

Environmental Assessment Report (Flora) for the Proposed Arrow Bowen Pipeline



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Glossary

AECOM	AECOM Australia Pty Ltd
AB	Arrow Bowen Mainline Kilometre Point
ABP	Arrow Bowen Pipeline
Arrow	Arrow Energy Ltd
BB	Brigalow Belt (Bioregion)
BD	Biodiversity status as assigned by DERM
CL	Critically Limited (RE status used in Queensland vegetation and biodiversity offset policies)
DEEDI	Queensland Department of Employment, Economic Development and Innovation
DERM	Queensland Department of Environment and Resource Management (previously the Departments of DNRW and EPA)
DEWR	Commonwealth Department of the Environment and Water Resources (now DSEWPC)
DL	Dysart Lateral Kilometre Point
DSEWPC	Commonwealth Department of the Sustainability, Environment, Water, Populations and Communities (previously DEWHA and DEH)
DNRW	Queensland Department of Natural Resources and Water (now part of DERM)
E	Endangered (RE status, threatened flora species status)
EA	Environmental Authority
EEC	Endangered Ecological Community
EIS	Environmental Impact Statement
EL	Elphinstone Lateral Kilometre Point
EMP	Environmental Management Plan
EPA	Queensland Environmental Protection Agency (now part of DERM)
EP Act	<i>Environmental Protection Act 1994</i>
ERA	Environmentally Relevant Activities
ESA	Environmentally Sensitive Area
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
EVNT	Endangered, Vulnerable and Near Threatened (threatened flora species)
GPS	Global Positioning System
HDD	Horizontal Directional Drilling
HVR	High Value Regrowth
KP	Kilometre Point (along AB, EL, SL and DL lines)
LC	Least Concern (RE status)
LP Act	<i>Land Protection (Pest and Stock Route Management) Act 2002</i>
NC Act	<i>Nature Conservation Act 1992</i>
NC	No Concern at Present (RE status)
Non-rem	Non-remnant vegetation (as defined by VM Act)
OC	Of Concern (RE status)

P&G Act	<i>Petroleum and Gas (Production and Safety) Act 2004</i>
PMAV	Property Map of Assessable Vegetation
PSL	Petroleum Survey Licence
PVMP	Property Vegetation Management Plan
RE	Regional Ecosystem
REDD	Regional Ecosystem Description Database
ROW	Right of Way
SEQ	Southeast Queensland (Bioregion)
SKM	SKM Pty Ltd
SL	Saraji Lateral Kilometre Point
Study area	10 km corridor centred on the proposed alignment (i.e. a buffer extending 5 km around the alignment)
T	Threshold (RE status used in Queensland vegetation and biodiversity offset policies)
VM Act	<i>Vegetation Management Act 1999</i>
WONS	Weeds of National Significance

Executive Summary

AECOM was commissioned to conduct a flora assessment for the proposed Arrow Bowen Pipeline (ABP). The proposed pipeline includes:

- The Arrow Bowen mainline (AB), which runs approximately 477 km from a point about 18 km north-west of Glenden to a junction with the proposed Arrow Surat Pipeline about 22 km west of Gladstone.
- The Elphinstone lateral line (EL - also known as the header line), which runs approximately 52 km from a point about 25 km south-east of Glenden to the mainline about 29 km west of Moranbah.
- The Saraji lateral line (SL), which runs approximately 26 km from a point about 11 km west of Peak Downs Mine to the mainline about 36 km west of Peak Downs Mine.
- The Dysart lateral line (DL), which runs approximately 26 km from a point about 14 km west of Dysart to the mainline about 37 km west of Dysart.

The aims of the assessment were to assess existing flora values along the proposed pipeline route, identify potential flora constraints to the project, assist in developing a pipeline route with the least ecological impact (within financial, cultural heritage, landholder and engineering constraints) and develop recommendations to avoid, mitigate or offset potential impacts on flora values. The study area included a 5 km buffer centred on the proposed alignment, with the focus on the proposed alignment Right of Way (ROW), which was assumed to be 30 m in width.

The desktop assessment was based on existing Commonwealth and State databases, ecological resources (e.g. publications, reports, websites, maps), satellite imagery, regional ecosystem (RE) mapping and consultation with the Queensland Department of Environment and Resource Management (DERM). The desktop assessment was supplemented by field studies of the proposed pipeline route, concentrating on areas of high ecological value identified in desktop studies. While investigations examined several potential routes, the revision D alignment is the focus of this assessment.

Protected Areas

The study area contains six state forests and four nature refuges, but these all lie at least 2 km from the proposed ROW. No national parks or world heritage areas lie within 5 km of the pipeline route. The ABP is unlikely to have any significant impacts on protected areas.

Vegetation Communities / REs

The majority of the proposed pipeline passes through cleared land, primarily used for cropping and grazing. The alignment transects approximately 124 km of remnant vegetation and 28 km of HVR, which is less than 22% and 5% respectively, of the proposed pipeline alignment. Assuming a 30 m wide ROW, the total disturbance area would be approximately 372.1 ha of remnant vegetation. This represents 0.19% of the remnant vegetation (of equivalent RE types) within the study area.

Queensland Herbarium RE mapping recognizes 78 REs within the study area. Field surveys and examination of satellite imagery identified 30 REs within the 30 m ROW.

The proposed alignment transects two vegetation communities listed as endangered ecological communities under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). These communities correspond to two REs with an Endangered biodiversity status (as defined by DERM) and one RE with an Of Concern biodiversity status:

- 3 areas of Brigalow (*Acacia harpophylla* dominant and co-dominant) - RE 11.4.9 and 11.3.1; and
- 2 areas of Natural grasslands of the Qld Central Highlands and the northern Fitzroy Basin – RE 11.8.11.

Two REs listed with an Endangered biodiversity status were identified within the ROW:

- 2 areas of RE 11.4.9 - *Acacia harpophylla* shrubby open forest to woodland with *Terminalia oblongata* on Cainozoic clay plains; and
- 1 area of 11.3.1 - *Acacia harpophylla* and / or *Casuarina cristata* open forest on alluvial plains.

Construction of the pipeline using the Revision D alignment would impact on up to 6.33 ha of endangered ecological communities if the full 30 m ROW contained remnant vegetation and required clearing. Implementation of the mitigation measures outlined in this report would reduce the maximum area of clearing to 5.83 ha. In most cases the proposed alignment can utilise pre-existing clearings, so actual impacts would be further reduced.

Twelve REs listed as Of Concern under the Biodiversity status were identified along the proposed alignment:

- 52 areas of *Eucalyptus tereticornis* or *E. camaldulensis* woodland fringing drainage lines (11.3.25);
- 22 areas of *Eucalyptus populnea* woodland on alluvial plains (11.3.2);
- 14 areas of *Eucalyptus populnea*, *Eremophila mitchellii* shrubby woodland on fine-grained sedimentary rocks (11.9.7);
- 6 areas of *Eucalyptus coolabah* woodland on alluvial plains (11.3.3);
- 6 areas of *Eucalyptus tereticornis* and / or *Eucalyptus* spp. tall woodland on alluvial plains (11.3.4);
- 4 areas of *Corymbia* spp. woodland on alluvial plains (11.3.7);
- 3 areas of Freshwater wetlands (11.3.27);
- 2 areas of *Eucalyptus crebra* and / or *E. populnea* and / or *E. melanophloia* on alluvial plains. Higher terraces (11.3.36);
- 2 areas of Semi-evergreen vine thicket (11.7.1x1);
- 2 areas of *Dichanthium sericeum* grassland on Cainozoic igneous rocks (11.8.11);
- 2 areas of *Eucalyptus cambageana*, *Acacia harpophylla* woodland on old sedimentary rocks with varying degrees of metamorphism and folding. Lowlands (11.11.16); and
- 1 area of *Eucalyptus* spp. and / or *Corymbia* spp. grassy or shrubby woodland on Cainozoic clay plains (11.4.2).

Up to 83.5 ha of Of Concern REs would be impacted if the entire 30 m ROW required clearing, Implementation of the mitigation measures outlined in this report would reduce the maximum area of clearing to 77.6 ha. This amount would be further reduced by utilising pre-existing clearings and reducing clearing widths in Of Concern communities adjacent to watercourses.

Other REs transected by the proposed alignment have a No Concern at Present Biodiversity Status. Field surveys and examination of aerial imagery identified 16 No Concern at Present REs within the proposed pipeline alignment:

- 49 areas of *Eucalyptus populnea* +/- *E. melanophloia* +/- *Corymbia clarksoniana* on Cainozoic sand plains / remnant surfaces (11.5.3);
- 20 areas of *Eucalyptus crebra* woodland on fine-grained sedimentary rocks (11.9.9);
- 18 areas of *Eucalyptus crebra* and other *Eucalyptus* spp. and *Corymbia* spp. woodland on Cainozoic sand plains / remnant surfaces (11.5.9);
- 13 areas of *Acacia* spp. woodland on Cainozoic lateritic duricrust. Scarp retreat zone (11.7.2);
- 8 areas of *Melaleuca* spp., *Eucalyptus crebra*, *Corymbia intermedia* woodland on Cainozoic sand plains / remnant surfaces (11.5.8);
- 8 areas of *Eucalyptus crebra* woodland on deformed and metamorphosed sediments and interbedded volcanics (11.11.15);
- 6 areas of *Eucalyptus orgadophila* open woodland on Cainozoic igneous rocks (11.8.5);
- 4 areas of *Eucalyptus moluccana* or *E. microcarpa* woodland to open forest on margins of alluvial plains (11.3.26);
- 3 areas of Mangrove forest/woodland on marine clay plains (11.1.4);
- 3 areas of *Corymbia clarksoniana* woodland and other *Corymbia* spp. and *Eucalyptus* spp. on Cainozoic sand plains / remnant surfaces (11.5.12);
- 2 areas of *Sporobolus virginicus* grassland on marine clay plains (11.1.1);

- 2 areas of *Eucalyptus crebra* woodland on igneous rocks (11.12.1);
- 2 area of *Eucalyptus crebra* woodland on old sedimentary rocks with varying degrees of metamorphism and folding. Coastal ranges (11.11.4);
- 2 area of *Eucalyptus melanophloia* woodland on igneous rocks (11.12.2);
- 1 area of *Eucalyptus melanophloia* +/- *E. orgadophila* woodland on fine-grained sedimentary rocks (11.9.2); and
- 1 area of *Eucalyptus crebra* +/- *Acacia rhodoxylon* woodland on old sedimentary rocks with varying degrees of metamorphism and folding (11.11.1).

Assuming a 30 m ROW, the proposed pipeline would require a maximum of 287.2 ha No Concern at Present RE to be cleared, representing 0.22% of these REs occurring within the study area.

The proposed ROW contains 84.2 ha of HVR vegetation, which represents approximately 0.68% of the area of HVR within the study area. This includes 19.59 ha of HVR of Endangered RE, 24.83 ha of HVR of Of Concern RE and 39.78 ha of HVR of Least Concern RE. Most occurrences of HVR are mosaics of varying vegetation density, so it is likely that clearing of HVR can be greatly reduced by utilising pre-existing clearings and minor route refinements.

Bioregional Corridors

The proposed ROW contains 162.1 km of bioregional corridors mapped by DERM, including 118.3 km of corridor of state significance and 43.8 km of corridor of regional significance. If the entire ROW contained remnant vegetation, construction would require clearing of 486.3 ha of bioregional corridors. However, potential impacts on corridors will be substantially less than these figures as 50.8% of the area identified within corridors is cleared with low ecological value in its present condition. Measures to minimise impacts on connectivity in corridors include route realignments to avoid remnant vegetation within identified corridors, avoiding large remnant trees, retaining habitat features (e.g. fallen timber, dead trees), weed control and rehabilitation immediately following construction works.

Endangered, Vulnerable or Near Threatened (ENVT) Species

Thirty four flora species considered to be Endangered, Vulnerable or Near Threatened (ENVT) under the EPBC Act or *Nature Conservation Act* 1992 (NC Act) actually or potentially occur within the study area, based on desktop investigations. Four ENVT flora species were observed within the study area during field surveys.

These species are:

- *Cerbera dumicola* (Near Threatened under the NC Act);
- *Desmodium macrocarpum* (Near Threatened under the NC Act);
- *Eucalyptus raveretiana* (Vulnerable under the NC Act and the EPBC Act); and
- *Euphorbia sarcostemmoides* (Vulnerable under the NC Act).

Cerbera dumicola is a Near Threatened species that was recorded within the ROW between AB 61 to 62, AB 63 to 64 and AB 70 to 71 (Appendix A, Figure 4). This species was recorded within lancewood (*Acacia shirleyi*) and bendee (*Acacia catenulata*) woodlands on lateritic ridges (RE 11.7.2 / 11.7.3).

Desmodium macrocarpum is a Near Threatened species that was recorded between AB 100.2 to 100.8 in poplar box (*Eucalyptus populnea*) woodland and between EL 30.8 to 31.2 in poplar gum (*Eucalyptus platyphylla*) woodland.

Eucalyptus raveretiana (black ironbox) is a Vulnerable species that was recorded along watercourse crossings containing RE 11.3.25 from AB 349 to 383. Individuals were recorded at or adjacent to four watercourse crossings within the ROW:

- Two Mile Creek (AB 349.2);
- Limestone Creek (AB 371.3) - this area is also mapped as essential habitat for black ironbox;
- Deep Creek (AB 373.4); and
- Lion Creek (AB 382.8).

Euphorbia sarcostemmoides is a Vulnerable species that was recorded within the ROW at AB 70.5. A small population of this species was found in a lancewood (*Acacia shirleyi*) community on a lateritic ridge (RE 11.7.2 / 11.7.3). This species has not been recorded in the area prior to this survey.

Freshwater and Marine Wetlands

The pipeline transects referable wetlands containing four REs:

- 11.1.1: *Sporobolus virginicus* grassland on marine clay plains (marine wetland);
- 11.1.4: Mangrove forest / woodland on marine clay plains (marine wetland);
- 11.3.25: *Eucalyptus tereticornis* or *E. camaldulensis* woodland fringing drainage lines (riverine wetland); and
- 11.3.27: Freshwater wetlands (non-riverine freshwater wetland).

The majority of wetlands observed within the alignment were narrow bands of fringing riparian vegetation along streams (RE 11.3.25). Most non-riverine freshwater wetlands within the ROW (RE 11.3.27) appeared to be ephemeral, with low abundance and diversity of aquatic vegetation. Surveys detected fourteen freshwater aquatic species, none of which are EVNT species.

Marine wetlands containing RE 11.1.1 and 11.1.4 were associated with several tidal creeks in the southern section of the mainline. Surveys detected nine marine flora species, which are all common, widespread species.

Up to 23.3 ha of wetlands would be impacted if the entire 30 m ROW required clearing, representing 0.64% of these REs occurring within the study area. This total includes 1.05 ha of marine wetlands. Horizontal Directional Drilling (HDD) methods are being investigated to avoid impacts on major watercourses (e.g. Fitzroy River, Isaac River, Clarke Creek) and marine vegetation (e.g. Raglan Creek). Route revisions are proposed to avoid non-riverine wetlands. By implementing the mitigation measures outlined in this report, the maximum area of wetland clearing would be reduced to 20 ha and the total clearing of marine vegetation to 0.1 ha. This amount would be further reduced by ongoing route refinements to avoid REs, utilising pre-existing clearings and modifications of the ROW to avoid mature vegetation.

Proposed measures to mitigate indirect impacts to wetlands include minimising clearing widths in beds of watercourses, minimising watercourse disturbance during the wet season, minimising impacts on water, sediment and nutrient flows and effective weed hygiene practices to avoid the introduction and spread of aquatic weeds.

Weeds

The construction and maintenance of the proposed pipeline has the potential to introduce new weeds and spread existing weeds. Surveys detected 12 weeds declared under the *Land Protection (Pest and Stock Route Management) Act 2002* (LP Act), eight weeds of national significance (WONS) and numerous other environmental weeds that may impact adversely on the ecological values of the study area.

Construction and maintenance activities for the pipeline have the potential to spread declared and environmental weeds into ecosystems that are currently in a natural condition. As such, good weed hygiene will be required to help mitigate the potential for weeds to be introduced or spread along the alignment.

Mitigation Recommendations

Detailed measures to avoid, mitigate and offset impacts of the proposed pipeline are described in Section 5.0 Proposed mitigation measures for vegetation include:

- Minor re-alignments of the proposed pipeline route to avoid or minimise clearing of areas of high environmental value (e.g. endangered ecological communities, Endangered and Of Concern REs, habitat for EVNT flora species, wetlands, riparian areas, marine vegetation, bioregional corridors) and areas of remnant vegetation generally;
- Use of minimum clearing widths in areas of remnant vegetation;
- Minimising clearing of large mature trees wherever possible;
- Careful management of clearing and construction works to minimise area of clearing and associated disturbance;
- Scheduling of construction during the dry season wherever possible (especially in and adjacent to watercourses and wetlands);

- Effective rehabilitation of disturbance areas following construction (including stockpiling and respreading of topsoil and vegetative wastes, weed control and revegetation where required);
- Effective sediment and erosion control systems to minimise indirect impacts on surrounding areas; and
- A weed management program, including effective weed hygiene procedures, regular weed monitoring during and after construction and weed control works as required.

Provided that the recommended mitigation measures outlined in Section 5.0 are implemented effectively, impacts are anticipated to be limited to:

- Clearing of a maximum of 372.1 ha of remnant vegetation during pipeline construction;
- Clearing of a maximum of 5.83 ha of Endangered Ecological Communities listed under the EPBC Act;
- Clearing of a maximum of 0.85 ha of REs with a biodiversity status of Endangered;
- Clearing of a maximum of 77.63 ha of REs with an Of Concern biodiversity status;
- Clearing of a maximum of 19.96 ha of REs containing wetlands;
- Clearing of a maximum of 0.1 ha of REs containing marine vegetation under the *Fisheries Act* 1994;
- Clearing of a maximum of 0.4 ha of REs containing essential habitat for EVNT species; and
- Potential impacts on habitat for four EVNT flora species recorded in surveys of the study area and a further 30 EVNT flora species identified in desktop searches.

With ongoing investigations and route refinements, it is expected that these areas will be further reduced.

Offsets

While all practicable efforts will be made to avoid and minimise impacts on flora of high ecological value, it is likely that small areas will be cleared or disturbed for construction and operation of the proposed pipeline. Where residual impacts cannot be avoided, an offset plan will be prepared and implemented to rehabilitate vegetation similar to that of the impacted vegetation in a nearby location. The goal of any offset program will be to achieve a net conservation gain by enhancing the long-term sustainability of the vegetation in the Bioregion. Offsets will be developed in liaison with relevant Commonwealth and State regulatory agencies. Based on the current investigation, offsets may be required for:

- 5.83 ha of Endangered Ecological Communities under the EPBC Act;
- 0.85 ha of REs with Endangered biodiversity status identified by DERM;
- 77.63 ha of REs with Of Concern biodiversity status identified by DERM;
- 0.4 ha of Essential Habitat identified by DERM;
- 19.96 ha of wetlands identified by DERM;
- 18.3 ha of habitat for EVNT flora species under the NC Act or EPBC Act; and
- 0.1 ha of marine vegetation under the *Fisheries Act* 1994.

However, these figures are likely to be reduced by further refinements of the proposed pipeline route and minimising ROW width in critical areas.

Further Investigations

The following surveys are proposed to quantify and mitigate potential impacts of the proposed pipeline:

- From AB 55.5 to 74, investigate a route to the east along an existing powerline to reduce impacts on populations of EVNT flora (*Euphorbia sarcostemmoides* and *Cerbera dumicola*).
- From AB 234 to 239, investigate feasibility of HDD under Isaac River and Clarke Creek (including associated access and construction requirements).
- From AB 349 to 383, investigate watercourse crossing points to reduce impacts on EVNT flora (*Eucalyptus raveretiana*).
- From AB 425 to 431, investigate a route to the west from to reduce impacts on marine vegetation and Of Concern REs.

- From AB 446 to 447, investigate options to reduce impacts on marine vegetation and Of Concern REs (including feasibility of HDD).
- From EL 27 to 35, investigate an alternative route to reduce impacts on Of Concern REs, watercourses, EVNT flora (*Desmodium macrocarpum*) and wetlands.
- From SL 7 to 88 and SL 10 to 12, investigate an alternative route to the north to avoid non-riverine wetlands and Of Concern REs.

Survey results would be used to refine the proposed pipeline, more accurately define residual impacts and assist in planning for any requirements for ecological offsets.

1.0 Introduction

Arrow Energy Pty Ltd (Arrow) commissioned AECOM Pty Ltd (AECOM) to conduct flora investigations of the proposed Arrow Bowen Pipeline (ABP) as part of the Environmental Impact Statement (EIS) being prepared by SKM Pty Ltd (SKM). The proposed pipeline includes the mainline and three lateral lines extending from Glenden to Gladstone in central Queensland.

This report provides a detailed assessment of flora and associated ecological issues relevant to the proposed pipeline and describes measures to mitigate potential impacts on ecological values.

While the study examined several potential routes, this report focuses on one alignment (revision D) that has been developed in collaboration with Arrow to address a range of issues, including potential ecological impacts associated with the construction and operation of the proposed ABP.

1.1 Scope of Works

The scope of this flora assessment is to:

- Assess the existing flora characteristics of the proposed pipeline route, through both desktop and field studies, including identification and description of the proposed route in terms of:
 - Vegetation communities / Regional Ecosystems (REs);
 - Listed Endangered, Vulnerable and Near Threatened (EVNT) flora species, both observed and potentially present;
 - General flora and ecosystem values;
 - Aquatic flora;
 - Pest flora; and
 - Environmentally sensitive areas (ESAs) that are relevant to flora values.
- Identify suitable locations for pipeline route refinements to be adopted for the purposes of minimising potential impacts on ecological values.
- Identify potential impacts on ecological features and values that may result from the construction of a pipeline within the revision D alignment.
- Identify appropriate measures to help avoid, minimise, mitigate and compensate for (i.e. offset) potential impacts to ecological features and values.

1.2 Assumptions and Limitations

The present report assesses the revision D alignment supplied by Arrow in August 2011 (Appendix A, Figure 1). Assessments of more recent alignment changes were not incorporated into this report.

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 Department of Sustainability, Environment, Water, Population and Communities (DSEWPC) Environment Protection and Biodiversity Conservation (EPBC) Protected Matters Search website are based on a combination of actual records, primarily from State Government databases, combined with modelled distributions of species according to their ecological characteristics. Species and communities identified by this search may occur in the search area, but require further investigation to confirm their presence.

As the presence or otherwise of a particular flora species within the site can only be confirmed by detailed targeted field surveys, the precautionary approach has been adopted throughout this assessment. A species is assumed to occur in the study area if it was recorded in database searches for the region and RE mapping and / or field surveys indicated suitable habitat for the species is present, based on existing knowledge of the species' ecological requirements.

The most recent Queensland Herbarium RE mapping (Version 6.0) for this region is mapped at 1:100 000 scale from 2005 imagery. Actual vegetation may differ from mapped REs due to mapping scale and clearing activities since 2005. For example, small remnants along creeks and road reserves may not be mapped and small scale variation within larger remnants may not be recognised. While field surveys aimed to survey all Endangered REs, most Of Concern REs and at least one occurrence of each No Concern at Present RE along the pipeline route, it was not possible to ground truth all mapped remnant vegetation due to time and access constraints. Access to some areas was not possible during the June or September survey due to the prolonged wet season and landholder constraints. A combination of RE mapping, field observations and aerial imagery was therefore used to estimate the areas of each RE type which occurs or potentially occurs within the pipeline route and the study area. All clearing requirements are calculated based on a 30 m wide Right of Way (ROW).

Many map units within RE mapping are mosaic polygons, which contain a mixture of several REs. The proportion of each RE within a mosaic polygon is estimated from aerial imagery, so area calculations based on mosaic polygons are also estimates. Further errors may be introduced when calculating the areas of REs that are transected by the 30 m ROW through mosaic polygons. It is unlikely that each RE within the mosaic will be evenly distributed and therefore any one section of the polygon is likely to have differing proportions of each of the listed REs.

Whilst a significant proportion of the study area is cleared and is likely to be suitable for locating infrastructure which will be required for the construction and operation of the pipeline, the specific locations for any new access roads that may be required, construction camps and other support infrastructure were not known at the time of the assessment. It is assumed that these would be subject to a similar ecological assessment to identify and mitigate potential impacts.

1.3 Review of Relevant Legislation

1.3.1 Commonwealth

Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

The EPBC act is administered by the DSEWPC and protects areas identified as matters of national environmental significance, including

- World Heritage properties;
- National Heritage places;
- Wetlands of international significance (Ramsar wetlands);
- Listed threatened species and ecological communities;
- Migratory species protected under international agreements;
- Commonwealth marine areas; and
- Nuclear actions.

Based on the current flora assessment, the ABP project may have significant impacts on listed threatened flora species and threatened ecological communities.

If a development proposal involves an action that may have a significant impact on matters of national environmental significance, it must be referred to DSEWPC for assessment. If DSEWPC determines that the proposed action is likely to have significant impacts, the project will be considered to be a Controlled Action and will require formal assessment and approval. A separate EPBC referral will be prepared for the ABP project.

1.3.2 State

Environmental Protection Act 1994 (EP Act)

The EP Act is intended to protect Queensland's environment while allowing for development that improves total quality of life, now and in the future, by encouraging ecologically sustainable development. The Act regulates environmentally relevant activities (ERAs), which include mining or petroleum activities and others prescribed by the EP Regulation. Petroleum activities are classified within two levels of ERA, based on the risk of environmental harm. The Department of Environment and Resource Management (DERM) assesses applications to undertake ERAs and issues Environmental Authorities (EAs) that identify environmental conditions that must be met to prevent and / or minimise the likelihood of environmental harm caused by authorised ERAs.

DERM granted an EA (PEN 201616610) on 18 January 2011 to survey and investigate the potential and suitability for the construction and operation of the proposed ABP. This is a non-code compliant level 2 EA.

Construction of a new transmission pipeline is classified as a Level 1 petroleum activity. As part of the EA application, a voluntary Environmental Impact Statement (EIS), Environmental Management Plan (EMP) and supporting technical documents will be developed and submitted. The EMP will outline the general environmental and social aspects of the Project (including associated facilities, construction camps etc.) and sets environmental protection commitments for construction and operations. These documents will help DERM decide the conditions of the EA for petroleum activities. The Standard Criteria defined in Schedule 4 of the EP Act will be considered in the preparation of the EIS, EMP and associated technical documents. DERM has issued Terms of Reference to guide the development of the EIS.

Environmental conditions of particular relevance to the current flora assessment are environmentally sensitive areas (ESA). DERM defines an ESA as a location, however large or small, that has environmental values that contribute to maintaining biological diversity and integrity, has intrinsic or attributed scientific, historical, or cultural heritage value, or is important in providing amenity, harmony or sense of community. ESAs are broken down into three categories. Category A and B areas are defined in the *Environmental Protection Regulation 2008*, while Category C areas are generally defined in Environmental Authorities prepared for specific petroleum activities.

Category A areas that have significant ecological values include national parks, marine parks, conservation parks, forest reserves, the Wet Tropics World Heritage Area and the Great Barrier Reef region. Category B areas include regional ecosystems (REs) with an Endangered biodiversity status (BD status), Ramsar wetlands, state forest parks, wilderness areas, areas seaward of the highest astronomical tide, fish habitat areas and areas containing marine plants. Category C areas typically include REs with an Of Concern biodiversity status, essential habitat, referable wetlands, nature refuges, state forests, timber reserves, declared water catchment areas, Koala habitat areas and resources reserves. For the purposes of ESAs, the biodiversity status of the RE is considered, not the status under the *Vegetation Management Act 1999* (VM Act).

Petroleum and Gas (Production and Safety) Act 2004 (P&G Act)

The P&G Act aims to facilitate and regulate the carrying out of responsible petroleum activities and the development of a safe, efficient and viable petroleum and fuel gas industry. The Act issues licences to undertake surveys and construction and operation of petroleum facilities (including a gas pipeline).

A Petroleum Survey Licence (PSL) was issued by the Department of Employment and Economic Development and Innovation (DEEDI) on 17 February 2011. The PSL (PSL 64) provides land access enabling field assessments to be undertaken for ecological and cultural heritage surveys and engineering and construction inspections, particularly to refine route selection.

Approval under the P&G Act exempts some pipeline activities from approval under other Acts, for example vegetation clearing under the VM Act. Exemptions only apply if works are conducted for activities authorised under the licence within the specified licence area.

Nature Conservation Act 1992 (NC Act)

The NC Act and associated regulations provide for the conservation of nature, including declaration and management of protected areas, protection of wildlife and habitat, and the sustainable use of native wildlife and areas.

The *Nature Conservation (Wildlife) Regulation 2006* lists the plants and animals considered presumed extinct, endangered, vulnerable, near threatened, least concern, international and prohibited. The *Nature Conservation (Protected Areas Management) Regulation 2006* identifies protected areas, including national parks, conservation parks, resources reserves, forest reserves and nature refuges. The Act and associated regulations discuss the significance of each group and states the declared management intent and the principles to be observed in any taking and use for each group.

The NC Act and regulations state that any person taking, using or interfering with protected fauna is required to have a Wildlife Rehabilitation Permit (spotter-catcher) and to possess the training and skills required to undertake this activity. Such a permit will allow a person to rescue and release a sick, injured or orphaned protected animal; or a protected animal whose habitat has been, or will be, destroyed by human activity or a natural disaster.

A clearing permit is also likely to apply to taking, using or interfering with protected flora under this Act. Protected flora includes all native flora species.

Vegetation Management Act 1999 (VM Act)

The VM Act regulates the clearing of native vegetation in Queensland. Approval under the Act is required if remnant vegetation is to be cleared, with applications for approval likely to be accompanied by a Property Vegetation Management Plan (PVMP). An exemption applies where the clearing is for an authorised petroleum activity, as defined under the P&G Act. Accordingly, vegetation clearing under an authorised pipeline licence is exempt from assessment under the VM Act, including incidental activities undertaken within the area covered by the pipeline licence. Vegetation clearing related to incidental activities outside the pipeline licence area, such as camps and borrow pits, would require development approval and a clearing permit under the VM Act.

Fisheries Act 1994

The main purpose of this Act is to provide for the use, conservation and enhancement of the community's fisheries resources and fish habitats to promote ecologically sustainable development. Under the Act, a permit is required to remove, destroy or damage marine plants. Marine plants include plants that usually grow on or adjacent to tidal land and plants prescribed as a marine plant under a regulation or management plan.

Queensland Government Environmental Offsets Policy

The Queensland Government Environmental Offsets Policy provides an integrated, consistent and transparent framework for applying environmental offsets in Queensland. Environmental offsets are used to replace the value of environmental features lost during development. However, offsets should only be considered after all environmental impacts have been avoided and minimised and if all other government environmental standards have been met. An offset may be located within or outside the geographic site of the impact.

Relevant specific-issue offset policies under the Queensland Government Environmental Offsets Policy include:

- Policy for Vegetation Management Offsets, version 3 (September 2011), administered by DERM;
- Biodiversity Offset Policy, version 1 (October 2011), administered by DERM; and
- Mitigation and Compensation for Works or Activities Causing Marine Fish Habitat Loss (2002), administered by DEEDI.

As vegetation clearing for a petroleum activity is exempt from assessment under the VM Act, it is likely that the project is also exempt from offset requirements under the Policy for Vegetation Management Offsets. However, offsets for clearing of Endangered and Of Concern REs are also required under the recently introduced Biodiversity Offset Policy. This policy describes offset requirements for impacts to a range of State significant biodiversity values, including:

- EVNT species listed under the NC Act;
- Wetlands and watercourses;
- Endangered and Of Concern REs (including grassland REs);
- High Value Regrowth (HVR) of Endangered and Of Concern REs;
- Threshold and critically limited REs;
- Essential habitat; and
- Remnant or regrowth areas that are within 500 m of a State significant biodiversity value and that provide important connectivity or are at least 5 ha in size.

2.0 Assessment Methodology

2.1 Assessment Team

The flora desktop review and field assessments were conducted by Con Lokkers (Principal Environmental Scientist), Alan House (Principal Environmental Scientist), Jodi Wood (Professional Environmental Scientist), David Moore (Senior Environmental Scientist), Carissa Free (Professional Environmental Scientist), Julian Buttigieg (Professional Environmental Scientist), Martha Rees (Professional Environmental Scientist) and Deanna Bayliss (Professional Environmental Scientist) from November 2010 and September 2011.

2.2 Study Area

The study area considered in this report is a 10 km wide corridor centred on the proposed alignment (i.e. a buffer extending 5 km either side of the route). The proposed pipeline includes:

- The Arrow Bowen mainline (AB), which runs approximately 477 km from a point about 18 km north-west of Glenden to a junction with the proposed Arrow Surat Pipeline about 22 km west of Gladstone.
- The Elphinstone lateral line (EL - also known as the header line), which runs approximately 52 km from a point about 25 km south-east of Glenden to the mainline about 29 km west of Moranbah.
- The Saraji lateral line (SL), which runs approximately 26 km from a point about 11 km west of Peak Downs Mine to the mainline about 36 km west of Peak Downs Mine.
- The Dysart lateral line (DL), which runs approximately 26 km from a point about 14 km west of Dysart to the mainline about 37 km west of Dysart.

The density of flora and fauna specimens collated from Queensland Herbarium, Queensland Museum and Wildnet databases was significantly lower in the north-western half of the pipeline (i.e. west of the Broadsound Range from AB 0 to AB 310) than in the south-eastern half. To compensate for the discrepancy in specimen density, a larger buffer of 10 km (i.e. a 20 km corridor centred on the proposed alignment) was utilised for flora and fauna database searches west of the Broadsound Range, while the standard 5 km buffer was used in the section east of the range.

Field studies concentrated on the Right of Way (ROW) for the proposed alignment, which is assumed to be 30 m in width. While investigations examined several potential routes, the revision D alignment presented in Figure 1 (Appendix A) is the focus of this assessment.

2.3 Taxonomic Nomenclature

Scientific names of plants used in this report follow the Queensland Herbarium (Bostock and Holland, 2010).

2.4 Determination of Significance Level for Flora

The significance of vegetation communities is described as per their listings in the *Australian Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) as Critically Endangered (CE), Endangered (E) or Vulnerable (V).

The significance of Regional Ecosystems (REs) is classified by:

- Their biodiversity status as Endangered (E), Of Concern (OC) and No Concern at present (NC), sourced from the Regional Ecosystem Description Database (REDD); and
- Their remnant extent as Critically Limited (CL) and Threshold (T), sourced from the Queensland vegetation and biodiversity policies.

Listed Endangered, Vulnerable or Near Threatened (EVNT) flora species are defined as those taxa listed in the EPBC Act and / or the Queensland *Nature Conservation Act 1992* (NC Act) as Critically Endangered (CE), Endangered (E), Vulnerable (V) or Near Threatened (NT). All other native flora species have been designated as being Least Concern.

2.5 Flora Desktop Assessment

The flora desktop assessment included:

- A review of Queensland Herbarium RE mapping (version 6.0) for a buffer extending 5 km around the proposed alignment (the study area), to identify the vegetation communities mapped at a scale of 1:100,000 as occurring in the study area (Appendix A, Figure 1). This mapping also provided mapping of Essential Habitats, which are areas in which an EVNT species has been known to occur. An examination of aerial photography was used in conjunction with the existing vegetation mapping. This review provided an appreciation of the vegetation types within the wider study area and the project's proximity to sensitive areas.
- A review of the Environmentally Sensitive Area (ESA) mapping by DERM to identify sensitive environmental values in the study area, including significant wetlands, Endangered and Of Concern REs and protected areas.
- Reviews of species data from Queensland Herbarium HerbreCs and DERM Wildnet databases, which were sourced in December 2010. Reviews focussed on EVNT flora species that are known to occur or potentially occur within the wider study area. The data search area was divided into four boxes bound by the following coordinates:
 - Box 1: 21° to 22° S latitude and 147.5° to 148.5° E longitude;
 - Box 2: 22° to 23° S latitude and 148° to 149° E longitude;
 - Box 3: 22.5° to 23.5° S latitude and 149° to 150° E longitude; and
 - Box 4: 23° to 24° S latitude and 150° to 151.5° E longitude.
- A review of species and ecological communities identified in DSEWPC Protected Matters Searches of the study area. An initial search was undertaken in December 2010, and an updated search was conducted in September 2011 to incorporate the Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions community (listed as an Endangered Ecological Community in March 2011).
- A review of wetland mapping by DERM (2009) to determine the classification, extent and significance of wetlands within the study area.
- A review of biodiversity and corridor mapping prepared by DERM (2008) for the Brigalow Belt Biodiversity Planning Assessment.

2.6 Flora Field Survey

Field assessments were conducted from 14 June to 4 July and 29 August to 11 September 2011. During these surveys, 34 sites were assessed to tertiary level (detailed sites), with a further 358 sites assessed to quaternary level (observational sites). These sites are mapped in Figure 2 (Appendix A). Detailed flora assessments were focussed on floristic hot spots – locations determined from the desktop reviews as most likely to support EVNT species and / or significant vegetation communities.

The field assessments included:

- Investigation of the presence / absence or likely presence / absence of EVNT flora species, as identified on the State and Commonwealth database lists.
- Ground-truthing of 392 sites within the proposed ROW or potential alternative ROW alignments. This included 358 quaternary level assessments and 34 tertiary level assessments (Neldner et al., 2005). Quaternary assessments recorded dominant canopy species and were used primarily to ground truth and record boundaries of REs as mapped by the Queensland Herbarium. Tertiary assessments recorded an inventory of observed woody flora species, their average height and their approximate abundance (including native and exotic flora species) and focused on locating any potential EVNT flora species.
- Observations on the wider environment surrounding each site so that the potential impacts associated with the proposed clearing could be discussed in local, State and Commonwealth contexts.

The flora site surveys were undertaken in accordance with the Queensland Herbarium vegetation survey methods described in Neldner et al. (2005). The following data were collected for the tertiary sites:

- Confirmation of the mapped RE;
- A general description of the vegetation;
- Structural characteristics of the vegetation (based on life forms, strata, approximate height and percentage cover);
- Groundcover characteristics;
- Vegetation condition (integrity as either pristine, excellent, very good, good, average, degraded or completely degraded);
- Occurrence of weed species;
- Dominant species in each structural component (stratum) of the vegetation;
- Patch size, shape and connectivity;
- Landscape characteristics;
- Geology and soil characteristics, including erosion;
- Wetland characteristics (if present); and
- Notes on particular sensitivities to the proposed impacts.

Where important plant species could not be identified in the field (e.g. dominant and characteristic species, suspected EVNT species), specimens were collected in plant presses for further analysis and / or identification by the Queensland Herbarium. Plant specimens were collected under Scientific Purposes Permit WISP071811610.

The general distribution of significant pest plants within the corridor was also noted.

Location coordinates were taken using hand held Getac devices running Arcpad mobile GIS software (accuracy to approximately 10 m) to assist in validating the existing Queensland Herbarium vegetation mapping.

2.7 Analysis and Interpretation

REs to be potentially cleared were assessed using Queensland Herbarium RE mapping (Version 6.0), with any corrections as identified by field ground-truthing and available aerial imagery. Estimated clearing areas were calculated for each RE based on the proposed clearing width of 30 m within the ROW. To help consider the significance of this proposed clearing in a regional context, the estimated area of each RE type occurring within the study area was calculated. The proposed clearing within each RE could then be expressed as a percentage of its area within the 5 km buffer.

Plant specimens collected during the field survey were analysed using available literature, keys and AECOM Herbarium specimens. Fine identifying features (e.g. oil dots, hairs) were examined using a dissecting microscope. If necessary, specimens were sent to the Queensland Herbarium for identification. Specimens of EVNT flora species were also sent to the Queensland Herbarium for confirmation.

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3.0 Description of Environmental Values of Terrestrial Flora

The proposed pipeline route transects or lies adjacent to a variety of land tenures and uses, including:

- Freehold and leasehold land, used primarily for dryland cropping and grazing;
- Mining tenures;
- State Forests used for timber production (Table 1);
- Nature Refuges (Table 1);
- Other reserves such as road reserves and stock routes; and
- Other infrastructure easements (electricity, gas, telecommunications).

3.1 Environmentally Sensitive Areas

Desktop investigations have identified the following ESAs of ecological significance to flora within the ROW and / or study area:

- Endangered REs (Category B).
- Of Concern REs (Category C).
- Protected Area Estates:
 - State forests (Category C); and
 - Nature refuges (Category C).
- Essential habitat (Category C).

These are discussed further in following sections.

3.2 Protected Area Estates

Areas protected under the NC Act that are in proximity to the pipeline are listed in Table 1. The ROW does not transect any protected area estate, but lies within 5 km of six state forests and four nature refuges. No national parks or world heritage areas occur within 5 km of the ABP.

The Great Barrier Reef World Heritage Area and Marine Park adjoins the coast of north and central Queensland. Although the ROW does not directly impact the Great Barrier Reef region, it runs through the Calliope, Fitzroy and Burdekin catchments, which flow into the Great Barrier Reef lagoon.

Table 1 Protected Area Estate within the Study Area

Estate Name	Lot and Plan	Location Relative to Nearest KP
Newlands Nature Refuge	14 SP225054	2 km west of AB 0
Kemmis Creek Nature Refuge	12 SP236271	4.7 km north-east of EL 0
Coolibah Nature Refuge	9 CNS42	2 km south of DL 0 – DL 1
Eugene State Forest	65 FTY1503	2km north of AB 302-AB 304 and 2km north-east of AB 298-AB 302
Develin State Forest	66 FTY1343	4.5km south-west of AB 312-AB 314
Aricia State Forest	11 4FTY861	2km north of AB 334-AB 339
Morinish State Forest	878 FTY842	5km south-west of AB 360-AB 362
Bouldercombe State Forest	950 FTY1794	3.5km north of AB 405
Pindari Nature Refuge	181 DS631	4km south of AB 440
Mount Larcom State Forest	208 FTY1451	5km north-north-east of AB 466

3.3 Vegetation Communities and Regional Ecosystems

The pipeline passes through the Brigalow Belt Bioregion (Bioregion 11). Queensland Herbarium RE mapping recognises 78 REs within the 5 km buffer area (Table 2). Field surveys and examination of satellite imagery identified 30 REs within the ROW (Table 2).

Field inspections generally agreed with RE mapping, with some minor discrepancies that could be attributed mostly to mapping scale. Field surveys assessed vegetation within a narrow 30 m wide corridor, so were capable of detecting much smaller scale vegetation patterns than the 1:100,000 RE mapping. Field inspections also recorded clearing that had occurred following compilation of the most recent RE mapping.

The proposed alignment is characterised by predominantly non-remnant land (428.79 km or 73.8% of the alignment), most of which is cropping and grazing land. Remnant vegetation occurs along 124.03 km (21.4%) of the proposed alignment and HVR along 28.06 km (4.8%). Remnant vegetation is comprised of 0.44 km of Endangered REs (0.07% of the alignment), 27.8 km of Of Concern REs (4.79% of the alignment) and 95.7 km of No Concern at Present REs (16.4% of the alignment). The most prominent vegetation types within the study area include:

- 33.93 km of the No Concern at Present poplar box woodland on residual Cainozoic sand plains (RE 11.5.3); and
- 19.33 km of the No Concern at Present ironbark woodland on fine-grained sedimentary rocks (RE 11.9.9).

A sequential breakdown of REs along the proposed alignment is given in Table 22 (Appendix B).

