with limited *Alphitonia excelsa* compared to T1.2. Limited ground cover species in this area.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m²/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	T2	T3	S1
Eucalyptus moluccana	D	20	15	10	6				2	3	2	**2**	
Eucalyptus crebra	A		15							1			
Alphitonia excelsa					8	4	2						
Digitaria								0.5					
% Rock	10												
% Bare ground	10												
% Leaf litter	10												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T007

Topography , Soils and Geology	
Landform Situation:	Slope / Hill
Erosional Landform Pattern:	Undulating Rises
Slope Type:	Gently to Moderately inclined
Altitude:	420 - 440
Soils:	Observation (reliability low)
Soil Colour:	Light Brown
Soil Texture:	Loamy
Geology:	Inferred (reliability high)
Geology:	Granite
Geology Formation / Rock Type:	Igneous Rocks Intrusive

Community Health and Condition	
Overall Health:	**Moderate to Good**
Weed Species:	-
Weed Cover (%):	-
Disturbance:	Logging
Disturbance Cover (%):	< 5

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	1T1.3
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	29/09/2009

VEGETATION SURVEY

T008

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**Non-Remnant**
EPA Status:	**n/a**
DNRW Mapped as:	Non-Remnant
Width of Vegetation:	40 – 60 metres
Total Area of Vegetation:	<50ha

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 277.6
Photo Numbers:	P017
Datum:	UTM
Easting / Northing (Precision):	56 J 0267972 7325902

Vegetation Community Description

Melaleuca dominated open forest on alluvial flats associated with a larger ephemeral watercourse (Bell Creek). A thick cover of *Lantana camara* dominates the shrub layer with some *Melaleuca* regrowth. A wide variety of tree species occur in this community. Other tree species occurring in this community include: *Casuarina cunninghamiana*, *Melaleuca viminalis*, *Ficus opposita* and *Ficus platypoda*.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m²/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	T2	T3	S1
Melaleuca leucadendra	D	22	18	14	10				3	4	2	**3**	
Casuarina cunninghamiana	D		18							2			
Eucalyptus tereticornis	A		16										
Corymbia tessellaris	A			14									
Acacia salicina	A				10	8							
Melaleuca viminalis	A						4						
Acacia semilunata							2						
Ficus opposita							4						
Lantana camara								2					
Lantana montevidensis								0.5					
Digitaria ciliaris								0.5					
% Rock	0												
% Bare ground	50												
% Leaf litter	10												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T008

Topography , Soils and Geology	
Landform Situation:	Stream
Erosional Landform Pattern:	Undulating Rises
Slope Type:	Gently to Moderately inclined
Altitude:	310 - 340
Soils:	Observation (reliability low)
Soil Colour:	Brown Yellow
Soil Texture:	Gravelly Sand
Geology:	Inferred (reliability high)
Geology:	Sand
Geology Formation / Rock Type:	Unconsolidated

Community Health and Condition	
Overall Health:	**Moderate to Good**
Weed Species:	-
Weed Cover (%):	-
Disturbance:	Grazing
Disturbance Cover (%):	< 5

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	1T2.1
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	30/09/2009

VEGETATION SURVEY

T009

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE Non-remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-remnant
Width of Vegetation:	200m
Total Area of Vegetation:	>50ha

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP 275.6
Photo Numbers:	21 - 24
Datum:	WGS84
Easting / Northing (Precision):	56J 0267639 7323884

Vegetation Community Description

On top of the Calliope Range. Grazing land with scattered eucalypts with rocky outcrops and steep slopes. The vegetation is non-remnant due to the lack of abundance of mature trees. Dominant trees are *Eucalyptus crebra* and bloodwood spp.
EVR – *Cycas megacarpa* observed throughout this area. Easily 100+ examples. Some damage to the *Cycas* was observed.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m²/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	T2	T3	S1
Corymbia erythrophloia	S			10									
Eucalyptus melanophloia	D			10						1			
Ficus platypoda			12							1			
Erythrina vespertilio					8								
Eucalyptus crebra					8								
Cycas megacarpa	EVR						1						
Aristida spp.								0.5					
% Rock	40												
% Bare ground	20												
% Leaf litter	<5												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T009

Topography , Soils and Geology	
Landform Situation:	Steep Slope
Erosional Landform Pattern:	Steep Hills
Slope Type:	Steep
Altitude:	400 – 430m
Soils:	Observation (reliability low)
Soil Colour:	Grey Yellow
Soil Texture:	Sandy Loam
Geology:	Inferred (reliability high)
Geology:	Granite
Geology Formation / Rock Type:	Igneous Rocks - Intrusive

Community Health and Condition	
Overall Health:	**Moderate**
Weed Species:	*Erythrina vespertilio*
Weed Cover (%):	5
Disturbance:	Clearing for improved pastures. *Cycas megacarpa* damaged by recent earthworks.
Disturbance Cover (%):	50

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	1T2.2
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	30/09/2009

VEGETATION SURVEY

T010

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.11.15**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.11.15/11.11.15/11.11.15/11.11.4
Width of Vegetation:	>1km
Total Area of Vegetation:	>100ha

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP 269.2
Photo Numbers:	42 - 48
Datum:	WGS 84
Easting / Northing (Precision):	0263766 E 7319340 N

Vegetation Community Description

Located on top of a ridge which will be scalped and used for the pipeline. The tertiary survey runs along the ridge in a similar direction to the proposed pipeline. This is in the middle of a large patch of remnant vegetation. *Eucalyptus crebra* dominates the tree layer, with *Acacia* spp., *Geijera parviflora* and *Eremophila mitchellii* dominating the shrub layer. The ground cover consisted of pastoral grass species. .

EVR

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m²/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	T2	T3	S1
Eucalyptus crebra	D			10	4					8			
Corymbia erythrophloia	S			8	4					2			
Eremophila mitchellii					4	2							
Petalostigma pubescens						3							
Geijera parviflora						2							
Acacia decora						2							
Acacia julifera						2							
Cycas megacarpa	EVR						1						
Aristida caput-medusae								0.3					
Dianella revoluta								0.4					
% Rock	10												
% Bare ground	10												
% Leaf litter	10												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T010

Topography , Soils and Geology	
Landform Situation:	Steep Slope
Erosional Landform Pattern:	Steep Hills
Slope Type:	Steep
Altitude:	370m
Soils:	Observation (reliability low)
Soil Colour:	Grey Yellow
Soil Texture:	Sandy Loam
Geology:	Inferred (reliability high)
Geology:	Igneous
Geology Formation / Rock Type:	Igneous Rocks Volcanic

Community Health and Condition	
Overall Health:	**Good**
Weed Species:	-
Weed Cover (%):	n/a
Disturbance:	Old road
Disturbance Cover (%):	<5

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	1T3.1
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	01/10/2009 (9:39)

VEGETATION SURVEY

T011

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.3.25**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.11.15/11.3.25/11.11.4/11.11.4a
Width of Vegetation:	Narrow stream 50m
Total Area of Vegetation:	<100ha

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP 263.6
Photo Numbers:	57 – 58
Datum:	WGS84
Easting / Northing (Precision):	0258842 E 7318341 N

Vegetation Community Description

An ephemeral stream. Vegetation is dominated by *Melaleuca bracteata, Casuarina cunninghamiana* and *Melaleuca viminalis* growing within in the alluvial gravel and along the narrow strip of vegetation on the bank. The area surrounding the stream to the west is not remnant vegetation. However, it consists of *Eucalyptus tereticornis* and *Eucalyptus crebra*

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m²/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	T2	T3	S1
Melaleuca bracteata	D			8						3			
Eucalyptus tereticornis	S		15	10						2			
Eucalyptus crebra	S		14							1			
Corymbia tessellaris	S		12										
Corymbia clarksoniana	A		14										
Melaleuca trichostachya	S				6								
Melaleuca viminalis	S				3								
Lantana camara						1.5							
Agave americana							1						
Acacia decora							1.5						
Aristida caput-medusae								0.3					
Argemone ochroleuca ssp. *ochroleuca*								0.6					
% Rock	10												
% Bare ground	40												
% Leaf litter	<5												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T011

Topography , Soils and Geology	
Landform Situation:	Channel
Erosional Landform Pattern:	n/a
Slope Type:	Very Gently Inclined
Altitude:	275m
Soils:	Observation (reliability low)
Soil Colour:	Yellow brown
Soil Texture:	Gravelly Sand
Geology:	Inferred (reliability high)
Geology:	Alluvial sand
Geology Formation / Rock Type:	Unconsolidated

Community Health and Condition	
Overall Health:	**Moderate**
Weed Species:	*Lantana camara, Agave americana, Argemone ochroleuca*
Weed Cover (%):	10 -20
Disturbance:	Selective Clearing – non remnant to the west
Disturbance Cover (%):	10 - 15

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	1T3.2
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	01/10/2009 16:11

VEGETATION SURVEY

T012

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.10.11a / 11.10.1**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.10.1
Width of Vegetation:	>2km
Total Area of Vegetation:	>100ha

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP 257.8
Photo Numbers:	82 - 83
Datum:	WGS84
Easting / Northing (Precision):	56J 253972 7318404

Vegetation Community Description

Along the northern side of the Dawson highway in a mixed dry vine forest / eucalypt woodland community within the road reserve. The road reserve boarders the timber reserve and forms a large remnant patch of vegetation containing both of these vegetation types. Mixed eucalypts and vine forest species dominate.
EVR – *Acacia pedleyi* more than 10 specimens are located in this area.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m²/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	T2	T3	S1
Eucalyptus moluccana			22	16	7					2	2		
Eucalyptus crebra				14	8						3		
Brachychiton populneus					8	3							
Acacia excelsa						3							
Alectryon oleifolius							1.5						
Acacia pedleyi	EVR						1.5						
Pandorea pandorana							1						
% Rock	<5												
% Bare ground	<5												
% Leaf litter	80												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T012

Topography , Soils and Geology	
Landform Situation:	Hills and Tablelands
Erosional Landform Pattern:	n/a
Slope Type:	Very Gently Inclined
Altitude:	345m
Soils:	Observation (reliability low)
Soil Colour:	Brown
Soil Texture:	Loamy Sand
Geology:	Inferred (reliability high)
Geology:	Sandstone Ranges
Geology Formation / Rock Type:	Sedimentary

Community Health and Condition	
Overall Health:	**Good**
Weed Species:	*Lantana montevidensis, Opuntia tomentosa*
Weed Cover (%):	<5
Disturbance:	Tracks
Disturbance Cover (%):	<5

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	1T4.1
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	02/10/2009

VEGETATION SURVEY

T013

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.10.11a**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.10.1
Width of Vegetation:	>2km
Total Area of Vegetation:	>100ha

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP 258.6
Photo Numbers:	91 - 93
Datum:	WGS84
Easting / Northing (Precision):	56J 0254579 7318902

Vegetation Community Description

Large patch of remnant vegetation in the range area north of the Dawson Highway. *Eucalyptus moluccana* forms almost a monoculture as little other tree species are present in this area. The shrub layer mostly consists of *Acacia* spp and numerous *Alectryon oleifolius*. Other species surrounding the site include*: Calytrix glaucophylla* and *Eucalyptus fibrosa*.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m²/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	T2	T3	S1
Eucalyptus moluccana	D		18	14									
Acacia leiocalyx						6	2						
Alectryon oleifolius						3.5	2						
Opuntia tomentosa							1						
Opuntia stricta							0.5						
Cymbopogon refractus								0.3					
Aristida caput-medusae								0.3					
% Rock	0												
% Bare ground	10												
% Leaf litter	60												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T013

Topography , Soils and Geology	
Landform Situation:	Hills and Tablelands
Erosional Landform Pattern:	n/a
Slope Type:	Very Gently Inclined
Altitude:	355m
Soils:	Observation (reliability low)
Soil Colour:	Brown grey
Soil Texture:	Loamy Sand
Geology:	Inferred (reliability high)
Geology:	Sandstone Ranges
Geology Formation / Rock Type:	Sedimentary

Community Health and Condition	
Overall Health:	**Good**
Weed Species:	-
Weed Cover (%):	n/a
Disturbance:	Selective logging
Disturbance Cover (%):	<5 %

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	1T4.2
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	02/10/2009 (15:35)

VEGETATION SURVEY

T014

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.10.1 / 11.10.11a**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.10.1
Width of Vegetation:	>2km
Total Area of Vegetation:	>100ha

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP 257
Photo Numbers:	97 – 103
Datum:	WGS 84
Easting / Northing (Precision):	

Vegetation Community Description

The site is located in the road reserve to the north of the Dawson Highway. The vegetation is a real mixture of woodland and vine forest vegetation. Community exists as *Eucalyptus moluccana* and *Corymbia citriodora* woodland with a vine forest understorey and shrubbery.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m²/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	T2	T3	S1
Eucalyptus moluccana	C		20	15	8					1	1	**2**	
Corymbia citriodora	D		22	15	8					1	1	**4**	
Eucalyptus crebra				12							1		
Eucalyptus tereticornis				14							1		
Acacia excelsa						4							
Acacia pedleyi							2						
Cupaniopsis anacardioides						3							
Alchornea ilicifolia							1						
Alectryon diversifolius							1						
Dodonaea viscosa							1.5						
Myoporum spp.							1.5						
Macfadyena unguis-cati							3						
Cynanchum bowmanii							3						
Pandorea pandorana							3						
% Rock	5												
% Bare ground	5												
% Leaf litter	80												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T014

Topography , Soils and Geology	
Landform Situation:	Hills and Tablelands
Erosional Landform Pattern:	n/a
Slope Type:	Very Gently Inclined
Altitude:	345m
Soils:	Observation (reliability low)
Soil Colour:	Grey yellow
Soil Texture:	Loamy Sand
Geology:	Inferred (reliability high)
Geology:	Sandstone Ranges
Geology Formation / Rock Type:	Sedimentary

Community Health and Condition	
Overall Health:	**Good**
Weed Species:	*Macfadyena unguis-cati, Lantana camara*
Weed Cover (%):	5 - 10
Disturbance:	Tracks, Grazing, Weeds
Disturbance Cover (%):	10

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	1T5.1
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	03/10/2009 (9:26)

VEGETATION SURVEY

T015

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.9.1**
EPBC Status:	**Endangered**
VMA Status:	**Endangered**
EPA Status:	**Endangered**
DNRW Mapped as:	11.9.1
Width of Vegetation:	200m
Total Area of Vegetation:	6ha

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	200m east of 237.1
Photo Numbers:	119 – 130
Datum:	WGS84
Easting / Northing (Precision):	56J 0237625 7307135

Vegetation Community Description

This site is surrounded by grazing properties. The community exists as an isolated remnant patch of *Acacia harpophylla* with some tall emergent *Eucalyptus cambageana* with Gilgai present. Some moratorium regrowth vegetation is correctly mapped to the west of the site however the actual extent of the regrowth vegetation and the polygons on the map do not correctly align. This vegetation community is listed as **Endangered** under Commonwealth and State legislation. This vegetation community will not be affected by the proposed alignment corridor.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m²/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	T2	T3	S1
Eucalyptus cambageana	S		15	10	6		2			3	7		
Acacia harpophylla	D	22	15						2	3			
Lysiphyllum carronii							2						
Alectryon diversifolius							1						
Geijera parviflora							2						
% Rock	0												
% Bare ground	40												
% Leaf litter	40												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T015

Topography , Soils and Geology	
Landform Situation:	Plains
Erosional Landform Pattern:	n/a
Slope Type:	Black soil
Altitude:	155
Soils:	Observation (reliability low)
Soil Colour:	Black brown
Soil Texture:	Heavy clay
Geology:	Inferred (reliability high)
Geology:	Clay sediments
Geology Formation / Rock Type:	Sedimentary

Community Health and Condition	
Overall Health:	**Good**
Weed Species:	-
Weed Cover (%):	n/a
Disturbance:	Compaction, grazing
Disturbance Cover (%):	10

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	1T5.2
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	03/10/2009 (15:27)

VEGETATION SURVEY

T016

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.12.17/11.12.1**
EPBC Status:	**n/a**
VMA Status:	**Endangered**
EPA Status:	**Endangered**
DNRW Mapped as:	Non-Remnant
Width of Vegetation:	100m
Total Area of Vegetation:	>13ha

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP 144
Photo Numbers:	168 – 171
Datum:	WGS84
Easting / Northing (Precision):	56J 0209646 7083525

Vegetation Community Description

Narrow patch of moratorium regrowth vegetation located just above an ephemeral stream system. The site could potentially be remnant vegetation (RE 11.12.2 – *Eucalyptus populnea* woodland). The best quality vegetation occurs within the road reserve. The shrub layer is almost exclusively *Eremophila mitchellii*. The new alignment for the pipeline misses this area of vegetation.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m²/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	T2	T3	S1
Eucalyptus populnea	D		14	12	8					2	1	3	
Eucalyptus melanopholia	S				8							1	
Eremophila mitchellii	A					4	2						
Dianella revolute								0.6					
Opuntia tomentosa							1						
Aristida calycina								0.4					
Digitaria ammophila								0.4					
% Rock	0												
% Bare ground	20												
% Leaf litter	40												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T016

Topography , Soils and Geology	
Landform Situation:	Tablelands
Erosional Landform Pattern:	Gently undulating Rises
Slope Type:	Very Gently inclined
Altitude:	340
Soils:	Observation (reliability low)
Soil Colour:	Brown
Soil Texture:	Sandy Loam
Geology:	Inferred (reliability high)
Geology:	Igneous rocks and derived sediments
Geology Formation / Rock Type:	Igneous Rocks – Intrusive

Community Health and Condition	
Overall Health:	**Good**
Weed Species:	*Opuntia tomentosa*
Weed Cover (%):	<5%
Disturbance:	Weed, tracks
Disturbance Cover (%):	5

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	1T6.1
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	05/10/2009

VEGETATION SURVEY

T017

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.7.4 / 11.7.5**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.7.4/11.7.7/11.7.5/11.7.2
Width of Vegetation:	>5km
Total Area of Vegetation:	>100ha

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	400m west of KP Con 12
Photo Numbers:	177 – 182
Datum:	WGS84
Easting / Northing (Precision):	56J 0224237 7058920

Vegetation Community Description

Lateritic crusts located around the site. Tree species dominating include *Eucalyptus crebra* and *Eucalyptus fibrosa*. A thick under tree shrub stratum consisting of *Allocasuarina luehmannii* and *Callitris endlicheri* occurs where there are no lateritic crusts. Other species in the area include: *Xanthorea johnsonii, Melaleuca uncinata, Hakea leucoptera*, *Acacia triptera, Micromyrtus sessilis* and *Corymbia leichhardtii*. High habitat values due to the floral diversity in the area.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m²/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	T2	T3	S1
Eucalyptus crebra	D		14	10						4			
Eucalyptus fibrosa	A		14							1			
Angophora leiocarpa	A		13							1			
Callitris endlicheri				10	8						1	1	
Allocasuarina luehmannii					7	3							
Acacia triptera							1						
Aristida caput-medusae								0.3					
% Rock	<5												
% Bare ground	45												
% Leaf litter	25												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T017

Topography , Soils and Geology	
Landform Situation:	Hills and Tablelands
Erosional Landform Pattern:	n/a
Slope Type:	Level
Altitude:	310m
Soils:	Observation (reliability low)
Soil Colour:	Red Grey and White
Soil Texture:	Loamy Sand
Geology:	Inferred (reliability high)
Geology:	Duricrust and associated sediments
Geology Formation / Rock Type:	Consolidated Weathering Features

Community Health and Condition	
Overall Health:	**Good**
Weed Species:	-
Weed Cover (%):	n/a
Disturbance:	Selective Logging , Grazing
Disturbance Cover (%):	<5

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	1T7.1
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	05/10/2009

VEGETATION SURVEY

T018

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.3.14**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at present**
DNRW Mapped as:	11.3.4 / Non Remnant
Width of Vegetation:	230m
Total Area of Vegetation:	>100ha

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	600m west of KP Con 11.5
Photo Numbers:	190 - 191
Datum:	WGS84
Easting / Northing (Precision):	56J 0224378 7058482

Vegetation Community Description

Dogwood Creek, the largest of the ephemeral streams surveyed during this site visit. The woodland vegetation surrounding the stream is in good condition. The tree species dominating the stream consist of exclusively 2 species: *Angophora leiocarpa* and *Eucalyptus camaldulensis* to 30 metres. The shrub layer is largely absent from the river terraces with *Leptospermum polygalifolium* and *Melaleuca viminalis* occurring on the stream bank itself. *Lomandra longifolia* occurs in numbers as a ground cover.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m²/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	T2	T3	S1
Angophora floribunda	D	25		10					7		5		
Eucalyptus tereticornis	S			10							3		
Lomandra longifolia								0.8					
Aristida spp.								0.3					
% Rock	5												
% Bare ground	5												
% Leaf litter	70												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T018

Topography , Soils and Geology	
Landform Situation:	Stream
Erosional Landform Pattern:	n/a
Slope Type:	Gently Inclined
Altitude:	305m
Soils:	Observation (reliability low)
Soil Colour:	Yellow grey
Soil Texture:	Sandy
Geology:	Inferred (reliability high)
Geology:	Alluvial terrace
Geology Formation / Rock Type:	Sedimentary

Community Health and Condition	
Overall Health:	**Good**
Weed Species:	-
Weed Cover (%):	n/a
Disturbance:	-
Disturbance Cover (%):	n/a

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	1T7.2
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	05/10/2009 (12:56)

VEGETATION SURVEY

T019

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.7.4**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at present**
DNRW Mapped as:	11.7.4
Width of Vegetation:	>2km
Total Area of Vegetation:	>100ha

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP Con 7
Photo Numbers:	200 - 201
Datum:	WGS84
Easting / Northing (Precision):	56J 0226036 7054560

Vegetation Community Description

One of the larger remnant patches affected by the southern lateral of the pipeline. *Eucalyptus crebra* dominates the trees in the area although many have been felled. However *Callitris glaucophylla* and *Allocasuarina luehmannii* form a continuous shrub layer. These two shrub species are easily the most numerous woody vegetation. The regionally significant flora species *Dodonaea macrossanii* was observed.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m²/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	T2	T3	S1
Eucalyptus crebra	A		20	14	10					1	2	4	
Allocasuarina luehmannii	D				10	4	2						
Callitris glaucophylla	S			12	8	4							
Dodonaea macrossanii								0.3					
Gahnia aspera								0.4					
Lomandra multiflora subsp. *multiflora*								0.3					
% Rock	0												
% Bare ground	60												
% Leaf litter	20												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T019

Topography , Soils and Geology	
Landform Situation:	Hills and Tablelands
Erosional Landform Pattern:	n/a
Slope Type:	Very Gently Inclined
Altitude:	335m
Soils:	Observation (reliability low)
Soil Colour:	Yellow Brown
Soil Texture:	Loamy Sand
Geology:	Inferred (reliability high)
Geology:	Duricrust and derived sediment
Geology Formation / Rock Type:	Consolidated Weathering Features

Community Health and Condition	
Overall Health:	**Good**
Weed Species:	-
Weed Cover (%):	n/a
Disturbance:	Selective logging, tracks
Disturbance Cover (%):	<5%

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	1T7.3
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	05/10/2009

VEGETATION SURVEY

T020

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.7.4**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.7.4
Width of Vegetation:	>2km
Total Area of Vegetation:	>100ha

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP Con 5.9
Photo Numbers:	207 – 208
Datum:	WGS84
Easting / Northing (Precision):	0225916 E 7053409 N

Vegetation Community Description

A large remnant community consisting of *Eucalyptus fibrosa* dominated woodland. The understorey is dominated by *Callitris glaucophylla* and *Allocasuarina luehmannii.* The ground layer is sparse and contains a high level of litter. The regionally significant flora species *Dodonaea macrossanii* was observed in this area.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m²/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	T2	T3	S1
Eucalyptus fibrosa	D		22	14	10					2	11		
Callitris glaucophylla					12								
Geijera parviflora						4							
Acacia semilunata							2						
Aristida caput-medusae								0.3					
% Rock	5												
% Bare ground	60												
% Leaf litter	<5												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T020

Topography , Soils and Geology	
Landform Situation:	Hills and Tablelands
Erosional Landform Pattern:	n/a
Slope Type:	Gently Inclined
Altitude:	345m
Soils:	Observation (reliability low)
Soil Colour:	Grey
Soil Texture:	Loamy Sand
Geology:	Inferred (reliability high)
Geology:	Duricrust and derived sediment
Geology Formation / Rock Type:	Consolidated Weathering Features

Community Health and Condition	
Overall Health:	**Good**
Weed Species:	-
Weed Cover (%):	n/a
Disturbance:	Selective Logging, some tracks, a new fence
Disturbance Cover (%):	10 – 20

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	1T8.1
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	06/10/2009 (08:51)

VEGETATION SURVEY

T021

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.7.4**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.7.4/11.7.7/11.7.5/11.7.2
Width of Vegetation:	>400m
Total Area of Vegetation:	>50ha

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP Com 3
Photo Numbers:	219 - 225
Datum:	WGS84
Easting / Northing (Precision):	0225883 E 7049923 N

Vegetation Community Description

A smaller remnant corridor between a powerline easement and cleared grazing lands. *Eucalyptus fibrosa* dominates the tree species and act as an emergent through the continuous thick understorey consisting of predominately *Acacia shirleyi* and *Callitris glaucophylla*. The ground layer is dominated by small rocky outcrops, fallen logs and leaf litter.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m²/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	T2	T3	S1
Eucalyptus fibrosa	D		20	14	10						2		
Acacia shirleyi					10	5						**7**	
Callitris glaucophylla					8	4	2					**6**	
Aristida spp.								0.3					
% Rock	10												
% Bare ground	70												
% Leaf litter	0												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T021

Topography , Soils and Geology	
Landform Situation:	Hills and Tablelands
Erosional Landform Pattern:	n/a
Slope Type:	Gently Inclined
Altitude:	360m
Soils:	Observation (reliability low)
Soil Colour:	Brown Grey
Soil Texture:	Loamy Sand
Geology:	Inferred (reliability high)
Geology:	Duricrust and derived sediment
Geology Formation / Rock Type:	Consolidated Weathering Features

Community Health and Condition	
Overall Health:	**Good**
Weed Species:	-
Weed Cover (%):	n/a
Disturbance:	Selective Logging, some tracks
Disturbance Cover (%):	10 – 20

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	1T8.2
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	06/10/2009 (12:48)

VEGETATION SURVEY

T022

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.7.4**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.7.4/11.7.7/11.7.5/11.7.2
Width of Vegetation:	>1km
Total Area of Vegetation:	>100ha

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	Con 003
Photo Numbers:	226 - 227
Datum:	WGS84
Easting / Northing (Precision):	0226079 E 7050526 N

Vegetation Community Description

A large remnant community consisting of *Eucalyptus fibrosa* dominated woodland. The shrub layer consists predominately of *Callitris glaucophylla* and *Acacia julifera*. The ground stratum contains a high number of *Gahnia aspera*. This area has lost a large number of tall *Eucalyptus fibrosa* to logging.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m²/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	T2	T3	S1
Eucalyptus fibrosa	D		18	12	9					4	3	1	
Callitris glaucophylla					10	4							
Acacia leiocalyx						2	1						
Gahnia aspera								0.5					
% Rock	20												
% Bare ground	10												
% Leaf litter	<5												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T022

Topography , Soils and Geology	
Landform Situation:	Hills and Tablelands
Erosional Landform Pattern:	n/a
Slope Type:	Gently inclined
Altitude:	360m
Soils:	Observation (reliability low)
Soil Colour:	Grey Yellow
Soil Texture:	Loamy Sand
Geology:	Inferred (reliability high)
Geology:	Duricrust and derived sands
Geology Formation / Rock Type:	Consolidated Weathering Features

Community Health and Condition	
Overall Health:	**Good**
Weed Species:	-
Weed Cover (%):	n/a
Disturbance:	Selective Logging, some tracks
Disturbance Cover (%):	10 – 20

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	1T8.3
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	06/11/2009 (14:12)

VEGETATION SURVEY

T023

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.10.1**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.10.1
Width of Vegetation:	0.33 km
Total Area of Vegetation:	>100 ha

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 254.9
Photo Numbers:	297 - 298
Datum:	WGS 84
Easting / Northing (Precision):	56J 0251632m E 7316937m N (+/-5m)

Vegetation Community Description

This site is located on some coarse grain sediments ranging from white to red in colour. The site is a small jump-up style geological formation. A thick shrub layer dominated by *Acacia* species was locally dominant in places. The site was utilised as grazing land however only limited grasses were present on the jump-up so grazing pressure was naturally low.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – $1m^2$/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	T2	T3	S1
Eucalyptus crebra	D		18	15						2	1		
Angophora leiocarpa	S		20	15							1		
Corymbia hendersonii	S			12	5							1	
Corymbia trachyphloia	S			15	5							1	
Acacia decora							2						
Themeda triandra								0.5					
% Rock	25												
% Bare ground	5												
% Leaf litter	10												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T023

Topography , Soils and Geology	
Landform Situation:	Slopes
Erosional Landform Pattern:	Undulating Low Hills
Slope Type:	Moderately Inclined
Altitude:	330 m
Soils:	Observation (reliability low)
Soil Colour:	Red and White
Soil Texture:	Sandy (Coarse)
Geology:	Inferred (reliability high)
Geology:	Sandstone ranges
Geology Formation / Rock Type:	Sandstone

Community Health and Condition	
Overall Health:	**Moderate**
Weed Species:	-
Weed Cover (%):	-
Disturbance:	Grazing and Selective Clearing
Disturbance Cover (%):	5 - 10

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2T1.1
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	16/10/2009 (14:04)

VEGETATION SURVEY

T024

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE Non - Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non - Remnant
Width of Vegetation:	0.35 km
Total Area of Vegetation:	35 ha

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 214.9
Photo Numbers:	314 - 316
Datum:	WGS 84
Easting / Northing (Precision):	56J 0238663m E 7285402m N (+/-5m)

Vegetation Community Description

The site is a non-remnant open woodland patch used for grazing cattle. The site contains little diversity of woody species and it is difficult to locate any woody vegetation other than *Eucalyptus melanophloia.* The shrub layer was almost completely absent. The groundcover was dominated by the exotic *Cenchrus ciliaris*.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m^2/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	T2	T3	S1
Eucalyptus melanophloia	D		18	10	5					4	1		
Cenchrus ciliaris								0.4					
Cymbopogon refractus								0.4					
Enneapogon avenaceus								0.3					
% Rock	5												
% Bare ground	5												
% Leaf litter	5												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T024

Topography , Soils and Geology	
Landform Situation:	Slopes
Erosional Landform Pattern:	Undulating Low Hills
Slope Type:	Moderately Inclined
Altitude:	235 m
Soils:	Observation (reliability low)
Soil Colour:	Brown Yellow
Soil Texture:	Sandy
Geology:	Inferred (reliability high)
Geology:	Igneous derived sediments
Geology Formation / Rock Type:	Igneous Rocks - Intrusive

Community Health and Condition	
Overall Health:	**Poor to Moderate**
Weed Species:	*Cenchrus ciliaris*
Weed Cover (%):	15 - 50
Disturbance:	Grazing
Disturbance Cover (%):	5

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2T2.1
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	17/10/2009 (11:33)

VEGETATION SURVEY

T025

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.12.1**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.12.1 / 11.3.25
Width of Vegetation:	1.2 km
Total Area of Vegetation:	>100 ha

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 172.3
Photo Numbers:	323 - 326
Datum:	WGS 84
Easting / Northing (Precision):	56J 0244930m E 7244742m N (+/-5m)

Vegetation Community Description

The site is an open woodland remnant used intermittently for grazing cattle. The area is in reasonable quality and shows no signs of being overgrazed. The site contains little diversity of woody species and the shrub layer was almost completely absent. The groundcover was typical of most sites In the area.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m^2/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	T2	T3	S1
Eucalyptus crebra	D		18	10	5						2		
Corymbia erythrophloia	S			9	5						3		
Cenchrus ciliaris								0.4					
Digitaria ciliaris								0.4					
Lomandra patens								0.2					
Aristida calycina var calycina								0.4					
Aristida caput-medusae								0.4					
% Rock	5												
% Bare ground	5												
% Leaf litter	5												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T025

Topography , Soils and Geology	
Landform Situation:	Flat Gentle Slopes
Erosional Landform Pattern:	Level Plain
Slope Type:	Gently Undulating Rises
Altitude:	390 m
Soils:	Observation (reliability low)
Soil Colour:	Light Brown
Soil Texture:	Sandy
Geology:	Inferred (reliability high)
Geology:	Igneous derived sediments
Geology Formation / Rock Type:	Igneous Rocks - Intrusive

Community Health and Condition	
Overall Health:	**Moderate to Good**
Weed Species:	*Opuntia tomentosa*
Weed Cover (%):	5
Disturbance:	Grazing
Disturbance Cover (%):	<5

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2T2.2
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	17/10/2009 (16:00)

VEGETATION SURVEY

T026

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.5.1**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.5.1 / 11.5.1a / 11.5.4
Width of Vegetation:	>10 km
Total Area of Vegetation:	>100 ha

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 10.4
Photo Numbers:	366 - 369
Datum:	WGS 84
Easting / Northing (Precision):	56J 0220282m E 7096414m N (+/-5m)

Vegetation Community Description

This site is located on the edge of a large remnant and a large grazed paddock. The vegetation in the area is dominated by *Eucalyptus crebra*. There is a narrow strip of vegetation dominated by Brigalow at the northern edge of this patch. The Regional Ecosystem Mapping shows a reasonably large polygon mapped as 11.9.5 to the north east of the site. This community does not exist and is incorrectly mapped. This area is devoid of trees and has been so for a long period of time.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m^2/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	T2	T3	S1
Eucalyptus crebra	D			10	8						2	2	
Brachychiton populneus	S				6								
Callitris glaucophylla	S				6							1	
Geijera parviflora	A					3							
Alectryon oleifolius oleifolius						5							
Psydrax oleifolia						4							
Bursaria spinosa							1						
Digitaria ciliaris								0.4					
Aristida calycina var calycina								0.4					
Aristida caput-medusae								0.4					
% Rock	0												
% Bare ground	10												
% Leaf litter	50												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T026

Topography , Soils and Geology	
Landform Situation:	Plain
Erosional Landform Pattern:	Level Plain
Slope Type:	Very Gently Inclined
Altitude:	370 m
Soils:	Observation (reliability low)
Soil Colour:	Whitish Grey
Soil Texture:	Sandy Loam
Geology:	Inferred (reliability high)
Geology:	Sand plains
Geology Formation / Rock Type:	Sedimentary

Community Health and Condition	
Overall Health:	**Moderate**
Weed Species:	-
Weed Cover (%):	n/a
Disturbance:	Fence lines and Selective Clearing
Disturbance Cover (%):	5 -10

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2T5.1
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	20/10/2009 (08:44)

VEGETATION SURVEY

T027

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.5.1**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.5.1 / 11.5.1a / 11.5.4
Width of Vegetation:	>10 km
Total Area of Vegetation:	>100 ha

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 8
Photo Numbers:	373 - 375
Datum:	WGS 84
Easting / Northing (Precision):	56J 0220093m E 7094082m N (+/-5m)

Vegetation Community Description

This site is located west of Quandong State Forest, one of the smaller state forests in the area. The vegetation in the area is dominated by *Eucalyptus crebra*. The large mature trees have been selectively cleared from this area and the site appears to be intermittently used to graze cattle. Land to the north is used as cropland.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m²/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	T2	T3	S1
Eucalyptus crebra	D			10	7						4	2	
Allocasuarina luehmannii	S					4						1	
Geijera parviflora	S					4	2						
Parsonsia eucalyptophylla							2						
Gahnia aspera								0.3					
Dianella revoluta var *revoluta*								0.2					
Cymbopogon refractus								0.4					
Aristida caput-medusae								0.4					
% Rock	0												
% Bare ground	10												
% Leaf litter	50												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T027

Topography , Soils and Geology	
Landform Situation:	Plain
Erosional Landform Pattern:	Level Plain
Slope Type:	Level
Altitude:	375 m
Soils:	Observation (reliability low)
Soil Colour:	Grey
Soil Texture:	Sandy Loam
Geology:	Inferred (reliability high)
Geology:	Sand plains
Geology Formation / Rock Type:	Sedimentary

Community Health and Condition	
Overall Health:	**Moderate**
Weed Species:	-
Weed Cover (%):	n/a
Disturbance:	Fence lines and Selective Clearing
Disturbance Cover (%):	5 -10

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2T5.2
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	20/10/2009 (14:36)

VEGETATION SURVEY

T028

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.7.7**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.7.2 / 11.7.7
Width of Vegetation:	1km
Total Area of Vegetation:	860 ha

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	500m east of KP 4.2
Photo Numbers:	383 - 385
Datum:	WGS 84
Easting / Northing (Precision):	56J 0220328m E 7090452m N (+/-5m)

Vegetation Community Description

The site is located in a dry ephemeral drainage line. The vegetation in the area is generally dominated by *Acacia shirleyi* on top of the ridges and *Eucalyptus fibrosa* and *Corymbia citriodora* in the drainage lines. A lot of the mature *Eucalyptus fibrosa* in the area have been selectively cleared usually in preference to the *Corymbia citriodora*.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m²/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	T2	T3	S1
Corymbia citriodora	D		20	15						3	8		
Eucalyptus fibrosa nubila	C			16	10						1		
Acacia shirleyi	C				10	6						1	
Acacia catenulata						4	2						
Gahnia aspera								0.3					
Lomandra multiflora multiflora								0.5					
Dianella revoluta var *revoluta*								0.3					
Aristida calycina var *calycina*								0.2					
% Rock	<5												
% Bare ground	20												
% Leaf litter	10												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T028

Topography , Soils and Geology	
Landform Situation:	Gully, Drainage Line
Erosional Landform Pattern:	Undulating Low Hills
Slope Type:	Steep
Altitude:	390 m
Soils:	Observation (reliability low)
Soil Colour:	Grey
Soil Texture:	Sandy (alluvial Sand)
Geology:	Inferred (reliability high)
Geology:	Duricrust and associated sediments
Geology Formation / Rock Type:	Consolidated weathering features

Community Health and Condition	
Overall Health:	**Good**
Weed Species:	-
Weed Cover (%):	n/a
Disturbance:	Fence lines and Selective Clearing
Disturbance Cover (%):	5 -10

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2T6.1
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	21/10/2009 (9:30)

VEGETATION SURVEY

T029

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.9.5**
EPBC Status:	**Endangered**
VMA Status:	**Endangered**
EPA Status:	**Endangered**
DNRW Mapped as:	11.9.5 / 11.9.10 / 11.9.5
Width of Vegetation:	0.3km
Total Area of Vegetation:	160 ha

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP Wol 39.4
Photo Numbers:	407 - 409
Datum:	WGS 84
Easting / Northing (Precision):	56J 0217480m E 7084186m N (+/-5m)

Vegetation Community Description

This site is the first most easterly tertiary site located on the Woleebee Lateral and is located 1.5km west from the junction with the mainline. This site is a good example of a Brigalow and Belah dominated vegetation community. The site is elevated, however, throughout this area *Melaleuca bracteata* dominate the Gilgai.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m²/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	T2	T3	S1
Acacia harpophylla	D			14	10						2	7	
Casuarina crista	S			12	10						2	4	
Melaleuca bracteata						8	4						
Opuntia tomentosa							3						
Geijera parviflora							4						
Croton insularis							4						
Alectryon diversifolius							1.5						
Enchylaena tomentosa								04.					
% Rock	0												
% Bare ground	15												
% Leaf litter	10												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T029

Topography , Soils and Geology	
Landform Situation:	Flat Gentle Slope
Erosional Landform Pattern:	Gently Undulating Plain
Slope Type:	Very Gently Inclined
Altitude:	365 m
Soils:	Observation (reliability low)
Soil Colour:	Dark Brown
Soil Texture:	Clay Blacksoil
Geology:	Inferred (reliability high)
Geology:	Black soil sediments
Geology Formation / Rock Type:	Sedimentary

Community Health and Condition	
Overall Health:	**Good**
Weed Species:	*Opuntia tomentosa*
Weed Cover (%):	< 5
Disturbance:	Road ways and fence lines
Disturbance Cover (%):	<5%

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2T6.2
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	21/10/2009 (15:11)

VEGETATION SURVEY

T030

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.5.21 / 11.7.5**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.5.21 / 11.7.4 / 11.5.4
Width of Vegetation:	100m
Total Area of Vegetation:	>100ha

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP Con 36.4
Photo Numbers:	407 - 409
Datum:	WGS 84
Easting / Northing (Precision):	56J 0219890m E 7079248m N (+/-5m)

Vegetation Community Description

A section of vegetation located between the road and Bottle Tree Creek. Soils on site are more like the lateritic duricrusts than the alluvial sands associated with Bottle Tree Creek. The vegetation is a real mix and contains several species not previously encountered on this trip. *Callitris glaucophylla* dominates the tree layer in this area.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m²/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	T2	T3	S1
Corymbia bloxsomei	C			12	8						1		
Eucalyptus exserta	C				6							3	1
Callitris glaucophylla	C				6	2							
Lysicarpus angustifolius	C					2.2							
Grevillea longistyla							1.2						
Melichrus erubescens							0.8						
Acacia conferta							1.8						
Hakea purpurea							1.2						
Micromyrtus sessilis							1						
Kunzea opposita							0.9						
Philotheca difformis								0.8					
Triodia marginata								0.5					
Aristida caput-medusae								0.3					
% Rock	15												
% Bare ground	5												
% Leaf litter	5												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T030

Topography , Soils and Geology	
Landform Situation:	Flat Gentle Slope
Erosional Landform Pattern:	Gently Undulating Plain
Slope Type:	Gently Inclined
Altitude:	340 m
Soils:	Observation (reliability low)
Soil Colour:	Grey / White
Soil Texture:	Sandy
Geology:	Inferred (reliability high)
Geology:	Duricrust and sand
Geology Formation / Rock Type:	Consolidated weathering feature and Sedimentary

Community Health and Condition	
Overall Health:	**Good**
Weed Species:	-
Weed Cover (%):	0
Disturbance:	Road grading spoil
Disturbance Cover (%):	<5%

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2T6.3
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	21/10/2009 (17:10)

VEGETATION SURVEY

T031

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.5.4**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.5.21 / 11.7.4 / 11.5.4
Width of Vegetation:	>10km
Total Area of Vegetation:	>100ha

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP Wol 32
Photo Numbers:	423 - 424
Datum:	WGS 84
Easting / Northing (Precision):	56J 0214688m E 7086004m N (+/-5m)

Vegetation Community Description

This site is a highly modified remnant located about 2 km north of Binkey State Forest. The site has undergone selective logging and high majorities of larger straight *Eucalyptus crebra* have been removed for timber.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m^2/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	T2	T3	S1
Eucalyptus crebra	D		16	10	6					1	1		
Angophora leiocarpa	S		18		6						1		
Corymbia clarksoniana	S				5								
Allocasuarina luehmannii						4							1
Acacia catenulata							2						
Aristida calycina								0.4					
Lomandra patens								0.2					
Dianella revoluta								0.3					
% Rock	0												
% Bare ground	5												
% Leaf litter	10												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T031

Topography , Soils and Geology	
Landform Situation:	Flat Gentle Slope
Erosional Landform Pattern:	Level Plain
Slope Type:	Level
Altitude:	365 m
Soils:	Observation (reliability low)
Soil Colour:	Dark Brown
Soil Texture:	Sandy Loam
Geology:	Inferred (reliability high)
Geology:	Sand plain
Geology Formation / Rock Type:	Sedimentary

Community Health and Condition	
Overall Health:	**Moderate**
Weed Species:	-
Weed Cover (%):	0
Disturbance:	Selective logging, 4WD tracks
Disturbance Cover (%):	5 – 10%

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2T7.1
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	22/10/2009 (10:57)

VEGETATION SURVEY

T032

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.9.5**
EPBC Status:	**Endangered**
VMA Status:	**Endangered**
EPA Status:	**Endangered**
DNRW Mapped as:	11.10.9 / 11.9.7 / 11.9.10
Width of Vegetation:	0.1km
Total Area of Vegetation:	At least 0.5ha

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 40.7
Photo Numbers:	456 - 465
Datum:	WGS 84
Easting / Northing (Precision):	56J 0219349m E 7126189m N (+/-5m)

Vegetation Community Description

This site has been mapped incorrectly and the vegetation community to be affected is an Endangered Regional Ecosystem (RE 11.9.5). The site is dominated by a semi-continuous canopy consisting of *Acacia harpophylla* and *Casuarina crista* with a sparse shrub layer dominated by *Geijera parviflora*. This site is a narrow strip left to protect livestock from sun and / or wind.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – $1m^2$/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	T2	T3	S1
Eucalyptus populnea	S		16							2			
Acacia harpophylla	D			14	10	6	2			1	3	2	
Brachychiton rupestris	S					6							
Casuarina crista	C					8							
Geijera parviflora						8	2						
Eremophila mitchellii						8	2						
Allocasuarina luehmannii							2						
% Rock	0												
% Bare ground	10												
% Leaf litter	10												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T032

Topography , Soils and Geology	
Landform Situation:	Slopes
Erosional Landform Pattern:	Undulating Low Hills
Slope Type:	Gently Inclined
Altitude:	335 m
Soils:	Observation (reliability low)
Soil Colour:	Dark Brown
Soil Texture:	Sandy Loam
Geology:	Inferred (reliability high)
Geology:	Sand
Geology Formation / Rock Type:	Sandstone

Community Health and Condition	
Overall Health:	**Moderate to Poor**
Weed Species:	*Opuntia tomentosa*
Weed Cover (%):	5
Disturbance:	4WD tracks and cattle grazing
Disturbance Cover (%):	5

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2T8.1
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	23/10/2009

VEGETATION SURVEY

T033

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.9.5a**
EPBC Status:	**Endangered**
VMA Status:	**Endangered**
EPA Status:	**Endangered**
DNRW Mapped as:	11.10.9 / 11.9.7 / 11.9.10
Width of Vegetation:	0.25km
Total Area of Vegetation:	Approximately 265ha

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 38.2
Photo Numbers:	468 - 473
Datum:	WGS 84
Easting / Northing (Precision):	56J 0218684m E 7123675m N (+/-5m)

Vegetation Community Description

This site has been mapped incorrectly and the vegetation community to be affected is an Endangered Regional Ecosystem (RE 11.9.5). The site is dominated by a semi-continuous canopy consisting of *Acacia harpophylla, Brachychiton rupestris* and *Casuarina crista* with a diverse shrub layer.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m^2/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	T2	T3	S1
Acacia harpophylla	D		18		10					2			
Brachychiton rupestris	C		18	16	10					2	1		
Casuarina crista	D			14							1		
Geijera parviflora	C					3							
Denhamia oleaster						3.5							
Croton insularis							1.5						
Peletostigma pubescens						2.2							
Alectryon diversifolius						2							
Exocarpus latifolius							1.5						
Macropteranthes leiocaulis						2.5							
Carrisa ovata							0.8						
Apophyllum anomalum							1						
Everistia vacciniifolia							1						
Pittosporum spinescens							1.2						
Dianella caerulea								0.4					
% Rock	0												
% Bare ground	15												
% Leaf litter	10												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T033

Topography , Soils and Geology	
Landform Situation:	Slopes
Erosional Landform Pattern:	Undulating Low Hills
Slope Type:	Gently Inclined
Altitude:	345 m
Soils:	Observation (reliability low)
Soil Colour:	Dark Brown
Soil Texture:	Sandy Loam
Geology:	Inferred (reliability high)
Geology:	Sand
Geology Formation / Rock Type:	Sandstone

Community Health and Condition	
Overall Health:	**Good**
Weed Species:	*Opuntia tomentosa*
Weed Cover (%):	< 5
Disturbance:	4WD tracks
Disturbance Cover (%):	5

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2T8.2
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	23/10/2009 (14:30)

VEGETATION SURVEY

T034

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.9.7**
EPBC Status:	**n/a**
VMA Status:	**Of Concern**
EPA Status:	**Of Concern**
DNRW Mapped as:	11.9.7 / 11.3.4
Width of Vegetation:	60m
Total Area of Vegetation:	1ha

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 37.3
Photo Numbers:	474 - 477
Datum:	WGS 84
Easting / Northing (Precision):	56J 0218622m E 7122805m N (+/-5m)

Vegetation Community Description

This site is an open woodland with a drainage line running through it. The site is a highly disturbed by grazing and contains a predominately Buffel Grass ground cover. The trees in the area are dominated by *Eucalyptus populnea* with other eucalypts scattered throughout.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m²/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	T2	T3	S1
Eucalyptus populnea	D			10	7						3		
Grevillea striata	S				8							2	
Acacia excelsa	S				8							1	
Eremophila mitchellii						4							
Geijera parviflora						5							
Cenchrus ciliaris								0.4					
Lomandra patens								0.5					
% Rock	0												
% Bare ground	30												
% Leaf litter	5												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T034

Topography , Soils and Geology	
Landform Situation:	Slopes
Erosional Landform Pattern:	Undulating Low Hills
Slope Type:	Gently Inclined
Altitude:	320 m
Soils:	Observation (reliability low)
Soil Colour:	Yellow
Soil Texture:	Sandy
Geology:	Inferred (reliability high)
Geology:	Sand
Geology Formation / Rock Type:	Unconsolidated

Community Health and Condition	
Overall Health:	**Moderate to Poor**
Weed Species:	*Cenchrus ciliaris*
Weed Cover (%):	10
Disturbance:	Tree clearing and 4WD tracks
Disturbance Cover (%):	10

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2T8.3
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	23/10/2009

VEGETATION SURVEY

T035

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.10.9**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.10.9
Width of Vegetation:	0.4km
Total Area of Vegetation:	>100ha

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 46.8
Photo Numbers:	488 - 490
Datum:	WGS 84
Easting / Northing (Precision):	56J 0219816m E 7131999m N (+/-5m)

Vegetation Community Description

This site is located on a vegetated gradual slope with a south-westerly aspect. The site is a highly disturbed remnant containing a real mix of species, dominated by *Callitris glaucophylla*. There are a lot of Endangered Brigalow communities located throughout this area. A 1m deep eroded channel runs parallel to the sample area.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m^2/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	T2	T3	S1
Callitris glaucophylla	D			10	6								
Eucalyptus tereticornis	C			10	6								
Eucalyptus populnea	C			11									
Eucalyptus crebra	C			12									
Eremophila mitchellii					6								
Grevillea striata					5								
Acacia leiocalyx						4							
Acacia excelsa						4							
Alphitonia excelsa						3							
Dodonaea heteromorpha							1						
Aristida caput-medusae													0.3
Cenchrus ciliaris													0.4
Lomandra patens													0.2
% Rock	5												
% Bare ground	10												
% Leaf litter	10												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T035

Topography , Soils and Geology	
Landform Situation:	Slopes
Erosional Landform Pattern:	Undulating Low Hills
Slope Type:	Moderately Inclined
Altitude:	315 m
Soils:	Observation (reliability low)
Soil Colour:	Yellow Brown
Soil Texture:	Sandy
Geology:	Inferred (reliability high)
Geology:	Coarse sediments
Geology Formation / Rock Type:	Sandstone

Community Health and Condition	
Overall Health:	**Moderate to Poor**
Weed Species:	*Cenchrus ciliaris,*
Weed Cover (%):	10
Disturbance:	Erosion and tree clearing
Disturbance Cover (%):	15

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2T9.1
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	25/10/2009

VEGETATION SURVEY

T036

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.10.1**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.10.1 / 11.7.2
Width of Vegetation:	>10km
Total Area of Vegetation:	>100ha