Table 2 REs within the Proposed Pipeline ROW and 5 km Buffer

RE Code	Area (ha)		% in Buffer*	Status #			Description	Extent ^ Reserved	Biodiversity Values ^^
	ROW	5 km Buffer		EPBC	VM Act	BD			
11.1.1	0.49	216.23	0.23		LC	NC	<i>Sporobolus virginicus</i> grassland on marine clay plains.	Medium	Provides estuarine wetland habitat.
11.1.2a	0	4,810.68	0.00		LC	NC	Samphire forbland on marine clay plains (mud flats on Quaternary estuarine deposits, with very isolated stunted mangroves).	High	Provides estuarine wetland habitat.
11.1.4	0.56	533.46	0.10		LC	NC	Mangrove forest/woodland on marine clay plains.	High	Provides estuarine wetland habitat.
11.3.1	0.84	4,044.62	0.02	E	E	E	<i>Acacia harpophylla</i> and / or <i>Casuarina cristata</i> open forest on alluvial plains.	Low	Habitat for EVNT fauna species including painted honeyeater <i>Grantiella picta</i> particularly in sub region 35.
11.3.2	27.20	12,617.49	0.22	E where <i>Acacia pendula</i> dominant*	OC	OC	<i>Eucalyptus populnea</i> woodland on alluvial plains.	Low	Habitat for EVNT flora species including <i>Homopholis belsonii</i> .
11.3.3	2.7	4,067.82	0.07	E for southern Brigalow Belt **	OC	OC	<i>Eucalyptus coolabah</i> woodland on alluvial plains.	Low	Mature trees provide hollows for fauna especially nesting birds. Associated with a high number fauna species.
11.3.4	1.96	5,486.8	0.04	-	OC	OC	<i>Eucalyptus tereticornis</i> and / or <i>Eucalyptus</i> spp. tall woodland on alluvial plains.	Low	Habitat for EVNT flora species including <i>Eucalyptus raveretiana</i> in sub regions 12 and 17.
11.3.7	5.05	1,058.34	0.48	-	LC	OC	<i>Corymbia</i> spp. woodland on alluvial plains.	Low	Habitat of the northern hairy-nosed wombat <i>Lasiorhinus krefftii</i> .
11.3.10	0	4.06	0.00	-	LC	NC	<i>Eucalyptus brownii</i> woodland on alluvial plains.	Low	-

RE Code	Area (ha)		% in Buffer*	Status #			Description	Extent ^ Reserved	Biodiversity Values ^^
	ROW	5 km Buffer		EPBC	VM Act	BD			
11.3.11	0	181.82	0.00	E	E	E	Semi-evergreen vine thicket on alluvial plains.	Low	Habitat for EVNT flora species including <i>Actephila sessilifolia</i> , <i>Atalaya calcicola</i> and <i>Eucalyptus raveretiana</i> (within Dipperu NP).
11.3.12	0	32.63	0.00	-	LC	NC	<i>Melaleuca viridiflora</i> , <i>M. argentea</i> +/- <i>M. dealbata</i> woodland on alluvial plains (palustrine wetland).	Low	-
11.3.21	0	770.52	0.00	E	E	E	<i>Dichanthium sericeum</i> and / or <i>Astrebala</i> spp. grassland on alluvial plains. Cracking clay soils.	Low	Habitat for EVNT flora species including <i>Thesium australe</i> , <i>Picris evae</i> , <i>Stemmacantha australis</i> , <i>Dichanthium queenslandica</i> , <i>Bothriochloa biloba</i> and <i>Digitaria porrecta</i> and fauna species including <i>Tympanocryptis pinguicolla</i> , <i>Anomalopus mackayi</i> and <i>Hemiaspis damelii</i> .
11.3.25	20.75	10,700.36	0.19	-	LC	OC	<i>Eucalyptus tereticornis</i> or <i>E. camaldulensis</i> woodland fringing drainage lines.	Low	Habitat for EVNT flora species including <i>Eucalyptus raveretiana</i> . Associated with high fauna species richness in the Taroom area. Known habitat for the EVNT freshwater turtle <i>Rheodytes leukops</i> within parts of the Fitzroy catchment. Known to be important habitat for other riparian freshwater turtle species.
11.3.26	4.27	3,127.41	0.14	-	LC	NC	<i>Eucalyptus moluccana</i> or <i>E. microcarpa</i> woodland to open forest on margins of alluvial plains.	Low	-

RE Code	Area (ha)		% in Buffer*	Status #			Description	Extent ^ Reserved	Biodiversity Values ^^
	ROW	5 km Buffer		EPBC	VM Act	BD			
11.3.27	1.44	1,189.23	0.12	-	LC	OC	Freshwater wetlands.	Low	Habitat for a diverse range of fauna species, particularly birds. The EVNT <i>Hydrocharis dubia</i> may occur in this RE. The EVNT <i>Aponogeton queenslandicus</i> may occur on heavy clays.
11.3.35	0	151.6	0.00	-	LC	NC	<i>Eucalyptus platyphylla</i> , <i>Corymbia clarksoniana</i> woodland on alluvial plains.	Low	-
11.3.36	2.42	333.09	0.73	-	OC	OC	<i>Eucalyptus crebra</i> and / or <i>E. populnea</i> and / or <i>E. melanophloia</i> on alluvial plains. Higher terraces.	Low	-
11.3.37	0	0.65	0.00	-	LC	NC	<i>Eucalyptus coolabah</i> fringing woodland on alluvial plains.	Low	-
11.4.1	0	6.67	0.00	E	E	E	Semi-evergreen vine thicket +/- <i>Casuarina cristata</i> on Cainozoic clay plains.	Medium	Habitat for the EVNT plant <i>Macropteranthes leiocaulis</i> .
11.4.2	0.17	408.72	0.04	-	OC	OC	<i>Eucalyptus</i> spp. and / or <i>Corymbia</i> spp. grassy or shrubby woodland on Cainozoic clay plains.	Low	-
11.4.4	0	84.21	0.00	E	LC	OC	<i>Dichanthium</i> spp., <i>Astrelba</i> spp. grassland on Cainozoic clay plains.	None	Habitat for EVNT flora species including <i>Dichanthium queenslandicum</i> . Often occurs adjacent to lower lying areas dominated by regional ecosystems 11.4.11 and 11.3.3.
11.4.5	0	25.21	0.00	-	OC	E	<i>Acacia argyrodendron</i> woodland on Cainozoic clay plains.	Low	-

RE Code	Area (ha)		% in Buffer*	Status #			Description	Extent ^ Reserved	Biodiversity Values ^^
	ROW	5 km Buffer		EPBC	VM Act	BD			
11.4.8	0	851.58	0.00	E	E	E	<i>Eucalyptus cambageana</i> woodland to open forest with <i>Acacia harpophylla</i> or <i>A. argyrodendron</i> on Cainozoic clay plains.	Low	-
11.4.9	0.5	2,069.69	0.02	E	E	E	<i>Acacia harpophylla</i> shrubby open forest to woodland with <i>Terminalia oblongata</i> on Cainozoic clay plains.	Low	Examples of this RE with seasonally ponded gilgai may contain the EVNT plant <i>Aponogeton queenslandicus</i> .
11.4.13	0	307.27	0.00	-	LC	E	<i>Eucalyptus orgadophila</i> open woodland on Cainozoic clay plains.	Low	-
11.5.2	0	1,064.18	0.00	-	LC	NC	<i>Eucalyptus crebra</i> , <i>Corymbia</i> spp., with <i>E. moluccana</i> on lower slopes of Cainozoic sand plains / remnant surfaces.	Low	-
11.5.3	101.80	25,274.1	0.40	-	LC	NC	<i>Eucalyptus populnea</i> +/- <i>E. melanophloia</i> +/- <i>Corymbia clarksoniana</i> on Cainozoic sand plains / remnant surfaces.	Low	-
11.5.8	11.45	1,137.37	1.01	-	LC	NC	<i>Melaleuca</i> spp., <i>Eucalyptus crebra</i> , <i>Corymbia intermedia</i> woodland on Cainozoic sand plains / remnant surfaces (<i>Eucalyptus platyphylla</i> woodland on white-yellow weathered sands).	Low	-
11.5.9	28.9	6,793.98	0.43	-	LC	NC	<i>Eucalyptus crebra</i> and other <i>Eucalyptus</i> spp. and <i>Corymbia</i> spp. woodland on Cainozoic sand plains / remnant surfaces (<i>E. crebra</i> , <i>E. tenuipes</i> , <i>Lysicarpus angustifolius</i> + <i>Corymbia</i> spp).	Low	-

RE Code	Area (ha)		% in Buffer*	Status #			Description	Extent ^ Reserved	Biodiversity Values ^^
	ROW	5 km Buffer		EPBC	VM Act	BD			
11.5.12	3.95	1,324.67	0.30	-	LC	NC	<i>Corymbia clarksoniana</i> woodland and other <i>Corymbia</i> spp. and <i>Eucalyptus</i> spp. on Cainozoic sand plains / remnant surfaces.	Low	-
11.5.15	0	106.48	0.00	E	LC, T	E	Semi-evergreen vine thicket on Cainozoic sand plains / remnant surfaces.	Low	Habitat for EVNT flora species including <i>Fontainea fugax</i> , <i>Macropteranthes leiocaulis</i> , <i>Pomaderris clivicola</i> and <i>Cadellia pentastylis</i> and a wide range of flora and fauna species with disjunct distributions.
11.5.16	0	11.38	0.00	E	E	E	<i>Acacia harpophylla</i> and / or <i>Casuarina cristata</i> open forest in depressions on Cainozoic sand plains / remnant surfaces.	Low	-
11.5.17	0	4.13	0.00	-	E	E	<i>Eucalyptus tereticornis</i> woodland in depressions on Cainozoic sand plains / remnant surfaces.	Low	Provides wetland habitat for a flora and fauna.
11.5.18	0	25.82	0.00	-	OC	OC	<i>Micromyrtus capricornia</i> shrubland on Cainozoic sand plains / remnant surfaces.	Medium	-
11.7.1x1	0.52	152.16	0.34	-	LC	OC	<i>Acacia harpophylla</i> and / or <i>Casuarina cristata</i> and <i>Eucalyptus thozetiana</i> or <i>E. microcarpa</i> woodland on lower scarp slopes on Cainozoic lateritic duricrust.	Low	Habitat for EVNT flora species including <i>Cadellia pentastylis</i> .
11.7.2	19.41	9,647.04	0.20	-	LC	NC	<i>Acacia</i> spp. woodland on Cainozoic lateritic duricrust. Scarp retreat zone.	Low	Habitat for EVNT flora species including <i>Acacia wardellii</i> .
11.7.3	0	1,202.37	0.00	-	LC	NC	<i>Eucalyptus persistens</i> , <i>Triodia mitchellii</i> open woodland on stripped margins of Cainozoic lateritic duricrust.	Low	-

RE Code	Area (ha)		% in Buffer*	Status #			Description	Extent ^ Reserved	Biodiversity Values ^^
	ROW	5 km Buffer		EPBC	VM Act	BD			
11.7.4	0	314.97	0.00	-	LC	NC	<i>Eucalyptus decorticans</i> and / or <i>Eucalyptus</i> spp., <i>Corymbia</i> spp., <i>Acacia</i> spp., <i>Lysicarpus angustifolius</i> on Cainozoic lateritic duricrust.	Low	-
11.7.5	0	3.93	0.00	-	LC	NC	Shrubland on natural scalds on deeply weathered coarse-grained sedimentary rocks.	Low	Habitat of EVNT flora species including <i>Acacia curranii</i> , <i>Calytrix gurlmundensis</i> , <i>Eucalyptus broviniensis</i> , <i>E. pachycalyx</i> , <i>E. viridis</i> , <i>Homoranthus decumbens</i> , <i>H. melanostictus</i> , <i>Micromyrtus carinata</i> and <i>Micromyrtus patula</i> .
11.7.6	0	19.09	0.00	-	LC	NC	<i>Corymbia citriodora</i> or <i>Eucalyptus crebra</i> woodland on Cainozoic lateritic duricrust.	Low	-
11.8.5	31.78	9,970.02	0.32	-	LC	NC	<i>Eucalyptus orgadophila</i> open woodland on Cainozoic igneous rocks.	Low	In southern part of bioregion, habitat for a number of EVNT flora species including <i>Bothriochloa biloba</i> , <i>Digitaria porrecta</i> , <i>Discaria pubescens</i> , <i>Indigofera baileyi</i> , <i>Picris evae</i> , <i>Stemmacantha australis</i> and <i>Thesium australe</i> .
11.8.11	4.99	5,397.11	0.09	E	OC	OC	<i>Dichanthium sericeum</i> grassland on Cainozoic igneous rocks.	Low	Habitat for EVNT flora species including <i>Dichanthium queenslandicum</i> and <i>Trioncinia retroflexa</i> which is currently known from three small populations.
11.8.13	0	571.93	0.00	E	E	E	Semi-evergreen vine thicket and microphyll vine forest on Cainozoic igneous rocks.	Low	Habitat for EVNT flora species including <i>Atalaya calcicola</i> and <i>Croton magneticus</i> .

RE Code	Area (ha)		% in Buffer*	Status #			Description	Extent ^ Reserved	Biodiversity Values ^^
	ROW	5 km Buffer		EPBC	VM Act	BD			
11.8.14	0	16.97	0.00	-	OC	OC	<i>Eucalyptus crebra</i> , <i>Corymbia dallachiana</i> woodland on Cainozoic igneous rocks.	None	-
11.8.15	0	134.22	0.00	-	E	E	<i>Eucalyptus brownii</i> or <i>Eucalyptus populnea</i> woodland on Cainozoic igneous rocks.	None	-
11.9.1	0	537.77	0.00	E	E	E	<i>Acacia harpophylla</i> - <i>Eucalyptus cambageana</i> open forest to woodland on fine-grained sedimentary rocks.	Low	-
11.9.2	0.53	3,120.04	0.02	-	LC	NC	<i>Eucalyptus melanophloia</i> +/- <i>E. orgadophila</i> woodland on fine-grained sedimentary rocks.	Medium	-
11.9.3	0	298.11	0.00	E	LC	NC	<i>Dichanthium</i> spp., <i>Astrebla</i> spp. grassland on fine-grained sedimentary rocks.	Low	-
11.9.4	0	17.28	0.00	E	OC	E	Semi-evergreen vine thicket or <i>Acacia harpophylla</i> with a semi-evergreen vine thicket understorey on fine grained sedimentary rocks (semi-evergreen vine thicket, generally dominated by a low tree layer 5-10 m high).	Low	Habitat for EVNT flora species including <i>Cadellia pentastylis</i> .
11.9.5	0	1,555.66	0.00	E	E	E	<i>Acacia harpophylla</i> and / or <i>Casuarina cristata</i> open forest on fine-grained sedimentary rocks.	Low	Habitat for EVNT flora species including <i>Jalmenus eubulus</i> , pale imperial hairstreak butterfly (Eastwood et al. 2008).
11.9.7	14.9	7,977.26	0.19	-	OC	OC	<i>Eucalyptus populnea</i> , <i>Eremophila mitchellii</i> shrubby woodland on fine-grained sedimentary rocks.	Low	-
11.9.9	58.01	6,959.26	0.83	-	LC	NC	<i>Eucalyptus crebra</i> woodland on fine-grained sedimentary rocks.	Low	-

RE Code	Area (ha)		% in Buffer*	Status #			Description	Extent ^ Reserved	Biodiversity Values ^^
	ROW	5 km Buffer		EPBC	VM Act	BD			
11.9.10	0	96.08	0.00	-	OC	E	<i>Eucalyptus populnea</i> , <i>Acacia harpophylla</i> open forest on fine-grained sedimentary rocks.	Low	-
11.9.13	0	181.67	0.00	-	OC	OC	<i>Eucalyptus moluccana</i> or <i>E. microcarpa</i> open forest on fine-grained sedimentary rocks.	Low	Habitat for uncommon mallee eucalypt species including <i>E. bakeri</i> and <i>E. viridis</i> in the Inglewood-Warwick area.
11.10.1	0	678.52	0.00	-	LC	NC	<i>Corymbia citriodora</i> open forest on coarse-grained sedimentary rocks.	High	-
11.10.3	0	2,269.98	.00	-	LC	NC	<i>Acacia catenulata</i> or <i>A. shirleyi</i> open forest on coarse-grained sedimentary rocks. Crests and scarps.	Medium	Habitat for EVNT flora species including <i>Acacia deuteroneura</i> , <i>A. lauta</i> , <i>A. wardellii</i> and <i>Bertya calycina</i> .
11.10.4	0	10,206.02	0.00	-	LC	NC	<i>Eucalyptus decorticans</i> , <i>Lysicarpus angustifolius</i> +/- <i>Eucalyptus</i> spp., <i>Corymbia</i> spp., <i>Acacia</i> spp. woodland on coarse-grained sedimentary rocks (small areas of <i>E. crebra</i> , <i>C. aureola</i> , <i>C. clarksoniana</i> and / or <i>A. shirleyi</i>).	High	Habitat for EVNT flora species including <i>Acacia curranii</i> , <i>A. handonis</i> , <i>A. holotricha</i> , <i>A. islana</i> , <i>A. lauta</i> , <i>A. pubicosta</i> , <i>A. tenuinervis</i> , <i>Bertya calycina</i> , <i>Calytrix islensis</i> , <i>Eucalyptus beaniana</i> , <i>E. curtisii</i> and <i>E. rubiginosa</i> .
11.10.7	0	11,006.36	0.00	-	LC	NC	<i>Eucalyptus crebra</i> woodland on coarse-grained sedimentary rocks.	Low	-
11.10.8	0	713.14	0.00	-	OC	OC	Semi-evergreen vine thicket in sheltered habitats on medium to coarse-grained sedimentary rocks.	Medium	-
11.10.12	0	930.63	0.00	-	LC	NC	<i>Eucalyptus populnea</i> woodland on medium to coarse-grained sedimentary rocks.	Low	-

RE Code	Area (ha)		% in Buffer*	Status #			Description	Extent ^ Reserved	Biodiversity Values ^^
	ROW	5 km Buffer		EPBC	VM Act	BD			
11.11.1	1.54	5,271.78	0.03	-	LC	NC	<i>Eucalyptus crebra</i> +/- <i>Acacia rhodoxylon</i> woodland on old sedimentary rocks with varying degrees of metamorphism and folding.	Medium	-
11.11.3	0	1,010.5	0.00	-	LC	NC	<i>Corymbia citriodora</i> , <i>Eucalyptus crebra</i> , <i>E. acmenoides</i> open forest on old sedimentary rocks with varying degrees of metamorphism and folding. Coastal ranges.	Medium	-
11.11.4	4.28	1,041.84	0.41	-	LC	NC	<i>Eucalyptus crebra</i> woodland on old sedimentary rocks with varying degrees of metamorphism and folding. Coastal ranges.	Low	-
11.11.5	0	1,197.35	0.00	-	LC	NC	Microphyll vine forest +/- <i>Araucaria cunninghamii</i> on old sedimentary rocks with varying degrees of metamorphism and folding.	Medium	-
11.11.7	0	1,061.02	0.00	-	LC	OC	<i>Eucalyptus fibrosa</i> subsp. (Glen Geddes), <i>E. xanthope</i> woodland on serpentinite.	Low	Habitat for EVNT flora species including <i>Corymbia xanthope</i> , <i>Hakea trineura</i> , <i>Capparis thozetiana</i> , <i>Leucopogon cuspidatus</i> , <i>Neoroepora buxifolia</i> , <i>Pimelea leptospermoides</i> , <i>Pultenaea setulosa</i> , <i>Stackhousia tryonii</i> , <i>Marsdenia brevifolia</i> , <i>Cycas ophiolitica</i> , <i>Bursaria reevesii</i> , <i>Capparis humistrata</i> and <i>Macrozamia serpentina</i> .
11.11.10	0	3,462.07	0.00	-	OC	OC	<i>Eucalyptus melanophloia</i> woodland on deformed and metamorphosed sediments and interbedded volcanics.	Low	

RE Code	Area (ha)		% in Buffer*	Status #			Description	Extent ^ Reserved	Biodiversity Values ^^
	ROW	5 km Buffer		EPBC	VM Act	BD			
11.11.13	0	56.14	0.00	-	OC	OC	<i>Acacia harpophylla</i> or <i>A. argyrodendron</i> , <i>Terminalia oblongata</i> low open forest on deformed and metamorphosed sediments and interbedded volcanic.	Low	-
11.11.14	0	602.06	0.00	E	E	E	<i>Acacia harpophylla</i> open forest on deformed and metamorphosed sediments and interbedded volcanics.	Low	-
11.11.15	16.55	4,436.75	0.37	-	LC	NC	<i>Eucalyptus crebra</i> woodland on deformed and metamorphosed sediments and interbedded volcanic.	Low	-
11.11.16	1.44	211.76	0.68	-	OC	OC	<i>Eucalyptus cambageana</i> , <i>Acacia harpophylla</i> woodland on old sedimentary rocks with varying degrees of metamorphism and folding. Lowlands.	Low	-
11.11.18	0	349.55	0.00	E	E	E	Semi-evergreen vine thicket on old sedimentary rocks with varying degrees of metamorphism and folding.	Low	-
11.11.21	0	66.65	0.00	-	OC	E	Semi-evergreen vine thicket on serpentinite.	Low	Habitat for EVNT flora species including <i>Quassia bidwillii</i> and <i>Neoroepora buxifolia</i> .
11.12.1	1.26	5,688.8	0.02	-	LC	NC	<i>Eucalyptus crebra</i> woodland on igneous rocks.	Low	-
11.12.2	2.44	2,077.13	0.12	-	LC	NC	<i>Eucalyptus melanophloia</i> woodland on igneous rocks.	Low	-

RE Code	Area (ha)		% in Buffer*	Status #			Description	Extent ^ Reserved	Biodiversity Values ^^
	ROW	5 km Buffer		EPBC	VM Act	BD			
11.12.3	0	7.24	0.00	-	LC	OC	<i>Eucalyptus crebra</i> , <i>E. tereticornis</i> , <i>Angophora leiocarpa</i> woodland on igneous rocks especially granite.	Low	-
11.12.4	0	1,547.59	0.00	-	LC	NC	Semi-evergreen vine thicket and microphyll vine forest on igneous rocks.	High	-
11.12.6	0	21.61	0.00	-	LC	NC	<i>Corymbia citriodora</i> open forest on granite (<i>Eucalyptus crebra</i> + <i>C.</i> <i>citriodora</i> and / or <i>E. acmenoides</i> + <i>Lophostemon suaveolens</i> woodland to open-forest).	Low	-
11.12.21	0	28.8	0.00	E	E	E	<i>Acacia harpophylla</i> open forest on igneous rocks. Colluvial lower slopes.	Low	-
Non-remnant	1,286.36	385,559.2	0.33	-	-	-	-	-	-
Ocean	0	91.23	0.00	-	-	-	-	-	-
Water	0	128.17	0.00	-	-	-	-	-	-
HVR-E	19.59	11,271.55	0.17	-	-	-	-	-	-
HVR-LC	39.78	15,713.17	0.25	-	-	-	-	-	-
HVR-OC	24.83	11,072.47	0.22	-	-	-	-	-	-
Total	1,742.66	614,774.29	9.13						

* Percentage of area in 5 km buffer that lies within the 30 m ROW.

Status under EPBC Act, VM Act and biodiversity status recognised by Qld DERM: E = Endangered; OC = Of Concern; LC = Least Concern; NC = No Concern at Present; T = Threshold.

^ Extent reserved in Qld protected area estate: High = > 10% of pre-clearing extent reserved; Medium = 4-10%; Low = < 4%.

^^ Biodiversity values recognised in REDD: '-' = none provided (does not indicate that the RE does not provide biodiversity value).

* No areas of RE 11.3.2 dominated by *Acacia pendula* were observed during field surveys, so do not form part of the EPBC-listed Endangered Ecological Community.

** Areas of RE 11.3.3 observed during survey were not in the southern Brigalow Belt, so do not form part of the EPBC-listed Endangered Ecological Community.

3.3.1 EPBC Listed Communities

An EPBC protected matters search identified five Endangered Ecological Communities (EECs) that may occur within or adjacent to the ABP. For each EEC, the EPBC nomination recommendation lists REs that are considered to form components of the EEC (DSEWPC, 2010b). Table 3 describes EECs, REs included in the EEC and areas of those REs within the ROW and 5 km buffer. The ROW contains 33.53 ha of remnant REs that form components of EECs (approximately 0.35% of the area within the 5 km buffer).

The actual amount of clearing of EECs is likely to be less than 33.53 ha as approximately 27.2 ha of this total is RE 11.3.2 (poplar box woodland). Weeping Myall (*Acacia pendula*) woodlands EEC forms only a very small proportion of this RE and no Weeping Myall was observed during the field surveys, so it is likely that none of the 27.2 ha within the ROW contains this EEC. This would reduce the area of EEC occurring within the ROW to 6.33 ha.

Table 3 EPBC Listed EECs and Equivalent REs within the ROW and the 5 km Buffer

EPBC Community Description	EPBC Act Status*	Equivalent RE	Area in ROW (ha)	Area in 5 km Buffer (ha)	% in Buffer ^
Brigalow (<i>Acacia harpophylla</i> dominant and co-dominant) (Appendix D, Plate 1)	E	11.3.1	0.84	4044.62	0.02
		11.4.8	0	851.58	0
		11.4.9	0.50	2,069.69	0.02
		11.5.16	0	11.38	0
		11.9.1	0	537.77	0
		11.9.5	0	1,555.66	0
		11.11.14	0	602.06	0
		11.12.21	0	28.82	0
Natural grasslands of the Qld Central Highlands and the northern Fitzroy Basin (Appendix D, Plate 2)	E	11.3.21	0	770.52	0
		11.4.4	0	84.21	0
		11.8.11	4.99	5,397.11	0.09
		11.9.3	0	298.11	0
Semi-evergreen vine thickets of the Brigalow Belt	E	11.3.11	0	181.82	0
		11.4.1	0	6.67	0
		11.5.15	0	106.48	0
		11.8.13	0	571.93	0
		11.11.18	0	349.55	0
Weeping Myall Woodlands (only small component of RE)	E (where <i>A. pendula</i> dominates)	11.3.2	27.20#	12,617.49	0.22
Total			33.53	30,085.47	0.35

* Status under EPBC Act: E = Endangered.

^ Percentage of area in 5 km buffer that lies within the 30 m ROW.

This area is unlikely to contain the weeping myall EEC as field surveys did not detect any weeping myall in RE 11.3.2.

In March 2011, DSEWPC listed the Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions as an EEC. According to the listing advice, this community corresponds to RE 11.3.3 only where it occurs in the Brigalow Belt South Bioregion. Since all occurrences of RE 11.3.3 in the ROW (AB 110-110.04; 167.98-168.05; 238.29-238.51 and 284.18-284.29) were recorded in the Brigalow Belt North Bioregion, these areas are not considered to form part of the listed EEC and have therefore been omitted from Table 3 and subsequent calculations.

3.3.2 Biodiversity Status of Regional Ecosystems

Based on Queensland Herbarium RE mapping, eleven REs with an Endangered Biodiversity Status, 13 REs with an Of Concern Biodiversity Status and 18 REs with a No Concern at Present Biodiversity Status are mapped as occurring within the 30 m ROW.

3.3.2.1 Regional Ecosystems with an Endangered Biodiversity Status

Based on Queensland Herbarium RE mapping, the proposed pipeline ROW transects eleven vegetation communities with an Endangered Biodiversity Status (Table 4). These are:

- 11.3.1: *Acacia harpophylla* and / or *Casuarina cristata* open forest on alluvial plains.
- 11.3.11: Semi-evergreen vine thicket on alluvial plains.
- 11.3.21: *Dichanthium sericeum* and / or *Astrelba* spp. grassland on alluvial plains (cracking clay soils).
- 11.4.8: *Eucalyptus cambageana* woodland to open-forest with *Acacia harpophylla* or *A. argyrodendron* on Cainozoic clay plains.
- 11.4.9: *Acacia harpophylla* shrubby open forest to woodland with *Terminalia oblongata* on Cainozoic clay plains.
- 11.4.13: Semi-evergreen vine thicket on old sedimentary rocks with varying degrees of metamorphism and folding.
- 11.8.13: Semi-evergreen vine thicket and microphyll vine forest on Cainozoic igneous rocks.
- 11.9.1: *Acacia harpophylla-Eucalyptus cambageana* open-forest to woodland on fine-grained sedimentary rocks.
- 11.9.5: *Acacia harpophylla* and / or *Casuarina cristata* open-forest on fine-grained sedimentary rocks.
- 11.11.14: *Acacia harpophylla* open-forest on deformed and metamorphosed sediments and interbedded volcanic.
- 11.11.18: Semi-evergreen vine thicket on old sedimentary rocks with varying degrees of metamorphism and folding.

Two of these REs were identified within the ROW during the field survey (11.3.1 and 11.4.9) (Table 4, Section 4.6.1). There are 59 occurrences along the pipeline that were mapped by the herbarium as Endangered RE or containing a proportion of Endangered RE. Field assessment surveys confirmed three occurrences of Endangered REs (two occurrences of 11.4.9 and one occurrence of 11.3.1), while 28 were identified as supporting an Of Concern RE, eleven sections were identified as supporting No Concern at Present REs, five sections contained HVR and 14 sections did not contain remnant vegetation. Table 4 compares the results of the desktop and field assessments for Endangered REs within the proposed alignment.

Table 4 Regional Ecosystems with an Endangered Biodiversity Status Transected by the Proposed Alignment

KP start (km)	KP End (km)	Length (km)	RE mapped by DERM	RE recorded by Field Survey	% of RE recorded	Field Survey Status [#]
Main line (AB)						
11.57	11.93	0.36	11.9.9 / 11.9.2 / 11.9.5	HVR-LC	100	-
12.86	12.98	0.12	11.9.5	HVR-E	100	-
19.75	19.77	0.02	11.9.5 / 11.8.13	non-rem	100	-
19.77	19.94	0.18	11.9.9 / 11.9.2 /	11.9.2	100	NC

KP start (km)	KP End (km)	Length (km)	RE mapped by DERM	RE recorded by Field Survey	% of RE recorded	Field Survey Status [#]
			11.9.5			
20.00	20.29	0.29	11.9.9 / 11.9.2 / 11.9.5	non-rem	100	-
21.07	21.57	0.50	11.9.5 / 11.8.13	non-rem	100	-
21.60	21.61	0.01	11.9.5 / 11.8.13	non-rem	100	-
44.42	44.51	0.10	11.4.2 / 11.4.9	11.4.2 / 11.4.9	60/40	OC/E
90.02	90.15	0.13	11.3.2 / 11.3.1 / 11.3.25	non-rem	100	-
90.58	90.71	0.13	11.3.2 / 11.3.1 / 11.3.25	11.3.25	100	OC
91.12	91.34	0.22	11.3.2 / 11.3.1 / 11.3.25	11.3.25	100	OC
92.86	93.07	0.20	11.3.2 / 11.3.1 / 11.3.25	11.3.25	100	OC
93.35	93.48	0.13	11.4.9	11.4.9	100	E
96.38	96.47	0.09	11.3.2 / 11.3.1	11.3.2	100	OC
96.54	96.59	0.05	11.3.2 / 11.3.1	11.3.2	100	OC
97.15	97.19	0.05	11.3.2 / 11.3.1	11.3.2	100	OC
97.74	97.83	0.09	11.3.2 / 11.3.1	11.3.2	100	OC
100.15	100.77	0.62	11.3.2 / 11.3.1	11.3.2	100	OC
101.82	101.87	0.05	11.3.2 / 11.3.1	non-rem	100	-
101.97	102.05	0.08	11.3.2 / 11.3.1	non-rem	100	-
104.69	105.08	0.40	11.3.2 / 11.3.1	non-rem	100	-
105.23	105.23	0.01	11.3.2 / 11.3.1 / 11.3.25	non-rem	100	-
108.88	108.96	0.08	11.9.5 / 11.9.1 / 11.9.2	non-rem	100	-
108.96	109.15	0.19	11.5.3 / 11.4.9	HVR-OC	100	-
109.35	109.47	0.13	11.3.2 / 11.3.1	non-rem	100	-
109.47	110.00	0.53	11.4.9 / 11.5.3	non-rem	100	-
110.00	110.04	0.04	11.4.9 / 11.5.3	11.3.3	100	OC
110.04	110.08	0.04	11.4.9 / 11.5.3	non-rem	100	-
111.66	111.85	0.19	11.5.3 / 11.4.9 / 11.3.35 / 11.5.9c	11.5.3	100	NC
160.17	160.25	0.07	11.3.7 / 11.3.1 / 11.3.1b	11.3.25	100	OC
163.70	164.00	0.29	11.3.21	11.3.2 / 11.3.7	50/50	OC/OC
164.59	164.69	0.10	11.3.2 / 11.3.7 / 11.3.1	11.3.2 / 11.3.7	50/50	OC/OC
164.85	165.60	0.75	11.3.2 / 11.3.3 / 11.3.1	11.3.7 / 11.3.3	50/50	OC/OC
165.65	165.80	0.15	11.3.2 / 11.3.3 /	11.3.7 / 11.3.3	50/50	OC/OC

KP start (km)	KP End (km)	Length (km)	RE mapped by DERM	RE recorded by Field Survey	% of RE recorded	Field Survey Status [#]
			11.3.1			
167.69	167.98	0.28	11.3.1	11.3.1	100	E
167.98	168.05	0.08	11.4.13 / 11.4.4	11.3.3	100	OC
232.42	232.60	0.18	11.3.1	HVR-E	100	-
261.42	261.46	0.05	11.4.2 / 11.3.3 / 11.3.1	11.3.25	100	OC
280.09	281.20	1.10	11.11.1 / 11.11.18 / 11.11.14	HVR-E	100	-
284.18	284.29	0.11	11.3.11	11.3.3	100	OC
285.37	285.47	0.09	11.3.26 / 11.3.4 / 11.3.25 / 11.3.1	11.3.25	100	OC
286.38	286.46	0.08	11.3.26 / 11.3.4 / 11.3.25 / 11.3.1	11.3.25	100	OC
289.08	289.16	0.08	11.3.26 / 11.3.4 / 11.3.25 / 11.3.1	11.3.25	100	OC
Elphinstone Lateral (EL)						
51.52	51.75	0.23	11.3.2 / 11.3.1	11.3.25	100	OC
51.75	51.85	0.10	11.3.2 / 11.3.1	11.5.3	100	NC
Saraji Lateral (SL)						
0.11	0.84	0.73	11.4.9 / 11.4.8 / 11.5.3	11.5.3	100	NC
1.66	1.81	0.15	11.4.9 / 11.4.8 / 11.5.3	11.5.3	100	NC
3.09	3.46	0.38	11.4.9 / 11.4.8 / 11.5.3	11.5.3	100	NC
3.62	3.88	0.26	11.4.9 / 11.4.8 / 11.5.3	11.5.3	100	NC
6.16	6.87	0.72	11.3.2 / 11.3.25 / 11.3.1	11.3.2 / 11.3.25	50/50	OC/OC
7.11	7.37	0.27	11.3.2 / 11.3.25 / 11.3.1	11.3.2	100	OC
7.67	7.71	0.04	11.3.2 / 11.3.25 / 11.3.1	11.3.25	100	OC
7.78	8.02	0.24	11.3.2 / 11.3.25 / 11.3.1	11.5.3	100	NC
8.02	10.76	2.74	11.5.3 / 11.4.9	11.5.3	100	NC
11.09	12.88	1.79	11.5.3 / 11.4.9	11.5.3	100	NC
12.88	13.08	0.19	11.4.9	non-rem	100	-
16.43	18.74	2.31	11.3.2 / 11.3.7 / 11.3.1	11.3.2 / 11.3.7	75/25	OC/OC
18.95	19.11	0.16	11.3.2 / 11.3.7 / 11.3.1 / 11.3.1b	11.3.2 / 11.3.7	75/25	OC/OC
19.59	20.19	0.60	11.3.2 / 11.3.7 / 11.3.1 / 11.3.1b	11.3.2	100	OC

KP start (km)	KP End (km)	Length (km)	RE mapped by DERM	RE recorded by Field Survey	% of RE recorded	Field Survey Status [#]
Dysart Lateral (DL)						
-	-	-	None present	None present	-	-

Status under biodiversity status recognised by Qld DERM: E = Endangered; OC = Of Concern; NC = No Concern at Present.

3.3.2.2 Regional Ecosystems with an Of Concern Biodiversity Status

Based on Queensland Herbarium RE mapping, the proposed pipeline route transects 13 vegetation communities with an Of Concern Biodiversity Status (Table 5). These are:

- 11.3.2: *Eucalyptus populnea* woodland on alluvial plains;
- 11.3.3: *Eucalyptus coolabah* woodland on alluvial plains;
- 11.3.25: *Eucalyptus tereticornis* or *E. camaldulensis* woodland fringing drainage lines;
- 11.3.27: Freshwater wetlands;
- 11.3.36: *Eucalyptus crebra* and / or *E. populnea* and / or *E. melanophloia* on alluvial plains. Higher terraces;
- 11.3.4: *Eucalyptus tereticornis* and / or *Eucalyptus* spp. tall woodland on alluvial plains;
- 11.3.7: *Corymbia* spp. woodland on alluvial plains;
- 11.4.2: *Eucalyptus* spp. and / or *Corymbia* spp. grassy or shrubby woodland on Cainozoic clay plains;
- 11.4.4: *Dichanthium* spp., *Astrebala* spp. grassland on Cainozoic clay plains;
- 11.8.11: *Dichanthium sericeum* grassland on Cainozoic igneous rocks;
- 11.9.7: *Eucalyptus populnea*, *Eremophila mitchellii* shrubby woodland on fine-grained sedimentary rocks;
- 11.11.10: *Eucalyptus melanophloia* woodland on deformed and metamorphosed sediments and interbedded volcanic; and
- 11.11.16: *Eucalyptus cambageana*, *Acacia harpophylla* woodland on old sedimentary rocks with varying degrees of metamorphism and folding. Lowlands.

Twelve Of Concern REs were identified during the field survey (Table 5, Section 4.6.2). There are 142 occurrences along the pipeline ROW that were mapped by the herbarium as Of Concern RE or containing a proportion of Of Concern RE. Field assessment surveys confirmed 88 of these occurrences and identified a further 7 occurrences of Of Concern previously mapped as non-remnant. One section was identified as supporting a mix of Of Concern/Endangered RE, 19 sections were identified as supporting No Concern at Present REs, 12 sections were No Concern at Present / Of Concern mixed REs, two sections were found to support HVR and twenty sections did not contain remnant vegetation. One RE (11.7.1x1 *Acacia harpophylla* and / or *Casuarina cristata* and *Eucalyptus thozetiana* or *E. microcarpa* woodland on lower scarp slopes on lateritic duricrust) was recorded during the field surveys, but was not mapped by DERM. Table 5 compares the results of the desktop and field assessments for Of Concern REs within the proposed alignment.

Table 5 Regional Ecosystems with an Of Concern Biodiversity Status Transected by the Proposed Alignment

KP start (km)	KP End (km)	Length (km)	RE mapped by DERM	RE recorded by Field Survey	% of RE recorded	Field Survey Status [#]
Main line (AB)						
12.14	12.27	0.13	11.3.25	11.3.25	100	OC
35.01	36.45	1.45	11.8.11 / 11.8.5	11.8.11	100	OC
36.45	36.79	0.34	11.3.2 / 11.3.25	11.3.25	100	OC
36.79	37.00	0.21	11.8.11 / 11.8.5	11.8.11	100	OC

KP start (km)	KP End (km)	Length (km)	RE mapped by DERM	RE recorded by Field Survey	% of RE recorded	Field Survey Status #
37.00	37.15	0.15	11.8.11 / 11.8.5	non-rem	100	-
37.15	37.17	0.01	11.3.2 / 11.3.25	non-rem	100	-
38.45	38.83	0.38	11.3.2 / 11.3.25	11.5.3	100	NC
38.99	39.13	0.13	11.3.2 / 11.3.25	11.5.3	100	NC
39.13	39.32	0.19	11.8.11 / 11.8.5	11.5.3	100	NC
44.42	44.51	0.10	11.4.2 / 11.4.9	11.4.2 / 11.4.9	60/40	OC/E
49.70	50.08	0.38	11.3.2	11.3.7	100	OC
50.08	50.22	0.15	11.3.25	11.3.25	100	OC
50.22	50.26	0.04	11.3.2	11.3.7	100	OC
54.00	54.42	0.42	11.3.2	non-rem	100	-
54.52	54.68	0.15	11.3.2	11.3.2	100	OC
59.05	59.07	0.02	11.3.25	non-rem	100	-
59.07	59.14	0.06	11.3.25	11.3.25	100	OC
59.14	59.15	0.01	11.3.25	non-rem	100	-
67.58	67.73	0.15	11.3.25	11.3.25	100	OC
68.24	68.28	0.05	11.3.25	11.3.25	100	OC
68.28	68.30	0.02	11.3.25	11.5.3	100	NC
73.44	73.57	0.13	11.7.2	11.7.1x1	100	OC
73.57	73.62	0.04	11.9.7a	11.7.1x1	100	OC
74.72	74.99	0.27	11.8.11 / 11.8.5	non-rem	100	-
86.91	87.22	0.31	11.3.2 / 11.3.25	11.3.2	100	OC
90.02	90.15	0.13	11.3.2 / 11.3.1 / 11.3.25	non-rem	100	-
90.58	90.71	0.13	11.3.2 / 11.3.1 / 11.3.25	11.3.25	100	OC
91.12	91.34	0.22	11.3.2 / 11.3.1 / 11.3.25	11.3.25	100	OC
91.99	92.22	0.23	11.3.36	11.3.36	100	OC
92.28	92.86	0.58	11.3.36	11.3.36	100	OC
92.86	93.07	0.20	11.3.2 / 11.3.1 / 11.3.25	11.3.25	100	OC
96.38	96.47	0.09	11.3.2 / 11.3.1	11.3.2	100	OC
96.47	96.54	0.07	11.3.25	11.3.25	100	OC
96.54	96.59	0.05	11.3.2 / 11.3.1	11.3.2	100	OC

KP start (km)	KP End (km)	Length (km)	RE mapped by DERM	RE recorded by Field Survey	% of RE recorded	Field Survey Status #
97.15	97.19	0.05	11.3.2 / 11.3.1	11.3.2	100	OC
97.74	97.83	0.09	11.3.2 / 11.3.1	11.3.2	100	OC
100.15	100.77	0.62	11.3.2 / 11.3.1	11.3.2	100	OC
101.82	101.87	0.05	11.3.2 / 11.3.1	non-rem	100	-
101.97	102.05	0.08	11.3.2 / 11.3.1	non-rem	100	-
104.19	104.69	0.49	non-rem	11.3.2	100	OC
104.69	105.08	0.40	11.3.2 / 11.3.1	non-rem	100	-
105.08	105.23	0.15	11.3.25	11.3.25	100	OC
105.23	105.23	0.01	11.3.2 / 11.3.1 / 11.3.25	non-rem	100	-
109.15	109.35	0.20	11.3.25	11.3.25	100	OC
109.35	109.47	0.13	11.3.2 / 11.3.1	non-rem	100	-
110.00	110.04	0.04	11.4.9 / 11.5.3	11.3.3	100	OC
160.17	160.25	0.07	11.3.7 / 11.3.1 / 11.3.1b	11.3.25	100	OC
163.70	164.00	0.29	11.3.21	11.3.2 / 11.3.7	50/50	OC/OC
164.59	164.69	0.10	11.3.2 / 11.3.7 / 11.3.1	11.3.2 / 11.3.7	50/50	OC/OC
164.69	164.85	0.17	11.3.25	11.3.25	100	OC
164.85	165.60	0.75	11.3.2 / 11.3.3 / 11.3.1	11.3.7 / 11.3.3	50/50	OC/OC
165.65	165.80	0.15	11.3.2 / 11.3.3 / 11.3.1	11.3.7 / 11.3.3	50/50	OC/OC
167.98	168.05	0.08	11.4.13 / 11.4.4	11.3.3	100	OC
171.79	171.85	0.07	11.3.25	11.3.25	100	OC
233.85	234.08	0.23	11.3.3 / 11.3.4 / 11.3.25	11.3.25	100	OC
234.08	234.66	0.58	11.3.25	11.3.25	100	OC
238.29	238.51	0.22	11.3.25	11.3.3	100	OC
239.42	239.46	0.04	11.3.25	non-rem	100	-
239.46	239.52	0.05	11.3.25	11.3.25	100	OC
244.99	245.15	0.16	11.3.25	11.3.25	100	OC
248.92	249.07	0.16	11.3.25	11.3.25	100	OC
261.42	261.46	0.05	11.4.2 / 11.3.3 / 11.3.1	11.3.25	100	OC
275.73	275.80	0.07	11.5.3 / 11.3.2	11.3.25	100	OC
284.18	284.29	0.11	11.3.11	11.3.3	100	OC

KP start (km)	KP End (km)	Length (km)	RE mapped by DERM	RE recorded by Field Survey	% of RE recorded	Field Survey Status #
285.37	285.47	0.09	11.3.26 / 11.3.4 / 11.3.25 / 11.3.1	11.3.25	100	OC
286.38	286.46	0.08	11.3.26 / 11.3.4 / 11.3.25 / 11.3.1	11.3.25	100	OC
289.08	289.16	0.08	11.3.26 / 11.3.4 / 11.3.25 / 11.3.1	11.3.25	100	OC
302.43	302.94	0.51	11.3.4 / 11.3.26 / 11.3.25	11.11.1	100	NC
302.94	303.02	0.08	11.3.4 / 11.3.26 / 11.3.25	non-rem	100	-
307.43	308.03	0.60	11.9.9 / 11.3.4	11.9.9	100	NC
312.32	312.57	0.25	11.9.9 / 11.3.4	11.9.9	100	NC
319.46	319.55	0.08	non-rem	11.3.25	100	OC
349.08	349.17	0.09	11.3.25 / 11.3.2 / 11.3.4	HVR-OC	100	-
349.17	349.23	0.06	11.3.25 / 11.3.2 / 11.3.4	11.3.25	100	OC
358.22	358.32	0.10	11.3.25 / 11.3.4 / 11.3.2	non-rem	100	-
358.32	358.38	0.06	11.3.25 / 11.3.4 / 11.3.2	HVR-LC	100	-
371.16	371.29	0.13	11.3.25 / 11.3.4 / 11.3.2	11.3.25	100	OC
373.31	373.37	0.07	11.3.25 / 11.3.4 / 11.3.2	11.3.25	100	OC
377.56	377.66	0.10	11.3.4 / 11.3.25 / 11.3.2	11.3.25	100	OC
381.70	381.77	0.06	11.11.10	non-rem	100	-
382.60	382.77	0.17	11.3.25 / 11.3.4 / 11.3.4	11.3.25 / 11.3.4	80/20	OC/OC
399.16	399.22	0.07	11.3.25 / 11.3.4 / 11.3.4 / 11.3.2	11.3.25	100	OC
400.07	400.22	0.15	11.3.25 / 11.3.4 / 11.3.4 / 11.3.2	11.3.4 / 11.3.25	50/50	OC/OC
402.53	402.83	0.30	11.3.4 / 11.3.4 / 11.3.25 / 11.3.2	11.3.4 / 11.3.25	50/50	OC/OC
406.39	406.42	0.03	11.3.25 / 11.3.4	11.3.25	100	OC
406.42	406.46	0.04	11.3.25 / 11.3.4	non-rem	100	-
406.69	406.73	0.04	11.3.25 / 11.3.4	11.3.25	100	OC
406.73	406.76	0.03	11.3.25 / 11.3.4	11.11.15	100	NC
406.76	407.10	0.34	11.11.15 / 11.3.4	11.11.15	100	NC
410.11	410.26	0.15	11.3.4 / 11.3.25	11.3.4 / 11.3.25	90/10	OC/OC
413.63	413.67	0.04	non-rem	11.3.25	100	OC

KP start (km)	KP End (km)	Length (km)	RE mapped by DERM	RE recorded by Field Survey	% of RE recorded	Field Survey Status #
419.77	419.79	0.03	non-rem	11.3.25	100	OC
433.09	433.18	0.09	non-rem	11.11.16	100	OC
433.45	433.52	0.07	11.11.16 / 11.3.26	non-rem	100	-
433.52	433.91	0.39	11.11.16 / 11.3.26	11.11.16	100	OC
433.91	434.17	0.26	11.11.16 / 11.3.26	non-rem	100	-
446.64	446.78	0.13	11.1.4 / 11.3.4	11.1.4	100	NC
458.53	458.74	0.21	11.3.26 / 11.3.4	11.3.26	100	NC
462.17	462.31	0.14	11.3.26 / 11.3.4	11.3.26	100	NC
463.80	464.59	0.79	11.3.26 / 11.3.4	11.3.26 / 11.3.4	80/20	NC/OC
Elphinstone Lateral (EL)						
0.00	4.27	4.27	11.9.9 / 11.10.12	11.9.9 / 11.9.7	80/20	NC/OC
4.27	4.45	0.19	11.9.7a / 11.9.9	11.9.9 / 11.9.7	80/20	NC/OC
4.45	4.52	0.07	11.3.25	11.9.9 / 11.9.7	80/20	NC/OC
4.52	4.70	0.18	11.3.25	11.3.25	100	OC
4.70	5.48	0.78	11.3.2	11.3.2	100	OC
5.72	7.08	1.36	11.3.2	11.3.2	100	OC
7.08	7.30	0.22	11.3.25	11.3.25	100	OC
7.30	8.28	0.98	11.3.2	11.3.2	100	OC
8.28	8.42	0.14	11.3.25	11.3.25	100	OC
8.42	11.58	3.16	11.9.7a / 11.9.9	11.9.9 / 11.9.7	80/20	NC/OC
11.58	11.91	0.33	11.3.25	11.3.25	100	OC
11.91	15.93	4.02	11.9.7a / 11.9.9	11.9.9 / 11.9.7	80/20	NC/OC
15.93	16.34	0.42	11.3.25	11.3.2	100	OC
16.34	16.48	0.14	11.9.7a / 11.9.9	11.3.2	100	OC
16.48	17.83	1.35	11.9.7a / 11.9.9 / 11.9.2	11.9.9 / 11.9.7	80/20	NC/OC
17.83	18.21	0.39	11.9.7a / 11.9.9 / 11.9.2	11.9.9	100	NC
18.21	18.33	0.12	11.9.7a / 11.9.9 / 11.9.2	11.9.7	100	OC
18.33	18.40	0.07	11.9.7a / 11.9.9	11.9.7	100	OC
18.40	18.71	0.30	11.9.7a / 11.9.9	11.9.9	100	NC
18.71	19.32	0.61	11.9.7a / 11.9.9	11.5.8	100	NC

KP start (km)	KP End (km)	Length (km)	RE mapped by DERM	RE recorded by Field Survey	% of RE recorded	Field Survey Status #
19.48	20.02	0.54	11.9.7a / 11.9.9	11.9.7	100	OC
20.02	20.25	0.23	11.9.7a / 11.9.9	11.9.9	100	NC
20.25	20.39	0.13	11.9.7a / 11.9.9 / 11.9.2	11.9.9	100	NC
20.39	20.53	0.15	11.9.7a / 11.9.9 / 11.9.2	11.9.7	100	OC
20.53	20.59	0.05	11.9.7a / 11.9.9 / 11.9.2	11.9.9 / 11.9.7	80/20	NC/OC
20.59	23.95	3.36	11.9.7a	11.9.9 / 11.9.7	80/20	NC/OC
23.95	25.55	1.61	11.9.7a / 11.9.9	11.9.9 / 11.9.7	80/20	NC/OC
25.92	28.30	2.38	11.9.7a / 11.9.9	11.9.9 / 11.9.7	80/20	NC/OC
28.30	28.44	0.15	11.3.4 / 11.3.2	11.3.4 / 11.3.2	70/30	OC/OC
28.44	28.54	0.10	11.3.4 / 11.3.2	11.3.25	100	OC
31.59	31.94	0.35	11.3.27f	11.5.8 / 11.3.27	75/25	NC/OC
34.76	34.84	0.09	11.5.3 / 11.7.2	11.3.25	100	OC
37.01	37.17	0.16	11.5.3 / 11.7.2	11.3.25	100	OC
37.93	37.98	0.04	11.5.3 / 11.7.2	11.3.25	100	OC
51.52	51.75	0.23	11.3.2 / 11.3.1	11.3.25	100	OC
51.75	51.85	0.10	11.3.2 / 11.3.1	11.5.3	100	NC
Saraji Lateral (SL)						
6.16	6.87	0.72	11.3.2 / 11.3.25 / 11.3.1	11.3.2 / 11.3.25	50/50	OC/OC
7.11	7.37	0.27	11.3.2 / 11.3.25 / 11.3.1	11.3.2	100	OC
7.67	7.71	0.04	11.3.2 / 11.3.25 / 11.3.1	11.3.25	100	OC
7.71	7.78	0.07	11.3.27b	11.3.27	100	OC
7.78	8.02	0.24	11.3.2 / 11.3.25 / 11.3.1	11.5.3	100	NC
10.76	11.09	0.33	11.3.27b	11.3.27	100	OC
16.43	18.74	2.31	11.3.2 / 11.3.7 / 11.3.1	11.3.2 / 11.3.7	75/25	OC/OC
18.74	18.95	0.21	11.3.25	11.3.25	100	OC
18.95	19.11	0.16	11.3.2 / 11.3.7 / 11.3.1 / 11.3.1b	11.3.2 / 11.3.7	75/25	OC/OC
19.59	20.19	0.60	11.3.2 / 11.3.7 / 11.3.1 / 11.3.1b	11.3.2	100	OC
Dysart Lateral (DL)						
17.96	18.19	0.23	non-rem	11.3.2	100	OC

KP start (km)	KP End (km)	Length (km)	RE mapped by DERM	RE recorded by Field Survey	% of RE recorded	Field Survey Status #
18.19	18.30	0.11	11.3.25	11.3.25	100	OC
18.30	18.33	0.03	11.3.2	non-rem	100	-

Status under biodiversity status recognised by DERM: E = Endangered; OC = Of Concern; NC = No Concern at Present.

3.3.2.3 Regional Ecosystems with a No Concern at Present Biodiversity Status

Based on Queensland Herbarium RE mapping, the proposed pipeline route transects 18 vegetation communities with a No Concern at Present Biodiversity Status (Table 6). These are:

- 11.1.1: *Sporobolus virginicus* grassland on marine clay plains;
- 11.1.4: Mangrove forest/woodland on marine clay plains;
- 11.3.26: *Eucalyptus moluccana* or *E. microcarpa* woodland to open forest on margins of alluvial plains;
- 11.5.3: *Eucalyptus populnea* +/- *E. melanophloia* +/- *Corymbia clarksoniana* on Cainozoic sand plains / remnant surfaces;
- 11.5.8: *Melaleuca* spp., *Eucalyptus crebra*, *Corymbia intermedia* woodland on Cainozoic sand plains / remnant surfaces;
- 11.5.9: *Eucalyptus crebra* and other *Eucalyptus* spp. and *Corymbia* spp. woodland on Cainozoic sand plains / remnant surfaces;
- 11.5.12: *Corymbia clarksoniana* woodland and other *Corymbia* spp. and *Eucalyptus* spp. on Cainozoic sand plains / remnant surfaces;
- 11.7.2: *Acacia* spp. woodland on Cainozoic lateritic duricrust. Scarp retreat zone;
- 11.8.5: *Eucalyptus orgadophila* open woodland on Cainozoic igneous rocks;
- 11.9.2: *Eucalyptus melanophloia* +/- *E. orgadophila* woodland on fine-grained sedimentary rocks;
- 11.9.9: *Eucalyptus crebra* woodland on fine-grained sedimentary rocks;
- 11.10.12: *Eucalyptus populnea* woodland on medium to coarse-grained sedimentary rocks;
- 11.10.4: *Eucalyptus decorticans*, *Lysicarpus angustifolius* +/- *Eucalyptus* spp., *Corymbia* spp., *Acacia* spp. woodland on coarse-grained sedimentary rocks. Crests and scarps;
- 11.11.1: *Eucalyptus crebra* +/- *Acacia rhodoxylon* woodland on old sedimentary rocks with varying degrees of metamorphism and folding;
- 11.11.4: *Eucalyptus crebra* woodland on old sedimentary rocks with varying degrees of metamorphism and folding;
- 11.11.15: *Eucalyptus crebra* woodland on deformed and metamorphosed sediments and interbedded volcanic;
- 11.12.1: *Eucalyptus crebra* woodland on igneous rocks; and
- 11.12.2: *Eucalyptus melanophloia* woodland on igneous rocks.

There are 154 occurrences along the pipeline that were mapped by the herbarium as No Concern at Present RE or containing a proportion of No Concern at Present RE. Field assessment surveys confirmed 104 of these occurrences and identified a further 13 occurrences of No Concern at Present RE previously mapped as non-remnant. Of the remainder, 17 sections were identified as supporting an Of Concern RE, 12 sections were mosaics of No Concern at Present / Of Concern RE, 6 sections were identified as supporting HVR and 15 sections did not contain remnant vegetation. Table 6 compares the results of the desktop and field assessments for No Concern at Present REs within the proposed alignment.

Table 6 Regional Ecosystems with a No Concern at Present Biodiversity Status Transected by the Proposed Alignment

KP start (km)	KP End (km)	Length (km)	RE mapped by DERM	RE recorded by Field Survey	% of RE recorded	Field Survey Status [#]
Main line (AB)						
0.00	2.39	2.42	11.8.5	11.8.5	100	NC
2.39	3.63	1.25	11.8.5	11.8.5	100	NC
3.95	7.98	4.06	11.8.5	11.8.5	100	NC
8.31	8.59	0.29	11.8.5	non-rem	100	-
11.57	11.93	0.36	11.9.9 / 11.9.2 / 11.9.5	HVR-LC	100	-
16.26	17.72	1.48	11.8.5	11.8.5	100	NC
19.77	19.94	0.18	11.9.9 / 11.9.2 / 11.9.5	11.9.2	100	NC
20.00	20.29	0.29	11.9.9 / 11.9.2 / 11.9.5	non-rem	100	-
21.57	21.60	0.03	11.8.5	non-rem	100	-
23.23	23.27	0.04	11.10.4a	non-rem	100	-
23.27	28.09	4.85	11.5.3	11.5.3	100	NC
28.09	28.42	0.33	11.9.9 / 11.9.2	11.9.9	100	NC
28.42	29.16	0.75	11.5.3	11.5.3	100	NC
29.16	29.28	0.13	11.9.9 / 11.9.2	11.9.9	100	NC
29.28	29.60	0.32	11.5.3	11.5.3	100	NC
29.60	29.97	0.37	11.9.9 / 11.9.2	11.9.9	100	NC
29.97	31.33	1.37	11.5.3	11.5.3	100	NC
31.33	31.47	0.14	11.5.12	11.5.12	100	NC
31.47	31.77	0.30	11.5.12	11.5.12	100	NC
31.77	33.77	2.01	11.5.3	11.5.3	100	NC
33.77	34.64	0.88	11.5.12	11.5.12	100	NC
34.64	35.01	0.37	11.5.3	11.5.3	100	NC
35.01	36.45	1.45	11.8.11 / 11.8.5	11.8.11	100	OC
36.79	37.00	0.21	11.8.11 / 11.8.5	11.8.11	100	OC
37.00	37.15	0.15	11.8.11 / 11.8.5	non-rem	100	-
38.45	38.83	0.38	11.3.2 / 11.3.25	11.5.3	100	NC
38.99	39.13	0.13	11.3.2 / 11.3.25	11.5.3	100	NC
39.13	39.32	0.19	11.8.11 / 11.8.5	11.5.3	100	NC
58.26	58.27	0.01	11.5.9c / 11.7.2	non-rem	100	-
59.43	60.89	1.47	11.5.3	11.5.3	100	NC
60.89	61.94	1.05	11.7.2 / 11.7.3	11.7.2	100	NC
61.94	62.70	0.76	11.5.3	11.5.9 / 11.5.3	80/20	NC/NC
62.70	62.78	0.09	11.7.2 / 11.7.3	11.5.9 / 11.5.3	80/20	NC/NC

KP start (km)	KP End (km)	Length (km)	RE mapped by DERM	RE recorded by Field Survey	% of RE recorded	Field Survey Status [#]
62.78	63.79	1.01	11.7.2 / 11.7.3	11.7.2	100	NC
63.79	63.89	0.11	11.5.9c / 11.5.3	11.5.9	100	NC
63.96	64.34	0.38	11.5.9c / 11.5.3	11.5.9 / 11.5.3	80/20	NC/NC
64.34	64.54	0.21	11.7.2 / 11.7.3	11.7.2	100	NC
64.54	64.72	0.18	11.5.9c / 11.5.3	11.5.9 / 11.5.3	80/20	NC/NC
64.72	66.06	1.34	11.7.2 / 11.7.3	11.7.2	100	NC
66.06	67.42	1.37	11.5.9c / 11.5.3	11.5.9 / 11.5.3	80/20	NC/NC
67.50	67.58	0.08	11.5.9c / 11.5.3	11.5.9 / 11.5.3	80/20	NC/NC
67.73	68.17	0.44	11.5.9c / 11.5.3	11.5.9 / 11.5.3	80/20	NC/NC
68.28	68.30	0.02	11.3.25	11.5.3	100	NC
70.28	70.88	0.61	11.7.2 / 11.7.3	11.7.2	100	NC
70.88	73.44	2.58	11.5.9c	11.5.9	100	NC
73.44	73.57	0.13	11.7.2	11.7.1x1	100	OC
74.64	74.72	0.08	11.8.5	11.8.5	100	NC
74.72	74.99	0.27	11.8.11 / 11.8.5	non-rem	100	-
74.99	76.29	1.30	11.8.5	11.8.5	100	NC
93.31	93.35	0.04	11.5.3	11.5.3	100	NC
94.94	95.21	0.27	11.5.3	11.5.3	100	NC
96.59	96.60	0.01	11.5.3 / 11.7.2	11.5.3	100	NC
96.65	96.80	0.15	11.5.3 / 11.7.2	11.5.3	100	NC
97.19	97.74	0.54	11.5.3 / 11.7.2	11.5.3	100	NC
108.88	108.96	0.08	11.9.5 / 11.9.1 / 11.9.2	non-rem	100	-
108.96	109.15	0.19	11.5.3 / 11.4.9	HVR-OC	100	-
109.47	110.00	0.53	11.4.9 / 11.5.3	non-rem	100	-
110.00	110.04	0.04	11.4.9 / 11.5.3	11.3.3	100	OC
110.04	110.08	0.04	11.4.9 / 11.5.3	non-rem	100	-
111.66	111.85	0.19	11.5.3 / 11.4.9 / 11.3.35 / 11.5.9c	11.5.3	100	NC
130.27	132.57	2.30	11.5.9c / 11.5.9b	11.5.9	100	NC
132.77	133.15	0.38	11.5.9c / 11.5.9b	11.5.9	100	NC
133.15	133.56	0.40	11.5.9c / 11.5.9b	11.5.9	100	NC
133.67	133.84	0.17	11.5.9c / 11.5.9b	11.5.9	100	NC
133.84	133.87	0.03	non-rem	11.5.3	100	NC
133.87	134.23	0.36	11.5.9c / 11.5.9b	11.5.9	100	NC
134.23	134.45	0.21	non-rem	11.5.9	100	NC
134.45	134.67	0.22	11.5.9c / 11.5.9b	11.5.9	100	NC

KP start (km)	KP End (km)	Length (km)	RE mapped by DERM	RE recorded by Field Survey	% of RE recorded	Field Survey Status [#]
134.67	134.73	0.06	non-rem	11.5.9	100	NC
134.73	134.93	0.20	11.5.9c / 11.5.9b	11.5.9	100	NC
142.48	145.00	2.53	11.5.12 / 11.5.3	11.5.3	100	NC
145.00	145.18	0.18	11.5.3	11.5.3	100	NC
145.18	145.24	0.06	11.5.12 / 11.5.3	11.5.3	100	NC
275.73	275.80	0.07	11.5.3 / 11.3.2	11.3.25	100	OC
280.09	281.20	1.10	11.11.1 / 11.11.18 / 11.11.14	HVR-E	100	-
285.37	285.47	0.09	11.3.26 / 11.3.4 / 11.3.25 / 11.3.1	11.3.25	100	OC
286.38	286.46	0.08	11.3.26 / 11.3.4 / 11.3.25 / 11.3.1	11.3.25	100	OC
289.08	289.16	0.08	11.3.26 / 11.3.4 / 11.3.25 / 11.3.1	11.3.25	100	OC
300.47	300.61	0.14	non-rem	11.12.2	100	NC
300.61	301.28	0.67	11.12.2	11.12.2	100	NC
302.43	302.94	0.51	11.3.4 / 11.3.26 / 11.3.25	11.11.1	100	NC
302.94	303.02	0.08	11.3.4 / 11.3.26 / 11.3.25	non-rem	100	-
307.43	308.03	0.60	11.9.9 / 11.3.4	11.9.9	100	NC
312.32	312.57	0.25	11.9.9 / 11.3.4	11.9.9	100	NC
358.42	358.74	0.32	non-rem	11.11.15	100	NC
367.00	367.83	0.83	11.11.15	11.11.15	100	NC
367.83	369.64	1.80	11.11.15	11.11.15	100	NC
369.90	370.16	0.26	11.11.15	HVR-LC	100	-
370.33	370.44	0.11	11.11.15	HVR-LC	100	-
381.77	381.92	0.15	11.11.1	non-rem	100	-
386.37	386.88	0.51	non-rem	11.11.15	100	NC
398.38	398.43	0.05	11.12.1	HVR-LC	100	-
399.22	399.36	0.14	11.12.1	11.12.1	100	NC
399.69	399.98	0.28	11.12.1	11.12.1	100	NC
406.73	406.76	0.03	11.3.25 / 11.3.4	11.11.15	100	NC
406.76	407.10	0.34	11.11.15 / 11.3.4	11.11.15	100	NC
407.67	408.03	0.36	11.11.15	11.11.15	100	NC
408.78	410.11	1.32	11.11.15	11.11.15	100	NC
430.12	430.16	0.03	11.1.4d	11.1.4	100	NC
433.45	433.52	0.07	11.11.16 / 11.3.26	non-rem	100	-
433.52	433.91	0.39	11.11.16 / 11.3.26	11.11.16	100	OC

KP start (km)	KP End (km)	Length (km)	RE mapped by DERM	RE recorded by Field Survey	% of RE recorded	Field Survey Status [#]
433.91	434.17	0.26	11.11.16 / 11.3.26	non-rem	100	-
446.40	446.52	0.11	non-rem	11.1.1	100	NC
446.52	446.54	0.02	non-rem	11.1.4	100	NC
446.54	446.59	0.05	non-rem	11.1.1	100	NC
446.64	446.78	0.13	11.1.4 / 11.3.4	11.1.4	100	NC
458.53	458.74	0.21	11.3.26 / 11.3.4	11.3.26	100	NC
462.17	462.31	0.14	11.3.26 / 11.3.4	11.3.26	100	NC
462.31	462.75	0.45	non-rem	11.3.26	100	NC
463.80	464.59	0.79	11.3.26 / 11.3.4	11.3.26 / 11.3.4	80/20	NC/OC
468.21	469.08	0.88	non-rem	11.11.4	100	NC
469.08	469.64	0.55	non-rem	11.11.4	100	NC
Elphinstone Lateral (EL)						
0.00	4.27	4.27	11.9.9 / 11.10.12	11.9.9 / 11.9.7	80/20	NC/OC
4.27	4.45	0.19	11.9.7a / 11.9.9	11.9.9 / 11.9.7	80/20	NC/OC
4.45	4.52	0.07	11.3.25	11.9.9 / 11.9.7	80/20	NC/OC
5.48	5.72	0.24	11.9.9 / 11.10.12	11.9.9	100	NC
8.42	11.58	3.16	11.9.7a / 11.9.9	11.9.9 / 11.9.7	80/20	NC/OC
11.91	15.93	4.02	11.9.7a / 11.9.9	11.9.9 / 11.9.7	80/20	NC/OC
16.34	16.48	0.14	11.9.7a / 11.9.9	11.3.2	100	OC
16.48	17.83	1.35	11.9.7a / 11.9.9 / 11.9.2	11.9.9 / 11.9.7	80/20	NC/OC
17.83	18.21	0.39	11.9.7a / 11.9.9 / 11.9.2	11.9.9	100	NC
18.21	18.33	0.12	11.9.7a / 11.9.9 / 11.9.2	11.9.7	100	OC
18.33	18.40	0.07	11.9.7a / 11.9.9	11.9.7	100	OC
18.40	18.71	0.30	11.9.7a / 11.9.9	11.9.9	100	NC
18.71	19.32	0.61	11.9.7a / 11.9.9	11.5.8	100	NC
19.32	19.48	0.16	11.5.8c	11.5.8	100	NC
19.48	20.02	0.54	11.9.7a / 11.9.9	11.9.7	100	OC
20.02	20.25	0.23	11.9.7a / 11.9.9	11.9.9	100	NC
20.25	20.39	0.13	11.9.7a / 11.9.9 / 11.9.2	11.9.9	100	NC
20.39	20.53	0.15	11.9.7a / 11.9.9 / 11.9.2	11.9.7	100	OC
20.53	20.59	0.05	11.9.7a / 11.9.9 / 11.9.2	11.9.9 / 11.9.7	80/20	NC/OC
20.59	23.95	3.36	11.9.7a	11.9.9 / 11.9.7	80/20	NC/OC
23.95	25.55	1.61	11.9.7a / 11.9.9	11.9.9 / 11.9.7	80/20	NC/OC

KP start (km)	KP End (km)	Length (km)	RE mapped by DERM	RE recorded by Field Survey	% of RE recorded	Field Survey Status [#]
25.55	25.92	0.37	11.5.8c	11.5.8	100	NC
25.92	28.30	2.38	11.9.7a / 11.9.9	11.9.9 / 11.9.7	80/20	NC/OC
29.14	29.68	0.54	11.5.3 / 11.7.2	11.5.3 / 11.7.2	80/20	NC/NC
29.68	31.15	1.47	11.5.8c	11.5.8	100	NC
31.15	31.25	0.10	11.5.3 / 11.7.2	11.5.8	100	NC
31.25	31.59	0.34	11.5.3 / 11.7.2	11.5.8	100	NC
31.59	31.94	0.35	11.3.27f	11.5.8 / 11.3.27	75/25	NC/OC
31.94	32.25	0.31	11.5.3 / 11.7.2	11.5.8	100	NC
32.25	32.39	0.13	11.5.3 / 11.7.2	11.5.8	100	NC
32.39	32.45	0.06	11.5.3 / 11.7.2	11.5.8	100	NC
34.76	34.84	0.09	11.5.3 / 11.7.2	11.3.25	100	OC
37.01	37.17	0.16	11.5.3 / 11.7.2	11.3.25	100	OC
37.93	37.98	0.04	11.5.3 / 11.7.2	11.3.25	100	OC
38.95	42.27	3.32	11.5.3 / 11.7.2	11.5.3 / 11.7.2	80/20	NC/NC
42.54	46.99	4.44	11.5.3 / 11.7.2	11.5.3 / 11.7.2	80/20	NC/NC
47.04	47.20	0.16	11.5.3 / 11.7.2	11.5.3 / 11.7.2	80/20	NC/NC
47.27	47.70	0.43	11.5.3 / 11.7.2	11.5.3 / 11.7.2	80/20	NC/NC
47.98	48.98	1.00	11.5.3 / 11.7.2	11.5.3 / 11.7.2	80/20	NC/NC
49.09	49.24	0.15	11.5.3 / 11.7.2	non-rem	100	-
49.56	50.88	1.33	11.5.3 / 11.7.2	11.5.3 / 11.7.2	80/20	NC/NC
50.88	50.95	0.07	non-rem	11.5.3 / 11.7.2	80/20	NC/NC
51.39	51.52	0.13	11.5.3	11.5.3	100	NC
51.75	51.85	0.10	11.3.2 / 11.3.1	11.5.3	100	NC
51.85	51.88	0.03	11.5.3	11.5.3	100	NC
Saraji Lateral (SL)						
0.00	0.11	0.11	11.5.3	11.5.3	100	NC
0.11	0.84	0.73	11.4.9 / 11.4.8 / 11.5.3	11.5.3	100	NC
1.66	1.81	0.15	11.4.9 / 11.4.8 / 11.5.3	11.5.3	100	NC
1.81	2.07	0.26	11.5.3	11.5.3	100	NC
3.09	3.46	0.38	11.4.9 / 11.4.8 / 11.5.3	11.5.3	100	NC
3.62	3.88	0.26	11.4.9 / 11.4.8 / 11.5.3	11.5.3	100	NC
4.56	6.02	1.45	11.5.3	11.5.3	100	NC
7.78	8.02	0.24	11.3.2 / 11.3.25 / 11.3.1	11.5.3	100	NC
8.02	10.76	2.74	11.5.3 / 11.4.9	11.5.3	100	NC

KP start (km)	KP End (km)	Length (km)	RE mapped by DERM	RE recorded by Field Survey	% of RE recorded	Field Survey Status [#]
11.09	12.88	1.79	11.5.3 / 11.4.9	11.5.3	100	NC
Dysart Lateral (DL)						
-	-	-	None present	None present	-	-

Status under biodiversity status recognised by DERM: E = Endangered; OC = Of Concern; NC = No Concern at Present.

3.3.2.4 Threshold and Critically Limited REs

The Queensland vegetation and biodiversity offset policies define two further categories of RE with conservation significance:

- Critically Limited REs that have a remnant extent below five per cent of their pre-clearing extent and are less than 500 ha in total extent; or have a remnant extent less than 200 ha; or are at risk of the remnant extent falling below 200 ha.
- Threshold REs that have a remnant extent near the threshold percentage for their conservation status (i.e. 10% or 30% of their pre-clearing extent).

Critically Limited and Threshold REs are listed in the Queensland vegetation and biodiversity offset policies.

No Critically Limited REs are mapped by DERM within the study area. Field surveys did not record any of these REs.

No Threshold REs are mapped by DERM within the proposed ROW. One Threshold RE is mapped within the 5 km buffer (RE 11.5.15 - semi-evergreen vine thicket on Cainozoic sand plains-remnant). No evidence of this RE was detected during field surveys.

3.3.3 Regrowth Vegetation

Regulated regrowth vegetation includes:

- Areas mapped by DERM as HVR vegetation of Endangered, Of Concern and Least Concern REs, and have not been cleared since 31 December 1989;
- Areas of native woody vegetation within 50m of a regrowth watercourse identified by DERM as a priority Great Barrier Reef catchment; and
- Areas mapped as a category C area on a Property Map of Assessable Vegetation (PMAV).

The ROW contains 84.2 ha of HVR vegetation, which represents approximately 0.68% of the area of HVR within the 5 km buffer (Table 7). This includes 19.59 ha of HVR of Endangered RE, 24.83 ha of HVR of Of Concern RE and 39.78 ha of HVR of Least Concern RE. Mapped HVR vegetation within the study area is shown in Figure 1 (Appendix A).

Table 7 High Value Regrowth Vegetation within the ROW and the 5 km Buffer

Regrowth Status*	Area in ROW (ha)	Area in 5 km Buffer (ha)	% in Buffer [^]
Endangered	19.59	11,271.55	0.17
Of Concern	24.83	11,072.47	0.22
Least Concern	39.78	15,713.17	0.25
Total Regrowth	84.2	38,057.19	0.64

* Status under Queensland VM Act: E = Endangered; OC = Of Concern; LC = Least Concern.

[^] Percentage of area in 5 km buffer that lies within the 30 m ROW.

3.4 Bioregional Corridors

DERM has conducted comprehensive biodiversity planning assessments (BPAs) for bioregions within Queensland using the biodiversity assessment and mapping methodology (EPA, 2002).

This methodology provides a consistent approach for assessing biodiversity values at the landscape scale in Queensland. It ranks areas of remnant vegetation into state, regional and local biodiversity significance, using a range of ecological criteria including size, rarity, diversity, fragmentation, habitat condition, resilience, threats, habitat for EVNT species and ecosystem processes. A key output of the BPA is identification and mapping of terrestrial corridors and riparian corridors throughout Queensland. The most recent BPA for the Brigalow Belt Bioregion is version 1.3 (EPA, 2008).

The ABP transects five terrestrial corridors and fifteen riparian corridors identified in the BPA. Terrestrial corridors are typically 10 km wide (i.e. a 5 km buffer), while riparian corridors are generally 2 km wide (i.e. a 1 km buffer).

The BPA classifies corridors into state and regional significance based on criteria including size and connectivity of remnant vegetation tracts, proximity to major watercourses and presence of EVNT species (DERM, 2008).

A breakdown of state and regional corridors within the ROW is provided in Table 8. The ROW contains 118.3 km of mapped corridor of state significance and 43.8 km of corridor of regional significance (Appendix A, Figure 3). However, 50.8% of the area identified within BPA corridors is cleared with low ecological value in its present condition. This is because corridors are buffered lines that connect existing core habitat areas and often traverse extensive areas of heavily cleared and highly fragmented landscape.

Table 8 Bioregional Corridors Transected by the Proposed Alignment

KP Start (km)	KP End (km)	Length (km)	Corridor Status	Area within ROW (ha)
Main line (AB)				
24.59	41.94	17.35	State	52.04
49.31	50.31	0.99	Regional	2.98
50.31	50.73	0.43	State	1.29
50.73	51.56	0.83	Regional	2.48
53.30	69.44	16.13	State	48.38
164.29	165.14	0.85	Regional	2.56
165.14	165.58	0.44	State	1.31
165.58	165.99	0.41	Regional	1.24
165.99	166.43	0.43	State	1.30
166.43	167.67	1.24	Regional	3.71
170.24	171.00	0.76	Regional	2.28
171.00	171.38	0.38	State	1.14
171.38	172.27	0.89	Regional	2.68
172.27	172.69	0.42	State	1.26
172.69	173.53	0.84	Regional	2.52
202.39	210.19	7.80	Regional	23.39
211.25	213.16	1.91	Regional	5.73
213.16	213.59	0.42	State	1.27
213.59	215.11	1.52	Regional	4.56
215.27	217.98	2.71	Regional	8.14

KP Start (km)	KP End (km)	Length (km)	Corridor Status	Area within ROW (ha)
232.89	234.70	1.81	Regional	5.43
234.70	235.57	0.86	State	2.59
235.57	238.86	3.29	Regional	9.88
238.86	239.26	0.40	State	1.19
239.26	239.85	0.59	Regional	1.78
239.85	240.23	0.38	State	1.13
240.23	241.34	1.11	Regional	3.33
244.53	245.31	0.78	Regional	2.34
245.31	245.70	0.39	State	1.17
245.70	246.48	0.78	Regional	2.34
246.75	257.89	11.15	State	33.44
284.52	300.42	15.90	State	47.69
317.25	318.13	0.88	Regional	2.64
318.13	318.50	0.37	State	1.11
318.50	319.71	1.21	Regional	3.62
319.71	320.08	0.37	State	1.11
320.08	320.82	0.74	Regional	2.23
Elphinstone Lateral (EL)				
0.00	49.29	49.29	State	147.87
Saraji Lateral (SL)				
5.90	6.70	0.79	Regional	2.38
6.70	7.10	0.40	State	1.20
7.10	9.20	2.10	Regional	6.30
16.44	17.62	1.19	Regional	3.56
17.62	17.96	0.33	State	1.00
17.96	18.31	0.36	Regional	1.07
18.31	18.97	0.65	State	1.96
18.97	19.14	0.17	Regional	0.50
19.14	19.67	0.54	State	1.61
19.67	19.78	0.11	Regional	0.32
19.78	20.20	0.42	State	1.27
20.20	21.06	0.85	Regional	2.56

KP Start (km)	KP End (km)	Length (km)	Corridor Status	Area within ROW (ha)
Dysart Lateral (DL)				
1.91	3.84	1.92	Regional	5.77
4.14	5.95	1.81	Regional	5.42
5.95	6.44	0.50	State	1.49
6.44	7.22	0.77	Regional	2.31
7.56	8.35	0.79	Regional	2.37
8.35	8.75	0.39	State	1.18
8.75	9.70	0.95	Regional	2.85

3.5 Essential Habitat for EVNT Flora

Essential habitat for *Eucalyptus raveretiana* (black ironbox), which is listed as Vulnerable under both the NC Act and the EPBC Act, occurs within the 5 km buffer area and within the ROW. The ROW contains 0.7 ha of essential habitat mapped by DERM near the crossing of Limestone Creek from AB 367 to 370 (Appendix A, Figure 1). This species occurs along rivers, creeks and watercourses on clay and loam soils. The distribution of the species overlaps with three EPBC listed EECs (Brigalow, semi-evergreen vine thickets and natural grasslands of the Queensland central highlands and the northern Fitzroy basin). Field surveys recorded black ironbox from one occurrence of essential habitat from AB 371.2 to 371.3. The distribution of black ironbox within the ROW is described in more detail in Section 3.6.

3.6 EVNT Flora

Table 9 lists EVNT flora species recorded within 5 km of the proposed pipeline route. Species data were collated from Queensland Herbarium, Wildnet and EPBC databases. The Queensland Herbarium has a total of 33 EVNT species records within the 5 km buffer, but no records within the 30 m ROW (Appendix A, Figure 3). The locations of EVNT species recorded during field surveys are mapped in Figure 4 (Appendix A).

EPBC listed flora include five Endangered species and 13 Vulnerable species. Flora listed under the Queensland NC Act include six Endangered species, 11 Vulnerable species and 12 Near Threatened species.

Table 9 EVNT Flora Species Recorded within the 5 km Pipeline Buffer

Scientific name	Status*		Recorded within ROW during field surveys	Source ^{^^}
	EPBC	NC Act		
<i>Bertya pedicellata</i>	-	NT	-	QH, W
<i>Bosistoa transversa</i> (syn. <i>B. selwynii</i>)	V	-	-	EPBC
<i>Capparis humistrata</i>	-	E	-	QH, W
<i>Cerbera dumicola</i>	-	NT	Yes	QH, W
<i>Corymbia xanthope</i>	V	V	-	W
<i>Cossinia australiana</i>	E	E	-	EPBC
<i>Cupaniopsis shirleyana</i>	V	V	-	EPBC
<i>Cycas megacarpa</i>	E	E	-	QH, W
<i>Cycas ophiolitica</i>	E	E	-	EPBC
<i>Cyperus clarus</i>	-	V	-	QH

Scientific name	Status*		Recorded within ROW during field surveys	Source^^
	EPBC	NC Act		
<i>Dansiea elliptica</i>	-	NT	-	W
<i>Desmodium macrocarpum</i>	-	NT	Yes	QH, W
<i>Dichanthium queenslandicum</i>	V	V	-	QH, W
<i>Dichanthium setosum</i>	V	NT	-	QH, W
<i>Digitaria porrecta</i>	E	NT	-	EPBC
<i>Eucalyptus raveretiana</i>	V	V	Yes	QH, W
<i>Euphorbia sarcostemmoides</i>	-	V	Yes	Not recorded previously
<i>Graptophyllum ilicifolium</i>	V	V	-	W
<i>Hernandia bivalvis</i>	-	NT	-	W
<i>Lepidium hyssopifolium</i>	E	-	-	W
<i>Leucopogon cuspidatus</i>	V	-	-	EPBC
<i>Lissanthe brevistyla</i>	-	V	-	QH, W
<i>Macropteranthes leiocaulis</i>	-	NT	-	QH, W
<i>Macrozamia serpentina</i>	-	E	-	QH, W
<i>Marsdenia hemiptera</i>	-	NT	-	QH, W
<i>Ozothamnus eriocephalus</i>	V	V	-	QH, W
<i>Paspalidium scabrifolium</i>	-	NT	-	QH, W
<i>Paspalidium udum</i>	-	V	-	W
<i>Pimelea leptospermoides</i>	V	NT	-	QH, W
<i>Pultenaea setulosa</i>	V	V	-	QH, W
<i>Quassia bidwillii</i>	V	V	-	EPBC
<i>Sannantha brachypoda</i>	-	NT	-	QH, W
<i>Solanum elachophyllum</i>	-	E	-	QH, W
<i>Taeniophyllum muelleri</i>	V	-	-	EPBC

* Status under EPBC Act and NC Act: E = Endangered; V = Vulnerable; NT = Near Threatened.

^^ Source of data: QH = Queensland Herbarium; W = DERM Wildnet; EPBC = EPBC protected matters search.

Four EVNT plant species were recorded within the study area during the field assessments. These species are:

- *Cerbera dumicola* (Near Threatened under the NC Act);
- *Desmodium macrocarpum* (Near Threatened under the NC Act);
- *Eucalyptus raveretiana* (Vulnerable under the NC Act and the EPBC Act); and
- *Euphorbia sarcostemmoides* (Vulnerable under the NC Act).

Cerbera dumicola (Appendix D, Plate 3) is a Near Threatened species that was recorded within the ROW between AB 61 to 62, AB 63 to 64 and AB 70 to 71 (Appendix A, Figure 4). This species was recorded within lancewood (*Acacia shirleyi*) and bendee (*Acacia catenulata*) woodlands on lateritic ridges (RE 11.7.2 / 11.7.3). Almost all individuals of this deciduous species were leafless during the September survey (Appendix D, Plate 4).

Desmodium macrocarpum (Appendix D, Plate 5) is a Near Threatened species that was recorded between AB 100.2 to 100.8 in poplar box (*Eucalyptus populnea*) woodland and between EL 30.8 to 31.2 in poplar gum (*Eucalyptus platyphylla*) woodland.

Eucalyptus raveretiana (black ironbox) is a vulnerable species that was recorded along watercourse crossings containing RE 11.3.25 from AB 349 to 383 (Appendix D, Plate 6). Populations were recorded at or adjacent to four watercourse crossings within the ROW:

- Two Mile Creek (AB 349.2);
- Limestone Creek (AB 371.3) - this area is also mapped as essential habitat for black ironbox;
- Deep Creek (AB 373.4); and
- Lion Creek (AB 382.8).

Euphorbia sarcostemmoides (Appendix D, Plate 7) is a Vulnerable species that was recorded within the ROW at AB 70.5. A small population of this species was found in a lancewood (*Acacia shirleyi*) community on a lateritic ridge (RE 11.7.2 / 11.7.3). This species has not been recorded in the area prior to this survey.

3.7 Wetlands

Based on DERM referable wetland mapping and field surveys, the proposed pipeline route transects referable wetlands containing four REs:

- 11.1.1: *Sporobolus virginicus* grassland on marine clay plains (No Concern at Present);
- 11.1.4: Mangrove forest / woodland on marine clay plains (No Concern at Present);
- 11.3.25: *Eucalyptus tereticornis* or *E. camaldulensis* woodland fringing drainage lines (Of Concern); and
- 11.3.27: Freshwater wetlands (Of Concern).

The majority of wetlands observed within the alignment were narrow bands of fringing riparian vegetation (RE 11.3.25) along streams (Appendix D, Plate 8). Most riparian vegetation has been degraded by clearing, frequent fires, weed invasion, grazing, erosion and changes in stream hydrology (e.g. weirs, sedimentation). Some larger watercourses in the study also contain seasonal to permanent pools that support aquatic vegetation.

Non-riverine freshwater wetlands within the ROW (RE 11.3.27) were recorded at:

- EL 31.6 to EL 31.9;
- SL 7.7 to SL 7.8; and
- SL 10.8 to SL 11.1 (Appendix D, Plate 9).

Most non-riverine freshwater wetlands within the ROW (RE 11.3.27) appeared to be ephemeral, with low abundance and diversity of aquatic vegetation. Aquatic flora species are discussed in more detail in Section 3.8.

Marine wetlands containing RE 11.1.1 and 11.1.4 were associated with several tidal creeks in the southern section of the mainline (Appendix D, Plate 10). Marine flora species are discussed in more detail in Section 3.9.

Table 10 Wetlands Transected by the Proposed Alignment

KP start (km)	KP End (km)	Length (km)	RE mapped by DERM	RE recorded by Field Survey	% of RE recorded	Field Survey Status #
Main line (AB)						
12.14	12.27	0.13	11.3.25	11.3.25	100	OC
36.45	36.79	0.34	11.3.2 / 11.3.25	11.3.25	100	OC
50.08	50.22	0.15	11.3.25	11.3.25	100	OC
59.07	59.14	0.06	11.3.25	11.3.25	100	OC
67.58	67.73	0.15	11.3.25	11.3.25	100	OC
68.24	68.28	0.05	11.3.25	11.3.25	100	OC
90.58	90.71	0.13	11.3.2 / 11.3.1 /	11.3.25	100	OC

KP start (km)	KP End (km)	Length (km)	RE mapped by DERM	RE recorded by Field Survey	% of RE recorded	Field Survey Status #
			11.3.25			
91.12	91.34	0.22	11.3.2 / 11.3.1 / 11.3.25	11.3.25	100	OC
92.86	93.07	0.20	11.3.2 / 11.3.1 / 11.3.25	11.3.25	100	OC
96.47	96.54	0.07	11.3.25	11.3.25	100	OC
105.08	105.23	0.15	11.3.25	11.3.25	100	OC
109.15	109.35	0.20	11.3.25	11.3.25	100	OC
160.17	160.25	0.07	11.3.7 / 11.3.1 / 11.3.1b	11.3.25	100	OC
164.69	164.85	0.17	11.3.25	11.3.25	100	OC
171.79	171.85	0.07	11.3.25	11.3.25	100	OC
233.85	234.08	0.23	11.3.3 / 11.3.4 / 11.3.25	11.3.25	100	OC
234.08	234.66	0.58	11.3.25	11.3.25	100	OC
239.46	239.52	0.05	11.3.25	11.3.25	100	OC
244.99	245.15	0.16	11.3.25	11.3.25	100	OC
248.92	249.07	0.16	11.3.25	11.3.25	100	OC
261.42	261.46	0.05	11.4.2 / 11.3.3 / 11.3.1	11.3.25	100	OC
275.73	275.80	0.07	11.5.3 / 11.3.2	11.3.25	100	OC
285.37	285.47	0.09	11.3.26 / 11.3.4 / 11.3.25 / 11.3.1	11.3.25	100	OC
286.38	286.46	0.08	11.3.26 / 11.3.4 / 11.3.25 / 11.3.1	11.3.25	100	OC
289.08	289.16	0.08	11.3.26 / 11.3.4 / 11.3.25 / 11.3.1	11.3.25	100	OC
319.46	319.55	0.08	non-rem	11.3.25	100	OC
349.17	349.23	0.06	11.3.25 / 11.3.2 / 11.3.4	11.3.25	100	OC
371.16	371.29	0.13	11.3.25 / 11.3.4 / 11.3.2	11.3.25	100	OC
373.31	373.37	0.07	11.3.25 / 11.3.4 / 11.3.2	11.3.25	100	OC
377.56	377.66	0.10	11.3.4 / 11.3.25 / 11.3.2	11.3.25	100	OC

KP start (km)	KP End (km)	Length (km)	RE mapped by DERM	RE recorded by Field Survey	% of RE recorded	Field Survey Status #
382.60	382.77	0.17	11.3.25 / 11.3.4 / 11.3.4	11.3.25 / 11.3.4	80/20	OC/OC
399.16	399.22	0.07	11.3.25 / 11.3.4 / 11.3.4 / 11.3.2	11.3.25	100	OC
400.07	400.22	0.15	11.3.25 / 11.3.4 / 11.3.4 / 11.3.2	11.3.4 / 11.3.25	50/50	OC/OC
402.53	402.83	0.30	11.3.4 / 11.3.4 / 11.3.25 / 11.3.2	11.3.4 / 11.3.25	50/50	OC/OC
406.39	406.42	0.03	11.3.25 / 11.3.4	11.3.25	100	OC
406.69	406.73	0.04	11.3.25 / 11.3.4	11.3.25	100	OC
410.11	410.26	0.15	11.3.4 / 11.3.25	11.3.4 / 11.3.25	90/10	OC/OC
413.63	413.67	0.04	non-rem	11.3.25	100	OC
419.77	419.79	0.03	non-rem	11.3.25	100	OC
430.12	430.16	0.03	11.1.4d	11.1.4	100	NC
446.40	446.52	0.11	non-rem	11.1.1	100	NC
446.52	446.54	0.02	non-rem	11.1.4	100	NC
446.54	446.59	0.05	non-rem	11.1.1	100	NC
446.64	446.78	0.13	11.1.4 / 11.3.4	11.1.4	100	NC
Elphinstone Lateral (EL)						
4.52	4.70	0.18	11.3.25	11.3.25	100	OC
7.08	7.30	0.22	11.3.25	11.3.25	100	OC
8.28	8.42	0.14	11.3.25	11.3.25	100	OC
11.58	11.91	0.33	11.3.25	11.3.25	100	OC
28.44	28.54	0.10	11.3.4 / 11.3.2	11.3.25	100	OC
31.59	31.94	0.35	11.3.27f	11.5.8 / 11.3.27	75/25	NC/OC
34.76	34.84	0.09	11.5.3 / 11.7.2	11.3.25	100	OC
37.01	37.17	0.16	11.5.3 / 11.7.2	11.3.25	100	OC
37.93	37.98	0.04	11.5.3 / 11.7.2	11.3.25	100	OC
51.52	51.75	0.23	11.3.2 / 11.3.1	11.3.25	100	OC
Saraji Lateral (SL)						
6.16	6.87	0.72	11.3.2 / 11.3.25 / 11.3.1	11.3.2 / 11.3.25	50/50	OC/OC

KP start (km)	KP End (km)	Length (km)	RE mapped by DERM	RE recorded by Field Survey	% of RE recorded	Field Survey Status #
7.67	7.71	0.04	11.3.2 / 11.3.25 / 11.3.1	11.3.25	100	OC
7.71	7.78	0.07	11.3.27b	11.3.27	100	OC
10.76	11.09	0.33	11.3.27b	11.3.27	100	OC
18.74	18.95	0.21	11.3.25	11.3.25	100	OC
Dysart Lateral (DL)						
18.19	18.30	0.11	11.3.25	11.3.25	100	OC

Status under biodiversity status recognised by Qld DERM: E = Endangered; OC = Of Concern; NC = No Concern at Present.