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP Wol 10.1
Photo Numbers:	531 - 532
Datum:	WGS 84
Easting / Northing (Precision):	55J 0794989m E 7080281m N (+/-5m)

Vegetation Community Description

The site is a cross-section of an eroded sandstone gully located within the same large remnant patch as Gurulmundi State Forest and shares the same large remnant patch as the state forest. The site is dominated by *Corymbia citriodora.* A large eroded section exists to the south of the site.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m²/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	T2	T3	S1
Corymbia citriodora	D	20	16	14						2			
Eucalyptus crebra	S		16							3			
Callitris glaucophylla	S					4							
Acacia julifera						6							
Psydrax oleifolium						3							
Acacia lineata							1.2						
Dodonaea triangularis							0.9						
Hovea lanceolata							2						
Carrisa ovata							0.8						
Gahnia aspera								0.3					
Dianella caerulea								0.4					
Capparis lasiantha								0.5					
Aristida caput-medusae								0.4					
Lomandra filiformis								0.3					
% Rock	5												
% Bare ground	5												
% Leaf litter	10												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T036

Topography , Soils and Geology	
Landform Situation:	Slopes
Erosional Landform Pattern:	Undulating Low Hills
Slope Type:	Moderately Inclined
Altitude:	425 m
Soils:	Observation (reliability low)
Soil Colour:	Grey White
Soil Texture:	Coarse Loamy Sand
Geology:	Inferred (reliability high)
Geology:	Coarse sediments
Geology Formation / Rock Type:	Sandstone

Community Health and Condition	
Overall Health:	**Good**
Weed Species:	-
Weed Cover (%):	0
Disturbance:	Selective logging of straight trees
Disturbance Cover (%):	5

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2T10.1
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	26/07/2009

VEGETATION SURVEY

T037

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.10.1**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.10.1 / 11.7.2
Width of Vegetation:	>10km
Total Area of Vegetation:	>100ha

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP Wol 7.8
Photo Numbers:	531 - 532
Datum:	WGS 84
Easting / Northing (Precision):	55J 0792910m E 7080324m N (+/-5m)

Vegetation Community Description

The site is located 500m north of Gurulmundi State Forest and shares the same large remnant patch as the state forest. The site is dominated by *Corymbia citriodora.* A lot of mature trees. Both *Corymbia citriodora* and *Eucalyptus crebra* have been selectively cleared for timber.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m^2/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	T2	T3	S1
Corymbia citriodora	D			15							3		
Eucalyptus crebra	S			12							3		
Acacia leiocalyx						4							
Acacia catenulata						3							
Alphitonia excelsa						4							
Petalostigma pubescens						4							
Dodonaea macrossanii								0.3					
Abutilon tubulosum								0.2					
Gahnia aspera								0.3					
Lomandra multiflora								0.3					
% Rock	< 5												
% Bare ground	15												
% Leaf litter	10												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T037

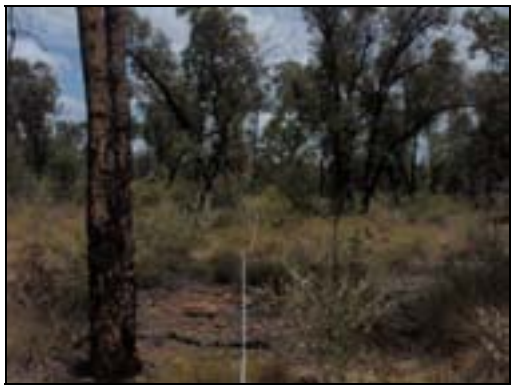
Topography , Soils and Geology	
Landform Situation:	Slopes
Erosional Landform Pattern:	Gently Undulating Rises
Slope Type:	Gently Inclined
Altitude:	425 m
Soils:	Observation (reliability low)
Soil Colour:	Grey White
Soil Texture:	Loamy Sand
Geology:	Inferred (reliability high)
Geology:	Coarse sediments
Geology Formation / Rock Type:	Sandstone

Community Health and Condition	
Overall Health:	**Good**
Weed Species:	-
Weed Cover (%):	0
Disturbance:	Selective logging of straight trees
Disturbance Cover (%):	10 - 20

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2T10.2
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	26/07/2009

VEGETATION SURVEY

T038



Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.10.13a**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.10.13 / 11.10.7 / 11.10.9
Width of Vegetation:	>10km
Total Area of Vegetation:	>100ha

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 91.5
Photo Numbers:	546 - 547
Datum:	WGS 84
Easting / Northing (Precision):	0237599m E 7170903m N (+/-5m)

Vegetation Community Description

Site is situated on a sandstone tableland / scarp between two heavily eroded sandstone drainage lines. The site is part of a large remnant patch including the Rockybar State Forest to the east. The vegetation is dominated by a low shrub layer with some scattered emergents.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m²/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	T2	T3	S1
Corymbia bunites					8							1	
Eucalyptus tenupes					6	2							2
Daviesia villifera							0.8						
Hovea tholiformis							2						
Triplarina spp.								0.3					
Acacia complanta							1.2						
Triodia mitchellii								0.5					
% Rock	50												
% Bare ground	5												
% Leaf litter	5												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T038

Topography , Soils and Geology	
Landform Situation:	Steep
Erosional Landform Pattern:	Steep Hills
Slope Type:	Steep
Altitude:	405 m
Soils:	Observation (reliability low)
Soil Colour:	Grey White and Red
Soil Texture:	Sandy
Geology:	Inferred (reliability high)
Geology:	Duricrust and associated sediments
Geology Formation / Rock Type:	Consolidated weathering features

Community Health and Condition	
Overall Health:	**Good**
Weed Species:	-
Weed Cover (%):	0
Disturbance:	Selective logging of straight trees
Disturbance Cover (%):	5 - 10

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2T11.2
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	27/07/2009

VEGETATION SURVEY

T039

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.7.6**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.7.6 / 11.7.5
Width of Vegetation:	>10km
Total Area of Vegetation:	>100ha

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 97.2
Photo Numbers:	557 - 558
Datum:	WGS 84
Easting / Northing (Precision):	0237797m E 7176413m N (+/-5m)

Vegetation Community Description

The site is located in a tall open woodland located I km south of the Rockybar State Forest Road. The site is part of a large remnant patch including the state forest to the east. The vegetation is dominated by tall *Corymbia citriodora* with a thick shrub layer consisting of mostly *Acacia* species.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m^2/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	T2	T3	S1
Corymbia citriodora	D	23		12					2	1			
Eucalyptus major	S	20							1				
Corymbia watsoniana	S		14							1			
Allocasuarina torulosa						3							
Exocarpos cupressiformis						2							
Acacia complanta						1.8							
Acacia spectabilis						2.2							
Leucopogon mitchellii							1.2						
Pultenaea subternata							0.8						
Dianella caerulea								0.5					
Gahnia aspera								0.3					
Lomandra patens								0.2					
Lomandra leucocephala								0.2					
Lomandra multiflora								0.4					
Themeda triandra								0.5					
Triodia marginata								0.4					
% Rock	0												
% Bare ground	5												
% Leaf litter	5												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T039

Topography , Soils and Geology	
Landform Situation:	Slopes
Erosional Landform Pattern:	Gently Undulating Rises
Slope Type:	Gently Inclined
Altitude:	405 m
Soils:	Observation (reliability low)
Soil Colour:	Grey White
Soil Texture:	Loamy Sand
Geology:	Inferred (reliability high)
Geology:	Duricrust and associated sediments
Geology Formation / Rock Type:	Consolidated weathering features

Community Health and Condition	
Overall Health:	**Good**
Weed Species:	-
Weed Cover (%):	0
Disturbance:	Selective logging of straight trees
Disturbance Cover (%):	5 - 10

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2T11.2
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	27/07/2009

VEGETATION SURVEY

T040

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.7.6**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.7.6 / 11.3.26 / 11.7.7
Width of Vegetation:	>10km
Total Area of Vegetation:	>100ha

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 93.9
Photo Numbers:	563 - 565
Datum:	WGS 84
Easting / Northing (Precision):	0237626m E 7173260m N (+/-5m)

Vegetation Community Description

The site is located in a tall open woodland located approximately 2 km's west of Rockybar State Forest. The site is part of a large remnant patch. The vegetation is dominated by tall *Corymbia citriodora* with a sparse shrub layer consisting of mostly *Acacia* species. The ground cover is continuous in places and somewhat diverse.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m^2/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	T2	T3	S1
Corymbia citriodora	D	22	14						3	1			
Corymbia clarksoniana	S			10									
Allocasuarina torulosa	S					4							
Alphitonia excelsa						4	2						
Acacia leiocalyx							1.5						
Acacia bancroftii							1.2						
Exocarpos cupressiformis							1.2						
Acacia complanta							1						
Dianella revoluta								0.3					
Gahnia aspera								0.3					
Panicum spp.								0.3					
Triodia marginata								0.4					
% Rock	0												
% Bare ground	10												
% Leaf litter	10												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T040

Topography , Soils and Geology	
Landform Situation:	Flat Gentle Slopes
Erosional Landform Pattern:	Gently Undulating Plain
Slope Type:	Very Gently Inclined
Altitude:	430 m
Soils:	Observation (reliability low)
Soil Colour:	Grey White
Soil Texture:	Loamy Sand
Geology:	Inferred (reliability high)
Geology:	Duricrust and associated sediments
Geology Formation / Rock Type:	Consolidated weathering features

Community Health and Condition	
Overall Health:	**Good**
Weed Species:	-
Weed Cover (%):	0
Disturbance:	Selective logging of straight trees
Disturbance Cover (%):	5 - 10

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2T11.3
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	27/07/2009 (11:39)

VEGETATION SURVEY

T041

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.7.5**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.7.5
Width of Vegetation:	>10km
Total Area of Vegetation:	>100ha

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP Con 31.7
Photo Numbers:	584 - 585
Datum:	WGS 84
Easting / Northing (Precision):	0219124m E 7074401m N (+/-5m)

Vegetation Community Description

Heath-like shrubland on natural scalds on deeply weathered coarse-grained sedimentary rocks. The vegetation layers are dominated by a low shrubbery to about 2 metres. Species of varying heights form locally dominant patches with scattered *Eucalyptus exserta* and *Corymbia bloxsomei* emerging where soil depth is adequate.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m^2/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	T2	T3	S1
Eucalyptus exselsa	S					4							
Melaleuca nodsa	D						1.8						
Grevillea longistyla							1						
Leucopogon pleiospermus							0.8						
Calytrix tetragona	C							0.4					
Triodia marginata								0.3					
% Rock	10												
% Bare ground	5												
% Leaf litter	<5												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T041

Topography , Soils and Geology	
Landform Situation:	Flat Gentle Slopes
Erosional Landform Pattern:	Level
Slope Type:	Gently Undulating Rises
Altitude:	335 m
Soils:	Observation (reliability low)
Soil Colour:	Red
Soil Texture:	Sandy
Geology:	Inferred (reliability high)
Geology:	Duricrust and associated sediments
Geology Formation / Rock Type:	Consolidated weathering features

Community Health and Condition	
Overall Health:	**Good**
Weed Species:	-
Weed Cover (%):	0
Disturbance:	-
Disturbance Cover (%):	0

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2T12.1
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	28/07/2009 (11:39)

VEGETATION SURVEY

T042

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.5.21**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.5.21 / 11.7.4 / 11.5.4
Width of Vegetation:	>10km
Total Area of Vegetation:	>100ha

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP Con 33.5
Photo Numbers:	584 - 585
Datum:	WGS 84
Easting / Northing (Precision):	0219468m E 7076019m N (+/-5m)

Vegetation Community Description

Woodland located east of Downfall Creek Road within a large patch of remnant vegetation in the southern sections of the pipeline route. The site itself is located 100m south of a dry drainage line. The tree layer is dominated by *Callitris glaucophylla* with scattered examples of *Corymbia bloxsomei* and *Allocasuarina luehmannii. Lysicarpus angustifolius* is also locally dominant in places. Lots of dirt access tracks in this area.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m^2/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	T2	T3	S1
Corymbia bloxsomei	D			14							1		
Callitris glaucophylla	S			14	8		2				1		
Allocasuarina luehmannii	S				8		2					1	
Lysicarpus angustifolius					8								
Acacia ixiophylla							2.2						
Leptospermum polygalifolium							1.5						
Leucopogon bifloris							1						
Hakea purpurea							0.8						
Dianella caerulea								0.5					
Gahnia aspera								0.4					
Triodia marginata								0.3					
Lomandra leucocephala								0.3					
Aristida caput-medusae								0.3					
% Rock	0												
% Bare ground	10												
% Leaf litter	<5												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T042

Topography , Soils and Geology	
Landform Situation:	Flat Gentle Slopes
Erosional Landform Pattern:	Very Gently Inclined
Slope Type:	Gently Undulating Rises
Altitude:	320 m
Soils:	Observation (reliability low)
Soil Colour:	Yellow / Brown
Soil Texture:	Loamy Sand
Geology:	Inferred (reliability high)
Geology:	Sand Plains
Geology Formation / Rock Type:	Sedimentary

Community Health and Condition	
Overall Health:	**Moderate to Good**
Weed Species:	-
Weed Cover (%):	< 5
Disturbance:	Access / 4WD tracks and some minor logging
Disturbance Cover (%):	5

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2T12.2
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	28/07/2009 (14:10)

VEGETATION SURVEY

T043

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.7.4**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.7.4/11.7.7/11.7.5/11.7.2
Width of Vegetation:	>1km
Total Area of Vegetation:	>100ha

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP Con 8.7
Photo Numbers:	589 - 590
Datum:	WGS 84
Easting / Northing (Precision):	0225832m E 7056145m N (+/-5m)

Vegetation Community Description

Disturbed patch of woodland within a large patch of remnant vegetation. Tree layer is dominated by *Callitris glaucophylla* with scattered examples of *Eucalyptus crebra* and *Allocasuarina luehmannii.* The site is almost devoid of a shrublayer other than young examples of tree species particularly *Callitris glaucophylla*. Lots of dirt access tracks in this area.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m^2/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	T2	T3	S1
Eucalyptus crebra	D		18							2			
Callitris glaucophylla	S			14	8		2				2		
Allocasuarina luehmannii	S				6		2					**1**	
Acacia shirleyi					6								
Acacia leiocalyx							2.2						
Leucopogon pleiospermus							1						
Lomandra patens								0.3					
Dianella caerulea								0.5					
Gahnia aspera								0.4					
Aristida caput-medusae								0.3					
% Rock	0												
% Bare ground	20												
% Leaf litter	10												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T043

Topography , Soils and Geology	
Landform Situation:	Flat Gentle Slopes
Erosional Landform Pattern:	Very Gently Inclined
Slope Type:	Gently Undulating Rises
Altitude:	320 m
Soils:	Observation (reliability low)
Soil Colour:	Yellow / Brown
Soil Texture:	Loamy Sand
Geology:	Inferred (reliability high)
Geology:	Duricrust and associated sediments
Geology Formation / Rock Type:	Consolidated weathering features

Community Health and Condition	
Overall Health:	**Moderate**
Weed Species:	-
Weed Cover (%):	< 5
Disturbance:	Access / 4WD tracks and logging
Disturbance Cover (%):	10

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2T12.3
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	28/07/2009

VEGETATION SURVEY

T044

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.7.4**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.7.4/11.7.7/11.7.5/11.7.2
Width of Vegetation:	>1km
Total Area of Vegetation:	>100ha

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP Con 21.2
Photo Numbers:	553 - 554
Datum:	WGS 84
Easting / Northing (Precision):	0217950m E 7064039m N (+/-5m)

Vegetation Community Description

Disturbed patch of woodland within a larger patch of remnant vegetation in the southern sections of the alignment. Tree layer is dominated by *Callitris glaucophylla* with scattered examples of *Eucalyptus crebra* and *Allocasuarina luehmannii.* The site is almost devoid of a shrublayer other than young examples of tree species.

Floristic Summary

Botanical Species	Misc	Average Height (m)							Abundance (BA – 1m²/ha)				
		E1	T1	T2	T3	S1	S2	G	E1	T1	T2	T3	S1
Eucalyptus crebra	D			10							2		
Callitris glaucophylla	S				8	6	2					**4**	
Allocasuarina luehmannii					7		2					**1**	
Acacia leiocalyx							1.8						
Gahnia aspera								0.4					
Aristida caput-medusae								0.3					
% Rock	0												
% Bare ground	20												
% Leaf litter	30												
% Cryptogram	0												

Misc: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant, V = collected, + = outside transect

T044

Topography , Soils and Geology	
Landform Situation:	Flat Gentle Slopes
Erosional Landform Pattern:	Very Gently Inclined
Slope Type:	Gently Undulating Rises
Altitude:	345 m
Soils:	Observation (reliability low)
Soil Colour:	Grey
Soil Texture:	Loamy Sand
Geology:	Inferred (reliability high)
Geology:	Duricrust and associated sediments
Geology Formation / Rock Type:	Consolidated weathering features

Community Health and Condition	
Overall Health:	**Moderate**
Weed Species:	*Opuntia tomentosa*
Weed Cover (%):	< 5
Disturbance:	Logging for timber
Disturbance Cover (%):	5

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2T13.1
Sample Level / Type:	Detailed / Rectangular
Sample Detail / Species List:	Tertiary / Woody species
Sample Area:	10 x 50 m
Date / Time:	29/07/2009

LAIRD POINT VEGETATION SURVEY

Ironbark – Blue Gum Open Woodland on Metamorphic Hill
T045

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 12.11.14**
EPBC Status:	**n /a**
VMA Status:	**Of Concern**
EPA Status:	**Of Concern**
DNRW Mapped as:	12.11.14
Width of RE:	Not linear
Total Area of Vegetation:	> 50 ha

Site Description	
Location:	Curtis Island, Central-eastern Queensland
KP / Site Description:	Laird Point Study Area, NW
Photo Numbers:	1168 - 1169
Datum:	WGS84
Longitude / Northing:	56 K 0314144 7372425

Vegetation Community Description

Open woodland to 10 – 15 m tall on midslope. Canopy is open to sparse and dominated by *Eucalyptus crebra* and *E. tereticornis.* Stags present. Midstorey is sparse and dominated by canopy recruits and pioneer species to 6 – 8 m tall. Scattered clumps of low shrub layer to 1.5 m tall of saplings. Grassy groundlayer to 0.5 m tall. Logs on ground.

Dominant Species (50 m x 10 m area)

Botanical Species	Status*	Average Height (m)							Abundance (m^2/ha)			
		E	T1	T2	T3	S1	S2	G	E	T1	T2	T3
Eucalyptus crebra	D		15	8						3		
Eucalyptus tereticornis	S		15	8						3		
Eucalyptus exserta	S			6								
Acacia concurrens				5		1						
Gomphocarpus physocarpus	#					1						
Capparis canescens						1						
Sida cordifolia	#							1				
Themeda triandra								0.6				
Cymbopogon refractus								0.6				

% Rock	< 5	% Bare ground	1< 5	% Leaf litter	< 5	% Cryptogram	0		

Status: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant

LAIRD POINT VEGETATION SURVEY

Ironbark – Blue Gum Open Woodland on Metamorphic Hill
T045

Community Health and Condition	
Overall Health:	**Good**
Potential EVR Flora Species Habitat:	*Quassia bidwilii*
EVR Flora Species Recorded:	No
Weed Species:	*P. dilatatum, Sida cordifolia, G. physocarpus*
Weed Cover (%):	< 5
Disturbance:	vehicle tracks, grazing
Disturbance Cover (%):	5 - 25

Topography and Landform	
Landform Situation:	Hills and tablelands, not specified
Altitude:	0 - 50 m
Relief:	Very low (9 - 30 m)
Slope:	Midslope
Slope Class:	Very Gently Inclined (1 – 3 %)
Erosional Landform Pattern:	n /a
Soils:	Surface observation (reliability low)
Soil Colour:	Brown
Soil Texture:	Loam
Geology:	Inferred (reliability high)
Geology Code:	Metamorphosed
Rock / Sediment Type:	Wandilla Formation – Quartz greywacke

Survey Details	
Project Number:	301001-00448 / 1BV2000
Recorder/s:	Amy Kruger
Field Site Number:	CIT002
Date / Time:	14 / 04 / 2009 13:15

LAIRD POINT VEGETATION SURVEY

Saltpan Vegetation on Marine Clay Plains
T046

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 12.1.2**
EPBC Status:	**n /a**
VMA Status:	**Not Of Concern**
EPA Status:	**Not Of Concern**
DNRW Mapped as:	12.1.2
Width of RE:	Not linear
Total Area of Vegetation:	> 50 ha

Site Description	
Location:	Curtis Island, Central-eastern Queensland
KP / Site Description:	Laird Point Study Area, NW
Photo Numbers:	1170 - 1171
Datum:	WGS84
Longitude / Northing:	56 K 0314140 7372537

Vegetation Community Description

Expansive mud flats largely devoid of vegetation. Saltpan vegetation is present along the edges of this community and dominated by *Sporobolus virginicus* to 0.2 m tall. Cracking clays. Mangrove stags to 2 m tall present.

Dominant Species (50 m x 10 m area)

Botanical Species	Status*	Average Height (m)							Abundance (m^2/ha)			
		E	T1	T2	T3	S1	S2	G	E	T1	T2	T3
Sporobolus virginicus	D							0.2				
Zoysia macrantha	S							0.2				
Sesuvium portulacastrum	A							0.2				
Sarcocornia quinqueflora	A							0.2				
Enchylaena tomentosa	A							0.2				
Suaeda australis	A							0.2				

% Rock	< 5	% Bare ground	75 - 80	% Leaf litter	0	% Cryptogram	0		

Status: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant

LAIRD POINT VEGETATION SURVEY

Saltpan Vegetation on Marine Clay Plains
T046

Community Health and Condition	
Overall Health:	**Good**
Potential EVR Flora Species Habitat:	none
EVR Flora Species Recorded:	No
Weed Species:	none
Weed Cover (%):	0
Disturbance:	vehicle tracks, grazing
Disturbance Cover (%):	< 5

Topography and Landform	
Landform Situation:	Plain, tidal flat, salt flat.
Altitude:	0 - 50 m
Relief:	Extremely low (< 9 m)
Slope:	Flat, open depression
Slope Class:	Level (< 1 %)
Erosional Landform Pattern:	n /a
Soils:	Surface observation (reliability low)
Soil Colour:	Dark brown
Soil Texture:	Clay
Geology:	Inferred (reliability high)
Geology Code:	Unconsolidated
Rock / Sediment Type:	Marine clay plain

Survey Details	
Project Number:	301001-00448 / 1BV2000
Recorder/s:	Amy Kruger
Field Site Number:	CIT003
Date / Time:	14 / 04 / 2009 13:30

LAIRD POINT VEGETATION SURVEY

Ironbark Open Woodland on Metamorphic Hill
T047

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 12.11.6**
EPBC Status:	**n /a**
VMA Status:	**Not Of Concern**
EPA Status:	**Not Of Concern**
DNRW Mapped as:	12.11.6
Width of RE:	Not linear
Total Area of Vegetation:	> 50 ha

Site Description	
Location:	Curtis Island, Central-eastern Queensland
KP / Site Description:	Laird Point Study Area, NW
Photo Numbers:	1164 - 1167
Datum:	WGS84
Longitude / Northing:	56 K 0313957 7372597

Vegetation Community Description

Open woodland to 10 – 15 m tall on upper slope of small rise. Canopy is open and dominated by *Eucalyptus crebra.* Midstorey is dense to 6 – 8m tall of *Acacia* species. Low shrub layer to 2 – 3 m tall becoming more dense and weedy on lower slopes. Sparse grassy ground layer to 0.5 m tall.

Dominant Species (50 m x 10 m area)

Botanical Species	Status*	Average Height (m)							Abundance (m^2/ha)			
		E	T1	T2	T3	S1	S2	G	E	T1	T2	T3
Eucalyptus crebra	D		12	6	3					7		
Eucalyptus exserta	S		12	6	3					3		
Corymbia citriodora	S		12									
Acacia concurrens				6	3							
Acacia implexa				6								
Alphitonia excelsa					3							
Breynia oblongifolia						2						
Opuntia tomentosa						2						
Cryptostegia grandiflora						2						
Carissa ovata						1						
Sida rhombifolia								1				
Lomandra longifolia								0.5				
Bothriochloa sp.								0.5				
Heteropogon contortus								0.5				
Cymbopogon refractus								0.5				

% Rock	5 - 15	% Bare ground	< 5	% Leaf litter	20 - 25	% Cryptogram	0

Status: D = dominant, C = Codominant, S = subdominant, A = associate, EVR = significant species, # = weed, ## = declared plant

LAIRD POINT VEGETATION SURVEY

Ironbark Open Woodland on Metamorphic Hill
T047

Community Health and Condition	
Overall Health:	**Good**
Potential EVR Flora Species Habitat:	*Quassia bidwillii*
EVR Flora Species Recorded:	No
Weed Species:	*O. tomentosa, S. rhombifolia, P. suberosa*
Weed Cover (%):	5 - 25
Disturbance:	vehicle tracks, grazing, litter
Disturbance Cover (%):	< 5

Topography and Landform	
Landform Situation:	Hills and tablelands, not specified
Altitude:	0 - 50 m
Relief:	Very low (9 – 30 m)
Slope:	Upper slope
Slope Class:	Very gently inclined (1 – 3 %)
Erosional Landform Pattern:	n /a
Soils:	Surface observation (reliability low)
Soil Colour:	Brown
Soil Texture:	Loam
Geology:	Inferred (reliability high)
Geology Code:	Metamorphosed
Rock / Sediment Type:	Wandilla Formation – Quartz greywacke

Survey Details	
Project Number:	301001-00448 / 1BV2000
Recorder/s:	Amy Kruger
Field Site Number:	CIT001
Date / Time:	14 / 04 / 2009 12:53

VEGETATION SURVEY

Q001

Regional Ecosystem Profile	
Regional Ecosystem Type:	**Non - remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-remnant
Overall Health:	**Average**

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP 107
Photo Numbers:	0024 - 0025
Datum:	WGS 84
Easting / Northing (Precision):	56J 0236448 7184633
Altitude:	340m

Vegetation Community Description

Eucalyptus tereticornis – E. melanophloia regrowth fringing creekline. Pale yellow Sandy Soils. Dry bed. Canopy is open to 12 – 18m tall. Narrow patch. Dense patches of shrubs to 2 – 6 m tall and dominated by *Melaleuca uncinata*, *Acacia decora* + canopy recruits. Native grassy groundlayer to 1m tall dominated by *Aristida* species.
Average condition. Evidence of clearing, fence construction, grazing, vehicle tracks, weeds (isolated clumps), logs and stags present. *Opuntia stricta*, *Lantana montevidensis*, *Bidens pilosa*
340m Alt

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Amy Kruger
Field Site Number:	AKQ001
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	26/09/20 11:06

VEGETATION SURVEY

Q002

Regional Ecosystem Profile	
Regional Ecosystem Type:	**Non - remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-remnant
Overall Health:	**Average**

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP 110.7
Photo Numbers:	026 - 027
Datum:	WGS84
Easting / Northing (Precision):	56J 0235462 7187871
Altitude:	334m

Vegetation Community Description
Eucalyptus tereticornis lined creekline to 15 – 20m tall. Very narrow patch (5 – 10m). Pale yellow sandy soils. Dry bed. Scattered shrub layer forming dense patches to 3-4 m tall. Shrubs include *Acacia decora, Melaleuca uncinata*, *Swainsonia galgefolia*. Grass groundlayer 0.5 – 1m tall, sparse in channel, dense on banks dominated by *Aristida* species, *Cymbopogon refractus*, Average condition. Extensive disturbance – grazing clearing and isolated *Opuntia stricta* present, logs present. 334m Alt

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Amy Kruger
Field Site Number:	AKQ002
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	26/09/20 12:29

VEGETATION SURVEY

Q003

Regional Ecosystem Profile	
Regional Ecosystem Type:	**Non - remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-remnant
Overall Health:	**Average**

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP 113
Photo Numbers:	032 - 033
Datum:	WGS84
Easting / Northing (Precision):	56J 0235826 7190235
Altitude:	345m

Vegetation Community Description
Eucalyptus tereticornis – E. populnea lined creekline to 12 – 15m. Rocky, dry bed. Pale yellow sandy soils. Partly, dense shrub layer to 1 – 3m tall of *Melaleuca uncinata, Swainsona galegifolia, Opuntia tormentosa*. Average to poor condition. Dam adjacent. Extensive disturbance including grazing compaction, tunnel erosion, weeds, tracks and logging / clearing. 345m Alt

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Amy Kruger
Field Site Number:	AKQ003
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	26/09/20 13:21

VEGETATION SURVEY

Q004

Regional Ecosystem Profile	
Regional Ecosystem Type:	**Non - remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-remnant
Overall Health:	**Average**

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP 114
Photo Numbers:	034 - 035
Datum:	WGS84
Easting / Northing (Precision):	56J 0235949 7191110
Altitude:	352m

Vegetation Community Description
Eucalyptus tereticornis fringing creekline to 15-20m tall. Narrow patch (5 – 10m). *Melaleuca uncinata* dominated shrublayer. Grassy understorey (native) to 0.5 m tall. Average condition Extensive clearing, grazing. Isolated weeds. 352m Alt

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Amy Kruger
Field Site Number:	AKQ004
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	26/09/20 14:13

VEGETATION SURVEY

Q005

Regional Ecosystem Profile	
Regional Ecosystem Type:	**Non - remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-remnant
Overall Health:	**Average**

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	
Photo Numbers:	043
Datum:	WGS84
Easting / Northing (Precision):	56J 0245226 7259686
Altitude:	347m

Vegetation Community Description

Patch of *Eucalyptus melanophlioa – E. crebra* to 10 – 12 m tall. Canopy open. Shrublayer to (1-3 m) tall of *Carissa ovata, Bursaria spinosa, Capparis lasiantha*. Scattered groundlayer of native grasses and weedy forbs. Road and constructed culvert (floodplain) adjacent.
Alignment is to the west of this patch and no clearing is required.
347m Alt

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Amy Kruger
Field Site Number:	AKQ005
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	27/09/20 11:26

VEGETATION SURVEY

Q006

Regional Ecosystem Profile	
Regional Ecosystem Type:	**Non - remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-remnant
Overall Health:	**Average**

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP 184.7
Photo Numbers:	049 – 050
Datum:	WGS84
Easting / Northing (Precision):	56J 0245420 7256673
Altitude:	312m

Vegetation Community Description

Rocky creekline with significant outcropping (basalt?) Vegetation is dominated by *Melaleuca bracteata – M. uncinata* to 4m tall. *Eucalyptus tereticornis* become dominant further downstream. (15 – 20m). Dense grassy groundlayer to 1m on the banks dominated by *Aristida calycina, Cymbopogon refractus*. Channel bed is dominated by forb/weed species *Senecio* sp., *Argemone mexicana*.
Average to degraded condition. Litter, grazing, clearing. Track construction.
312m Alt

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Amy Kruger
Field Site Number:	AKQ006
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	27/09/20 11:54

VEGETATION SURVEY

Q007

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.12.1**
EPBC Status:	**Not of Concern**
VMA Status:	**Not of Concern**
EPA Status:	**n/a**
DNRW Mapped as:	11.11.15/11.11.10/11.3.25
Overall Health:	**Good**

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP 182.7
Photo Numbers:	061 - 062
Datum:	WGS84
Easting / Northing (Precision):	56J 0244939 7254773
Altitude:	305m

Vegetation Community Description
Eucalyptus melanophloia dominated open woodland to woodland to 10 – 15m tall on midslope adjacent to Pump Creek. Pale yellow sandy soils with some rocky outcropping present. Canopy and midstorey is sparse. Midstorey to 6 - 8m tall dominated by canopy recruits. Occasional shrub to 1 – 2m tall, mostly *Opuntia stricta*. Dense grassy groundlayer to 1m of *Aristida calycina, Heteropogon contortus Themeda triandra*. Some logs present. Good condition. Some evidence of grazing, clearing and fence construction. Veg consistent with 11.12.1 305m Alt

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Amy Kruger
Field Site Number:	AKQ007
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	27/09/20 13:55

VEGETATION SURVEY

Q008

Regional Ecosystem Profile	
Regional Ecosystem Type:	**Non - remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-remnant
Overall Health:	**Average**

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP 180.5
Photo Numbers:	068 - 069
Datum:	WGS84
Easting / Northing (Precision):	56J 0245375 7252754
Altitude:	358m

Vegetation Community Description
Open grazing land with numerous stags and scattered *Eucalyptus crebra* and *Eucalyptus melanophloia* to 10 – 15m tall. Upper slope. Dense grassy groundlayer to 1m. Rocky outcropping present. Alignment realigned to pass adjacent mapped RE in grazed land.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Amy Kruger
Field Site Number:	AKQ008
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	27/09/20 14:36

VEGETATION SURVEY

Q009

Regional Ecosystem Profile	
Regional Ecosystem Type:	**Non - remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-remnant
Overall Health:	**Average**

Site Description	
Bioregion / Locality:	
KP / Site Description:	
Photo Numbers:	074 - 075
Datum:	WGS84
Easting / Northing (Precision):	56J 0245047 7248045
Altitude:	327m

Vegetation Community Description
Narrow vegetation patch fringing Keen Creek dominated by *Eucalyptus tereticornis, Corymbia tessellaris*, *Melaleuca bracteata*. Alignment will go through clearing in vegetation. 327m Alt

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Amy Kruger
Field Site Number:	AKQ009
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	27/09/20 16:29

VEGETATION SURVEY

Q010

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.12.17**
EPBC Status:	**n/a**
VMA Status:	**Endangered**
EPA Status:	**Endangered**
DNRW Mapped as:	11.12.1
Overall Health:	**Moderate**

Site Description	
Bioregion / Locality:	Brigalow Belt South.
KP / Site Description:	KP 155.5
Photo Numbers:	P001 – P002
Datum:	WGS84
Easting / Northing (Precision):	56J 0243081 7229670 (+/- 5 m)
Altitude:	365m

Vegetation Community Description
Eucalyptus populnea dominated woodland. The shrub layer consists almost entirely of *Eremophila mitchellii*. There are exists as regrowth with a large remnant section to the north mapped as 11.12.1 (Not of Concern); however, the site is more representative of 11.12.17 which is an Endangered regional ecosystem. The proposed pipeline crossing is to the south of both the remnant and regrowth vegetation and will only disturb the existing pasture grasses in the area.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	1R1.1
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	29/09/2009

VEGETATION SURVEY

Q011

Regional Ecosystem Profile	
Regional Ecosystem Type:	**Non-remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a - (MRV - Prior to 7th of October)**
EPA Status:	**n/a**
DNRW Mapped as:	Non-remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 156
Photo Numbers:	P003
Datum:	WGS84
Easting / Northing (Precision):	56J 0242826 7230078 (+/- 5m)
Altitude:	355m

Vegetation Community Description
Eucalyptus populnea dominated woodland regrowth vegetation. The area is currently mapped as Moratorium Regrowth vegetation (Prior to 7th of October) and is probably correctly mapped as the site was previously RE 11.12.17. *Eucalyptus tereticornis* dominated the low lying areas and ephemeral drainage lines.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	1R1.2
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	29/09/2009

VEGETATION SURVEY

Q012

Regional Ecosystem Profile	
Regional Ecosystem Type:	**11.12.1**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No concern at present**
DNRW Mapped as:	Non-remnant
Overall Health:	**Good**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	500m west of KP 158.6
Photo Numbers:	P007
Datum:	UTM
Easting / Northing (Precision):	56J 0242059 7232850 (+/- 5m)
Altitude:	410m

Vegetation Community Description
Eucalyptus crebra dominated woodland. The site is correctly mapped as 11.12.1 (Not of Concern). The site contains large granite rocks indicative of Land Zone 12. The shrub layer largely consists of *Alphitonia excelsa* and *Acacia catenulata*.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	1R1.3
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	29/09/2009 (11:15 am)

VEGETATION SURVEY

Q013

Regional Ecosystem Profile	
Regional Ecosystem Type:	**11.12.3**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**Of concern. under review**
DNRW Mapped as:	11.12.3
Overall Health:	**Moderate to Good (Some Logging)**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 160.7
Photo Numbers:	P012 – P013
Datum:	UTM
Easting / Northing (Precision):	56J 0242021 7234647 (+/- 5m)
Altitude:	430m

Vegetation Community Description
Woodland consisting of predominately *Eucalyptus crebra* and *Eucalyptus tereticornis*. Other trees include *Corymbia clarksoniana, Corymbia erythrophloia* and *Corymbia tessellaris. Acacia* species and Prickly Pear (*Opuntia stricta*) sparsely scattered throughout the mid layer. Pasture grasses as well as *Dianella revoluta* form the ground cover.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	1R1.4
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	29/09/2009 (14:38)

VEGETATION SURVEY

Q014

Regional Ecosystem Profile	
Regional Ecosystem Type:	**11.12.1**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No concern at present**
DNRW Mapped as:	11.12.6/11.12.1
Overall Health:	**Good**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP162.5
Photo Numbers:	P013
Datum:	UTM
Easting / Northing (Precision):	56J 0242111 7236401
Altitude:	420m

Vegetation Community Description
Eucalyptus crebra dominated woodland with scattered *Corymbia clarksoniana and Corymbia tessellari.* The site is correctly mapped as 11.12.1 (Not of Concern). The shrub layer largely consists of *Alphitonia excelsa* and *Acacia catenulata*. *Lomandra spp*. and *Dianella spp*. present with the grasses.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	1R1.5
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	29/09/2009

VEGETATION SURVEY

Q015

Regional Ecosystem Profile	
Regional Ecosystem Type:	**Non - remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-remnant
Overall Health:	**Average**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 169.8
Photo Numbers:	-
Datum:	UTM
Easting / Northing (Precision):	56J 0243120 7243407
Altitude:	350m

Vegetation Community Description
Site is located in the dry stream bed and the outer terraces of South Creek. The site is disturbed by on-going grazing practices. However, the area has undergone less clearing than most of the streams in the area. The stream contains a wide variety of both woodland and dry rainforest species. Species include *Eucalyptus tereticornis, Brachychiton populneu*s and *Melaleuca bracteata* emerging from the stream bank with shrub layer consisting *of Eremophila mitchellii*, *Ficus opposita* and *Alchornea ilicifolia*. Numerous weed species were encountered including *Xanthium* spp.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitchell Bird
Field Site Number:	1R1.6
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	29/09/2009 (16:50)

VEGETATION SURVEY

Q016

Regional Ecosystem Profile	
Regional Ecosystem Type:	**Non - remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 273.8
Photo Numbers:	036
Datum:	WGS84
Easting / Northing (Precision):	56J 0267015 7322306
Altitude:	410m

Vegetation Community Description
A highly disturbed non-remnant dry ephemeral stream. *Casuarina cunninghamiana* is the dominant tree species scattered along the stream bank. *Melaleuca trichostachya* also present in numbers. Other tree species present: *Geijera parviflora, Ficus platypoda, Eucalyptus tereticornis, Corymbia tessellaris*. Site contains a wide variety of weeds including *Lantana camara, Gomphocarpus physocarpus* and *Agave americana* occupying the watercourse.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	1R2.1
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	30/09/2009

VEGETATION SURVEY

Q017

Regional Ecosystem Profile	
Regional Ecosystem Type:	**Non - remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	
KP / Site Description:	KP272.25
Photo Numbers:	037 - 041
Datum:	WGS84
Easting / Northing (Precision):	56J 0265855 7321212
Altitude:	405m

Vegetation Community Description
Dry drainage line with vegetation extending to a large remnant patch on the Callide Range. *Corymbia citriodora* dominates the tree stratum. *Acacia salicina* and *Acacia neriifolia* dominate the sub tree stratum. Ground cover consists of typical pasture grasses and *Lomandra longifolia* struggling in the dry conditions. **EVR –** *Cycas megacarpa* observed on the way to the site

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	1R2.2
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	30/09/2009 16:00

VEGETATION SURVEY

Q018

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.11.15**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.11.15/11.3.25/11.11.4/11.11.4a
Overall Health:	**Good**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 267.6
Photo Numbers:	043 - 052
Datum:	WGS84
Easting / Northing (Precision):	56J 0262473 7319279
Altitude:	372m

Vegetation Community Description
The site has recently undergone a bushfire event and most of the ground layer and shrubs have been removed as a result of the fire. The tree layer above 5 metres remains intact and the area burnt was isolated indicating the intensity of the fire was low. The tree species observed were dominated by *Eucalyptus crebra.* Other species include a bloodwood (*Corymbia* spp.)

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	1R3.1
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	01/10/2009

VEGETATION SURVEY

Q019

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.3.25**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**Of Concern**
DNRW Mapped as:	11.11.15/11.3.25/11.11.4/11.11.4a
Overall Health:	**Average to Good**

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP 267.5
Photo Numbers:	053 - 054
Datum:	WGS 84
Easting / Northing (Precision):	56J 0262382 7319146
Altitude:	340m

Vegetation Community Description
A dry ephemeral stream to the north of the bushfire affected area (R3.1). This area mostly avoided the bushfire. Tree species were dominated by *Casuarina cunninghamiana* other tree species present: *Melaleuca bracteata, Ficus platypoda, Eucalyptus tereticornis*. The shrub layer was dominated by *Lantana camara*. Rubber vine (*Cryptostegia grandiflora*) was observed in several locations within the dry stream.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	1R3.2
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	01/10/2009 12:28

VEGETATION SURVEY

Q020

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.3.25**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**Of Concern**
DNRW Mapped as:	11.11.15/11.3.25/11.11.4/11.11.4a
Overall Health:	**Good**

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP266.6
Photo Numbers:	055 - 056
Datum:	WGS84
Easting / Northing (Precision):	56J 0261658 7318770
Altitude:	330m

Vegetation Community Description
An ephemeral stream and associated woodland. The woodland outside the stream bed is dominated by *Corymbia citriodora*, *Eucalyptus tereticornis* and *Eucalyptus crebra*. Other species observed in the woodland include *Corymbia tessellaris*. The stream vegetation is dominated by *Melaleuca bracteata* and *Casuarina cunninghamiana* with *Callistemon viminalis* and *Agave americana* in the stream bed growing in the alluvial gravel.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	1R3.3
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	01/10/2009 14:20

VEGETATION SURVEY

Q021

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.11.15**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.11.15/11.3.25/11.11.4/11.11.4a
Overall Health:	**Good**

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP 260
Photo Numbers:	066 - 070
Datum:	WGS84
Easting / Northing (Precision):	56J 0255731 7319627
Altitude:	260m

Vegetation Community Description
Site is located in a large remnant patch of woodland to the north of the Dawson Highway. The topography of this area is steep in places and rarely flat. Highly variable vegetation found throughout this woodland. *Eucalyptus crebra* generally dominates the tree stratum with *Corymbia* spp. The shrub layer consists of *Acacia* spp., *Calytrix glaucophylla* with *Ficus platypoda* and *Melaleuca spp*. occurring in the drainage lines and gullies near this site.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	1R4.1
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	02/10/2009

VEGETATION SURVEY

Q022

Regional Ecosystem Profile	
Regional Ecosystem Type:	**Non - remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	11.11.15/11.3.25/11.11.4/11.11.4a
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP 260.9
Photo Numbers:	072 - 080
Datum:	WGS84
Easting / Northing (Precision):	56J 0256512 7319357
Altitude:	275m

Vegetation Community Description
Narrow dry drainage line with a large remnant patch to the south. *Corymbia citriodora* and *Corymbia tessellaris* dominates the tree stratum. *Acacia salicina* and *Melaleuca trichostachya* dominate the sub tree stratum. This site is surrounded by recently cleared lands.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	1R4.2
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	02/10/2009

VEGETATION SURVEY

Q023

Regional Ecosystem Profile	
Regional Ecosystem Type:	**Non - remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-Remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 262
Photo Numbers:	-
Datum:	UTM
Easting / Northing (Precision):	56J 0257335 7318740
Altitude:	350m

Vegetation Community Description
The site is a potential laydown area located west of the Dawson Highway. The site was chosen due to the lack of slope relative to the other areas within the range. The site is dominated by foreign basalt derived gravel that has been used to suppress regrowth. As a result weed species (mostly *Argemone ochroleuca*) dominate the area and the area directly surrounding the point is devoid of any mature trees. Ecologically, the site would be suitable for a laydown area provided the Endangered *Cycas megacarpa* that occur in the drainage lines surrounding the site are protected.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitchell Bird
Field Site Number:	1R5.1
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	03/10/2009

VEGETATION SURVEY

Q024

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.10.1**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.10.1
Overall Health:	**Average**

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP 255.8
Photo Numbers:	104 - 105
Datum:	WGS84
Easting / Northing (Precision):	56J 0252334 7317397
Altitude:	320m

Vegetation Community Description
Open woodland located to the north of the highway. The effects of drought and grazing are more obvious in this area due to the site being located on the ecotone of woodland and the dry vine forest area. Most of the vine forest species are heavily wilted. Thee tree layer is very sparse and includes *Eucalyptus crebra* and *Corymbia* spp. tussock grasses dominate the ground layer (mostly *Aristida racemosa*).