A natural waterhole (Ungle Waterhole on Clarke Creek) lies adjacent to the ROW at approximately AB 236. This waterhole has been avoided by the pipeline and will not be directly impacted.

3.8 Aquatic Flora

The majority of the waterways and wetlands intersected by the pipeline are likely to be ephemeral and contain limited habitat for aquatic species. Nevertheless, numerous aquatic and semi-aquatic flora species have been recorded in wetlands within the pipeline buffer by the Queensland Herbarium and within the ROW during the field surveys (Table 11).

A total of fourteen aquatic species were recorded during the field surveys. None of the species recorded are listed as threatened under State or Commonwealth legislation.

Table 11 Native Aquatic Flora Species Recorded within the Pipeline Buffer by Queensland Herbarium and in the 30 m ROW during Field Surveys.

Scientific Name	Family	Plant Group	Habitat	Recorded by QH	Observed during the field survey
<i>Abildgaardia ovata</i>	Cyperaceae	Angiosperm	Semi-aquatic	Y	N
<i>Aponogeton queenslandicus</i>	Aponogetonaceae	Angiosperm	Freshwater	Y	N
<i>Azolla pennata</i>	Azollaceae	Angiosperm	Freshwater	N	Y
<i>Ceratophyllum demersum</i>	Ceratophyllaceae	Angiosperm	Freshwater	Y	N
<i>Cyperus</i> species	Cyperaceae	Angiosperm	Freshwater, semi-aquatic	Y	Y
<i>Eleocharis dietrichiana</i>	Cyperaceae	Angiosperm	Freshwater	Y	N
<i>Eleocharis dulchus</i>	Cyperaceae	Angiosperm	Freshwater	N	Y
<i>Fimbristylis</i> species	Cyperaceae	Angiosperm	Freshwater, semi-aquatic	Y	Y
<i>Ischaemum australe</i>	Poaceae	Angiosperm	Semi-aquatic	Y	N
<i>Juncus</i> species	Juncaceae	Angiosperm	Freshwater, semi-aquatic	Y	Y
<i>Ludwigia octovalvis</i>	Onagraceae	Angiosperm	Semi-aquatic	Y	Y
<i>Ludwigia peploides</i>	Onagraceae	Angiosperm	Freshwater	Y	N
<i>Marsilea exarata</i>	Marsileaceae	Pteridophyte	Freshwater	Y	N
<i>Marsilea mutica</i> *	Marsileaceae	Pteridophyte	Freshwater	N	Y

Scientific Name	Family	Plant Group	Habitat	Recorded by QH	Observed during the field survey
<i>Nymphaea gigantea</i>	Nymphaeaceae	Angiosperm	Freshwater	Y	N
<i>Nymphaea violacea</i>	Nymphaeaceae	Angiosperm	Freshwater	N	Y
<i>Ottelia alismoides</i>	Hydrocharitaceae	Angiosperm	Freshwater	Y	N
<i>Ottelia ovalifolia</i>	Hydrocharitaceae	Angiosperm	Freshwater	N	Y
<i>Paspalidium udum</i>	Poaceae	Angiosperm	Freshwater	Y	N
<i>Persicaria attenuata</i>	Polygonaceae	Angiosperm	Freshwater	Y	N
<i>Persicaria decipens</i> *	Polygonaceae	Angiosperm	Freshwater	N	Y
<i>Persicaria hydropiper</i>	Polygonaceae	Angiosperm	Freshwater	Y	N
<i>Persicaria lapathifolia</i>	Polygonaceae	Angiosperm	Freshwater	Y	N
<i>Persicaria orientalis</i>	Polygonaceae	Angiosperm	Freshwater	Y	N
<i>Persicaria prostrata</i>	Polygonaceae	Angiosperm	Freshwater	Y	N
<i>Phragmites australis</i> *	Poaceae	Angiosperm	Freshwater	N	Y
<i>Polygonum plebeium</i>	Polygonaceae	Angiosperm	Freshwater	Y	N
<i>Potamogeton crispus</i>	Potamogetonaceae	Angiosperm	Freshwater	Y	Y
<i>Potamogeton pectinatus</i>	Potamogetonaceae	Angiosperm	Freshwater	Y	N
<i>Pseudoraphis paradoxa</i>	Poaceae	Angiosperm	Freshwater	Y	N
<i>Pseudoraphis spinescens</i>	Poaceae	Angiosperm	Freshwater	Y	Y
<i>Schoenoplectus litoralis</i>	Cyperaceae	Angiosperm	Freshwater	Y	N
<i>Scleria mackaviensis</i>	Cyperaceae	Angiosperm	Semi-aquatic	Y	N
<i>Scleria polycarpa</i>	Cyperaceae	Angiosperm	Semi-aquatic	Y	N
<i>Utricularia sp.</i>	Lentibulariaceae	Angiosperm	Freshwater	N	Y

3.9 Marine Flora

The proposed revision D alignment transects saltmarsh and mangrove communities which contain marine plants along a 0.35 km section in the south of the study site (AB 446.4 to 446.8) and along a 40 m section near AB 430. These marine plants include:

- *Sporobolus virginicus* - saltwater couch;
- *Enchylaena tomentosa* - ruby saltbush;
- *Avicennia marina* - grey mangrove;
- *Aegiceras corniculatum* – river mangrove;
- *Ceriops tagal* – yellow mangrove;
- *Excoecaria agallocha* – milky mangrove;
- *Sarcocornia quinqueflora* - beaded glasswort;
- *Suaeda australis* - austral seablite; and
- *Limonium solanderi* - sea lavender.

Other marine species that have been recorded by the Queensland Herbarium in the 5 km buffer which could be recorded in estuarine areas along the ROW include:

- *Bruguiera gymnorhiza* – large-leaved mangrove;
- *Suaeda arbusculoides*;
- *Tecticornia indica*; and
- *Tecticornia pergranulata*.

3.10 Non-EVNT Flora Species

The Wildnet database identifies 1,459 Least Concern flora species and 24 threatened flora species within the study area.

Surveys identified many Least Concern species, but comprehensive tables of these species were not compiled, as it was considered that these do not contribute significantly to the assessment of ecological values and potential impacts of the project. Detailed flora assessments, including comprehensive lists of woody species and common ground-storey species were conducted for 34 sites (tertiary level sites). The tertiary and quaternary data sheets are provided in Appendix C of this report.

3.11 Introduced Flora

The Commonwealth Government recognises 20 Weeds of National Significance (WONS) across Australia, based on their:

- Invasiveness and impact characteristics;
- Potential and current area of spread; and
- Current primary industry, environmental and socio-economic impacts.

The *Land Protection (Pest and Stock Route) Management Act 2002* (LP Act) lists declared species for Queensland. Under the Act, pest species for both plants and animals are classified into three categories:

- Class 1 species are not generally established in Queensland and have potential to cause adverse economic, environmental or social impact. The landowner is obliged to take reasonable steps to keep their land free of Class 1 pest species, unless the owner holds a declared pest permit allowing the pests to be kept on the land.
- Class 2 species are established in Queensland and can cause significant adverse economical, environmental or social impact. The landowner is obliged to take reasonable steps to keep their land free of Class 2 pest species, unless the owner holds a declared pest permit allowing the pests to be kept on the land.
- Class 3 species are established in Queensland and have or could have adverse economical, environmental or social impact. Legislative obligations relating to control of these species are generally limited to specific conservation areas.

The desktop searches of the Queensland Herbarium, DERM Wildnet and EPBC databases identified 168 introduced flora species within the pipeline buffer. Invasive species, including WoNS and other introduced plants considered to pose a particular threat to biodiversity and that could potentially occur in the ROW are listed in Table 12.

A total of 12 declared weeds were recorded within the ROW during field surveys including:

- Nine Class 2 weeds, including three WONS; and
- Three Class 3 weeds, including one WONS.

Table 12 Invasive Plants identified within the Pipeline Buffer from Desktop Assessments and Detected during Field Surveys.

Scientific Name	Common Name	LP Act Status*	National Status ^A	KP of Survey Record
<i>Acacia nilotica subsp. indica</i>	Prickly Acacia	2	WONS	
<i>Asparagus aethiopicus</i>	Asparagus Fern	3	-	AB Line - 419.7
<i>Asparagus africanus</i>	Asparagus Fern	3	-	
<i>Asparagus plumosus</i>	Climbing Asparagus Fern	3	-	
<i>Baccharis halimifolia</i>	Groundsel Bush	2	-	
<i>Bryophyllum delagoense</i>	Mother of Millions	2	-	AB Line - 12.3, 399.1, 406.3, 465.3
<i>Bryophyllum x houghtonii</i>	Mother of Millions hybrid	2	-	
<i>Cascabela thevetia</i>	Yellow Oleander	3	-	
<i>Cinnamomum camphora</i>	Camphor Laurel	3	-	
<i>Cryptostegia grandiflora</i>	Rubber Vine	2	WONS	AB Line - 249. 261.5, 275.6, 277.7, 284.2, 286.4, 289.1, 303.1, 328.1, 332.2, 336.3, 358.4, 358.4, 358.7, 370.4, 377.6, 382.7, 391.4, 402.7, 410.1, 430.1, 430.5, 433.1, 433.5, 446.6, 448.5, 458.6, 462.5, 465.3
<i>Eichhornia crassipes</i>	Water Hyacinth	2	-	
<i>Harrisia martini</i>	Harrisia Cactus	2	-	AB Line -, 10.5, 13.0, 37.6, 87.1, 90.2, 93.5, 95.1, 96.5, 97.7, 232.5, 238.5, 249.0, 261.5, 312.4, 430.5, 433.1, 433.5, 445.5, 446.4, 446.5 Elphinstone Lateral - 6.2, 18.2 Saraji - 0.5, 12.9
<i>Hymenachne amplexicaulis</i>	Hymenachne	2	WONS	-
<i>Jatropha gossypifolia</i>	Bellyache Bush	2	-	-
<i>Lantana camara</i>	Lantana	3	WONS	AB Line - 50.2, 165.5, 280.1, 289.1, 358.4, 358.7, 370.4, 377.6, 387.4, 391.4, 399.1, 399.8, 402.7, 406.3, 413.6, 433.5, 445.5, 446.4, 458.6, 460.6, 465.3, 466.6, 469.3, 469.3, 410.4 Elphinstone Lateral - 6.2, 12.8 Saraji Lateral - 17, 19
<i>Lantana montevidensis</i>	Creeping Lantana	3	-	AB Line - 410.1
<i>Macfadyena unguis-cati</i>	Cat's Claw Creeper	3	-	-

Scientific Name	Common Name	LP Act Status*	National Status^	KP of Survey Record
<i>Opuntia stricta</i>	Common Pest Pear	2	-	AB Line - 10.5, 12.3, 19.0, 50.0, 50.2, , 87.1, 93.5, 95.1, 97.7, 144.9, 245.1, 307.9, 358.7, 442.4, 446.4, 448.5, 465.3 Elphinstone Lateral - 17.8, 12.8, 51.6, 18.6 Saraji Lateral - 12.9, 5.8
<i>Opuntia tomentosa</i>	Velvety Tree Pear	2	-	AB Line - 0.5, 249, 261.5, 312.4
<i>Parkinsonia aculeata</i>	Parkinsonia	2	WONS	AB Line - 18.4, 167.5
<i>Parthenium hysterophorus</i> (Appendix D, Plate 11)	Parthenium Weed	2	WONS	AB Line - 35.3; 37.0; 37.2; 58.3; 66.5, 68.2, 74.9, 75.1, 87.1, 110.0, 144.9, 160.1, 232.5, 261.5, 319.7, 332.2, 336.3, 349.3 Dysart Lateral - 16.8, 18.4 Elphinstone Lateral- 8.3, 12.8, 18.2 Saraji Lateral - 17.3
<i>Pennisetum setaceum</i>	Fountain Grass	3	-	-
<i>Prosopis pallida</i>	Mesquites	2	WONS	
<i>Salvinia molesta</i>	Salvinia	2	WONS	
<i>Schinus terebinthifolius</i>	Broad-leaved Pepper Tree	3	-	
<i>Spathodea campanulata</i> <i>subsp. nilotica</i>	African Tulip Tree	3	-	
<i>Sphagneticola trilobata</i>	Singapore Daisy	3	-	
<i>Sporobolus fertilis</i>	Giant Parramatta Grass	2	-	
<i>Sporobolus jacquemontii</i>	American Rat's Tail Grass	2	-	
<i>Sporobolus natalensis</i>	Giant Rat's Tail Grass	2	-	AB Line - 92.2, 475.9, 476.2, 477.3 Dysart Lateral - 30
<i>Sporobolus pyramidalis</i>	Giant Rat's Tail Grass	2	-	
<i>Thunbergia grandiflora</i>	Blue Thunbergia	2	-	
<i>Ziziphus mauritiana</i>	Indian jujube; Chinee Apple	2	-	AB Line - 377.6, 406.2

* Species declared under LP Act.

^ Species listed as Weed of National Significance.

4.0 Potential Impacts

4.1 Protected Area Estates

No areas of protected area estate lie adjacent to, or are transected by the proposed pipeline ROW, so are unlikely to be impacted by construction or operating activities provided that appropriate mitigation measures are implemented

4.2 Key Flora Issues and Constraints

The key flora issues and constraints relating to the clearing of remnant vegetation include:

- Loss of Endangered brigalow communities on alluvial plains (RE 11.3.1);
- Loss of Endangered brigalow communities on clay plains (RE 11.4.9);
- Loss of Endangered Natural grasslands of the Queensland Central Highlands and the northern Fitzroy Basin (RE 11.8.11);
- Loss of 12 Of Concern REs (11.3.2, 11.3.3, 11.3.4, 11.3.7, 11.3.25, 11.3.27, 11.3.36, 11.4.2 11.7.1x1, 11.8.11, 11.9.7, 11.11.16);
- Loss of 16 No Concern at Present REs (11.1.1, 11.1.4, 11.3.26, 11.5.3, 11.5.8, 11.5.9, 11.5.12, 11.7.2, 11.8.5, 11.9.2, 11.9.9, 11.11.1, 11.11.4, 11.11.15, 11.12.1, 11.12.2);
- Impacts on four EVNT flora species recorded in or close to the proposed alignment during the field surveys;
- Loss of potential habitat for EVNT flora species (detected and mapped);
- Loss of freshwater wetland ecosystems and associated riparian vegetation;
- Loss of marine wetlands and associated marine plants; and
- Fragmentation of remnant vegetation blocks.

4.3 Potential Impacts on Vegetation Communities

The proposed pipeline alignment transects approximately 124.03 km of remnant vegetation, or 21.35% of the proposed 580.8 km pipeline alignment (with laterals). Assuming that the entire 30 m wide ROW contained remnant vegetation and was required for construction, the total disturbance area would be approximately 371.2 ha of remnant vegetation (456.29 ha including HVR).

Table 13 lists the estimated maximum clearing requirements for each biodiversity conservation category of remnant vegetation – Endangered, Of Concern and No Concern at Present. This table also presents the area of these communities within the 5 km buffer area and the percentage affected by the proposed alignment. Assuming the entire 30 m ROW was cleared, the project would remove only 0.33% of the remnant vegetation (of equivalent RE types) within the 5 km wide buffer.

Table 13 Estimated Maximum Vegetation Clearing within ROW

Biodiversity Status*	Pipeline	Area in ROW (ha)	Area in 5 km Buffer (ha)	% in Buffer [^]
Endangered	Main Line (AB)	1.35	-	-
	Elphinstone Lateral (EL)	0	-	-
	Saraji Lateral (SL)	0	-	-
	Dysart Lateral (DL)	0	-	-
Endangered Total		1.34	12,339.37	0.01
Of Concern	Main Line (AB)	37.37	-	-
	Elphinstone Lateral (EL)	31.08	-	-
	Saraji Lateral (SL)	14.07	-	-
	Dysart Lateral (DL)	1.02	-	-

Biodiversity Status*	Pipeline	Area in ROW (ha)	Area in 5 km Buffer (ha)	% in Buffer^
Of Concern Total		83.55	55208.42	0.15
No Concern at Present	Main Line (AB)	163.78	-	-
	Elphinstone Lateral (EL)	99.06	-	-
	Saraji Lateral (SL)	24.37	-	-
	Dysart Lateral (DL)	0	-	-
No Concern at Present Total		287.20	123,390.7	0.23
Total Regrowth		84.2	38057.19	0.64

A detailed breakdown of clearing requirements for each RE within the ROW for each line is given in Table 23 (Appendix B) and a sequential breakdown along the alignment is given in Table 22 (Appendix B).

4.4 Reversible Versus Non Reversible Impacts

In areas not subject to cropping and grazing, such as remnant and regrowth communities, there is the potential to allow tree and shrub vegetation to naturally re-establish over all but the area immediately over the pipeline. A reduced easement over the constructed pipeline will be required for the ongoing inspection and maintenance of the pipeline. Assuming that a 6 m easement is sufficient to protect the pipeline from root damage, the remaining 24 m would be expected to regenerate naturally in the medium term (20 to 50 years).

The pipeline is likely to be decommissioned within 40 to 50 years. Decommissioning would be in accordance with the regulatory requirements and accepted environmental best practices at that time. Current procedures include the removal of all above ground infrastructure and the restoration of associated disturbed areas. 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, maintenance and decommissioning of the pipeline are considered to be reversible within all REs.

4.5 Potential Impacts on EPBC Listed Vegetation Communities

Only two EPBC listed communities, Brigalow (RE 11.3.1 and 11.4.9) and Natural grasslands of the Queensland Central Highlands and the northern Fitzroy Basin (RE 11.8.11), were recorded within the proposed ROW. The alignment transects five areas of these EECs including:

- RE 11.3.1 from AB 167.69 to 167.98;
- RE 11.4.9 from AB 44.42 to 44.51 and AB 93.35 to 93.48; and
- RE 11.8.11 from AB 35.01 to 36.45 and AB 36.79 to 37.0.

The dimensions of vegetation clearing required at each location where EECs occur are given in Table 3 and potential mitigation measures are provided in Table 19. Up to 6.33 ha would be impacted if the entire 30 m ROW required clearing, representing 0.13% of these EECs occurring within the 5 km wide study area. The area impacted would be greatly reduced by utilising pre-existing clearings and reducing clearing widths in Endangered communities.

4.6 Potential Impacts on Regional Ecosystems

4.6.1 Potential Impacts on Regional Ecosystems with an Endangered Biodiversity Status

Two REs with an Endangered biodiversity status were recorded within the proposed ROW. The alignment transects three areas of Endangered REs, including:

- One area with a mix of *Eucalyptus* spp. and / or *Corymbia* spp. grassy or shrubby woodland on Cainozoic clay plains (11.4.2 - Of Concern) and *Acacia harpophylla* shrubby open forest to woodland with *Terminalia oblongata* on Cainozoic clay plains (11.4.9 - Endangered);

- One area of *Acacia harpophylla* and / or *Casuarina cristata* open forest on alluvial plains (11.3.1); and
- One area of *Acacia harpophylla* shrubby open forest to woodland with *Terminalia oblongata* on Cainozoic clay plains (11.4.9).

The dimensions of vegetation clearing required at each location where Endangered REs occur are given in Table 14 and potential mitigation measures are provided in Table 19. Up to 1.34 ha would be impacted if the entire 30 m ROW required clearing, representing 0.04% of these REs occurring within the 5 km wide study area. This figure would be greatly reduced by route refinements to avoid Endangered REs and utilising pre-existing clearings in Endangered communities.

Table 14 Estimated Clearing of REs with an Endangered Biodiversity Status

RE	KP Start (km)	KP End (km)	Length (km)	Area Cleared if full 30 m ROW (ha)
11.4.9 (40% of a mixed RE)	44.42	44.51	0.11	0.11
11.4.9	93.35	93.48	0.4	0.39
11.3.1	167.69	167.98	0.84	0.84

The indirect impacts of construction and operation on Endangered REs could include erosion, sediment loss and weed invasion. These impacts are unlikely to be significant provided adequate erosion and sediment control and weed management measures are implemented. Subject to the successful implementation of the mitigation recommendations provided in Section 5.0, the potential impacts on the Endangered REs are expected to be limited to the direct impact associated with the proposed disturbance footprint.

4.6.2 Potential Impacts on Regional Ecosystems with an Of Concern Biodiversity Status

Twelve REs with an Of Concern biodiversity status were recorded within the proposed ROW (Table 15). The alignment transects 120 areas of Of Concern REs, including:

- 52 areas of *Eucalyptus tereticornis* or *E. camaldulensis* woodland fringing drainage lines (11.3.25);
- 22 areas of *Eucalyptus populnea* woodland on alluvial plains (11.3.2);
- 14 areas of *Eucalyptus populnea*, *Eremophila mitchellii* shrubby woodland on fine-grained sedimentary rocks (11.9.7);
- 6 areas of *Eucalyptus coolabah* woodland on alluvial plains (11.3.3);
- 6 areas of *Eucalyptus tereticornis* and / or *Eucalyptus* spp. tall woodland on alluvial plains (11.3.4);
- 8 areas of *Corymbia* spp. woodland on alluvial plains (11.3.7);
- 3 areas of Freshwater wetlands (11.3.27);
- 2 areas of *Eucalyptus crebra* and / or *E. populnea* and / or *E. melanophloia* on alluvial plains. Higher terraces (11.3.36);
- 2 area of Semi-evergreen vine thicket (11.7.1x1);
- 2 areas of *Dichanthium sericeum* grassland on Cainozoic igneous rocks (11.8.11);
- 2 areas of *Eucalyptus cambageana*, *Acacia harpophylla* woodland on old sedimentary rocks with varying degrees of metamorphism and folding. Lowlands (11.11.16); and
- 1 area of *Eucalyptus* spp. and / or *Corymbia* spp. grassy or shrubby woodland on Cainozoic clay plains (11.4.2).

The dimensions of vegetation clearing required at each location where Of Concern REs occur are given in Table 15 and potential mitigation measures are provided in Table 19. Up to 83.5 ha would be impacted if the entire 30 m ROW required clearing, representing 0.15% of these REs occurring within the 5 km wide study area. This figure would be greatly reduced by route refinements to avoid Of Concern REs, utilising pre-existing clearings and reducing clearing widths in Of Concern communities adjacent to watercourses.

Table 15 Estimated Clearing of REs with an Of Concern Biodiversity Status

RE	KP Start (km)	KP End (km)	Length (km)	Area Cleared if full 30 m ROW (ha)
Main line (AB)				
11.3.25	12.14	12.27	0.13	0.39
11.8.11	35.01	36.45	1.45	4.35
11.3.25	36.45	36.79	0.34	1.02
11.8.11	36.79	37	0.21	0.63
11.4.2 (60% of a mixed RE)	44.42	44.51	0.1	0.17*
11.3.7	49.7	50.08	0.38	1.14
11.3.25	50.08	50.22	0.15	0.45
11.3.7	50.22	50.26	0.04	0.12
11.3.2	54.52	54.68	0.15	0.45
11.3.25	59.07	59.14	0.06	0.18
11.3.25	67.58	67.73	0.15	0.45
11.3.25	68.24	68.28	0.05	0.15
11.7.1x1	73.44	73.57	0.13	0.39
11.7.1x1	73.57	73.62	0.04	0.12
11.3.2	86.91	87.22	0.31	0.93
11.3.25	90.58	90.71	0.13	0.39
11.3.25	91.12	91.34	0.22	0.66
11.3.36	91.99	92.22	0.23	0.69
11.3.36	92.28	92.86	0.58	1.74
11.3.25	92.86	93.07	0.2	0.6
11.3.2	96.38	96.47	0.09	0.27
11.3.25	96.47	96.54	0.07	0.21
11.3.2	96.54	96.59	0.05	0.15
11.3.2	97.15	97.19	0.05	0.15
11.3.2	97.74	97.83	0.09	0.27
11.3.2	100.15	100.77	0.62	1.86
11.3.2	104.19	104.69	0.49	1.47
11.3.25	105.08	105.23	0.15	0.45
11.3.25	109.15	109.35	0.2	0.6

RE	KP Start (km)	KP End (km)	Length (km)	Area Cleared if full 30 m ROW (ha)
11.3.3	110	110.04	0.04	0.12
11.3.25	160.17	160.25	0.07	0.21
11.3.2 / 11.3.7	163.7	164	0.29	0.87
11.3.2 / 11.3.7	164.59	164.69	0.1	0.3
11.3.25	164.69	164.85	0.17	0.51
11.3.7 / 11.3.3	164.85	165.6	0.75	2.25
11.3.7 / 11.3.3	165.65	165.8	0.15	0.45
11.3.3	167.98	168.05	0.08	0.24
11.3.25	171.79	171.85	0.07	0.21
11.3.25	233.85	234.08	0.23	0.69
11.3.25	234.08	234.66	0.58	1.74
11.3.3	238.29	238.51	0.22	0.66
11.3.25	239.46	239.52	0.05	0.15
11.3.25	244.99	245.15	0.16	0.48
11.3.25	248.92	249.07	0.16	0.48
11.3.25	261.42	261.46	0.05	0.15
11.3.25	275.73	275.8	0.07	0.21
11.3.3	284.18	284.29	0.11	0.33
11.3.25	285.37	285.47	0.09	0.27
11.3.25	286.38	286.46	0.08	0.24
11.3.25	289.08	289.16	0.08	0.24
11.3.25	319.46	319.55	0.08	0.24
11.3.25	349.17	349.23	0.06	0.18
11.3.25	371.16	371.29	0.13	0.39
11.3.25	373.31	373.37	0.07	0.21
11.3.25	377.56	377.66	0.1	0.3
11.3.25 / 11.3.4	382.6	382.77	0.17	0.51
11.3.25	399.16	399.22	0.07	0.21
11.3.4 / 11.3.25	400.07	400.22	0.15	0.45
11.3.4 / 11.3.25	402.53	402.83	0.3	0.9
11.3.25	406.39	406.42	0.03	0.09

RE	KP Start (km)	KP End (km)	Length (km)	Area Cleared if full 30 m ROW (ha)
11.3.25	406.69	406.73	0.04	0.12
11.3.4 / 11.3.25	410.11	410.26	0.15	0.45
11.3.25	413.63	413.67	0.04	0.12
11.3.25	419.77	419.79	0.03	0.09
11.11.16	433.09	433.18	0.09	0.27
11.3.4 (20% of a mixed RE)	463.8	464.59	0.79	0.47
Elphinstone Lateral (EL)				
11.9.7 (20% of a mixed RE)	0	4.27	4.27	2.56*
11.9.7 (20% of a mixed RE)	4.27	4.45	0.19	0.11*
11.9.7 (20% of a mixed RE)	4.45	4.52	0.07	0.04*
11.3.25	4.52	4.7	0.18	0.54
11.3.2	4.7	5.48	0.78	2.34
11.3.2	5.72	7.08	1.36	4.08
11.3.25	7.08	7.3	0.22	0.66
11.3.2	7.3	8.28	0.98	2.94
11.3.25	8.28	8.42	0.14	0.42
11.9.7 (20% of a mixed RE)	8.42	11.58	3.16	1.98*
11.3.25	11.58	11.91	0.33	0.99
11.9.7 (20% of a mixed RE)	11.91	15.93	4.02	2.41*
11.3.2	15.93	16.34	0.42	1.26
11.3.2	16.34	16.48	0.14	0.42
11.9.7 (20% of a mixed RE)	16.48	17.83	1.35	0.81*
11.9.7	18.21	18.33	0.12	0.36
11.9.7	18.33	18.4	0.07	0.21
11.9.7	19.48	20.02	0.54	1.62
11.9.7	20.39	20.53	0.15	0.45
11.9.7	20.53	20.59	0.05	0.03*

RE	KP Start (km)	KP End (km)	Length (km)	Area Cleared if full 30 m ROW (ha)
(20% of a mixed RE)				
11.9.7 (20% of a mixed RE)	20.59	23.95	3.36	2.01*
11.9.7 (20% of a mixed RE)	23.95	25.55	1.61	0.966*
11.9.7 (20% of a mixed RE)	25.92	28.3	2.38	1.42*
11.3.4/11.3.2	28.3	28.44	0.15	0.45
11.3.25	28.44	28.54	0.1	0.3
11.3.27 (25% of a mixed RE)	31.59	31.94	0.35	0.26*
11.3.25	34.76	34.84	0.09	0.27
11.3.25	37.01	37.17	0.16	0.48
11.3.25	37.93	37.98	0.04	0.12
11.3.25	51.52	51.75	0.23	0.69
Saraji Lateral (SL)				
11.3.2/11.3.25	6.16	6.87	0.72	2.16
11.3.2	7.11	7.37	0.27	0.81
11.3.25	7.67	7.71	0.04	0.12
11.3.27	7.71	7.78	0.07	0.21
11.3.27	10.76	11.09	0.33	0.99
11.3.2 / 11.3.7	16.43	18.74	2.31	6.93
11.3.25	18.74	18.95	0.21	0.63
11.3.2 / 11.3.7	18.95	19.11	0.16	0.48
11.3.2	19.59	20.19	0.6	1.8
Dysart Lateral (DL)				
11.3.2	17.96	18.19	0.23	0.69
11.3.25	18.19	18.3	0.11	0.33

* Areas have been calculated based on percentage in the mosaic

The indirect impacts of construction and operation on Of Concern REs could include erosion, sediment loss and weed invasion. These impacts are unlikely to be significant provided adequate erosion and sediment control and weed management measures are implemented. Subject to the successful implementation of the mitigation recommendations provided in Section 5.0, the potential impacts on the Of Concern REs are expected to be limited to the direct impact associated with the proposed disturbance footprint.

4.6.3 Potential Impacts on Regional Ecosystems with a No Concern at Present Biodiversity Status

Sixteen REs with a biodiversity status of No Concern at Present were recorded within the proposed ROW (Table 16). The alignment transects 144 areas of No Concern at Present REs, including:

- 49 areas of *Eucalyptus populnea* +/- *E. melanophloia* +/- *Corymbia clarksoniana* on Cainozoic sand plains / remnant surfaces (11.5.3);
- 20 areas of *Eucalyptus crebra* woodland on fine-grained sedimentary rocks (11.9.9);
- 18 areas of *Eucalyptus crebra* and other *Eucalyptus* spp. and *Corymbia* spp. woodland on Cainozoic sand plains / remnant surfaces (11.5.9);
- 10 areas of *Melaleuca* spp., *Eucalyptus crebra*, *Corymbia intermedia* woodland on Cainozoic sand plains / remnant surfaces (11.5.8);
- 8 areas of *Eucalyptus crebra* woodland on deformed and metamorphosed sediments and interbedded volcanics (11.11.15);
- 6 areas of *Eucalyptus orgadophila* open woodland on Cainozoic igneous rocks (11.8.5);
- 13 areas of *Acacia* spp. woodland on Cainozoic lateritic duricrust. Scarp retreat zone (11.7.2);
- 4 areas of *Eucalyptus moluccana* or *E. microcarpa* woodland to open forest on margins of alluvial plains (11.3.26);
- 3 areas of Mangrove forest/woodland on marine clay plains (11.1.4);
- 3 areas of *Corymbia clarksoniana* woodland and other *Corymbia* spp. and *Eucalyptus* spp. on Cainozoic sand plains / remnant surfaces.(11.5.12);
- 2 areas of *Sporobolus virginicus* grassland on marine clay plains (11.1.1);
- 2 areas of *Eucalyptus crebra* woodland on igneous rocks (11.12.1);
- 2 area of *Eucalyptus crebra* woodland on old sedimentary rocks with varying degrees of metamorphism and folding. Coastal ranges (11.11.4);
- 2 area of *Eucalyptus melanophloia* woodland on igneous rocks (11.12.2);
- 1 area of *Eucalyptus melanophloia* +/- *E. orgadophila* woodland on fine-grained sedimentary rocks (11.9.2); and
- 1 area of *Eucalyptus crebra* +/- *Acacia rhodoxylon* woodland on old sedimentary rocks with varying degrees of metamorphism and folding (11.11.1)

The dimensions of vegetation clearing required at each location where No Concern at Present REs occur are given in Table 16 and potential mitigation measures are provided in Table 19. Up to 287.21 ha would be impacted if the entire 30 m ROW required clearing, representing 0.22% of these REs occurring within the 5 km wide study area. This figure would be greatly reduced by route refinements to avoid REs, utilising pre-existing clearings and modifications of the ROW to avoid mature vegetation.

Table 16 Estimated Clearing of REs with a No Concern at Present Biodiversity Status

RE	KP Start (km)	KP End (km)	Length (km)	Area Cleared if full 30 m ROW (ha)
Main line (AB)				
11.8.5	0	2.39	2.42	7.25
11.8.5	2.39	3.63	1.25	3.76
11.8.5	3.95	7.98	4.06	12.18
11.8.5	16.26	17.72	1.48	4.44
11.9.2	19.77	19.94	0.18	0.53
11.5.3	23.27	28.09	4.85	14.55
11.9.9	28.09	28.42	0.33	0.99
11.5.3	28.42	29.16	0.75	2.25
11.9.9	29.16	29.28	0.13	0.38
11.5.3	29.28	29.6	0.32	0.96
11.9.9	29.6	29.97	0.37	1.11
11.5.3	29.97	31.33	1.37	4.12
11.5.12	31.33	31.47	0.14	0.42
11.5.12	31.47	31.77	0.3	0.91
11.5.3	31.77	33.77	2.01	6.03
11.5.12	33.77	34.64	0.88	2.63
11.5.3	34.64	35.01	0.37	1.11
11.5.3	38.45	38.83	0.38	1.13
11.5.3	38.99	39.13	0.13	0.40
11.5.3	39.13	39.32	0.19	0.58
11.5.3	59.43	60.89	1.47	4.40
11.7.2	60.89	61.94	1.05	3.15
11.5.9 / 11.5.3	61.94	62.7	0.76	2.29
11.5.9 / 11.5.3	62.7	62.78	0.09	0.26
11.7.2	62.78	63.79	1.01	3.02
11.5.9	63.79	63.89	0.11	0.33
11.5.9 / 11.5.3	63.96	64.34	0.38	1.14
11.7.2	64.34	64.54	0.21	0.62
11.5.9 / 11.5.3	64.54	64.72	0.18	0.53

RE	KP Start (km)	KP End (km)	Length (km)	Area Cleared if full 30 m ROW (ha)
11.7.2	64.72	66.06	1.34	4.03
11.5.9 / 11.5.3	66.06	67.42	1.37	4.11
11.5.9 / 11.5.3	67.5	67.58	0.08	0.24
11.5.9 / 11.5.3	67.73	68.17	0.44	1.33
11.5.3	68.28	68.3	0.02	0.05
11.7.2	70.28	70.88	0.61	1.82
11.5.9	70.88	73.44	2.58	7.73
11.8.5	74.64	74.72	0.08	0.25
11.8.5	74.99	76.29	1.3	3.90
11.5.3	93.31	93.35	0.04	0.11
11.5.3	94.94	95.21	0.27	0.80
11.5.3	96.59	96.6	0.01	0.03
11.5.3	96.65	96.8	0.15	0.44
11.5.3	97.19	97.74	0.54	1.63
11.5.3	111.66	111.85	0.19	0.57
11.5.9	130.27	132.57	2.3	6.89
11.5.9	132.77	133.56	0.78	1.15
11.5.9	133.15	133.56	0.40	1.21
11.5.9	133.67	133.84	0.17	0.50
11.5.3	133.84	133.87	0.03	0.09
11.5.9	133.87	134.23	0.36	1.09
11.5.9	134.23	134.45	0.21	0.64
11.5.9	134.45	134.67	0.22	0.66
11.5.9	134.67	134.73	0.06	0.19
11.5.9	134.73	134.93	0.2	0.59
11.5.3	142.48	145	2.53	7.58
11.5.3	145	145.18	0.18	0.54
11.5.3	145.18	145.24	0.06	0.18
11.12.2	300.47	300.61	0.14	0.43
11.12.2	300.61	301.28	0.67	2.01
11.11.1	302.43	302.94	0.51	1.54

RE	KP Start (km)	KP End (km)	Length (km)	Area Cleared if full 30 m ROW (ha)
11.9.9	307.43	308.03	0.6	1.81
11.9.9	312.32	312.57	0.25	0.75
11.11.15	358.42	358.74	0.32	0.96
11.11.15	367	369.64	2.63	2.48
11.11.15	367.83	369.64	1.80	5.40
11.11.15	386.37	386.88	0.51	1.53
11.12.1	399.22	399.36	0.14	0.41
11.12.1	399.69	399.98	0.28	0.85
11.11.15	406.73	406.76	0.03	0.10
11.11.15	406.76	407.1	0.34	1.03
11.11.15	407.67	408.03	0.36	1.09
11.11.15	408.78	410.11	1.32	3.97
11.1.4	430.12	430.16	0.03	0.10
11.1.1	446.4	446.52	0.11	0.34
11.1.4	446.52	446.54	0.02	0.07
11.1.1	446.54	446.59	0.05	0.15
11.1.4	446.64	446.78	0.13	0.39
11.3.26	458.53	458.74	0.21	0.62
11.3.26	462.17	462.31	0.14	0.41
11.3.26	462.31	462.75	0.45	1.34
11.3.26 (80% of a mixed RE)	463.8	464.59	0.79	1.9*
11.11.4	468.21	469.64	0.88	2.63
11.11.4	469.08	469.64	0.55	1.65
Elphinstone Lateral (EL)				
11.9.9 (80% of a mixed RE)	0	4.27	4.27	10.24*
11.9.9 (80% of a mixed RE)	4.27	4.45	0.19	0.44*
11.9.9 (80% of a mixed RE)	4.45	4.52	0.07	0.17*
11.9.9	5.48	5.72	0.24	0.73
11.9.9	8.42	11.58	3.16	7.58*

RE	KP Start (km)	KP End (km)	Length (km)	Area Cleared if full 30 m ROW (ha)
(80% of a mixed RE)				
11.9.9 (80% of a mixed RE)	11.91	15.93	4.02	9.64*
11.9.9 (80% of a mixed RE)	16.48	17.83	1.35	3.23*
11.9.9	17.83	18.21	0.39	1.16
11.9.9	18.4	18.71	0.3	0.91
11.5.8	18.71	19.32	0.61	1.83
11.5.8	19.32	19.48	0.16	0.48
11.9.9	20.02	20.25	0.23	0.7
11.9.9	20.25	20.39	0.13	0.4
11.9.9 (80% of a mixed RE)	20.53	20.59	0.05	0.13*
11.9.9 (80% of a mixed RE)	20.59	23.95	3.36	8.07*
11.9.9 (80% of a mixed RE)	23.95	25.55	1.61	3.86*
11.5.8	25.55	25.92	0.37	1.10
11.9.9 (80% of a mixed RE)	25.92	28.3	2.38	5.7*
11.5.3 / 11.7.2	29.14	29.68	0.54	1.61
11.5.8	29.68	31.15	1.47	4.41
11.5.8	31.15	31.25	0.1	0.29
11.5.8	31.25	31.59	0.34	1.03
11.5.8 (75% of a mixed RE)	31.59	31.94	0.35	0.79*
11.5.8	31.94	32.45	0.5	1.52
11.5.3 / 11.7.2	38.95	42.27	3.32	9.96
11.5.3 / 11.7.2	42.54	46.99	4.44	13.33
11.5.3 / 11.7.2	47.04	47.2	0.16	0.48
11.5.3 / 11.7.2	47.27	47.7	0.43	1.29
11.5.3 / 11.7.2	47.98	48.98	1	3
11.5.3 / 11.7.2	49.56	50.88	1.33	3.98
11.5.3 / 11.7.2	50.88	50.95	0.07	0.21

RE	KP Start (km)	KP End (km)	Length (km)	Area Cleared if full 30 m ROW (ha)
11.5.3	51.39	51.52	0.13	0.39
11.5.3	51.75	51.85	0.1	0.31
11.5.3	51.85	51.88	0.03	0.08
Saraji Lateral (SL)				
11.5.3	0	0.11	0.11	0.34
11.5.3	0.11	0.84	0.73	2.19
11.5.3	1.66	1.81	0.15	0.46
11.5.3	1.81	2.07	0.26	0.77
11.5.3	3.09	3.46	0.38	1.13
11.5.3	3.62	3.88	0.26	0.78
11.5.3	4.56	6.02	1.45	4.36
11.5.3	7.78	8.02	0.24	0.73
11.5.3	8.02	10.76	2.74	8.23
11.5.3	11.09	12.88	1.79	5.38
Dysart Lateral (DL)				
None present	-	-	-	-

* Areas have been calculated based on percentage in the mosaic.

The indirect impacts of construction and operation on No Concern at Present REs could include erosion, sediment loss and weed invasion. These impacts are unlikely to be significant provided adequate erosion and sediment control and weed management measures are implemented. Subject to the successful implementation of the mitigation recommendations provided in Section 5.0, the potential impacts on the No Concern at Present REs are expected to be limited to the direct impact associated with the proposed disturbance footprint.

4.7 Potential Impacts on Regrowth Vegetation

The proposed ROW contains 84.2 ha of HVR vegetation, which represents approximately 0.68% of the area of HVR within the 5 km buffer (Table 7). This includes 19.59 ha of HVR of Endangered RE, 24.83 ha of HVR of Of Concern RE and 39.78 ha of HVR of Least Concern RE. Most occurrences of HVR are mosaics of varying vegetation density, so it is likely that clearing of HVR can be greatly reduced by utilising pre-existing clearings and minor route refinements.

4.8 Potential Impacts on Bioregional Corridors

The proposed ROW contains 486.3 ha of bioregional corridors mapped by DERM, including 355 ha considered to have state significance and 131.3 ha of regional significance (Table 17). Potential impacts on corridors will be substantially less than these figures as 50.8 % of the area in mapped corridors is cleared and provides limited connectivity value.

Subject to the successful implementation of the mitigation recommendations provided in Section 5.0, the potential impacts on connectivity are expected to be limited to the direct impact associated with clearing of remnant vegetation within identified corridors in the proposed disturbance footprint.

Table 17 Estimated Area of Bioregional Corridors within the ROW

Corridor Status*	Pipeline	Length in ROW (km)	Area in ROW (ha)
State	Mainline	65.83	197.42
	Elphinstone	49.29	147.87
	Saraji	2.35	7.04
	Dysart	0.89	2.67
State Total		118.33	355.00
Regional	Mainline	31.95	95.86
	Elphinstone	0	0
	Saraji	5.57	16.70
	Dysart	6.24	18.72
Regional Total		43.76	131.28
Corridor Total		162.12	486.29

* Corridor status assigned in Brigalow Belt Biodiversity Planning Assessment (DERM, 2008).

4.9 Potential Impacts on Essential Habitat for EVNT Flora

The proposed alignment transects two areas mapped by DERM as essential habitat for *Eucalyptus raveretiana* (black ironbox) which is listed as Vulnerable under both the NC Act and the EPBC Act. Populations of this eucalypt were recorded within one section of the mapped essential habitat from AB 371.2 to 371.3. Although there is 0.7 ha of essential habitat for black ironbox mapped within the ROW, black ironbox and its habitat was only surveyed within 0.4 ha within the ROW along Limestone Creek. A detailed discussion of potential impacts and mitigation measures for this species and its habitat is provided in Section 4.10 and Section 5.0.

4.10 Potential Impacts on EVNT Flora Species

The desktop assessment identified 34 EVNT plant species recorded or potentially occurring within the study area. Targeted searches for these species during field assessments revealed the presence of four EVNT plant species present within the study area, all four of which were recorded within the proposed pipeline ROW.

- *Cerbera dumicola* (Near Threatened under the NC Act);
- *Desmodium macrocarpum* (Near Threatened under the NC Act);
- *Eucalyptus raveretiana* (Vulnerable under the NC Act and the EPBC Act); and
- *Euphorbia sarcostemmoides* (Vulnerable under the NC Act).

Cerbera dumicola

Several populations of *Cerbera dumicola* were recorded within and adjacent to the proposed ROW between AB 61 to 62, AB 63 to 64 and AB 70 to 71, growing in lancewood and bendee (*Acacia catenulata*) woodlands on lateritic ridges (RE 11.7.2 / 11.7.3). Threats to the survival of this species is unknown, but are likely to include land clearing, weed invasion, inappropriate fire regimes, erosion and sediment loss. Potential impacts from the pipeline construction are likely to be limited to the direct loss of plants within the ROW and associated disturbance areas (e.g. access tracks) and the introduction of weeds.

The proposed ROW transects populations from AB 61 to 71. Surveys were conducted within *Cerbera dumicola* habitat to identify a potential route which does not contain any *Cerbera dumicola* individuals. Results from this survey indicate that it is possible to identify a route within this section that would avoid any direct impacts on this population.

Desmodium macrocarpum

Several populations of *Desmodium macrocarpum* were recorded within and adjacent to the proposed ROW between AB 100.2 to 100.8 in poplar box (*Eucalyptus populnea*) woodland and between EL 30.8 to 31.2 in poplar gum (*Eucalyptus platyphylla*) woodland.

Known and potential threats to *Desmodium macrocarpum* include destruction of habitat by clearing, inappropriate fire regimes, weed invasion and inappropriate grazing regimes (QPWS, 1999a). Potential impacts from the pipeline construction are likely to be limited to the direct loss of plants within the ROW and associated disturbance areas (e.g. access tracks) and the introduction of weeds.

Surveys were conducted within *Desmodium macrocarpum* habitat between AB 100.2 to 100.8 and EL 30.8 to 31.2 to identify a potential route which does not contain any *Desmodium macrocarpum* individuals. Results from this survey indicate that it is possible to identify a route within this section that would avoid any direct impacts on this population.

Eucalyptus raveretiana

Several populations of *Eucalyptus raveretiana* were recorded within and adjacent to the ROW along four watercourse crossings containing RE 11.3.25 from AB 349 to 383. Known and potential impacts to this eucalypt include destruction of habitat by clearing, habitat disturbance due to timber harvesting, weed invasion and smothering and timber harvesting (QPWS, 1999b). Potential impacts from the pipeline construction are likely to be limited to the direct loss of plants within the ROW and associated disturbance areas (e.g. access tracks) and the introduction of weeds.

Surveys were conducted within habitat for *Eucalyptus raveretiana* along watercourse crossings between AB 349 to 383 to identify a potential route which does not contain any individuals. Results from this survey indicate that it is possible to identify a route within this section that would avoid any direct impacts on this population.

Euphorbia sarcostemmoides

One population of *Euphorbia sarcostemmoides* was recorded within the ROW at AB 70.5, within a lancewood (*Acacia shirleyi*) community on a lateritic ridge (RE 11.7.2 / 11.7.3). Known and potential impacts to *Euphorbia sarcostemmoides* include inappropriate fire regimes, clearing of habitat, grazing and disturbance by domestic stock and feral goats, weed invasion and risk of local extinction due to small, scattered populations (DECC, 2005). Potential impacts from the pipeline construction are likely to be limited to the direct loss of plants within the ROW and associated disturbance areas (e.g. access tracks) and the introduction of weeds.

Surveys were conducted within *Euphorbia sarcostemmoides* habitat to identify a potential route which does not contain any individuals. Results from this survey indicate that it is possible to identify a route within this section that would avoid any direct impacts on this population.

4.11 Potential Impacts on Wetlands

Four REs identified as wetland REs were recorded within the proposed ROW (Table 10). The alignment transects 60 areas of REs containing wetlands, including:

- 52 areas of *Eucalyptus tereticornis* or *E. camaldulensis* woodland fringing drainage lines (11.3.25);
- 3 areas of Freshwater wetlands (11.3.27);
- 3 areas of Mangrove forest/woodland on marine clay plains (11.1.4); and
- 2 areas of *Sporobolus virginicus* grassland on marine clay plains (11.1.1).

The dimensions of vegetation clearing required at each location where wetland REs occur are given in Table 18. Up to 23.3 ha would be impacted if the entire 30 m ROW required clearing, representing 0.64% of these REs occurring within the study area. This figure would be greatly reduced by route refinements to avoid REs, Horizontal Directional Drilling (HDD) under major watercourses, utilising pre-existing clearings and modifications of the ROW to avoid mature vegetation.

Table 18 Estimated Clearing of REs Containing Wetlands

RE	KP Start (km)	KP End (km)	Length (km)	Area Cleared if full 30 m ROW (ha)
Main line (AB)				
11.3.25	12.14	12.27	0.13	0.39
11.3.25	36.45	36.79	0.34	1.02
11.3.25	50.08	50.22	0.15	0.45

RE	KP Start (km)	KP End (km)	Length (km)	Area Cleared if full 30 m ROW (ha)
11.3.25	59.07	59.14	0.06	0.18
11.3.25	67.58	67.73	0.15	0.45
11.3.25	68.24	68.28	0.05	0.15
11.3.25	90.58	90.71	0.13	0.39
11.3.25	91.12	91.34	0.22	0.66
11.3.25	92.86	93.07	0.2	0.6
11.3.25	96.47	96.54	0.07	0.21
11.3.25	105.08	105.23	0.15	0.45
11.3.25	109.15	109.35	0.2	0.6
11.3.25	160.17	160.25	0.07	0.21
11.3.25	164.69	164.85	0.17	0.51
11.3.25	171.79	171.85	0.07	0.21
11.3.25	233.85	234.08	0.23	0.69
11.3.25	234.08	234.66	0.58	1.74
11.3.25	239.46	239.52	0.05	0.15
11.3.25	244.99	245.15	0.16	0.48
11.3.25	248.92	249.07	0.16	0.48
11.3.25	261.42	261.46	0.05	0.15
11.3.25	275.73	275.8	0.07	0.21
11.3.25	285.37	285.47	0.09	0.27
11.3.25	286.38	286.46	0.08	0.24
11.3.25	289.08	289.16	0.08	0.24
11.3.25	319.46	319.55	0.08	0.24
11.3.25	349.17	349.23	0.06	0.18
11.3.25	371.16	371.29	0.13	0.39
11.3.25	373.31	373.37	0.07	0.21
11.3.25	377.56	377.66	0.1	0.3
11.3.25 (80% of mixed RE)	382.6	382.77	0.17	0.41
11.3.25	399.16	399.22	0.07	0.21
11.3.25	400.07	400.22	0.15	0.22

RE	KP Start (km)	KP End (km)	Length (km)	Area Cleared if full 30 m ROW (ha)
(50% of mixed RE)				
11.3.25 (50% of mixed RE)	402.53	402.83	0.3	0.45
11.3.25	406.39	406.42	0.03	0.09
11.3.25	406.69	406.73	0.04	0.12
11.3.25 (10% of mixed RE)	410.11	410.26	0.15	0.04
11.3.25	413.63	413.67	0.04	0.12
11.3.25	419.77	419.79	0.03	0.09
11.1.4	430.12	430.16	0.03	0.10
11.1.1	446.4	446.52	0.11	0.34
11.1.4	446.52	446.54	0.02	0.07
11.1.1	446.54	446.59	0.05	0.15
11.1.4	446.64	446.78	0.13	0.39
Elphinstone Lateral (EL)				
11.3.25	4.52	4.7	0.18	0.54
11.3.25	7.08	7.3	0.22	0.66
11.3.25	8.28	8.42	0.14	0.42
11.3.25	11.58	11.91	0.33	0.99
11.3.25	28.44	28.54	0.1	0.3
11.3.27 (25% of a mixed RE)	31.59	31.94	0.35	0.26*
11.3.25	34.76	34.84	0.09	0.27
11.3.25	37.01	37.17	0.16	0.48
11.3.25	37.93	37.98	0.04	0.12
11.3.25	51.52	51.75	0.23	0.69
Saraji Lateral (SL)				
11.3.25 (50% of mixed RE)	6.16	6.87	0.72	1.07
11.3.25	7.67	7.71	0.04	0.12
11.3.27	7.71	7.78	0.07	0.21
11.3.27	10.76	11.09	0.33	0.99
11.3.25	18.74	18.95	0.21	0.63

RE	KP Start (km)	KP End (km)	Length (km)	Area Cleared if full 30 m ROW (ha)
Dysart Lateral (DL)				
11.3.25	18.19	18.3	0.11	0.33

Aquatic ecosystems could be indirectly impacted by altered water, sediment and nutrient flows if watercourse disturbance is not effectively managed. Construction works could also lead to the introduction and spread of aquatic weeds, such as hymenachne (*Hymenachne amplexicaulis*).

Subject to the successful implementation of the mitigation recommendations provided in Section 5.0 (including minimising clearing widths in beds of watercourses, minimising watercourse disturbance during the wet season, minimising impacts on water, sediment and nutrient flows and effective weed hygiene practices to avoid the introduction and spread of aquatic weeds), the proposed development is considered unlikely to have any significant impacts on aquatic ecosystems.

4.12 Potential Impacts on Aquatic Flora

The desktop assessment identified 35 aquatic plant species recorded within the study area (Table 11). Targeted searches for these species during field assessments revealed the presence of fourteen aquatic species. No EVNT aquatic species were detected.

The proposed pipeline route has the potential to impact on riparian plant species and aquatic plant species associated with watercourses and natural waterholes / wetland areas. Most species are widespread and abundant, so are unlikely to be significantly impacted by construction of the proposed pipeline, provided that appropriate mitigation measures are implemented. Aquatic ecosystems could also be indirectly impacted by altered water, sediment and nutrient flows if watercourse disturbance is not effectively managed. Construction works could also lead to the introduction and spread of aquatic weeds, such as hymenachne (*Hymenachne amplexicaulis*).

Subject to the successful implementation of the mitigation recommendations provided in Section 5.0 (including route revisions to avoid non-riverine wetlands, HDD of major watercourses, minimising clearing widths in beds of watercourses, minimising watercourse disturbance during the wet season, minimising impacts on water, sediment and nutrient flows and effective weed hygiene practices to avoid the introduction and spread of aquatic weeds), the proposed development is considered unlikely to have any significant impacts on aquatic ecosystems.

4.13 Potential Impacts on Marine Flora

The proposed alignment transects 0.35 km of saltmarsh (RE 11.1.1) and mangrove (RE 11.1.4) communities, which contain marine plants and bare marine substrate, at AB 446.4 to 446.8 and AB 430. Assuming that the entire 30 m ROW contains marine vegetation and / or habitat and requires removal for construction, the maximum total disturbance area would be approximately 1.05 ha. Potential impacts from conventional construction are likely to include direct loss of marine plants, loss of marine habitat, changes in hydrology, transport of sediment and other pollutants and aquatic weed invasion.

Subject to the successful implementation of the mitigation recommendations provided in Section 5.0 (including potential HDD of Raglan Creek, minimising clearing widths in marine environments, minimising impacts on water, sediment and nutrient flows and effective weed hygiene practices to avoid the introduction and spread of aquatic weeds), the proposed development is considered unlikely to have any significant impacts on marine plants.

4.14 Potential Impacts Associated with Weeds

The construction and maintenance of the proposed pipeline has the potential to introduce new weeds and spread existing weeds. Surveys detected twelve weed species declared under the LP Act and numerous other environmental weeds that may impact adversely on ecological values of the study area.

Of particular significance to landholders will be the potential to introduce and spread declared and other agricultural weeds. Introduction and spread of declared weeds can render land less productive and in some cases have serious health impacts on livestock (and on people in the case of parthenium).

Construction and maintenance activities for the pipeline have the potential to spread declared and environmental weeds into ecosystems that are currently in natural condition. As such, good weed hygiene will be required to help mitigate against the potential for weeds to be introduced or spread along the alignment. Recommended weed mitigation measures are outlined in Section 5.4

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5.0 Recommended Impact Mitigation Measures

5.1 Alignment Specific Recommendations

5.1.1 Vegetation Communities

Figure 4 (Appendix A) shows remnant vegetation identified along the proposed alignment. The alignment transects three communities listed as Endangered under the EPBC Act, two REs with an Endangered biodiversity status and 12 REs with an Of Concern biodiversity status. Table 19 provides locations and recommendations to minimise ecological impacts on occurrences of Endangered and Of Concern communities that are transected by the proposed alignment.

5.1.2 EVNT Flora

Four EVNT flora species were identified within the proposed pipeline alignment during the field surveys. A further 34 EVNT species potentially occur within the area. General mitigation measures to avoid or minimise impacts on these species are listed in Section 5.4 (e.g. pre-construction surveys to allow ROW refinements that avoid individual plants and / or populations, minimising the clearing widths through remnant vegetation, demarking of adjacent populations, stockpiling and re-spreading of topsoil, reseeding works, weed management). Table 19 provides locations and recommendations to minimise ecological impacts on populations of EVNT species that are transected by the proposed alignment. With further route realignments, it is possible that no populations of EVNT flora will be directly impacted by the development.

5.1.3 Essential Habitat

Essential habitat for *Eucalyptus raveretiana* was confirmed at Limestone Creek from AB 371.2 to 371.3 during field surveys. Several route revisions will be investigated to avoid populations of this EVNT species at Limestone Creek (Table 19).

5.1.4 Wetlands

Field surveys recorded non-riverine wetlands on the Elphinstone lateral from EL 31.6 to 31.9 and the Saraji lateral from EL 7.7 to 7.8 and SL 10.8 to 11.1. Several route revisions will be investigated to avoid these wetland areas (Table 19). Measures to avoid indirect impacts are listed in Section 5.4 (e.g. avoiding large remnant trees, minimising use of heavy equipment near wetland areas, adopting strict sediment and erosion control measures, weed control and rehabilitation immediately following construction works).

Riverine wetlands were recorded on 52 watercourses transected by the proposed alignment. In some large watercourses (e.g. Fitzroy River, Isaac River), the use of HDD techniques should be investigated to avoid impacts. Impacts could also be reduced by minimising ROW width, utilising existing clearings through watercourses, avoiding large remnant trees, minimising use of heavy equipment in riparian areas, adopting strict sediment and erosion control measures, weed control and rehabilitation immediately following construction works. Table 19 provides locations and recommendations to minimise ecological impacts on riverine wetlands that are transected by the proposed alignment.

5.1.5 Marine Vegetation

Marine vegetation was recorded at several locations within the proposed alignment from AB 430.1 to 430.2 and AB 446.4 to 446.8. Table 19 provides locations and recommendations to minimise ecological impacts on areas of marine vegetation that are transected by the proposed alignment. Measures may include further route revisions to avoid marine vegetation and use of HDD under marine vegetation at Raglan Creek.

5.1.6 Bioregional Corridors

DERM mapping has identified terrestrial and riparian corridors within 162.1 km of the proposed alignment. Measures to minimise impacts on connectivity in corridors include route realignments to avoid remnant vegetation within identified corridors, avoiding large remnant trees, retaining habitat features (e.g. fallen timber, dead trees), weed control and rehabilitation immediately following construction works. If offsets are required to compensate for project impacts, locating these within identified corridors will assist in restoring connectivity.

Table 19 Potential Constraints on the Revision D Alignment and Proposed Mitigation Measures

(a) Mainline

KP start (km)	KP End (km)	Length (km)	Surveyed RE	RE Status	Constraint*	Recommended Mitigation
12.1	12.3	0.13	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees.
35.0	36.5	1.45	11.8.11	OC	EEC, OC RE (Native grassland)	Modify ROW as practical. Avoid large mature trees where possible. Offset likely to be required.
36.5	36.8	0.34	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees.
36.8	37.0	0.21	11.8.11	OC	EEC, OC RE (Native grassland)	Modify ROW as practical. Avoid large mature trees where possible. Offset likely to be required.
44.4	44.5	0.1	11.4.2 / 11.4.9	OC/E	EEC, E RE, OC RE (Brigalow)	Deviate 200 m east to avoid RE.
49.7	50.1	0.38	11.3.7	OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible.
50.1	50.2	0.15	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees.
50.2	50.3	0.04	11.3.7	OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible.
54.5	54.7	0.15	11.3.2	OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align route to use existing cleared gap. Conduct pre-construction surveys to detect and avoid any weeping myall communities (EEC).
59.1	59.1	0.06	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees.
60.7	61.4	0.7	11.7.2	NC	Near threatened flora (<i>Cerbera dumicola</i>)	Deviate 200 m west around population. Investigate new route to east from AB 55.5 to 74 to use existing cleared powerline.
62.5	64.0	1.5	11.7.2	NC	Near threatened flora (<i>Cerbera dumicola</i>)	Deviate 350 m west around population. Investigate new route to east from AB 55.5 to 74 to use existing cleared powerline.
64.8	65.8	1	11.7.2	NC	Near threatened flora (<i>Cerbera dumicola</i>)	Deviate 150 m west around population. Investigate new route to east from AB 55.5 to 74 to use existing cleared powerline.

KP start (km)	KP End (km)	Length (km)	Surveyed RE	RE Status	Constraint*	Recommended Mitigation
67.6	67.7	0.15	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees. Investigate new route to east from AB 55.5 to 74 to use existing cleared powerline.
68.2	68.3	0.05	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Use old vehicle track 50m to west or cleared area adjacent to haul road 60m to east. Investigate new route to east from AB 55.5 to 74 to use existing cleared powerline.
70.0	71.5	1.5	11.7.4	NC	Vulnerable flora (<i>Euphorbia sarcostemmoides</i>) Near threatened flora (<i>Cerbera dumicola</i>)	Deviate 500 m southwest around population. Investigate new route to east. Investigate new route to east from AB 55.5 to 74 to use existing cleared powerline.
73.6	73.6	0.04	11.7.1x1	OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible. Investigate new route to east from AB 55.5 to 74 to use existing cleared powerline and quarry (500 m north of existing line at AB 73.6).
86.9	87.2	0.31	11.3.2	OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible. Conduct pre-construction surveys to detect and avoid any weeping myall communities (EEC).
90.6	90.7	0.13	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees.
91.1	91.3	0.22	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees.
92.0	92.2	0.23	11.3.36	OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible.
92.3	92.9	0.58	11.3.36	OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible.
92.9	93.1	0.2	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees.
93.3	93.5	0.13	11.4.9	E	EEC, E RE, OC RE (Brigalow)	Deviate 150m east to avoid RE.
96.4	96.5	0.09	11.3.2	OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible. Conduct pre-construction surveys to detect and avoid any weeping myall communities (EEC).

KP start (km)	KP End (km)	Length (km)	Surveyed RE	RE Status	Constraint*	Recommended Mitigation
96.5	96.5	0.07	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees.
96.5	96.6	0.05	11.3.2	OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible. Conduct pre-construction surveys to detect and avoid any weeping myall communities (EEC).
97.1	97.2	0.05	11.3.2	OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible. Conduct pre-construction surveys to detect and avoid any weeping myall communities (EEC).
97.7	97.8	0.09	11.3.2	OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible. Conduct pre-construction surveys to detect and avoid any weeping myall communities (EEC).
100.2	100.8	0.62	11.3.2	OC	OC RE, Near threatened flora (<i>Desmodium macrocarpum</i>) to west and south	Modify ROW as practical. Avoid large mature trees where possible. Avoid plants adjacent to ROW. Conduct pre-construction surveys to detect and avoid any weeping myall communities (EEC).
104.2	104.7	0.49	11.3.2	OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible. Conduct pre-construction surveys to detect and avoid any weeping myall communities (EEC).
105.1	105.2	0.15	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees.
109.2	109.4	0.2	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees.
110.0	110.0	0.04	11.3.3	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees.
160.2	160.2	0.07	11.3.25	OC	Watercourse, OC RE	Deviate 200 m west to avoid riparian vegetation
163.7	164.0	0.29	11.3.2/ 11.3.7	OC/OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible. Conduct pre-construction surveys to detect and avoid any weeping myall communities (EEC).
164.6	164.7	0.1	11.3.2/ 11.3.7	OC/OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible. Conduct pre-construction surveys to detect and avoid any weeping myall communities (EEC).

KP start (km)	KP End (km)	Length (km)	Surveyed RE	RE Status	Constraint*	Recommended Mitigation
164.7	164.9	0.17	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees.
164.9	165.6	0.75	11.3.7/ 11.3.3	OC/OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible.
165.6	165.8	0.15	11.3.7/ 11.3.3	OC/OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible.
167.7	168.0	0.28	11.3.1	E	EEC, E RE, OC RE (Brigalow)	Modify ROW as practical. Avoid large mature trees where possible. Offset likely to be required.
168.0	168.1	0.08	11.3.3	OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible.
171.8	171.9	0.07	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees.
233.8	234.1	0.23	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees.
234.1	234.7	0.58	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Consider HDD under Isaac River.
238.3	238.5	0.22	11.3.3	OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible. Consider HDD under Clarke Creek.
239.5	239.5	0.05	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees.
245.0	245.1	0.16	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees.
248.9	249.1	0.16	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees.
261.4	261.5	0.05	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Consider gap in riparian vegetation 150 m to NNE. Micro-align crossing to reduce clearing and avoid large habitat trees.
275.7	275.8	0.07	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees.
284.2	284.3	0.11	11.3.3	OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible.

KP start (km)	KP End (km)	Length (km)	Surveyed RE	RE Status	Constraint*	Recommended Mitigation
285.4	285.5	0.09	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees.
286.4	286.5	0.08	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees.
289.1	289.2	0.08	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees.
319.5	319.5	0.08	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Consider HDD under Fitzroy River.
349.2	349.2	0.06	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees.
371.2	371.3	0.13	11.3.25	OC	Vulnerable flora (<i>E. raveretiana</i>), Essential Habitat, Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Investigate potential 20 m gaps between <i>E. raveretiana</i> trees 20 m, 450 m and 550 m to SW. Micro-align crossing to reduce clearing and avoid large habitat trees.
373.3	373.4	0.07	11.3.25	OC	Vulnerable flora (<i>E. raveretiana</i>), Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Investigate potential gap between <i>E. raveretiana</i> trees 50 m to ENE. Micro-align crossing to reduce clearing and avoid large habitat trees.
377.6	377.7	0.1	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees.
382.6	382.8	0.17	11.3.25/ 11.3.4	OC/OC	Vulnerable flora (<i>E. raveretiana</i>), Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Investigate potential gap between <i>E. raveretiana</i> trees 100m to NE. Micro-align crossing to reduce clearing and avoid large habitat trees.
399.2	399.2	0.07	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees.
400.1	400.2	0.15	11.3.4/ 11.3.25	OC/OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees.

KP start (km)	KP End (km)	Length (km)	Surveyed RE	RE Status	Constraint*	Recommended Mitigation
402.5	402.8	0.3	11.3.4/ 11.3.25	OC/OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees.
406.4	406.4	0.03	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees.
406.7	406.7	0.04	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees.
410.1	410.3	0.15	11.3.4/ 11.3.25	OC/OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Investigate potential alignment to west along existing powerline easement. Micro-align crossing to reduce clearing and avoid large habitat trees.
413.6	413.7	0.04	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees.
419.8	419.8	0.03	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees.
430.1	430.2	0.03	11.1.4	NC	Marine vegetation, wetland	Modify ROW as practical. Avoid large mature trees where possible. Investigate potential alignment to west from AB 425-431 to avoid marine vegetation.
433.1	433.2	0.09	11.11.16	OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible. Investigate potential alignment 100m to south to avoid RE.
433.5	433.9	0.39	11.11.16	OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible. Investigate potential alignment 100m to south to avoid RE.
446.4	446.5	0.11	11.1.1	NC	Marine vegetation, wetland	Modify ROW as practical. Avoid large mature trees where possible. Investigate potential alignment 250m to south to reduce clearing of marine vegetation. Consider HDD under Raglan Creek.
446.5	446.5	0.02	11.1.4	NC	Marine vegetation, wetland	Modify ROW as practical. Avoid large mature trees where possible. Investigate potential alignment 250 m to south to reduce clearing of marine vegetation.
446.5	446.6	0.05	11.1.1	NC	Marine vegetation, wetland	Modify ROW as practical. Avoid large mature trees where possible. Investigate potential alignment 250 m to south to reduce clearing of marine vegetation.

KP start (km)	KP End (km)	Length (km)	Surveyed RE	RE Status	Constraint*	Recommended Mitigation
446.6	446.8	0.13	11.1.4	NC	Marine vegetation, wetland	Modify ROW as practical. Avoid large mature trees where possible. Investigate potential alignment 250 m to south to reduce clearing of marine vegetation.
463.8	464.6	0.79	11.3.26/ 11.3.4	NC/OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible. Investigate micro-alignment change to avoid OC RE.

* Identified constraint:

EEC – Endangered Ecological Community listed in the EPBC Act

E RE – RE with Endangered biodiversity status assigned by DERM

OC RE – RE with Of Concern biodiversity status assigned by DERM

(b) Elphinstone Lateral

KP start (km)	KP End (km)	Length (km)	Surveyed RE	RE Status	Constraint	Recommended Mitigation
4.3	4.5	0.19	11.9.9/ 11.9.7	NC/OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align to avoid OC RE where possible.
4.5	4.5	0.07	11.9.9/ 11.9.7	NC/OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align to avoid OC RE where possible.
4.5	4.7	0.18	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees.
4.7	5.5	0.78	11.3.2	OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible. Conduct pre-construction surveys to detect and avoid any weeping myall communities (EEC).
5.7	7.1	1.36	11.3.2	OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible. Conduct pre-construction surveys to detect and avoid any weeping myall communities (EEC).
7.1	7.3	0.22	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees.
7.3	8.3	0.98	11.3.2	OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible. Conduct pre-construction surveys to detect and avoid any weeping myall communities (EEC).
8.3	8.4	0.14	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees.
8.4	11.6	3.16	11.9.9/ 11.9.7	NC/OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align to avoid OC RE where possible.
11.6	11.9	0.33	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees.
11.9	15.9	4.02	11.9.9/ 11.9.7	NC/OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align to avoid OC RE where possible.
15.9	16.3	0.42	11.3.2	OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible. Conduct pre-construction surveys to detect and avoid any weeping myall communities (EEC).
16.3	16.5	0.14	11.3.2	OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible. Conduct pre-construction surveys to detect and avoid any weeping myall communities (EEC).

KP start (km)	KP End (km)	Length (km)	Surveyed RE	RE Status	Constraint	Recommended Mitigation
16.5	18.2	1.35	11.9.9/ 11.9.7	NC/OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align to avoid OC RE where possible.
18.2	18.3	0.12	11.9.7	OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible.
18.3	18.4	0.07	11.9.7	OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible.
19.5	20.0	0.54	11.9.7	OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible.
20.4	20.5	0.15	11.9.7	OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible.
20.5	20.6	0.05	11.9.9/ 11.9.7	NC/OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align to avoid OC RE where possible.
20.6	24.0	3.36	11.9.9/ 11.9.7	NC/OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align to avoid OC RE where possible.
24.0	25.6	1.61	11.9.9/ 11.9.7	NC/OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align to avoid OC RE where possible.
25.9	28.3	2.38	11.9.9/ 11.9.7	NC/OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align to avoid OC RE where possible. Investigate alternate alignment from EL 27 to EL 35 to reduce impacts on OC RE, watercourse, near threatened flora and wetland.
28.3	28.4	0.15	11.3.4/ 11.3.2	OC/OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible. Investigate alternate alignment to west from EL 27 to EL 35 to reduce impacts on OC RE, watercourse, near threatened flora and wetland. Conduct pre-construction surveys to detect and avoid any weeping myall communities (EEC).
28.4	28.5	0.1	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees. Investigate alternate alignment to west from EL 27 to EL 35 to reduce impacts on OC RE, watercourse, near threatened flora and wetland.
30.8	31.2	0.4	11.5.8	NC	Near threatened flora (<i>Desmodium macrocarpum</i>)	Modify ROW as practical. Avoid large mature trees where possible. Deviate 80m to west around population. Investigate alternate alignment to west from EL 27 to EL 35 to reduce impacts on OC RE, watercourse, near threatened flora and wetland.

KP start (km)	KP End (km)	Length (km)	Surveyed RE	RE Status	Constraint	Recommended Mitigation
31.6	31.9	0.35	11.5.8/ 11.3.27	NC/OC	Wetland, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Investigate alternate alignment to west from EL 27 to EL 35 to reduce impacts on OC RE, watercourse, near threatened flora and wetland.
51.5	51.8	0.23	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees.

* Identified constraint:

EEC – Endangered Ecological Community listed in the EPBC Act

E RE – RE with Endangered biodiversity status assigned by DERM

OC RE – RE with Of Concern biodiversity status assigned by DERM

(c) Saraji Lateral

KP start (km)	KP End (km)	Length (km)	Surveyed RE	RE Status	Constraint	Recommended Mitigation
6.2	6.9	0.72	11.3.2/ 11.3.25	OC/OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees.
7.1	7.4	0.27	11.3.2	OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible. . Conduct pre-construction surveys to detect and avoid any weeping myall communities (EEC).
7.7	7.7	0.04	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees.
7.7	7.8	0.07	11.3.27	OC	Wetland, OC RE	Deviate 300m north to avoid wetland.
10.8	11.1	0.33	11.3.27	OC	Wetland, OC RE	Deviate 750 m north to avoid wetland.
16.4	18.7	2.31	11.3.2/ 11.3.7	OC/OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible. . Conduct pre-construction surveys to detect and avoid any weeping myall communities (EEC).
18.7	19.0	0.21	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees.
19.0	19.1	0.16	11.3.2/ 11.3.7	OC/OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible. . Conduct pre-construction surveys to detect and avoid any weeping myall communities (EEC).

KP start (km)	KP End (km)	Length (km)	Surveyed RE	RE Status	Constraint	Recommended Mitigation
19.6	20.2	0.6	11.3.2	OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible. . Conduct pre-construction surveys to detect and avoid any weeping myall communities (EEC).

* Identified constraint:

EEC – Endangered Ecological Community listed in the EPBC Act

E RE – RE with Endangered biodiversity status assigned by DERM

OC RE – RE with Of Concern biodiversity status assigned by DERM

(d) Dysart Lateral

KP start (km)	KP End (km)	Length (km)	Surveyed RE	RE Status	Constraint	Recommended Mitigation
18.0	18.2	0.23	11.3.2	OC	OC RE	Modify ROW as practical. Avoid large mature trees where possible. . Conduct pre-construction surveys to detect and avoid any weeping myall communities (EEC).
18.2	18.3	0.11	11.3.25	OC	Watercourse, OC RE	Modify ROW as practical. Avoid large mature trees where possible. Micro-align crossing to reduce clearing and avoid large habitat trees.

* Identified constraint:

EEC – Endangered Ecological Community listed in the EPBC Act

E RE – RE with Endangered biodiversity status assigned by DERM

OC RE – RE with Of Concern biodiversity status assigned by DERM

5.2 Analysis of Impacts with Proposed Mitigation Measures

Implementing the mitigation measures proposed in Table 19 will significantly reduce ecological impacts of the ABP. While some mitigation measures cannot be accurately quantified at this stage, it is possible to analyse the effects of proposed mitigation within fifteen sections of the alignment. Table 20 provides a breakdown of the reduction in impact area with proposed mitigation measures along each line and the values mitigated (e.g. EECs, OC REs, wetlands, watercourses and marine vegetation). Table 21 summarises the area of each ecological value mitigated. It is estimated that implementation of the proposed mitigation measures will reduce the impact area of the ABP by 7.4 ha (7% of the total impact area within the ROW).

With ongoing investigations and route revisions (see Section 5.5), impacts on ecological values will be further reduced. However, it is not possible to quantify the effects of these mitigation measures at this stage. For example, impacts to EVNT flora species have not been factored into the present mitigation calculations as a final route will not be determined until further investigations are completed.

Table 20 Breakdown of Reduction in Impact Area with Proposed Mitigation Measures

KP start (km)	KP End (km)	Length (km)	Constraint	Recommended Mitigation	Area mitigated (ha)
Mainline (AB Line)					
44.4	44.5	0.1	EEC, E RE, OC RE (Brigalow)	Deviate 200 m east to avoid RE.	0.29 (OC RE) 0.17 (EEC, E RE)
93.3	93.5	0.13	EEC, E RE (Brigalow)	Deviate 150 m east to avoid RE.	0.39
160.2	160.2	0.07	Watercourse, OC RE	Deviate 200 m west to avoid riparian vegetation	0.22
234.1	234.7	0.58	Watercourse, OC RE	Consider HDD under Isaac River.*	1.74
238.3	238.5	0.22	OC RE	Consider HDD under Clarke Creek.*	0.66
319.5	319.5	0.08	Watercourse, OC RE	Consider HDD under Fitzroy River.*	0.25
433.1	433.2	0.09	OC RE	Investigate potential alignment 100 m to south to avoid RE.	0.28
433.5	433.9	0.39	OC RE	Investigate potential alignment 100 m to south to avoid RE.	1.16
446.4	446.5	0.11	Marine vegetation, wetland	Investigate potential alignment 250 m to south to reduce clearing of marine vegetation. Consider HDD under Raglan Creek*.	0.34
446.5	446.5	0.02	Marine vegetation, wetland	Investigate potential alignment 250 m to south to reduce clearing of marine vegetation.	0.07
446.5	446.6	0.05	Marine vegetation, wetland	Investigate potential alignment 250 m to south to reduce clearing of marine vegetation.	0.15
446.6	446.8	0.13	Marine vegetation, wetland	Investigate potential alignment 250 m to south to reduce clearing of marine vegetation.	0.39
Elphinstone Lateral (EL)					
31.6	31.9	0.35	Wetland, OC RE	Investigate alternate alignment to west from KP EL27 to EL35 to reduce impacts on OC RE, watercourse, near threatened flora and wetland.	0.26
Saraji Lateral (SL)					
7.7	7.8	0.07	Wetland, OC RE	Deviate 300m north to avoid wetland.	0.20
10.8	11.1	0.33	Wetland, OC RE	Deviate 750m north to avoid wetland.	0.98

* Undertaking HDD under watercourses is subject to geotechnical investigations.

Table 21 Summary of Reduction in Impact Area with Proposed Mitigation Measures

Ecological Value	Impact Area without Mitigation (ha)	Estimated Area Mitigated* (ha)	Impact Area with Mitigation (ha)
EEC	6.33	0.5	5.83
Endangered RE	1.35^	0.5^	0.85^
Of Concern RE	83.55	5.92	77.63
Essential Habitat	0.4^	0	0.4^

Ecological Value	Impact Area without Mitigation (ha)	Estimated Area Mitigated* (ha)	Impact Area with Mitigation (ha)
Habitat for EVNT flora species	17.19 (LC RE) 1.11^ (OC RE)	0	17.19 (LC RE) 1.11^ (OC RE)
Marine vegetation	1.05	0.95	0.1
Wetlands	23.24^	4.34^	19.96^
Total	108.12	7.37	100.75

* These calculations will change when mitigation options have been field verified and finalised. Therefore, final areas of mitigation are expected to be higher than those presented in this table.

^ Area is incorporated within another ecological value (e.g. all areas of Endangered REs are included within the total area of EECs; essential habitat is also an OC RE; and all wetlands are incorporated within OC REs and / or marine vegetation categories). Therefore this area is not included in total area calculations.

5.3 Offsetting Residual Impacts to Flora

While all practicable efforts will be made to avoid and minimise impacts on flora of high ecological value, it is likely that small areas will be cleared or disturbed for construction and operation of the proposed pipeline. Where residual impacts cannot be avoided, an offset plan will be prepared and implemented to rehabilitate vegetation similar to that of the impacted vegetation in a nearby location.

The goal of any offset program will be to achieve a net conservation gain by enhancing the long-term sustainability of the vegetation in the Bioregion. Offsets will be developed in liaison with relevant Commonwealth and State regulatory agencies.

Relevant permits, plans and policies that may be considered include:

- Vegetation clearing guidelines prepared by DERM (note that an application for vegetation clearing under the VM Act is not required for a petroleum activity as defined under the EP Act).
- Queensland Government Environmental Offsets Policy (2008), administered by DERM.
- Policy for Vegetation Management Offsets, version 3 (September 2011), administered by DERM.
- Regional Vegetation Management Code for Brigalow Belt and New England Tablelands Bioregions, version 2 (November 2009), administered by DERM.
- Draft Policy Statement: Use of Environmental Offsets under the EPBC Act 2007, produced by Department of Environment and Water Resources (now DSEWPC). Note that a new draft policy is currently open for public submission and will be finalised after 21 October 2011.
- Biodiversity Offset Policy, version 1 (October 2011), administered by DERM.
- Mitigation and Compensation for Works or Activities Causing Marine Fish Habitat Loss (2002), administered by DEEDI.

Based on the current revision D alignment and proposed mitigations in this report, clearing of the proposed 30 m ROW may result in the removal of the following maximum areas of ecological values that require offsets:

- 5.83 ha of Endangered Ecological Communities under the EPBC Act;
- 0.85 ha of REs with Endangered biodiversity status identified by DERM;
- 77.63 ha of REs with Of Concern biodiversity status identified by DERM;
- 0.4 ha of Essential Habitat identified by DERM;
- 19.96 ha of wetlands identified by DERM;
- 18.3 ha of habitat for EVNT flora species under the NC Act or EPBC Act; and
- 0.1 ha of marine vegetation under the *Fisheries Act* 1994.

However, these figures are likely to be reduced by further refinements of the proposed pipeline route and minimising ROW width in critical areas.

5.3.1 Offsetting Residual Impacts under the Policy for Vegetation Management Offsets

The Queensland Policy for Vegetation Management Offsets describes offset requirements for impacts to the following vegetation values:

- REs listed as Endangered and Of Concern REs;
- Essential habitat for species protected under the NC Act;
- Wetlands as defined in the VM Act;
- Watercourses (remnant vegetation within distances defined in the Regional Vegetation Management Code for Brigalow Belt and New England Tablelands Bioregions);
- Threshold REs;
- Critically limited REs; and
- Remnant or regrowth areas that provide important connectivity.

Offsets may be delivered as land-based offsets or offset payments:

- Land-based offsets involve the acquisition, rehabilitation and legal securing of a suitable area of land to compensate for the impacts of a proposed development. Land-based offsets may be a direct offset proposed by the applicant, or an offset transfer negotiated with an offset broker. A land-based offset may also incorporate an indirect offset if the proposed offset area cannot achieve ecological equivalence with the impact site. Indirect offsets must be an activity approved by DERM, such as improvements in ecological knowledge or management of protected species and communities.
- Offset payments are financial payments to Ecofund Queensland, which will be used to purchase or secure land containing significant State biodiversity values. Offset payments cannot be accepted for impacts to EVNT species, critically limited REs and threshold REs. The policy provides a method to calculate the required offset payment, which incorporates management and administration costs.

Under the Vegetation Offsets Policy, an offset area may be sourced from:

- Category X areas identified on a PMAV.
- HVR vegetation under the Queensland Regrowth Vegetation Code, unless the area is HVR of an Endangered RE on freehold or indigenous land; an Endangered or Of Concern RE on leasehold land; essential regrowth habitat; stream protection zone; within a wetland protection area; or on a slope greater than 12%.
- Other regrowth vegetation that contains the necessary functioning regional ecosystem/s.

An offset site cannot be sourced from:

- Areas currently mapped as remnant vegetation, unless:
 - The area has a current clearing approval; and
 - The area is an approved advance offset under the Queensland Vegetation Offsets Policy and protected by a legally binding mechanism.
- Category A or B areas on a PMAV.
- Vegetation that is required to be retained under an offset arrangement or other approval administered by the Federal, State or local government.

The offset must be ecologically equivalent to the proposed clearing area. This will be demonstrated using the ecological equivalence methodology developed by DERM (2011). Ecological equivalence provides an objective comparison of ecological attributes, using 14 ecological condition indicators and 14 special feature indicators. The ecological condition assessment is based on the version 2 Biocondition methodology developed by DERM (Eyre *et al.*, 2011). The special feature indicators are based on the version 2.1 Biodiversity Assessment and Mapping Methodology developed by DERM (EPA, 2002). To achieve ecological equivalence, the offset site should:

- Have a level of ecological condition the same or higher than the impact site;
- Have a minimum score for two ecological condition indicators, tree canopy cover and recruitment of woody plant species; and

- Have a level of special features the same or higher than the impact site.

An offset area must be legally secured, to protect it from future clearing. At present there are three legally binding mechanisms available to secure offsets, including:

- Protected area estates (e.g. a nature refuge) under the NC Act;
- Declarations under the VM Act; and
- Covenants under the *Land Act 1994* or *Land Title Act 1994*.

An offset area management plan will be prepared for each offset area. The plan will include:

- A map of the proposed offset area, showing existing areas of ecological value and areas subject to specific management actions;
- A map of the proposed impact area, showing areas of ecological value that would be cleared;
- Ecological equivalence assessments of the impact and offset areas;
- Offset area management objectives and outcomes;
- An assessment of the risks to achieving the management objectives and outcomes, actions (including restrictions on existing activities) to minimise the risks and remedial actions if any of the risks occur;
- The estimated duration until the objectives and outcomes of the plan are achieved;
- Estimated costs associated with achieving the objectives and outcomes of the plan;
- Yearly schedule of management actions for the period until the offset area successfully achieves the outcomes of the plan; and
- Names, skills and qualifications of the parties responsible for undertaking the management actions.

Suitability criteria for State significant biodiversity values that may require offsetting under this policy include:

- Endangered REs
 - Located within the same bioregion; and
 - An Endangered RE in the same broad vegetation group.
- Of Concern REs
 - Located within the same bioregion; and
 - An Of Concern RE in the same broad vegetation group.
- Wetlands
 - Located within the same bioregion;
 - Same or higher wetland status (i.e. either a wetland or significant wetland as identified in the Regional Vegetation Management Code);
 - Wetland or wetland RE as identified in the Regional Vegetation Management Code; and
 - Assists with maintaining water quality, aquatic habitat and terrestrial habitat.
- Watercourses
 - Located within the same bioregion;
 - Same or higher stream order; and
 - Watercourse RE that assists with maintaining bank stability, water quality, aquatic habitat and terrestrial habitat.
- Essential Habitat
 - Located within the same bioregion;
 - Either an area that contains at least three essential factors for the protected species (including any listed as mandatory for the species), or an area for which there is recent evidence of utilisation by the protected species; and

- Offset area and the surrounding environment successfully mitigate the direct impacts on the protected species.
- Connectivity
 - Located within the same bioregion; and
 - A strategic area or strategic rehabilitation area identified by DERM, an ecological corridor identified by the Commonwealth, State or local government or a DERM-approved corridor identified by a recognised organisation.

5.3.2 Offsetting Residual Impacts to EVNT Flora Species and HVR

The Queensland Biodiversity Offsets Policy describes offset requirements for impacts to State significant biodiversity values, including:

- EVNT species listed under the NC Act;
- Wetlands and watercourses;
- Endangered and Of Concern REs (including grassland REs);
- HVR of Endangered and Of Concern REs;
- Threshold and critically limited REs;
- Essential habitat; and
- Remnant or regrowth areas that are within 500 m of a State significant biodiversity value and that provide important connectivity or are at least 5 ha in size.

As this policy does not apply to State significant biodiversity values that are offset under another Queensland government offset policy, it is likely that the Biodiversity Offsets Policy will apply only to impacts on EVNT species and HVR of Endangered and Of Concern REs.

Biodiversity offset requirements are similar to those described in the Queensland Policy for Vegetation Management Offsets, including offset delivery methods, legal securing of offsets, suitability of offset sites and offset management planning.

An assessment of ecological equivalence is not required for offsetting impacts to EVNT flora species under the NC Act. The offset must demonstrate how:

- The offset will achieve a net gain for the impacted species; and
- The offset is consistent with an approved recovery plan for the species or, if no recovery plan exists, consistent with written advice from a recognised expert for the species.

An offset for EVNT fauna species must provide:

- An assessment of the known historical distribution of the species based on historical records and appropriate expert knowledge;
- Habitat requirements for the species based on published information and appropriate expert knowledge; and
- Published information and appropriate expert knowledge of home range requirements and mobility relevant to assessment of the minimum viable habitat size and dispersal capabilities of the species.

While the exact content of an offset management plan would depend on further investigations and consultation, likely goals and actions would include:

- A goal of net conservation gain by enhancing the long-term sustainability of the species;
- Summary of available ecological information that would assist in management of the species;
- Identification of all relevant permits, policies and other legislative instruments that are relevant to the removal of EVNT flora species;
- Liaison with DERM, DSEWPC and relevant experts to determine whether translocation is a viable option (based on success of previous translocation programs);

- If translocation is considered viable, development of appropriate methods using professional horticultural advice, best practice guidelines such as the Guidelines for the Translocation of Threatened Plants in Australia (Vallee *et al.*, 2004) and any available previous experience;
- Translocation of plants within the development footprint into suitable nearby retention areas before construction commences;
- Propagation of plants to replace individuals that are destroyed or die as a result of construction and translocation (ensuring sufficient individuals are planted to minimise the risk of net population loss);
- Management of translocated and planted populations (e.g. watering of seedlings, weed control, fire management, protection from wild and domestic grazing animals);
- Monitoring of translocated populations and control populations within undisturbed areas to assess mortality and condition levels;
- Development of remedial actions if goals are not met; and
- Protection via a legally binding mechanism.

Based on the current study, it is likely that impacts to EVNT species can be avoided, so offsets would not be required for this State significant biodiversity value. Further investigations will be undertaken to develop route revisions in areas where EVNT species have been recorded, including:

- *Cerbera dumicola* populations from AB 60.7 to 61.4, AB 62.5 to 64, AB 64.8 to 65.8 and AB 70 to 71.5;
- *Euphorbia sarcostemmoides* population at AB 70.5;
- *Desmodium macrocarpum* populations from EL 30.8 to 31.2 and adjacent to AB 100.2 to 100.8; and
- *Eucalyptus raveretiana* populations at watercourses from AB 371.2 to 371.3, AB 373.3 to 373.4 and AB 382.6 to 382.8.

5.3.3 Offsetting Residual Impacts to Marine Plants

The *Fisheries Act* 1994 provides for the management, use, development and protection of fisheries resources and fish habitats, including marine plants. Plants protected under the Act include:

- Highest fisheries significance plants, which usually grow on tidal land that is seaward of the highest astronomical tide (HAT) and are known to contribute to fisheries productivity (e.g. mangroves, seagrasses, marine algae, Saltwater Couch, samphires). These species are protected marine plants regardless of their location and whether or not they are on tidal lands.
- Medium fisheries significance plants, which are plants that usually grow adjacent to tidal land and which have a capacity for a direct link to fisheries productivity (e.g. *Melaleuca* swamps, *Allocasuarina* woodlands with marine plant understoreys).

The proposed pipeline ROW contains up to 1 ha of highest fisheries significance marine plants (mangroves, saltwater couch and saltmarsh plants) from AB 430.1 to 430.2 and AB 446.4 to 446.8. A permit under Section 51 of the Fisheries Act is required for any works within intertidal areas that may disturb marine plants. Compensatory measures such as rehabilitation of a nearby area may be proposed to offset unavoidable clearing of marine plants.