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitchell Bird
Field Site Number:	1R5.2
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	03/10/2009 10:30

VEGETATION SURVEY

Q025

Regional Ecosystem Profile	
Regional Ecosystem Type:	**Non - remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP 258
Photo Numbers:	107
Datum:	WGS84
Easting / Northing (Precision):	56J 0245976 7313168
Altitude:	185m

Vegetation Community Description
The site is a road reserve regrowth vegetation community located on a small dirt road to the west of Biloela. Vegetation consists largely of *Acacia harpophylla* regrowth with some *Eucalyptus cambageana* emergents. The area is currently mapped as Moratorium Regrowth vegetation (Prior to 7th of October) and is probably correctly mapped as the site was probably historically RE 11.9.1.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitchell Bird
Field Site Number:	1R5.3
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	03/10/2009 11:29

VEGETATION SURVEY

Q026

Regional Ecosystem Profile	
Regional Ecosystem Type:	**Non - remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP 243.5
Photo Numbers:	108 - 109
Datum:	WGS 84
Easting / Northing (Precision):	56J 0241800 7311373
Altitude:	155m

Vegetation Community Description
This site is a road reserve vegetation community located on a small dirt road to the west of Biloela consisting of *Eucalyptus populnea*, *Corymbia tessellaris* and *Eucalyptus crebra* with a mostly exotic ground cover layer of *Chloris gayana* and *Melinus repens*. There are numerous stands of regrowth Brigalow located to the north of this site but no regrowth Brigalow will be affected in this area.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitchell Bird
Field Site Number:	1R5.4
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	03/10/2009

VEGETATION SURVEY

Q027

Regional Ecosystem Profile	
Regional Ecosystem Type:	**Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP 242.6
Photo Numbers:	110 - 113
Datum:	WGS 84
Easting / Northing (Precision):	56J 0241042 7310836
Altitude:	155m

Vegetation Community Description
The site is located on a wide section of Callide Creek. Callide Creek is an ephemeral stream, however, it is one of the larger watercourses surveyed for the pipeline. There are some large *Eucalyptus tereticornis* located throughout this area. Under the eucalypts are shrubs consisting of *Acacia* spp. mostly *Acacia salicina*. The site is mapped as non-remnant. This is probably due to the width of the vegetation community instead of its lack of quality.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitchell Bird
Field Site Number:	1R5.5
Sample Level / Type:	/ Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	

VEGETATION SURVEY

Q028

Regional Ecosystem Profile	
Regional Ecosystem Type:	**Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP 239.6
Photo Numbers:	114 - 116
Datum:	WGS84
Easting / Northing (Precision):	56J 0238782 7308932
Altitude:	155m

Vegetation Community Description
A smaller ephemeral stream with *Melaleuca* spp. and *Eucalyptus tereticornis* acting as a narrow riparian corridor. The vegetation is too narrow to map as RE vegetation however the narrow community is of remnant size and structure. This site is heavily infested with *Macfadyena unguis-cati.*

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitchell Bird
Field Site Number:	1R5.6
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	

VEGETATION SURVEY

Q029

Regional Ecosystem Profile	
Regional Ecosystem Type:	**Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP 238.7
Photo Numbers:	117
Datum:	WGS84
Easting / Northing (Precision):	56J 0238100 7308395
Altitude:	155m

Vegetation Community Description
Narrow drainage line acting as a buffer between a grazing property and a wheat crop. The vegetation in the stream is dominated by *Eucalyptus tereticornis* and *Corymbia tessellaris* with a shrubbery of and *Acacia pendula* and *Lysiphyllum spp*. The community is too narrow to be considered remnant vegetation.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitchell Bird
Field Site Number:	1R5.7
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	03/10/2009 14:02

VEGETATION SURVEY

Q030

Regional Ecosystem Profile	
Regional Ecosystem Type:	**Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP 148.6
Photo Numbers:	131
Datum:	WGS84
Easting / Northing (Precision):	56J 0239116 7282120
Altitude:	275m

Vegetation Community Description
Dry drainage line located with a cattle grazing paddock. *Eucalyptus tereticornis* dominates the tree stratum with *Melaleuca bracteata* forming a narrow shrub layer within the drainage line. This are is highly disturbed. The pipeline will have minimal impact on any remaining vegetation and will probably avoid the larger trees in this area.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitchell Bird
Field Site Number:	1R6.1
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	04/10/2009 09:06

VEGETATION SURVEY

Q031

Regional Ecosystem Profile	
Regional Ecosystem Type:	**Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP 148.6
Photo Numbers:	140 - 141
Datum:	WGS84
Easting / Northing (Precision):	56J 0242543 7223463
Altitude:	335m

Vegetation Community Description
Dry ephemeral watercourse dominated by *Eucalyptus tereticornis* with a narrow shrub layer occupied by *Melaleuca bracteata* and *Melaleuca trichostachya* with scattered examples of *Angophora leiocalyx*. The grasses in the paddock to the south have recently been burnt to encourage new growth. Scattered *Eucalyptus crebra* occur away from the stream bank.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitchell Bird
Field Site Number:	1R6.2
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	04/10/2009 11:11

VEGETATION SURVEY

Q032

Regional Ecosystem Profile	
Regional Ecosystem Type:	**Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP 146.1
Photo Numbers:	142 - 144
Datum:	WGS84
Easting / Northing (Precision):	56J 0241724 7221193
Altitude:	360m

Vegetation Community Description
A small non- remnant regrowth patch of dry rainforest / vine forest vegetation. This vegetation is isolated and occurs in the middle of a paddock that is currently grazed. Species in this community include: *Acacia harpophylla*, *Brachychiton rupestris, Eremophila mitchellii, Notalea* spp., *Carissa ovata, Capparis mitchellii* and *Capparis arborea.*

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitchell Bird
Field Site Number:	1R6.3
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	04/10/2009

VEGETATION SURVEY

Q033

Regional Ecosystem Profile	
Regional Ecosystem Type:	**Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP 145
Photo Numbers:	145 - 155
Datum:	WGS84
Easting / Northing (Precision):	56J 241649 7219881
Altitude:	380m

Vegetation Community Description
Potential laydown area located in a cattle grazing paddock. This area is a large flat space with scattered trees of species that indicate the area was previously a mixture of eucalypt woodland and vine forest. Tree species and shrubs observed include the following *Maytenus cunninghamii, Brachychiton rupestris, Eremophila mitchellii, Capparis mitchellii, Brachychiton populneus* as well as eucalypt species to the south and east.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitchell Bird
Field Site Number:	1R6.4
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	04/10/2009 12:38

VEGETATION SURVEY

Q034

Regional Ecosystem Profile	
Regional Ecosystem Type:	**Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP Wol 25.7
Photo Numbers:	168 - 171
Datum:	WGS84
Easting / Northing (Precision):	56J 0209646 7083525
Altitude:	310m

Vegetation Community Description
Highly degraded drainage line. The area is dominated by regrowth vegetation with only a few scattered mature trees. The tree layer is dominated by *Eucalyptus populnea* with some scattered *Eucalyptus tereticornis* and *Brachychiton populneus*. Scattered shrubs include *Alectryon diversifolius* and *Acacia salicina*. There is a small patch of *Acacia harpophylla* regrowth to the north and an area incorrectly mapped as moratorium regrowth to the east.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitchell Bird
Field Site Number:	1R7.1
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	05/10/2009

VEGETATION SURVEY

Q035

Regional Ecosystem Profile	
Regional Ecosystem Type:	**Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP Wol 26.5
Photo Numbers:	174 - 176
Datum:	WGS84
Easting / Northing (Precision):	56J 210079 7084240
Altitude:	315m

Vegetation Community Description
Highly degraded drainage line similar to R7.1 in quality. Species include: *Eucalyptus melanophloia, Corymbia tessellaris, Geijera parviflora* and *Acacia ixodes*. The area is currently being grazed.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitchell Bird
Field Site Number:	1R7.2
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	05/10/2009 9:48

VEGETATION SURVEY

Q036

Regional Ecosystem Profile	
Regional Ecosystem Type:	**Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP Con 4.9
Photo Numbers:	214 – 216
Datum:	WGS 84
Easting / Northing (Precision):	56J 0225808 7052426
Altitude:	325m

Vegetation Community Description
Vegetative hilltop surrounded by grazed paddocks. *Eucalyptus fibrosa* and *Eucalyptus pilligaensis* dominate the tree species present. *Geijera parviflora* and *Acacia leichhardtii* dominate the shrub layer. *Casuarina crista* and *Acacia harpophylla* regrowth occurs at the bottom of the slope and in the drainage lines.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitchell Bird
Field Site Number:	1R8.1
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	06/11/2009

VEGETATION SURVEY

Q037

Regional Ecosystem Profile	
Regional Ecosystem Type:	**Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP Con 3.9
Photo Numbers:	217 - 218
Datum:	WGS84
Easting / Northing (Precision):	56J 0226066 7051469
Altitude:	335m

Vegetation Community Description
Highly degraded drainage line containing a few scattered mature trees *(Brachychiton populneus*, *Geijera parviflora, Eremophila mitchellii* and *Eucalyptus populnea*). Pasture grasses and *Verbena aristigera* occur as ground cover.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitchell Bird
Field Site Number:	1R8.2
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	06/10/2009

VEGETATION SURVEY

Q038

Regional Ecosystem Profile	
Regional Ecosystem Type:	**Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP Con 1.5
Photo Numbers:	232
Datum:	WGS84
Easting / Northing (Precision):	56J 0225810 7049181
Altitude:	330m

Vegetation Community Description
Highly degraded drainage line with no mature trees. This area is currently grazed and occurs as pasture with some scattered *Acacia deanei* present. The proposed pipeline is unlikely to impact on any significant vegetation. Some *Acacia harpophylla* regrowth located between the site and the large remnant patch to the north.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitchell Bird
Field Site Number:	1R8.3
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	06/10/2009 15:35

VEGETATION SURVEY

Q039

Regional Ecosystem Profile	
Regional Ecosystem Type:	**Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	BBS
KP / Site Description:	KP Con 0.6
Photo Numbers:	233 - 236
Datum:	WGS84
Easting / Northing (Precision):	56J 225717 7048267
Altitude:	350m

Vegetation Community Description
The area is highly disturbed with waste and litter such as 2 cars and some scrap corrugated iron and other household waste. The area has also undergone some historic logging. *Eucalyptus crebra, Eucalyptus melanophloia* and *Eucalyptus fibrosa* dominate the tree species that have not been logged. The shrub layer is dominated by *Acacia* spp. and *Callitris glaucophylla*. The ground layer is sparse and contains numerous brick-sized rocks.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitchell Bird
Field Site Number:	1R8.4
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	06/10/2009 16:00

VEGETATION SURVEY

Q040

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.10.1**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.10.1
Overall Health:	**Good**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 257
Photo Numbers:	0293 – 0294 (corrected)
Datum:	WGS 84
Easting / Northing (Precision):	56J 0253285 7318201 (5m)
Altitude:	345m

Vegetation Community Description
Woodland with a thick shrublayer / vine-thicket understorey. *Eucalyptus microcarpa* and *Corymbia citriodora* dominate the tree stratum. The thick shrub layer as typically dominated by *Alectryon diversifolius, Alphitonia excelsa* and *Geijera parviflora.* The site contained numerous examples of environmental weeds including the declared weeds *Macfadyena unguis-catii, Lantana camara* and *Opuntia tomentosa*.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R1.1
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	16/10/2009

VEGETATION SURVEY

Q041

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-Remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 254.1
Photo Numbers:	0302 – 0304 (corrected)
Datum:	WGS 84
Easting / Northing (Precision):	56J 0237164 7303057 (5m)
Altitude:	290m

Vegetation Community Description

The site is located between the Dawson Highway and the existing QGC pipeline. The site is currently highly disturbed open pasture grassland. The vegetation in this area is dominated by pasture grasses that have not recently been grazed. The regrowth vegetation consists of pioneer species, typically *Alphitonia excelsa* and *Acacia leiocalyx*. To the south of the site exists a patch of mature *Eucalyptus populnea* indicating the site was probably once dominated by this species.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R1.2
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	16/10/2009 (13:25)

VEGETATION SURVEY

Q042

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-Remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 232.9
Photo Numbers:	0308 – 0309 (corrected)
Datum:	WGS 84
Easting / Northing (Precision):	56J 0237164 7303057 (5m)
Altitude:	190m

Vegetation Community Description

Highly disturbed area of the pipeline. The site was previously mapped as moratorium regrowth (prior to the new legislation taking effect on the 6th of October 2009). The vegetation in this area is almost exclusively brigalow (*Acacia harpophylla*) regrowth and pasture grassed. The brigalow on site is generally around 3 metres in height with some taller examples to 5 metres. The site contains some gilgai and smaller shrubbery of *Alectryon diversifolius* indicating it was historically an endangered Brigalow community, however, the current state of the site is poor and provides little resemblance to a remnant community.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R1.3
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	16/10/2009 (13:28)`

VEGETATION SURVEY

Q043

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-Remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 230.2
Photo Numbers:	0308 – 0309 (corrected)
Datum:	WGS 84
Easting / Northing (Precision):	56J 0237901 7300499 (5m)
Altitude:	180m

Vegetation Community Description
Highly disturbed area of the pipeline. The site was previously mapped as moratorium regrowth (prior to the new legislation taking effect on the 6th of October 2009). The vegetation in this area is almost exclusively brigalow (*Acacia harpophylla*) regrowth and pasture grassed. The brigalow on site is generally around 3 metres in height with some taller examples to 5 metres. The vegetation in this area is very similar to that observed at 2R1.3,

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R1.4
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	16/10/2009

VEGETATION SURVEY

Q044

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-Remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 234.4
Photo Numbers:	0310 – 0311 (corrected)
Datum:	WGS 84
Easting / Northing (Precision):	56J 0236598 7304439 (5m)
Altitude:	165m

Vegetation Community Description
A larger patch of highly diverse regrowth vegetation. The site was previously mapped as moratorium regrowth (prior to the new legislation taking effect on the 6th of October 2009). The vegetation in this area is dominated by scattered *Eucalyptus thozetiana* with a scattered disturbed acacia layer as well as pasture grasses. The brigalow on site is generally around 5 metres, is not very abundant and is more concentrated in the western sections of the site.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R2.1
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	17/10/2009 (8:30)

VEGETATION SURVEY

Q045

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-Remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 206.6
Photo Numbers:	0312 – 0313 (corrected)
Datum:	WGS 84
Easting / Northing (Precision):	56J 0240689 7277654 (5m)
Altitude:	250m

Vegetation Community Description
Open grassland located to the south of Biloela. This site is currently grazed pasture and contains largely pasture grasses with scattered examples of *Eucalyptus tereticornis*. In the centre of the site is a large stand of *Melaleuca bracteata* regrowth that provides cover for the cattle and is thick enough to limit the growth of any ground cover. No areas in the vicinity of this site can be considered remnant vegetation.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R2.2
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	17/10/2009 (10:33)

VEGETATION SURVEY

Q046

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-Remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 214
Photo Numbers:	0317 - 0318
Datum:	WGS 84
Easting / Northing (Precision):	56J 0238741 7284565 (5m)
Altitude:	225m

Vegetation Community Description
This site exists as a dry ephemeral stream bed highly disturbed by grazing. The vegetation in the locality of the stream is typical of the watercourses throughout the northern and central sections of the pipeline. The narrow strip of riparian vegetation included *Melaleuca trichostachya*, *Callistemon viminalis, Casuarina cunninghamiana* and *Eucalyptus tereticornis.* As with most streams and gullies in this area there was a significant infestation of the declared weed Cat's Claw Creeper (*Macfadyena unguis-cati*).

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R2.3
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	17/10/2009 (12:24)

VEGETATION SURVEY

Q047

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-Remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 177.4
Photo Numbers:	0319 - 0320
Datum:	WGS 84
Easting / Northing (Precision):	56J 0245031 7249677 (5m)
Altitude:	360m

Vegetation Community Description
A large remnant openly grazed woodland. Tree species in this area almost exclusively two species (*Eucalyptus melanophloia* or *Corymbia erythrophloia*). The shrub layer is almost non-existent except for where small rocky granite outcrops are exposed support *Alectryon diversifolius* and some other smaller shrubs in clumps. The site has numerous large trees that have died potentially due to poisoning.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R2.4
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	17/10/2009 (14:23)

VEGETATION SURVEY

Q048

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-Remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 176.6
Photo Numbers:	0321 - 0322
Datum:	WGS 84
Easting / Northing (Precision):	56J 0245212 7248919 (5m)
Altitude:	355

Vegetation Community Description
Open woodland. Tree species in this area are dominated by *Eucalyptus melanophloia* and *Corymbia erythrophloia*. The shrub layer is almost non-existent except for some regrowth of the tree species. The site contains far less dead wood and appears in better health than 2R2.4

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R2.5
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	17/10/2009 (15:05)

VEGETATION SURVEY

Q049

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-Remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 168
Photo Numbers:	0327 - 0330
Datum:	WGS 84
Easting / Northing (Precision):	56J 0245212 7248919 (5m)
Altitude:	370m

Vegetation Community Description

Dry ephemeral stream / drainage line with large granite boulders in stream. The trees in the stream area are a diverse mix of Myrtaceous species with *Eucalyptus populnea* dominating the tree layer in the upper terraces away from the stream There is a recently cleared corridor located south of the stream that appears to have been created for a water pipeline (see right-hand photo). Where the water pipeline has recently been cleared numerous environmental weeds have established. This indicates the need for a good weed management plan when the pipeline easement has been established.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R2.6
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	17/10/2009 (16:55)

VEGETATION SURVEY

Q050

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**NC**
EPA Status:	**NC**
DNRW Mapped as:	Non-Remnant
Overall Health:	**Moderate to Poor**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 224.5
Photo Numbers:	0331 - 0340
Datum:	WGS 84
Easting / Northing (Precision):	56J 0237305 7294940 (5m)
Altitude:	185m

Vegetation Community Description

A community of large acacias located on sedimentary floodplains. The proposed pipe location should pass between this community and the stream. The community was investigated due to the likelihood of it potentially being dominated by *Acacia pendula* (Weeping Myall) a federally listed Endangered ecological community. The vegetation on site was dominated by *Acacia salicina* and not *Acacia pendula* and contains almost exclusively non-native ground cover indicating that the site is not the endangered ecological community. Many of the acacias had been poisoned as the axe marks on the lower trunks of the trees was obvious in places.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R3.1
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	1810/2009 (9:30)

VEGETATION SURVEY

Q051

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**NC**
EPA Status:	**NC**
DNRW Mapped as:	Non-Remnant
Overall Health:	**Moderate to Poor**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 224.6
Photo Numbers:	-
Datum:	WGS 84
Easting / Northing (Precision):	56J 0237305 7294940 (5m)
Altitude:	185m

Vegetation Community Description

One of the larger ephemeral streams surveyed throughout the site. The vegetation height and cover in some places would potentially qualify for remnant. However the width of this community is too narrow. The vegetation in this community resembles RE 11.3.25 and is dominated by *Eucalyptus tereticornis, Melaleuca* spp. and *Casuarina cunninghamiana* There is also a scattered shrub layer occurring throughout the site dominated by *Callistemon viminalis* closer to the stream bed and *Ficus opposite* on the lower terrace. The declared weed Cat's Claw Creeper (*Macfadyena unguis-cati)* is common throughout the site.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R3.2
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	1810/2009 (9:55)

VEGETATION SURVEY

Q052

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**NC**
EPA Status:	**NC**
DNRW Mapped as:	Non-Remnant
Overall Health:	**Moderate to Poor**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 223.6
Photo Numbers:	343
Datum:	WGS 84
Easting / Northing (Precision):	56J 0237242 7294024 (5m)
Altitude:	190m

Vegetation Community Description

A dry ephemeral stream with a narrow fringing vegetation community. In the stream the vegetation is dominated by *Eucalyptus tereticornis, Melaleuca trichostachya*, and *Casuarina cunninghamiana.* The upper terraces contain mostly *Eucalyptus* species to the south and a small brigalow (*Acacia harpophylla*) and Lysiphyllum carronii community exist to the north. The declared weed Cat's Claw Creeper (*Macfadyena unguis-cati)* is common throughout the site although a severe infestation is yet to occur.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R3.3
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	18/10/2009 (11:08)

VEGETATION SURVEY

Q053

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**NC**
EPA Status:	**NC**
DNRW Mapped as:	Non-Remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 220.3
Photo Numbers:	
Datum:	WGS 84
Easting / Northing (Precision):	56J 0237965 7290869 (5m)
Altitude:	210m

Vegetation Community Description
The site is a dry ephemeral stream to 5 metres in width. The in-stream vegetation is typical of the area including *Melalueca* spp. The areas outside the stream bed are highly disturbed by grazing and are dominated by *Eucalyptus cambageana* with patches of *Acacia harpophylla* closer to the stream where bulldozer access is more difficult. This indicates that site was previously RE (11.9.1), a Regional Ecosystem that is currently endangered.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R3.4
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	18/10/2009

VEGETATION SURVEY

Q054

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-Remnant
Overall Health:	**Moderate to Poor**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 217.6
Photo Numbers:	-
Datum:	WGS 84
Easting / Northing (Precision):	56J 0238150 7288080 (5m)
Altitude:	210m

Vegetation Community Description
Highly degraded drainage line containing no continuous vegetation, exposed black soil and evidence of erosion. The site is currently grazed and pasture grasses are found throughout. Further away from the road some scattered *Melaleuca bracteata, Acacia salicina* and *Eucalyptus tereticornis* exist as isolated trees.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R3.5
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	18/10/2009 (13:00)

VEGETATION SURVEY

Q055

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-Remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 218.6
Photo Numbers:	0347 - 0351
Datum:	WGS 84
Easting / Northing (Precision):	56J 0243058 7271837 (5m)
Altitude:	205m

Vegetation Community Description

This site is located east of the proposed pipeline and along the road travelling south from Biloela. This site was investigated to the presence or absence of the federally listed Weeping Myall Woodland – Endangered Ecological Community. The vegetation on site was dominated by *Eucalyptus populnea* and *Eucalyptus tereticornis* on alluvial floodplain terraces. The understorey in this area is dominated by *Acacia salicina* with a mix of native and exotic grasses forming a thick cover on the ground. This Quaternary investigation showed that the endangered ecological community did not occur in this area.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R3.6
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	18/10/2009 (13:31)

VEGETATION SURVEY

Q056

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-Remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 200.4
Photo Numbers:	0347 - 0351
Datum:	WGS 84
Easting / Northing (Precision):	56J 0243058 7271837
Altitude:	265m

Vegetation Community Description

Open grazing pasture located on flat pastoral land. This site was chosen due to a small corridor of mature trees being visible from aerial photography. On inspection all of the trees visible on the aerial photography had been recently felled i.e. in the last few weeks and lay on the ground with green leaves and flowers. The trees were generally *Eucalyptus tereticornis* or *Eucalyptus populnea.* The site is currently being grazed by cattle. This survey included a 1 kilometre walk north along the pipeline with no mature trees visible.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R3.7
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	18/10/2009 (16:06)

VEGETATION SURVEY

Q057

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-Remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 203.2
Photo Numbers:	0354 – 0356
Datum:	WGS 84
Easting / Northing (Precision):	56J 0241833 7274309 (5m)
Altitude:	260m

Vegetation Community Description

Highly degraded sandy ephemeral stream. The trees in this area have been heavily cleared and only a few scattered examples existing along the watercourse. Trees in this area are dominated by *Casuarina cunninghamiana* with some scattered examples of *Melaleuca bracteata*. This site is non-remnant. To the north of this site a large number of mature trees had been recently cleared.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R3.8
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	18/10/2009 (17:30)

VEGETATION SURVEY

Q058

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-Remnant
Overall Health:	**Moderate**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	2km east of KP 69
Photo Numbers:	0357 – 0358
Datum:	WGS 84
Easting / Northing (Precision):	56J 0227780 7151800 (5m)
Altitude:	275m

Vegetation Community Description

Site is located in Cockatoo Creek, the largest watercourse investigated during this field survey. The site is located in sandstone with a highly eroded cliff face located to the north of the site. The trees in this area have been cleared previously; however, large trees (mostly *Eucalyptus tereticornis*) remain on the upper terraces. The in-stream vegetation is dominated by *Melaleuca* spp. and *Callistemon viminalis*. Despite the lack of rain in the area the creek still maintained some smallish pools indicating some form of semi-permanence. This site is non-remnant. Above the cliff face the vegetation appears to be a brigalow (*Acacia harpophylla*) community.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R4.1
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	19/10/2009 (14:20)

VEGETATION SURVEY

Q059

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-Remnant
Overall Health:	**Moderate**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 70
Photo Numbers:	0360 – 0362
Datum:	WGS 84
Easting / Northing (Precision):	56J 0227780 7151800 (5m)
Altitude:	265m

Vegetation Community Description

The site is located in a dry drainage line in the centre of a grazing paddock. The vegetation in this area is dominated by *Callitris glaucophy*lla regrowth and contains very few other species. In the paddock to the north of the site *Acacia* regrowth (mostly *Acacia ixodes*) dominates a shrub layer to 3 metres. After consultation with the landowner the paddock will be burnt when the fire ban for the area is lifted. Buffel grass (*Cenchrus ciliaris*) dominates the pasture in this area

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R4.2
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	19/10/2009 (16:13)

VEGETATION SURVEY

Q060

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.5.1**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.5.1
Overall Health:	**Moderate**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 7.3
Photo Numbers:	0370 – 0372
Datum:	WGS 84
Easting / Northing (Precision):	56J 0219929 7093453 (5m)
Altitude:	360m

Vegetation Community Description
The site sits as a small gap of Not Of Concern RE (11.5.1) wedge between two Endangered RE polygons. The site was micro-sited into this gap deliberately to minimise the impact of tree removal in these endangered communities. Eucalyptus crebra dominates the tree layer in this area with some larger *Casuarina crista.* Other species in this area include *Callitris glaucophylla, Psydrax oleifolia* and *Geijera parviflora*. A highly disturbed *Acacia harpophylla* (Brigalow) community exists 100 metres to the west and will be avoided during the construction of the pipeline.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R5.1
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	20/10/2009 (12:26)

VEGETATION SURVEY

Q061

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.7.2**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.7.2/11.7.7
Overall Health:	**Moderate**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 2
Photo Numbers:	0376 – 0377
Datum:	WGS 84
Easting / Northing (Precision):	56J 0219940 7088298 (5m)
Altitude:	400m

Vegetation Community Description

The site is heavily dominated by *Acacia shirleyi* in the tree stratum forming monocultures in places. Other species occurring include *Eucalyptus crebra, Eucalyptus excreta* and *Alphitonia excelsa.* The shrub layer in this community is relatively sparse with the exception of some scattered *Acacia catenulata*. The groundcover varies greatly depending on the dominant tree species in the area.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R5.2
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	20/10/2009 (17:26)

VEGETATION SURVEY

Q062

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.7.7**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.7.2/11.7.7
Overall Health:	**Moderate**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	700m east of KP 5
Photo Numbers:	0385 – 0386
Datum:	WGS 84
Easting / Northing (Precision):	56J 0220312 7091359 (5m)
Altitude:	390

Vegetation Community Description
Steep sandstone scarp fading into lower land brigalow regrowth. Site on the slope exists as a *Eucalyptus crebra* and *Corymbia citriodora* with an *Acacia shirleyi* dominated understorey. A large amount of logging of mature trees has occurred throughout the site and it appears the *Eucalyptus crebra* have been the preferred tree to remove. Further down the scarp, the soil changes colour into a deeper brown / black soil. This area is devoid of mature trees; however, the regrowth is generally *Acacia harpophylla* and vine forest species.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R6.1
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	21/10/2009 (10:50)

VEGETATION SURVEY

Q063

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-Remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	Con 43.5
Photo Numbers:	0388 – 0391
Datum:	WGS 84
Easting / Northing (Precision):	56J 0219815 7085819 (5m)
Altitude:	360m

Vegetation Community Description
The site is being investigated as a potential camp and lay down area. The site exists as a open paddock dominated by pasture grasses with some scattered regrowth *Acacia harpophylla* (brigalow) and *Capparis lasiantha.* A strip of brigalow regrowth is growing between the site and the road in the road reserve. Soils in the area are cracking clay like soils.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R6.2
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	21/10/2009 (12:32)

VEGETATION SURVEY

Q064

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-Remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP Con 42.9
Photo Numbers:	0392 – 0394
Datum:	WGS 84
Easting / Northing (Precision):	56J 0219990 7085295 (5m)
Altitude:	360m

Vegetation Community Description

The site is being investigated as a camp site and lay down area. This site is located directly south of the survey site 2R6.2. The site exists as a open paddock dominated by pasture grasses with more *Aristida* species than the previous site. There are some scattered regrowth *Acacia harpophylla* (brigalow) with a small brigalow patch to the east. Three large *Casuarina crista* occur in the west of the site and a strip of brigalow regrowth remains growing between the site and the road in the road reserve. Soils in the area are cracking clay like soils which appear sandier than the previous site. Other regrowth species include *Carrisa ovata* and *Casuarina crista*.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R6.3
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	21/10/2009 (12:55)

VEGETATION SURVEY

Q065

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-Remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP Con 42.2
Photo Numbers:	0395 – 0396
Datum:	WGS 84
Easting / Northing (Precision):	56J 0220314 7084585(5m)
Altitude:	360 m

Vegetation Community Description

The site is being investigated as a potential camp site and lay down area. This site is located directly south of the survey site 2R6.3. The site exists as a open paddock dominated by pasture grasses and contains some minor farming infrastructure such as some older cattle yards and feed troughs. The vegetation in this area is dominated by *Eucalyptus crebra* and *Allocasuarina luehmannii*. Some young *Eucalyptus microcarpa* are located in the eastern sections of the site. Heading in a southerly direction down this road the regrowth vegetation looks less like brigalow and dry rain forest species and more like sclerophyll woodlands.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R6.4
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	21/10/2009 (13:15)

VEGETATION SURVEY

Q066

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-Remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP Wol 36.4
Photo Numbers:	0395 – 0396
Datum:	WGS 84
Easting / Northing (Precision):	56J 0219002 7086218 (5m)
Altitude:	360 m

Vegetation Community Description
First site heading west off the main line on the Woleebee Lateral. The site was previously mapped as moratorium regrowth (prior to the new legislation taking effect on the 6th of October 2009). The site is a narrow strip of brigalow regrowth mostly occurring on the southern side of the fence. The brigalow is generally 5m high and generally in poor condition.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R6.5
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	21/10/2009 (14:46)

VEGETATION SURVEY

Q067

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.5.21**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	11.5.21/11.7.4/11.5.4
Overall Health:	**Moderate to Good**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP Wol 33.3
Photo Numbers:	0422 – 0423
Datum:	WGS 84
Easting / Northing (Precision):	56J 0215966 7085985 (5m)
Altitude:	360 m

Vegetation Community Description

The site is located in a large section of remnant vegetation along the Woleebee Lateral 4km west of the mainline. The vegetation on site is highly disturbed *Allocasuarina luehmannii*, and *Callitris glaucophylla* woodland with some scattered *Eucalyptus* forming taller emergents. Pasture grasses form a continuous layer of groundcover. Many of the larger emergents in this are have been cleared for timber.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R7.1
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	22/10/2009 (10:00)

VEGETATION SURVEY

Q068

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.9.5**
EPBC Status:	**Endangered**
VMA Status:	**Endangered**
EPA Status:	**Endangered**
DNRW Mapped as:	11.9.5/11.9.6
Overall Health:	**Moderate to Good**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP Wol 29.5
Photo Numbers:	0422 – 0423
Datum:	WGS 84
Easting / Northing (Precision):	56J 0215966 7085985 (5m)
Altitude:	345 - 360 m

Vegetation Community Description

This site is at the edge of the scarp with a steep north-westerly aspect. On top of the scarp the vegetation is dominated by *Acacia shirleyi*. The scarp declines steeply with a north-west aspect. To the north of the site exists a pocket of semi-evergreen vine thicket tucked up against the scarp (RE: 11.9.4). Given that the Vulnerable tree *Cadellia pentastylis* (ooline) was found further west along this scarp in much degraded vegetation communities, it is likely to be occurring in this area. The proposed pipeline will cross the scarp where the least vegetation is located and will not remove any of the endangered vegetation community.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R7.2
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	22/10/2009 (13:10)

VEGETATION SURVEY

Q069

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-Remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP Wol 14.9
Photo Numbers:	0438 – 0439
Datum:	WGS 84
Easting / Northing (Precision):	56J 0200932 7080958 (5m)
Altitude:	335 m

Vegetation Community Description
This site is located on the sandy stream bed and surrounding floodplain terraces of Juandah Creek. This area is a highly disturbed watercourse currently grazed by cattle. The remaining woody vegetation is scattered along the eroded creekbed and is consists primarily of *Angophora floribunda* and *Eucalyptus tereticornis.*

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R7.3
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	22/10/2009 (15:00)

VEGETATION SURVEY

Q070

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.10.1**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.10.1/11.7.2
Overall Health:	**Moderate to Good**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP Wol 17.2
Photo Numbers:	0440 – 0442
Datum:	WGS 84
Easting / Northing (Precision):	56J 0202945 7080594 (5m)
Altitude:	365 m

Vegetation Community Description

The vegetation on site is dominated by *Corymbia citriodora* and *Eucalyptus crebra* with some *Acacia* species forming a scattered shrub layer. The pipeline corridor will intersect this vegetation community and trim off a small section of a large remnant vegetation community. Only a small section of this community will be removed and the area affected is at the edge of the community and the grazing land.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R7.4
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	22/10/2009 (16:30)

VEGETATION SURVEY

Q071

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-Remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 33.8
Photo Numbers:	0447 – 0448
Datum:	WGS 84
Easting / Northing (Precision):	56J 0218543 7119411 (5m)
Altitude:	365 m

Vegetation Community Description
Open grazing land on the edge of the state forest. The vegetation in this are has been historically cleared for pastures. The vegetation is dominated by the exotic Buffel Grass (*Cenchrus ciliaris*) with scattered regrowth vegetation consisting of brigalow and dry rainforest species. No remnant vegetation will be cleared in this area as a result of the pipeline construction.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R8.1
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	23/10/2009 (09:10)

VEGETATION SURVEY

Q072

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.9.9**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.10.9/11.9.7/11.9.10
Overall Health:	**Average**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	200m east of KP 33.8
Photo Numbers:	0449 – 0453
Datum:	WGS 84
Easting / Northing (Precision):	56J 0218733 7119399 (5m)
Altitude:	370 m

Vegetation Community Description
This area is located in remnant vegetation 200m east of the pipeline easement. A sparse tree layer in this area is dominated by *Eucalyptus crebra*. However, there is a thick shrub layer consisting primarily of *Hovea longipes* to about 3 metres with some scattered examples of *Carissa ovata.* It appears this vegetation was not locally removed and the brigalow (Site 2R8.1) was bulldozed for pasture.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R8.2
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	23/10/2009 (09:29)

VEGETATION SURVEY

Q073

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-Remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 43
Photo Numbers:	0454 – 0455
Datum:	WGS 84
Easting / Northing (Precision):	56J 0219499 7128378 (5m)
Altitude:	275 m

Vegetation Community Description
This site is a degraded drainage line in an open grazed paddock. The site has been recently burnt and contains lots of fallen timber. Trees dominating in this are include *Angophora floribunda* and *Eucalyptus tereticornis*. The drainage line has no real sandy substrate indicating that water flows only occur after substantial rainfall. The upper terraces are dominated by *Eucalyptus populnea* and *Callitris glaucophylla.* The site is currently being grazed by cattle.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R8.3
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	23/10/2009

VEGETATION SURVEY

Q074

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.10.9**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.10.9/11.9.7/11.9.10
Overall Health:	**Good**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 39
Photo Numbers:	0465 – 0466
Datum:	WGS 84
Easting / Northing (Precision):	56J 0218873 7124507 (5m)
Altitude:	340 m

Vegetation Community Description
This site exists as a thick grove of *Callitris glaucophylla* with a few scattered *Allocasuarina luehmannii* to a height of about 8 metres. There are some scattered trees that are acting as emergents. These species include *Eucalyptus crebra* and *Brachychiton populneus.* The ground cover in this area is absent due largely to the thick layer of *Callitris.*

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R8.4
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	23/10/2009

VEGETATION SURVEY

Q075

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	11.9.1
Overall Health:	**Poor to Moderate**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 35.8
Photo Numbers:	0478 – 0479
Datum:	WGS 84
Easting / Northing (Precision):	56J 0218742 7121373 (5m)
Altitude:	340 m

Vegetation Community Description
A highly disturbed community dominated by *Casuarina crista* on fine grain sediments. The site contains no mature *Acacia harpophylla* (brigalow) however; there are regrowth brigalow to the south. The shrub layer in this area is dominated by *Eremophila mitchellii*. A lot of clearing of brigalow in diagonal strips has occurred to the west of the site. This clearing appears to be done to allow for wind protection for the cattle.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R8.5
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	23/10/2009 (16:54)

VEGETATION SURVEY

Q076

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-Remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 35.3
Photo Numbers:	0481 – 0483
Datum:	WGS 84
Easting / Northing (Precision):	56J 0218641 7120845 (5m)
Altitude:	340 m

Vegetation Community Description
This site was shown to demonstrate the clearing of brigalow in diagonal strips has recently occurred in this area. This clearing appears to be done to allow for sun / wind protection for the cattle. Within the strips the brigalow is generally to two metres in height. Some small sections of this site were previously mapped as moratorium regrowth (prior to the new legislation taking effect on the 6th of October 2009).

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R8.6
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	23/10/2009 (17:09)

VEGETATION SURVEY

Q077

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.10.9**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.10.9
Overall Health:	**Moderate**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 50
Photo Numbers:	0484
Datum:	WGS 84
Easting / Northing (Precision):	56J 0221784 7134471 (5m)
Altitude:	365 m

Vegetation Community Description

This site is on the edge of a large section of vegetation that will not be cleared as a result of the proposed pipeline. Looking at the regrowth vegetation scattered in the paddock it appears the vegetation cleared to the south of the site was a brigalow dominated community and the *Callitris glaucophylla* community to the north was not cleared. The vegetation remaining is dominated by *Callitris glaucophylla* with scattered *Alphitonia excelsa, Allocasuarina luehmannii* and *Eucalyptus crebra.* The site also contains a diverse shrub layer and ground cover.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R9.1
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	25/10/2009 (11:00)

VEGETATION SURVEY

Q078

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-Remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 47.9
Photo Numbers:	0485 – 0487
Datum:	WGS 84
Easting / Northing (Precision):	56J 020718 7132533 (5m)
Altitude:	345 m

Vegetation Community Description
This site exists as a small gap of cleared non-remnant vegetation between two larger remnant sections. The gap occurs between two patches of RE 11.10.9 which is dominated by *Callitris glaucophylla* with some scatted *Eucalyptus crebra* emerging. The cleared gap between the two communities is 35 metres at its narrowest. If any vegetation in this area is required for removal it will be minimal.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R9.2
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	25/10/2009 (11:30)

VEGETATION SURVEY

Q079

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-Remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 45.4
Photo Numbers:	0495 – 0496
Datum:	WGS 84
Easting / Northing (Precision):	56J 0219180 7130881 (5m)
Altitude:	305 m

Vegetation Community Description

This site exists as a small gap of cleared non-remnant vegetation between remnant sections. The gap occurs between two patches. The vegetation in this area is highly disturbed and has suffered historic clearing events. To the north of the gap is a monoculture of *Callitris* and to the south is a mixture of *Callitris glaucophylla* with some scatted *Eucalyptus crebra* emerging. The vegetation to the south is in better condition to that of the north.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R9.3
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	25/10/2009

VEGETATION SURVEY

Q080

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-Remnant
Overall Health:	**Moderate**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 44.4
Photo Numbers:	0497 – 0499
Datum:	WGS 84
Easting / Northing (Precision):	56J 0219395 7129852 (5m)
Altitude:	270 m

Vegetation Community Description
This site is a larger ephemeral stream with some deeper stagnant pools. Given the extended dry periods in the area and the water remaining in indicates that this stream is semi-permanent. The vegetation in this area is typical of riparian vegetation in the Brigalow Belt. Dominant tree species include *Angophora floribunda* and *Eucalyptus tereticornis*. Large *Lomandra longifolia* are growing through the exposed rocks in the side of the stream bank.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R9.4
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	25/10/2009 (17:00)

VEGETATION SURVEY

Q081

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-Remnant
Overall Health:	**Moderate**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 30
Photo Numbers:	0500 – 0501
Datum:	WGS 84
Easting / Northing (Precision):	56J 0219503 7115894 (5m)
Altitude:	325 m

Vegetation Community Description
This site is located at the edge of a remnant community and a cleared paddock devoid of any trees. East of the site is a brigalow dominated community which adjoins a *Callitris glaucophylla* community to the north (the car in the photo highlights the community boundary - to the right of the car in the photo is the Brigalow (11.9.5) to the left Callitris (11.10.9)). WP004 shows the change in the vegetation community. The proposed pipeline will avoid removing any vegetation from either of these communities. However, it is worth nothing the incorrectly mapped brigalow patch.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R9.5
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	25/10/2009 (17:35)

VEGETATION SURVEY

Q082

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	11.3.25/11.9.10/11.9.7
Overall Health:	**Moderate**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 29.2
Photo Numbers:	0502 – 0504
Datum:	WGS 84
Easting / Northing (Precision):	56J 0219463 7015058 (5m)
Altitude:	300 m

Vegetation Community Description
This site is a dry ephemeral stream with grazing paddocks located to the north and south. The vegetation in the stream is typical; *Eucalyptus tereticornis* dominates the trees in the stream with some *Callitris glaucophylla* dominating the upper terraces. Within the stream *Lomandra longifolia* dominates the rocky substrate. The paddock to the north has recently been blade ploughed and shows scattered exposed sandstone boulders. Probably too narrow to be remnant.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R9.6
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	25/10/2009 (17:50)

VEGETATION SURVEY

Q083

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.10.1**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.10.1 / 11.7.2
Overall Health:	**Good**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP Wol 11.7
Photo Numbers:	0508 – 0509
Datum:	WGS 84
Easting / Northing (Precision):	55J 0796783 7080603 (5m)
Altitude:	390 m

Vegetation Community Description
This site is located on a small sandstone jump-up surrounded by grazing lands. The vegetation on the jump-up has remained due to the difficulty in clearing it compared to the flat and stable areas surrounding the site. The vegetation in this area is dominated by *Corymbia citriodora.* The pipeline will clip the northern part of this jump-up and only a limited number of trees will be removed.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R10.1
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	26/10/2009

VEGETATION SURVEY

Q084

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.7.2**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.10.1 / 11.7.2
Overall Health:	**Good**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP Wol 9.7
Photo Numbers:	0522 – 0523
Datum:	WGS 84
Easting / Northing (Precision):	55J 0794836 7080098 (5m)
Altitude:	445 m

Vegetation Community Description
This site is located just north of Gurulmundi State Forest and is part of the same vegetated community as the State Forest. It is located on top of a sandstone scarp and has a high altitude. The vegetation in this area was dominated by *Acacia shirleyi* with some very scattered examples of *Eucalyptus crebra*. It appears that in this area that RE: 11.7.2 dominates the tops of the scarps and RE: 11.10.1 dominates the lower areas and slopes.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R10.2
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	26/10/2009

VEGETATION SURVEY

Q085

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.10.1**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.10.1 / 11.7.2
Overall Health:	**Good**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP Wol 9.2
Photo Numbers:	0528 – 0530
Datum:	WGS 84
Easting / Northing (Precision):	55J 0794225 7080097 (5m)
Altitude:	445 m

Vegetation Community Description
The vegetation in this area is dominated by *Corymbia citriodora* with *Lysicarpus angustifolius* forming a locally dominant patch in the west of the site. A lot of mature trees have been felled in this area although the tree removal is less than in the Ironbark woodlands on the Southern Lateral. A lot of the *Corymbia citriodora* trees in this area are smaller regrowth trees generally with a DBH less than 40cms (see right hand photo). *Acacia conferta* was a dominant shrub in this area.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R10.3
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	26/10/2009 (12:50)

VEGETATION SURVEY

Q086

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.3.25**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.10.1/11.7.2
Overall Health:	**Moderate**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP Wol 6.6
Photo Numbers:	0534 – 0535
Datum:	WGS 84
Easting / Northing (Precision):	55J 0791755 7080537 (5m)
Altitude:	385 m

Vegetation Community Description
This site is a dry sandy stream. There is a high level of erosion and this site is currently grazed by cattle. The area where the pipe has been re-aligned is dominated by *Eucalyptus tereticornis* and *Eucalyptus crebra*. Other species in this area include scattered *Geijera parviflora.* In a small patch to the north of the site exists a brigalow community that has not been correctly mapped the location and extent of this community was recorded on the GPS at WP005.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R10.4
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	26/10/2009

VEGETATION SURVEY

Q087

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.10.1**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.10.1 / 11.7.2
Overall Health:	**Moderate**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP Wol 3.75
Photo Numbers:	0539 – 0540
Datum:	WGS 84
Easting / Northing (Precision):	55J 0789027 7079677 (5m)
Altitude:	385 m

Vegetation Community Description

A large remnant extending from the road north. This site has been heavily logged and is highly disturbed. The mature trees that have been cleared in this are mostly *Eucalyptus crebra* and some *Corymbia citriodora.* The remaining trees are mostly *Callitris glaucophylla* with a thick shrubby layer of *Acacia leiocalyx*. To the west of the site, larger trees remain and the evidence of logging is less. There is a thick ground cover in places dominated by *Aristida* spp. and *Gahnia aspera*.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R10.5
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	26/10/2009 (17:00)

VEGETATION SURVEY

Q088

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.10.13**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.10.13a/11.10.13a/11.10.7/11.10.9/11.10.13a
Overall Health:	**Good**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP 91.8
Photo Numbers:	556
Datum:	WGS 84
Easting / Northing (Precision):	56J 0237612 7171178 (5m)
Altitude:	390 m

Vegetation Community Description
Dry sandy ephemeral stream. There is a lot of tree diversity throughout this area; however, the area is dominated by a mix of *Eucalyptus* species such as *Eucalyptus major*, *Eucalyptus tereticornis* and *Eucalyptus crebra*. The shrub layer was scattered throughout this area; however there was a high diversity in the shrub layer with numerous species of *Acacia*, two species of *Dodonaea* as well as many others. The ground cover just above the stream bed was sparse but where present was dominated by *Triodia marginata.* This large remnant area with its sandstone gullies is one of the more florally diverse areas surveyed for the pipeline.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R11.1
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	27/10/2009

VEGETATION SURVEY

Q089

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.10.13**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.10.13a/11.10.13a/11.10.7/11.10.9/11.10.13a
Overall Health:	**Good**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	West of KP 91
Photo Numbers:	556
Datum:	WGS 84
Easting / Northing (Precision):	56J 0236850 7170820 (5m)
Altitude:	385 m

Vegetation Community Description
This site is located on a elevated sandstone ridge and was surveyed as a potential alternate alignment. *Eucalyptus decorticans* and *Corymbia watsoniana* subsp. *capillata* dominate with some scattered *Lysicarpus angustifolius. Acacia* species dominate the shrublayer and form small thick clumps in places. *Triodia* and *Dianella* species are common in places.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R11.2
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	27/10/2009

VEGETATION SURVEY

Q090

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.3.14**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.5.21/11.7.4/11.5.4
Overall Health:	**Good**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP Con 31.5
Photo Numbers:	576
Datum:	WGS 84
Easting / Northing (Precision):	56J 0219319 7074191 (5m)
Altitude:	340 m

Vegetation Community Description

This site is located where the pipeline alignment crosses a dry sandy stream. In the stream the vegetation is dominated by *Eucalyptus tereticornis* and *Eucalyptus major* with a thick and continuous shrub layer just above the sandy streambed consisting primarily of *Leptospermum polygalifolium.* A steep cliff approximately four metres in height meanders around just west of the site. The declared weed *Bryophyllum* spp was observed on the northern side of the stream in small numbers.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R12.1
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	28/10/2009

VEGETATION SURVEY

Q091

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.5.21**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.5.21/11.7.4
Overall Health:	**Good**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP Con 35.5
Photo Numbers:	0577 – 0578
Datum:	WGS 84
Easting / Northing (Precision):	56J 02193702 7078054 (5m)
Altitude:	345 m

Vegetation Community Description

The site is part of a large remnant polygon located west of Downfall Creek Road. The site exists as a *Corymbia bloxsomei* and *Eucalyptus crebra* dominated woodland. Other species in this area include *Eucalyptus exserta* and *Eucalyptus macrocarpa.* Most of the properties in this area have removed a lot of the larger Myrtaceous species; however, this site has very limited logging and generally in good condition.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R12.2
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	28/10/2009

VEGETATION SURVEY

Q092

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.5.21**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.5.21/11.7.6
Overall Health:	**Good**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP Con 32.6
Photo Numbers:	0577 – 0578
Datum:	WGS 84
Easting / Northing (Precision):	56J 0219360 7075218(5m)
Altitude:	350 m

Vegetation Community Description
The vegetation on site is dominated by *Callitris glaucophylla* and *Eucalyptus crebra* woodland with locally dominant stands of *Allocasuarina luehmannii.* The shrubbery on site is thick in places of higher disturbance and is dominated by *Acacia ixiophylla.* There is more logging on this site and the logging appears to have occurred to both the *Callitris* and eucalypts.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R12.3
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	28/10/2009 (14:54)

VEGETATION SURVEY

Q093

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.3.14**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.3.14
Overall Health:	**Good**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP Con 8.9
Photo Numbers:	0591 – 0592
Datum:	WGS 84
Easting / Northing (Precision):	56J 0225742 7056377 (5m)
Altitude:	315 m

Vegetation Community Description
This site is located within a dry ephemeral tributary of Dogwood Creek. This tributary is small and would very infrequently hold water. The tree species in this area is dominated by *Eucalyptus tereticornis* and *Angophora leiocarpa*. *Acacia semilunata* dominates the shrub layer. Further away from the stream *Eucalyptus populnea* and *Callitris glaucophylla* become more abundant

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R12.4
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	28/10/2009

VEGETATION SURVEY

Q094

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.7.7**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.3.14
Overall Health:	**Good**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP Con 9.3
Photo Numbers:	0594 – 0595
Datum:	WGS 84
Easting / Northing (Precision):	56J 0225576 7056754 (5m)
Altitude:	315 m

Vegetation Community Description

This site is an open woodland dominated by *Eucalyptus fibrosa* with one or two scattered *Acacia shirleyi* scattered forming an understorey. This site is located east of the stream surveyed in 2R12.4. Further away from the stream the greater the abundance of *Eucalyptus fibrosa.* There is limited evidence of logging in this area which is a contrast to the surrounding properties; however, this is likely to be due to the difficulty in getting to the site.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R12.5
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	28/10/2009 (17:55)

VEGETATION SURVEY

Q095

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.7.7**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.7.4/11.7.7/11.7.5/11.7.2
Overall Health:	**Average**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	Con 15.4
Photo Numbers:	548 - 550
Datum:	WGS 84
Easting / Northing (Precision):	56J 0222024 7061260
Altitude:	360m

Vegetation Community Description

The site is located after the easterly kink in Retreat Road. This site has undergone significant recent clearing events. The tree layer in this community is dominated by *Eucalyptus fibrosa* a highly sort after timber used in the area mostly as fence posts. In this community significant amounts (50 – 80%) of mature trees have been recently removed selectively by chain saw. The only other tree species to occur in numbers in the area is *Callitris glaucophylla*. The shrub layer is relatively sparse and the groundcover is dominated by the regionally significant *Dodonea biloba* which forms a semi-continuous cover in places.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R13.1
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	29/10/2009

VEGETATION SURVEY

Q096

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE 11.7.7**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.7.4/11.7.7/11.7.5/11.7.2
Overall Health:	**Average**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	Con 18.6
Photo Numbers:	552 - 553
Datum:	WGS 84
Easting / Northing (Precision):	56J 0222024 7061260
Altitude:	360m

Vegetation Community Description

The site is located just north of Retreat Road. This site has undergone significant recent clearing events similar to the previous tertiary site. The tree layer in this community is dominated by *Eucalyptus fibrosa,* a highly sort after timber used in the area mostly as fence posts. In this community significant amounts (50 – 80%) of mature trees have been removed selectively by chain saw approximately 2 years ago. As a result of removing the eucalypts, *Acacia shirleyi* has developed to be a dominant tree in most places. The shrub layer is relatively sparse with scattered *Leucopogon bifloris* occurring occasionally and the groundcover is sparse to absent.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R13.2
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	29/10/2009

VEGETATION SURVEY

Q097

Regional Ecosystem Profile	
Regional Ecosystem Type:	**11.7.4**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.7.4/11.7.7/11.7.5/11.7.2
Overall Health:	**Moderate to Good**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	KP Con 28
Photo Numbers:	557 - 558
Datum:	WGS 84
Easting / Northing (Precision):	56J 0218727 7070685
Altitude:	340m

Vegetation Community Description

The site is located to the west of the road on top of a crest sloping south to a small ephemeral stream. *Angophora leiocarpa* dominates the tree layer with a thick shrub layer of *Allocasuarina luehmannii* and *Acacia leiocalyx*. It appears the site has undergone some historic disturbance as the *Acacia* regrowth seems to all be of a similar age indicating some kind of succession event. The ground stratum was sparse to absent. *Bryophyllum* spp. were observed in patches closer to the stream.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R13.3
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	29/10/2009

VEGETATION SURVEY

Q098

Regional Ecosystem Profile	
Regional Ecosystem Type:	**11.5.21**
EPBC Status:	**n/a**
VMA Status:	**Not of Concern**
EPA Status:	**No Concern at Present**
DNRW Mapped as:	11.5.21/11.7.4/11.5.4
Overall Health:	**Good**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	Con 38.8
Photo Numbers:	559 - 560
Datum:	WGS 84
Easting / Northing (Precision):	56J 0220083 7081396
Altitude:	340m

Vegetation Community Description
The site is located to the west of the road in a small sandy depressed drainage line. Sandy areas directly surrounding the drainage line are dominated by *Corymbia bloxsomei* and *Callitris glaucophylla* with the *Callitris* forming thick layer to about 5m in places. The shrub layer was dominated by *Callitris* regrowth. The ground stratum was sparse to absent with some smallish clumps of *Lomandra* spp. present.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R13.4
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	29/10/2009

VEGETATION SURVEY

Q099

Regional Ecosystem Profile	
Regional Ecosystem Type:	**RE Non-Remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	Non-Remnant
Overall Health:	**Poor**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	Wol 1.6
Photo Numbers:	567 - 568
Datum:	WGS 84
Easting / Northing (Precision):	55J 0786985 7080181
Altitude:	400m

Vegetation Community Description

The pipeline alignment has been placed between two large vegetated sandstone jump-ups. The top of the sandstone ridges in the area are dominated by RE 11.7.2 (*Acacia shirleyi* woodland). The lower slopes below the jump-ups are dominated by pasture grasses with some scattered vine thicket species as regrowth. Given the scattered regrowth within the paddock the bulk of this area would have historically been semi-deciduous vine thicket (RE 11.9.4). Due to less clearing pressure as a result of increased slope small patches of vine thicket remain scattered throughout these areas.

EVR: This whole area contains examples of the Vulnerable *Cadellia pentastylis* (ooline) that will be affected by the construction of the pipeline and the maintenance of the easement. There are also ooline scattered on the neighbouring road reserve and any road upgrades in this area may also affect this Vulnerable species.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R13.5
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	29/10/2009

VEGETATION SURVEY

Q100

Regional Ecosystem Profile	
Regional Ecosystem Type:	**Non-remnant**
EPBC Status:	**n/a**
VMA Status:	**n/a**
EPA Status:	**n/a**
DNRW Mapped as:	11.10.1/11.7.2
Overall Health:	**Poor to Average**

Site Description	
Bioregion / Locality:	Brigalow Belt South
KP / Site Description:	Wol 2.7
Photo Numbers:	567 - 568
Datum:	WGS 84
Easting / Northing (Precision):	55J 0788044 7079707
Altitude:	350 – 370m

Vegetation Community Description

Open grazing lands currently used to support grazing cattle, some with calves. The vegetation in the area has been mapped as remnant vegetation. This mapping appears to be incorrect as the predominant canopy of the vegetation is not covering more than 50% of the undisturbed predominant canopy (using the neighbouring paddock that was remnant as a surrogate). The tree species in this area are highly variable (*Corymbia spp*., *Eucalyptus* spp. and *Brachychiton* spp.) and include a small section of brigalow regrowth vegetation which was mapped as a track matching to Waypoint WP012.

Survey Details	
Project Number:	301001-00448 / 1BV4010
Recorder/s:	Mitch Bird
Field Site Number:	2R13.6
Sample Level / Type:	Reconnaissance / Random
Sample Detail / Species List:	Quaternary / Dominant species
Sample Area:	50 x 50 m
Date / Time:	29/10/2009

LAIRD POINT VEGETATION SURVEY

Ironbark – Spotted Gum Open Forest on Metamorphic Hill
Q101

Regional Ecosystem Profile	
Regional Ecosystem Type:	**12.11.6**
EPBC Status:	**n /a**
VMA Status:	**Not Of Concern**
EPA Status:	**Not Of Concern**
DNRW Mapped as:	12.11.6
Width of RE (site):	Not linear
Total Area of Vegetation:	> 50 ha
Overall Health:	**Good**

Site Description	
Location:	Curtis Island, Central-eastern Queensland
KP / Site Description:	Laird Point Study Area, NE
Photo Numbers:	1202 - 1203
Datum:	WGS84
Longitude / Northing:	56 K 0316104 7372748
Altitude:	29 m

Vegetation Community Description

Open forest to open woodland to 10 – 15 m tall and dominated by *Eucalyptus crebra* with *Corymbia citriodora* on upper hillslope. Canopy is open with occasional *E. exserta* and *C. intermedia.* Midstorey of *E. crebra, C. tessellaris, Angophora leiocarpa* and *Acacia concurrens* to 7 – 10 m tall. Midstorey is sparse to open. Shrub layer of pioneer and canopy recruit species present to 2 – 4 m tall. Dense groundlayer to 1 m tall of grass species including *Heteropogon contortus, Aristida calycina, Themeda triandra* and *Cymbopogon refractus.*
Bushland is in good condition with hollow logs and some leaf litter. Disturbance includes vehicle tracks and historical fire scars. Environmental weeds in isolated clumps present.