The Fish Habitat Management Operational Policy for the Management and Protection of Marine Plants (DPI, 2007) outlines compensation measures that may be carried out off-site to offset adverse impacts on marine plants, tidal lands and fish habitats. Compensation programs may include habitat exchange, restoration projects to create replacement fish habitats and / or contribution to a state-wide compensation program to fund research or extension on fish habitats. The restoration process is outlined in the Fish Habitat Guideline - Restoration of Fish Habitats (Hopkins *et al.*, 1998) and should include the following steps:

- Identify site;
- Identify baseline conditions and degrading factors;
- Set restoration objectives and criteria for success;
- Determine resource allocation;
- Determine and obtain relevant permits / approvals;

- Formulate restoration plan;
- Develop revegetation strategy (where necessary);
- Implement plan;
- Monitor site to assess the effectiveness of habitat restoration;
- Report results; and
- Maintain restored site.

5.4 General Mitigation and Rehabilitation Recommendations for Flora

The following general mitigation and rehabilitation measures are recommended to help avoid and minimise potential impacts on flora.

- Pre-construction surveys should be conducted for EVNT flora species. Surveys should include the 30 m ROW of the final alignment and immediately adjacent areas that may be disturbed by construction activities. Any individuals and populations detected during surveys should be marked before construction commences and actions taken to reduce impacts where possible (e.g. minor route realignments, flagging and / or barrier fencing of populations adjacent to the ROW as no-go areas).
- The corridor impacted upon by the pipeline construction should be minimised within all areas of remnant vegetation. Clearing widths should be restricted to 30 m or less wherever possible.
- Clearing of remnant vegetation areas should be avoided for the purposes of situating construction camps, lay down areas, vehicle access tracks and other ancillary impact areas, wherever possible.
- Clearing boundaries within remnant vegetation areas should be clearly marked in the field.
- Subject to easement requirements and landholder preferences, trees and shrubs should be allowed to naturally regenerate on the cleared pipeline corridor (except for those areas that are required to be kept tree-free for pipeline protection and maintenance purposes).
- Small-sized vegetative wastes resulting from clearing should be re-spread over the easement following construction, where practicable and where landholders provide consent to do so. This will further encourage regrowth and minimise weed infestations. Such vegetative wastes can contain weed propagules, which may require intensive weed control following construction. Care should be taken to avoid transporting vegetative wastes from weed-infested areas to weed-free sections of the alignment.
- Chipping of vegetative wastes is not preferable from a fauna habitat perspective as fauna habitat diversity is significantly reduced. Large scale burning of vegetative wastes should also be avoided. Rather, the timber should be stick-raked into piles and left to provide animal habitat and to assist in revegetation and erosion control.
- If landholders are opposed to stick rake piles, chipping is the next preferable method of dealing with vegetative wastes.
- All vehicles should contain spark arresters on diesel engines. Fire-fighting equipment and personnel trained in fire fighting are to be on-hand during welding operations to minimise damage caused by accidental fires.
- Topsoil (containing the natural seed bank) should be removed, stockpiled and then re-spread across rehabilitation areas as soon as possible following disturbance. This will encourage regeneration of native species. Topsoil may also contain weed seeds, so regenerating areas may require intensive weed control following construction.
- Vegetation re-establishment should be monitored during and after construction. Key performance indicators should include percentage groundcover of desirable species. A suitable target may be 50% of the desirable species cover occurring on adjoining undisturbed areas within 24 months. Desirable species may include native groundcover species where these are already present or pasture species where these are currently present or requested by the landholder.
- Construction should be scheduled in the dry season wherever possible (especially in and adjacent to watercourses and wetlands).
- Clearing in watercourses, areas of Endangered and Of Concern vegetation and other sensitive areas should be carefully managed to minimise clearing of mature trees wherever possible.

- Monitoring of weed infestations within disturbed areas should occur biannually during construction and then biannually for a period of two years following construction. Monitoring in areas of known parthenium, giant rat's tail grass and African lovegrass infestations should be undertaken quarterly or in accordance with respective landholder concerns. Appropriate weed control measures should be applied. Following the two year period, the frequency of monitoring should be reconsidered dependent on the success of control measures and the level of infestations.
- A Weed Management Plan that addresses the construction, rehabilitation and operation phases of the project should be prepared prior to construction. This Plan should include hygiene protocols to minimise the likelihood of introduction and spread of environmental, agricultural and declared weeds.
- All vehicles and plant should have certification that they are weed-free prior to their initial commencement of works and when moving from weed infested to weed-free sections of the pipeline route. Of most concern to landholders would be the spread of parthenium, giant rat's tail grass, African lovegrass, prickly acacia and parkinsonia. Care should also be taken to avoid spreading aquatic weeds between watercourses.
- A sediment and erosion control plan should be developed and implemented to minimise soil loss and indirect impacts on downstream environments. The plan should incorporate physical measures (e.g. sediment capture devices, topsoil management) and biological rehabilitation (e.g. natural regeneration, revegetation).

5.5 Further Investigations

Further studies are recommended to quantify the potential impacts of the proposed pipeline and investigate options to avoid and mitigate impacts. Flora surveys are proposed in March 2012 at the following locations:

- From AB 55.5 to 74, investigate a route to the east along an existing powerline to reduce impacts on populations of EVNT flora (*Euphorbia sarcostemmoides* and *Cerbera dumicola*).
- From AB 234 to 239, investigate feasibility of HDD under Isaac River and Clarke Creek (including associated access and construction requirements).
- From AB 349 to 383, investigate watercourse crossing points to reduce impacts on EVNT flora (*Eucalyptus raveretiana*).
- From AB 425 to 431, investigate a route to the west from to reduce impacts on marine vegetation and Of Concern REs.
- From AB 446 to 447, investigate options to reduce impacts on marine vegetation and Of Concern REs (including feasibility of HDD).
- From EL 27 to 35, investigate an alternative route to reduce impacts on Of Concern REs, watercourses, EVNT flora (*Desmodium macrocarpum*) and wetlands.
- From SL 7 to 88 and SL 10 to 12, investigate an alternative route to the north to avoid non-riverine wetlands and Of Concern REs.

Survey results would be used to refine the proposed pipeline, more accurately define residual impacts and assist in planning for any requirements for ecological offsets.

6.0 Conclusion

This report has identified the following primary impacts associated with construction and operation of the proposed Arrow Bowen gas pipeline:

- Clearing of a maximum of 372.1 ha of remnant vegetation during pipeline construction;
- Clearing of a maximum of 5.83 ha of Endangered Ecological Communities listed under the EPBC Act;
- Clearing of a maximum of 0.85 ha of REs with a biodiversity status of Endangered;
- Clearing of a maximum of 77.63 ha of REs with an Of Concern biodiversity status;
- Clearing of a maximum of 19.96 ha of REs containing wetlands;
- Clearing of a maximum of 0.1 ha of REs containing marine vegetation under the *Fisheries Act 1994*;
- Clearing of a maximum of 0.4 ha of REs containing essential habitat for EVNT species; and
- Potential impacts on habitat for four EVNT flora species recorded in surveys of the study area and a further 30 EVNT flora species identified in desktop searches.

The majority of impacts occur in eucalypt and wattle woodlands on lateritic duricrusts and residual tertiary sand plains, which are widespread in the local region. Proposed mitigation measures for impacts to vegetation include:

- Minor re-alignments of the proposed pipeline route to avoid or minimise clearing of areas of high environmental value (e.g. EECs, Endangered and Of Concern REs, habitat for EVNT flora species, riparian areas) and areas of remnant vegetation generally;
- Use of minimum clearing widths in areas of remnant vegetation;
- Effective sediment and erosion control systems to minimise indirect impacts on surrounding areas;
- Implementation of a weed management program, including effective weed hygiene procedures, regular weed monitoring during and after construction and weed control works as required;
- Investigation into use of HDD techniques to avoid impacts on major watercourses (e.g. Fitzroy River, Isaac River, Clarke Creek); and
- Development of offset strategies to compensate for any residual impacts on important ecological values (e.g. EECs, Endangered and Of Concern REs, habitat for EVNT species, wetlands).

Populations of four EVNT flora species were recorded along the ROW. Further investigations will be undertaken to develop route revisions in areas where EVNT species have been recorded, including:

- *Cerbera dumicola* populations from AB 60.7 to 61.4, AB 62.5 to 64, AB 64.8 to 65.8 and AB 70 to 71.5;
- *Euphorbia sarcostemmoides* population at AB 70.5;
- *Desmodium macrocarpum* populations from EL 30.8 to 31.2 and adjacent to AB 100.2 to 100.8; and
- *Eucalyptus raveretiana* populations at watercourses from AB 371.2 to 371.3, AB 373.3 to 373.4 and AB 382.6 to 382.8.

Provided that the recommended mitigation measures outlined in Section 5.0 are implemented effectively, residual impacts are anticipated to be limited to:

- Clearing of less than 372.1 ha of remnant vegetation;
- Impacts on several EECs and Endangered and Of Concern REs, which would be addressed through an offset plan to achieve a net conservation gain (via rehabilitation to remnant status and protection of larger areas of equivalent REs);
- Little or no impacts on EVNT flora species and essential habitat; and
- Minor impacts on riparian wetlands and marine wetlands.

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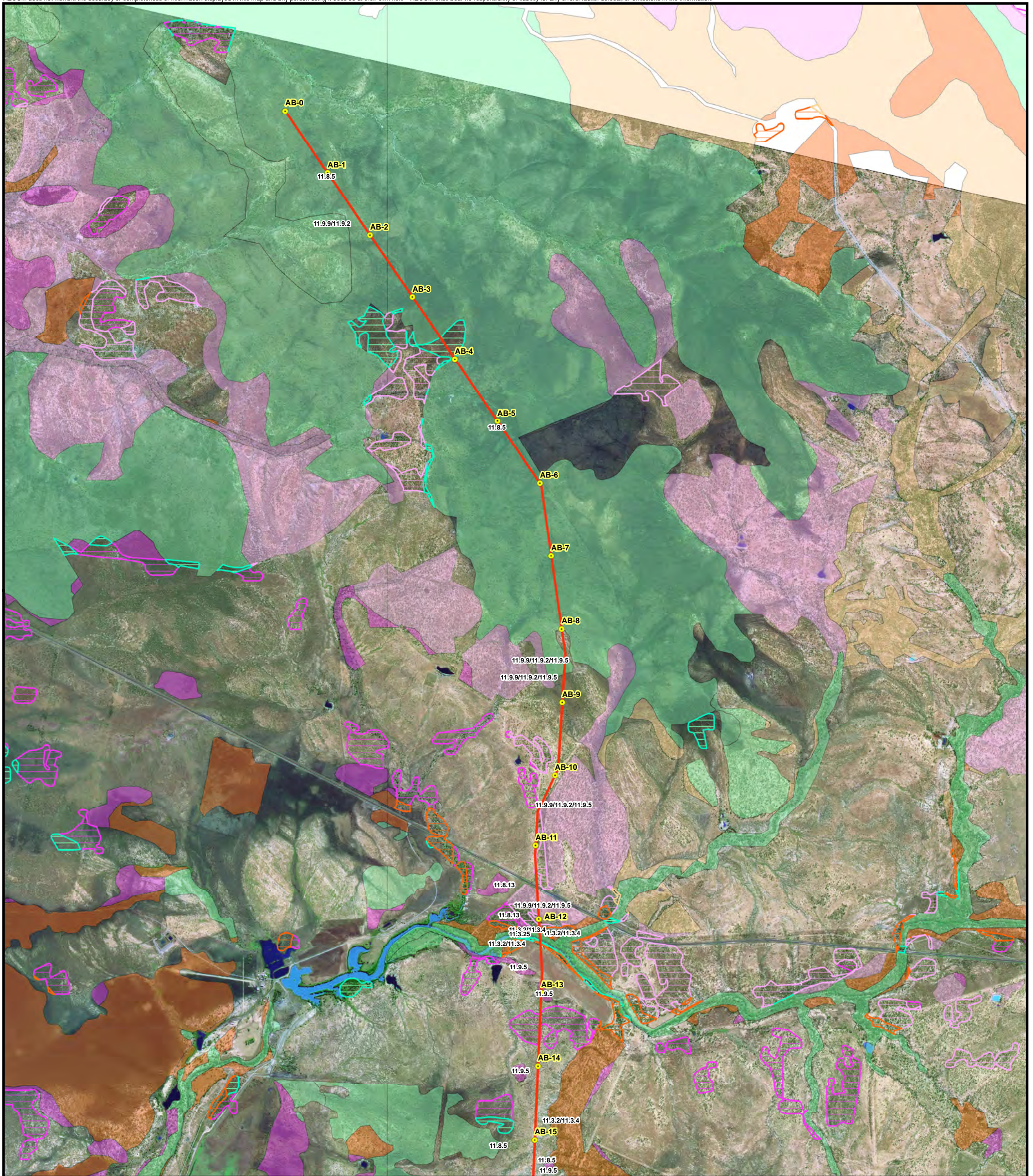
Vallee, L., Hogbin, T., Monks, L., Makinson, B., Matthes, M. and Rossetto, M. 2004. *Guidelines for the Translocation of Threatened Plants in Australia. 2nd edition*. Australian Network for Plant Conservation, Canberra.

Appendix A

Figures

Appendix A Figures

- Figure 1 Regional Ecosystem and Essential Habitat Mapping**
- Figure 2 Protected Areas and Field Survey Sites**
- Figure 3 Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records**
- Figure 4 Regional Ecosystems and Constraints Surveyed along Alignment**



LEGEND

- 1 Km Kilometrage Point
 - ABP Route Revision D
- | | | |
|--|---|---|
| <p>Regrowth Vegetation</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Regional Ecosystem</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Essential Habitat</p> <ul style="list-style-type: none"> Essential Habitat |
|--|---|---|

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

Map 1 Of 41
Main Line
Kp AB-0 To Kp AB-15

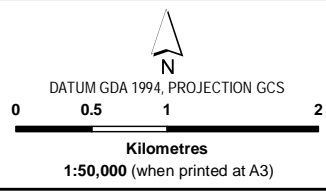
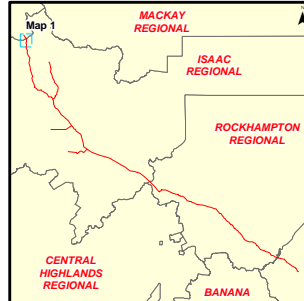
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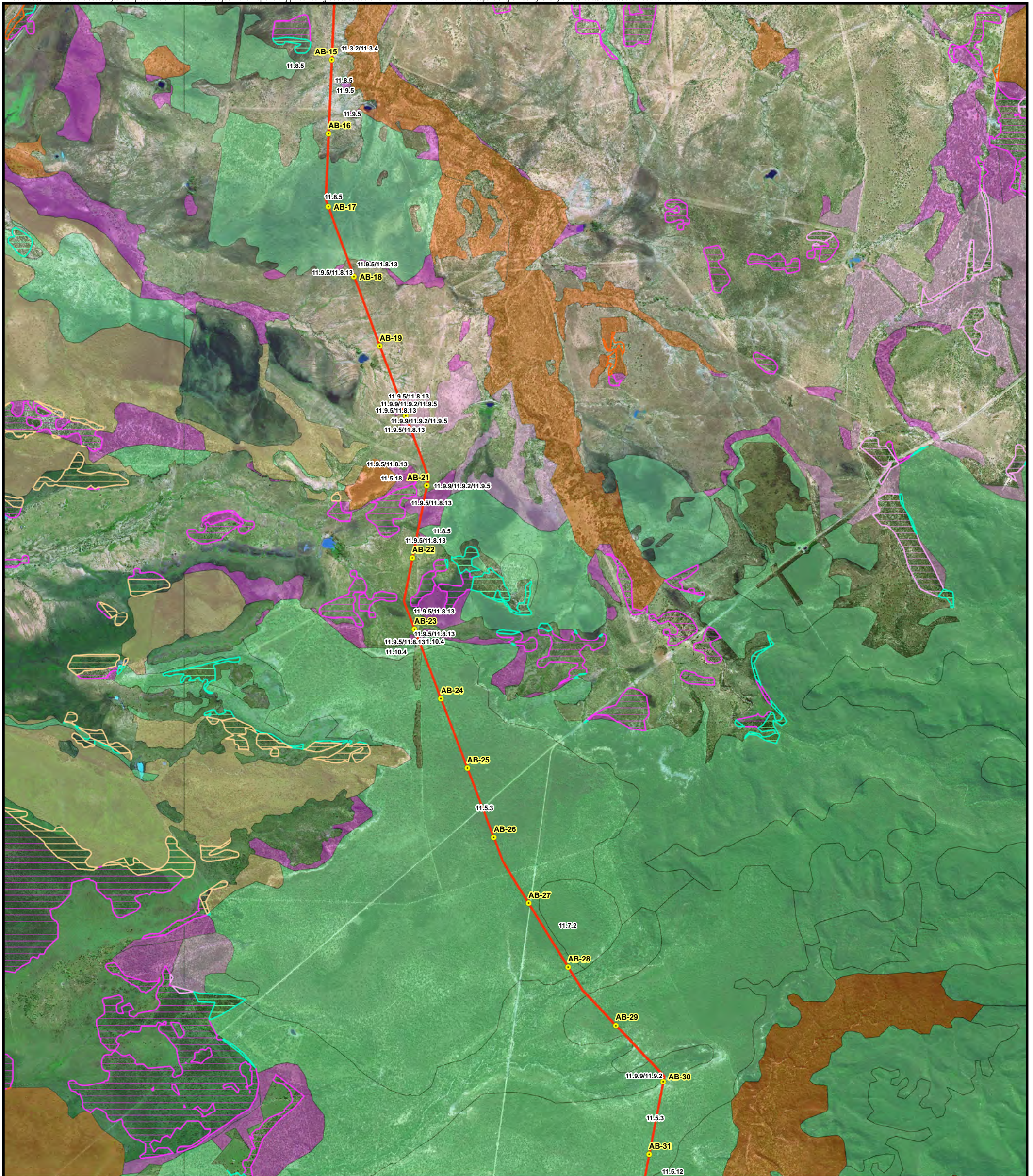
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Map
1 - 1



LEGEND

- 1 Km Kilometrage Point
 - ABP Route Revision D
- | | | |
|---|--|--|
| <p>Regrowth Vegetation</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Regional Ecosystem</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Essential Habitat</p> <ul style="list-style-type: none"> Essential Habitat |
|---|--|--|

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

Map 2 Of 41

Main Line

Kp AB-15 To Kp AB-31

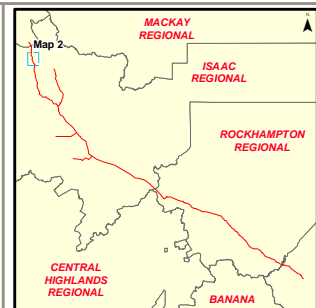
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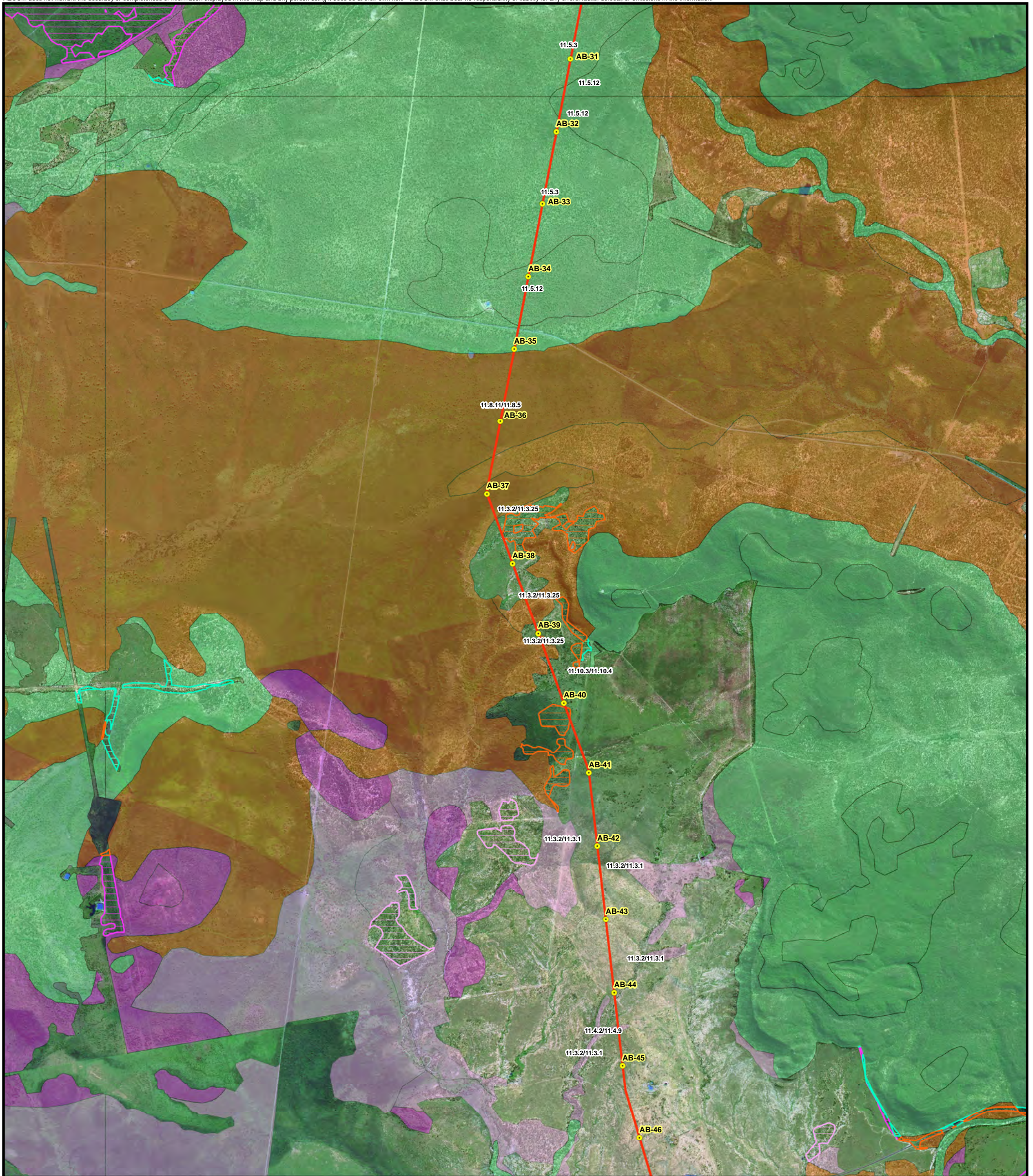
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Isaac to Gladstone, Qld

Map

1 - 2



LEGEND

- | | | | |
|---|---|---|---|
| <ul style="list-style-type: none"> ● 1 Km Kilometrage Point — ABP Route Revision D | <p>Regrowth Vegetation</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Regional Ecosystem</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Essential Habitat</p> <ul style="list-style-type: none"> Essential Habitat |
|---|---|---|---|

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

Map 3 Of 41

Main Line

Kp AB-31 To Kp AB-46

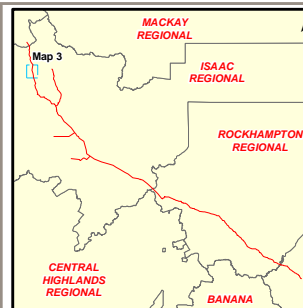
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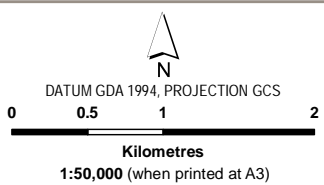
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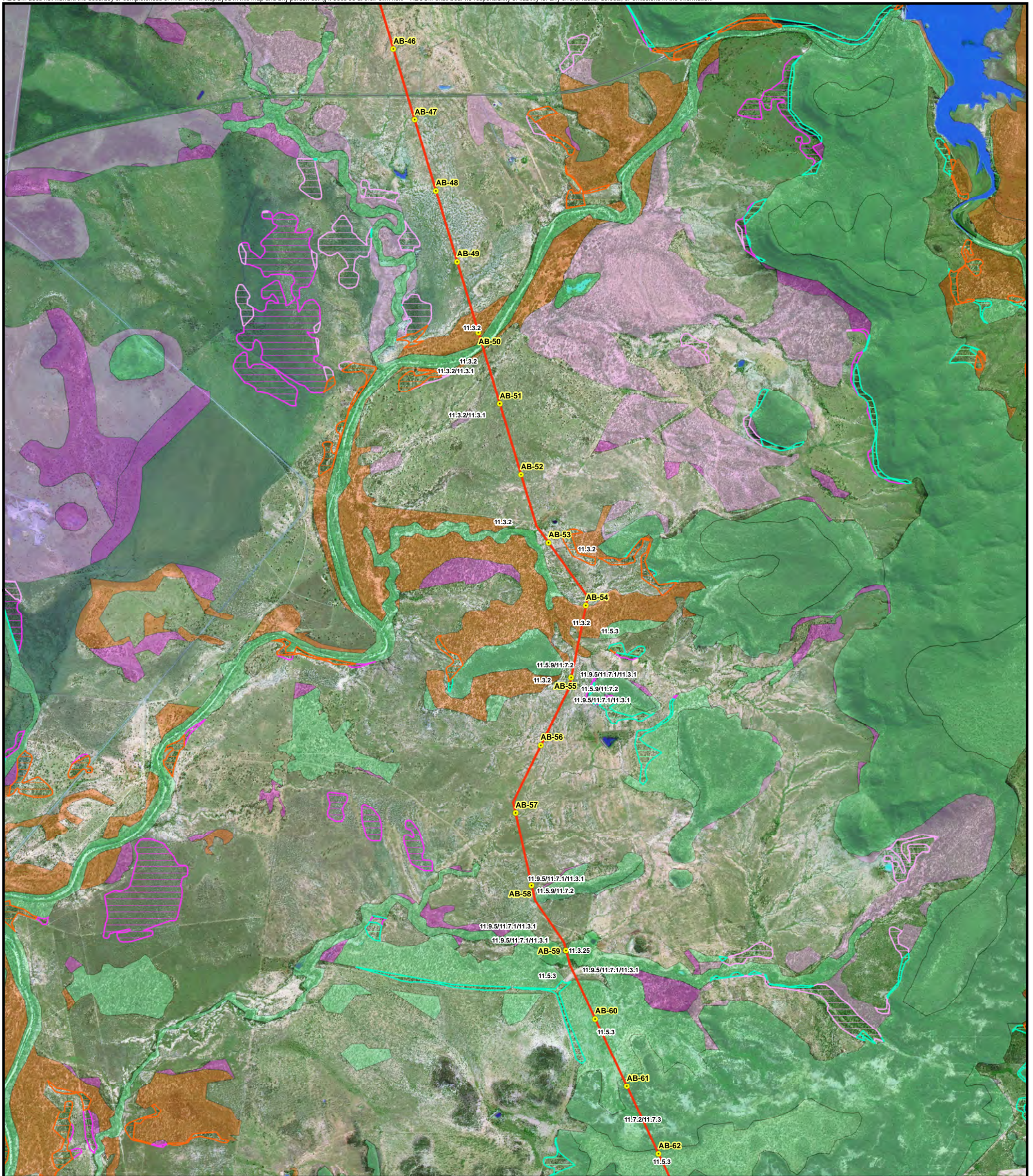
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Map

1 - 3





LEGEND

- 1 Km Kilometrage Point
 - ABP Route Revision D
- | | | |
|---|--|---|
| <p>Regrowth Vegetation</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Regional Ecosystem</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Essential Habitat</p> <ul style="list-style-type: none"> Essential Habitat |
|---|--|---|

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

Map 4 Of 41

Main Line

Kp AB-46 To Kp AB-62

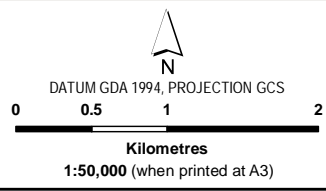
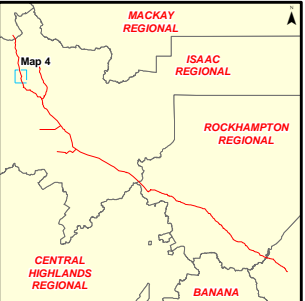
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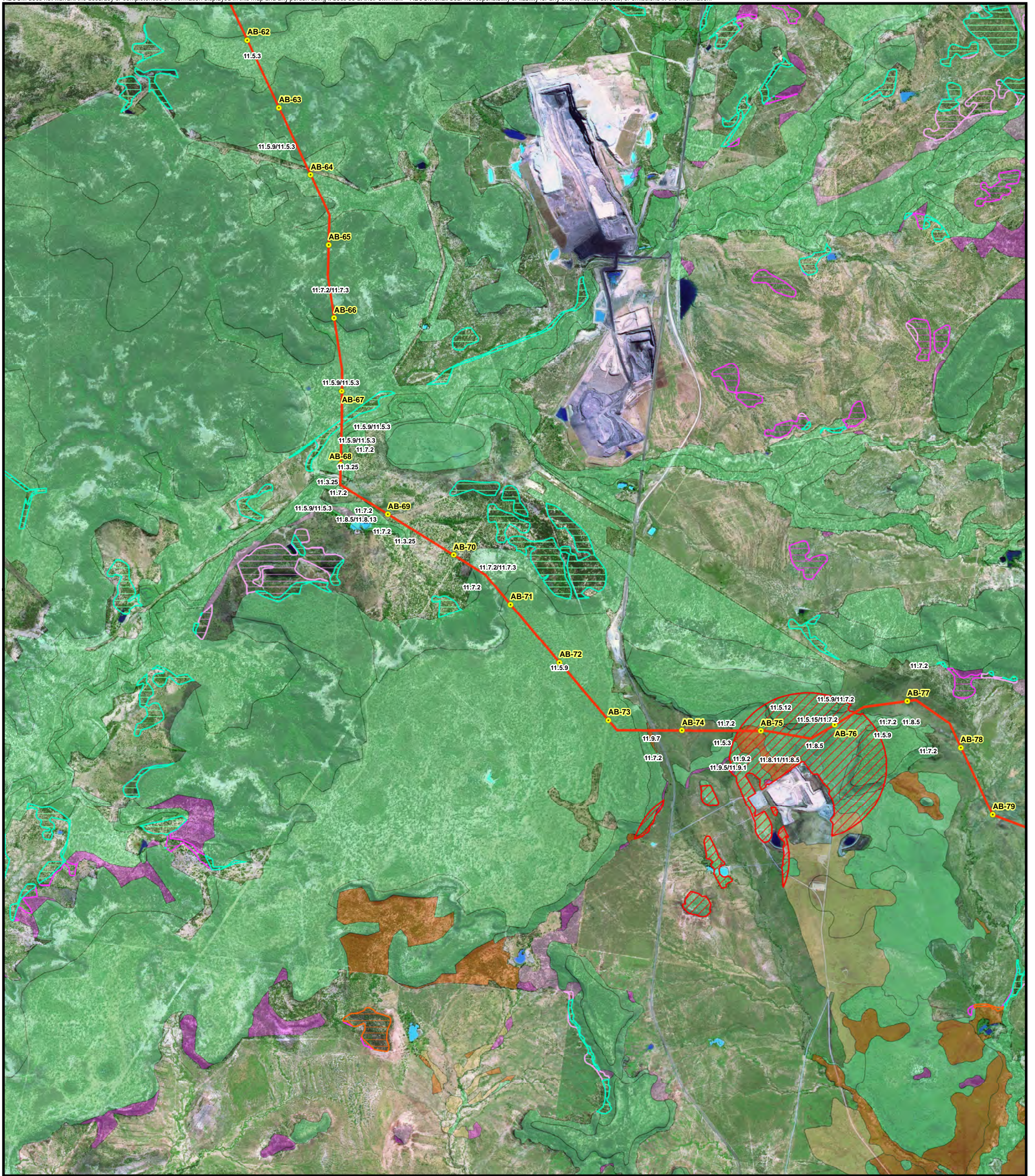
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Map
 1 - 4



LEGEND

- 1 Km Kilometrage Point
 - ABP Route Revision D
- | | | |
|---|---|--|
| <p>Regrowth Vegetation</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Regional Ecosystem</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Essential Habitat</p> <ul style="list-style-type: none"> Essential Habitat |
|---|---|--|

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

Map 5 Of 41

Main Line

Kp AB-61 To Kp AB-79

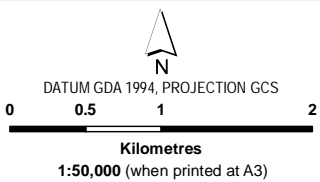
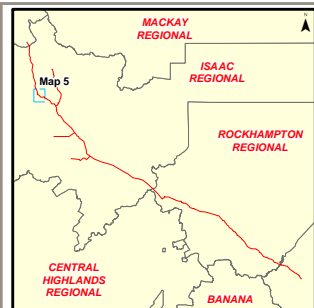
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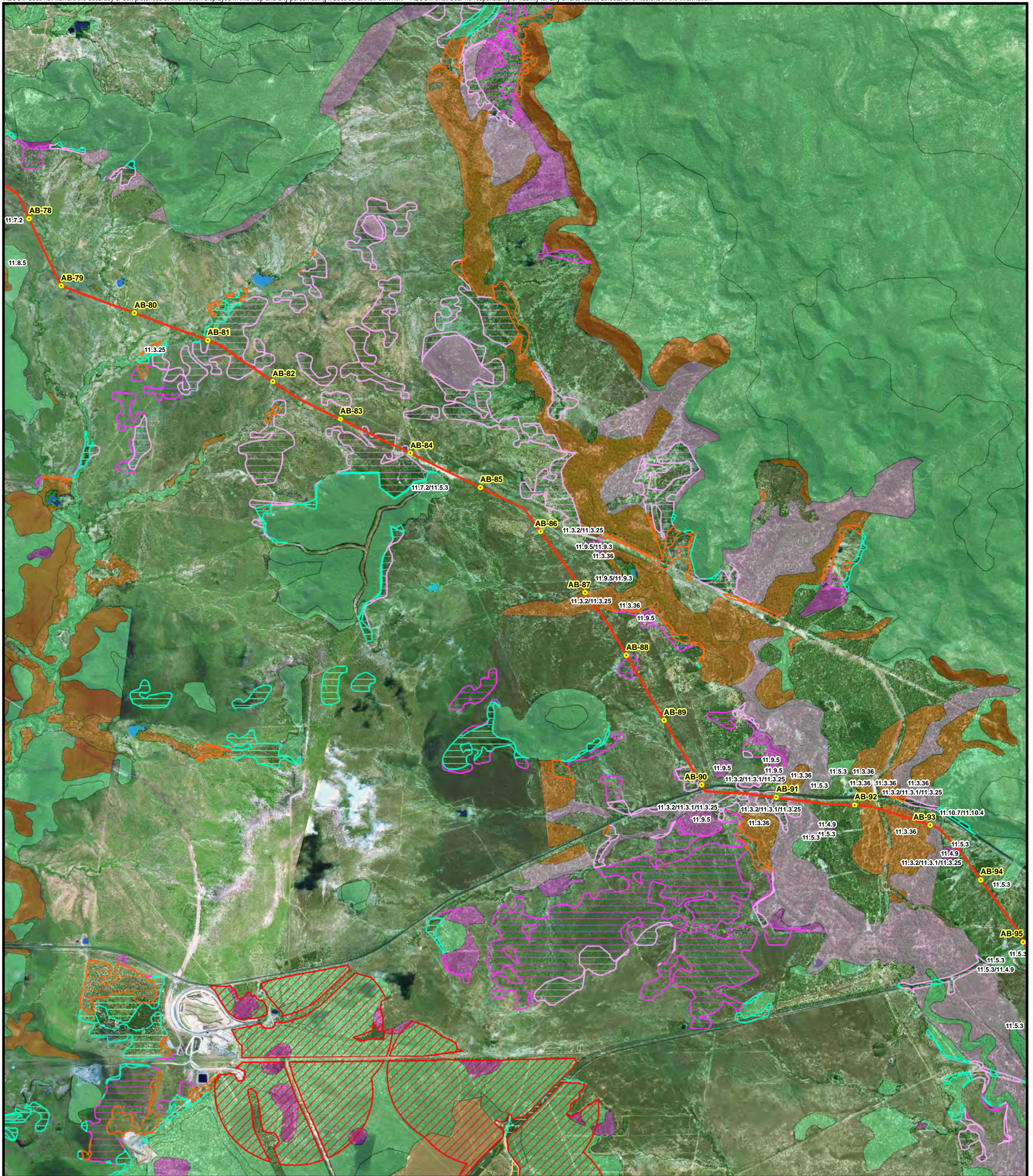
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Isaac to Gladstone, Qld

Map

1 - 5



LEGEND

- 1 Km Kilometrage Point
 - ABP Route Revision D
- | | | |
|--|--|---|
| <p>Regrowth Vegetation</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Regional Ecosystem</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Essential Habitat</p> <ul style="list-style-type: none"> Essential Habitat |
|--|--|---|

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

Map 6 Of 41

Main Line

Kp AB-78 To Kp AB-94

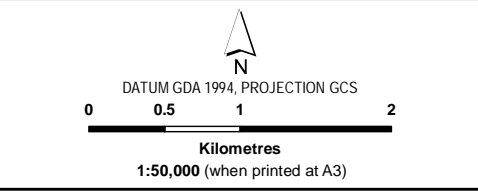
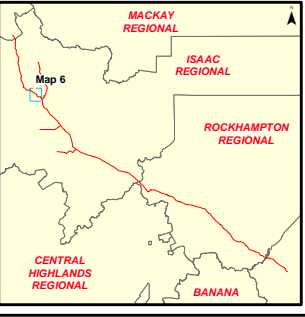
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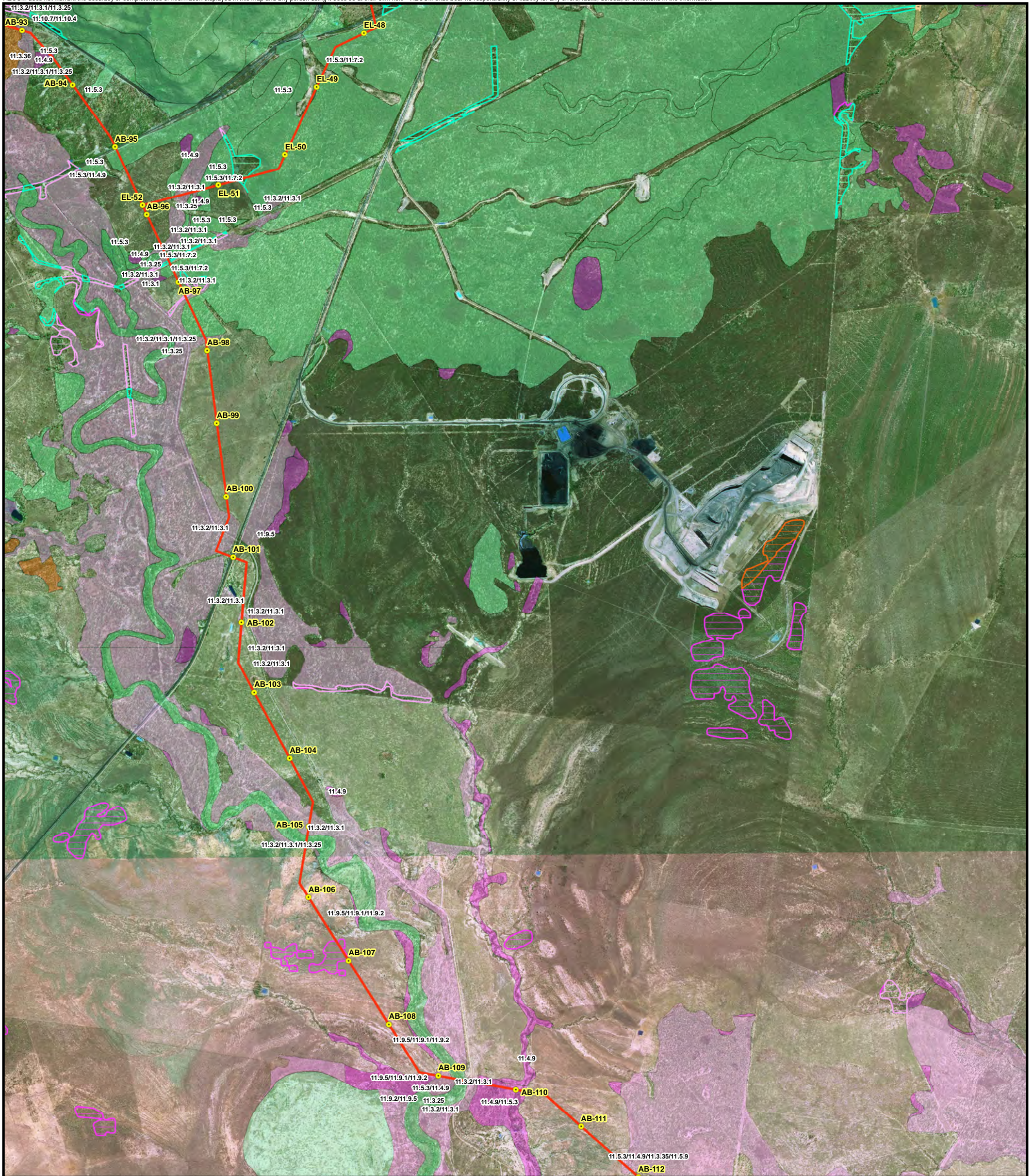
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Map
1 - 6



LEGEND		Regrowth Vegetation	Regional Ecosystem	Essential Habitat
●	1 Km Kilometrage Point	[Light Purple Box] Endangered - Sub-dominant	[Light Purple Box] Endangered - Sub-dominant	[Hatched Box] Essential Habitat
—	ABP Route Revision D	[Pink Box] Endangered - Dominant	[Pink Box] Endangered - Dominant	
		[Light Orange Box] Of Concern - Sub-dominant	[Light Orange Box] Of Concern - Sub-dominant	
		[Orange Box] Of Concern - Dominant	[Orange Box] Of Concern - Dominant	
		[Green Box] Least Concern	[Green Box] Least Concern	

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

Map 7 Of 41

Main Line

Kp AB-94 To Kp AB-111

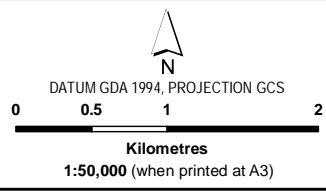
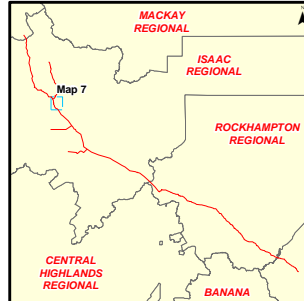
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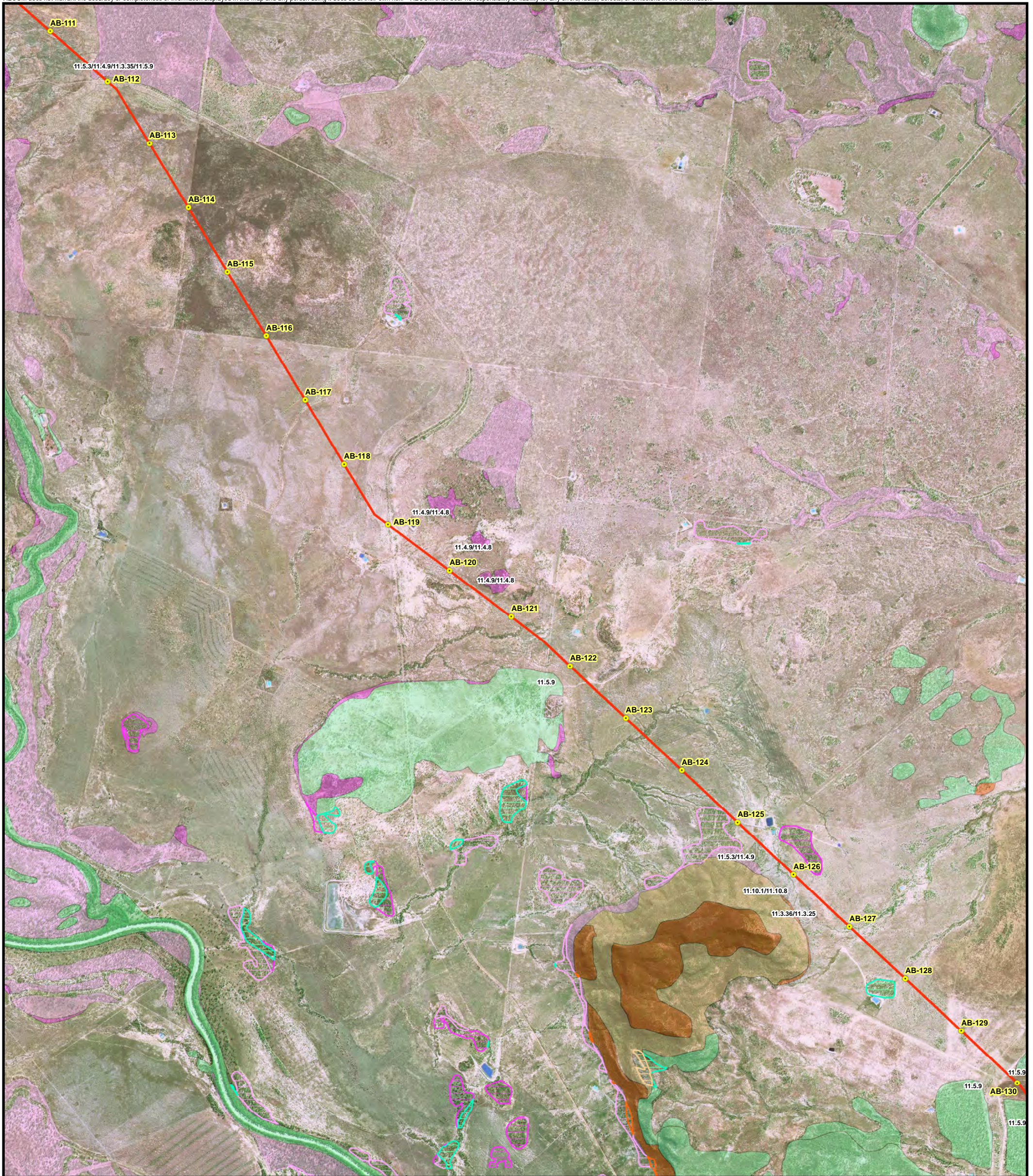