Survey Details	
Project Number:	301001-00448 / 1BV2000
Recorder/s:	Amy Kruger
Site Number:	Q082
Date / Time:	15 / 04 / 2009 13:22

LAIRD POINT VEGETATION SURVEY

Ironbark – Blue Gum Open Forest on Metamorphic Hill
Q102

Regional Ecosystem Profile	
Regional Ecosystem Type:	**12.11.6**
EPBC Status:	**n /a**
VMA Status:	**Not Of Concern**
EPA Status:	**Not Of Concern**
DNRW Mapped as:	12.11.6
Width of RE (site):	Not linear
Total Area of Vegetation:	> 50 ha
Overall Health:	**Good**

Site Description	
Location:	Curtis Island, Central-eastern Queensland
KP / Site Description:	Laird Point Study Area, N
Photo Numbers:	1172 - 1173
Datum:	WGS84
Longitude / Northing:	56 0314514 7372693
Altitude:	29 m

Vegetation Community Description
Open forest dominated by *Eucalyptus crebra* with *E. tereticornis* and *E. exserta* to 10 – 15 m tall on lower hillslope. Low tree layer is dense of canopy recruits to 2 – 6 m tall. Dense grassy groundlayer of native species to 1 m tall. Bushland is in good condition with some evidence of grazing and environmental weed invasion present.

Survey Details	
Project Number:	301001-00448 / 1BV2000
Recorder/s:	Amy Kruger
Site Number:	Q001
Date / Time:	14 / 04 / 2009 13:56

LAIRD POINT VEGETATION SURVEY

Ironbark – Blue Gum Open Forest on Metamorphic Hill
Q103

Regional Ecosystem Profile	
Regional Ecosystem Type:	**12.11.14**
EPBC Status:	**n /a**
VMA Status:	**Of Concern**
EPA Status:	**Of Concern**
DNRW Mapped as:	12.3.7 /12.3.11
Width of RE (site):	Not linear
Total Area of Vegetation:	> 50 ha
Overall Health:	**Good**

Site Description	
Location:	Curtis Island, Central-eastern Queensland
KP / Site Description:	Laird Point Study Area, NC
Photo Numbers:	1214 - 1215
Datum:	WGS84
Longitude / Northing:	56 K 0315619 73272665
Altitude:	9 m

Vegetation Community Description
Eucalyptus crebra – E. tereticornis open woodland to 10 – 12 m tall on lower slope of rocky rise. Dense understorey of canopy recruits, *Melaleuca quinquenervia* and *Acacia* species to 4 – 8 m tall. Scattered shrub layer of saplings to 2 m tall. Dense native grass ground layer to 0.5 m tall. Hollow trees and logs on ground. Fringing creekline. Bushland is in good condition. Slight variation in vegetation boundaries.

Survey Details	
Project Number:	301001-00448 / 1BV2000
Recorder/s:	Amy Kruger
Site Number:	Q085
Date / Time:	15 / 04 / 2009 14:28

Appendix C Flora Species Recorded During Field Assessment

Family	Species Name	Common Name
Malvaceae	*Abutilon otocarpum*	desert lantern
Malvaceae	*Abutilon tubulosum*	flannel bush
Mimosaceae	*Acacia bancroftii*	Bancroft's wattle
Mimosaceae	*Acacia burbidgeae*	Burbidge's wattle
Mimosaceae	*Acacia catenulata*	bendee
Mimosaceae	*Acacia complanta*	flat-stem wattle
Mimosaceae	*Acacia conferta*	crowded-leaf wattle
Mimosaceae	*Acacia deanii*	Dean's wattle
Mimosaceae	*Acacia decora*	pretty wattle
Mimosaceae	*Acacia excelsa*	ironwood
Mimosaceae	*Acacia falcata*	hickory wattle
Mimosaceae	*Acacia farnesiana**	mimosa bush
Mimosaceae	*Acacia harpophylla*	brigalow
Mimosaceae	*Acacia ixiophylla*	umbrella wattle
Mimosaceae	*Acacia julifera* subsp. *julifera*	-
Mimosaceae	*Acacia juncifolia*	rush-leaved wattle
Mimosaceae	*Acacia leiocalyx* subsp. *leiocalyx*	black wattle
Mimosaceae	*Acacia lineata*	streaked wattle
Mimosaceae	*Acacia neriifolia*	pechey wattle
Mimosaceae	*Acacia oswaldii*	miljee
Mimosaceae	*Acacia pedleyi*#	Pedley's wattle
Mimosaceae	*Acacia podalyriifolia*	Queensland silver wattle
Mimosaceae	*Acacia salicina*	doolan tree
Mimosaceae	*Acacia semilunata*	crescent-leaved wattle
Mimosaceae	*Acacia shirleyi*	lancewood
Mimosaceae	*Acacia* sp.1	-
Mimosaceae	*Acacia* sp.2	-
Mimosaceae	*Acacia spectabilis*	Mudgee wattle
Mimosaceae	*Acacia stenophylla*	river myall

Family	Species Name	Common Name
Mimosaceae	*Acacia triptera*	spur-winged wattle
Mimosaceae	*Acaicia decora*	pretty wattle
Agavaceae	*Agave americana**	American century plant
Ericaceae	*Agiortia pleiosperma*	-
Euphorbiaceae	*Alchornea ilicifolia*	native holy
Sapindaceae	*Alectryon diversifolius*	holly bush
Sapindaceae	*Alectryon oleifolius* subsp. *elongatus*	rosewood
Casuarinaceae	*Allocasuarina luehmannii*	buloke
Apocynaceae	*Allocasuarina torulosa*	forest she-oak
Rhamnaceae	*Alphitonia excelsa*	red ash
Apocynaceae	*Alstonia constricta*	bitter bark
Loranthaceae	*Amyema bifurcata*	-
Loranthaceae	*Amyema congener* subsp. *rotundifolia*	a mistletoe
Loranthaceae	*Amyema quandang* var. *bancroftii*	-
Loranthaceae	*Amyema quandang* var. *quandang*	-
Myrtaceae	*Angophora floribunda*	rough-barked apple
Myrtaceae	*Angophora leiocarpa*	smooth-barked apple
Capparaceae	*Apophyllum anomalum*	warrior bush
Apocynaceae	*Araujia sericifera**	white moth plant
Papaveraceae	*Argemone ochroleuca* ssp. *ochroleuca**	Mexican poppy
Poaceae	*Aristida calycina* var *calycina*	dark wiregrass
Poaceae	*Aristida caput-medusae*	many-headed wiregrass
Poaceae	*Arundinella nepalensis*	reedgrass
Sapindaceae	*Atalaya hemiglauca*	whitewood
Euphorbiaceae	*Bertya oleifolia*	-
Poaceae	*Bothriochloa spp.*	-
Sterculiaceae	*Brachychitton australis*	broad-leaved bottle tree
Sterculiaceae	*Brachychitton populneus*	kurrajong
Sterculiaceae	*Brachychitton rupestris*	narrow-leaved bottle tree
Phyllanthaceae	*Breynia oblongifolia*	coffee bush
Crassulaceae	*Bryophyllum delagoense**	mother of millions

Family	Species Name	Common Name
Pittosporaceae	*Bursaria spinosa*	pricle pine
Surianaceae	*Cadellia pentastylis*#	ooline
Cupressaceae	*Callitris endlicheri*	black cypress
Cupressaceae	*Callitris glaucophylla*	white cypress
Myrtaceae	*Calytrix tetragona*	common fringe-myrtle
Capparaceae	*Capparis canescens*	wild orange
Capparaceae	*Capparis lasiantha*	split jack
Asteraceae	*Carduus pycnocephalus**	slender thistle
Apocynaceae	*Carissa ovata*	currant bush
Lauraceae	*Cassytha lasiantha*	-
Apocynaceae	*Casuarina crista*	belah
Apocynaceae	*Casuarina cunninghamiana*	river she-oak
Poaceae	*Cenchrus ciliaris**	buffel grass
Adiantaceae	*Cheilanthes sieberi*	rock fern
Poaceae	*Chloris gayana**	Rhodes grass
Vitaceae	*Clematocissus opaca*	cissus opaca
Myrtaceae	*Corymbia bloxsomei*	yellowjacket
Myrtaceae	*Coymbia bunites*	yellow jacket
Myrtaceae	*Corymbia citriodora*	lemon-scented/spotted gum
Myrtaceae	*Corymbia clarksoniana*	Clarkson's bloodwood
Myrtaceae	*Corymbia erythrophloia*	gum-topped bloodwood
Myrtaceae	*Corymbia hendersonii*	Henderson's bloodwood
Myrtaceae	*Corymbia leichhardtii*	rustyjacket
Myrtaceae	*Corymbia tessellaris*	Moreton Bay ash
Myrtaceae	*Corymbia trachyphloia*	brown bloodwood
Myrtaceae	*Corymbia watsoniana*	Watson’s large-fruited yellowjacket
Euphorbiaceae	*Croton insularis*	silver leaf croton
Apocynaceae	*Cryptostegia grandiflora*	rubber vine
Sapindaceae	*Cupaniopsis anacardioides**	tuckeroo
Cycadaceae	*Cycas megacarpa*#	large-fruited zamia palm
Orchidaceae	*Cymbidium canaliculatum*	black orchid

Family	Species Name	Common Name
Poaceae	*Cymbopogon refractus*	barbed wire grass
Asclepiadaceae	*Cynanchum bowmanii*	Bowman's milk vine
Cyperaceae	*Cyperus iria*	rice flat-sedge
Fabaceae	*Daviesia villifera*	prickly daviesia
Phormiaceae	*Dianella brevipedunculata*	short-flowered flax-lily
Phormiaceae	*Dianella caerulea*	blue flax lily
Phormiaceae	*Dianella revoluta var revoluta*	flax lily
Poaceae	*Dichanthium sericeum*	Queensland bluegrass
Poaceae	*Digitaria ammophila*	silky umbrella grass
Poaceae	*Digitaria ciliaris*	summer grass
Ebenaceae	*Diospyros humilis*	shrub persimmon
Sapindaceae	*Dodonaea biloba*	a hopbush
Sapindaceae	*Dodonaea filifolia*	thread-leaf hopbush
Sapindaceae	*Dodonaea heteromorpha*	-
Sapindaceae	*Dodonaea macrossanii*	inland hopbush
Sapindaceae	*Dodonaea peduncularis*	stalked hopbush
Sapindaceae	*Dodonaea triangularis*	a hopbush
Sapindaceae	*Dodonaea viscosa*	sticky hop bush
Chenopodiaceae	*Einadia hastata*	berry saltbush
Chenopodiaceae	*Enchylaena tomentosa*	ruby saltbush
Poaceae	*Enneapogon avenaceus*	common bottlewashers
Poaceae	*Enneapogon gracilis*	slender bottlewashers
Myoporaceae	*Eremophila deserti*	Ellengowan poison bush
Myoporaceae	*Eremophila mitchellii*	false sandalwood
Fabaceae	*Erythrina vespertilio**	bat's wing coral tree
Myrtaceae	*Eucalyptus bakeri*	Baker's mallee
Myrtaceae	*Eucalyptus camaldulensis*	river red gum
Myrtaceae	*Eucalyptus cambageana*	Dawson gum
Myrtaceae	*Eucalyptus chloroclada*	Baradine red gum
Myrtaceae	*Eucalyptus cloeziana*	Gympie messmate
Myrtaceae	*Eucalyptus crebra*	narrow-leaved red ironbark

Family	Species Name	Common Name
Myrtaceae	*Eucalyptus decorticans*	gum-topped ironbark
Myrtaceae	*Eucalyptus exserta*	Queensland pepermint
Myrtaceae	*Eucalyptus fibrosa* subsp. *nubila*	dusk-leaved ironbark
Myrtaceae	*Eucalyptus major*	grey gum
Myrtaceae	*Eucalyptus melanophloia*	silver-leaved ironbark
Myrtaceae	*Eucalyptus microcarpa*	gum-topped box
Myrtaceae	*Eucalyptus moluccana*	gum-topped box
Myrtaceae	*Eucalyptus populnea*	poplar box
Myrtaceae	*Eucalyptus tenuipes*	narrow-leaved white mahogany
Myrtaceae	*Eucalyptus tereticornis*	Queensland blue gum
Myrtaceae	*Eucalyptus thozetiana*	mountian yapunyah
Rubiaceae	*Everistia vacciniifolia* var *vacciniifolia*	small-leaf canthium
Santalaceae	*Exocarpos cupressiformis*	wild cherry
Santalaceae	*Exocarpus latifolius*	broad-leaved cherry
Moraceae	*Ficus opposita*	sandpaper fig
Moraceae	*Ficus platypoda*	rock fig
Rutaceae	*Flindersia australis*	crow's ash
Cyperaceae	*Gahina aspera*	rough saw sedge
Rutaceae	*Geijera parviflora*	wilga
Rutaceae	*Geijera salicifolia*	brush wilga
Apocynaceae	*Gomphocarpus fruticosus**	narrow-leaf cotton bush
Goodeniaceae	*Goodenia rotundifolia*	round-leaved goodenia
Proteaceae	*Grevillea longistyla*	red spider flower
Proteaceae	*Grevillea striata*	beefwood
Proteaceae	*Hakea leucoptera* subsp. *leucoptera*	needlewood
Proteaceae	*Hakea lorea*	corkwood oak
Proteaceae	*Hakea plurinervia*	Lake Keepit hakea
Proteaceae	*Hakea purpurea*	flame hakea
Poaceae	*Heteropogon contortus*	black speargrass
Dilleniaceae	*Hibbertia cistifolia*	-
Dilleniaceae	*Hibbertia cistoidea*	-

Family	Species Name	Common Name
Myrtaceae	*Homoranthus melanostictus*	mouse bush
Fabaceae	*Hovea lanceolata*	lance-leaf hovea
Fabaceae	*Hovea tholiformis*	hovea
Poaceae	*Imperata cylindrica*	blady grass
Juncaceae	*Juncus aridicola*	tussock rush
Myrtaceae	*Kunzea opposita*	-
Verbenaceae	*Lantana camara**	lantana
Verbenaceae	*Lantana montevidensis**	creeping lantana
Myrtaceae	*Lepidosperma laterale*	variable sword-sedge
Myrtaceae	*Leptospermum polygalifolium*	wild may
Ericaceae	*Leucopogon bifloris*	twin-flower bearded-heath
Ericaceae	*Leucopogon mitchellii*	Mitchell's bearded-heath
Laxmanniaceae	*Lomandra filiformis*	wattle matrush
Laxmanniaceae	*Lomandra leucocephala*	woolly-headed matrush
Laxmanniaceae	*Lomandra longifolia*	matrush
Laxmanniaceae	*Lomandra multiflora* subsp. *multiflora*	many-flowered mat-rush
Laxmanniaceae	*Lomandra patens*	irongrass
Myrtaceae	*Lysicarpus angustifolius*	budgeroo
Caesalpiniaceae	*Lysiphyllum carronii*	bauhinia
Caesalpiniaceae	*Lysiphyllum hookeri*	Queensland ebony
Bignoniaceae	*Macfadyena unguis-cati**	cats claw creeper
Combretaceae	*Macropteranthes leichardtii*	bonewood
Combretaceae	*Macropteranthes leiocaulis*[#]	smooth-barked bonewood
Myrtaceae	*Melaleuca bracteata*	black teatree
Myrtaceae	*Melaleuca leucadendra*	weeping tea-tree
Myrtaceae	*Melaleuca tamariscina*	bush house paperbark
Myrtaceae	*Melaleuca trichostachya*	flaxleaf paperbark
Myrtaceae	*Melaleuca uncinata*	broombush
Myrtaceae	*Melaleuca viminalis*	bottle brush
Ericaceae	*Melichrus erubescens*	ruby urn-heath
Ericaceae	*Melichrus* sp. Isla Gorge	Isla Gorge urn-heath

Family	Species Name	Common Name
Ericaceae	*Melichrus urceolatus*	cream urn heath
Poaceae	*Melinis repens**	red Natal grass
Myrtaceae	*Micromyrtus sessilis*	heath-myrtle
Myoporaceae	*Myoporum* spp.	-
Oleaceae	*Notelaea microcarpa*	velvet mock-olive
Asteraceae	*Olearia ramosissima*	-
Asteraceae	*Onopordum acanthium**	scotch thistle
Cactaceae	*Opuntia stricta**	prickly pear
Cactaceae	*Opuntia tomentosa**	velvet tree-pear
Meliaceae	*Owenia acidula*	emu apple
Meliaceae	*Owenia x reliqua*	emu apple
Asteraceae	*Ozothamnus bidwillii*	-
Bignoniaceae	*Pandorea pandorana*	wonga vine
Apocynaceae	*Parsonsia eucalyptophylla*	gargaloo
Asteraceae	*Parthenium hysterophorus**	parthenium weed
Poaceae	*Paspalidium constrictum*	knotty butt grass
Poaceae	*Paspalum distichum*	water grass
Picrodendraceae	*Petalostigma pubescens*	quinine berry tree
Rutaceae	*Philotheca difformis* ssp. *difformis*	small-leaf waxflower
Thymelaeaceae	*Pimelea simplex*	pimelea
Pittosporaceae	*Pittosporum angustifolium*	weeping pittosporum
Pittosporaceae	*Pittosporum spinescens*	wallaby apple
Rubiaceae	*Psydrax odorata*	shiny-leaved canthium
Rubiaceae	*Psydrax oleifolia*	wild lemon
Fabaceae	*Pultenaea petiolaris*	-
Fabaceae	*Pultenaea subternata*	downy grey bush pea
Chenopodiaceae	*Salsola kali*	soft roly-poly
Cyperaceae	*Schoenus subaphyllus*	desert dog rush
Chenopodiaceae	*Sclerolaena birrchii**	galvinised burr
Asteraceae	*Senecio* sp.	-
Caesalpiniaceae	*Senna circinnata*	-

Family	Species Name	Common Name
Malvaceae	*Sida rhombifolia*	Paddy's lucerne
Poaceae	*Sporobolus virginicus*	salt couch
Fabaceae	*Swainsona galegifolia*	Darling pea
Poaceae	*Themeda arguens*	christmas grass
Poaceae	*Themeda triandra*	kangaroo grass
Poaceae	*Triodia marginata*	sticky spinifex
Poaceae	*Triodia mitchellii*	buck spinifex
Poaceae	*Triodia scariosa*	porcupine grass
Myrtaceae	*Triplarina sp.*	-
Verbenaceae	*Verbena aristigera**	Mayne's pest
Verbenaceae	*Verbena bonariensis**	purple top
Asteraceae	*Xanthium pungens**	Noogoora burr
Xanthorrhoeaceae	*Xanthorrhoea johnsonii*	grass tree

* indicates non-native species
# indicates EVR flora species

Appendix D Significant Flora Species Dossiers

Waajie wattle (Acacia barakulensis)

Vulnerable (Queensland)

Shrub to 2 m tall with resinous, ribbed and sparsely pubescent branchlets and crowded, erect, straight phyllodes (modified leaves) to 22mm long and 1mm thick. Yellow, globular flowerheads are produced from late winter to early spring and fruit pods are linear, stragith, slightly contracted between the seeds and slightly convex over them to 40mm long and 4mm wide (Maslin 2001).

The Waajie wattle is restricted to sandy soils in eucalypt communities in the Barakula State Forest north of Chinchila in southern Queensland. Total population size is not known (Maslin 2001).

Cracow wattle (Acacia calantha)

Rare (Queensland)

Shrub to 3m tall with slender, moderately dense, glabrous and somewhat resinous branchlets and erect to patent, filiform, shallowly incurved and green to grey green leaves to 15cm long and 1mm wide with prominent midribs. Flowerheads are bright golden, showy and globular and are held in simple inflorescences in the leaf axils. Fruit are narrowly oblong, leathery and slightly raised over the seeds to 6cm long and 6mm wide (Maslin 2001).

Restricted to the Dawson River Basin near Cracow in southern Queensland, where it is found in eucalypt open forests and acacia woodlands with a dense understorey in sands, loams and light clay soils on sandstone ridges, rocky hillsides and shallow valleys (DNR 1999; Maslin 2001).

Chinchilla wattle (Acacia chinchillensis)

Vulnerable (Australia)
Near Threatened (Queensland)

Multi-stemmed shrub to 2m tall with smooth, grey-brown to yellow-brown bark and hairy branchlets. Leaves are bipinnate with 2-4 pairs of narrowly oblanceolate, silvery, leathery leaflets to 7mm long and 1mm wide. It have golden to yellow, globular flowerheads that are held in racemes in the leaf axils and on the ends of branches and curved, leathery, brownish black seed pods to 10cm long and 7mm wide. Flowers appear in late winter to early spring whilst seed pods have been recorded mid spring to early summer (DNR 1999; Maslin 2001).

More than 20 populations of Chinchilla wattle have been recorded over a 200km range in open forests dominated by ironbark, box and cypress pines in the Chinchilla region of the Darling Downs in southern Queensland. The Chinchilla wattle occurs on gently undulating plains with deep loamy to sandy loam soils often with poor drainage and low nutrient levels to 340-380m altitude and populations have been recorded in the Barakula, Dunmore and Braemar State Forests with an estimated total population size of 103,000 individuals.

This species is under threat from destruction of habitat by clearing and inappropriate fire regimes (DEWHA 2010; DNR 1999; Maslin 2001).

Curly-barked wattle (Acacia curranii)

Vulnerable (Australia)
Vulnerable (Queensland)

Broom-like, multi-stemmed shrub to 4m tall with distinctively red, curling bark (minnirichi) and long angular, hairy maroon-grey branches and straight, hairy phyllodes (modified leaves) to 18cm long and 1.5mm wide. Golden yellow flower spikes to 7mm long appear on short stalks in late winter to early spring with hairy, oblong, greyish-brown seed pods to 3mm long forming mid spring (Maslin 2001).

The curly-barked wattle is restricted to Gurulmundi in southern Queensland and Shepherds Hill and Kilparney in central New South Wales, where it is found in dry sclerophyll forests and semi-arid woodlands on rocky outcrops of isolated hills and ranges on skeletal soils. This species is under threat from grazing and habitat destruction by feral animals, clearing during fire trail widening, quarrying, insect seed predation and inappropriate fire regimes (DEWHA 2010; Maslin 2001).

Sandalwood wattle (Acacia eremophiloides)

Vulnerable (Australia)
Vulnerable (Queensland)
Back on Track Species (High) (Queensland)

Glabrous, resinous shrub to 2.5m tall with slender branches and leathery, shallowly incurved phyllodes (modified leaves) to 6.5cm long and 3mm wide. Globular, golden flowerheads appear in late winter to early spring on stalks to 10mm long with linear, cinnamon brown seed pods to 8cm long and 3.5mm wide recorded in late spring (Maslin 2001).

The sandalwood wattle is restricted to a 4-5 hectare area approximately 46km south-west of Gayndah and 45km south-east of Mundubbera in southern Queensland. It has been recorded in discontinous populations on granite outcrops at 460-550m altitude with the total population size estimated at 5000 individuals. The sandalwood wattle is under threat from population isolated (lack of genetic diversity) and habitat degradation and is not protected in any conservation reserve (DEWHA 2010; Maslin 2001).

Pedley's wattle (Acacia pedleyi)

Rare (Queensland)

Slender, erect tree to 10m tall with smooth, greenish bark and terete, angled, brown to greenish brown branchlets. Young foliage tips are pale yellow to golden and silky and leaves are herbaceous, feathery and bipinnate with 5-8-paired pinnae to 7cm long. Pale yellow, globular flowerheads are produced from mid autumn to late spring in axillary racemes or terminal or axillary false-panicles. Fruit pods are straight-sided to constricted between the seeds, straight or slightly curved, leathery and dull brownish black to 13cm long and 6.5mm wide (Maslin 2001).

Restricted to the Callide and Calliope Ranges in the Port Curtis District of central Queensland, Pedley's wattle is found in eucalypt open forests and woodlands in alluvial loams to red clayey loams derived from sandstone and basalt rocks on alluvial flats, hill slopes and on the tops of ridges. Eleven populations have been recorded in the distribution range although none are in protected reserves. Threats include destruction of habitat by clearing, inappropriate fire regimes and inappropriate grazing regimes (DNR 1999; Maslin 2001).

Biggenden wattle (Acacia pubicosta)

Rare (Queensland)

Shrub to 5m tall with densely white hairy branchlets and new shoots and linear to 8.5cm long and 3mm wide. White to cream globular flowerheads are arranged in racemes with silver white, hairy

stalks to 4cm long and are produced from mid autumn to early spring. Fruit pods are slightly leathery, blackish and glabrous to 10cm long and 1cm wide and appear from early to mid spring (Maslin 2001).

Biggenden wattle prefers in monotypic stands in ironbark and bloodwood forests in stony and sandy soils on steep slopes in hilly terrain and also recorded in closed heathlands. It is restricted to the Biggenden area of central-eastern Queensland where it has been recorded in the Blackdown, Mount Walsh and Carnarvon National Parks. Threatening processes have been identified as destruction of habitat due to clearing, disturbance of habitat by timber harvesting and inappropriate fire and grazing regimes (DNR 1999; Maslin 2001).

Western rosewood (Acacia spania)

Rare (Queensland)

Single-stemmed, glabrous tree to 15m tall with hard, persistent bark (ironbark) and light brown, angular, scurfy branchlets. Phyllodes (modified leaves) are narrowly elliptic to elliptic, flat, leathery, stiff and scurfy to 4.5cm long and 18mm wide with inconspicuous veins. Yellow flower spikes to 4cm long appear in late winter and fruit pods are produced from spring to summer (Maslin 2001).

Western rosewood is restricted to the Emerald district in central Queensland where it is found in monotypic stands surrounded by open eucalypt woodlands in shallow red soils. Two populations have been recorded at Fairhill approximately 56-70km north-east of Emerald although total population size is unknown. This species is not known to any protected estate and threats have been identified as vegetation clearing and disturbance (Maslin 2001).

Scrub wattle (Acacia tenuinervis)

Rare (Queensland)

Scrub wattle grows to 9 m tall, often with root suckers and is characterised by grey-brown, furrowed bark and orange-red to red-brown, pruinose branchlets. Juvenile foliage is velvety. Phyllodes (modified leaves) are very narrowly elliptic to narrowly elliptic, straight to falcate and glabrous to slightly scurfy to 12.5cm long and 30mm wide with 3-5 slightly prominent, parallel, anastomosing nerves and 1 large, basal gland. Golden flowers to 1.5mm long are borne in long racemes in the leaf axils from late winter to early spring and seed pods are linear, chartaceous and scurfy and are slightly constricted and raised over the seed to 11cm long and 4mm wide (Maslin 2001).

This species prefers eucalypt scrubs and forests in association with tumble-down Ironbark (*Eucalyptus panda*), narrow-leaved red ironbark (*E. crebra*) and poplar box *(E. populnea*) in red earths and ironstone gravels, in the Glenmorgan-Injune-Monto region of south-eastern Queensland. It has also been recorded in monotypic stands on ridges and roadsides and in vegetation containing brigalow (*Acacia harpophylla*) (DNR 1999).

Little is known about the total population size and extent of occurrence of this species and it is not known to any protected reserve. Scrub wattle is under threat by destruction of habitat by clearing, disturbance of habitat by timber harvesting, inappropriate fire regimes and inappropriate grazing regimes (DNR 1999).

Sessile-leaved actephila (Actephila sessilifolia)

Rare (Queensland)

Shrub or small tree to 6 m tall with slender branches and elliptic to narrowly-ovate, hairless, rough leaves. Leaves are dark green above and pinkish when dry below to 7.5 cm long and 3 m wide.

Small, inconspicuous flowers appear in summer and hard, black globular fruits to 12 mm diameter are produced in mid to late autumn (DNR 1999).

This species is restricted to eastern Queensland, from Bowling Green Bay near Townsville, south to Mount Larcom near Gladstone, where it has been recorded in notophyll and microphyll vine forests and vine thickets, in red, talus or granite soils at 30-320 m altitude. It is considered a locally common species and is often recorded in association with brown tulip oak (*Argyrodendron polyandrum*), banyan (*Ficus virens)*, cedar fig (*F. superba* var. *henneana)*, white walnut (*Cryptocarya hypospodia*), red bean (*Dysoxylum mollisissum* ssp. molle); python tree (*Gossia bidwilli)*, blush walnut (*Beilschmiedia obtusifolia)* and trumpet satinash (*Acmenosperma claviflorum*) (DNR 1999).

Sessile-leaved actephila is known to several national parks and state forests including the Eungella and Mount O'Connell National Parks and is considered under threat by the clearing of habitat and weed invasion (DNR 1999).

Large-leaf chainfruit (Alyxia magnifolia)

delisted in 2009 (previously considered Rare) (Queensland)
Shrub to 4m tall with white sap and whorled (3-4), elliptic to oblong, dull to dark glossy green above and paler below leaves to 15cm long and 6cm wide with sharply pointed tips and inrolled margins. Fragrant, cream to pale purple, tubular flowers to 7mm long and 2.5mm wide appear in clusters from early to late winter and globular to oblong, orange fruit berries to 23mm long and 12mm diameter are borne solitary or in clusters from late summer to mid winter (DNR 1999; Forster 1992).

Restricted to coastal areas of central and southern Queensland and northern New South Wales, large-leaf chainfruit is found in wetter rainforest communities such as complex notophyll vineforests and araucarian microphyll vine forests in variety of soils (usually granite or granodiorite substrates) and at 130 – 800 m altitude. The total population size is unknown but this species is protected in the Eungella and Mount Bauple National Parks. Threats include destruction of habitat by clearing, degradation of habitat by weeds, especially lantana (*Lantana camara*), disturbance of habitat due to timber harvesting in sclerophyll forests and inappropriate fire regimes (DNR 1999; Forster 1992).

Sharpe's chainfruit (Alyxia sharpei)

Rare (Queensland)

Erect, rigid shrub to 3m tall with white sap and 3-5 whorled, linear-acicular, thin-leathery, conocolourous, grey green leaves to 40mm long and 1mm wide. Leaves have strongly recurved margins and pungently pointed tips. Flowers are cream to cream with purple throat, tubular and sessile to 9mm long and 6mm diameter and appear mid autumn to early spring. Fruit are globular, oblong and orange-red to 10mm long and 6mm diameter and are produced early to mid autumn (DNR 1999; Forster 1991).

Four populations have been recorded from the Port Curtis region of central-eastern Queensland in araucarian microphyll vine forests in dark brown soils; complex notophyll vine forests on alluvium adjacent to mangrove swamps and tall open woodlands in association with the shiny-leaved grey ironbark (*Eucalyptus suffulgens*) Moreton Bay ash (*Corymbia tessellaris*), lemon-scented/spotted gum (*C. citriodora*), curry myrtle (*Backhousia angustifolia*) in clay-loam soils derived from basalt and also in notophyll scrub dominated by southern siris (*Archidendropsis thozetiana*) to 480m altitude. This species is protected within the Eurimbula National Park and threats have been identified as inappropriate fire regimes, degradation of habitat by weed invasion, destruction of habitat by clearing and disturbance f open forest / woodland habitat due to timber harvesting (DNR 1999; Forster 1991).

Sandstone prickle bush (Apatophyllum teretifolium)

Rare (Queensland)

Distinctive compact, rounded, prostrate shrub to 0.4m tall with line green, cylindrical, opposite leaves to 10mm long and 1mm wide with sharply pointed tips. Flowers appear in the leaf axils in autumn, winter and spring and are greenish-cream to 1mm diameter. Fruit capsules are pear-shaped and flattened to 7mm long and 4mm wide (Santos 2007).

Sandstone prickle bush prefers eucalypt and cypress pine woodlands in association with ironbarks, narrow-leaved white mahogany (*Eucalyptus tenuipes*), budgeroo *(Lysicarpus angustifolius*), white cypress pine (*Callitris glaucophylla)* and black cypress pine *(C. endlicheri),* Henderson's bloodwood (*Corymbia hendersonii)*, brown bloodwood *(C. trachyphloia)*, spotted gum *(E. maculata)*, large-fruited yellow jacket (*C. watsoniana)* and rush-leaved wattle (*Acacia juncifolia)*, in coarse sandy soils, among rock and along cliff edges on sandstone ridges. It is restricted to the Carnarvon and Expedition Ranges and Barakula State Forest in central and southern Queensland where it has been recorded in the Carnarvon National Park (Santos 2007).

Rock whitewood (Atalaya calcicola)

delisted in 2009 (previously considered Rare) (Queensland)

Tree to 10m tall with densely hairy new growth and bipinnate leaves with 4-8 opposite, obovate to oval, bluish-grey, deeply notched leaflets to 14cm long and 6cm wide. Flowers are 5-petalled to 6mm long and 2.5mm wide and appear mid autumn to mid winter and winged fruit to 4cm long are produced from early spring to mid summer (DNR 1999).

Restricted to coastal regions of eastern Queensland, this species is found in deciduous vine thickets on hillsides, rocky slopes and rock outcrops (290-500m altitude) on boulders, scree, sandy loams or colluvial soils. This species is protected in the Undara Volcanic and Chillagoe-Mungana National Parks and threats may include the destruction of habitat, degradation of habitat by weeds and inappropriate fire regimes (DNR 1999).

Veiny whitewood (Atalaya rigida)

delisted in 2009 (previously considered Rare) (Queensland)

Tree to 8m tall with stiff, alternate, compound leaves with 2-8 paired, ovate to elliptic, yellowish green leaflets to 14cm long and 7.5cm wide. Small, white flowers appear in terminal panicles in spring and summer and fruit is winged and 3cm long (DNR 1999).

Found in vine thickets, araucarian microphyll-notophyll vine forests and open forests in red clay soils and black clay loams to 500 m altitude, this species is r estricted to the coastal regions of eastern Queensland, from Mount Aberdeen near Bowen, south to Mount Glastonbury, south-west of Gympie. This species is not known to any protected reserve and threats include clearing and disturbance of habitat. (DNR 1999).

Long-stalked bertya (Bertya pedicellata)

Rare (Queensland)

Shrub to small tree to 5m tall with hairy stems and dark glossy green above and grey and hairy below leaves to 6.5cm long and 6mm wide. Flowers appear early autumn to late spring and are con-shaped and egg-shaped fruit to 10mm long are produced in late spring (DNR 1999).

The long-stalked bertya is restricted to near Nebo, south to north-east of Mundubbera, west to near Aramac and east to the coast of central Queensland. It is found in open and closed forests on rocky hills in shallow skeletal or sandy soils and at 320-840m altitude and in association with brown bloodwood *(Corymbia trachyphloia)*, thread-leaved hopbush *(Dodonaea filifolia)*, bendee (*Acacia catenulata*), crooked-veined wattle (*A. julifera* subsp. *curvinervia*) and lancewood *(A. shirleyi)*. Long-stalked bertya is protected in the Salvador Rosa National Park and is under threat from habitat clearing, habitat disturbance by timber harvesting and inappropriate fire regimes (DNR 1999).

Heart-leaved bosistoa (Bosistoa transversa)

Vulnerable (Australia)

Small to medium tree to 22 m tall with a dense, dark green canopy and crooked trunk. Leaves are up to 16 cm long with 1-3 paired, broad, leathery, glabrous leaflets to 12.5 cm long and 6 cm wide. They are dark above and paler below with prominent veins and distinct oil dot and heart-shaped bases. Small, white flowers appear in summer in terminal and/or upper axillary spikes to 16 cm long. Hard, ribbed, egg-shaped fruit to 13 mm wide appear thereafter (DEC 2010; DEWHA 2010).

Heart-leaved bosistoa prefers lowland subtropical rainforests to 300 m altitude and is restricted to southern Queensland and north-eastern New South Wales, from Maryborough in the north to Nightcap Range in the south. Little is known about the total population size and extent of occurrence of this species including its representation in protected estates however, threats have been identified as loss of habitat through clearing and fragmentation, habitat degradation through weed invasion and disturbance, grazing by domestic stock, fire and timber harvesting (DEWHA 2010).

Lobed bluegrass (Bothriochloa biloba)

Vulnerable (Australia)

Erect to decumbent perennial grass to 1m tall with branching stems and hairy leaves to 5mm wide. Leaves have loose, keeled, glabrous sheaths and hairy ligules to 2mm long. Inflorescences are 3-6-flowered, hairy and purplish to 10cm long with sessile, bearded spikelets to 8mm long, silky glumes. Lobed bluegrass flowers from late spring to mid winter (Botanic Gardens Trust 2010).

Restricted to the Darling Downs region of southern Queensland and tablelands and western slopes of the Great Dividing Range in northern New South Wales, this species is found in cleared eucalypt forests and relict grasslands dominated by purple wiregrass *(Aristida ramosa),* red-leg grass *(Bothriochloa macra)*, pitted bluegrass (*B. decipiens*) and windmill grass (*Chloris truncata)*, in heavier-textured soils including brown or black clays (DEWHA 2010).

Little is known about the total population size and extent of occurrence of species including its representation in protected reserves. This species is considered under threat from inappropriate grazing and farming practices and weed competition (DEWHA 2010).

Miniature moss-orchid (Bulbophyllum globuliforme)

Vulnerable (Australia)
Rare (Queensland)

Tiny epiphytic orchid found in sparse to dense clumps and long strands with creeping stems and thickened bulb-like stems (pseudobulbs). Pseudobulbs are small, pale green and globular to egg-shaped to 2 mm long and 2 mm wide with small, thread-like, papery, narrowly-triangular leaves to 2 mm long and 0.3 mm wide arising from the top. Leaves are concave and often shed early. Small,

solitary, white to pale yellow flowers are borne in late autumn to late spring, on thread-like stems to 15 mm long that arise from the base of the pseudobulbs (DEWHA 2010; DNR 1999).

This species is restricted to south-eastern Queensland and north-eastern New South Wales from the Kroombit Tops, west of Gladstone in the north to the McPherson Range, south of the border. It is found in dry rainforests including notophyll vine forests and some microphyll vine forests on scaly bark of the branches and upper trunk of mature hoop pine (*Araucaria cunninghamii*) trees at 500-800 m altitude (DEWHA 2010; DNR 1999).

It is not known if this species occurs in any protected estate however threats have been identified as logging of hoop pine host-trees, fire, damage to host trees by roadworks and collection or damage by orchid enthusiasts (DNR 1999).

Ooline (Cadellia pentastylis)

Vulnerable (Australia)
Vulnerable (Queensland)
Back on Track Species (Critical) (Queensland)
Vulnerable (New South Wales)
Tree to 28m tall with dark, hard, scaly bark and hairless, simple, ovate to obovate leaves to 6.5cm long and 4cm wide with prominent venation. Leaves are glossy above and dull and paler below and shortly stalked. White flowers to 6mm long appear from mid spring to early summer in Queensland and mid to late spring in New South Wales, with egg-shaped, brownish, wrinkled and slightly compressed fruit to 5mm long and 3mm diameter produced from late spring to early summer. Fruit is enclosed by an enlarged, spreading, red, papery calyx with 5 lobes (DEC 2010; DNR 1999).

Ooline is known to several protected areas including the Carnarvon, Sundown and Tregole National Parks and Stones Country Resource Reserve although total population size and extent of occurrence are unknown. This species occurs in semi-evergreen vine thickets in association bitter bark (*Alstonia constricta*), hard alectryon (*Alectryon subdentatus*), leopard ash (*Flindersia collina*), wilga (*Geijera parviflora)* and narrow-leaved bottle tree (*Brachychiton rupestris*) on sandstone and basalt slopes and currawong (*Acacia sparsiflora),* brigalow *(A. harpophylla)* and belah (*Casuarina cristata*) communities on undulating clay plains and low hills at 200-500m altitude, from Narrabri in northern New South Wales to Rannes in central Queensland (DEWHA 2010; DNR 1999).

Ooline is under threat from broadscale tree clearing, soil compaction by domestic stock and feral goats, risk of local extinction due to small, scattered remnants and inappropriate fire and grazing regimes (DEWHA 2010).

Bailey's cypress pine (Callitris baileyi)

Vulnerable (International)
Rare (Queensland)
Back on Track Species (High) (Queensland)
Endangered (New South Wales)

Bailey's cypress pine is a slender tree to 18m tall with erect, spreading branches and rough greyish bark. It has mid-green, keeled leaves on ultimate branchlets to 2mm long and solitary, ovoid pollen cones (flowers). Seed cones (fruit) are also ovoid to oblong to 13mm diameter and are held on solitary, slender fruiting branchlets (DEC 2010).

Bailey's cypress pine is restricted to open grassy eucalypt forests in shallow, often clayey soils in rocky areas in the Darling Downs ranges in southern Queensland and is not known to any

conservation reserve. Threatening processes have been identified as fire, risk of local extinction as the population is small, trampling by stock and clearing of habitat of agriculture (DEC 2010).

Gurulmundi fringe myrtle (Calytrix gurulmundensis)

Vulnerable (Australia)
Vulnerable (Queensland)

The Gurulmundi fringe myrtle grows to 2 m tall and is characterised by linear to narrowly elliptic, aromatic leaves to 11mm long and 1mm wide which are held crowded and spirally along the branches. Star-like, cream and yellow flowers to 11mm long and 3mm wide are borne in terminal clusters from mid winter to mid spring (DNR 1999).

Restricted to the to the Gurulmundi-Guluguba-Barakula area in south-eastern Queensland, this species is found in open scrublands with sparse stunted *Eucalyptus, Acacia* and *Casuarina* species on ridge tops and *Triodia* hummock grasslands with scattered shrubs. The Gurulmundi fringe myrtle has an estimate total population area of less than 100km and is not conserved in any protected estate. This species is under threat from vegetation clearing, increasing fragmentation and loss of remnants, changed fire regimes, quarrying and inappropriate timber harvesting (DEWHA 2010; DNR 1999).

Isla Gorge fringe myrtle (Calytrix islensis)

Rare (Queensland)

Shrub to 2m tall with elliptic to obovate leaves to 3.5mm long and1.2mm wide. Leaves have prominent midribs and stipules to 0.2mm long. Star-like, white and yellow flowers to 8mm long and 4mm wide are produced singly or in clusters in early spring (Craven 1987).

Known only from the type locality on dissected sandstone plateaux of the Isla Gorge in central Queensland, this species lies wholly within the Isla Gorge National Park (Craven 1987).

Native frangipani (Cerbera dumicola)

Rare (Queensland)

Shrub or small tree to 4 m tall with white sap and light grey, longitudinally fissured and somewhat scaly bark. Leaves are elliptic-lanceolate, glabrous, discolourous and variously lobed to 17cm long and 6cm wide. They are glossy and light green above with obscure veins and pale green with prominent veins below. Flowers are white and tubular with ovate to obovate petals and sweetly scented to 18mm long and 20mm diameter and are held in 30-flowered branched cymes to 8cm long. Fruit are globular to ovoid to 5.5cm long, 4cm wide and 4cm thick (DNR 1999).

This species is restricted in central Queensland where it has been recorded in lancewood (*Acacia shirleyi*) thickets away from the coast and semi-evergreen vine thickets near the coast in red and sandy clay soils to 884m altitude. It is not known to any protected reserve and is considered under threat from the removal or degradation of habitat areas by agricultural and extractive industry development (DNR 1999).

Giant ironwood (Choricarpia subargentea)

Rare (Queensland)
Endangered (New South Wales)

Tree to 40m tall with smooth, pale, shining, brown, green or salmon-coloured bark that sheds in thin, flaky strips. Giant ironwood is often buttressed to 1.5m diameter with four-angled branchlets and rusty

hairy young shoots and flowers. Leaves are opposite, oval to elliptic and glossy dark green above and paler below to 9cm long. Cream flowers to 2.5mm diameter are produced from mid spring to late autumn. They lack petals and are held in dense globular heads to 10mm diameter. Fruit capsules to 2mm long are produced late summer to mid winter (DEC 2010; DNR 1999).

Giant ironwood prefers the hillslopes and creeks of microphyll vine forests and rainforests and is often found in association with white booyong *(Argyrodendron trifoliolatum),* shatterwood *(Backhousia sciadophora),* Queensland cascarilla bark *(Croton insularis)*, crow's ash (*Flindersia australis*), native lime (*Microcitrus australis)*, crow's apple (*Owenia venosa)* and bastard crow's ash *(Pentaceras australe*) on hillslopes and along creeks. It is restricted to the southern coast of Queensland where it is represented in the Mount Bauple (Scientific) and Pioneer Peaks National Parks. This species is under threat from inappropriate fire regimes, degradation of habitat by weeds and clearing of habitat for farming and urban development (DNR 1999).

Cardarga kurrajong (Commersonia argentea)

Vulnerable (Australia)

Shrub to 4m tall with densely hairy stems and hairy, ovate leaves with finely toothed margins to 13cm long and 8cm wide. White to cream flowers to 10mm diameter are borne in 10-30-flowered inflorescences to 5cm long (DEWHA 2010).

The Cadarga kurrajong is restricted to central and southern Queensland from Injune to Tambo where it is found in eucalypt forests on stony ridges. This species is known to the Carnarvon National Park (DEWHA 2010).

Cossinia (Cossinia australiana)

Endangered (Australia)
Endangered (Queensland)

Cossinia is a small, slender and occasionally multi-stemmed tree to 7m tall and 10cm diameter with densely hairy new growth. Leaves are sub-divided to 3-7 leaflets with winged axis. Leaflets are channelled above to 7.5cm long and 2.8cm wide. Flowers to 4.5mm long and 3mm wide are borne in clusters of 3-8 mid spring to mid summer and fruit capsules to 1.8cm long and 1.6cm wide are produced late summer. Species readily roots from suckers up to 5m from main trunk (DEWHA 2010; DNR 1999.

Seven populations are known from a 300km area in eastern Queensland, from Gympie to Milman, although the total population size is unknown. Cossinia prefers araucarian microphyll vine forests and relict semi-evergreen vine thickets in a variety of soils at 20-380m altitude where is occurs in association with prickly alyxia (*Alyxia ruscifolia)*, brush caper berry *(Capparis arborea)*, grey boxwood *(Drypetes deplanchei),* crow's ash (*Flindersia australis),* crow's apple (*Owenia venosa)*, ivorywood *(Siphonodon australis)*, native grape (*Cissus oblonga),* burnie vine *(Trophis scandens)* and zigzag vine (*Melodorum leichhardtii*) (DNR 1999).

This species is known from the Cania Gorge National Park and is under threat from weed invasion, habitat loss due to clearing; timber harvesting on private land; inappropriate fire regime; especially on sites close to rainforest margins; low population sizes and habitat fragmentation leading to inbreeding depression and loss of genetic variability; habitat fragmentation leading to increased exposure to natural processes such as high winds and insect and fungal attack; and road construction and maintenance at sites where the tree occurs (DEWHA 2010).

Silky cryptandra (Cryptandra ciliata)

Delisted in 2009 (previously considered Rare) (Queensland)
Poorly known (> 100km geographical range) (CSIRO R&T Australian Plants List)

Shrub to 0.5m tall with lateral branchlets to 15mm long that lack terminal spines. Branchlets are hairy becoming glabrous with age. Leaves are green and glabrous above and white and hairy below and are terete and linear to 2.6mm long and 0.5mm wide with strongly rolled margins. Silky cryptandra flowers and fruits from mid winter to early september. Flowers are white to brown and tubular with hairy lobes to 2.0mm long and fruit capsules are ellipsoidal to 2.9mm long (bean 2004; DNR 1999).

Restricted to the Barakula-Theodore region of south-eastern Queensland, the silky cryptandra is found in lemon-scented/spotted gum (*Corymbia citriodora*) and narrow-leaved red ironbark (*Eucalyptus crebra*) dominated woodlands with tall *Acacia* spp. understorey on lateritic duricrusts and eucalypt woodlands on rocky and sandy loam soils and lancewood (*Acacia shirleyi*) scrublands and forests and *Triodia* grasslands. Little is known about the total population size and extent of occurrence of this species with representation populations recorded in the Barakula State Forest. Silky cryptandra is not known to any protected reserve and is under threat from destruction of habitat due to clearing and habitat disturbance (Bean 2004; DNR 1999).

Wedge-leaf tuckeroo (Cupaniopsis shirleyana)

Vulnerable (Australia)
Vulnerable (Queensland)
Back on Track Species (High) (Queensland)

Small tree to 10 m tall with compound, alternate and pinnate leaves and greenish to cream flowers that are held on slender axillary or terminal racemes and appear from mid autumn to mid winter. Leaflets are 6-15-paired, stiff, leathery and glossy green above and hairy below with triangular to wedge-shaped bases and toothed or sometimes entire margins. Orange, hairy, spherical to egg-shaped fruit are produced mid winter (DEWHA 2010).

This species is restricted to south-eastern Queensland, from Brisbane to Curtis Island and is found in dry rainforests and scrubby urbanised areas on moderate to very steep slopes, screeslope gullies and rocky stream channels at 60-550 m altitude and in association with white booyong (*Argyrodendron trifoliatum*), hoop pine (*Araucaria cunninghamii*), rough-leaved elm (*Aphananthe philippensis)*, white bean (*Ailanthus triphysa)*, native holly (*Alchornea ilicifolia*), broad-leaved whitewood (*Atalaya multiflora)*, python tree (*Gossia bidwillii*), thick-leaved croton (*Croton acronychioides)*, black plum (*Diospyros australis)*, hard quandong (*Elaeocarpus obovatus)*, southern fitzalania *(Fitzalania heteropetala),* blush coondoo *(Planchonella laurifolia*), blunt-leaved coondoo (*P. myrsinifolia)*, Burdekin plum *(Pleiogynium timorense*), red-fruited kurrajong (*Sterculia quadrifida)* and strychnine tree (*Strychnos axillaris*) (DEWHA 2010; DNR 1999).

Wedge-leaf tuckeroo is protected at Mount Larcom and in the Sankey Scrub and threats have been identified as clearing and disturbance from activities such as roadworks and other infrastructure works, including associated drainage works, weed infestations (DEWHA 2010).

Large-fruited zamia palm (Cycas megacarpa)

Endangered (International)
Endangered (Australia)
Endangered (Queensland)
Back on Track Species (Critical) (Queensland)

Trunked cycad to 5 m tall and 14 cm diameter with green, densely hairy, orange-brown new growth. Leaves are bright green, highly glossy to semi-glossy, moderately keeled and pinnate to 110 cm long. Leaflets are 120-170-numbered, simple, strongly discolourous and flat to slightly keeled to 200 mm long and 7.5 mm wide with basal leaflets not gradually reducing to spines. Pollen cones (flowers) are ovoid and orange to 18 cm long and 7 cm diameter and seed cones (fruit) are grey to brown to 25 cm long and are produced in early autumn (Botanic Gardens Trust 2010; Queensland Herbarium 2007).

The large-fruited zamia palm is beetle pollinated and restricted to south-eastern Queensland where it is found in woodlands and open woodlands dominated by lemon-scented/spotted gum (*Corymbia citriodora*), narrow-leaved red ironbark (*Eucalyptus crebra*), gum-topped bloodwood (*C. erythrophloia)*, silver-leaved ironbark (*E. melanophloia)* and brush box *(Lophostemon confertus*), on rocky substrates derived from acid volcanics, ironstone and mudstone and rarely alluvium and at 40-680 m altitude (Botanic Gardens Trust 2010; Queensland Herbarium 2007).

Forty-six populations have been recorded across its distribution range totalling 372,964 individuals and including several populations from national parks. Important populations have been identified at Biloela, Kroombit and Wonbah and threats have been identified as include destruction due to land clearing, legal harvesting and commercial salvage, illegal harvesting, loss of genetic variation and insect pollinators, inappropriate fire regimes, timber harvesting and drought. Species is declining (Queensland Herbarium 2007).

Bright flat-sedge (Cyperus clarus)

Vulnerable (Queensland)

Slender, tufted sedge to 80cm tall with triquetrous to trigonous, smooth to scabrous stems to 2.5mm diameter. Leaves are septate-nodulose and shorter than the stems. Inflorescences are simple and 3-6-branched to 10cm long and are held in dense clusters to 35mm diameter. They have leaf-like involucral bracts, flattened spikelets to 18mm long and 4.5 mm wide and acute, golden brown to brown glumes to 4mm long. Inflorescences appear from spring to summer (Botanic Gardens Trust 2010).

Bright flat-sedge prefers grasslands and open woodlands in heavy basalt-derived soils in south-eastern Queensland and north-eastern New South Wales. Little is known about the total population size and extent of occurrence for this species including its representation in protected reserves (Botanic Gardens Trust 2010).

Dansiea (Dansiea elliptica)

Rare (Queensland)

Tree to 35m tall with alternate or sub-opposite, elliptic, densely hairy leaves to 8.5cm long, becoming hairless with age. Leaves are glossy green above and paler below with numerous small, fine, translucent oil dots. Fruit capsules are winged to 25mm long (DNR 1999; Harden et al 2006).

Dansiea is restricted to south-eastern Queensland and north-eastern New South Wales, where it is found in coastal notophyll vine forests and semi-evergreen vine thickets in sandy soils at low altitudes (30 - 150 m) (south-eastern Queensland) and rainforests and rainforest margins at 100 - 500 m altitude (north-eastern Queensland). This species is protected in the Wooroonooran National Parks and occurs in association with crows ash (*Flindersia australis),* belah (*Casuarina cristata),* python tree (*Austromyrtus bidwillii),* grey boxwood (*Drypetes deplanchei)*, small-leaved coondoo (*Planchonella cotinifolia)*, Burdekin plum *(Pleiogynium timorense)* and brown damson (*Terminalia porphyrocarpa*) (DNR 1999; Harden et al 2006).

Small-leaved denhamia (Denhamia parvifolia)

Vulnerable (Australia)
Vulnerable (Queensland)
Back on Track Species (High) (Queensland)

Shrub to 3m tall with hairless, branches and stems and mottled white bark. Roots are orange and leaves are obovate to oval-shaped, hairless and sharply pointed with prominent veins to 1.8cm long and 0.9cm wide. They are dark green above and paler below. White to yellowish flowers to 3.5mm long are borne singly or in clusters mid spring and obovoid, yellowish fruit capsules to 8mm long are produced early summer to early autumn (DNR 1999).

Restricted to the greater Chinchilla area in south-eastern Queensland, small-leaved denhamia prefers semi-evergreen vine thickets, vine scrubs and brigalow *(Acacia harpophylla)* scrub communities in association with Shrub persimmon *(Diospyros humilis),* crow's ash (*Flindersia australis)*, wilga (*Geijera parviflora*), crow's apple (*Owenia venosa)* and python tree (*Austromyrtus bidwillii)* in fertile, red-brown, sandy, clay loams on hillslopes and crests of variable aspect and at 160-560m altitude. This species has also been recorded in narrow-leaved red ironbark *(Eucalyptus crebra*) forests and is known to several state forests. It is under threat from the legacy of historic broadscale vegetation clearing, changed fire regimes, invasion by exotic weeds and grazing pressure (DEWHA 2010; DNR 1999).

Large-podded tick-trefoil (Desmodium microcarpum)

Rare (Queensland)

Perennial twining herb to 0.5m tall with hairy stems and leaf stalks and prominent, persistent, triangular stipules to 12mm long and 5mm wide. Leaves are entire to trifoliate with coarsely textured, hairy, ovate to broadly ovate leaflets to 65mm long and 55mm wide. Pale pink, pea-shaped flowers to 8mm long and 7mm wide are borne in loose clusters along leafless stalks from late autumn to early summer. Laterally flattened, constricted seed pods to 4.5mm long and 3.5mm wide are produced year round but mostly in autumn (DNR 1999).

Self-pollinating and reproducing from root nodules, the large-podded tick-trefoil is found in open forests and woodlands with sparse shrubby understorey of currant bush *(Carissa ovata)* and dysentery bush (*Grewia retusifolia*) and semi-evergreen vine thickets in red earths, rarely sandy clay soils and at altitudes to 884 m. Associated species include with poplar box (*Eucalyptus populnea),* narrow-leaved red ironbark (*E. crebra),* silver-leaved ironbark (*E. melanophloia)*, spotted gum (*Corymbia maculata),* Shirley's silver-leaved ironbark *(E. shirleyi),* grey ironbark (*E. siderophloia*) and narrow-leaved white mahogany (*E. teniupes*) (DNR 1999).

Large-podded tick-trefoil is restricted to eastern Queensland, from Forty Mile Scrub to Mundubbera and is known to the Bimblebox Nature Refuge and Forty Mile Scrub National Park. This species is under threat from the destruction of habitat by clearing, inappropriate grazing regime and inappropriate fire regimes (DNR 1999).

King bluegrass (Dichanthium queenslandicum)

Vulnerable (Australia)
Vulnerable (Queensland)

Tufted grass with erect stems to 80cm tall with bearded nodes and hairy leaf sheaths. Leaves are hairy and scaberulous to 18cm long and 5mm wide. Inflorescences are 10cm long with paired, stalked spikelets and are produced late spring to late summer (Sharp and Simon 2002).

King bluegrass is restricted to black clay soils in central and southern Queensland and is not known to any protected reserve. It is under threat from broad-scale vegetation clearing, grazing and increased habitat fragmentation (DEWHA 2010; Sharp and Simon 2002).

Finger panic grass (Digitaria porrecta)

Endangered (Australia)
Rare (Queensland)
Endangered (New South Wales)

Grass with erect stems to 70cm tall and sparsely branched lateral branches. Leaves are flat to 15cm long and 4mm wide. Inflorescences are 27cm long bearing 10-20 fertile spikelets and appear late summer to mid winter (Sharp and Simon 2002; DEWHA 2010).

Restricted to coastal regions of south Queensland and in northern New South Wales, where it is found in grasslands on extensive basaltic plains in association with Queensland bluegrass (*Dichanthium sericeum)*, native millet (*Panicum decompositum*), yadbila grass (*Panicum queenslandicum)*, umbrella grass *(Digitaria divaricatissima),* white speargrass (*Aristida leptopoda)*, hogweed (*Boerhavia dominii)*, creeping mint (*Mentha satureioides*), tough scurf-pea *(Psoralea tenax)*, rhynchosia (*Rhynchosia minima),* shotgrass *(Paspalidium* globoideum), native oatgrass *(Themeda avenacea*), billy buttons *(Ixiolaena brevicompta),* black rolypoly (*Sclerolaena muricata*) and yellow vine (*Tribulus micrococcus)*; and undulating woodlands and open forests underlying basaltic geology and dominated by mountain coolibah *(Eucalyptus orgadophila) (*hills and slopes) or Queensland blue gum (*E. tereticornis)* and poplar box (*E. populnea*) (drainage lines). Also recorded in communities dominated by white box (*E. albens)* and weeping myall (*Acacia pendula*) and on road verges and stock routes. This species also occurs on dark, fine textured soils with seasonal cracking and is not known to any protected reserve. It is under threat from the clearing of native habitat for cropping and pastures, heavy grazing and trampling by domestic stock, physical disturbance by machinery, urban expansion and weed invasion (DEC 2010; DEWHA 2010).

Pink donkey-orchid (Diuris tricolor)

Vulnerable (Australia)
Vulnerable (New South Wales)

Terrestrial herb to 40cm tall with 1-3, linear leaves to 30cm long and 4mm wide. Flowers are bright yellow to orange and speckled with red to purple and white markings to 3cm long and appear on racemes to 40cm long (2-6-flowered) in spring (DEC 2010).

The pink donkey-orchid is restricted to coastal ranges eastern Australia, from south-east Queensland to the New South Wales-Victoria border, where it is found in sclerophyll forests and ironbark-acacia shrublands in association with white cypress pine (*Callitris glaucophylla*), poplar box (*Eucalyptus populnea)*, gum coolibah *(Eucalyptus intertexta*) and often with a grassy to herbaceous understorey, in sandy soils on flats and small rises and sometimes red earths (DEC 2010; DEWHA 2010).

Little is known about the total population size and extent of occurrence of this species including its representation in protected reserves. Threats have been identified as habitat clearing and modification, feral animals, weed competition and illegal collection (DEWHA 2010).

Salt pipewort (Eriocaulon carsonii)

Endangered (Australia)
Endangered (Queensland)

Back on Track Species (High) (Queensland)
Endangered (New South Wales)

Tufted hairless herb to 8cm tall with lanceolate, striated basal leaves to 6cm long 10mm wide. Flowers are white with dark brown markings and are borne in clusters to 4mm diameter in summer to late autumn. Fruit capsules are membraneous, swollen and shiny brown to 0.6mm long (Botanic Gardens Trust 2010).

This species is restricted to Queensland, north-western New South Wales and north-eastern South Australia, where is it found in active or flowing artesian mound springs or the margins of the great artesian basin and on fen soils. Salt pipewort is not known to any protected reserve and is under threat from limited habitat availability, habitat clearing and modification, grazing and trampling by stock, competition with other native plant species and feral pigs (DEWHA 2010; NPWS NSW 2002).

Plunkett mallee (Eucalyptus curtisii)

Rare (Queensland)

Plunkett mallee is a spreading mallee or small tree (forming lignotubers) to 7m tall with smooth, grey to silvery bark that sheds in short curly brown flakes and slender, non-glaucous branchlets which lack oil glands in the pith. Juvenile stems are square to rounded in cross-section and glabrous and juvenile leaves are opposite becoming sub-opposite to alternate, stalked, linear to narrowly lanceolate, discolourous and darker green above to 6.2cm long and 0.6cm wide. Adult leaves are alternate (sometimes opposite), lanceolate to falcate, flat, strikingly discolourous, glossy and green to 14.5cm long and 3.3cm wide. Flowers are white and held in 7-flowered umbels on stalks to 0.5cm long, in terminal panicles on slightly angular inflorescence stalks to 1.7cm long. Flowers appear from early spring to early summer. Nuts are copular to truncate-globose to 1.1cm long and 1.1cm wide with descending, narrow, dehiscence circumscissile discs and are produced from late winter to late summer (Slee et al 2006).

Restricted to south-eastern Queensland, from Plunkett south of Beenleigh, west to Inglewood and north to the Glasshouse Mountains, this species is found in monotypic stands of mallee growth in shrublands dominated by banksias and sometimes in association with swamp stringybark *(Eucalyptus conglomerata)*, in poorly drained lowland areas, and in scattered distribution in more open parts of mixed eucalypt forests dominated by spotted gum (*Corymbia maculata*), brown bloodwood (*C. trachyphloia)* and black cypress pine (*Callitris endlicheri*) or broad-leaved red ironbark *(E. fibrosa)*, needlebark *(E. planchoniana)* and yellow stringybark (*E. acmenoides)*, in better drained soils. Plunkett mallee grows in sandy podosols with impeded drainage, shallow stony soils, clay loams and stony clays with a surface layer of loose stones, on low ridges and up to 457m altitude (DNR 1999; Slee et al 2006).

Plunkett mallee is under threat from destruction of habitat due to clearing, disturbance of habitat by timber harvesting, inappropriate grazing regimes, inappropriate fire regimes and inappropriate legal collection practices. It has been recorded in the Barakula State Forest however is not known to any conservation reserve (DNR 1999).

Castletower ironbark (Eucalyptus decolor)

Rare (Queensland)

Tree to 30m tall forming lignotuber with dark grey, hard, deeply furrowed bark on trunk and larger branches, becoming white to pink to coppery and smooth on small to medium sized branches. Juvenile leaves are stalked, slightly discolourous, green, opposite becoming alternate and narrowly

lanceolate to 13.5cm long and 1.6cm wide. Adult leaves are alternate, dull green and lanceolate to falcate to 13cm long and 2.2cm wide. Flowerbuds are fusiform to diamond-shaped to 0.4cm long and 0.3cm wide with scar present and conical operculum narrower than hypanthium at join. Flowers are white and borne in 7-flowered umbels in panicles at the end of branches from early summer to early autumn. Fruit nuts are truncate-ovoid to cup-shaped to 0.5cm long and 0.6cm wide with descending discs and 4-5 valves near rim level or enclosed (Slee et al 2006).

Restricted to the Castle Tower National Par-Coast Ranges in central and south-eastern Queensland, this species is found in open forests and open tall woodlands on ridges, crests and steep hillsides, in grey loams and shallow, sandy soils derived from granite and sandstone, in association with lemon-scented spotted gum *(Corymbia citriodora*), brown bloodwood (*C. trachyphloia*) mountain grey gum *(Eucalyptus major*), gum-topped box *(E. moluccana)*, yellow stringybark (*E. acmenoides)*, New England blackbutt (*E. campanulata),* Queensland peppermint *(E. exserta)*, turpentine (*Syncarpia glomulifera*), black she-oak (*Allocasuarina littoralis),* brush box *(Lophostemon confertus*), rock tea-tree *(Leptospermum neglectum*), silver-leaved pomaderris *(Pomaderris argyrophylla),* reedgrass (*Arundinella nepalensis)* and poverty grass *(Eremophila bimaculata*) (DNR 1999; Slee et al 2006).

The Castletower ironbark is conserved in the Castletower and Eurimbula National Parks with a total population estimated at more than 1000 individuals. It is under threat from the destruction of habitat by timber harvesting, destruction of habitat by clearing and inappropriate fire regimes (DNR 1999).

Pumpkin gum (Eucalyptus pachycalyx ssp. waajensis)

Endangered (Queensland)

Back on Track Species (High) (Queensland)

Tree forming lignotuber to 15m tall with smooth, shiny, mottled white, cream and aple grey bark. Newly exposed bark is pink and bright orange and often slightly powdery. Juvenile leaves are stalked, opposite, lanceolate and green to 13cm long and 5.5cm wide. Adult leaves are alternate, lancolate to falcate, concoloruous and dull green to 16cm long and 2.5cm wide. Flowerbuds are ovoid and yellow to creamy to 1cm long and 0.6cm wide with conical operculum and scar present. Flowers are white and borne in 7-11-flowered inflorescences in the leaf axils and fruit nuts are cup-shaped to hemispherical to 0.6cm long and 0.9cm wide with raised-annular or level discs and 3-4 strongly exserted valves (Slee et al 2006).

Restricted to southern Queensland and north-eastern New South Wales, this species is found in woodlands in association with narrow-leaved white mahogany *(Eucalyptus tenuipes),* large-fruited yellow jacket (*Corymbia watsoniana*), mugga ironbark *(E. sideroxylon),* Cracow ironbark *(E. corynodes)* and broad-leaved yellow bloodwood *(C. petalophylla*), in shallow, sandy soils derived from sandstone or granite on hillsides and ridge tops (Slee et al 2006).

Pumpkin gum is not known to any protected reserve and is under threat from broad-scale vegetation clearing, inappropriate fire regimes and natural restriction (Slee et al 2006).

Isla Gorge mahogany (Eucalyptus rubiginosa)

Rare (Queensland)

Tree forming lignotuber to 15m tall with softly fibrous, thick, reddish-brown stringybark and stalked, opposite, narrowly lanceolate, discolour, dull green juvenile leaves to 15cm long and 3cm wide. Adult leaves are alternate, lanceolate to falcate, dull, discolourous and dark green above to 15cm long and 3cm wide. Flowerbuds are ovoid to 1.1cm long and 0.7cm wide with conical operculum and lack a scar. Flowers are white and borne in compound clusters at the ends of branches from early to mid

spring. Fruit nuts are dark brown, copular to hemispherical to 0.9cm long and 1.2cm wide with level discs and 4-5 rarely slightly raised or descending valves near rim level (Slee et al 2006).

The Isla Gorge mahogany prefers woodlands and forests as a co-dominant in association with narrow-leaved white mahogany *(Eucalyptus tenuipes*), lemon-scented/spotted gum *(Corymbia citriodora)*, large-fruited yellow jacket (*C. watsoniana)*, smooth-topped ironbark (*E. dura),* brown bloodwood (*C. trachyphloia)*, Queensland peppermint *(E. exserta)* and Bailey's stringybark *(E. baileyana*) in shallow, sandy or loamy and skeletal soils on lateritic, stony sandstone rises or hillsides (Slee et al 2006).

This species is restricted to Bauhinia Downs-Theodore area of southern Queensland where it has been recorded in the Isla Gorge National Park. Threats include timber harvesting (Slee et al 2006).

Ball nut (Floydia praealta)

Vulnerable (Australia)
Vulnerable (Queensland)
Vulnerable (New South Wales)

Small to medium sized tree to 30m tall with brown, rough barked trunk to 60cm diameter and leathery to semi-stiff, oblanceolate to oblong-shaped, green leaves to 25cm long and 3cm wide. Flowers are cream, paired and stalked and are produced from mid summer to mid autumn. Fruit nuts are woody, brown and globular to 4cm diameter and are produced in mid summer to early winter (DNR 1999).

Ball nut is restricted to eastern Australia, from Gympie in south-eastern Queensland to Clarence River in north-eastern New South Wales, where it prefers riverine and lowland subtropical rainforests and has been recorded in the Triunia, Nicoll Scrub and Mount Pinbarren National Park and Mount Cooroy Conservation Park. Threatening processes include destruction of habitat by clearing and timber harvesting on freehold land, weed infestation and fire. Threatening processes are exacerbated by small local populations of sparsely distributed individuals (DEWHA 2010; DNR 1999).

Gonocarpus (Gonocarpus urceolatus)

Vulnerable (Queensland)

Herb to 30cm tall with branched, erect, hairy stems and sessile, opposite, widely spread, flat and ovate leaves to 22mm long and 13mm wide. Leaves are hairy and have thickened, toothed margins, becoming reduced up the stem. Flowers are green to deep red, hooded, keeled, clawed and sparsely scabrous (keel only) to 2.5mm long and 0.6mm wide with green, lanceolate sepals to 1mm long and 0.5mm wide. Flowers are held in simple, spike-like inflorescences in the leaf axils of alternate bracts (reduced leaves). Fruit are silvery-grey and pitcher-shaped to 2mm long and 1.1mm diameter and along with flowers, are produced mid spring (Orchard 1986).

Gonocarpus is known only from the type collections in the Chinchilla area, in south-eastern Queensland and at Peak Hill, near Emerald in central Queensland, where it is found in buloke (*Allocasuarina leuhmannii*) dominated vegetation. Suitable habitat includes brigalow (*Acacia* harpophylla)-belah *(Casuarina cristat*a) open forest on fine-grained sedimentary rocks (RE11.9.5); poplar box (*Eucalyptus populnea)*-narrow-leaved box (*E. pilligaensis)* open forest to woodland on margins of clay plains (RE11.4.10); and Queensland blue gum (*E. tereticornis*) tall woodland on alluvial plains (RE11.3.4) and potential habitat may also include dusky-leaved ironbark (*E. fibrosa* ssp. *nubila)* woodland on lateritic duricrust (RE11.7.7); gum-topped ironbark (*E. decorticans*) woodland on lateritic duricrust (RE11.7.4); narrow-leaved red ironbark *(E. crebra*) woodland on sand plains and remnant surface (RE11.5.1); Shrublands on natural scalds on deeply weathered coarse-grained

sedimentary rocks (RE11.7.5); and *Acacia* woodland on lateritic duricrust (RE11.7.2) (EPA 2002; Parsons Brinckerhoff 2007).

This species is not known to any conservation reserve and total population size is unknown. It is under threat by broad-scale vegetation clearing and habitat loss, changes to hydrological regimes, salinity, competition with weeds, road maintenance and genetic isolation from restricted distribution (ANRA 2008; Orchard 1986).

Sturt's desert rose (Gossypium sturtianum)

delisted in 2009 (previously considered Rare) (Queensland)

Glabrous shrub to 2m tall with firm, ovate leaves to 6cm long. Leaves have reddish nectar. Hibiscus-like, pink to mauve flowers with reddish blotches at base to 6cm long are produced mid spring to early summer and fruit capsules are glabrous and black-dotted to 16mm long.

This species is found along dry creek beds, watercourses, gorges and rocky slopes in sandy and gravely soils, in inland regions of mainland Australia and is not known to any protected reserve (ASGAP 2010).

Scarlet fuchsia (Graptophyllum excelsum)

Rare (Queensland)

Dense shrub to 3m tall and 1m wide with hairy young branches becoming hairless and spiny with age. Leaves are roughly obovate to lanceolate, leathery and shiny green above and dull green below to 4cm long and 1.5cm wide and they have oil glands. Red tubular flowers to 30mm long and 5.5mm wide are borne in clusters in the leaf axils mid to late winter and mid spring to mid summer. Fruit capsules are 27mm long (ASGAP 2010).

This species is confined to a few specific habitats at widely separated localities in eastern coastal Queensland from Rockhampton to Mount Larcom where it is found in semi-evergreen vine thickets in association with gyro damson (*Gyrocarpus americanus),* native bauhinia *(Lysiphyllum hookeri*), scrub ironwood *(Acacia fasciculifera*) and broad-leaved bottle tree *(Brachychiton australis*) and grassy woodlands in association with Cullen's ironbark *(Eucalyptus cullenii)* and gum-topped bloodwood *(Corymbia erythrophloia*) in soil pockets among rocks and in rock crevices on quite steep, rough, rocky, eroded hillsides, in soils derived from limestone, sandstone and igneous rock (ASGAP 2010).

Scarlet fuchsia is known to the Chillagoe-Mungana Caves, Mount Etna Caves and Mount Archer National Parks and it is considered under threat from disturbance of habitat by clearing, disturbance of habitat by weeds, inappropriate legal collection practices and inappropriate fire regimes (ASGAP 2010).

Hocking's grevillea (Grevillea hockingsii)

Vulnerable (Queensland)

Dense, compact, upright shrub to 2.5m tall with angular, silky branches and linear, leaves to 14cm long and 18mm wide with prominent midribs, rolled margins and tapered tips. Leaves are silvery and softly hairy when young, becoming green and glabrous with age. Flowers are bright pinkish purple to 15mm long and 2.5mm wide and are born in whorls on single stems in the leaf axils or on the wood mid autumn to early summer. Fruit are 13mm long and 4.5mm wide (DNR 1999).

Restricted to the Mount Morgan region in central Queensland, Hocking's grevillea is found in woodlands and open forests dominated by gum-topped ironbark *(Eucalyptus decorticans)*, spotted

gum (*Corymbia maculata)*, shiny-leaved grey ironbark *(E. suffulgens)* and yellow stringybark (*E. acmenoides)* in red and brown, shallow, sandy or sandy loam soils on hilly sandstone slopes and also recorded on the edge of soaks. It is not represented in any conservation reserve and is under threat from the disturbance of habitat by timber harvesting and habitat loss due to clearing for agricultural and mining activities and inappropriate fire and grazing regimes (DNR 1999).

Single-flowered grevillea (Grevillea singuliflora)

Vulnerable (Queensland)

Low bushy, spreading shrub to 75cm tall and 1m wide with inconspicuous, pale translucent green, single or paired, axillary flowers to 12mm long and 6mm wide that are produced from mid winter to spring. Leaves are ovate to round, deeply glossy green above and paler below with wavy margins to 20mm long and 16mm wide. Fruit are bluish green (DNR 1999).

This species is known from the Blackdown Tableland and Robinson Gorge National Parks and has been recorded in open eucalypt forests, along creekbanks and grassy slopes in shallow, sandy soils in south-eastern Queensland. Threats include the destruction of habitat by clearing, disturbance of habitat by timber harvesting, inappropriate fire regimes and inappropriate grazing regimes (DNR 1999).

Grease nut (Hernandia bivalvis)

Rare (Queensland)

Small tree to 12 m tall with ovate to oblong-ovate, dark glossy green (paler and hairless below) leaves to 10 cm long with prominent veins and cream flowers borne in clusters in spring. Red to orange, ovate, edible fruit are produced in late summer to mid autumn (DNR 1999).

Grease nut is restricted to rainforests, vine thickets and microphyll vine forests to 620 m altitude on coastal ranges on rock pavements and outcrops in shallow soils, in south-eastern Queensland and it is not known to occur in any protected reserve (DNR 1999; Harden et al 2006).

Decumbent homoranthus (Homoranthus decumbens)

Vulnerable (Australia)
Vulnerable (Queensland)
Back on Track Species (High) (Queensland)

Low shrub to 60cm tall and 2m wide with spreading stems and cylindrical, sessile, opposite, whitish-green to reddish brown, aromatic leaves to 12mm long and 0.4mm diameter. Flowers are single, yellow-green, tiny and tubular to 5mm long and are produced in the leaf axils early spring to early summer (DNR 1999).

This species is restricted to the Barakula Forestry Area near Chinchilla and the Blackdown Tableland National Park in southern and central Queensland where it is found in tall shrublands and heathlands in shallow sandy soils containing lateritic pebbles and on sandstone cliff edges and at 0 – 800 m altitude. Threats include broadscale vegetation clearing, increased fragmentation and loss of remnants, changed fire regimes and inappropriate plant collection (DEWHA 2010; DNR 1999).

Bailey's indigo (Indigofera baileyi)

delisted in 2009 (previously considered Rare) (Queensland)
Endangered (New South Wales)

Upright herb to 0.4m tall with woody rootstock and pink to purple, pea-shaped flowers that are held in spikes to 11-17cm long. Leaves are pinnate to 7.5cm long with paired, elliptic to obovate leaflets to 19mm long and 10mm wide. Seed pods are terete and smooth to 29mm long.

This species prefers forests and woodlands in subtropical coastal regions in clay soils derived from sandstone up to 590 m altitude in south-eastern Queensland and New South Wales. This species is not represented in any conservation reserve and is under threat from road maintenance works including weed spraying, clearing of habitat, high frequency fires and grazing (NSW Scientific Committee 2002).

Blunt-leaved phebalium (leionema obtusifolium)

Vulnerable (Australia)
Vulnerable (Queensland)

Shrub to 1m tall with hairless, glossy, reddish and somewhat warty and angled branchlets that are aromatic when crushed. Leaves are stalkless, papery and narrowly oval to spoon shaped to 55mm long and 6mm wide and are aromatic when crushed. Leaves are alternate, smooth, glossy and hairless with prominent midribs and oil dots and curved margins. Yellowish-white petals to 4mm long are provided in flat-topped, 10-20-flowered inflorescences at the ends of branches from mid winter to early spring. Fruit capsules are 1-5-chambered (Botanic Gardens Trust 2010).

Restricted to a small area in the Helidon-Ravensbourne area of south-eastern Queensland where it is found in open forests communities dominated by yellow stringybark (*Eucalyptus acmenoides*), brown bloodwood (*Corymbia trachyphloia)* and smudgy apple (*Angophora woodsiana*) in shallow, dark, well-drained and generally stony soils in hilly terrain on slopes with a southerly aspect. This species is protected in the Crows Nest National Park with a total population size estimated at less than 5000 individuals. Threatening processes include loss or fragmentation of populations through vegetation clearing, inappropriate fire regimes, habitat degradation through inappropriate forest operations and grazing regimes (Botanic Gardens Trust 2010).

Northern bearded-heath (Leucopogon cuspidatus)

Vulnerable (Australia)

Small, dense shrub to 1.2m tall with flaky, hairless branchlets and alternate, sessile, oblong leaves with sharp spiny tips to 11mm long and 2mm wide. Urn-shaped, white, tubular flowers to 6mm long and 3mm wide and orange, ovoid fruit to 4mm long are produced from mid autumn to late spring (Calvert et al 2005; DEWHA 2010).

The northern bearded heath prefers mountain tops on poor skeletal soils, amongst granite or serpentinite outcrops in coastal regions of central Queensland where it is found in stunted open woodlands or shrublands. This species is under threat from weed invasion, inappropriate fire regimes and development (Calvert et al 2005; DEWHA 2010).

Large-flowered bearded-heath (Leucopogon grandiflorus)

Rare (Queensland)

Shrub to 2m tall with small, hairy branches and oblong, hairy leaves to 10mm long and 1.3mm wide. Leaves have sharply pointed tips and curved margins. Tubular flowers to 4.5mm long appear early autumn to early spring whilst dry, globular fruit to 5mm long are produced late winter to late spring (DNR 1999).

Restricted to inland southern Queensland, the large-flowered bearded-heath prefers eucalypt forests and woodlands in skeletal to deep sands on sandstone cliffs or sandy valley floors at 200 - 720 m altitude. This species is protected in the Palmgrove (Scientific), Carnarvon, Expedition and Precipice National Parks and threats have been identified as destruction of habitat due to clearing and inappropriate fire regimes (DNR 1999).

Carnarvon palm (Livistona nitida)

Rare (Queensland)

Palm to 30m tall with globose, moderately dense crown and solitary trunk to 35cm diameter. Trunk has numerous, regularly spaced, long, deep vertical fissures and surface rings of sheath scars. Leaves are 35-50-numbered, strongly ascending to horizontally spreading, bright green and deeply divided to 190cm long and 0.3mm thick. Leaves are held on smooth, flattened triangular stalks to 190cm long and 26mm wide. Flowers are thick-textured and leathery to 2.2mm long and are held in strongly arching inflorescences. Fruit are black, glossy and fleshy to 17mm diameter and held in crowded clusters (PACSOA 2010; Rodd 1998).

Restricted to the upper Dawson River basin and uppermost Comet River basin region in southern Queensland where it is found along banks and channels of larger-semi-permanent streams, in sandy, silty or gravelly alluvium and at cliff bases and on cliff ledges in sheltered sandstone gorges. This species is represented in the Carnarvon National Park (PACSOA 2010).

Queensland bush nut (Macadamia integrifolia)

Vulnerable (Australia)
Vulnerable (Queensland)

Tree to 20m tall with trunk to 30cm diameter and brownish grey, persistent, rough bark. Leaves are stiff and leathery and arranged on branchlets in threes. Leaves are pale green with wavy to smooth margins to 14cm long and 3.5cm wide. White to creamy white flowers appear in narrow, brush-like, pendulous racemes to 30cm long from late winter to late spring and round, hard, brown fruit to 3.5cm diameter are produced early summer to early autumn (DNR 1999).

Twenty-six wild populations are restricted to south-eastern Queensland, from Mount Bauple, south of Maryborough, to the Nicoll Scrub near the New South Wales border. This species occurs in rainforests on well drained soils on hill crests, hill slopes, scree slopes and foot slopes of coastal areas and is found in the Mount Bauple (Scientific), Nicolls Scrub and Truinia National Parks and Mount Cooroy Conservation Park. Threats include habitat clearing and disturbance (DEWHA 2010; DNR 1999).

Blackdown Tableland macarthuria (Macarthuria ephedroides)

delisted in 2009 (previously considered Rare) (Queensland)

Rigid, multi-stemmed, rush-like shrub to 2m tall with flattened, slender, green to yellow, glabrous stems and sessile, narrowly to linear obovate leaves to 81mm long and 7mm wide. Leaves are held mainly towards the base of stems, becoming further reduced up the stem (scale-like). Greenish-white flowers appear in axillary clusters of 1-4 year round. Fruits year round (Lepschi 1996).

This species prefers rocky sandstone hills and in association with Hando's Wattle (*Acacia handonis*) in central Queensland (Hando and Hando 1997).

Northern bonewood (Macropteranthes fitzalanii)

Rare (Queensland)

Shrub to 7m tall with rough bark and broadly elliptic to circular, hairy to glabrous, dull dark green above and warty, paler below leaves to 4cm long. Leaves have oil dots. Fruit are dry, narrow-conical to funnel-like, hairless and yellow to 25mm long (DNR 1999).

This species is found in coastal notophyll vine forests, microphyll vine forests and littoral rainforests along the central Queensland coast area north of Gladstone. It is not known to any protected reserve (DNR 1999; Harden et al 2006).

Smooth-barked bonewood (Macropteranthes leiocaulis)

Rare (Queensland)
Tree to 25m tall with pink to green white, smooth bark and erect, hairy branchlets. Leaves are broadly elliptic to circular, opposite, hairless, glossy green above and paler below leaves to 8cm long and 2.3cm wide. Flowers are paired and hairy to 7mm long and 5mm wide and are produced early to mid summer. Fruit are straw coloured and hairless and appear mid to late summer (DNR 1999).

Restricted to eastern Queensland from Mingela Bluff near Townsville, to Binjour Plateau near Mundubbera, this species is found in deciduous vine thickets, semi-evergreen vine thickets and araucarian microphyll vine forests and occasionally forest and woodland habitats in red euchrozems (red, strongly structured clay soils) or sandstone talus. Smooth-barked bonewood is represented in Dipperu National Park and threats include destruction of habitat due to clearing and habitat disturbance by timber harvesting in sclerophyll forests and woodlands (DNR 1999).

Yellow bottlebrush (Melaleuca formosa)

Rare (Queensland)

Small to medium tree to 10m tall with erect, weeping branches and purplish, hairy juvenile leaves. Adult leaves are green hairy and narrowly elliptic to 8.5cm long 1cm wide with fine spots and pointed tips. Flowers are creamy white and held in clusters in spring and summer. Fruit capsules to 6mm wide appear in spring (DNR 1999).

Restricted to south-eastern Queensland, this species is found in eucalypt open forests and woodlands in association with spotted gum (*Corymbia maculata*) and gum-topped ironbark *(Eucalyptus decorticans*) and mountain hickory (*Acacia penninervis)*, long-leaved waxflower (*Philotheca myoporoides*) and snowy mintbush (*Prostanthera nivea*) dominated heathlands and shrublands as large monotypic stands or less scattered individuals in sandstone and red loam soils to 840m altitude. This species is known to the Mount Walsh National Parks and threats include the destruction of habitat by clearing, inappropriate fire regimes, uncontrolled collection of seed and cutting material for cultivation and degradation of habitat by weeds (DNR 1999).

Grove's paperbark (Melaleuca groveana)

Rare (Queensland)
Vulnerable (New South Wales)

Shrub to 5m tall with light brown, fibrous, papery bark and alternate, narrowly-elliptic, bright green flowers to 5.5cm long and 0.8cm wide. Flowers are creamy-white and held in dense, loose, cylindrical, unbranched spikes to 3.5cm long at the ends of branchlets. Fruit are barrel-shaped to 7mm diameter (DNR 1999).

Flowering from late winter to early spring, this species is found in heathlands and eucalypt woodlands and forests with heathy understorey and occasionally, tall open forests with grassy understorey and microphyll vine forests, on ridges, high mountain slopes and the summits of mountains of at 340-600m altitude, in subtropical and tropical coastal regions of south-eastern Queensland and north-eastern New South Wales (DNR 1999).

Grove's paperbark is known to the Blackdown Tableland, Carnarvon, Glasshouse and Moogerah National Parks and threats have been identified as the loss and disturbance of habitat by vegetation clearing and timber harvesting and inappropriate fire and grazing regimes (Botanic Gardens Trust 2010; DNR 1999).

Gurulmundi heath-myrtle (Micromyrtus carinata)

Endangered (Queensland)

Slender shrub to 2.5m tall and 0.5m wide with grey bark with shallow, longitudinal fissures and pendulous branches with grey, slightly convex and not winged or warty ribs. Leaves are overlapping, obovate to oblanceolate and glabrous to 1.5mm long and 0.7mm wide with prominent oil glands. Pale yellow flowers to 1.8mm diameter and indehiscent fruit appear in the leaf axils from late autumn to mid spring (Bean 1997).

Restricted to a small area north-west of Gurulmundi, in southern Queensland where it is found in heathlands and woodlands in association with narrow-leaved white mahogany *(Eucalyptus teniupes),* brown bloodwood *(Corymbia trachyphloia)* and Gurulmundi fringe myrtle (*Calytrix gurulmundensis)*, in shallow sandy soils on crests of mountain ranges. This species is not represented in protected estate (Bean 1997).

Spreading heath-myrtle (Micromyrtus patula)

Endangered (Queensland)

Shrub to 2m tall with grey, loose, fibrous bark at base becoming closely adhering with shallow longitudinal fissures above. Branchlets are spreading and not pendulous and have grey, convex, not winged or warty flanges (stem ribs). Leaves are overlapping, sessile, linear to oblanceolate and glabrous to 2.8mm long and 0.8mm wide with prominent oil glands. Flowers are white with keeled petals and prominent oil glands to 1mm long and 1mm wide. Flowers appear from early autumn to early spring (Bean 1997).

Restricted to the Barakula State Forest in southern Queensland where it occurs in heathlands in association with stunted specimens of Queensland peppermint (*Eucalyptus exserta*) and narrow-leaved white mahogany (*E. tenuipes*) as well as pleasant fringe myrtle (*Kardomia jucunda)* and thyme honey-myrtle (*Melaleuca thymifolia*), in skeletal soils, on flat rocky platforms of laterised sandstone (Bean 1997).

This species is known only from the type locality and is not represented in any conservation reserve. The total population size is estimated at 200 individuals over a 0.5ha area and it is under threat from roadworls and changed fire regimes (Bean 1997).

Artesian water-milfoil (Myriophyllum artesium)

Endangered (Queensland)
Back on Track Species (High) (Queensland)

Creeping, mat-forming herb to 15cm tall with erect, slender, unbranched stems to 0.8mm diameter and opposite, obloanceolate to narrowly obovate leaves to 5.5mm long and 2.9mm wide. Leaves have a small, red terminal gland and flowers appear late summer to late spring. Fruit are sessile, pale brown and cubic to 0.9mm long and 0.7mm diameter and appear late summer (Halford and Fensham 2001).

This species is restricted to central and southern Queensland, from the Boulia, Clermont – Aramac, Taroom, Quilpie and Eulo districts where it is found in wetlands associated with springs emanating from the Great Artesian and associated basins. It is not known to any protected reserve and is under threat from changes to hydrological flows as a result of pressure draw-down, introduction and spread of ponded pasture species, trampling by domestic stock and rooting by feral pigs (Halford and Fensham 2001).

Pungent olive (Notelaea pungens)

Rare (Queensland)

Compact, bushy shrub to 60cm tall with hairy branchlets and opposite, lanceolate, leathery leaves to 3.5cm long and 6mm wide. Leaves have sharply pointed tips and thickened, curved margins. Pale green to yellow flowers to 2mm diameter are produced singly in the leaf axils from mid autumn to mid winter. Spherical to ovoid, dark blue, woody fruit to 10mm long and 9mm diameter appear late spring to early autumn (DNR 1999).

Restricted to the Eidsvold region of south-eastern Queensland where it is found in open forest and woodland communities dominated by large-fruited yellow jacket (*Corymbia watsoniana*), lemon-scented/spotted gum (*C. citriodora)* and tumble-down ironbark (*Eucalyptus panda)*, in well drained, mostly shallow gravelly clay-loam or sandy soils, in undulating to hilly terrain on either sandstone or granite ridges (DNR 1999).

Seven populations are known in the distribution range although this species is not known to any protected estate. Threats include destruction of habitat by clearing, disturbance of habitat due to timber harvesting and inappropriate fire regimes (DNR 1999).

Gibson's oldenlandia (Oldenlandia gibsonii)

Endangered (Queensland)
Back on Track Species (Critical) (Queensland)

Woody, densely branched herb to 1m tall with thin, greyish, papery bark and opposite, discolourous, subsessile, glabrous leaves to 7mm long and 2mm wide. Leaves have prominent midribs and recurved margins. Flowers are solitary, tubular and cream with lilac tinge or blotches in throat to 3mm long and appear from late autumn to late spring. Subglobular, glabrous fruit to 2mm diameter are produced in mid autumn and late spring to early summer (Halford 1999).

Restricted to State Forest 583, 35 km W of Miriam Vale in central Queensland, this species occurs in araucarian microphyll vine forests and dry rainforests in brown loam soils on slopes and scree hillsides. It is not protected in any conservation reserve (Halford 1999).

Kroombit Tops monkey rope (Parsonsia kroombitensis)

Vulnerable (Queensland)

Climber to 2m tall with hairy stems and clear sap. Leaves are opposite, hairless above and hairy below, lanceolate and dark purple to purplish brown when dried to 6cm long and 1.9cm wide. Flowers are tubular, orange-yellow with red, hairy throats and fruit capsules are very narrowly ovoid to 10cm

long and 1cm diameter. Flowers late summer to early autumn, fruiting mid winter to early spring (DNR 1999).

Restricted to central-eastern Queensland, where it is found in low shrubby woodlands and open shrublands and lithophytic vegetation at the edges of deep valleys and among outcrops of acidic volcanic rocks. This species is only known from the type locality on the Kroombit Tops and Boyne Ranges, south-west of Gladstone and Cania Gorge, north-west of Monto and is represented in the Cania Gorge National Park. Threats include fragmentation of habitat, disturbance of habitat due to timber harvesting, inappropriate fire regimes and bush walking (DNR 1999).

Mount Larcom monkey rope (Parsonsia larcomensis)

Vulnerable (Australia)
Vulnerable (Queensland)

The Mount Larcom monkey rope is a semi-woody creeping plant to 5 m long with clear sap and ovate to broadly elliptic leaves to 4.5 cm long and 2.2 cm wide. Leaves are green above and glaucous below with raised veins and slightly recurved margins and are held on stalks to 7 mm long. Flowers are white with red spots in the throat, tubular and hairy to 8 mm long and are borne in clusters of 5-12 from mid summer to late autumn. Brown, hairy, slender, cylindrical to spindle-shaped fruit to 11 cm long and 1.1 mm diameter are produced from late winter to early summer. Plants attach to rocks and soils by adventitious roots (DEWHA 2010; DNR 1999).

This species is restricted to the Rockhampton-Mount Perry region of central-east and south-eastern Queensland where it is found in open heathlands and shrublands at or near the summits of mountain peaks on cliffs or among outcrops of acid volcanic rocks and serpentinite and in shallow, loamy soils in association with broad-leaved red ironbark (*Eucalyptus crebra*), grasstrees (*Xanthorrhoea* spp.) and serpentinite rice flower (*Pimelea leptospermoides*) at 350-750 m altitude (DNR 1999).

Five populations have been recorded in the distribution area although total population size is unknown. This species is not known to occur in any conservation reserve and is considered under threat by habitat degradation by weeds and fragmentation by clearing (DEWHA 2010; DNR 1999).

Narrow-leaved parsonsia (Parsonsia lenticellata)

delisted in 2009 (previously considered Rare) (Queensland)

Climbing vine to 7m tall with thin, twining, finely hairy, warty stems and clear sap. Leaves are opposite, thin, hairless, smooth and narrow to 100mm long and 30mm wide. Flowers are small, pale yellow to cream and fragrant to 4mm long and are held in clusters. Fruit capsules are dry and narrowly cylindrical to 110mm long and 9mm wide. Flowers late spring to mid winter, fruiting late autumn to mid spring (Calvert et al 2005; DNR 1999).

Found in vine thickets and rainforest / gallery forests on river terraces and hillslopes and occasionally in eucalypt / paperbark woodlands in coastal regions of central and northern Queensland, this species is not represented in any conservation reserve. Threats include weeds, changes to surrounding vegetation, fire and construction activities that may destroy plants and fragment vine thicket habitats (Calvert et al 2005; DNR 1999).

Rough-leaved paspalum (Paspalidium scabrifolium)

Rare (Queensland)

Tufted grass to 100cm tall with erect, hollow, glabrous stems and linear to lanceolate, scabrous leaves to 30cm long and 8mm wide. Inflorescences are compound panicles with flexuous, unilateral racemes to 3cm long and 0.6mm wide. Spikelets are solitary to 2.3mm long and 1.45mm wide. This species flowers mid autumn to early winter (Sharp and Simon 2002).

Little known species of brigalow country in coastal regions of north and central Queensland, the rough-leaved paspalum is not known to any protected reserve (Sharp and Simon 2002).

Glossy-leaved spurge (Phyllanthus sauropodoides)

Rare (Queensland)

Shrub to small tree to 4m tall with densely leaved branchlets and dark green to lightly red, elliptic to ovate leaves to 10.5cm long and 4.2cm wide. Flowers are solitary or clustered and fruit capsules are flattened and globular to 2.2cm long and 0.7mm diameter. Flowers mid winter to mid spring and fruits early autumn to early winter (DNR 1999).

This species is restricted to araucarian microphyll vine forests and araucarian notophyll vine forests in alluvium and chocolate soils and at 120-690m altitude, on the Many Peaks Range in central-eastern Queensland. It is under threat from the destruction of habitat due to clearing (DNR 1999).

Small-flowered polianthion (Polianthion minutiflorum)

Vulnerable (Australia)
Vulnerable (Queensland)

Shrub to 1m tall with reddish brown, slender, densely hairy young stems and greyish, egg-shaped, hairy, flat leaves to 11mm long and 7mm wide. Flowers are minute, white and hairy and are held in clusters to 1.2cm diameter year round (DEWHA 2010).

This species is restricted to inland regions of southern Queensland, where it is found in woodlands in sandy soils and light, gravelly loams derived from sedimentary rocks and up to 340m altitude. This species is known from five locations but is not represented in any conservation reserve. It is under threat from vegetation clearing and altered fire regimes (DEWHA 2010).

Cobar greenhood (Pterostylis cobarensis)

Vulnerable (Australia)
Vulnerable (New South Wales)

Terrestrial deciduous orchid to 40cm tall with narrow-elliptic leaves to 2.5cm long and 8mm wide forming basal rosette. Three to eight transparent flowers with brown and green markings to 1.2cm long appear on stems to 40cm tall in spring (Botanic Gardens Trust 2010; DEWHA 2010).

Restricted to the central eastern Australia from Darling Downs in southern Queensland south to Nyngan-Cobar-Bourke region in New South Wales and west to eastern South Australia, this species is found in eucalypt woodlands, open mallee and cypress pine shrubland in skeletal sandy loam soils on low stony ridges and slopes and in association with Morris' grey mallee (*Eucalyptus morrisii)*, green mallee *(E. viridis*), gum coolibah *(E. intertexta*), Manara Hills red gum *(E. vicina*), white cypress pine (*Callitris glaucophylla*), wilga (*Geijera parviflora)*, belah *(Casuarina cristata)*, spearwood (*Acacia doratoxylon)* (DEC 2010; DEWHA 2010).

The Cobar greenhood reproduces vegetatively and is under threat from damage caused by feral goats, broad-scale vegetation clearing, grazing pressure, changed hydrology increasing salinity, fragmentation, loss of remnants and weed invasion (DEWHA 2010).

Quassia (Quassia bidwillii)

Vulnerable (Australia)
Vulnerable (Queensland)

Quassia is a small shrub or tree to 6 m tall with ribbed, hairy young branches and stiff, leathery, narrowly elliptic to narrowly ovate leaves to 12 cm long and 2 cm wide. Leaves are green, glossy and hairless above and paler and hairy below with curled margins and are held on stalks to 7 mm long. Small, red flowers are borne in clusters in the leaf axils from late Spring to early Autumn and red, hairy, egg to elliptic shaped fruit to 1 cm long are produced from late summer to mid winter (DNR 1999).

This species is restricted to Queensland, between Scawfell Island near Mackay and Goomboorian north of Gympie, where it is found in lowland rainforests or rainforest margins and occasionally open forests, woodlands and mangroves in lithosols, skeletal soils, loamy sands, sands, silts and sands with clay subsoils at 1 - 617 m altitude in coastal regions. Quassia occurs in association with lemon-scented/spotted gum (*Corymbia citriodora)*, small-fruited grey gum (*Eucalyptus propinqua)*, yellow stringybark (*E. acmenoides*), Queensland blue gum (*E. tereticornis*), pink bloodwood *(C. intermedia*), grey ironbark (*E. siderophloia),* gum-topped ironbox *(E. moluccana)*, Gympie messmate (*E. cloeziana*) and broad-leaved red ironbark (*E. fibrosa s*pp. *fibrosa)* (DEWHA 2010,; DNR 1999).

Forty populations have been recorded in the distribution range including in the Scawfell Island National Park. Threats to this species include habitat clearing and soil erosion resulting from agriculture, forestry, urban development and recreational activities, inappropriate fire regimes and weed infestation (DNR 1999).

Austral cornflower (Rhaponticum australe)

Vulnerable (Australia)
Vulnerable (Queensland)
Back on Track Species (High) (Queensland)

Erect herb to 60cm tall with woolly hairy branches and basal leaves. Upper leaves are sessile, smaller and alternate and toothed to deeply lobed to 10cm long and 6cm wide. Purple, thistle-like flowerheads to 6cm diameter are produced in spring and autumn at the ends of branches and cypselas (fruit) are striated and hairy to 8mm long (DNR 1999).

Restricted from Mount Moffatt to Gatton in southern Queensland and historically known to extend through New South Wales and Victoria. Austral cornflower is found in eucalypt open forests with grassy understorey in black clay soils, on roadsides and road reserves and up to 480 m altitude. This species is not known to any protected estate and is under threat from broadscale vegetation clearing, invasion by exotic weeds, grazing pressures and roadworks (DEWHA 2010; DNR 1999).

Narrow-leaved turpentine (Rhodamnia angustifolia)

Endangered (Queensland)

Single or multi-stemmed erect tree to 10m tall with grey, smooth trunk and rounded, brownish, smooth branches. Leaves are opposite, discolourous, coriaceous, trinerved and mostly narrowly elliptic to 70mm long and 12mm wide. Flowers are yellowish-white to 2.5mm long and 3.0mm wide and appear in 2-7-flowered inflorescences in spring and summer. Fruit berries are globose, glabrous and yellowish orange with some red to 5mm long and 6mm wide and are produced shortly after flowering (Snow and Guymer 1999).

Known only from the type locality at the head of Cedar Creek in the Wietalaba State Forest, south of Gladstone in central-eastern Queensland, this species is found in microphyll vine forests in reddish or brown loam soils derived from mudstones of Muncon volcanics, on ridges and slopes and at 200-600m altitude. Total population size is estimated at 20 individuals across a 60ha area and this species is considered under threat from habitat clearing and weed invasion (Snow and Guymer 1999).

Red-soil woolly wrinklewort (Rutidosis lanata)

Endangered (Queensland)

Erect herb to 30cm tall with densely white woolly hairy stems and alternate, sessile, elliptic to lanceolate basal leaves to 4.5cm long and 9mm wide. Leaves are green and moderately hairy above and white and densely woolly hairy below. Bell-shaped flowerheads to 16mm diameter are produced from mid spring to early autumn. Fruit is obovoid to 3mm long and 1.5mm wide (DNR 1999; Holland 1994).

This self-fertilising species is r estricted to the Darling Downs district of southern Queensland, where it is found in poplar box *(Eucalyptus populnea)*-belah *(Casuarina cristata*) dominated forests, ironbark and currawong (*Acacia sparsiflora)* forests, box-ironwood forests and eucalypt forests in red-brown gravelly sands, grey clays, red-brown clay and sandy loams, on flat land and stony red ridges and at 280-320 m altitude. This species is under threat from destruction of habitat by clearing, inappropriate grazing regimes, road verge maintenance and habitat disturbance by weeds and introduced pasture grasses (DNR 1999; Holland 1994).