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Map
1 - 7



LEGEND

- 1 Km Kilometrage Point
 - ABP Route Revision D
- | | | |
|--|---|---|
| <p>Regrowth Vegetation</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Regional Ecosystem</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Essential Habitat</p> <ul style="list-style-type: none"> Essential Habitat |
|--|---|---|

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

Map 8 Of 41

Main Line

Kp AB-111 To Kp AB-129

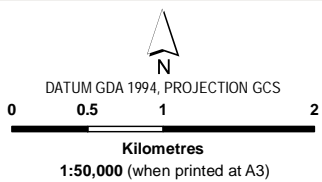
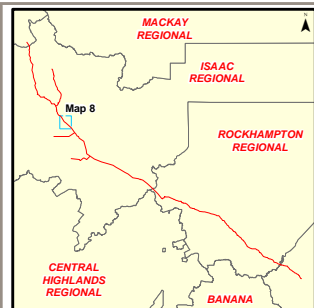
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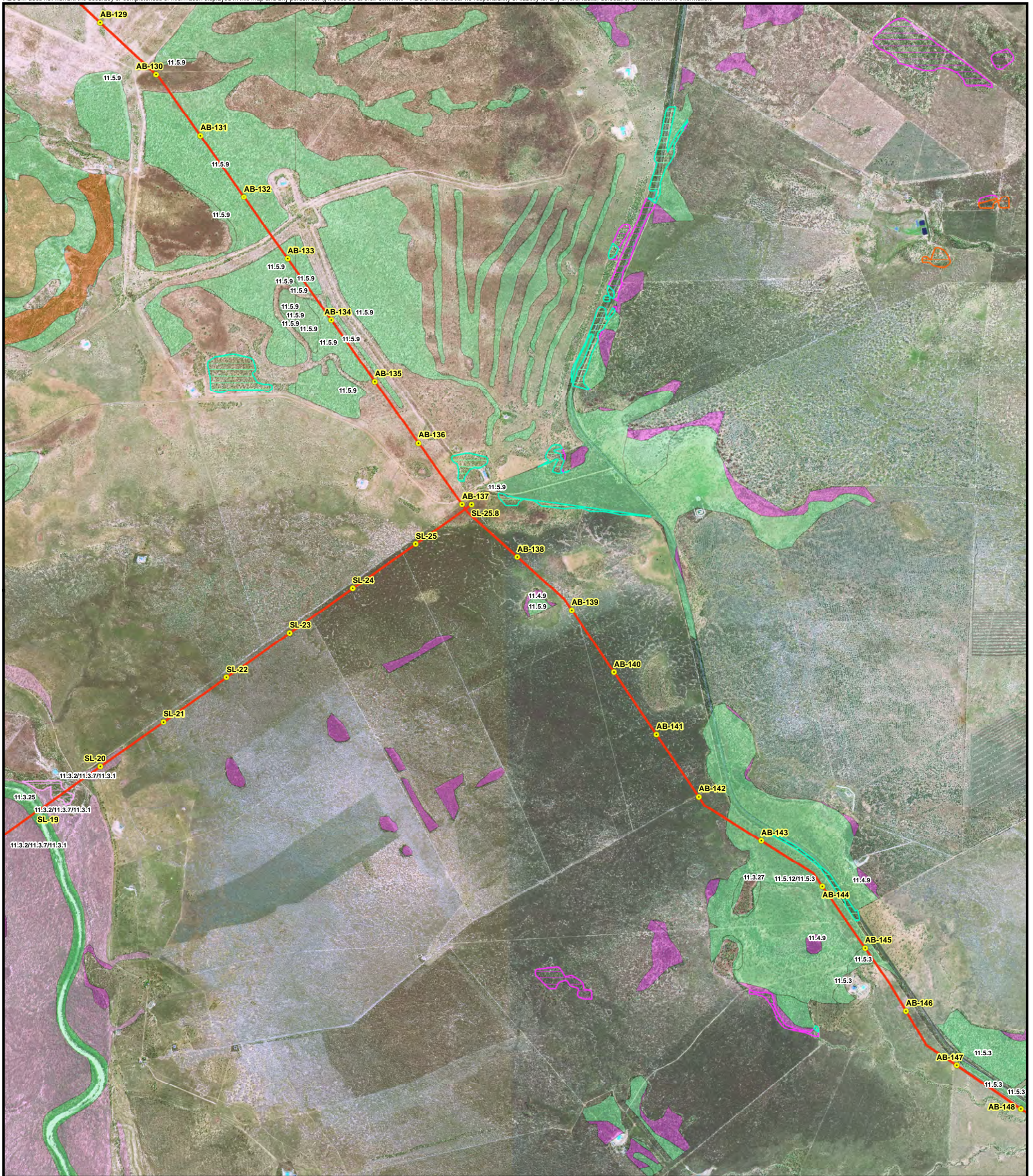
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Map

1 - 8



LEGEND

- 1 Km Kilometrage Point
 - ABP Route Revision D
- | | | |
|---|--|--|
| <p>Regrowth Vegetation</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Regional Ecosystem</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Essential Habitat</p> <ul style="list-style-type: none"> Essential Habitat |
|---|--|--|

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

Map 9 Of 41

Main Line

Kp AB-129 To Kp AB-147

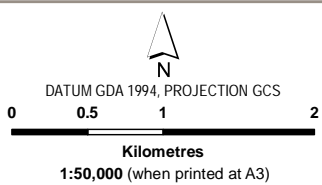
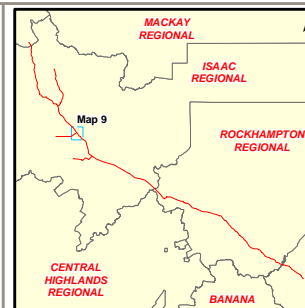
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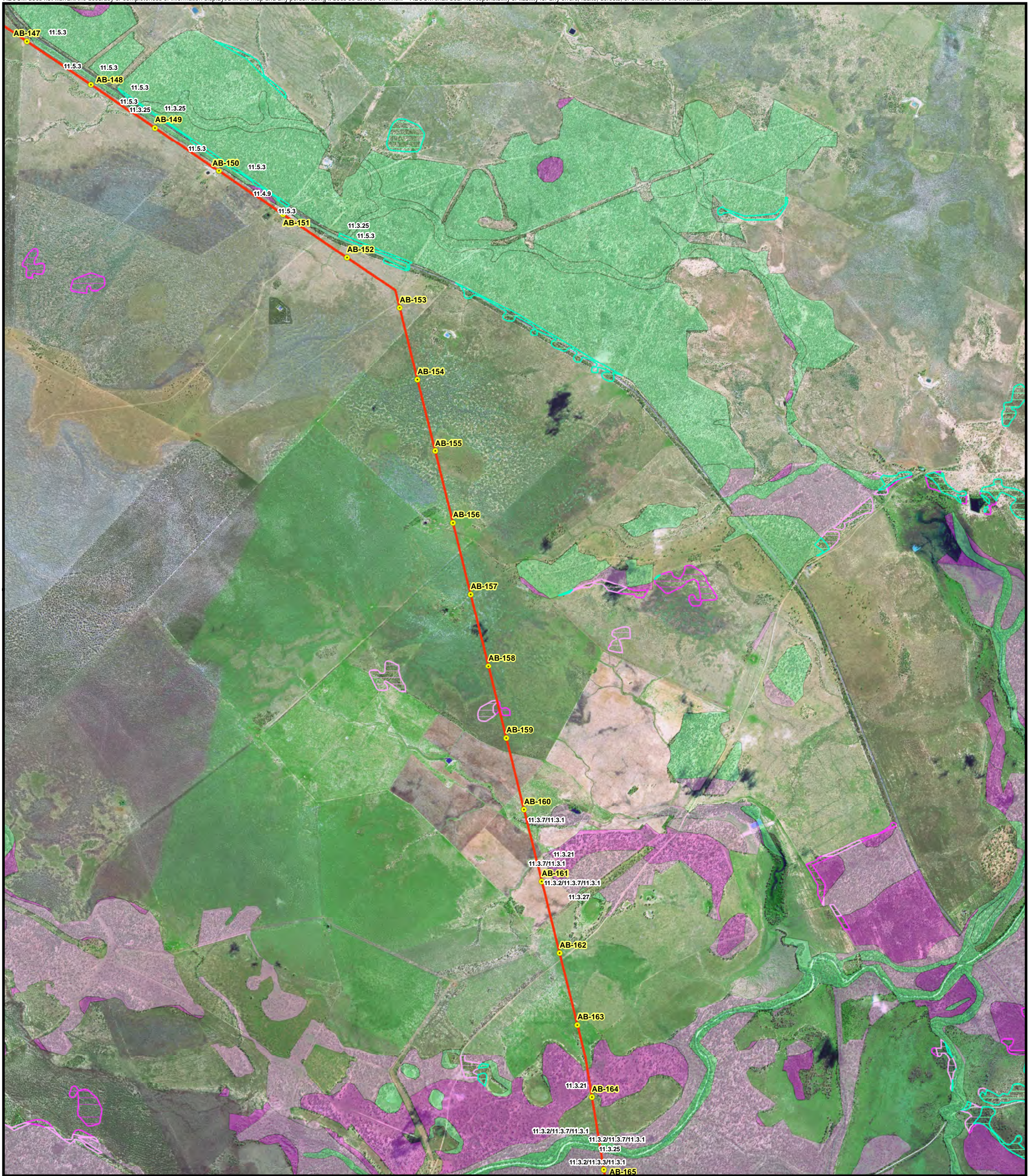
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Map

1 - 9



LEGEND

- 1 Km Kilometrage Point
 - ABP Route Revision D
- | | | |
|---|--|---|
| <p>Regrowth Vegetation</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Regional Ecosystem</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Essential Habitat</p> <ul style="list-style-type: none"> Essential Habitat |
|---|--|---|

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

Map 10 Of 41

Main Line

Kp AB-147 To Kp AB-165

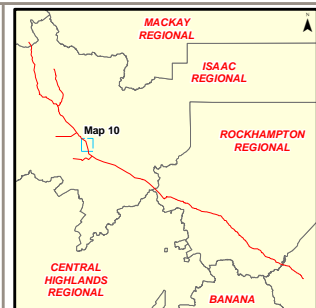
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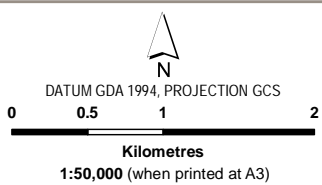
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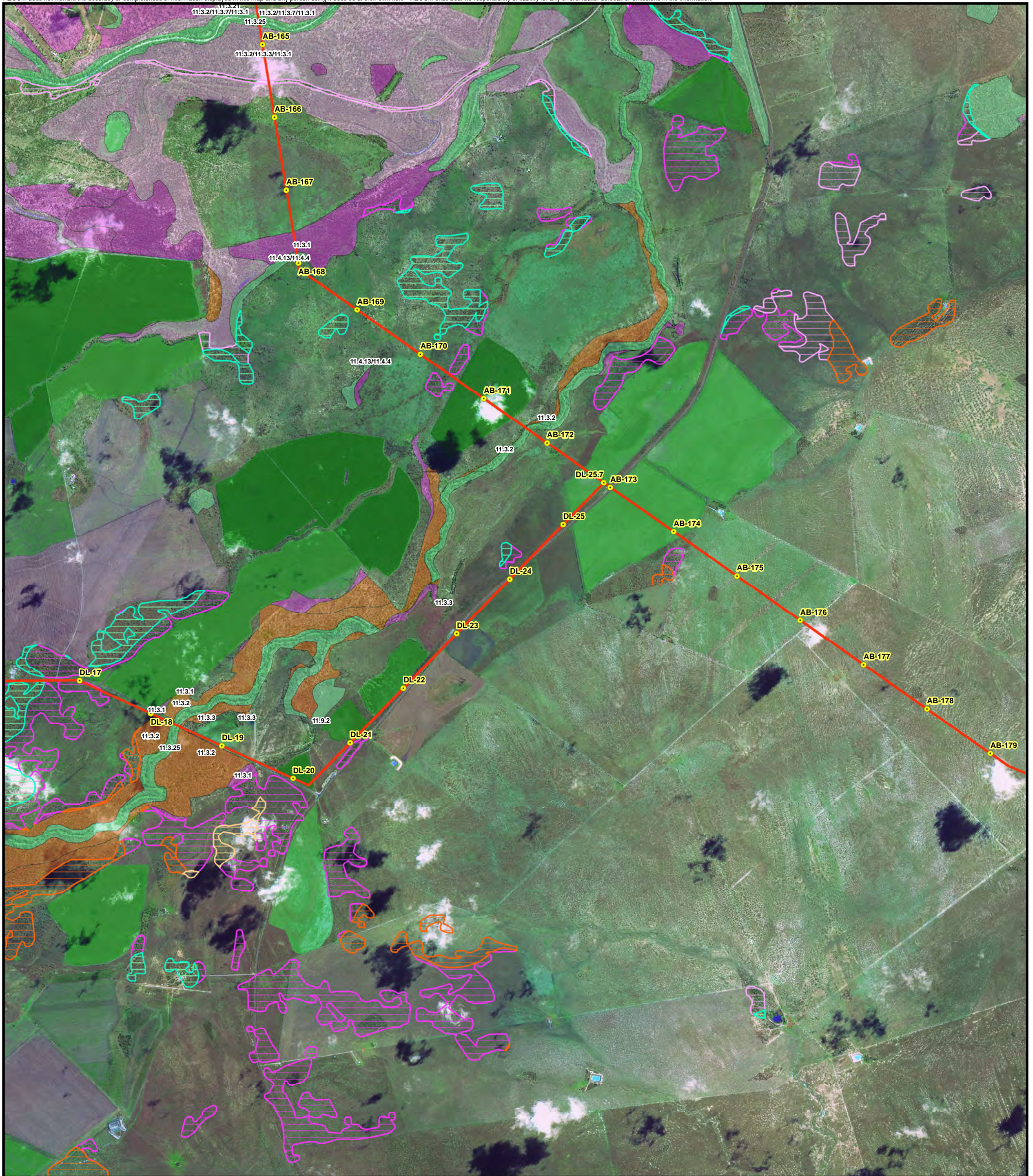
ABP - EIS - Flora Report

Isaac to Gladstone, Qld



Map

1 - 10



LEGEND

- 1 Km Kilometrage Point
 - ABP Route Revision D
- | | | |
|---|--|---|
| <p>Regrowth Vegetation</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Regional Ecosystem</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Essential Habitat</p> <ul style="list-style-type: none"> Essential Habitat |
|---|--|---|

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

Map 11 Of 41

Main Line

Kp AB-165 To Kp AB-178

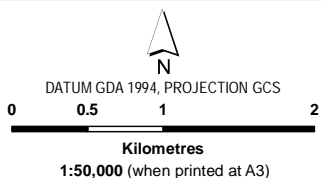
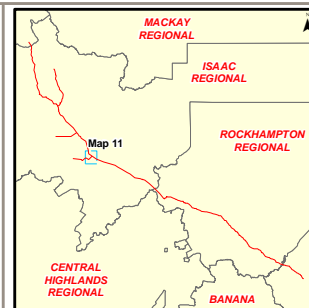
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Data Sources:
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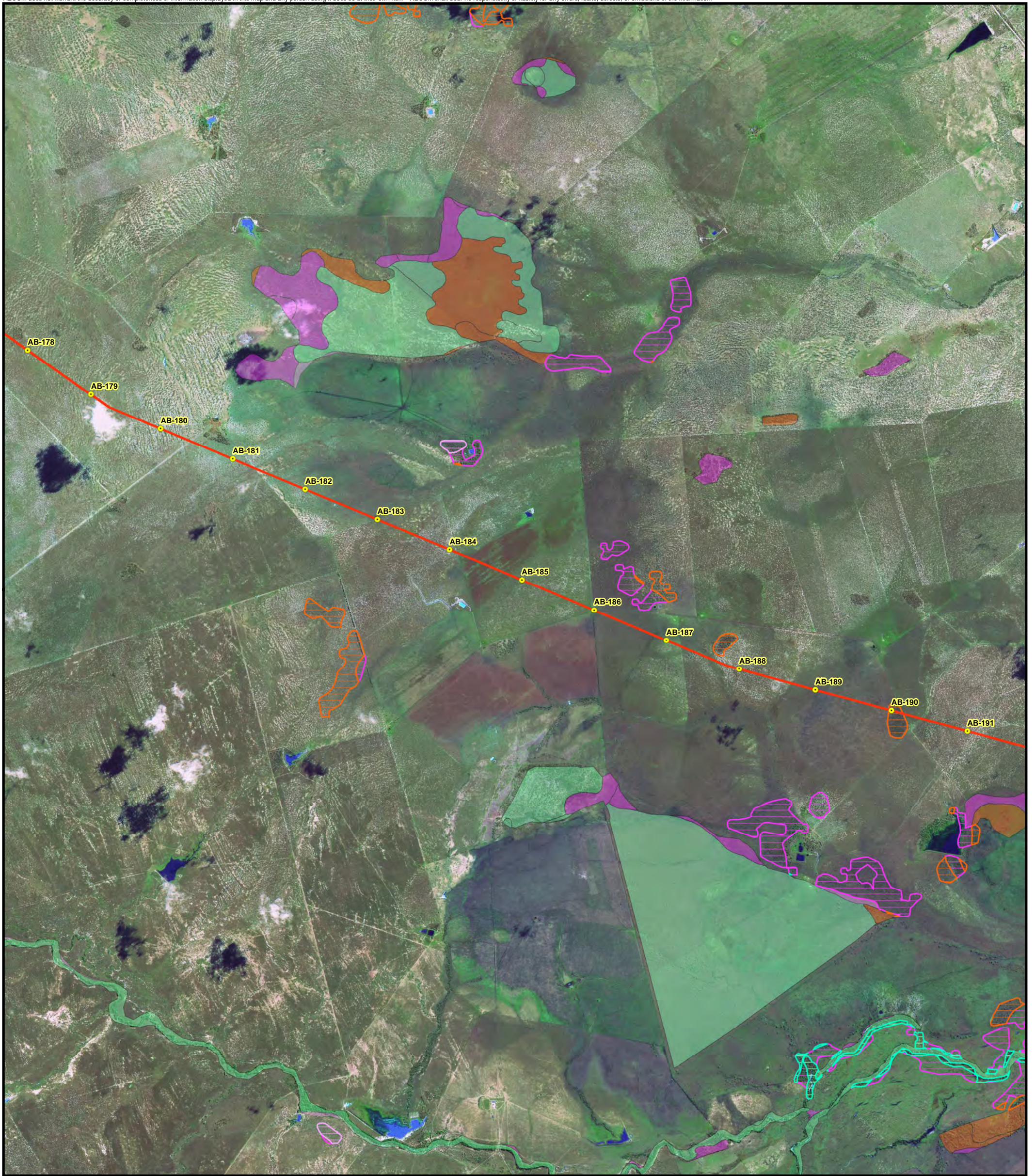
Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

1 - 11



LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D

Regrowth Vegetation

- Endangered - Sub-dominant
- Endangered - Dominant
- Of Concern - Sub-dominant
- Of Concern - Dominant
- Least Concern

Regional Ecosystem

- Endangered - Sub-dominant
- Endangered - Dominant
- Of Concern - Sub-dominant
- Of Concern - Dominant
- Least Concern

Essential Habitat

- Essential Habitat

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

Map 12 Of 41

Main Line

Kp AB-178 To Kp AB-191

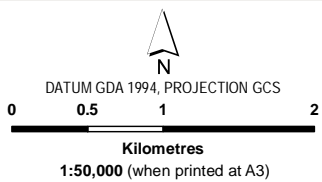
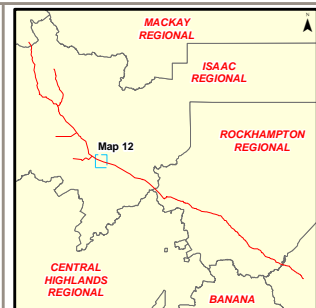
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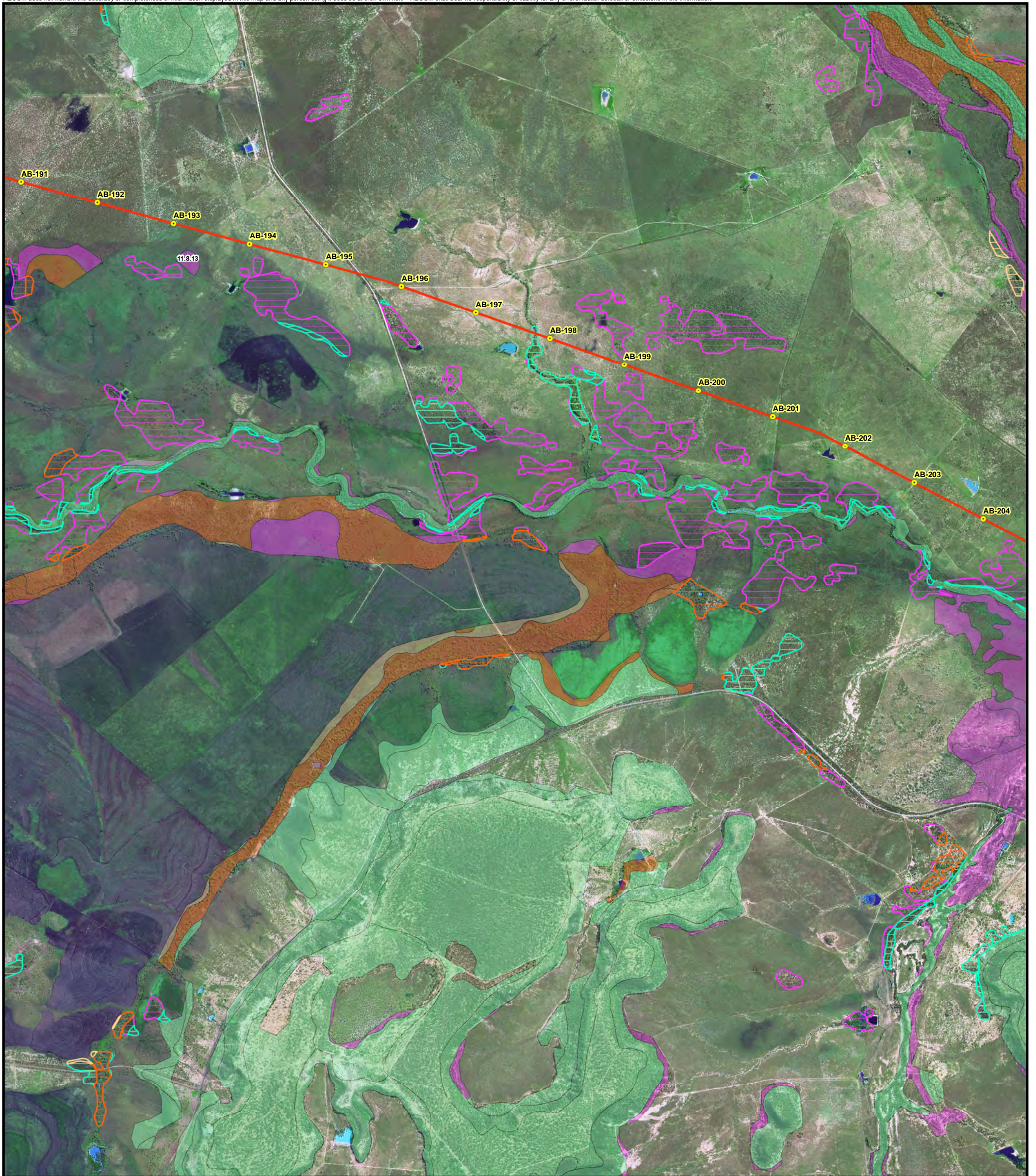
Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

1 - 12



LEGEND

- 1 Km Kilometrage Point
 - ABP Route Revision D
- | | | |
|---|--|---|
| <p>Regrowth Vegetation</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Regional Ecosystem</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Essential Habitat</p> <ul style="list-style-type: none"> Essential Habitat |
|---|--|---|

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

Map 13 Of 41
 Main Line
 Kp AB-191 To Kp AB-204

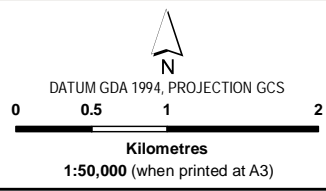
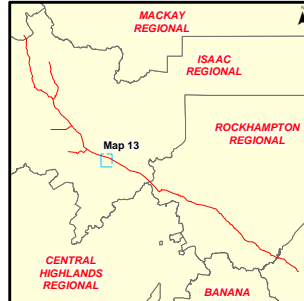
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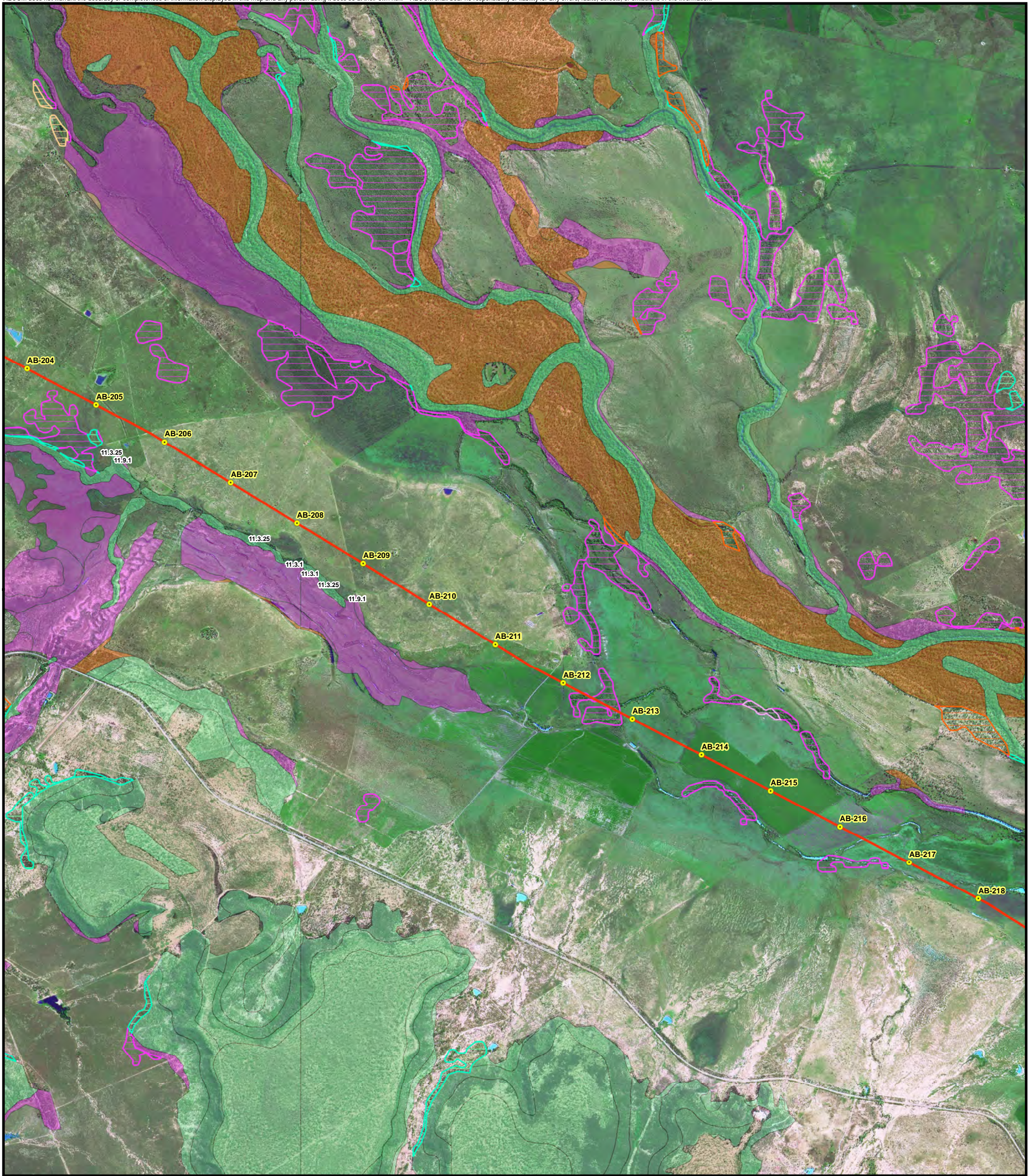
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 Isaac to Gladstone, Qld

Map
1 - 13



LEGEND

- 1 Km Kilometrage Point
 - ABP Route Revision D
- | | | |
|--|---|---|
| <p>Regrowth Vegetation</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Regional Ecosystem</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Essential Habitat</p> <ul style="list-style-type: none"> Essential Habitat |
|--|---|---|

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

Map 14 Of 41

Main Line

Kp AB-204 To Kp AB-218

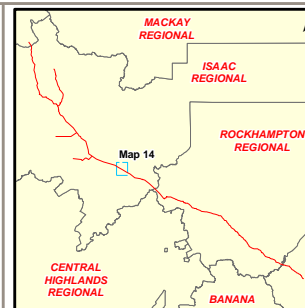
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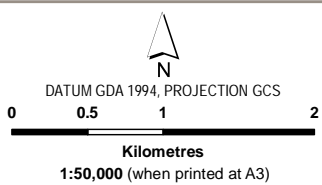
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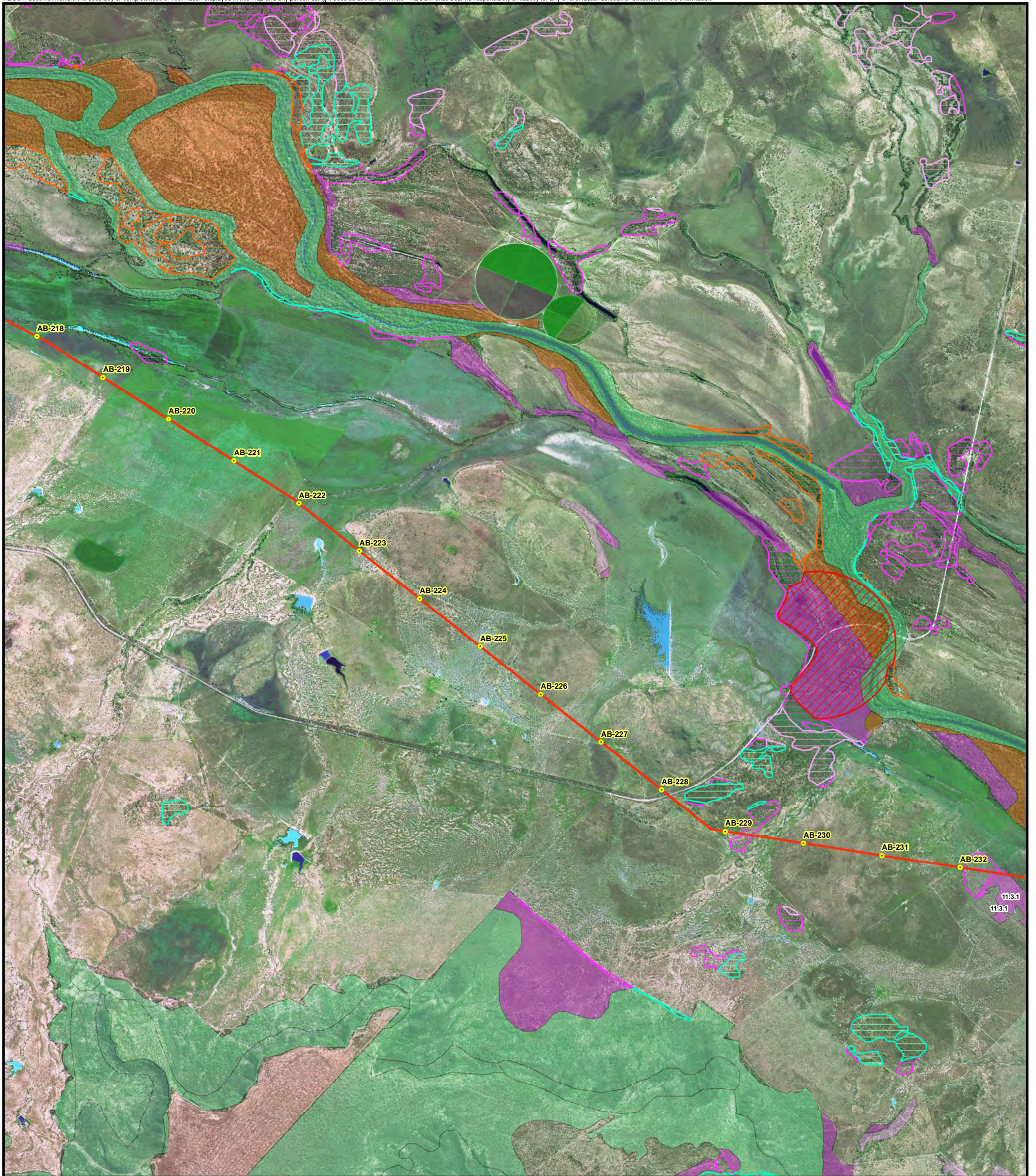
ABP - EIS - Flora Report

Isaac to Gladstone, Qld



Map

1 - 14



LEGEND

- 1 Km Kilometrage Point
 - ABP Route Revision D
- | | | |
|---|--|--|
| <p>Regrowth Vegetation</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Regional Ecosystem</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Essential Habitat</p> <ul style="list-style-type: none"> Essential Habitat |
|---|--|--|

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

Map 15 Of 41

Main Line

Kp AB-218 To Kp AB-232

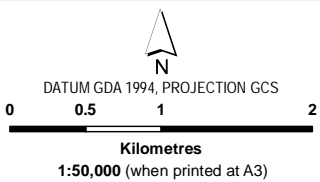
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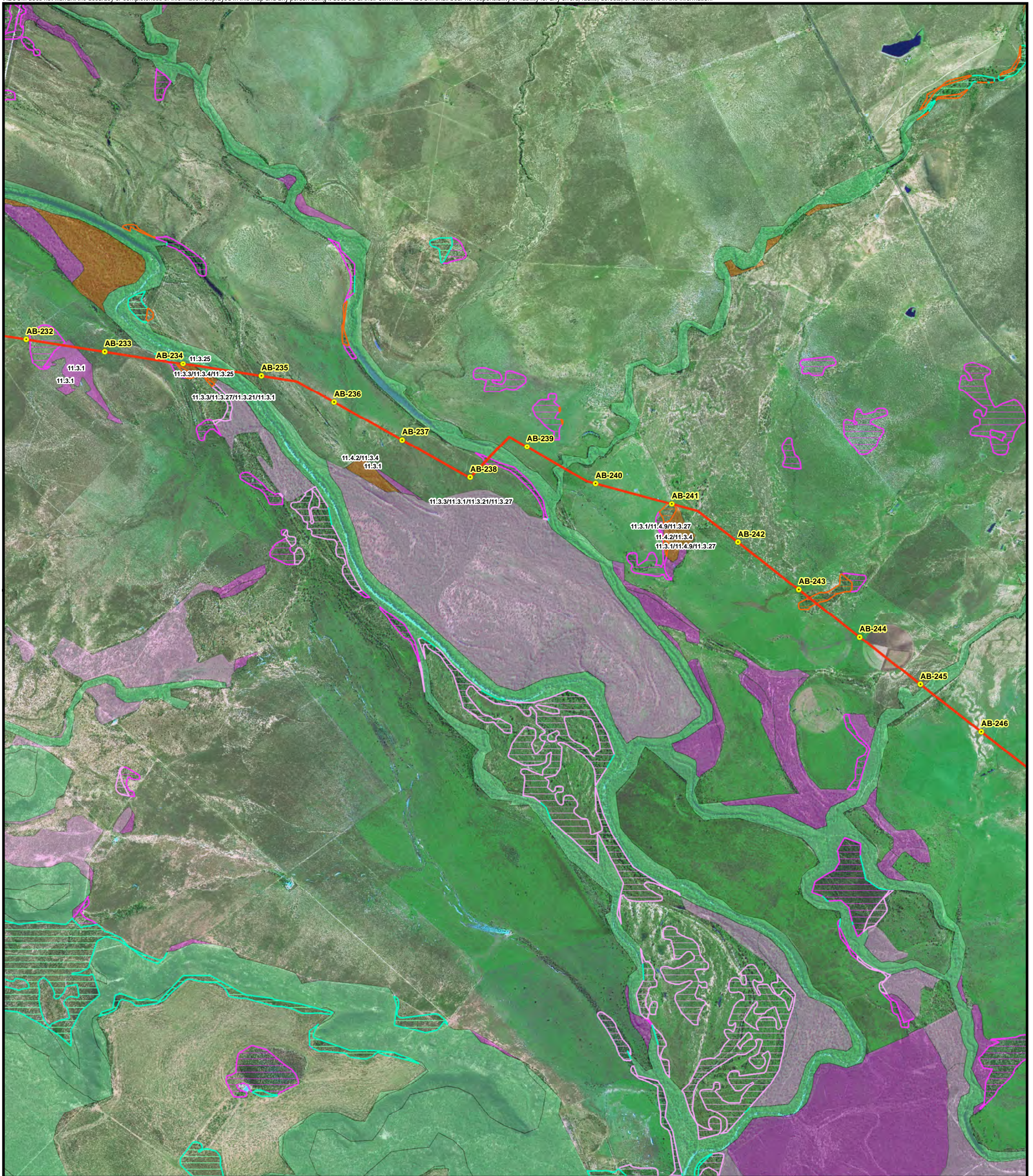
Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

1 - 15



LEGEND		Regrowth Vegetation	Regional Ecosystem	Essential Habitat
●	1 Km Kilometrage Point	[Purple Box] Endangered - Sub-dominant	[Purple Box] Endangered - Sub-dominant	[Hatched Box] Essential Habitat
—	ABP Route Revision D	[Pink Box] Endangered - Dominant	[Pink Box] Endangered - Dominant	
		[Orange Box] Of Concern - Sub-dominant	[Orange Box] Of Concern - Sub-dominant	
		[Light Orange Box] Of Concern - Dominant	[Light Orange Box] Of Concern - Dominant	
		[Green Box] Least Concern	[Green Box] Least Concern	

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

Map 16 Of 41

Main Line

Kp AB-232 To Kp AB-246

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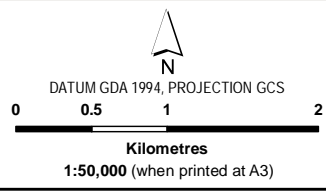
Arrow Bowen Pipeline (ABP)

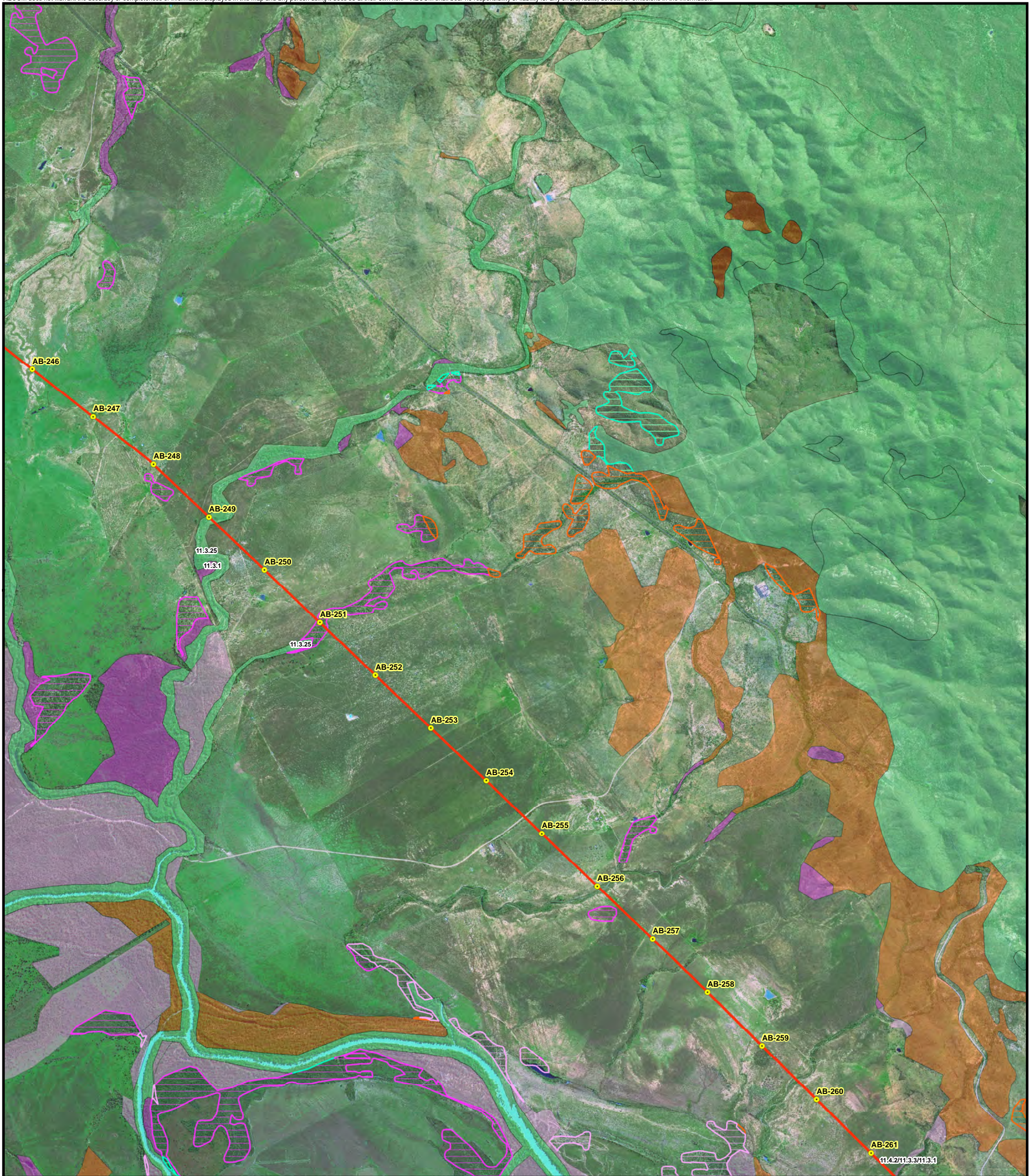
ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

1 - 16





LEGEND

- 1 Km Kilometrage Point
 - ABP Route Revision D
- | | | |
|---|--|---|
| <p>Regrowth Vegetation</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Regional Ecosystem</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Essential Habitat</p> <ul style="list-style-type: none"> Essential Habitat |
|---|--|---|

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

Map 17 Of 41

Main Line

Kp AB-246 To Kp AB-261

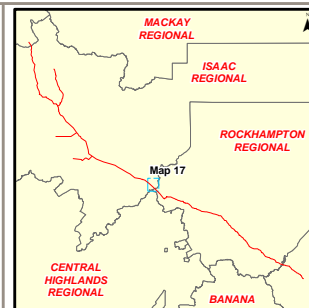
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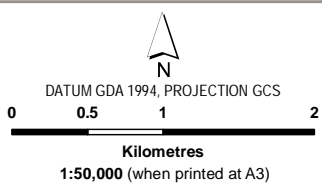
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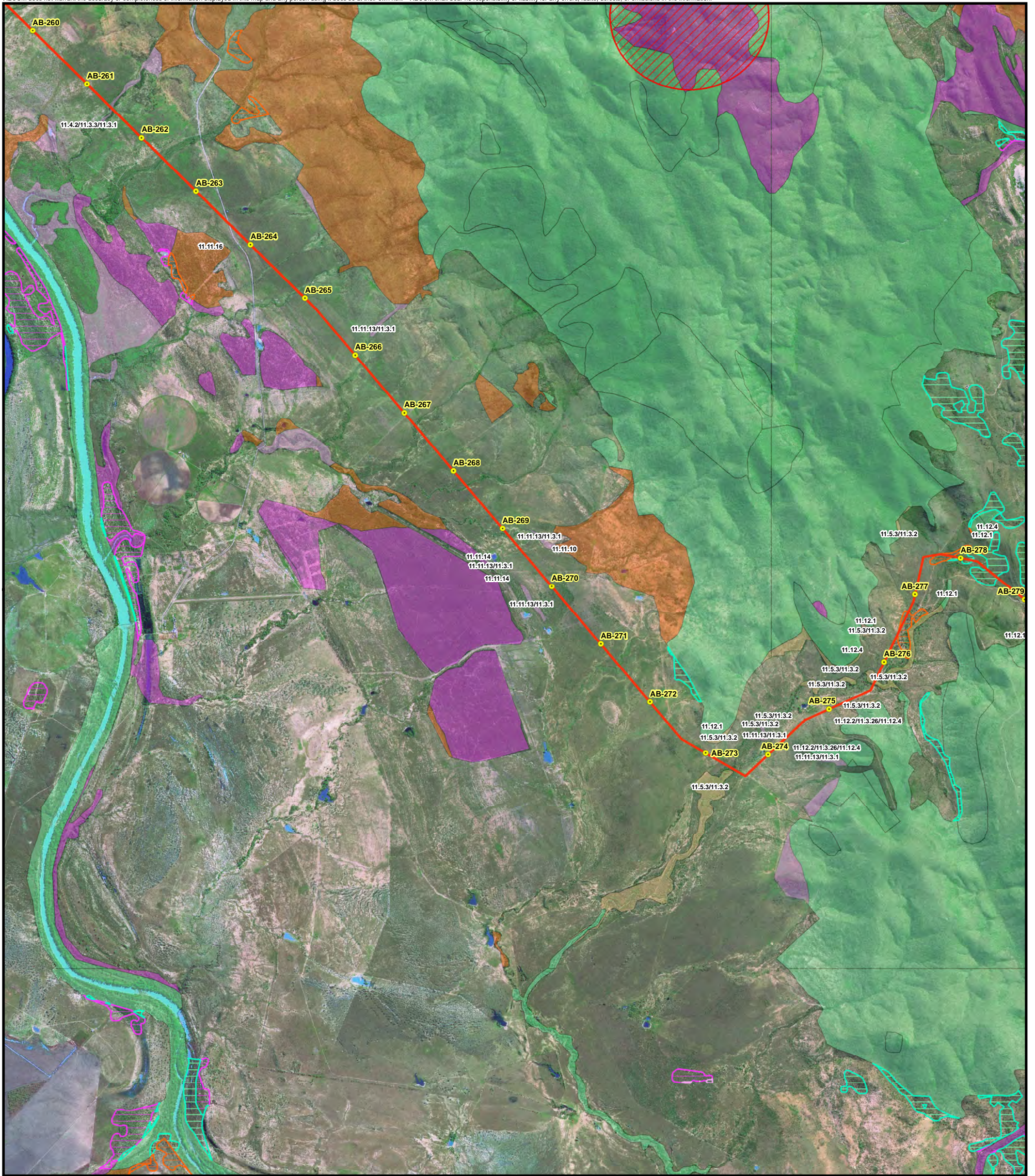
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Isaac to Gladstone, Qld