Sannantha (Sannantha brachypoda)

Rare (Queensland)

Shrub to 4m tall with grey, persistent, scaly to fibrous bark and quadrangular branchlets. Leaves are obovate, concolourous, straight, flat and not keeled to 9mm long and 2.8mm wide with prominent oil glands. Flowers are white to 2.5mm long and 2.5mm wide and are held in 3-flowered inflorescences in the leaf axils mid summer to early autumn. Fruit nuts are hemispherical and woody to 2.0mm long and 3.5mm wide with broadly deltate, exserted valves and appear mid summer (Bean 1999).

Restricted to the Rolleston-Woorabinda-Theodore region of central Queensland, this species is found in clearings in eucalypt forests with shrubby understorey, in sandstone gullies and in sandy alluvial soils adjacent to sandstone ranges. It is known to the Precipice National Park (Bean 1999; Wilson et al 2007).

Rainforest cassia (Senna acclinis)

Rare (Queensland)
Endangered (New South Wales)

Shrub to 3m tall with paired, glabrous to slightly hairy, broadly elliptic leaflets to 5cm long and 1.5cm wide and yellow flowers to 3cm diameter that appear late summer in groups of 2-5. Fruit pods are oval to 15cm long and 8mm wide and are produced late autumn (DEC 2010).

Restricted to coastal regions of central Queensland and central New South Wales, where it is found in rainforest margins in association with Burdekin plum (*Pleiogynium timorense)* and open forests in association with flooded gum (*Eucalyptus grandis*), turpentine (*Syncarpia glomulifera*) and red ash (*Alphitonia excelsa),* in soils derived from basalt and metamorphic rocks and at altitudes of 100-660 m. This species is not known to any protected reserve and is under threat from weed invasion, change to

fire regimes and destruction of habitat by clearing for urban development and agriculture (DEC 2010; DNR 1999).

Minute orchid (Taeniophyllum muelleri)

Vulnerable (Australia)

Epiphytic terrestrial orchid with leaves reduced to scale-like bracts and soon shed. Green-yellow, tubular flowers are produced from mid winter to late spring and species reproduces by vegetative growth.

The minute orchid is restricted to coasts and coastal ranges of eastern Australia, north of Bellinger River in New South Wales and at 0-250 m altitude, where it is found on the outer branches and branchlets of rainforest trees in littoral and subtropical rainforests, wet sclerophyll forests and riparian areas. This species is not known to any protected reserve and threats have been identified as habitat clearing and removal of host trees.

Slender tylophora (Tylophora linearis)

Endangered (Australia)
Endangered (Queensland)
Vulnerable (New South Wales)

Slender, glabrous twiner to sub-shrub with milky to clear sap and dark green, flat, linear leaves to 5cm long and 3mm wide. Purple flowers to 7mm diameter are produced from late spring to late autumn and fruit to 100mm long and 5mm wide appear from late summer to late winter (DEC 2010; DEWHA 2010).

Restricted to northern and central western slopes of New South Wales and near Glenmorgan in the western Darling Downs district, Queensland, slender tylophora is found in dry scrublands, open forests and woodlands in association with broombush (Melaleuca uncinata), broad-leaved red ironbark (*Eucalyptus fibrosa),* grey ironbark (*E. sideroxylon),* white box (*E. albens)*, black cypress pine (*Callitris endlicheri),* white cypress pine *(C. glaucophylla)*, buloke *(Allocasuarina luehmannii)*, hakea wattle (*Acacia hakeoides)*, striped wattle *(A. lineata)* at low altitudes and on sedimentary flats (DEC 2010; DEWHA 2010).

Australian bluebell (Wahlenbergia islensis)

Rare (Queensland)

Multi-stemmed herb with ascending, crowded stems to 50cm long and sessile, linear leaves to 35mm long and 1.5mm wide. Blue, bell-shaped flowers to 3.5mm long appear singly or in clusters of 2-6 early winter to late spring and hemispherical fruit to 3.5mm long and 3mm wide are produced in spring (DNR 1999; Smith 1992).

Restricted to the Isla and Robinson Gorges and Carnarvon and Chesterton Ranges in inland central Queensland, this species is known to the Carnarvon, Isla Gorge and Expedition National Parks. It is found in crevices on rock outcrops and on sandstone slopes situated below cliffs in Gympie messmate *(Eucalyptus cloeziana)* and spotted gum (*Corymbia maculata*) woodlands (DNR 1999).

Small-leaved westringia (Westringia parvifolia)

Vulnerable (Australia)
Vulnerable (Queensland)

Spreading shrub to 1.5m tall with hexagonal branchlets and whorled, narrowly ovate leaves to 7mm long and 2mm wide. Flowers are white with purplish to brownish dots to 12mm long and are held in the leaf axils and at the ends of branches late winter to late spring (Botanic Gardens Trust 2010; DEWHA 2010).

This species is known from an 80km area near Yelarbon and Inglewood in south-eastern Queensland. It occurs in mallee, woodlands and forests in association with Baker's mallee (*Eucalyptus bakeri)*, green mallee (*E. viridis*) in sandy and stony soils. Threats include broad-scale vegetation clearing, increasing fragmentation and loss of remnants, hydrological change and pollution (DEWHA 2010).

Mount Larcom zieria (Zieria actites)

Endangered (Queensland)

Densely compacted, glabrous shrub to 1m tall with erect, wiry branches and palmately trifoliate, aromatic (aniseed) leaves. Leaflets are lanceolate to elliptic and gland dotted to 10mm long. Flowers are cream to pale pink to 4mm long and 2mm wide and appear in clusters in the leaf axils and many-lobed, glabrous fruit to 3.5mm long and 2mm wide are produced early spring to late autumn (DEWHA 2010).

Restricted to Mount Larcom, WNW of Gladstone in central Queensland, this species is found in open woodlands and shrublands, in crevices and clefts on exposed outcrops and clifflines on the Targinnie Quartz Monzonite at 630m altitude. Total population size is estimated at less than 1000 individuals. Threatening processes include habitat destruction and inappropriate fire regimes, weeds and general disturbance (DEWHA 2010).

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Appendix E Fauna Database Search Results

Common Name	*Scientific Name*	EPBC	NCA	Mi	NPT	AP	Pest	Source
Invertebrates								
boggomoss snail	*Adclarkia dawsonensis*	CE						1,4
glasswing	*Acraea andromacha andromacha*							4
yellow albatross	*Appias paulina ego*							4
purple oak-blue	*Arhopala centaurus centaurus*							4
lemon migrant	*Catopsilia pomona pomona*							4
white migrant	*Catopsilia pyranthe crokera*							4
bordered rustic	*Cupha prosope*							4
marsh tiger	*Danaus affinis affinis*							4
lesser wanderer	*Danaus chrysippus petilia*							4
monarch	*Danaus plexippus plexippus*							4
scarlet jezebel	*Delias argenthona argenthona*							4
barred skipper	*Dispar compacta*							4
purple crow	*Euploea tulliolus tulliolus*							4
no-brand grass-yellow	*Eurema brigitta australis*							4
large grass-yellow	*Eurema hecabe phoebus*							4
ringed xenica	*Geitoneura acantha acanthe*							4
common brown	*Heteronympha merope merope*							4
orange ringlet	*Hypocysta adiante adiante*							4

Common Name	*Scientific Name*	EPBC	NCA	Mi	NPT	AP	Pest	Source
brown ringlet	*Hypocysta metirius*							4
varied eggfly	*Hypolimnas bolina nerina*							4
pale imperial hairstreak	*Jalmenus eubulus*		V					4
blue argus	*Junonia orithya albicincta*							4
common evening-brown	*Melanitis leda bankia*							4
orange bush-brown	*Mycalesis terminus terminus*							4
satin opal	*Nesolycaena albosericea*							4
green grass-dart	*Ocybadistes walkeri*							4
orchard swallowtail (Australian subspecies)	*Papilio aegeus aegeus*							4
yellow admiral	*Vanessa itea*							4
Fish								
Agassiz's glassfish	*Ambassis agassizii*					R		4
barred grunter	*Amniataba percoides*							4
longfin eel	*Anguilla reinhardtii*							4
blue catfish	*Arius graeffei*							4
snubnose garfish	*Arrhamphus sclerolepis*							4
silver perch	*Bidyanus bidyanus*				BBS			4
goldfish	*Carassius auratus**							4

Common Name	*Scientific Name*	EPBC	NCA	Mi	NPT	AP	Pest	Source
flyspecked hardyhead	*Craterocephalus stercusmuscarum*							4
estuary stingray	*Dasyatis fluviorum*							4
mosquitofish	*Gambusia holbrooki**							4
mouth almighty	*Glossamia aprion*							4
striped gudgeon	*Gobiomorphus australis*							4
sooty grunter	*Hephaestus fuliginosus*							4
empire gudgeon	*Hypseleotris compressa*							4
firetail gudgeon	*Hypseleotris galii*							4
western carp gudgeon	*Hypseleotris klunzingeri*							4
Midgley's carp gudgeon	*Hypseleotris species 1*							4
jungle perch	*Kuhlia rupestris*				SEQ			4
barramundi	*Lates calcarifer*							4
spangled perch	*Leiopotherapon unicolor*							4
mangrove jack	*Lutjanus argentimaculatus*							4
Murray cod	*Maccullochella peelii peelii*	V						1
golden perch	*Macquaria ambigua*							4
Australian bass	*Macquaria novemaculeata*							4
oxeye herring	*Megalops cyprinoides*							4
crimsonspotted rainbowfish	*Melanotaenia duboulayi*							4

Common Name	*Scientific Name*	EPBC	NCA	Mi	NPT	AP	Pest	Source
eastern rainbowfish	*Melanotaenia splendida splendida*							4
southern purplespotted gudgeon	*Mogurnda adspersa*				BBS	R		4
diamondfish	*Monodactylus argenteus*							4
sea mullet	*Mugil cephalus*							4
bony bream	*Nematalosa erebi*							4
Australian lungfish	*Neoceratodus forsteri*	V			SEQ / BBS			1,4
Hyrtl's catfish	*Neosilurus hyrtlii*							4
sleepy cod	*Oxyeleotris lineolata*							4
flathead gudgeon	*Philypnodon grandiceps*							4
dwarf flathead gudgeon	*Philypnodon macrostomus*							4
guppy	*Poecilia reticulata**							4
Pacific blue eye	*Pseudomugil signifer*							4
Australian smelt	*Retropinna semoni*							4
spotted scat	*Scatophagus argus*							4
southern saratoga	*Scleropages leichardti*					R		4
leathery grunter	*Scortum hillii*					IK		4
striped scat	*Selenotoca multifasciata*							4
freshwater longtom	*Strongylura krefftii*							4
freshwater catfish	*Tandanus tandanus*				BBS			4

Common Name	*Scientific Name*	EPBC	NCA	Mi	NPT	AP	Pest	Source
crescent grunter	*Terapon jarbua*							4
Amphibians								
tusked frog	*Adelotus brevis*		V		SEQ / BBS			3,4
desert froglet	*Crinia deserticola*				SEQ			3
beeping froglet	*Crinia parinsignifera*							3, 4
clicking froglet	*Crinia signifera*				SEQ			3,4
greenstripe frog	*Cyclorana alboguttata*							3,4
superb collared frog	*Cyclorana brevipes*				SEQ			3,4
eastern snapping frog	*Cyclorana novaehollandiae*				SEQ			3,4
rough collared frog	*Cyclorana verrucosa*			R				3, 4
marbled frog	*Limnodynastes convexiusculus*				SEQ			4
barking frog	*Limnodynastes fletcheri*							3,4
striped marshfrog	*Limnodynastes peronii*							3,4
salmon striped frog	*Limnodynastes salmini*				SEQ / BBS			3,4
spotted grassfrog	*Limnodynastes tasmaniensis*							3,4
scarlet sided pobblebonk	*Limnodynastes terraereginae*							3,4
Barrington Tops frog	*Litoria barringtonensis*							3
common green treefrog	*Litoria caerulea*							3,4
emerald spotted treefrog	*Litoria cf peronii*							3

Common Name	*Scientific Name*	EPBC	NCA	Mi	NPT	AP	Pest	Source
orange eyed treefrog	*Litoria chloris*							4
bleating treefrog	*Litoria dentata*				SEQ			4
eastern sedgefrog	*Litoria fallax*							3,4
graceful treefrog	*Litoria gracilenta*							3,4
bumpy rocketfrog	*Litoria inermis*				SEQ			3,4
broad palmed rocketfrog	*Litoria latopalmata*							3,4
stony creek frog	*Litoria lesueuri sensu lato*							4
striped rocketfrog	*Litoria nasuta*							3,4
cascade treefrog	*Litoria pearsoniana*		V			IK		3,4
cascade treefrog (Kroombit Tops)	*Litoria pearsoniana* (Kroombit Tops)		E			IK		4
emerald spotted treefrog	*Litoria peronii*				SEQ			3,4
northern laughing treefrog	*Litoria rothii*				SEQ			3,4
ruddy treefrog	*Litoria rubella*							3,4
southern laughing treefrog	*Litoria tyleri*				SEQ			4
eastern stony creek frog	*Litoria wilcoxii*							4
great barred frog	*Mixophyes fasciolatus*							3,4
ornate burrowing frog	*Platyplectrum ornatum*							3, 4
red-backed broodfrog	*Pseudophryne coriacea*				SEQ			3
great brown broodfrog	*Pseudophryne major*							3,4

Common Name	*Scientific Name*	EPBC	NCA	Mi	NPT	AP	Pest	Source
copper backed broodfrog	*Pseudophryne raveni*							3,4
cane toad	*Rhinella marina**						Non-declared	3,4
Kroombit tinkerfrog	*Taudactylus pleione*	V	E			VU		3,4
dusky gungan	*Uperoleia fusca*							3,4
eastern gungan	*Uperoleia laevigata*							3,4
Littlejohn's toadlet	*Uperoleia littlejohni*							3
chubby gungan	*Uperoleia rugosa*							3,4
Reptiles								
common death adder	*Acanthophis antarcticus*		R			R		3,4
nobbi	*Amphibolurus nobbi*							3,4
short-necked worm-skink	*Anomalopus brevicollis*							3,4
two-clawed worm-skink	*Anomalopus leuckartii*							3,4
five-clawed worm-skink	*Anomalopus mackayi*	V						1
three-clawed worm-skink	*Anomalopus verreauxii*							3,4
spotted python	*Antaresia maculosa*							3,4
black-headed python	*Aspidites melanocephalus*							3,4
major skink	*Bellatorias frerei*							4
brown tree snake	*Boiga irregularis*							3,4
coral snake	*Brachyurophis australis*				SEQ			3,4

Common Name	*Scientific Name*	EPBC	NCA	Mi	NPT	AP	Pest	Source
white-crowned snake	*Cacophis harriettae*							3,4
golden crowned snake	*Cacophis squamulosus*							3,4
cone-eared calyptotis	*Calyptotis lepidorostrum*				SEQ			3,4
scute-snouted calyptotis	*Calyptotis scutirostrum*							3,4
shaded-litter rainbow-skink	*Carlia munda*							3,4
outcrop rainbow-skink	*Carlia mundivensis*							3,4
open-litter rainbow-skink	*Carlia pectoralis*							3,4
robust rainbow-skink	*Carlia schmeltzii*							3,4
southern rainbow-skink	*Carlia tetradactyla*							4
tussock rainbow-skink	*Carlia vivax*							3,4
eastern snake-necked turtle	*Chelodina longicollis*							3,4
frilled lizard	*Chlamydosaurus kingii*							3,4
estuarine crocodile	*Crocodylus porosus*		V	Mi		R		1
metallic snake-eyed skink	*Cryptoblepharus metallicus*							4
callose-palmed shinning-skink	*Cryptoblepharus plagiocephalus*							3
elegant snake-eyed skink	*Cryptoblepharus pulcher pulcher*							4
cream-striped shinning-skink	*Cryptoblepharus virgatus* (sensu lato)							3,4
Carpentaria whip snake	*Cryptophis boschmai*				BBS			3,4
eastern small-eyed snake	*Cryptophis nigrescens*							3,4

Common Name	*Scientific Name*	EPBC	NCA	Mi	NPT	AP	Pest	Source
black-striped snake	*Cryptophis nigrostriatus*				SEQ			3,4
brown-blazed wedgesnout ctenotus	*Ctenotus allotropis*							3
arcane ctenotus	*Ctenotus arcanus*							3,4
brown-backed yellow-lined ctenotus	*Ctenotus eurydice*							3
unspotted yellow-sided ctenotus	*Ctenotus ingrami*				BBS			4
robust ctenotus	*Ctenotus robustus*							3,4
copper-tailed skink	*Ctenotus taeniolatus*							3,4
pink-tongued lizard	*Cyclodomorphus gerrardii*							3,4
excitable delma	*Delma tincta*							3
collared (adorned) delma	*Delma torquata*	V	V			VU		1,4
yellow-faced whip snake	*Demansia psammophis*							3,4
collared whip snake	*Demansia torquata*							3,4
black whip snake	*Demansia vestigiata*							3,4
common tree snake	*Dendrelaphis punctulata*							3,4
De Vis' banded snake	*Denisonia devisi*							3
ornamental Snake	*Denisonia maculata*	V	V			VU		1,3
tessellated gecko	*Diplodactylus tessellatus*							4
wood gecko	*Diplodactylus vittatus*							3,4
tommy roundhead	*Diporiphora australis*							3,4

Common Name	*Scientific Name*	EPBC	NCA	Mi	NPT	AP	Pest	Source
two-lined dragon	*Diporiphora bilineata*							4
yakka skink	*Egernia rugosa*	V	V			R		1,3
tree skink	*Egernia striolata*							3,4
southern snapping turtle	*Elseya albagula*							3,4
northern snapping turtle	*Elseya dentata*							3
Krefft's river turtle	*Emydura macquarii krefftii*							3,4
Murray turtle	*Emydura macquarii macquarii*							3,4
narrow-banded sand-swimmer	*Eremiascincus fasciolatus*							3
northern barsided skink	*Eulamprus brachysoma*							3,4
dark barsided skink	*Eulamprus martini*							3,4
eastern water skink	*Eulamprus quoyii*							3,4
stout barsided skink	*Eulamprus sokosoma*							3,4
barred-sided skink	*Eulamprus tenuis*							3,4
yellow-naped snake	*Furina barnardi*		R					3
red-naped snake	*Furina diadema*							3,4
Dunmall's snake	*Furina dunmalli*	V	V			VU		1,3,4
orange-naped snake	*Furina ornata*							3
chain-backed dtella	*Gehyra catenata*							4
dubious dtella	*Gehyra dubia*							3,4

Common Name	*Scientific Name*	EPBC	NCA	Mi	NPT	AP	Pest	Source
tree dtella	*Gehyra variegata*							4
fine-spotted mulch-skink	*Glaphyromorphus punctulatus*							3,4
black-bellied swamp snake	*Hemiaspis signata*							3,4
Bynoe's gecko	*Heteronotia binoei*							3,4
pale-headed snake	*Hoplocephalus bitorquatus*				BBS			3,4
Stephens' banded snake	*Hoplocephalus stephensii*					R		3,4
diamond-shielded sunskink	*Lampropholis adonis*							3,4
friendly sunskink	*Lampropholis amicula*							3,4
plain-backed sunskink	*Lampropholis couperi*							3,4
dark-flecked garden sunskink	*Lampropholis delicata*							3,4
eastern mulch-slider	*Lerista fragilis*							3,4
eastern robust slider	*Lerista punctatovittata*							3,4
wood mulch-slider	*Lerista timida*							4
Burton's legless lizard	*Lialis burtonis*							3,4
Burns' dragon	*Lophognathus burnsi*							3
Steindachner's gecko	*Lucasium steindachneri*							3,4
tree-base litter-skink	*Lygisaurus foliorum*							3,4
broad-shelled river turtle	*Macrochelodina expansa*				BBS	R		3,4
common dwarf skink	*Menetia greyii*							3,4

Common Name	*Scientific Name*	EPBC	NCA	Mi	NPT	AP	Pest	Source
dwarf litter-skink	*Menetia timlowi*				SEQ			3,4
carpet python	*Morelia spilota*							3,4
south-eastern morethia skink	*Morethia boulengeri*				SEQ			3,4
fire-tailed skink	*Morethia taeniopleura*				SEQ			3,4
spiny knob-tailed gecko	*Nephrurus asper*							3,4
clouded gecko	*Oedura jacovae*							3
Lesueur's velvet gecko	*Oedura lesueurii*				SEQ			4
ocellated velvet gecko	*Oedura monilis*							3,4
zig-zag gecko	*Oedura rhombifer*							3,4
robust velvet gecko	*Oedura robusta*							3,4
southern spotted velvet gecko	*Oedura tryoni*							3,4
Cooloola snake-skink	*Ophioscincus cooloolensis*		R			R		3,4
coastal taipan	*Oxyuranus scutellatus*							3,4
brigalow scaly-foot	*Paradelma orientalis*	V	V			VU		1,3,4
Dwyer's Snake	*Parasuta dwyeri*							3,4
eastern water dragon	*Physignathus lesueurii*							3,4
bearded dragon	*Pogona barbata*							3,4
king brown snake	*Pseudechis australis*							3,4
red-bellied black snake	*Pseudechis porphyriacus*							3,4

Common Name	*Scientific Name*	EPBC	NCA	Mi	NPT	AP	Pest	Source
ringed brown snake	*Pseudonaja modesta*							3
western brown snake	*Pseudonaja nuchalis*							3
eastern brown snake	*Pseudonaja textilis*							3,4
eastern hooded scaly-foot	*Pygopus schraderi*							3
small-headed blind snake	*Ramphotyphlops affinis*							3
robust blind snake	*Ramphotyphlops ligatus*							3
blackish blind snake	*Ramphotyphlops nigrescens*				SEQ			3,4
proximus blind snake	*Ramphotyphlops proximus*							3,4
claw-snouted blind snake	*Ramphotyphlops unguirostris*							3,4
brown-snouted blind snake	*Ramphotyphlops wiedii*							3,4
Fitzroy River turtle	*Rheodytes leukops*	V	V			VU		1,4
three-toed skink	*Saiphos equalis*				SEQ			3,4
rough-throated leaf-tailed gecko	*Saltuarius salebrosus*							3,4
golden-tailed gecko	*Strophurus taenicauda*		NT					3,4
soft-spined gecko	*Strophurus williamsi*							3,4
curl snake	*Suta suta*							3,4
eastern blue-tongued lizard	*Tiliqua scincoides*							4
freshwater snake	*Tropidonophis mairii*							3,4
grassland earless dragon	*Tympanocryptis pinguicolla*	E						1

Common Name	*Scientific Name*	EPBC	NCA	Mi	NPT	AP	Pest	Source
thick-tailed gecko	*Underwoodisaurus milii*							3,4
sand monitor	*Varanus gouldii*							3,4
yellow-spotted monitor	*Varanus panoptes*				BBS			4
rusty monitor	*Varanus semiremex*		R			R		3,4
black-tailed monitor	*Varanus tristis*							3,4
lace monitor	*Varanus varius*							3,4
bandy-bandy	*Vermicella annulata*							3,4
saw-shelled turtle	*Wollumbinia latisternum*							3,4
Birds								
spiny-cheeked honeyeater	*Acanthagenys rufogularis*							2,4
inland thornbill	*Acanthiza apicalis*							2,4
yellow-rumped thornbill	*Acanthiza chrysorrhoa*							2,3,4
striated thornbill	*Acanthiza lineata*							2,4
yellow thornbill	*Acanthiza nana*							2,3,4
brown thornbill	*Acanthiza pusilla*							2,3,4
buff-rumped thornbill	*Acanthiza reguloides*							2,3,4
eastern spinebill	*Acanthorhynchus tenuirostris*							2,4
collared sparrowhawk	*Accipiter cirrhocephalus cirrhocephalus*			Mi				2,3,4
brown goshawk	*Accipiter fasciatus*			Mi				2,3,4

Common Name	*Scientific Name*	EPBC	NCA	Mi	NPT	AP	Pest	Source
grey goshawk	*Accipiter novaehollandiae*		R	Mi				2,4
Australian reed-warbler	*Acrocephalus australis*							2,4
common sandpiper	*Actitis hypoleucos*			Mi				2,4
Australian owlet-nightjar	*Aegotheles cristatus*							2,3,4
Australian swiftlet	*Aerodramus terraereginae*		R					4
	Aidemosyne modesta							3
green catbird	*Ailuroedus crassirostris*				SEQ			2,4
	Alcedo azurea azureus							3
Australian brush-turkey	*Alectura lathami*							2,4
Australian king-parrot	*Alisterus scapularis*							2,4
chestnut teal	*Anas castanea*			Mi				2,4
grey teal	*Anas gracilis*			Mi				2,4
northern mallard	*Anas platyrhynchos**							2,3,4
Australasian shoveler	*Anas rhynchotis*			Mi				2,4
Pacific black duck	*Anas superciliosa*			Mi				2,4
Australasian darter	*Anhinga novaehollandiae*							2,4
black noddy	*Anous minutus*							4
magpie goose	*Anseranas semipalmata*							2,4
little wattlebird	*Anthochaera chrysoptera*				SEQ			4

Common Name	*Scientific Name*	EPBC	NCA	Mi	NPT	AP	Pest	Source
Australasian pipit	*Anthus novaeseelandiae*							2,3,4
southern whiteface	*Aphelocephala leucopsis*							2
red-winged parrot	*Aprosmictus erythropterus*							2,4
fork-tailed swift	*Apus pacificus*			Mi				2,4
wedge-tailed eagle	*Aquila audax*			Mi				2,4
Great Egret	*Ardea alba*			Mi				1
cattle egret	*Ardea ibis*			Mi				2,4
intermediate egret	*Ardea intermedia*							2,4
eastern great egret	*Ardea modesta*			Mi				2,4
white-necked heron	*Ardea pacifica*							2,4
Australian bustard	*Ardeotis australis*					NT		3,2,4
ruddy turnstone	*Arenaria interpres*			Mi				4
black-faced woodswallow	*Artamus cinereus*				SEQ			2,3,4
dusky woodswallow	*Artamus cyanopterus*							2,4
white-breasted woodswallow	*Artamus leucorynchus*							2,4
little woodswallow	*Artamus minor*							2,3,4
masked woodswallow	*Artamus personatus*							2,4
white-browed woodswallow	*Artamus superciliosus*							2,3,4
Pacific baza	*Aviceda subcristata*			Mi				2,3,4

Common Name	*Scientific Name*	EPBC	NCA	Mi	NPT	AP	Pest	Source
hardhead	*Aythya australis*			Mi				2,3,4
musk duck	*Biziura lobata*			Mi/Ma	SEQ			2,4
Australasian bittern	*Botaurus poiciloptilus*					VU		4
bush stone-curlew	*Burhinus grallarius*				SEQ / BBS	NT		2,4
striated heron	*Butorides striata*							2,4
sulphur-crested cockatoo	*Cacatua galerita*							2,3,4
little corella	*Cacatua sanguinea*							2,4
fan-tailed cuckoo	*Cacomantis flabelliformis*							2,3,4
pallid cuckoo	*Cacomantis pallidus*							4
brush cuckoo	*Cacomantis variolosus*							2,4
sharp-tailed sandpiper	*Calidris acuminata*							2,3,4
Sanderling	*Calidris alba*			Mi				2
red knot	*Calidris canutus*			Mi				2,4
curlew sandpiper	*Calidris ferruginea*			Mi				2,4
red-necked stint	*Calidris ruficollis*			Mi				2,4
great knot	*Calidris tenuirostris*			Mi				4
red-tailed black-cockatoo	*Calyptorhynchus banksii*							2,4
yellow-tailed black-cockatoo	*Calyptorhynchus funereus*							2,4
glossy black-cockatoo	*Calyptorhynchus lathami*		V					2,3,4

Common Name	*Scientific Name*	EPBC	NCA	Mi	NPT	AP	Pest	Source
large-tailed nightjar	*Caprimulgus macrurus*				SEQ			2,4
white-eared monarch	*Carterornis leucotis*							2,4
pheasant coucal	*Centropus phasianinus*							2,3,4
azure kingfisher	*Ceyx azureus*							2,4
Horsfield's bronze-cuckoo	*Chalcites basalis*							2,4
shining bronze-cuckoo	*Chalcites lucidus*							2,4
little bronze-cuckoo	*Chalcites minutillus*							2,4
black-eared cuckoo	*Chalcites osculans*							2,4
emerald dove	*Chalcophaps indica*							2,4
greater sand plover	*Charadrius leschenaultii*			Mi				4
lesser sand plover	*Charadrius mongolus*			Mi				2,4
red-capped plover	*Charadrius ruficapillus*			Mi				2,4
Australian wood duck	*Chenonetta jubata*							2,3,4
white-backed swallow	*Cheramoeca leucosterna*							2,4
whiskered tern	*Chlidonias hybrida*							2,4
silver gull	*Chroicocephalus novaehollandiae*							2,3,4
speckled warbler	*Chthonicola sagittata*					NT		2,4
brown songlark	*Cincloramphus cruralis*			Mi				2,4
rufous songlark	*Cincloramphus mathewsi*			Mi				2,3,4

Common Name	*Scientific Name*	EPBC	NCA	Mi	NPT	AP	Pest	Source
spotted quail-thrush	*Cinclosoma punctatum*							2,4
swamp harrier	*Circus approximans*			Mi				2,4
golden-headed cisticola	*Cisticola exilis*			Mi				2,3,4
banded stilt	*Cladorhynchus leucocephalus*			Mi	BBS			4
brown treecreeper	*Climacteris picumnus*							2,3,4
grey shrike-thrush	*Colluricincla harmonica*							2,3,4
little shrike-thrush	*Colluricincla megarhyncha*							2,4
white-headed pigeon	*Columba leucomela*							2,4
rock dove	*Columba livia**							2,3,4
rufous-throated honeyeater	*Conopophila rufogularis*				SEQ			2,4
barred cuckoo-shrike	*Coracina lineata*							4
ground cuckoo-shrike	*Coracina maxima*							2,4
black-faced cuckoo-shrike	*Coracina novaehollandiae*							2,3,4
white-bellied cuckoo-shrike	*Coracina papuensis*							2,4
cicadabird	*Coracina tenuirostris*							2,3,4
white-winged chough	*Corcorax melanorhamphos*							2,4
white-throated treecreeper	*Cormobates leucophaea*							2,3,4
little crow	*Corvus bennetti*							2,4
Australian raven	*Corvus coronoides*							2,4

Common Name	*Scientific Name*	EPBC	NCA	Mi	NPT	AP	Pest	Source
Torresian crow	*Corvus orru*							2,3,4
stubble quail	*Coturnix pectoralis*							2,4
brown quail	*Coturnix ypsilophora*							2,4
pied butcherbird	*Cracticus nigrogularis*							2,4
Australian magpie	*Cracticus tibicen*							2,3,4
grey butcherbird	*Cracticus torquatus*							2,4
oriental cuckoo	*Cuculus optatus*							4
pallid cuckoo	*Cuculus pallidus*							3
black swan	*Cygnus atratus*							2,3,4
blue-winged kookaburra	*Dacelo leachii*				SEQ			2,4
laughing kookaburra	*Dacelo novaeguineae*							2,3,4
varied sittella	*Daphoenositta chrysoptera*							2,4
wandering whistling-duck	*Dendrocygna arcuata*			Mi				2,4
plumed whistling-duck	*Dendrocygna eytoni*			Mi				2,4
mistletoebird	*Dicaeum hirundinaceum*							2,4
spangled drongo	*Dicrurus bracteatus*							2,4
emu	*Dromaius novaehollandiae*							2,3,4
little egret	*Egretta garzetta*							2,4
white-faced heron	*Egretta novaehollandiae*							2,4

Common Name	*Scientific Name*	EPBC	NCA	Mi	NPT	AP	Pest	Source
eastern reef egret	*Egretta sacra*			Mi				2,4
black-shouldered kite	*Elanus axillaris*			Mi				2,4
black-fronted dotterel	*Elseyornis melanops*			Mi				2,3,4
painted finch	*Emblema pictum*							2
blue-faced honeyeater	*Entomyzon cyanotis*							2,3,4
galah	*Eolophus roseicapillus*							2,3,4
eastern yellow robin	*Eopsaltria australis*							2,4
black-necked stork	*Ephippiorhynchus asiaticus*		R					2,4
white-fronted chat	*Epthianura albifrons*							4
red-kneed dotterel	*Erythrogonys cinctus*			Mi				2,4
red goshawk	*Erythrotriorchis radiatus*	V	E	Mi		VU		4
beach stone-curlew	*Esacus magnirostris*		V					4
eastern koel	*Eudynamys orientalis*							2,3,4
spotted nightjar	*Eurostopodus argus*							4
white-throated nightjar	*Eurostopodus mystacalis*							2,4
dollarbird	*Eurystomus orientalis*							2,3,4
king quail	*Excalfactoria chinensis*							2
brown falcon	*Falco berigora*			Mi				2,3,4
nankeen kestrel	*Falco cenchroides*			Mi				2,3,4

Common Name	*Scientific Name*	EPBC	NCA	Mi	NPT	AP	Pest	Source
grey falcon	*Falco hypoleucos*		R	Mi		NT		2,3,4
Australian hobby	*Falco longipennis*			Mi				2,4
peregrine falcon	*Falco peregrinus*			Mi				2,3,4
black falcon	*Falco subniger*			Mi				2,4
crested shrike-tit	*Falcunculus frontatus*							2,4
Eurasian coot	*Fulica atra*							2,4
Latham's snipe	*Gallinago hardwickii*			Mi				2,4
dusky moorhen	*Gallinula tenebrosa*							2,4
buff-banded rail	*Gallirallus philippensis*							2,3,4
gull-billed tern	*Gelochelidon nilotica*							2,4
diamond dove	*Geopelia cuneata*							2,3,4
bar-shouldered dove	*Geopelia humeralis*							2,3,4
peaceful dove	*Geopelia striata*							2,4
squatter pigeon (southern)	*Geophaps scripta scripta*	V	V			NT		2,4
white-throated gerygone	*Gerygone albogularis*							2,4
western gerygone	*Gerygone fusca*							2,4
mangrove gerygone	*Gerygone levigaster*							2,4
brown gerygone	*Gerygone mouki*							2,4
	Gerygone olivacea olivacea							3

Common Name	*Scientific Name*	EPBC	NCA	Mi	NPT	AP	Pest	Source
fairy gerygone	*Gerygone palpebrosa*				SEQ			2,4
musk lorikeet	*Glossopsitta concinna*				SEQ			2,4
little lorikeet	*Glossopsitta pusilla*							2,4
magpie-lark	*Grallina cyanoleuca*							2,4
painted honeyeater	*Grantiella picta*		R			NT		2,4
brolga	*Grus rubicunda*			Mi				2,4
sooty oystercatcher	*Haematopus fuliginosus*		R					2,4
Australian pied oystercatcher	*Haematopus longirostris*							2,4
white-bellied sea-eagle	*Haliaeetus leucogaster*			Mi				2,3,4
brahminy kite	*Haliastur indus*			Mi				2,4
whistling kite	*Haliastur sphenurus*			Mi				2,4
black-breasted buzzard	*Hamirostra melanosternon*			Mi				4
little eagle	*Hieraaetus morphnoides*			Mi				2,4
black-winged stilt	*Himantopus himantopus*			Mi				2,4
white-throated needletail	*Hirundapus caudacutus*			Mi				2,4
welcome swallow	*Hirundo neoxena*							2,4
barn swallow	*Hirundo rustica*			Mi				1
Caspian tern	*Hydroprogne caspia*			Mi				2,4
comb-crested jacana	*Irediparra gallinacea*							2,4

Common Name	*Scientific Name*	EPBC	NCA	Mi	NPT	AP	Pest	Source
Australian little bittern	*Ixobrychus dubius*							2,4
black bittern	*Ixobrychus flavicollis*							2,4
varied triller	*Lalage leucomela*							2,4
white-winged triller	*Lalage sueurii*							2,3,4
wonga pigeon	*Leucosarcia melanoleuca*							2,3,4
Lewin's rail	*Lewinia pectoralis*		R					2,4
yellow-faced honeyeater	*Lichenostomus chrysops*							2,4
mangrove honeyeater	*Lichenostomus fasciogularis*							2,3,4
fuscous honeyeater	*Lichenostomus fuscus*							2,3,4
white-eared honeyeater	*Lichenostomus leucotis*							2,3,4
yellow-tufted honeyeater	*Lichenostomus melanops*				SEQ			2,3,4
white-plumed honeyeater	*Lichenostomus penicillatus*							2,4
singing honeyeater	*Lichenostomus virescens*							2,3,4
brown honeyeater	*Lichmera indistincta*							2,3,4
broad-billed sandpiper	*Limicola falcinellus*			Mi				2,4
bar-tailed godwit	*Limosa lapponica*			Mi				2,4
chestnut-breasted mannikin	*Lonchura castaneothorax*							2,3,4
nutmeg mannikin	*Lonchura punctulata*							2
square-tailed kite	*Lophoictinia isura*		R	Mi				2,4

Common Name	*Scientific Name*	EPBC	NCA	Mi	NPT	AP	Pest	Source
topknot pigeon	*Lopholaimus antarcticus*							2,4
southern giant-petrel	*Macronectes giganteus*	E	E	Mi				1
brown cuckoo-dove	*Macropygia amboinensis*							2,4
pink-eared duck	*Malacorhynchus membranaceus*			Mi				2,4
superb fairy-wren	*Malurus cyaneus*							2,4
variegated fairy-wren	*Malurus lamberti*							2,4
red-backed fairy-wren	*Malurus melanocephalus*							2,3,4
yellow-throated miner	*Manorina flavigula*							2,3,4
noisy miner	*Manorina melanocephala*							2,3,4
bell miner	*Manorina melanophrys*				SEQ			4
little grassbird	*Megalurus gramineus*			Mi				2,4
tawny grassbird	*Megalurus timoriensis*			Mi				2,3,4
orange-footed scrubfowl	*Megapodius reinwardt*							4
hooded robin	*Melanodryas cucullata*				BBS			4
hooded robin (southern)	*Melanodryas cucullata cucullata*					NT		3
Lewin's honeyeater	*Meliphaga lewinii*							2,4
white-throated honeyeater	*Melithreptus albogularis*							3,4
brown-headed honeyeater	*Melithreptus brevirostris*							2,4
black-chinned honeyeater	*Melithreptus gularis*		R					2,3,4

Common Name	*Scientific Name*	EPBC	NCA	Mi	NPT	AP	Pest	Source
white-naped honeyeater	*Melithreptus lunatus*							2,4
budgerigar	*Melopsittacus undulatus*							2,4
rainbow bee-eater	*Merops ornatus*			Mi				1,2,4
little pied cormorant	*Microcarbo melanoleucos*							2,4
jacky winter	*Microeca fascinans*							4
black kite	*Milvus migrans*			Mi				2,4
Horsfield's bushlark	*Mirafra javanica*							2,4
black-faced monarch	*Monarcha melanopsis*			Mi				1,2,4
spectacled monarch	*Monarcha trivirgatus*			Mi				1,3
shining flycatcher	*Myiagra alecto*				SEQ			4
satin flycatcher	*Myiagra cyanoleuca*			Mi				1,2,4
restless flycatcher	*Myiagra inquieta*							2,3,4
leaden flycatcher	*Myiagra rubecula*							2,3,4
dusky honeyeater	*Myzomela obscura*				SEQ			2,4
scarlet honeyeater	*Myzomela sanguinolenta*							2,3,4
olive-backed sunbird	*Nectarinia jugularis*							4
plum-headed finch	*Neochmia modesta*							2,4
star finch (eastern)	*Neochmia ruficauda ruficauda*	E	E					1
red-browed finch	*Neochmia temporalis*							2,3,4

Common Name	*Scientific Name*	EPBC	NCA	Mi	NPT	AP	Pest	Source
turquoise parrot	*Neophema pulchella*		R			NT		4
cotton pygmy-goose	*Nettapus coromandelianus*		R	Mi		NT		1,2,4
green pygmy-goose	*Nettapus pulchellus*			Mi	SEQ			2,4
barking owl	*Ninox connivens*				SEQ / BBS			2,4
southern boobook	*Ninox novaeseelandiae*							2,3,4
powerful owl	*Ninox strenua*		V			LC		3,2,4
blue bonnet	*Northiella haematogaster*							2,4
eastern curlew	*Numenius madagascariensis*		R	Mi				2,4
little curlew	*Numenius minutus*			Mi	SEQ			1
whimbrel	*Numenius phaeopus*			Mi				2,4
nankeen night-heron	*Nycticorax caledonicus*							2,4
cockatiel	*Nymphicus hollandicus*							2,4
crested pigeon	*Ocyphaps lophotes*							2,4
olive-backed oriole	*Oriolus sagittatus*							2,3,4
blue-billed duck	*Oxyura australis*			Mi	SEQ			2,4
golden whistler	*Pachycephala pectoralis*							2,3,4
rufous whistler	*Pachycephala rufiventris*							2,3,4
eastern osprey	*Pandion cristatus*							2,4
spotted pardalote	*Pardalotus punctatus*							2,4

Common Name	*Scientific Name*	EPBC	NCA	Mi	NPT	AP	Pest	Source
red-browed pardalote	*Pardalotus rubricatus*							2,4
striated pardalote	*Pardalotus striatus*							2,3,4
house sparrow	*Passer domesticus**							2,4
Indian peafowl	*Pavo cristatus**							2,4
plains-wanderer	*Pedionomus torquatus*	V	V			EN		4
Australian pelican	*Pelecanus conspicillatus*							2,4
fairy martin	*Petrochelidon ariel*							2,4
tree martin	*Petrochelidon nigricans*							2,3,4
red-capped robin	*Petroica goodenovii*							2,4
rose robin	*Petroica rosea*							2,3,4
great cormorant	*Phalacrocorax carbo*							2,3,4
little black cormorant	*Phalacrocorax sulcirostris*							2,4
pied cormorant	*Phalacrocorax varius*							2,4
common bronzewing	*Phaps chalcoptera*							2,3,4
little friarbird	*Philemon citreogularis*							2,3,4
noisy friarbird	*Philemon corniculatus*							2,3,4
white-cheeked honeyeater	*Phylidonyris niger*							2,4
noisy pitta	*Pitta versicolor*							2,4
yellow-billed spoonbill	*Platalea flavipes*							2,4

Common Name	*Scientific Name*	EPBC	NCA	Mi	NPT	AP	Pest	Source
royal spoonbill	*Platalea regia*							2,4
pale-headed rosella	*Platycercus adscitus*							2,3,4
eastern rosella	*Platycercus eximius*				SEQ			4
striped honeyeater	*Plectorhyncha lanceolata*							2,3,4
glossy ibis	*Plegadis falcinellus*			Mi				2,4
Pacific golden plover	*Pluvialis fulva*			Mi				2,4
grey plover	*Pluvialis squatarola*			Mi				2
plumed frogmouth	*Podargus ocellatus plumiferus*		V			NT		4
tawny frogmouth	*Podargus strigoides*							2,3,4
great crested grebe	*Podiceps cristatus*							2,4
white-browed robin	*Poecilodryas superciliosa*							4
hoary-headed grebe	*Poliocephalus poliocephalus*							2,4
white-browed babbler	*Pomatostomus superciliosus*				BBS			4
grey-crowned babbler	*Pomatostomus temporalis*				BBS			2,3,4
purple swamphen	*Porphyrio porphyrio*							2,4
Australian spotted crake	*Porzana fluminea*							2,4
spotless crake	*Porzana tabuensis*							2,4
red-rumped parrot	*Psephotus haematonotus*							2,4
paradise parrot	*Psephotus pulcherrimus*	PE		Mi		EX		3

Common Name	*Scientific Name*	EPBC	NCA	Mi	NPT	AP	Pest	Source
eastern whipbird	*Psophodes olivaceus*							2,4
Kermadec Petrel (western)	*Pterodroma neglecta neglecta*	V				CE		1
wompoo fruit-dove	*Ptilinopus magnificus*							2,4
rose-crowned fruit-dove	*Ptilinopus regina*				SEQ			2,4
superb fruit-dove	*Ptilinopus superbus*				SEQ			2,3,4
spotted bowerbird	*Ptilonorhynchus maculatus*							2,4
satin bowerbird	*Ptilonorhynchus violaceus*							2,3,4
paradise riflebird	*Ptiloris paradiseus*				SEQ			2,4
red-necked avocet	*Recurvirostra novaehollandiae*			Mi				2,4
grey fantail	*Rhipidura albiscapa*							2,3,4
willie wagtail	*Rhipidura leucophrys*							2,3,4
rufous fantail	*Rhipidura rufifrons*							1,2,4
Australian painted snipe	*Rostratula australis*	V	V	Mi		VU		1,2,3,4
channel-billed cuckoo	*Scythrops novaehollandiae*							2,4
yellow-throated scrubwren	*Sericornis citreogularis*							4
white-browed scrubwren	*Sericornis frontalis*							2,3,4
large-billed scrubwren	*Sericornis magnirostra*							2,4
regent bowerbird	*Sericulus chrysocephalus*							4
weebill	*Smicrornis brevirostris*							2,3,4

Common Name	*Scientific Name*	EPBC	NCA	Mi	NPT	AP	Pest	Source
Australasian figbird	*Sphecotheres vieilloti*							2,3,4
diamond firetail	*Stagonopleura guttata*				SEQ / BBS	NT		4
little tern	*Sterna albifrons*		E	Mi				1
freckled duck	*Stictonetta naevosa*		R	Mi				2,4
Australian pratincole	*Stiltia isabella*							2,4
pied currawong	*Strepera graculina*							2,3,4
spotted dove	*Streptopelia chinensis**							2,4
apostlebird	*Struthidea cinerea*							2,3,4
common myna	*Sturnus tristis**							2,4
common starling	*Sturnus vulgaris**							2,3,4
brown booby	*Sula leucogaster*			Mi				2,4
spectacled monarch	*Symposiarchus trivirgatus*							2,4
Australasian grebe	*Tachybaptus novaehollandiae*							2,4
radjah shelduck	*Tadorna radjah*		R	Mi				2,4
double-barred finch	*Taeniopygia bichenovii*							2,3,4
zebra finch	*Taeniopygia guttata*							2,3,4
shy albatross	*Thalassarche cauta*	V	C	Mi		VU		3,4
lesser crested tern	*Thalasseus bengalensis*			Mi				2,4
crested tern	*Thalasseus bergii*			Mi				2,4

Common Name	*Scientific Name*	EPBC	NCA	Mi	NPT	AP	Pest	Source
Australian white ibis	*Threskiornis molucca*							2,4
straw-necked ibis	*Threskiornis spinicollis*							2,4
collared kingfisher	*Todiramphus chloris*							2,4
forest kingfisher	*Todiramphus macleayii*							2,4
red-backed kingfisher	*Todiramphus pyrrhopygius*							2,4
sacred kingfisher	*Todiramphus sanctus*							2,3,4
pale-yellow robin	*Tregellasia capito*							4
black-tailed native-hen	*Tribonyx ventralis*							2,4
scaly-breasted lorikeet	*Trichoglossus chlorolepidotus*							2,3,4
rainbow lorikeet	*Trichoglossus haematodus moluccanus*							2,3,4
grey-tailed tattler	*Tringa brevipes*			Mi				2,4
wood sandpiper	*Tringa glareola*			Mi				2
common greenshank	*Tringa nebularia*			Mi				2,4
marsh sandpiper	*Tringa stagnatilis*			Mi				2,4
red-backed button-quail	*Turnix maculosus*							2,4
black-breasted button-quail	*Turnix melanogaster*	V	V			VU		1,2,4
red-chested button-quail	*Turnix pyrrhothorax*							2,4
painted button-quail	*Turnix varius*							2,4
little button-quail	*Turnix velox*							4

Common Name	*Scientific Name*	EPBC	NCA	Mi	NPT	AP	Pest	Source
eastern barn owl	*Tyto javanica*							2,3,4
eastern grass owl	*Tyto longimembris*							2,4
masked owl	*Tyto novaehollandiae*				SEQ / BBS			4
sooty owl	*Tyto tenebricosa*		R					4
masked lapwing	*Vanellus miles*			Mi				2,3,4
banded lapwing	*Vanellus tricolor*			Mi				2,4
terek sandpiper	*Xenus cinereus*			Mi				2,4
russet-tailed thrush	*Zoothera heinei*			Mi				4
Bassian thrush	*Zoothera lunulata*			Mi				4
silvereye	*Zosterops lateralis*							2,3,4
Mammals								
feathertail glider	*Acrobates pygmaeus*							3,4
rufous bettong	*Aepyprymnus rufescens*				SEQ / BBS			3,4
yellow-footed antechinus	*Antechinus flavipes*							3,4
European cattle	*Bos taurus**						Non-declared	4
dog	*Canis familiaris**						Class 2	4
dingo	*Canis lupus dingo*							3,4
northern freetail bat	*Chaerephon jobensis*							4
large-eared pied bat	*Chalinolobus dwyeri*	V	R					1

Common Name	*Scientific Name*	EPBC	NCA	Mi	NPT	AP	Pest	Source
Gould's wattled bat	*Chalinolobus gouldii*							3,4
chocolate wattled bat	*Chalinolobus morio*							3,4
hoary wattled bat	*Chalinolobus nigrogriseus*				BBS			3,4
little pied bat	*Chalinolobus picatus*		R			NT		3,4
northern quoll	*Dasyurus hallucatus*	E			SEQ / BBS	NT		1,3,4
spotted-tailed quoll (southern)	*Dasyurus maculatus maculatus*	E	V			VU		1,3,4
horse	*Equus caballus**						Non-declared	4
cat	*Felis catus**						Class 2	4
Semon`s leaf-nosed bat	*Hipposideros semoni*	E	E			EN		1,4
water rat	*Hydromys chrysogaster*							3,4
northern brown bandicoot	*Isoodon macrourus*				BBS			3,4
golden-tipped bat	*Kerivoula papuensis*		R			NT		3,4
brown hare	*Lepus capensis**						Non-declared	3,4
agile wallaby	*Macropus agilis*				SEQ			4
black-striped wallaby	*Macropus dorsalis*				SEQ / BBS			3,4
eastern grey kangaroo	*Macropus giganteus*							3,4
whiptail wallaby	*Macropus parryi*							3,4
common wallaroo	*Macropus robustus*							3,4
red-necked wallaby	*Macropus rufogriseus*							3,4

Common Name	*Scientific Name*	EPBC	NCA	Mi	NPT	AP	Pest	Source
grassland melomys	*Melomys burtoni*							3,4
fawn-footed melomys	*Melomys cervinipes*							3,4
little bent-wing bat	*Miniopterus australis*				BBS			3,4
eastern bent-wing bat	*Miniopterus schreibersii oceanensis*				BBS			3,4
Beccari's freetail bat	*Mormopterus beccarii*							4
east coast freetail bat	*Mormopterus norfolkensis*				SEQ	DD		4
southern freetail bat	*Mormopterus planiceps*							3,4
inland freetail bat	*Mormopterus sp. 3*							4
house mouse	*Mus musculus**						Non-declared	3,4
large-footed myotis	*Myotis macropus*				SEQ	NT		4
eastern tube-nosed bat	*Nyctimene robinsoni*							4
northern long-eared bat	*Nyctophilus bifax bifax*							4
lesser long-eared bat	*Nyctophilus geoffroyi*							4
Gould's long-eared bat	*Nyctophilus gouldi*							4
eastern long-eared bat	*Nyctophilus corbeni*	V	V					1
platypus	*Ornithorhynchus anatinus*				SEQ / BBS			3,4
rabbit	*Oryctolagus cuniculus**						Class 2	4
long-nosed bandicoot	*Perameles nasuta*				BBS			3,4
greater glider	*Petauroides volans*				SEQ / BBS			3,4

Common Name	*Scientific Name*	EPBC	NCA	Mi	NPT	AP	Pest	Source
yellow-bellied glider (southern)	*Petaurus australis australis*				SEQ / BBS	NT		4
sugar glider	*Petaurus breviceps*							4
squirrel glider	*Petaurus norfolcensis*				SEQ / BBS	NT		3,4
Herbert's rock-wallaby	*Petrogale herberti*				SEQ			3,4
unadorned rock-wallaby	*Petrogale inornata*							3
brush-tailed phascogale	*Phascogale tapoatafa*				SEQ / BBS			3
koala (SEQ)	*Phascolarctos cinereus*		V			NT		3,4
common planigale	*Planigale maculata*							3,4
narrow-nosed planigale	*Planigale tenuirostris*				BBS			3
common ringtail possum	*Pseudocheirus peregrinus*				SEQ / BBS			3,4
delicate mouse	*Pseudomys delicatulus*				SEQ			3,4
eastern chestnut mouse	*Pseudomys gracilicaudatus*				SEQ			3,4
eastern pebble-mound mouse	*Pseudomys patrius*				SEQ / BBS			3,4
black flying-fox	*Pteropus alecto*							3,4
grey-headed flying-fox	*Pteropus poliocephalus*	V				VU		1,3,4
little red flying-fox	*Pteropus scapulatus*				SEQ			3,4
bush rat	*Rattus fuscipes*							3,4
swamp rat	*Rattus lutreolus*							3
black rat	*Rattus rattus**						Non-declared	3,4

Common Name	*Scientific Name*	EPBC	NCA	Mi	NPT	AP	Pest	Source
pale field-rat	*Rattus tunneyi*							3,4
eastern horseshoe-bat	*Rhinolophus megaphyllus*							3,4
yellow-bellied sheathtail bat	*Saccolaimus flaviventris*							3,4
greater broad-nosed bat	*Scoteanax rueppellii*				SEQ	NT		3,4
inland broad-nosed bat	*Scotorepens balstoni*							4
little broad-nosed bat	*Scotorepens greyii*							3,4
south-eastern broad-nosed bat	*Scotorepens orion*				SEQ			4
central-eastern broad-nosed bat	*Scotorepens* sp. (Parnaby)				SEQ / BBS	DD		4
stripe-faced dunnart	*Sminthopsis macroura*							3,4
common dunnart	*Sminthopsis murina*				SEQ			3,4
pig	*Sus scrofa**						Class 2	3,4
eastern blossom bat	*Syconycteris australis*				SEQ			4
short-beaked echidna	*Tachyglossus aculeatus*							3,4
white-striped freetail bat	*Tadarida australis*							4
coastal sheathtail bat	*Taphozous australis*		V			NT		3,4
common sheathtail bat	*Taphozous georgianus*				SEQ			3,4
red-legged pademelon	*Thylogale stigmatica*				SEQ			3,4
red-necked pademelon	*Thylogale thetis*							3,4
short-eared possum	*Trichosurus caninus*				SEQ			4

Common Name	*Scientific Name*	EPBC	NCA	Mi	NPT	AP	Pest	Source
common brushtail possum	*Trichosurus vulpecula*				BBS			3,4
bottlenose dolphin	*Tursiops truncatus*							4
eastern forest bat	*Vespadelus pumilus*							3,4
eastern cave bat	*Vespadelus troughtoni*							3,4
little forest bat	*Vespadelus vulturnus*				SEQ			4
red fox	*Vulpes vulpes**						Class 2	4
swamp wallaby	*Wallabia bicolor*				SEQ			3,4
false water-rat	*Xeromys myoides*	V	V			IK		1

EPBC – EPBC Act: CE = critically endangered, E = endangered, V = vulnerable.

NCA – NC Act: E = endangered; V = vulnerable; R = rare; NT = near threatened.

MI – listed as Migratory under the EPBC Act

NPT – non-EVR priority taxon (EPA 2002): BBS = listed as a non-EVR priority taxon for the Brigalow Belt South bioregion; SEQ = BBS = listed as a non-EVR Priority taxon for the southeast Qld bioregion

AP - Action Plan: VU = vulnerable, R = rare, NT = near threatened, IK = insufficiently known, R / IK = rare or insufficiently known, DD = data deficient.

Pest = Pest status under the *Land Protection (Pest and Stock Route Management) Act 2002*

Source: 1 = EPBC Protected Matters Search, 2 = Birds Australia, 3 = Qld Museum Fauna Collection Records, 4 = DERM Wildlife Online, 5 = Worley Parsons (this survey).

Appendix F Fauna Assessment Site Locations

Site No	3F KP	Location	Date	Latitude	Longitude	Survey
OB044	Con 0.6	Warrego Highway road reserve	6/10/2009	-26.659893	150.244612	OB
OB043	Con 0.7	Akers Gully	6/10/2009	-26.658953	150.244911	OB
OB042	Con 01.5	Minor creekline	6/10/2009	-26.651725	150.245490	OB
HA025	Con 02.3	Jump-up	6/10/2009	-26.645043	150.246370	HA
HA026	Con 02.9	Ironbark woodland	6/10/2009	-26.639642	150.248483	HA
OB041	Con 03.9	Minor creekline	6/10/2009	-26.631137	150.248547	OB
OB040	Con 04.8	Stony knob	6/10/2009	-26.622456	150.246171	OB
HA024	Con 05.9	Ironbark woodland	6/10/2009	-26.613284	150.247524	HA
HA023	Con 07.0	Ironbark woodland	5/10/2009	-26.603253	150.248918	HA
OB093	Con 08.6	Callitris forest	28/10/2009	-26.588960	150.247130	OB
HA055	Con 08.9	Minor creekline	28/10/2009	-26.586760	150.246250	HA
OB094	Con 09.3	Ironbark woodland	28/10/2009	-26.583460	150.244830	OB
HA022	Con 11.5	Dogwood Creek	5/10, 28/10	-26.567556	150.233139	HA, AN
HA021	Con 12.0	Callitris forest	5/10/2009	-26.564221	150.231893	HA
OB095	Con 15.3	Ironbark woodland - Myall Park Rd	29/10/2009	-26.542090	150.210560	OB
HA056	Con 18.5	Ironbark forest	29/10/2009	-26.535400	150.180600	HA
OB096	Con 21.2	Callitris forest	29/10/2009	-26.516500	150.169860	OB
HA057	Con 27.9	Minor creekline	29/10/2009	-26.456840	150.179170	HA
HA053	Con 31.5	L Tree Creek	28/10/2009	-26.424580	150.183910	HA

Site No	3F KP	Location	Date	Latitude	Longitude	Survey
HA052	Con 31.9	Shrubland north of L Tree Creek	28/10/2009	-26.422140	150.184910	HA
OB092	Con 32.6	Callitris forest	28/10/2009	-26.415330	150.186660	OB
OB091	Con 33.5	Tin Hut Creek	28/10/2009	-26.408020	150.187850	OB
HA054	Con 35.5	Ironbark woodland	28/10/2009	-26.389980	150.190720	HA
HA037	Con 36.7	Bottle Tree Creek	21/10/2009	-26.379050	150.192540	HA, AN
OB097	Con 38.8	Callitris and Yellowjacket forest	29/10/2009	-26.360300	150.195040	OB
OB070	Con 42.2	Camp site - south option	21/10/2009	-26.331100	150.197940	OB
OB069	Con 42.9	Camp site - central option	21/10/2009	-26.324840	150.195430	OB
OB068	Con 43.5	Camp site - north option	21/10/2009	-26.320280	150.193220	OB
OB087	none	Proposed Laydown - Wandoan	26/10/2009	-26.106940	149.950380	OB
OB098	Wol 01.6	Saddle between jump-ups	29/10/2009	-26.369550	149.875900	OB
OB099	Wol 02.6	Creekline - Gurulmundi Rd	29/10/2009	-26.373460	149.884340	OB
HA047	Wol 03.9	Gurulmundi Rd - Callitris forest	26/10/2009	-26.374310	149.897690	HA
HA046	Wol 06.7	Brigalow patch - unmapped	26/10/2009	-26.366460	149.924070	HA
HA045	Wol 07.9	Spotted Gum & Ironbark forest	26/10/2009	-26.367160	149.936000	HA
OB088	Wol 09.1	Spotted Gum forest	26/10/2009	-26.368820	149.948260	OB
HA044	Wol 10.0	Spotted Gum & Ironbark forest	26/10/2009	-26.368190	149.957140	HA
HA043	Wol 12.0	Spotted Gum forest - rocky jump-up	26/10/2009	-26.363420	149.975330	HA
OB074	Wol 14.7	Juandah Creek	22/10/2009	-26.359970	150.002550	OB

Site No	3F KP	Location	Date	Latitude	Longitude	Survey
OB075	Wol 17.5	Ironbark & Spotted Gum woodland	22/10/2009	-26.363880	150.023330	OB
OB038	Wol 25.7	Juandah Creek tributary	5/10/2009	-26.338780	150.091088	OB
OB039	Wol 26.6	Juandah Creek tributary	5/10/2009	-26.332130	150.096181	OB
OB073	Wol 29.5	Sandstone scarp	22/10/2009	-26.318240	150.116090	OB
HA038	Wol 32.1	Ironbark & Buloke woodland	22/10/2009	-26.317540	150.142530	HA
OB072	Wol 33.3	Martindale Road	22/10/2009	-26.317480	150.154830	OB
HA036	Wol 35.5	Brigalow patch	21/10/2009	-26.316340	150.176450	HA
OB071	Wol 36.4	Brigalow regrowth strip	21/10/2009	-26.316360	150.185240	OB
HA034	1.9	Acacia & Ironbark woodland	20/10/2009	-26.298200	150.195190	HA
OB066	4.3	Spotted gum forest	21/10/2009	-26.278290	150.199140	OB
HA035	4.5	Rocky gully	21/10/2009	-26.276640	150.198810	HA
OB067	5.2	Low sandstone scarp	21/10/2009	-26.269360	150.200130	OB
OB062	6.0	Dam	20/10/2009	-26.263380	150.197510	OB
OB065	6.4	Large dam / wetland	20/10/2009	-26.259820	150.195510	OB
OB063	7.3	Low scarp	20/10/2009	-26.251480	150.196270	OB
HA033	7.9	Ironbark woodland	20/10/2009	-26.246140	150.197970	HA
OB064	8.1	Brigalow regrowth	20/10/2009	-26.244410	150.198100	OB
HA032	10.3	Knights Road	20/10/2009	-26.224850	150.200150	HA
OB086	29.2	Roche Creek	25/10/2009	-26.056340	150.196300	OB

Site No	3F KP	Location	Date	Latitude	Longitude	Survey
OB085	30.0	Cooaga SF- W boundary	25/10/2009	-26.048870	150.196610	OB
HA039	33.9	Ironbark woodland - Glendoan Road	23/10/2009	-26.016710	150.189710	HA
OB080	35.3	Narrow brigalow regrowth strip	23/10/2009	-26.004080	150.189330	OB
OB079	35.9	Belah patch	23/10/2009	-25.999090	150.190520	OB
HA041	37.3	Minor creekline - Juandah Gully	23/10/2009	-25.986210	150.189330	HA
HA040	38.1	Brigalow & SEVT - unmapped	23/10/2009	-25.978520	150.190120	HA
OB078	39.0	Callitris forest	23/10/2009	-25.971240	150.192230	OB
OB077	40.7	Brigalow strip	23/10/2009	-25.955990	150.197100	OB
OB076	43.0	Bottletree Creek	23/10/2009	-25.936250	150.199310	OB
OB084	44.4	Bungaban Creek	25/10/2009	-25.922940	150.198520	OB
OB083	45.4	Gap in Callitris forest	25/10/2009	-25.913790	150.196690	OB
HA042	46.8	Ironbark & Callitris woodland	25/10/2009	-25.903560	150.203320	HA
OB082	47.9	Cleared gap in belah forest	25/10/2009	-25.898230	150.212360	OB
OB081	50.0	Ironbark woodland - minor creekline	25/10/2009	-25.882090	150.223100	OB
HA031	69.1	Cockatoo Creek	19/10/2009	-25.726050	150.286680	HA
OB061	70.0	Callitris patch	19/10/2009	-25.717900	150.288010	OB
OB090	90.4	Ironbark woodland - Deearne	27/10/2009	-25.559280	150.379650	OB
OB089	91.0	Silverleaf Gully - Deearne	27/10/2009	-25.555390	150.381670	OB
HA049	91.5	Yellowjacket woodland - Deearne	27/10/2009	-25.556180	150.388410	HA

Site No	3F KP	Location	Date	Latitude	Longitude	Survey
HA048	91.8	Silverleaf Gully - Deearne	27/10/2009	-25.553310	150.388430	HA
HA051	93.8	Spotted Gum forest - Deearne	27/10/2009	-25.535150	150.389190	HA
HA050	97.2	Mixed eucalypt woodland - Deearne	27/10/2009	-25.506050	150.391220	HA
HA001	101.0	Fairyland	25/09/2009	-25.483194	150.366461	HA
OB001	102.9	Fairyland	25/09/2009	-25.465940	150.368650	OB
HA002	103.4	Fairyland	25/09/2009	-25.460745	150.367676	HA, AN
OB002	105.5	Dam - Fairyland	25/09/2009	-25.443550	150.372060	OB
HA003	106.5	Ironbark woodland	26/09/2009	-25.436366	150.377143	HA
OB003	107.0	Minor creekline	26/09/2009	-25.432050	150.379617	OB
OB004	108.5	Rocky knoll - Callitris	26/09/2009	-25.418243	150.381704	OB
OB005	110.7	Ross Creek	26/09/2009	-25.402291	150.371807	OB
OB006	113.0	Ross Creek	26/09/2009	-25.382204	150.375096	OB
OB007	114.0	Ross Creek	26/09/2009	-25.373499	150.375999	OB
HA020	144.1	Horse Creek	4/10/2009	-25.121282	150.436913	HA
OB037	144.9	Ironbark regrowth	4/10/2009	-25.114548	150.437664	OB
HA019	145.3	Proposed camp - south option	4/10/2009	-25.110556	150.438321	HA
OB036	146.1	Proposed camp - north option	4/10/2009	-25.103038	150.438935	OB
OB035	148.6	Delusion Creek	4/10/2009	-25.082698	150.447473	OB
OB013	155.4	Poplar Box woodland	29/07/2009	-25.026786	150.453955	OB

Site No	3F KP	Location	Date	Latitude	Longitude	Survey
OB014	155.9	Minor creekline - Camboon	29/07/2009	-25.023066	150.451511	OB
HA006	156.9	Oxtrack Creek	29/07/2009	-25.014227	150.448988	HA
OB015	158.7	Ironbark woodland	29/07/2009	-24.998610	150.444057	OB
HA007	160.3	Ironbark woodland	29/07/2009	-24.986061	150.444015	HA
OB016	160.7	Ironbark & Bluegum woodland	29/07/2009	-24.981708	150.444403	OB
OB017	162.5	Ironbark woodland	29/07/2009	-24.965898	150.445619	OB
HA008	164.1	Gum-top Box forest	29/07/2009	-24.952719	150.452349	HA
OB053	168.0	South Creek tributary	17/10/2009	-24.918290	150.451830	OB
OB018	169.9	South Creek	29/07/2009	-24.902854	150.456898	OB
HA029	172.3	Ironbark woodland	17/10/2009	-24.891370	150.474840	HA
OB012	175.7	Keen Creek	27/09/2009	-24.861735	150.476951	OB
OB052	176.6	Ironbark woodland	17/10/2009	-24.853620	150.478670	OB
OB051	177.4	Powerline easement	17/10/2009	-24.846640	150.476850	OB
HA005	178.5	Minor creekline	27/09/2009	-24.836568	150.478696	HA
OB011	180.5	Ironbark woodland	27/09/2009	-24.818936	150.481014	OB
HA004	182.6	Pump Creek	27/09/2009	-24.801477	150.477212	HA
OB010	182.7	Hillside north off Pump Ck	27/09/2009	-24.800531	150.476591	OB
OB009	184.7	Twenty Mile Creek	27/09/2009	-24.783516	150.481819	OB
OB008	187.8	Poplar Box woodland	27/09/2009	-24.756389	150.482333	OB

Site No	3F KP	Location	Date	Latitude	Longitude	Survey
OB059	200.9	Cleared Bluegum forest	18/10/2009	-24.642100	150.460010	OB
OB060	203.2	Dry Creek	18/10/2009	-24.623010	150.449840	OB
OB049	206.8	Prospect Creek	17/10/2009	-24.591640	150.441390	OB
OB034	211.5	Minor creekline	4/10/2009	-24.552899	150.424498	OB
OB050	214.0	Prairie Creek	17/10/2009	-24.530790	150.421260	OB
HA028	214.8	Ironbark woodland	17/10/2009	-24.523180	150.420780	HA
OB057	217.5	Minor creekline	18/10/2009	-24.498860	150.416050	OB
OB058	218.5	Prospect Creek flats	18/10/2009	-24.489520	150.415940	OB
OB056	220.3	Prospect Creek tributary	18/10/2009	-24.473760	150.414670	OB
OB055	223.6	Quartpot Creek	18/10/2009	-24.445370	150.408130	OB
OB054	224.4	Prospect Creek	18/10/2009	-24.438610	150.410230	OB
HA030	224.6	Acacia woodland	18/10/2009	-24.436250	150.409500	HA
OB047	230.2	Orange Creek Road	16/10/2009	-24.386840	150.415950	OB
OB046	232.9	Brigalow regrowth	16/10/2009	-24.363290	150.409330	OB
OB048	234.3	Brigalow regrowth	16/10/2009	-24.351350	150.403880	OB
OB033	235.7	Prospect Creek Road	3/10/2009	-24.338524	150.404716	OB
OB032	237.0	Small brigalow patch	3/10/2009	-24.329442	150.412954	OB
HA018	237.3	Brigalow patch	3/10/2009	-24.326951	150.414400	HA
OB031	238.7	Kroombit Creek - west channel	3/10/2009	-24.315657	150.419302	OB

Site No	3F KP	Location	Date	Latitude	Longitude	Survey
OB030	239.6	Kroombit Creek	3/10/2009	-24.310930	150.426116	OB
OB029	241.6	Minor road off Callide Road	3/10/2009	-24.298469	150.440122	OB
HA017	242.6	Callide Creek	3/10/2009	-24.294129	150.448714	HA
OB028	243.5	Jambin-Dakenba Road	3/10/2009	-24.289405	150.456268	OB
OB027	248.1	Callide-Kilburnie Road	3/10/2009	-24.273834	150.497709	OB
OB045	254.0	Callide Timber Reserve - W boundary	16/10/2009	-24.245520	150.546780	OB
HA027	254.9	Callide Timber Reserve	16/10/2009	-24.240960	150.553910	HA
OB026	255.8	Callide Timber Reserve	3/10/2009	-24.236748	150.561015	OB
HA016	257.1	Callide Timber Reserve	3/10/2009	-24.229812	150.570670	HA
HA014	257.8	Callide Timber Reserve	2/10/2009	-24.227854	150.577440	HA, AN
HA015	258.6	Callide Range	2/10/2009	-24.223522	150.583370	HA
HA013	260.0	Callide Range	2/10/2009	-24.217765	150.594982	HA
OB024	260.9	Callide Range - Collards Ck tributary	2/10/2009	-24.219718	150.602467	OB
OB025	261.9	Laydown area - Callide Range	3/10/2009	-24.225412	150.610446	OB
HA012	263.6	Collards Creek	1/10/2009	-24.229238	150.625222	HA, AN
OB023	266.6	Collards Creek	1/10/2009	-24.225654	150.653027	OB
OB022	267.5	Collards Creek	1/10/2009	-24.222514	150.660188	OB
OB021	267.7	Ironbark woodland	1/10/2009	-24.221327	150.661105	OB
HA011	269.3	Ridge between Spring Ck & Collards Ck	1/10/2009	-24.220978	150.673832	HA

Site No	3F KP	Location	Date	Latitude	Longitude	Survey
OB020	272.2	Louisa Creek	30/09/2009	-24.204556	150.694968	OB
OB019	273.8	Collards Creek	30/09/2009	-24.194691	150.706299	OB
HA010	275.7	Rocky jump-up	30/09/2009	-24.179768	150.712960	HA
HA009	277.6	Bell Creek	30/09/2009	-24.162380	150.716281	HA
CIC01	285.1	Dawson Highway	7/09/2009	-24.116700	150.763000	OB
CIC02	285.2	Dawson Hwy road reserve	7/09/2009	-24.115800	150.763000	OB
CIC12	288.1	Sand Gully	8/09/2009	-24.106600	150.787000	OB
CIC03	288.4	Ironbark regrowth	7/09/2009	-24.105900	150.790000	OB
CIC04	294.4	Duck Holes Road	7/09/2009	-24.079200	150.837000	OB
CIC05	294.8	Calliope River	7/09/2009	-24.076300	150.841000	OB
CIC06	302.8	Harper Creek	7/09/2009	-24.027500	150.893000	OB
CIC07	307.3	Alarm Creek	7/09/2009	-24.017400	150.935000	OB
CIC11	310.9	Sandy Creek	8/09/2009	-24.003200	150.968000	OB
CIC10	316.8	Minor creekline	8/09/2009	-23.953400	150.976000	OB
CIC09	318.0	Gravel Creek	8/09/2009	-23.941700	150.986000	OB
CIC08	320.5	Larcom Creek	8/09/2009	-23.921900	150.996000	OB
L01	356.0	Curtis Island	14/04/2009	-23.7470	151.1740	HA
L02	356.3	Curtis Island	14/04/2009	-23.7481	151.1770	HA
LP210	357.4	Curtis Island	8/10/2009	-23.7477	151.1880	HA

Site No	3F KP	Location	Date	Latitude	Longitude	Survey
LP207	357.8	Curtis Island	7/10/2009	-23.7475	151.1920	HA
L09	358.2	Curtis Island	15/04/2009	-23.7458	151.1960	HA
LP209	359.8	Curtis Island	8/10/2009	-23.7558	151.2000	HA

Appendix G Fauna Species Recorded During Field Assessment

Common Name	Scientific Name	Location (KP)	EPBC	NCA	BoT	BAMM	AP	PEST
Amphibians								
common green treefrog	*Litoria caerulea*	Wol 1.6, 238.7,						
eastern sedgefrog	*Litoria fallax*	307.3,						
ruddy treefrog	*Litoria rubella*	Wol 32.1, Wol 33.3, Con 4.8, Con 5.9, Con 33.5,						
ornate burrowing frog	*Opisthodon ornatus*	238.7,						
cane toad	*Rhinella marina*	70.0, 234.3, Curtis Is						Non-declared
Reptiles								
open-litter rainbow-skink	*Carlia pectoralis*	4.3, 47.9, 155.4, 156.9, 224.6, 242.6, 258.6, 266.6, 267.5, 269.3,				SEQ		
unspotted yellow-sided ctenotus	*Ctenotus ingrami*	266.6, 267.5,				BBS		
dwarf litter-skink	*Menetia timlowi*	266.6,				SEQ		
dubious dtella	*Gehyra dubia*	Wol 3.9, Wol 6.7, Wol 12.0, Wol 26.6, Wol 35.5, Con 8.9, Con 11.5, Con 12.0, Con 27.9, Con 32.6, 7.3, 7.9, 10.3, 39.0, 47.9, 217.5, 266.6, Curtis Is						
Bynoe's gecko	*Heteronotia binoei*	Wol 10.0, Wol 12.0, Wol 32.1, Con 2.3, Con 5.9, Con 7.0, Con 11.5, Con 33.5, Con 42.9, 7.9, 10.3, 44.4, 46.8, 47.9, 148.6, 156.9, 160.3, 242.6, 266.6, 269.3, Curtis Is						
ocellated velvet gecko	*Oedura monilis*	237.3,						

Common Name	Scientific Name	Location (KP)	EPBC	NCA	BoT	BAMM	AP	PEST
zig-zag gecko	*Oedura rhombifer*	46.8,						
shaded-litter rainbow-skink	*Carlia munda*	69.1, 257.1, Curtis Is						
tussock rainbow-skink	*Carlia vivax*	318.0,						
ragged snake-eyed skink	*Cryptoblepharus pannosus*	Wol 26.6,						
elegant snake-eyed skink	*Cryptoblepharus pulcher pulcher*	Con 11.5, Con 27.9, Con 32.6, 4.3, 7.9, 47.9, 69.1, 91.8, 103.4, 160.7, 217.5, 238.7, 318.0, Curtis Is						
eastern mulch-slider	*Lerista fragilis*	10.3,						
bearded dragon	*Pogona barbata*	Wol 3.9, Wol 17.5, Wol 25.7, Wol 35.5, 7.9, 10.3,						
sand monitor	*Varanus gouldii*	Wol 17.5, Con 4.8, Con 42.2, 4.2,						
black-tailed monitor	*Varanus tristis*	46.8,Curtis Is						
lace monitor	*Varanus varius*	Con 17.7, Con 37.2, 162.5,						
common tree snake	*Dendrelaphis punctulata*	Curtis Is						
yellow-faced whip snake	*Demansia psammophis*	156.9,						
eastern brown snake	*Pseudonaja textilis*	69.1,						
Birds								
squatter pigeon (southern)	*Geophaps scripta scripta*	Incidental 5km W of 35, 209.7, 212.6, 254.0, 294.4,	V	V			NT	
glossy black-cockatoo	*Calyptorhynchus lathami*	Con 36.7,		V	High		NT	

Common Name	Scientific Name	Location (KP)	EPBC	NCA	BoT	BAMM	AP	PEST
beach stone-curlew	*Esacus magnirostris*	Curtis Is		V	High		LC	
eastern curlew	*Numenius madagascariensis*	Curtis Is		R			LC	
grey-crowned babbler	*Pomatostomus temporalis*	Wol 25.7, Con 11.5, Con 27.9, Con 42.2, 7.9, 35.9, 36.5, 37.6, 43.0, 148.6, 187.8, 220.3, 224.6, 234.3, 257.1,				BBS	NT	
blue-winged kookaburra	*Dacelo leachii*	285.1, 294.8, 320.5,				SEQ		
barking owl	*Ninox connivens*	Curtis Is				SEQ, BBS	NT	
Australian bustard	*Ardeotis australis*	145.3, 175.7, 200.9, 203.2,					NT	
eastern reef egret	*Egretta sacra*	Curtis Is						
white-bellied sea-eagle	*Haliaeetus leucogaster*	Curtis Is						
rainbow bee-eater	*Merops ornatus*	Wol 6.7, Wol 10.0, Wol 14.7, Wol 35.5, Con 5.9, Con 42.2, Con 42.9, 33.9, 39.0, 45.4, 47.9, 69.1, 113.0, 114.0, 144.1, 169.9, 242.6, 243.5, 254.0, 257.8, 260.0, 260.9, 269.3, 273.8, 277.6, 275.7, 285.1, 294.8, 302.8, 310.9, Curtis Is						
satin flycatcher	*Myiagra cyanoleuca*	Wol 32.1, 70.0, 257.1, 267.5,						
whimbrel	*Numenius phaeopus*	Curtis Is						
Pacific golden plover	*Pluvialis fulva*	Curtis Is						
rufous fantail	*Rhipidura rufifrons*	239.6, 320.5,						

Common Name	Scientific Name	Location (KP)	EPBC	NCA	BoT	BAMM	AP	PEST
inland thornbill	*Acanthiza apicalis*	Wol 32.1,						
yellow-rumped thornbill	*Acanthiza chrysorrhoa*	257.1,						
yellow thornbill	*Acanthiza nana*	Wol 32.1, Con 7.0, Con 18.5, Con 21.2, 7.9, 70.0, 267.5,						
Australian brush-turkey	*Alectura lathami*	38.1, 46.8,						
Australian king-parrot	*Alisterus scapularis*	91.8, 263.6, 267.5,						
grey teal	*Anas gracilis*	105.5, 234.3,						
Pacific black duck	*Anas superciliosa*	6.0, 6.4, 234.3, 237.3, 275.7, 302.8,						
Richard's pipit	*Anthus novaeseelandiae*	237.3, 273.8,						
red-winged parrot	*Aprosmictus erythropterus*	Wol 12.0, Wol 14.7, 168.0, 224.6, 234.3, 242.6, 285.1,						
wedge-tailed eagle	*Aquila audax*	114.0, 182.6, 220.3, 277.6, 294.4,						
intermediate egret	*Ardea intermedia*	6.4,						
white-necked heron	*Ardea pacifica*	232.9, Curtis Is						
Pacific baza	*Aviceda subcristata*	162.5, 217.5,						
hardhead	*Aythya australis*	6.0, 105.5,						
striated heron	*Butorides striata*	Curtis Is						

Common Name	Scientific Name	Location (KP)	EPBC	NCA	BoT	BAMM	AP	PEST
sulphur-crested cockatoo	*Cacatua galerita*	Wol 7.9, Wol 12.0, Wol 14.7, Con 2.9, Con 11.5, Con 12.0, 4.3, 29.2, 30.0, 46.8, 69.1, 70.0, 91.8, 97.2, 114.0, 156.9, 164.1, 172.3, 175.7, 200.9, 211.5, 214.0, 218.5, 220.3, 223.6, 224.4, 254.0, 255.8, 257.1, 257.8, 261.9, 263.6, 267.5, 269.3, 272.2, 273.8, 294.4, 294.8,						
little corella	*Cacatua sanguinea*	203.2, 206.8, 214.0, 217.5,						
red-tailed black-cockatoo	*Calyptorhynchus banksii*	Curtis Is						
pheasant coucal	*Centropus phasianinus*	30.0, 103.4, 114.0, 184.7, 232.9, 302.8, Curtis Is						
red-capped plover	*Charadrius ruficapillus*	Curtis Is						
Australian wood duck	*Chenonetta jubata*	Wol 13.7, 6.4, 105.5, 113.0, 156.9, 260.9, 275.7,						
spotted bowerbird	*Chlamydera maculata*	40.7,						
grey shrike-thrush	*Colluricincla harmonica*	Wol 10.0, Wol 32.1, Con 31.5, 7.3, 10.3, 33.9, 37.3, 239.6, 320.5,						
black-faced cuckoo-shrike	*Coracina novaehollandiae*	33.9, 40.7, 220.3, 242.6, 294.8, Curtis Is						
white-winged chough	*Corcorax melanorhamphos*	110.7, 145.3, 148.6, 169.9, 232.9, 257.8,						
white-throated treecreeper	*Cormobates leucophaea*	Con 5.9, 102.9,						

Common Name	Scientific Name	Location (KP)	EPBC	NCA	BoT	BAMM	AP	PEST
crow / raven	*Corvus* sp.	Wol 6.7, Wol 14.7, Wol 17.5, Wol 33.3, Wol 25.7, Wol 26.6, Con 0.7, Con 1.5, Con 2.3, Con 3.9, Con 4.8, Con 5.9, Con 7.0, Con 11.5, Con 21.2, Con 43.5, 1.9, 4.3, 7.3, 7.9, 8.1, 10.3, 30.0, 33.9, 35.9, 40.7, 43.0, 44.4, 50.0, 69.1, 70.0, 106.5, 107.0, 110.7, 113.0, 114.0, 144.1, 145.3, 146.1, 148.6, 155.4, 156.9, 160.7, 162.5, 164.1, 168.0, 169.9, 175.7, 176.6, 178.5, 182.6, 184.7, 203.2, 206.8, 211.5, 214.0, 214.8, 217.5, 220.3, 223.6, 224.6, 230.2, 232.9, 235.7, 237.0, 237.3, 242.6, 243.5, 254.9, 255.8, 257.1, 257.8, 258.6, 260.0, 260.9, 261.9, 263.6, 266.6, 267.5, 269.3, 272.2, 273.8, 275.7, 277.6, 285.1, 288.1, 288.4, 294.4, 294.8, 302.8, 318.0, 320.5, Curtis Is						
brown quail	*Coturnix ypsilophora*	114.0,						
pied butcherbird	*Cracticus nigrogularis*	Wol 1.6, Wol 3.9, Wol 6.7, Wol 14.7, Wol 25.7, Wol 26.6, Wol 29.5, Con 8.6, Con 42.9, 4.3, 10.3, 33.9, 38.1, 45.4, 47.9, 144.1, 146.1, 168.0, 169.9, 172.3, 220.3, 224.4, 234.3, 242.6, 277.6, 285.1, 320.5, Curtis Is						

Common Name	Scientific Name	Location (KP)	EPBC	NCA	BoT	BAMM	AP	PEST
Australian magpie	*Cracticus tibicen*	Wol 2.6, Wol 7.9, Wol 12.0, Wol 25.7, Wol 26.6, Con 12.0, Con 36.7, Con 42.9, Con 43.5, 1.9, 4.3, 10.3, 40.7, 46.8, 70.0, 101.0, 114.0, 146.1, 148.6, 155.4, 155.9, 162.5, 164.1, 169.9, 172.3, 176.6, 177.4, 182.6, 214.0, 217.5, 218.5, 220.3, 224.4, 224.6, 235.7, 237.3, 238.7, 242.6, 255.8, 257.8, 258.6, 261.9, 267.5, 269.3, 288.4, 294.4, 320.5, Curtis Is						
grey butcherbird	*Cracticus torquatus*	Wol 3.9, Wol 6.7, Wol 9.1, Wol 10.0, Wol 12.0, Wol 17.5, Wol 32.1, Wol 33.3, Con 0.7, Con 2.3, Con 2.9, Con 4.8, Con 5.9, Con 8.6, Con 9.3, Con 15.3, Con 32.6, Con 33.5, Con 35.5, Con 36.7, Con 38.8, Con 43.5, 4.3, 6.4, 7.3, 7.9, 10.3, 30.0, 35.9, 37.3, 38.1, 40.7, 45.4, 46.8, 69.1, 91.5, 91.8, 93.8, 97.2, 101.0, 102.9, 103.4, 106.5, 108.5, 110.7, 148.6, 155.4, 156.9, 160.3, 162.5, 164.1, 172.3, 175.7, 177.4, 182.6, 217.5, 220.3, 223.6, 224.4, 232.9, 257.1, 257.8, 258.6,						
pallid cuckoo	*Cuculus pallidus*	Wol 1.6,						
black swan	*Cygnus atratus*	6.0,						

Common Name	Scientific Name	Location (KP)	EPBC	NCA	BoT	BAMM	AP	PEST
laughing kookaburra	*Dacelo novaeguineae*	Wol 3.9, Wol 6.7, Wol 7.9, Wol 10.0, Con 0.7, Con 2.3, Con 8.6, Con 8.9, Con 9.3, Con 18.5, 1.9, 40.7, 43.0, 93.8, 103.4, 114.0, 156.9, 164.1, 169.9, 177.4, 223.6, 254.9, 257.1, 257.8, 260.0, 261.9, 267.5, 269.3, 275.7, 302.8, Curtis Is						
spangled drongo	*Dicrurus bracteatus*	237.3, Curtis Is						
emu	*Dromaius novaehollandiae*	148.6, 178.5, 182.6, 200.9,						
little egret	*Egretta garzetta*	Curtis Is						
white-faced heron	*Egretta novaehollandiae*	Con 4.8,						
black-fronted dotterel	*Elseyornis melanops*	6.0, 103.4,						
blue-faced honeyeater	*Entomyzon cyanotis*	Wol 2.6, Con 0.7, Con 31.5, 7.3, 106.5, 144.1, 211.5, 234.3, 242.6, 258.6, 263.6,						
galah	*Eolophus roseicapillus*	Wol 1.6, Wol 3.9, Wol 10.0, Wol 12.0, Wol 14.7, Wol 29.5, Wol 35.5, Con 1.5, Con 4.8, Con 8.9, Con 11.5, Con 31.5, 1.9, 7.9, 29.2, 30.0, 33.9, 45.4, 155.9, 156.9, 168.0, 178.5, 184.7, 217.5, 220.3, 224.4, 234.3, 238.7, 242.6, 248.1, 302.8, 320.5,						
red-kneed dotterel	*Erythrogonys cinctus*	6.4,						
dollarbird	*Eurystomus orientalis*	Wol 6.7, Con 8.9, 30.0, 40.7, 148.6, 211.5, 217.5, 218.5, 224.4, 254.9, 263.6, 272.2,						
brown falcon	*Falco berigora*	177.4, 275.7,						

Common Name	Scientific Name	Location (KP)	EPBC	NCA	BoT	BAMM	AP	PEST
nankeen kestrel	*Falco cenchroides*	Wol 25.7, Con 1.5, 114.0, 144.1, 146.1, 180.5, 182.6, 203.2, 217.5, 288.4, 294.4,						
peregrine falcon	*Falco peregrinus*	70.0,						
black-tailed native-hen	*Gallinula ventralis*	6.0,						
bar-shouldered dove	*Geopelia humeralis*	Curtis Is						
peaceful dove	*Geopelia striata*	Wol 35.5, Con 4.8, 1.9, 7.3, 164.1, 182.6, 218.5, 220.3, 230.2, 232.9, 237.0, 237.3, 238.7, 239.6, 242.6, 257.1, 263.6, 267.5, 294.4, 294.8, 302.8,						
white-throated gerygone	*Gerygone olivacea*	Con 5.9,						
magpie-lark	*Grallina cyanoleuca*	Wol 6.7, Wol 14.7, Wol 26.6, Con 1.5, Con 4.8, Con 5.9, Con 42.9, 1.9, 7.3, 10.3, 30.0, 33.9, 43.0, 44.4, 114.0, 144.1, 156.9, 175.7, 177.4, 184.7, 203.2, 206.8, 211.5, 214.0, 217.5, 220.3, 224.6, 238.7, 242.6, 285.1, 302.8, Curtis Is						
brolga	*Grus rubicunda*	234.3,						
pied oystercatcher	*Haematopus longirostris*	Curtis Is						
brahminy kite	*Haliastur indus*	Curtis Is						
black-winged stilt	*Himantopus himantopus*	6.0, 6.4, 243.5,						
welcome swallow	*Hirundo neoxena*	263.6, Curtis Is						
tree martin	*Hirundo nigricans*	Curtis Is						

Common Name	Scientific Name	Location (KP)	EPBC	NCA	BoT	BAMM	AP	PEST
silver gull	*Larus novaehollandiae*	Curtis Is						
white-eared honeyeater	*Lichenostomus leucotis*	Con 12.0, Con 32.6,						
singing honeyeater	*Lichenostomus virescens*	Con 38.8,						
brown honeyeater	*Lichmera indistincta*	232.9, 288.1, 294.8, 302.8, 307.3, 316.8, 318.0, 320.5,						
variegated fairy-wren	*Malurus lamberti*	Con 33.5, 33.9, 232.9, 257.8,						
white-winged fairy-wren	*Malurus leucopterus*	Wol 17.0,						
red-backed fairy-wren	*Malurus melanocephalus*	91.8, 103.4, 211.5, 214.8, 224.4, 248.1, 277.6, 302.8, 318.0,						
noisy miner	*Manorina melanocephala*	Wol 1.6, Wol 2.6, Wol 6.7, Wol 7.9, Wol 10.0, Wol 12.0, Wol 17.5, Wol 25.7, Wol 26.6, Con 2.3, Con 2.9, Con 4.8, Con 5.9, Con 8.6, Con 8.9, Con 9.3, Con 11.5, Con 27.9, Con 31.5, Con 38.8, 1.9, 4.3, 5.2, 7.3, 7.9, 10.3, 33.9, 35.9, 37.3, 45.4, 46.8, 69.1, 93.8, 97.2, 101.0, 102.9, 103.4, 106.5, 107.0, 108.5, 110.7, 113.0, 114.0, 144.1, 144.9, 145.3, 155.9, 156.9, 160.7, 164.1, 168.0, 169.9, 177.4, 178.5, 184.7, 211.5, 217.5, 220.3, 223.6, 234.3, 255.8, 257.1, 257.8, 258.6, 263.6,						
Lewin's honeyeater	*Meliphaga lewinii*	38.1, 40.7, 257.1, 257.8,						
white-throated honeyeater	*Melithreptus albogularis*	257.8, 263.6, 302.8, Curtis Is						
jacky winter	*Microeca fascinans*	155.4,						

Common Name	Scientific Name	Location (KP)	EPBC	NCA	BoT	BAMM	AP	PEST
black kite	*Milvus migrans*	242.6, 243.5,						
restless flycatcher	*Myiagra inquieta*	237.0,						
leaden flycatcher	*Myiagra rubecula*	Wol 10.0, Con 5.9, Con 8.6, Con 8.9, Con 21.2, Con 38.8, 50.0, 294.4, 294.8, 310.9, 320.5,						
plum-headed finch	*Neochmia modesta*	302.8,						
southern boobook	*Ninox novaeseelandiae*	Con 11.5,						
cockatiel	*Nymphicus hollandicus*	224.6, 234.3, 237.3, 238.7,						
crested pigeon	*Ocyphaps lophotes*	Wol 1.6, Wol 29.5, Wol 35.5, Con 2.9, Con 11.5, Con 42.2, Con 43.5, 1.9, 8.1, 10.3, 30.0, 33.9, 103.4, 106.5, 144.1, 146.1, 169.9, 182.6, 200.9, 206.8, 217.5, 224.6, 232.9, 234.3, 237.3, 275.7, 288.4,						
olive-backed oriole	*Oriolus sagittatus*	5.2, 7.9,						
rufous whistler	*Pachycephala rufiventris*	Wol 32.1, Wol 33.3, Con 5.9, Con 15.3, Con 18.5, Con 21.2, Con 36.7, 237.3,						
striated pardalote	*Pardalotus striatus*	Wol 35.5, Con 4.8, Con 11.5, 4.3, 102.9, 103.4, 110.7, 113.0, 114.0, 145.3, 148.6, 155.4, 155.9, 242.6, 267.5, 273.8, 285.1, 294.4, 294.8, 320.5,						
Australian pelican	*Pelecanus conspicillatus*	6.4,						
fairy martin	*Petrochelidon ariel*	266.6, 269.3,						

Common Name	Scientific Name	Location (KP)	EPBC	NCA	BoT	BAMM	AP	PEST
little pied cormorant	*Phalacrocorax melanoleucos*	Curtis Is						
little black cormorant	*Phalacrocorax sulcirostris*	Wol 13.7, 6.4,						
pied cormorant	*Phalacrocorax varius*	6.4,						
common bronzewing	*Phaps chalcoptera*	Con 0.7, 1.9, 93.8, 103.4, 169.9,						
little friarbird	*Philemon citreogularis*	Con 0.7, Con 7.0, 46.8, 69.1, 169.9, 175.7, 211.5, 239.6, 257.8, 260.0, 320.5,						
noisy friarbird	*Philemon corniculatus*	Wol 3.9, Wol 6.7, Wol 10.0, Wol 12.0, Wol 14.7, Wol 35.5, Con 0.7, Con 5.9, Con 7.0, Con 8.6, Con 8.9, Con 11.5, Con 12.0, Con 27.9, 35.9, 37.3, 69.1, 93.8, 97.2, 101.0, 144.1, 146.1, 155.4, 175.7, 184.7, 217.5, 237.3, 238.7, 239.6, 242.6, 257.8, 258.6, 269.3, 310.9, 320.5, Curtis Is						
yellow-billed spoonbill	*Platalea flavipes*	6.0, 6.4,						
pale-headed rosella	*Platycercus adscitus*	Wol 2.6, 30.0, 44.4, 46.8, 50.0, 102.9, 146.1, 148.6, 172.3, 182.6, 234.3, 254.9, 255.8, 267.5, 277.6,						
striped honeyeater	*Plectorhyncha lanceolata*	Con 4.8,						
tawny frogmouth	*Podargus strigoides*	169.9, Curtis Is						

Common Name	Scientific Name	Location (KP)	EPBC	NCA	BoT	BAMM	AP	PEST
grey fantail	*Rhipidura albiscapa*	Wol 2.6, Wol 6.7, Wol 7.9, Wol 9.1, Wol 10.0, Wol 32.1, Wol 35.5, Con 5.9, Con 8.9, Con 11.5, Con 15.3, Con 18.5, Con 21.2, Con 27.9, Con 35.5, Con 36.7, Con 38.8, 4.3, 5.2, 10.3, 37.3, 43.0, 44.4, 69.1, 102.9, 103.4, 113.0, 148.6, 184.7, 237.3, 238.7, 239.6, 242.6, 260.0, 294.4, 294.8, 302.8, 320.5,						
willie wagtail	*Rhipidura leucophrys*	Wol 6.7, Wol 12.0, Wol 26.6, Wol 33.3, Con 4.8, Con 8.9, Con 15.3, Con 21.2, Con 43.5, 7.3, 10.3, 33.9, 35.3, 44.4, 50.0, 148.6, 175.7, 220.3, 224.4, 232.9, 237.0, 237.3, 242.6, 288.4, 294.4, Curtis Is						
channel-billed cuckoo	*Scythrops novaehollandiae*	Wol 3.9, 1.9, 261.9,						
Australasian figbird	*Sphecotheres vieilloti*	263.6, 294.8,						
crested tern	*Sterna bergii*	Curtis Is						
caspian tern	*Sterna caspia*	Curtis Is						
pied currawong	*Strepera graculina*	Wol 2.6, Wol 9.1, Wol 10.0, Wol 12.0, Con 7.0, Con 11.5, Con 12.0, Con 21.2, Con 27.9, Con 36.7, 4.3, 44.4, 69.1, 91.8, 93.8, 101.0, 106.5, 160.3, 160.7, 162.5, 164.1, 177.4, 255.8, 257.1, 257.8, 260.0, 260.9, 261.9, 263.6, 267.5, 269.3, 273.8, 275.7, 277.6, Curtis Is						

Common Name	Scientific Name	Location (KP)	EPBC	NCA	BoT	BAMM	AP	PEST
apostlebird	*Struthidea cinerea*	Wol 2.6, Wol 14.7, Wol 26.6, Con 0.7, Con 4.8, Con 5.9, Con 42.2, Con 42.9, 1.9, 7.3, 10.3, 40.7, 43.0, 44.4, 69.1, 114.0, 144.1, 145.3, 146.1, 148.6, 156.9, 169.9, 187.8, 206.8, 211.5, 217.5, 220.3, 224.6, 232.9, 242.6, 277.6,						
Australasian grebe	*Tachybaptus novaehollandiae*	6.0, 6.4, 105.5, 234.3, 237.3, 260.9,						
double-barred finch	*Taeniopygia bichenovii*	Wol 36.4, 38.1, 239.6, 242.6, 254.9, 257.8, 260.9, 263.6, 294.8, 302.8, 307.3,						
straw-necked ibis	*Threskiornis spinicollis*	30.0, 175.7,						
forest kingfisher	*Todiramphus macleayii*	182.6, 302.8, Curtis Is						
scaly-breasted lorikeet	*Trichoglossus chlorolepidotus*	Wol 7.9, Wol 25.7, Con 11.5, Con 31.5, 93.8, 156.9, 168.0, 175.7, 178.5, 182.6, 184.7, 217.5, 218.5,						
rainbow lorikeet	*Trichoglossus haematodus*	Wol 12.0, Wol 25.7, Con 11.5, 69.1, 93.8, 114.0, 148.6, 169.9, 175.7, 203.2, 206.8, 211.5, 214.0, 217.5, 218.5, 232.9, 237.3, 238.7, 239.6, 242.6, 257.1, 258.6, 260.0, 261.9, 263.6, 267.5, 272.2, 273.8, 285.1, 288.4, 294.8, 302.8, 307.3, 310.9, 318.0, 320.5, Curtis Is						
painted button-quail	*Turnix varius*	Wol 32.1,						
masked lapwing	*Vanellus miles*	105.5, 113.0, 234.3, Curtis Is						

Common Name	Scientific Name	Location (KP)	EPBC	NCA	BoT	BAMM	AP	PEST
silvereye	*Zosterops lateralis*	Wol 12.0, 277.6,						
little shrike-thrush		267.5,						
white-throated nightjar		Con 2.3,						
Terrestrial Mammals								
Herbert's Rock-wallaby	*Petrogale herberti*	275.7,				SEQ		
short-beaked echidna	*Tachyglossus aculeatus*	Wol 1.6, Wol 2.6, Con 7.0, 46.8, 69.1, 144.1, 217.5,						
sugar glider	*Petaurus breviceps*	1.9,						
eastern grey kangaroo	*Macropus giganteus*	Wol 2.6, Wol 14.7, Wol 25.7, 1.9, 6.0, 6.4, 69.1, 91.5, 102.9, 162.5, 164.1, 175.7, 200.9, 211.5, 234.3, 275.7, Curtis Is						
red-necked wallaby	*Macropus rufogriseus*	Con 21.2, 33.9, 35.3, 35.9, 40.7, 164.1,						
Whiptail wallaby	*Macropus parryi*	69.1, 223.6,						
common wallaroo	*Macropus robustus*	69.1,						
swamp wallaby	*Wallabia bicolor*	Con 8.9, Con 12.0, 69.1,						
European cattle	*Bos taurus*	Curtis Is						Non-declared
dog / dingo*	*Canis familiaris*	Con 15.3, Con 18.5, 4.3, 91.8, 144.1, 162.5, 168.0, 169.9, 285.1,						Class 2
goat*	*Capra hircus*	144.1,						Class 2
horse*	*Equus caballus*	Curtis Is						Non-declared
brown hare*	*Lepus capensis*	Con 1.5, 232.9,						Non-declared

Common Name	Scientific Name	Location (KP)	EPBC	NCA	BoT	BAMM	AP	PEST
rabbit*	*Oryctolagus cuniculus*	Wol 26.6, Con 42.9, 144.1, 148.6, 155.9, 182.6, 217.5,						Class 2
pig*	*Sus scrofa*	97.2, 146.1,						Class 2
Bats								
little pied bat	*Chalinolobus picatus*	Con 11.5, Con 36.7, 103.4,		R				
hoary wattled bat	*Chalinolobus nigrogriseus*	Con 11.5,				BBS		
little red flying-fox	*Pteropus scapulatus*	Incidentals on fence at 34.5 & 107.2, overhead on Wildflower Rd				SEQ		
Troughton's sheathtail bat	*Taphozous troughtoni*	257.8, 263.6,				SEQ		
little forest bat	*Vespadelus vulturnus*	Con 11.5, Con 36.7,				SEQ		
northern freetail bat	*Chaerephon jobensis*	257.8, 263.6,						
Gould's wattled bat	*Chalinolobus gouldii*	Con 11.5, Con 36.7, 103.4, 257.8, 263.6,						
chocolate wattled bat	*Chalinolobus morio*	263.6,						
eastern bentwing bat	*Miniopterus orianae ocenensis*	103.4, 257.8, 263.6,						
Beccari's freetail bat	*Mormopterus beccarii*	103.4,						
eastern free-tailed bat	*Mormopterus ridei* (*M.* species 2)	Con 11.5, Con 36.7, 103.4, 257.8,						
inland freetail bat	*Mormopterus* species 3	Con 11.5, Con 36.7,						
unkown long-eared bat	*Nyctophilus* species	Con 11.5, Con 36.7, 103.4,						

Common Name	Scientific Name	Location (KP)	EPBC	NCA	BoT	BAMM	AP	PEST
eastern horseshoe-bat	*Rhinolophus megaphyllus*	257.8, 263.6,						
yellow-bellied sheathtail bat	*Saccolaimus flaviventris*	Con 11.5, Con 36.7, 103.4, 257.8, 263.6,						
inland broad-nosed bat	*Scotorepens balstoni*	Con 11.5, Con 36.7, 103.4, 263.6,						
little broad-nosed bat	*Scotorepens greyii*	Con 11.5, Con 36.7, 103.4, 257.8, 263.6,						
white-striped freetail bat	*Tadarida australis*	Con 11.5, Con 36.7, 103.4,						
eastern cave bat	*Vespadelus troughtoni*	257.8, 263.6,						

Appendix H Results of Anabat call analysis

Anabat Data Analysis Summary

Client: Worley Parsons **Contact**: Simon Hudson **Job no.:** WP_0906 **Location:** Miles-Nathan **Analysis Date:** 24/11/2009

		Nathan	Callide Range		Miles		
GENUS NAME	**SPECIES NAME**	**25-Sep**	**1-Oct**	**2-Oct**	**21-Oct**	**28-Oct**	**Species identity comments**
Saccolaimus	*flaviventris*	A	A	A	A	A	frequency overlap with *C. jobensis* but it has steeper pulses with erratic changes in shape and frequency *cf*.uniform open curves in *S. flaviventris*
Taphozous	*troughtoni*	C	A	A			frequency overlap with *M. beccarii* but that species has longer duration pulses with down-turned tail *cf*. shorter, mianly flat pulses from *T. troughtoni*
Chaerephon	*jobensis*		A	A			some calls overlap frequency of *S. flaviventris* but *C. jobensis* has erratic pulse characteristics in overlap zone *cf.* uniform pulses in *S. flaviventris*
Mormopterus	*beccarii*	A					some frequecy overlap with *T. troughtoni* but pulse shape usually diagnostic (longer and with down-curved tail); couple of definite calls from *M. beccarii*
Mormopterus	species 2	A		A	B	B	similar to *M.* sp 2 but often at slightly higher frequency (30-34kHz); sometimes similar to *C. gouldii* but latter has alternating pulse frequency
Mormopterus	species 3	C		C	B	B	similar to M. sp 3 but often at slightly lower frequency (28-32kHz); sometimes similar to C. gouldii but latter has alternating pulse frequency
Tadarida	*australis*	A			A	A	calls distinctive - at lower frequency than anything else here (10-13kHz)
Rhinolophus	*megaphyllus*		A	A			highly distinctive constant frequency calls at 65-70kHz
Miniopterus	*orianae ocenensis*	A	A	B			similar frequency to *V. baverstocki* & *V. vulturnus* but longer duration pulse with flatter base & tail (*cf.* up-curved tail in *V.* spp.)
Chalinolobus	*gouldii*	A	A	A	A	A	steep pulses with alternating frequency in range 28-32kHz; some calls lack alt. freq. and can be confused with *Mormopterus* spp.
Chalinolobus	*morio*		B				frequency overlap with *V. troughtoni* but *C. morio* pulses generally have down-turned tail *cf.* upturned in *V. troughtoni*
Chalinolobus	*nigrogriseus*					B	frequency similar to *S. greyii* but pulses with flatter base & longer duration characteristic frequency component
Chalinolobus	*picatus*	B		C	A	A	frequency similar to *S. greyii* often slightly higher frequency (39-42kHz) and usually with distinctive alternating frequency
Nyctophilus	species	A			B	A	distinctive steep linear pulses but species in genus can't be differentiated; several species possibly present - *N. geoffroyi, N. gouldii, N. timoriensis*
Scotorepens	*balstoni*	B	B		B	B	similar to *C. gouldii* but lacks frequency alternation; most calls have steeper pulses than *Mormopterus* spp. In same freq. range
Scotorepens	*greyii*	A	B	A	A	A	freq. overlap with *C. nigrogriseus* & *C. picatus* - refer notes above for differences
Vespadelus	*baverstocki*		C		C	C	similar to *V. vulturnus* but generally lower freq. (42-45kHz); freq. overlap with *M. o. oceanensis* but it has longer duration pulses with flat-based curve
Vespadelus	*troughtoni*		A	A			freq. overlap with *C. morio* but *V. troughtoni* pulses have uptunred tail (*cf.* downturned in *C. morio*); some overlap with *V. vulturnus* - indistinguishable
Vespadelus	*vulturnus*		C		B	B	similar to but usually slightly higher freq. than *V. baverstocki* (45-48kHz); some overlap at upper freq. with *V. troughtoni* - not distinguishable

Anabat Data Analysis Summary

Client: Worley Parsons **Contact**: Simon Hudson **Job no.:** WP_0906 **Location:** Miles-Nathan **Analysis Date:** 24/11/2009

Reliability ratings for ID:

A	definite	one or more calls where absolutely no doubt about identification of bat
B	probable	most likely the species named; low probability of confusion with species that use similar calls
C	possible	call is comparable with the listed species, but moderate to high probability of confusion with species with similar calls

Call identification based on:

Reinhold, L., Law, B., Ford, G. and Pennay, M. (2001). *Key to the bat calls of south-east Queensland and north-east New South Wales*. Department of Natural Resources and Mines, Brisbane.

Pennay, M., Law, B. and Reinhold, L. (2004). *Bat Calls of New South Wales*. Department of Environment and Conservation, Hurstville.

Reference calls collected in southern and central Quensland.

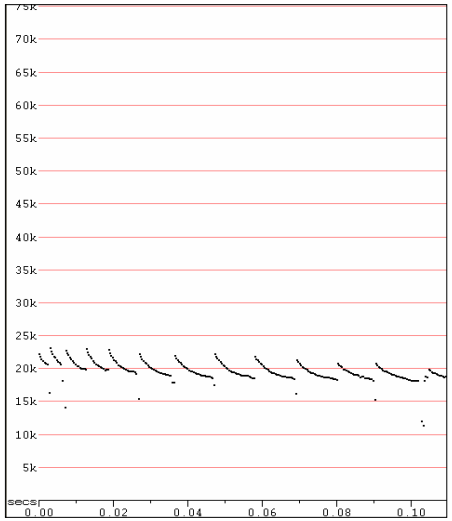
Other references:

Churchill, S. (2008). *Australian Bats*. Jacana Books, Allen & Unwin; Sydney.

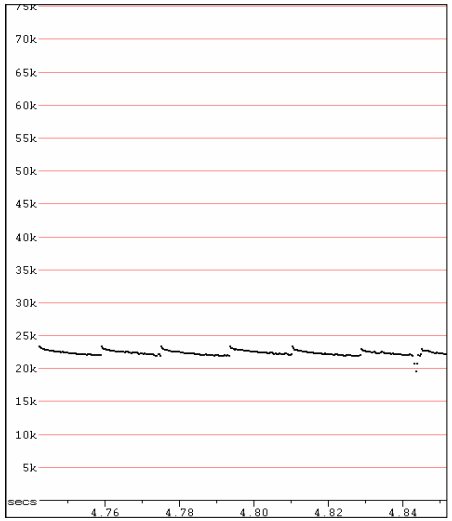
van Dyck, S. and Strahan, R. (ed.) (2008). *The Mammals of Australia* (Third Edition); New Holland; Sydney.

Sample calls extracted from the Miles-Nathan survey data Worley Parsons; 25/9/2009 - 28/10/2009)

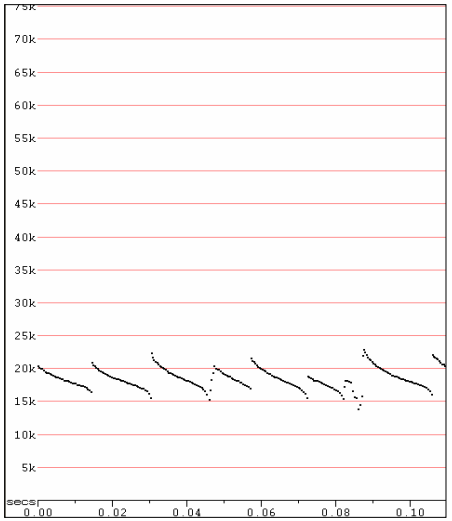
Scale: 10 msec per tick; time between pulses removed (*AnalookW* F7 compressed mode)



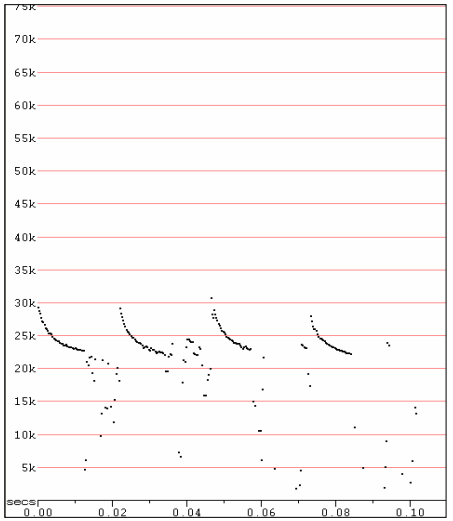
Saccolaimus flaviventris



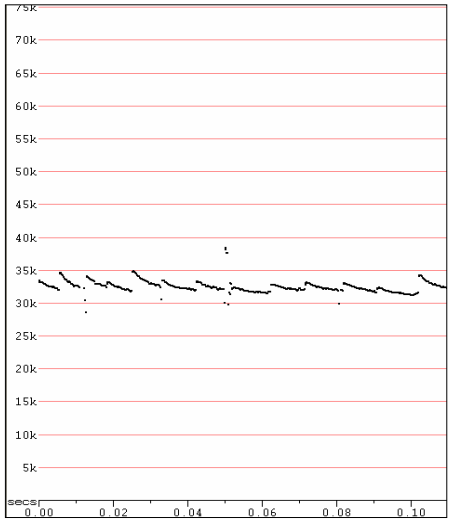
Taphozous troughtoni



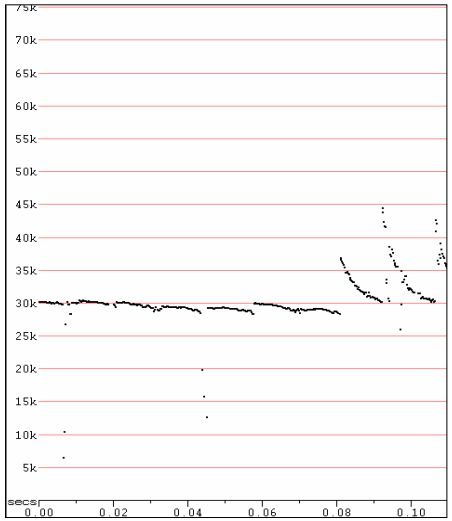
Chaerephon jobensis



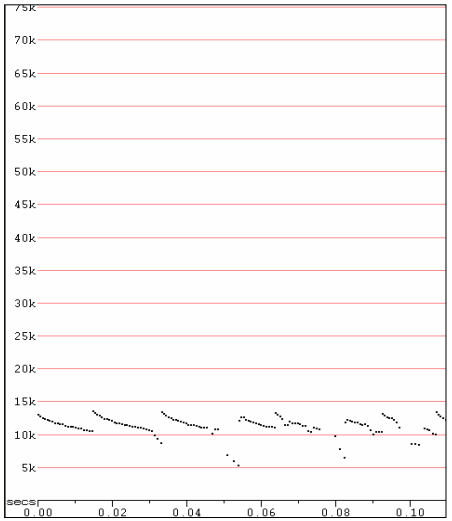
Mormopterus beccarii



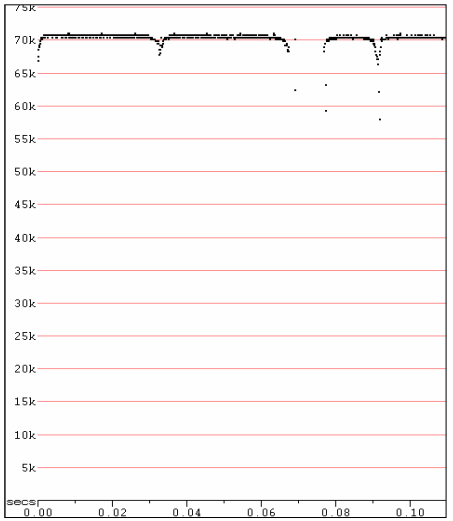
Probably *Mormopterus* sp. 2



Probably *Mormopterus* sp. 3



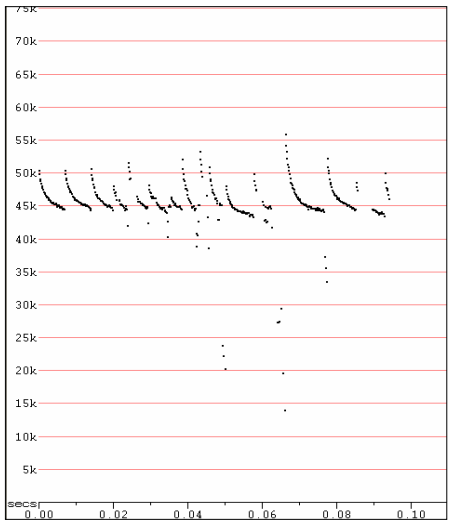
Tadarida australis



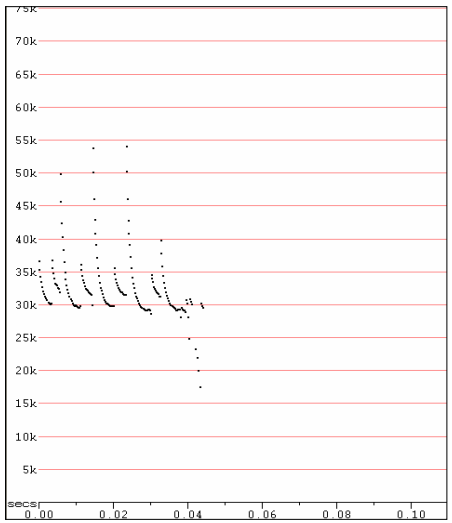
Rhinolophus megaphyllus

Sample calls extracted from the Miles-Nathan survey data Worley Parsons; 25/9/2009 - 28/10/2009)

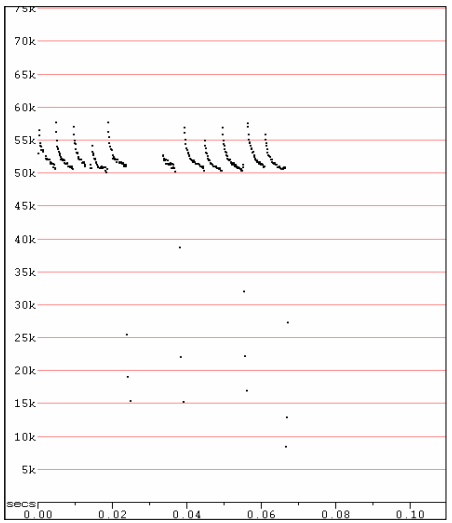
Scale: 10 msec per tick; time between pulses removed (*AnalookW* F7 compressed mode)



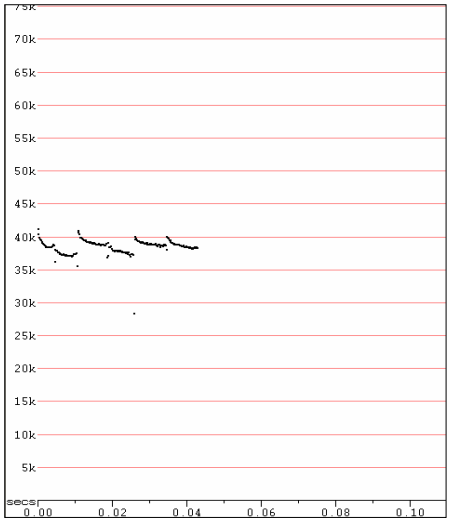
Miniopterus orianae oceanensis



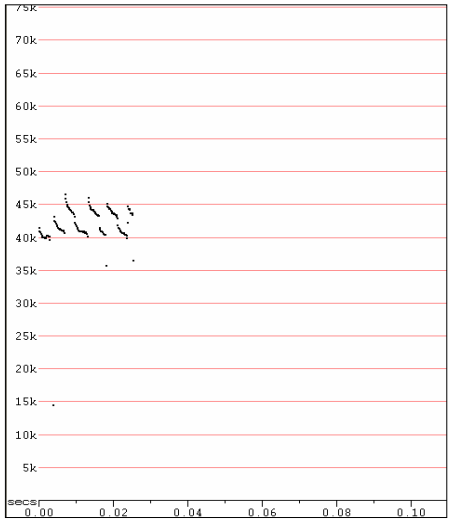
Chalinolobus gouldii



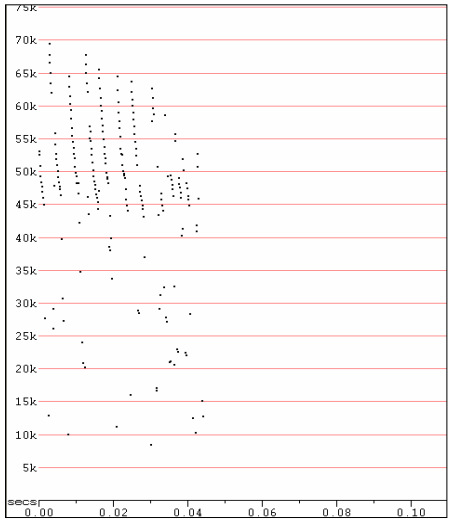
Possibly *Chalinolobus morio*



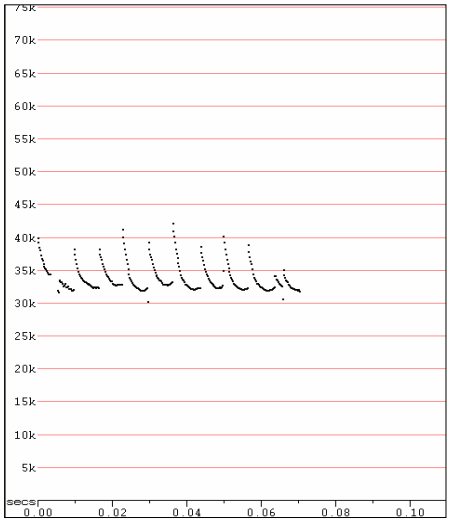
Probably *Chalinolobus nigrogriseus*



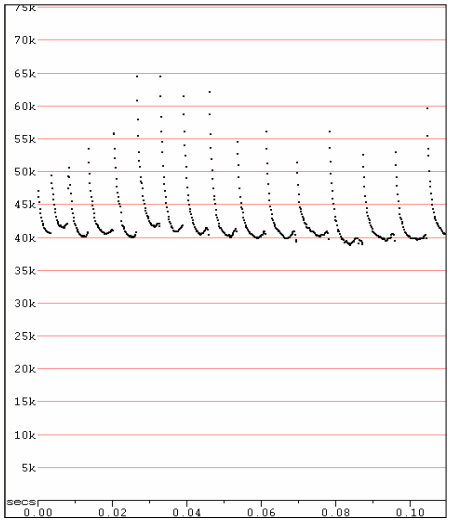
Chalinolobus picatus



Nyctophilus species



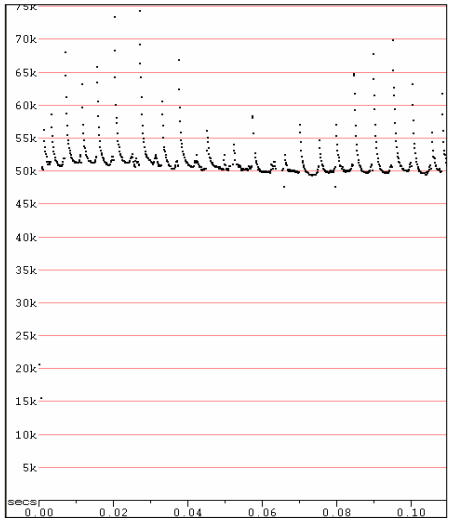
Probably *Scotorepens balstoni*



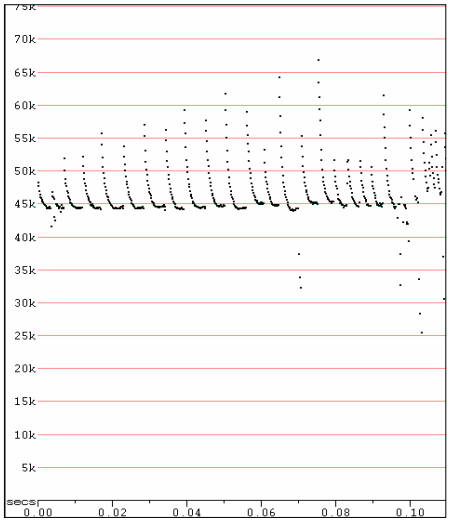
Scotorepens greyii

Sample calls extracted from the Miles-Nathan survey data Worley Parsons; 25/9/2009 - 28/10/2009)

Scale: 10 msec per tick; time between pulses removed (*AnalookW* F7 compressed mode)



Vespadelus troughtoni



Most likely *Vespadelus vulturnus*
but possibly *V. baverstocki*

Appendix I Regionally Significant fauna species

Common name *Scientific name*	NPT	AP	Preferred habitat	Preferred habitat in corridor	Source
Fish					
southern purplespotted gudgeon *Mogurnda adspersa*	BBS	R	Slow flowing waters among weed where suitable hard objects are available for spawning. Mainly a bottom-dweller.	No	4
silver perch *Bidyanus bidyanus*	BBS		Throughout the Murray-Darling basin, prefers fast-flowing waters but also occurs in lakes and dams. Recent severe decline, only small populations remain in faster running areas of rivers.	No	4
freshwater catfish *Tandanus tandanus*	BBS		Lakes and sluggish turbid streams with fringing vegetation. Lives and feeds largely on the bottom.	No	4
jungle perch *Kuhlia rupestris*	SEQ		Brackish water in N Qld, preferring tidal waters but readily move into freshwaters such as fast-flowing rivers and streams in coastal areas.	No	4
leathery grunter *Scortum hillii*		IK	Variety of habitats ranging from brackish estuaries to clear or turbid flowing streams and still pools.	No	4
Agassiz's glassfish *Ambassis agassizii*		R	Rivers, streams, billabongs and associated waters with plenty of weed cover. Comprised of eastern (coastal) and western (Murray-Darling) populations.	No	4
southern saratoga *Scleropages leichardti*		R	Long deep muddy waterholes with overhanging vegetation.	No	4
Frogs					

Common name *Scientific name*	NPT	AP	Preferred habitat	Preferred habitat in corridor	Source
desert froglet *Crinia deserticola*	SEQ		Damp areas associated with broad river channels in semi arid regions.	✓	3
clicking froglet *Crinia signifera*	SEQ		Varied habitats from wet sclerophyll forest to grasslands and disturbed areas, near creeks ponds, swamps and seepages.	✓	3,4
superb collared frog *Cyclorana brevipes*	SEQ		Dry savannah woodland. Burrowing frog usually recorded near clay pans after rain.	✓	3,4
eastern snapping frog *Cyclorana novaehollandiae*	SEQ		Woodland, grassland, open habitats and claypans.	✓	3,4
marbled frog *Limnodynastes convexiusculus*	SEQ		Swampy areas, long grass and dense vegetation beside temporary pools.	✓	4
bleating treefrog *Litoria dentata*	SEQ		Ponds, swamps or coastal lagoons, particularly with grassy edges. Found beneath bark and stones near breeding sites during the day.	✓	4
bumpy rocketfrog *Litoria inermis*	SEQ		Flooded plains, woodlands and monsoonal forests across northern Australia down the Qld coast.	✓	3,4
emerald spotted treefrog *Litoria peronii*	SEQ		Breeds in temporary pools, dams and inundated areas, shelters under loose bark on trunks of eucalypts close to waterholes and rivers.	✓	3,4
northern laughing treefrog *Litoria rothii*	SEQ		Coastal and sub-coastal woodlands, open forests and grasslands from NW WA to central Qld.	✓	3,4

Common name *Scientific name*	NPT	AP	Preferred habitat	Preferred habitat in corridor	Source
southern laughing treefrog *Litoria tyleri*	SEQ		Sclerophyll forest, typically near permanent pools.	✓	4
red-backed broodfrog *Pseudophryne coriacea*	SEQ		Sclerophyll forest and marshy areas, amongst leaf litter and fallen bark.	✓	3
salmon striped frog *Limnodynastes salmini*	SEQ / BBS		Uses temporary marshes and ponds for breeding, shelters under timber, bark and rocks. Spends much of its time underground, only emerging after rain.	✓	3,4
Reptiles					
broad-shelled turtle *Macrochelodina expansa*	BBS	R	Lagoons, lakes, rivers, swamps, inland drainage systems. Tends to prefer silty water.	✓	3
open-litter rainbow-skink *Carlia pectoralis*	SEQ		Dry sclerophyll forests, woodlands and heaths from SEQ north to Cooktown.	✓	3,4
unspotted yellow-sided ctenotus *Ctenotus ingrami*	BBS		Dry woodlands on heavy clay soils in inland SE Qld. Poorly known.	✓	4,5
Carpentaria whip snake *Rhinoplocephalus boschmai*	BBS		Dry forests and woodlands in eastern Qld, often on deep cracking soils.	✓	4
pale-headed snake *Hoplocephalus bitorquatus*	SEQ / BBS		Dry sclerophyll forests and woodlands, usually near floodplains or watercourses.	✓	3,4

Common name *Scientific name*	NPT	AP	Preferred habitat	Preferred habitat in corridor	Source
yellow-spotted monitor *Varanus panoptes*	BBS		Widespread across most of Qld in various habitats. Riverine woodlands, heaths, spinifex, brigalow, mulga.	✓	4
cone-eared calyptotis *Calyptotis lepidorostrum*	SEQ		Rainforests, eucalypt forests, heaths; damp microhabitat beneath rocks, logs and litter.	✓	3,4
dwarf litter-skink *Menetia timlowi*	SEQ		Leaf litter in habitats ranging from SEVT to open woodlands and heaths along the coast and ranges of eastern Qld.	✓	3,4,5
south-eastern morethia skink *Morethia boulengeri*	SEQ		Sclerophyll forests, woodlands and shrublands, generally on heavy soils; widespread in inland southern and central-western Qld.	✓	3,4
fire-tailed skink *Morethia taeniopleura*	SEQ		Open sclerophyll forests, woodlands and sandy heaths, usually with tussock grasses and fallen timber, often associated with rock outcrops.	✓	3,4
Lesueur's velvet gecko *Oedura lesueurii*	SEQ		Rocky habitats, especially sandstone and granite, in dry screophyll forests and woodlands.	✓	4
blackish blind snake *Ramphotyphlops nigrescens*	SEQ		Rainforests, forests, woodlands, shrublands, usually with well-embedded rocks and logs.	✓	3,4
black-striped snake *Rhinoplocephalus nigrostriatus*	SEQ		Dry sclerophyll forests and woodlands along east coast of Qld, from about Gladstone north to Cape York.	✓	4
three-toed skink *Saiphos equalis*	SEQ		Damp microhabitats under rocksd, logs and litter in sclerophyll forests and woodlands along the east coast and ranges from SE NSW to Kroombit Tops.	✓	3,4

Common name *Scientific name*	NPT	AP	Preferred habitat	Preferred habitat in corridor	Source
coral snake *Brachyurophis australis*	SEQ		Dry woodlands, shrublands, outcrops in eastern Australia, mainly on sandy soils.	✓	4
Birds					
speckled warbler *Chthonicola sagittata*	BBS	NT	Open eucalypt woodlands, with rocky gullies, logs, tussocks.	✓	2,4
banded stilt *Cladorhynchus leucocephalus*	BBS		Rare vagrant to the study area, typically utilising saltpan habitat.	✓	4
white-browed babbler *Pomatostomus superciliosus*	BBS		Open forests and woodlands, tree-lined inland watercourses.	✓	4
grey-crowned babbler *Pomatostomus temporalis*	BBS		Open forests, woodlands, roadsides with grassy understorey.	✓	2,4,5
green catbird *Ailuroedus crassirostris*	SEQ		Subtropical and temperate rainforests and adjacent paperbarks.	No	2,4
little wattlebird *Anthochaera chrysoptera*	SEQ		Forests, woodlands, and Banksia heathlands in SE Australia.	✓	4
black-faced woodswallow *Artamus cinereus*	SEQ		Dry open forests and woodlands, paddocks and roadsides with scattered trees.	✓	2,4

Common name *Scientific name*	NPT	AP	Preferred habitat	Preferred habitat in corridor	Source
musk duck *Biziura lobata*	SEQ		Deep permanent lakes, swamps and dams with open waters and dense reed-beds.	✓	2,4
large-tailed nightjar *Caprimulgus macrurus*	SEQ		Edges of rainforests, vine thickets and mangroves. Shelters in deep leaf litter.	✓	2,4
rufous-throated honeyeater *Conopophila rufogularis*	SEQ		Riparian paperbark forests and woodlands, open eucalypt woodlands, mangroves, gardens.	✓	2,4
blue-winged kookaburra *Dacelo leachii*	SEQ		Open forests and woodlands.	✓	2,4,5
fairy gerygone *Gerygone palpebrosa*	SEQ		Lowland rainforest, monsoon forest, riparian forest, mangroves.	✓	2,4
musk lorikeet *Glossopsitta concinna*	SEQ		Woodlands, open forests, mallee, farmlands and roadsides with scattered trees.	✓	2,4
yellow-tufted honeyeater *Lichenostomus melanops*	SEQ		Eucalypt forests and woodlands, mallee, brigalow, callitris woodlands.	✓	2,4
bell miner *Manorina melanophrys*	SEQ		Tall wet sclerophyll forests, rainforest margins.	✓	4
shining flycatcher *Myiagra alecto*	SEQ		Mangroves, rainforests, paperbark swamps.	✓	4

Common name *Scientific name*	NPT	AP	Preferred habitat	Preferred habitat in corridor	Source
dusky honeyeater *Myzomela obscura*	SEQ		Rainforests, monsoon forests, paperbarks, mangroves, vine thickets.	✓	2,4
green pygmy-goose *Nettapus pulchellus*	SEQ		Deep permanent freshwater lakes, dams and lagoons with abundant aquatic vegetation; floodplain swamps.	No	2,4
little curlew *Numenius minutus*	SEQ		River floodplains, billabongs, freshwater swamps, blacksoil plains grasslands.	✓	1
blue-billed duck *Oxyura australis*	SEQ		Deep permanent freshwater lakes, swamps and dams.	✓	2,4
eastern rosella *Platycercus eximius*	SEQ		Woodlands, farmlands, croplands, parks and gardens.	✓	4
rose-crowned fruit-dove *Ptilinopus regina*	SEQ		Rainforests, monsoon forests, vine thickets, mangroves, swampy woodlands.	✓	2,4
superb fruit-dove *Ptilinopus superbus*	SEQ		Rainforests, monsoon forests, vine-thickets, lantana and adjacent woodlands.	✓	2,4
paradise riflebird *Ptiloris paradiseus*	SEQ		Subtropical and temperate rainforests and adjacent wet sclerophyll forests.	No	2,4
bush stone-curlew *Burhinus grallarius*	SEQ / BBS	NT	Open forest, woodland, mallee, mulga. Avoids dense forests.	✓	2,4

Common name *Scientific name*	NPT	AP	Preferred habitat	Preferred habitat in corridor	Source
diamond firetail *Stagonopleura guttata*	SEQ / BBS	NT	Open forest, woodland, scrublands with grassy understorey.	✓	4
barking owl *Ninox connivens*	SEQ / BBS		Open timbered country, riparian woodland, paperbark swamps.	✓	2,4,5
masked owl *Tyto novaehollandiae*	SEQ / BBS		Roosts and nests in thick forests, hunts over open woodlands.	✓	4
Australian bustard *Ardeotis australis*		NT	Grasslands, open dry woodlands, mulga, mallee, heath.	✓	2,3,4,5
Mammals					
hoary wattled bat *Chalinolobus nigrogriseus*	BBS		Range of habitats in N and E Australia from wet sclerophyll forest to open woodland, roosts in hollows and crevices.	✓	3,4,5
northern brown bandicoot *Isoodon macrourus*	BBS		Wet tropical and subtropical forest, woodland, grassland, gardens in northern Australia.	✓	3,4
little bent-wing bat *Miniopterus australis*	BBS		Lowland rainforest, wet and dry sclerophyll forest, paperbark swamps. Roosts in caves and tunnels.	✓	3,4
eastern bentwing bat *Miniopterus orianae*	BBS	CD	Roosts in colonies in caves, old mines, with populations centred on areas with suitable cave roosts in N and E Australia. Forages in a wide range of habitats.	✓	3,5

Common name *Scientific name*	NPT	AP	Preferred habitat	Preferred habitat in corridor	Source
long-nosed bandicoot *Perameles nasuta*	BBS		Rainforest, wet and dry sclerophyll forest, woodlands, scrub.	✓	3,4
koala *Phascolarctos cinereus*	BBS	NT	Restricted to eucalypt forests and woodlands of eastern Australia. Generally inhabits open eucalypt forests with sparse ground cover and tends to avoid thick forests and steep slopes.	✓	3,4
narrow-nosed planigale *Planigale tenuirostris*	BBS		Open habitats including Mitchell grass, saltbush, gibber plains and mallee with cracking clay soils in semi-arid and arid eastern Australia.	✓	3
common brushtail possum *Trichosurus vulpecula*	BBS		Forests, woodlands, farmland, gardens, towns and cities.	✓	3,4
agile wallaby *Macropus agilis*	SEQ		Variety of grassy forest, woodland and riverine habitats on plains.	✓	4
east coast freetail bat *Mormopterus norfolkensis*	SEQ	DD	Little-known, dry and wet sclerophyll forests, roosts in tree hollows and buildings.	✓	4
large-footed myotis *Myotis macropus*	SEQ	NT	Coastal and subcoastal areas, always close to water from small creeks to large lakes and estuaries.	✓	4
Herbert's rock-wallaby *Petrogale herberti*	SEQ		Rocky outcrops, boulder piles, scree slopes, gorges, rocky slopes, gorgwes, cliffs and escarpments.	✓	3,4,5
delicate mouse *Pseudomys delicatulus*	SEQ		Open sandy country with sparse grassy ground cover.	✓	3,4

Common name *Scientific name*	NPT	AP	Preferred habitat	Preferred habitat in corridor	Source
eastern chestnut mouse *Pseudomys gracilicaudatus*	SEQ		Heaths, woodlands and dry sclerophyll forests with a grassy or heathy understorey.	✓	3,4
little red flying-fox *Pteropus scapulatus*	SEQ		Camps in streamside trees, forages in a wide range of forests and woodlands. Feeds mostly on eucalypt and paperbark nectar, also fruit.	✓	3,4,5
greater broad-nosed bat *Scoteanax rueppellii*	SEQ	NT	Variety of habitats in eastern and northeastern Austraila including rainforest, sclerophyll forest and woodland, cleared paddocks with scattered trees. Roost in hollows and dead trees.	✓	3,4
south-eastern broad-nosed bat *Scotorepens orion*	SEQ		Variety of habitats including rainforest, tall wet forest, vine forest, open woodland and mixed woodland. Roosts in tree hollows.	✓	4
common dunnart *Sminthopsis murina*	SEQ		Dry sclerophyll forest and heathy mallee in SE Australia.	✓	3,4
eastern blossom bat *Syconycteris australis*	SEQ		Roosts in rainforest foliage; forages in heathland, paperbark swamps, rainforest and wet sclerophyll forest, along with orchards.	✓	4
Troughton's sheathtail bat *Taphozous troughtoni*	SEQ		Varied: wet and dry sclerophyll forests, woodland, mulga, shrublands, grasslands. Roosts in caves.	✓	3,4,5
red-legged pademelon *Thylogale stigmatica*	SEQ		Rainforest and occasionally wet sclerophyll forest from about Tamworth in NSW north to Cape York Peninsula.	✓	3,4
short-eared possum *Trichosurus caninus*	SEQ		Wet sclerophyll forest and subtropical rainforest.	No	4

Common name *Scientific name*	NPT	AP	Preferred habitat	Preferred habitat in corridor	Source
little forest bat *Vespadelus vulturnus*	SEQ		Wet and dry sclerophyll forest, riparian red gum forest, brigalow, mulga, mallee in SE Australia and Tas. Roosts in hollows.	✓	4,5
rufous bettong *Aepyprymnus rufescens*	SEQ / BBS		Eucalypt forests and woodlands with sparse or grassy understoreys between Cooktown and coastal mid-NSW.	✓	3,4
black-striped wallaby *Macropus dorsalis*	SEQ / BBS		Rainforests, brigalow, vine thicket, eucalypt forest and woodland with a dense shrub layer.	✓	3,4
platypus *Ornithorhynchus anatinus*	SEQ / BBS		Widespread in eastern Australian freshwater streams, rivers, lakes, shallow dams. Prefers steep vegetated banks.	✓	3,4
greater glider *Petauroides volans*	SEQ / BBS		Wet and damp eucalypt forests in eastern Australia. Requires large tree hollows for shelter.	✓	3,4
squirrel glider *Petaurus norfolcensis*	SEQ / BBS	NT	Dry sclerophyll forest, riparian forest, damp coastal eucalypt and banksia forest in eastern Australia.	✓	3,4
brush-tailed phascogale *Phascogale tapoatafa*	SEQ / BBS		Sparsely distributed in dry sclerophyll forest, woodland, monsoon forest. Dens in hollows and stumps.	✓	3
common ringtail possum *Pseudocheirus peregrinus*	SEQ / BBS		Open and closed forests, coastal scrub, gardens.	✓	3,4
eastern pebble-mound mouse *Pseudomys patrius*	SEQ / BBS		Dry rocky ridges with grassy woodland.	✓	3,4

Common name *Scientific name*	NPT	AP	Preferred habitat	Preferred habitat in corridor	Source
central-eastern broad-nosed bat *Scotorepens* sp. (Parnaby)	SEQ / BBS	DD	Dry sclerophyll forest, coastal woodland and heathland. Natural history poorly known.	✓	4

* Status: Action Plan: VU = vulnerable, R = rare, NT = near threatened, IK = insufficiently known, R / IK = rare or insufficiently known, DD = data deficient.
NPT: BBS = Listed as a Non-EVR Priority Taxa for the Brigalow Belt South bioregion; SEQ = BBS = Listed as a Non-EVR Priority Taxa for the SEQ bioregion.
** Source: 1 = EPBC Protected Matters, 2 = Birds Australia, 3 = Queensland Museum, 4= WildNet, 5 = WorleyParsons (this study).

Appendix J EPBC-listed Migratory Birds

Common Name *Scientific Name*	Preferred Habitat	Preferred habitat in corridor	Likelihood of Occurrence **	Source^
Australian Reed-warbler *Acrocephalus australis*	Dense vegetation alongside water, especially thick reed beds, as well as tall crops, bamboo thickets and lantana. Occurs throughout Australia where there is suitable habitat.	✓	Possible	2,4
Common Sandpiper *Actitis hypoleucos*	Varied coastal and interior wetland habitats including the narrow muddy edges of billabongs, river pools, mangroves, reefs and beaches. Widespread but generally uncommon.	✓	Likely	2,4
Fork-tailed Swift *Apus pacificus*	Varied; airspace over habitat ranging from rainforest to semi-desert.	✓	Likely	1,2,4
Great Egret *Ardea alba*	Floodwater, rivers, shallows of wetlands, intertidal mudflats.	✓	Likely	1
Cattle Egret *Ardea ibis*	Pasture, shallows of freshwater wetlands.	✓	Likely	1,2,4
Ruddy Turnstone *Arenaria interpres*	Beaches, coasts with exposed rock, stony or shell beaches, mudflats or reefs.	✓	Likely	4
Sharp-tailed Sandpiper *Calidris acuminata*	Widespread distribution, found in flooded fields, mudflats, mangroves, rocky shores and beaches.	✓	Likely	2,3,4
Sanderling *Calidris alba*	Open sandy beaches exposed to oceanic swells.	No	Unlikely	2

Common Name *Scientific Name*	Preferred Habitat	Preferred habitat in corridor	Likelihood of Occurrence **	Source^
Red Knot *Calidris canutus*	Distributed around the coastline on sheltered areas such as mud flats, sandbars, estuaries of harbours and lagoons.	✓	Likely	2,4
Curlew Sandpiper *Calidris ferruginea*	Found on intertidal mudflats of estuaries, lagoons, mangroves, as well as beaches, rocky shores and around lakes, dams and floodwaters and flooded saltbush surrounds of inland lakes.	✓	Likely	2,4
Red-necked Stint *Calidris ruficollis*	Sheltered inlets, bays, lagoons, estuaries, intertidal and inland mudflats and protected sandy or coralline shores. Wide distribution	✓	Likely	2,4
Great Knot *Calidris tenuirostris*	Coastal sheltered areas such as mudflats of estuaries, inlets, harbours, lagoons and mangrove swamps.	✓	Likely	4
Greater Sand Plover *Charadrius leschenaultii*	Occurs mainly on sheltered sandy, shelly or muddy beaches or estuaries with large intertidal mudflats or sandbanks.	✓	Likely	4
Lesser Sand Plover *Charadrius mongolus*	Sheltered bays, harbours and estuaries with large intertidal sand flats or mudflats.	✓	Likely	2,4
Eastern Reef Egret *Egretta sacra*	Beaches, rocky shores, tidal rivers and inlets, mangroves, and exposed coral reefs.	✓	Known	2,4,5
Lesser Frigatebird *Fregata ariel*	Usually pelagic, marine air space over tropical waters.	✓	Possible	4

Common Name *Scientific Name*	Preferred Habitat	Preferred habitat in corridor	Likelihood of Occurrence **	Source^
Latham's Snipe *Gallinago hardwickii*	Low rank vegetation around shallows of wetlands, reeds, sedges, salt marsh.	✓	Possible	1,2,4
White-bellied Sea-eagle *Haliaeetus leucogaster*	Coastal seas, islands, estuaries and inlets. Follows major rivers and wetlands far inland. Huge nests of sticks, usually in tall trees.	✓	Known	2,3,4,5
White-throated Needletail *Hirundapus caudacutus*	Variety of habitats. Aerial forager. Breeds in northern hemisphere, nests in tree hollows.	✓	Likely	1,2,4
Barn Swallow *Hirundo rustica*	Wide variety of habitats with the exception of the more heavily forested regions and drier inland areas. Often near water.	✓	Likely	1
Broad-billed Sandpiper *Limicola falcinellus*	Sheltered coastal estuaries and lagoons with intertidal mudflats, and on muddy coastal creeks and swamps. Generally uncommon	✓	Possible	2,4
Bar-tailed Godwit *Limosa lapponica*	Coastal tidal mudflats and sandbars of estuaries, lagoons, ephemeral inland lakes.	✓	Likely	2,4
Rainbow Bee-eater *Merops ornatus*	Open country, most vegetation types, sand dunes, banks.	✓	Known	1,2,4,5
Black-faced Monarch *Monarcha melanopsis*	Rainforests, mangroves, eucalypt woodlands, coastal scrub and damp gullies, along the east coast of Australia.	✓	Likely	1,2,4

Common Name *Scientific Name*	Preferred Habitat	Preferred habitat in corridor	Likelihood of Occurrence **	Source^
Spectacled Monarch *Monarcha trivirgatus*	Mainly found in coastal rainforest but also found in mangroves and gullies of dense wet Eucalypt forest	✓	Likely	1,3
Satin Flycatcher *Myiagra cyanoleuca*	Forests, woodlands, mangroves and coastal heath but avoids rainforest. Occurs along the east coast of Australia from far northern Queensland to Tasmania.	✓	Known	1,2,4,5
Little Curlew *Numenius minutus*	Coastal and inland grasslands and black soil plains in northern Australia, near swamps, billabongs and flooded areas. Widespread in the north of Australia and scattered elsewhere.	✓	Possible	1
Whimbrel *Numenius phaeopus*	Tidal and estuarine mudflats and lagoons, especially near mangroves. Common across northern Australia and uncommon to rare further south.	✓	Known	2,4,5
Ruff *Philomachus pugnax*	Mudflats and sedges around lakes, also in tidal pools and estuaries. Rare but recurrent visitor to the coast lines of Australia.	✓	Unlikely	4
Glossy Ibis *Plegadis falcinellus*	Shallows of swamps, floodwaters, irrigated pastures.	✓	Likely	2,4
Pacific Golden Plover *Pluvialis fulva*	Muddy, rocky and sandy shores, saltmarsh, estuaries, mudflats, lagoons, wetlands, shallow inland swamps, paddocks.	✓	Known	2,4,5
Grey Plover *Pluvialis squatarola*	Coastal environments such as marine shores of estuaries, in lagoons on mudflats or sandy bars, on rocky platforms and rocky coasts.	✓	Likely	2

Common Name *Scientific Name*	Preferred Habitat	Preferred habitat in corridor	Likelihood of Occurrence **	Source^
Rufous Fantail *Rhipidura rufifrons*	Rainforest, dense wet eucalypt forest, paperbark and mangrove swamps, riparian vegetation.	✓	Known	1,2,4,5
Brown Booby *Sula leucogaster*	Mainly tropical marine habitats including deep waters and inshore shallows.	✓	Possible	2,4
Wood Sandpiper *Tringa glareola*	Inland shallow freshwater wetlands and pools with emergent reeds and grass, surrounded by tall plants or dead trees and fallen timber. Widely distributed.	✓	Possible	2
Common Greenshank *Tringa nebularia*	Permanent and temporary wetlands: swamps, lakes, dams, irrigated crops, estuaries, tidal mudflats and mangroves. Summer migrant.	✓	Likely	2,4
Marsh Sandpiper *Tringa stagnatilis*	Coastal or inland, fresh or brackish wetlands such as rivers, water meadows, lagoons and swamps. Common across the far north, scattered else where in Australia.	✓	Likely	2,4
Terek Sandpiper *Xenus cinereus*	Sheltered coastal mudflats, estuaries and lagoons as well as reefs, coastal swamps and salt fields. Common summer migrant to the north coast of Australia but scarce to rare in the south.	✓	Likely	2,4

**Likelihood of Occurrence: Known: species has been recently recorded within pipeline study area; Likely: species is known from the wider study area and preferred habitat is present on site; Possible: species is known from the wider study area and suboptimal habitat is present in the pipeline study area; Unlikely: species is known from the wider study area but suitable habitat is not present in the pipeline study area.

^Source: 1 = EPBC Protected Matters Search, 2 = Birds Australia, 3 = Qld Museum Fauna Collection Records, 4 = DERM Wildlife Online, 5 = Worley Parsons (this survey).

Appendix K Legislative and approval requirements

Commonwealth Government

Environment Protection and Biodiversity Conservation Act 1999

At the Commonwealth level, the EPBC Act is applicable to those developments / actions that are likely to impact on a matter of National Environmental Significance (NES). Matters of NES likely to be affected by the project include Ramsar-listed wetlands, threatened species, and migratory species protected under international agreements .

A referral was submitted to the Federal Environment Minister to seek a determination on the existence of controlled actions under the Act and the level of environmental assessment required. The Minister has determined that the pipeline component of the Project , together with the gas fields and LNG Plant components are 'controlled actions'.

There is some potential for the project to have a significant impact on one matter of NES: the population of the endangered *Cycas megacarpa* which is present on the Callide Range (KPs 255-271) and Calliope Range (KPs 281.5-282.1). Further survey of the alignment in these sections is needed to adequately quantify the potential impact of the project on this species (see Section 7.1). Potential mitigation measures could include avoidance of the cycads (realignments, directional drilling under the Calliope Range), translocations and / or offsets (Section 7)

With the implementation of mitigation measures outlined in Section 7, the proposed project is not considered likely to significantly impact upon other matters of NES including Commonwealth listed EVR flora and fauna species or ecological communities.

QUEENSLAND GOVERNMENT

Environmental Protection Act 1994

The *Environmental Protection Act 1994* (EP Act) provides the framework to managing Queensland's environment within the principles of ecologically sustainable development. The EP Act outlines the responsibility and the duty of care all persons have to the environment and the scope and content for preparing environmental protection policies.

Regulatory controls imposed by the Act include licensing and approval systems, management mechanisms (such as audits, environmental management plans and compliance strategies) and project decommissioning regulations. The Act provides for the licensing of Environmental Relevant Activities (ERAs) as defined under the Act including activities that could cause actual or potential environmental harm by the generation of emissions or through carrying out the activity, cause contamination or are listed as 'other notifiable activities' under Schedule 2 of the Act.

The Act also provides for Environmental Protection Policies (EPPs) which deal with environmental issues in the construction and subsequent use of facilities including air quality, noise emissions, waste management and water resources.

Vegetation Management Act 1999

The VMA manages the clearing of native vegetation including remnant vegetation, vegetation in declared areas and a strategy for the protection of regulated regrowth is currently being developed. The objective of the VMA is to prevent land degradation and loss of biodiversity caused by clearing, maintain ecological processes and reduce greenhouse gas emissions.

The conservation status of remnant vegetation in Queensland is recognised under this Act and includes three categories:

- Endangered: which includes remnant vegetation where there is less than 10 % of the pre-clearing extent remaining (or 10 - 30 % remaining if the remnant is less than 10,000ha in area);
- Of Concern: which includes remnant vegetation where there is less 10 - 30 % of the pre-clearing extent remaining (or more than 30 % remaining if the remnant is less than 10,000 ha); and
- Least concern: which includes remnant vegetation where there is over 30 % of the pre-clearing extent remaining and the remnant is greater than 10,000ha.

The proposed alignment will transect mapped remnant vegetation listed under the VMA, and areas identified as regulated regrowth. However, under the *Integrated Planning Act 1997,* petroleum activities associated with the project within the project area are recognised as exempt activities and therefore are exempt from approval under the VMA. However, it is the intention of the project to minimise environmental harm and as such, consideration has been made to minimise potential impacts on remnant vegetation on site and mitigation measures to achieve this have been discussed.

Nature Conservation Act 1992

The NC Act provides a comprehensive strategy for the conservation and management of Queensland's native animals and plants. Its objective is to achieve ecological sustainability by declaration and management of protected and the protection of wildlife and wildlife habitats. Under the NC Act, the taking or destruction of listed flora and fauna species and / or protected areas is prohibited without authorisation.

Four species of flora anf five fauna species listed under the NC Act were recorded during the field survey. Listed flora and fauna species potentially present along the alignment are discussed in Sections 3.3 and 4.1, and potential impacts and mitigation measures in Sections 6 and 7.

Fisheries Act 1994

The *Fisheries Act 1994* promotes ecological sustainability through accountability in terms of the use, conservation and enhancement of the community's fisheries resources and fish habitats. Under Section 51 (1) of the Act, a permit is required for activities which result in the removal, destruction or damage to marine plants.

Marine plants are present in the intertidal areas located within the proposed RoW include the eastern coastline of the mainland located, on the western side of Curtis Island and on North Passage Island.

Water Act 2000

The *Water Act 2000* provides for the sustainable management of water and other resources, a regulatory framework for providing water and sewerage services and the establishment and operation of water authorities. Under the Water Act, a riverine protection permit is required to undertake activities involving the disturbance and / or destruction of vegetation, excavation and placing fill below the high bank mark of any watercourse, lake or spring.

The proposed alignment will transect several vegetated watercourses including the Balonne and Condamine Rivers and Dogwood Creek which may result in the removal and / or disturbance of riparian vegetation requiring DNRW approval.

Land Protection (Pest and Stock Route Management) Act 2002

The LP(P&SRM)A provides for the management of pests on land and the management of the stock route network. This Act identifies State declared plants (weeds) and animal pests and the management requirements of landholders to control these species.

Mitigation measures to minimise the introduction and / or spread of declared plants along the proposed alignment and adjacent land are outlined in Section 7.4.