Map

1 - 17





LEGEND

- 1 Km Kilometrage Point
 - ABP Route Revision D
- | | | |
|--|---|---|
| <p>Regrowth Vegetation</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Regional Ecosystem</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Essential Habitat</p> <ul style="list-style-type: none"> Essential Habitat |
|--|---|---|

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

Map 18 Of 41

Main Line

Kp AB-260 To Kp AB-278

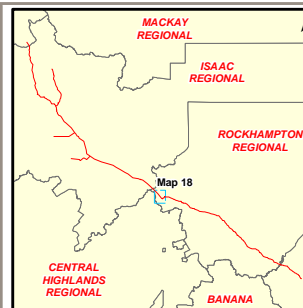
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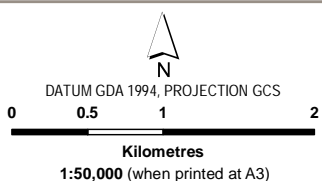
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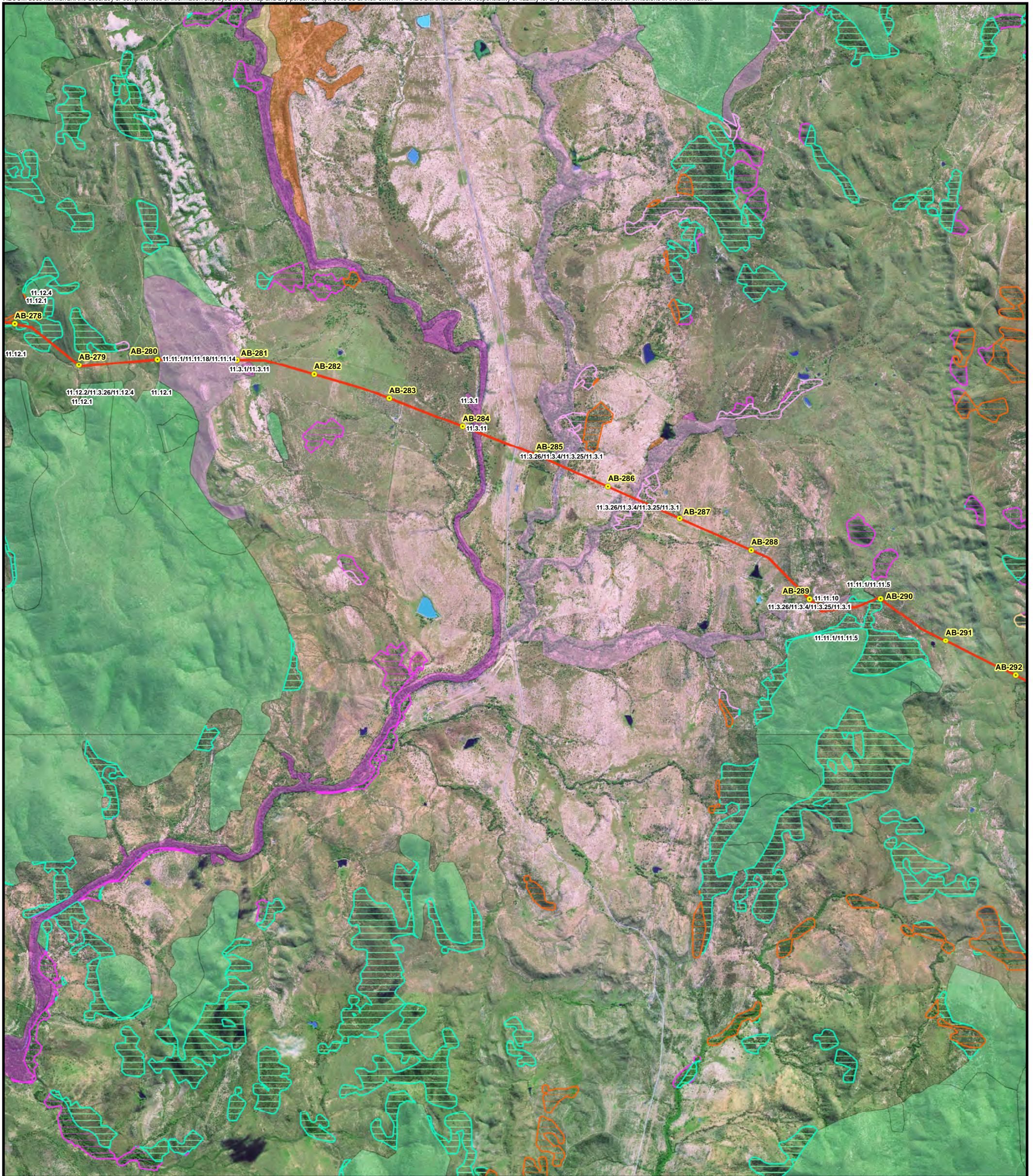
ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

1 - 18





LEGEND

- 1 Km Kilometrage Point
 - ABP Route Revision D
- | | | |
|--|---|---|
| <p>Regrowth Vegetation</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Regional Ecosystem</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Essential Habitat</p> <ul style="list-style-type: none"> Essential Habitat |
|--|---|---|

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

Map 19 Of 41

Main Line

Kp AB-278 To Kp AB-291

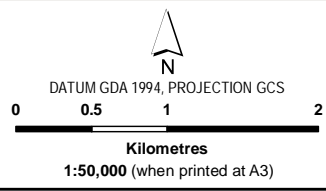
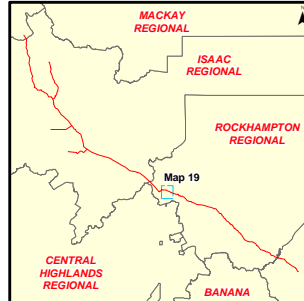
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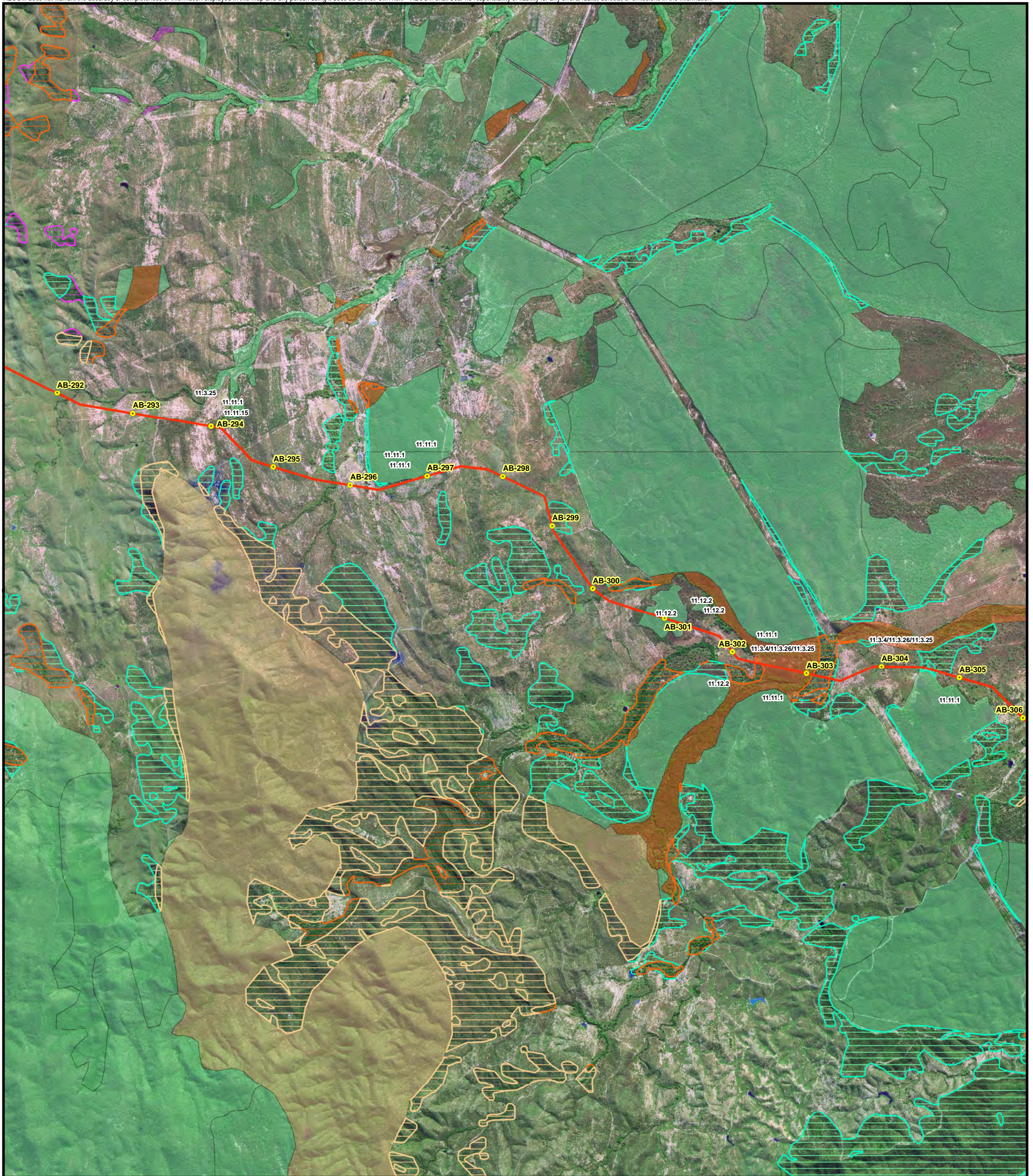


Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map
1 - 19



LEGEND

- 1 Km Kilometrage Point
 - ABP Route Revision D
- | | | |
|---|--|--|
| <p>Regrowth Vegetation</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Regional Ecosystem</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Essential Habitat</p> <ul style="list-style-type: none"> Essential Habitat |
|---|--|--|

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

Map 20 Of 41

Main Line

Kp AB-292 To Kp AB-305

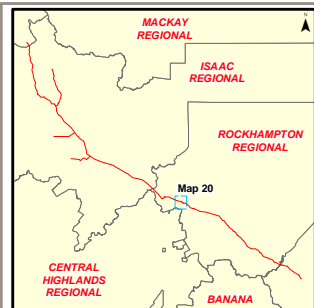
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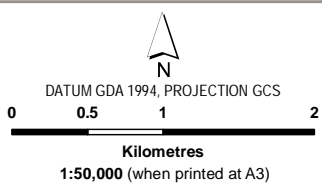
Arrow Bowen Pipeline (ABP)

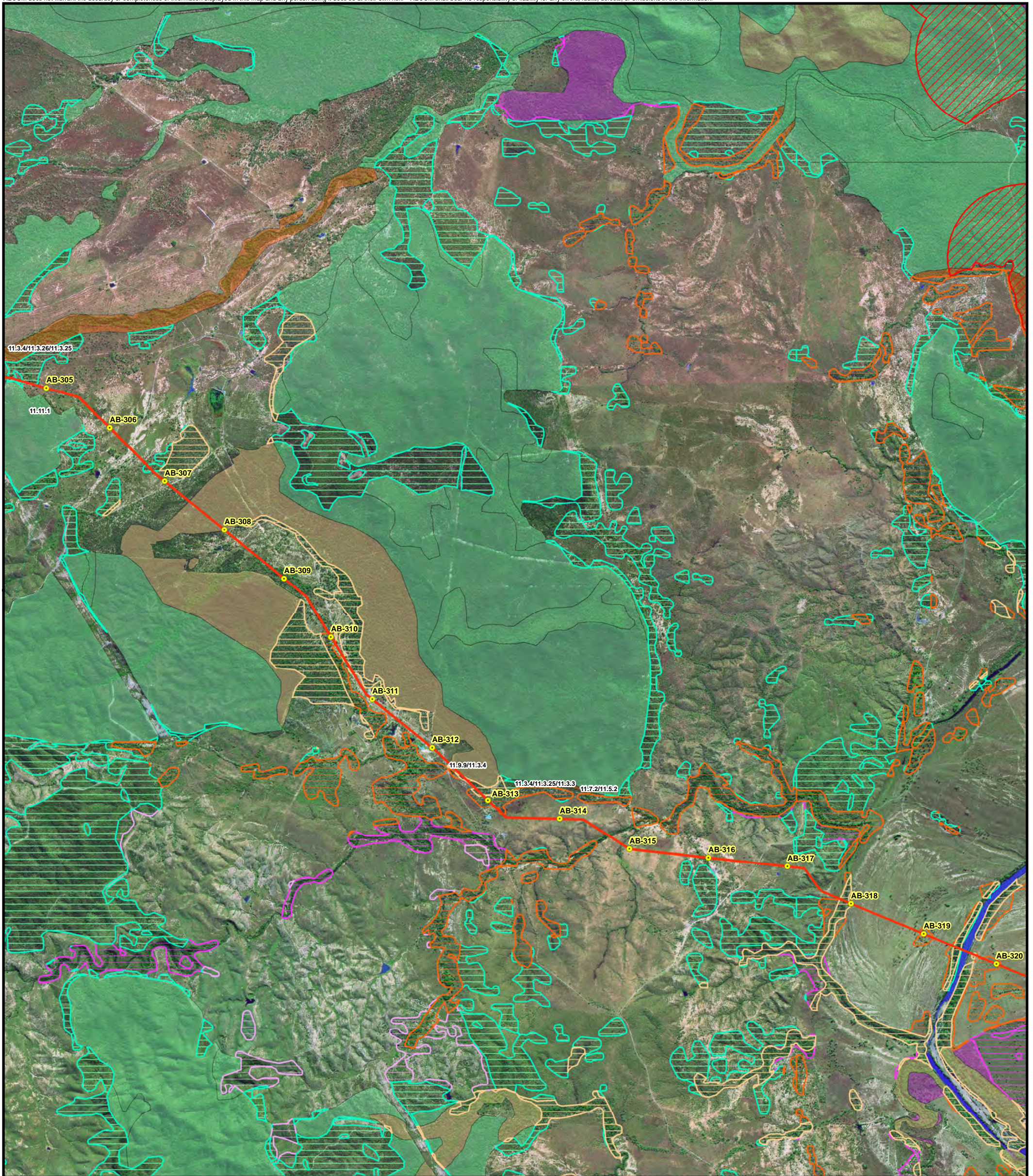
ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

1 - 20





LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D

Regrowth Vegetation

- Endangered - Sub-dominant
- Endangered - Dominant
- Of Concern - Sub-dominant
- Of Concern - Dominant
- Least Concern

Regional Ecosystem

- Endangered - Sub-dominant
- Endangered - Dominant
- Of Concern - Sub-dominant
- Of Concern - Dominant
- Least Concern

Essential Habitat

- Essential Habitat

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

Map 21 Of 41

Main Line

Kp AB-305 To Kp AB-320

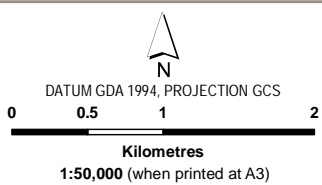
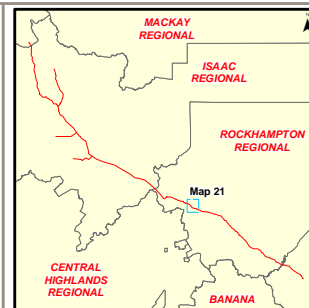
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Data Sources:
 - Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
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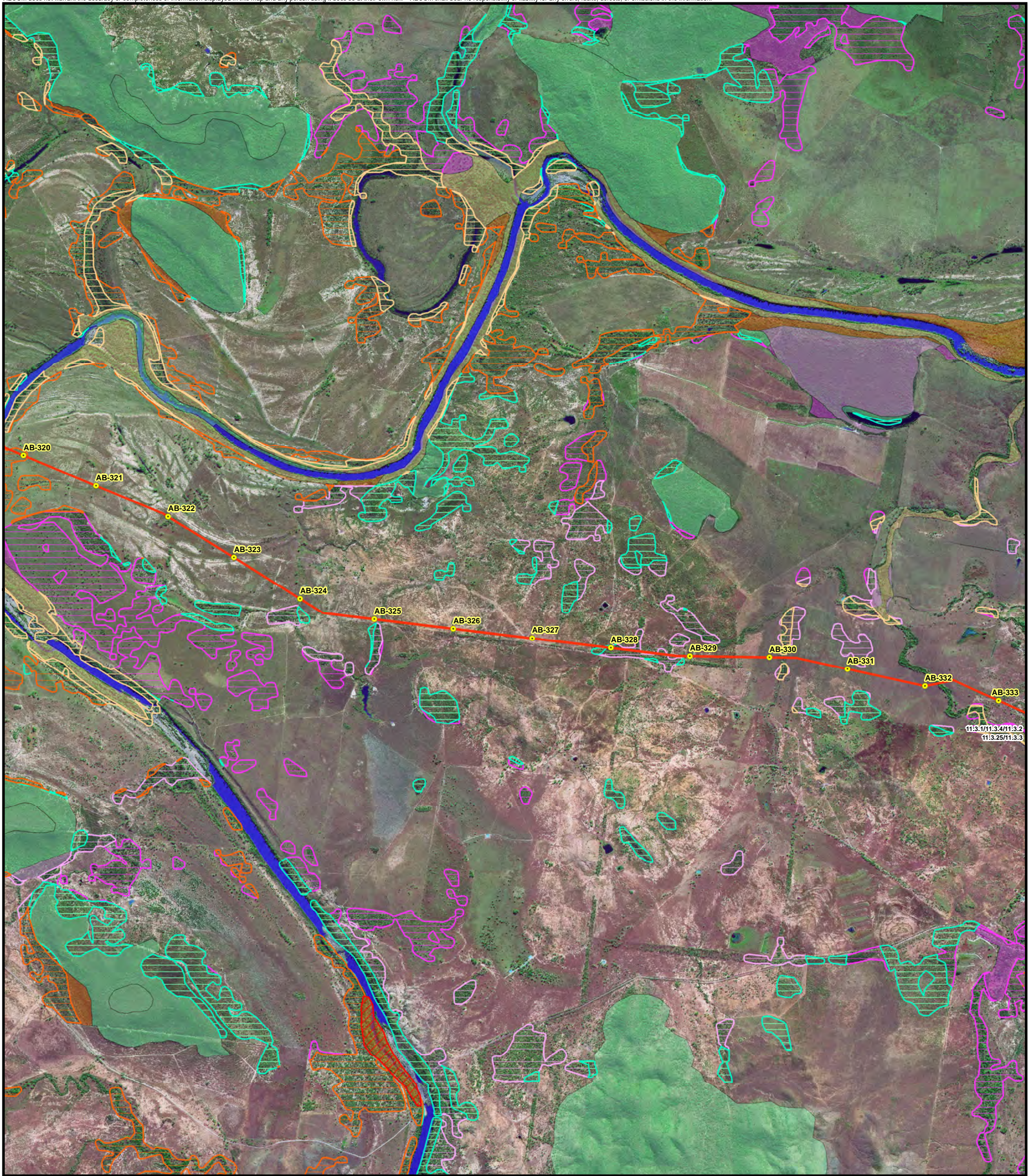
Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

1 - 21



LEGEND

- 1 Km Kilometrage Point
 - ABP Route Revision D
- | | | |
|---|--|--|
| <p>Regrowth Vegetation</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Regional Ecosystem</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Essential Habitat</p> <ul style="list-style-type: none"> Essential Habitat |
|---|--|--|

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

Map 22 Of 41

Main Line

Kp AB-320 To Kp AB-333

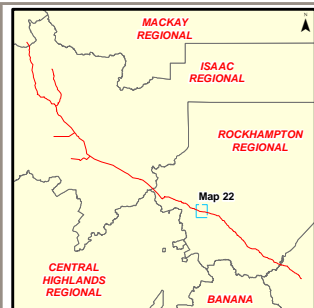
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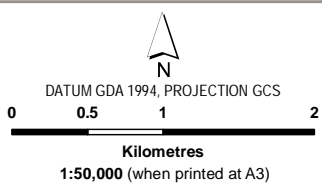
Arrow Bowen Pipeline (ABP)

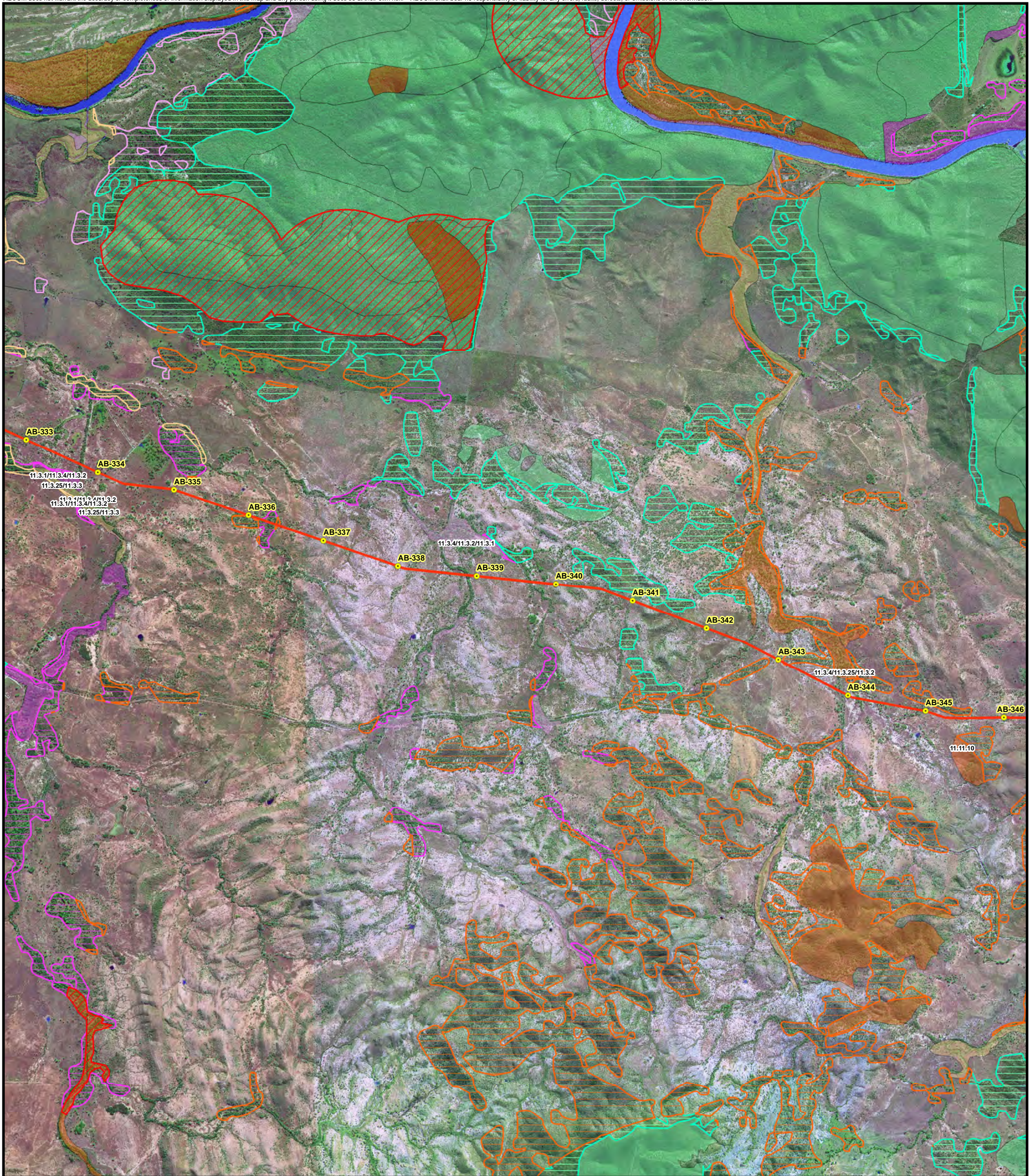
ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

1 - 22





LEGEND

- 1 Km Kilometrage Point
 - ABP Route Revision D
- | | | |
|--|---|---|
| <p>Regrowth Vegetation</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Regional Ecosystem</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Essential Habitat</p> <ul style="list-style-type: none"> Essential Habitat |
|--|---|---|

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

Map 23 Of 41
Main Line
Kp AB-333 To Kp AB-346

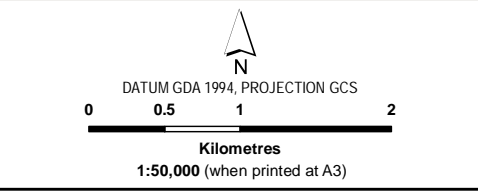
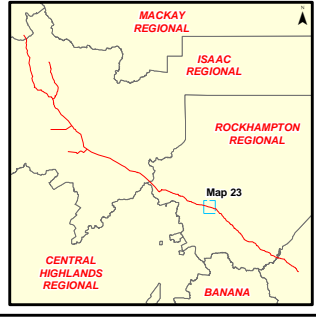
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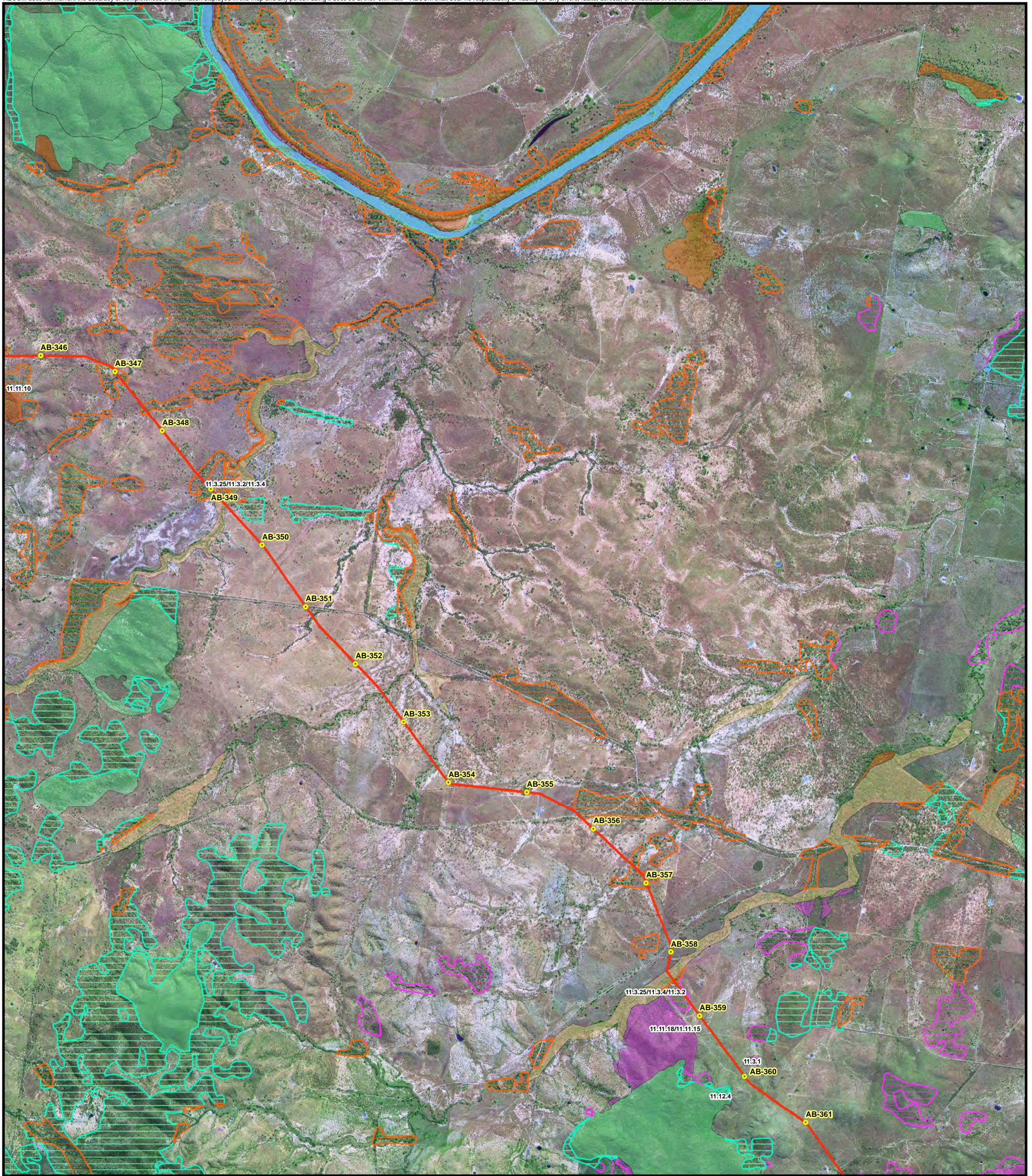
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Isaac to Gladstone, Qld

Map
1 - 23



LEGEND

- 1 Km Kilometrage Point
 - ABP Route Revision D
- | | | |
|---|--|---|
| <p>Regrowth Vegetation</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Regional Ecosystem</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Essential Habitat</p> <ul style="list-style-type: none"> Essential Habitat |
|---|--|---|

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

Map 24 Of 41

Main Line

Kp AB-346 To Kp AB-361

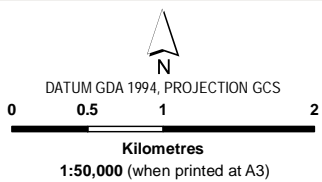
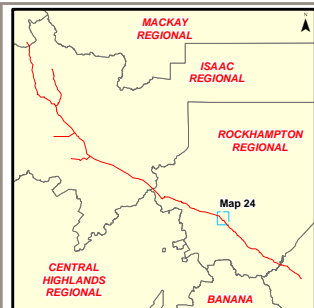
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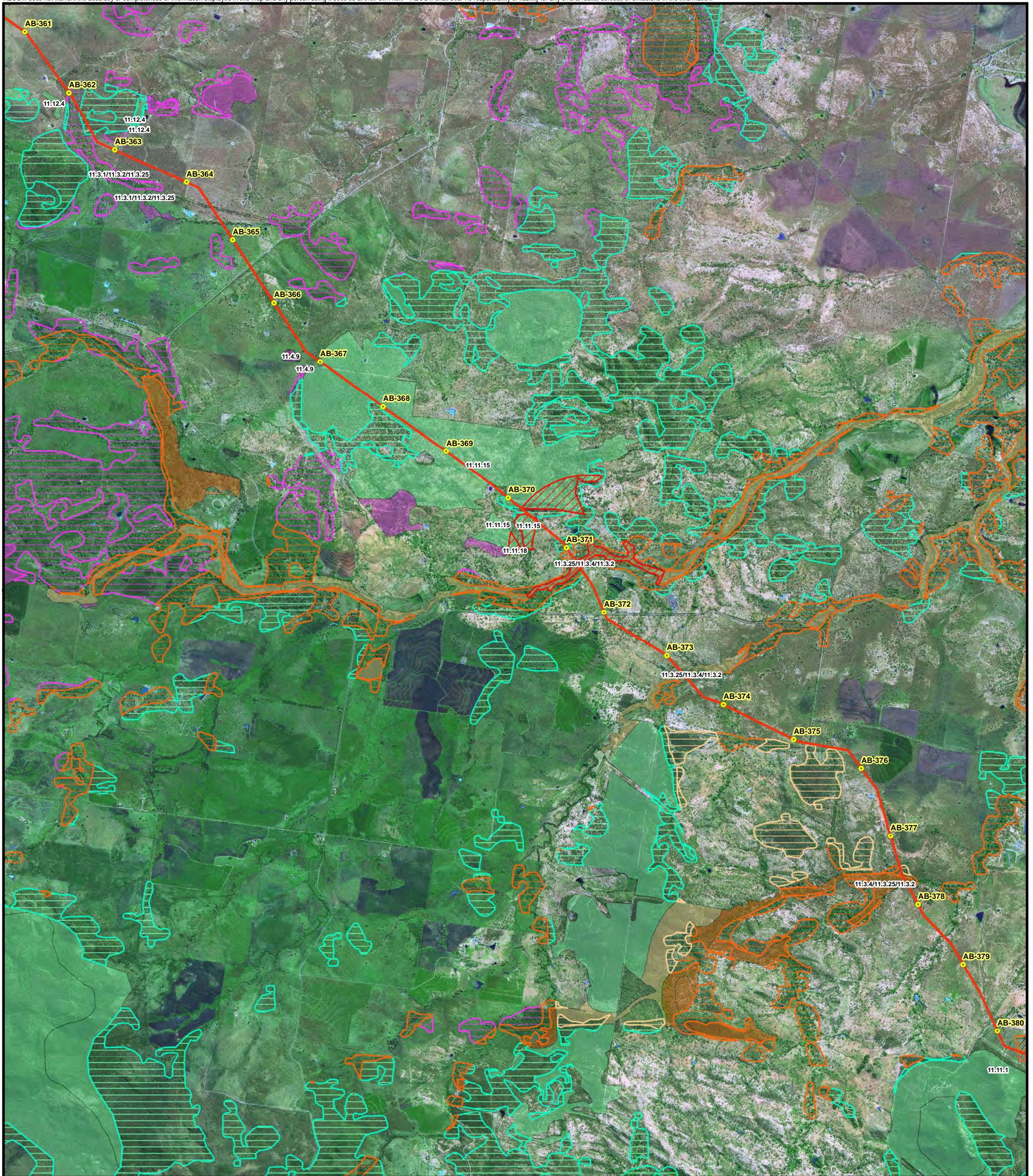
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Isaac to Gladstone, Qld

Map

1 - 24



LEGEND

- 1 Km Kilometrage Point
 - ABP Route Revision D
- | | | |
|---|--|--|
| <p>Regrowth Vegetation</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Regional Ecosystem</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Essential Habitat</p> <ul style="list-style-type: none"> Essential Habitat |
|---|--|--|

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

Map 25 Of 41

Main Line

Kp AB-361 To Kp AB-380

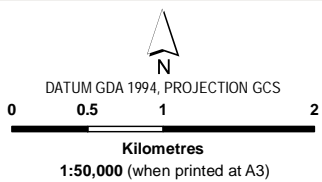
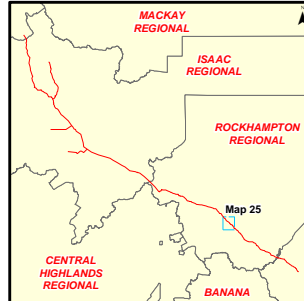
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Isaac to Gladstone, Qld

Map

1 - 25



LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D

Regrowth Vegetation

- Endangered - Sub-dominant
- Endangered - Dominant
- Of Concern - Sub-dominant
- Of Concern - Dominant
- Least Concern

Regional Ecosystem

- Endangered - Sub-dominant
- Endangered - Dominant
- Of Concern - Sub-dominant
- Of Concern - Dominant
- Least Concern

Essential Habitat

- Essential Habitat

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

Map 26 Of 41

Main Line

Kp AB-379 To Kp AB-399

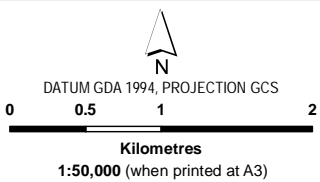
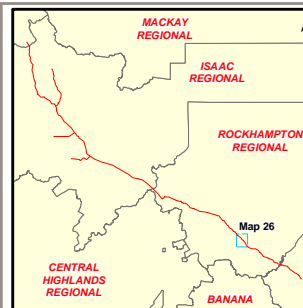
PROJECT ID 60188431
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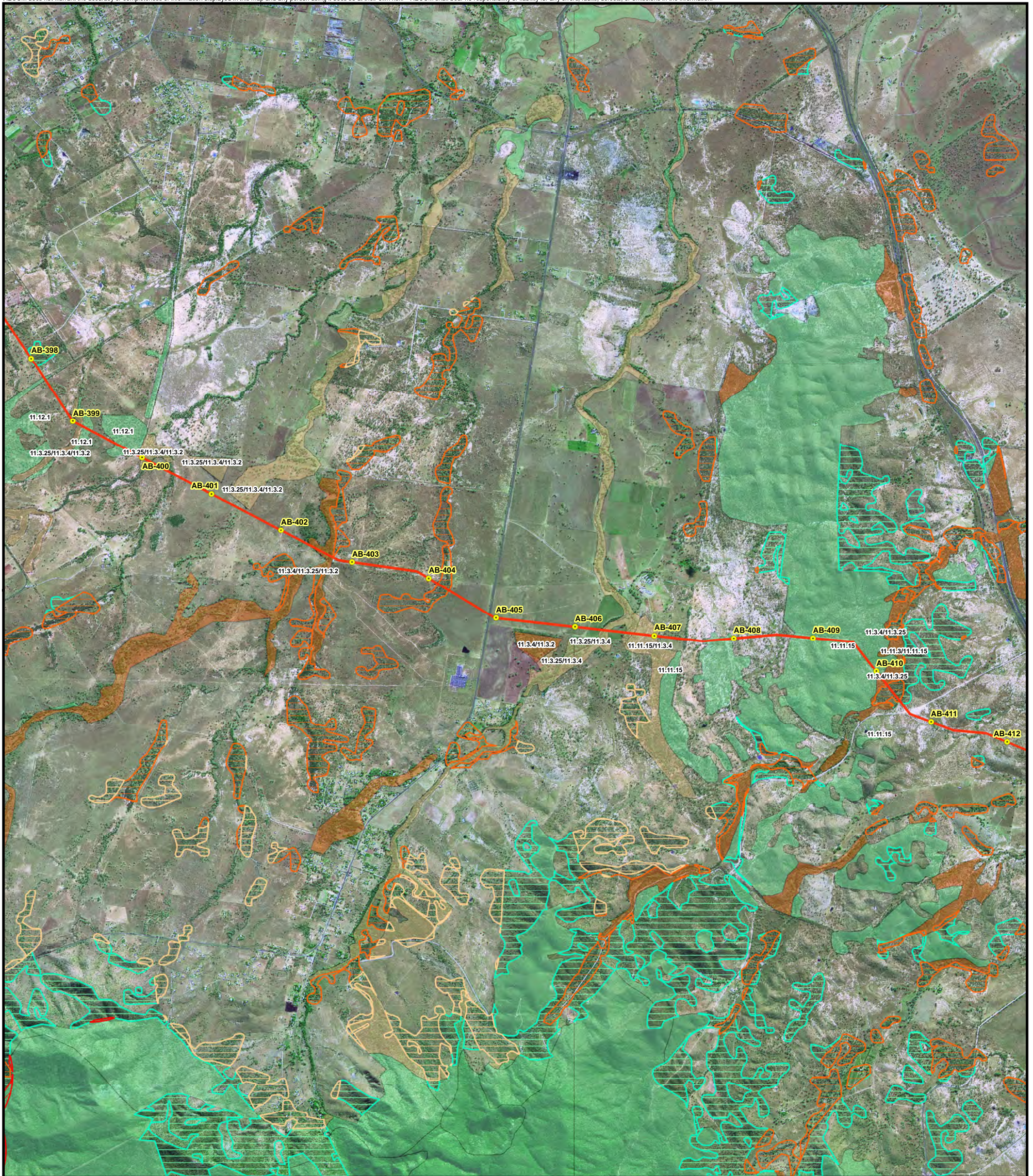
Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

1 - 26



LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D

Regrowth Vegetation

- Endangered - Sub-dominant
- Endangered - Dominant
- Of Concern - Sub-dominant
- Of Concern - Dominant
- Least Concern

Regional Ecosystem

- Endangered - Sub-dominant
- Endangered - Dominant
- Of Concern - Sub-dominant
- Of Concern - Dominant
- Least Concern

Essential Habitat

- Essential Habitat

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

Map 27 Of 41

Main Line

Kp AB-398 To Kp AB-412

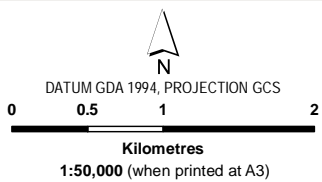
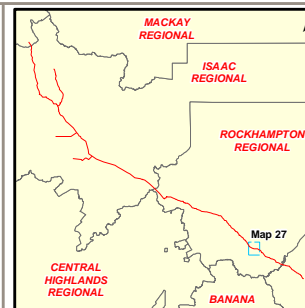
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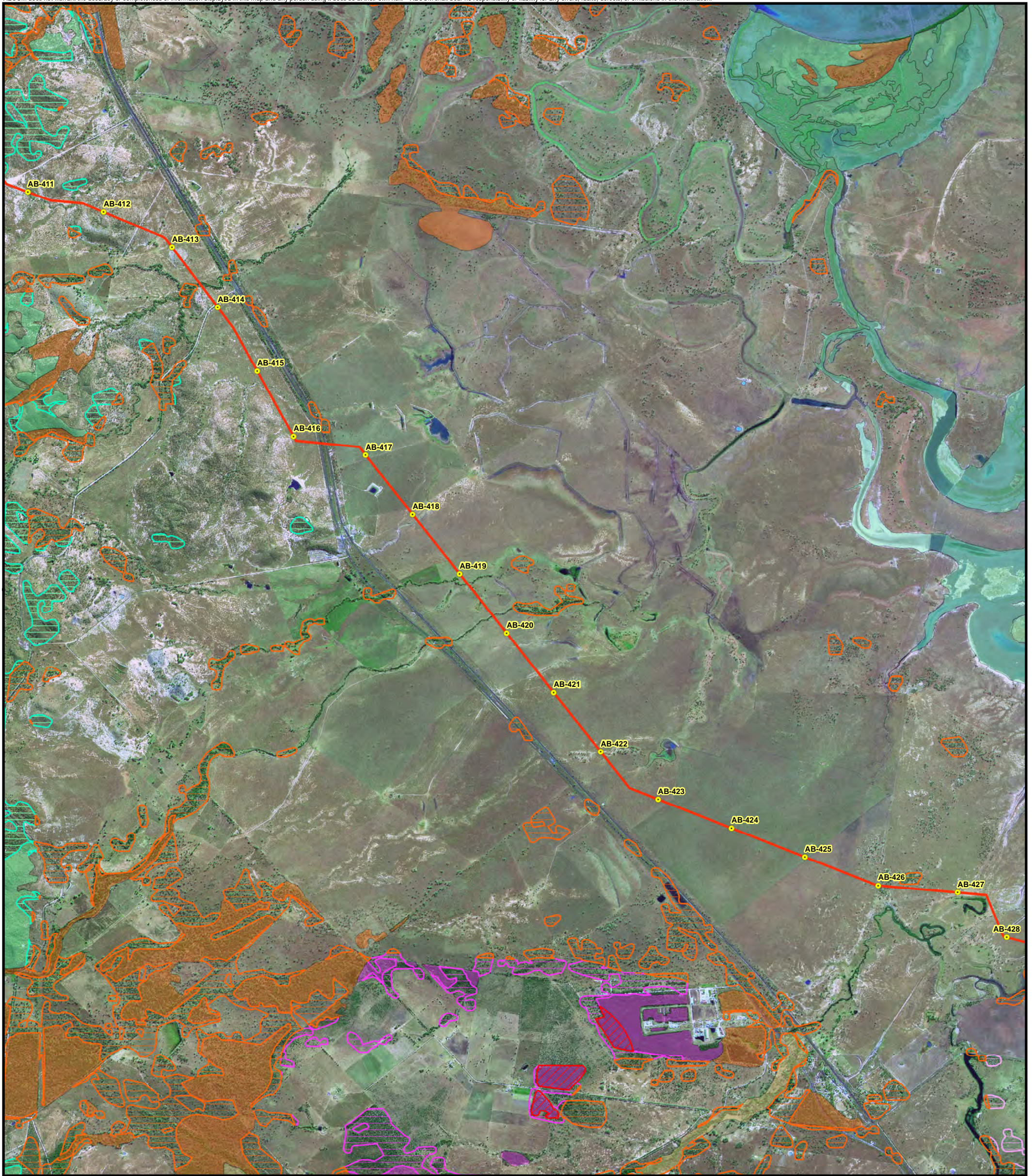
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Isaac to Gladstone, Qld

Map

1 - 27



LEGEND

- 1 Km Kilometrage Point
 - ABP Route Revision D
- | | | |
|---|--|---|
| <p>Regrowth Vegetation</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Regional Ecosystem</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Essential Habitat</p> <ul style="list-style-type: none"> Essential Habitat |
|---|--|---|

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

Map 28 Of 41

Main Line

Kp AB-411 To Kp AB-428

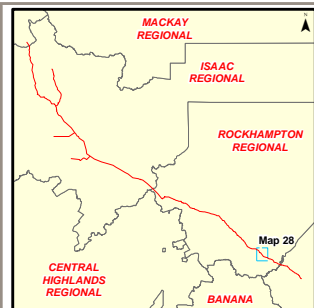
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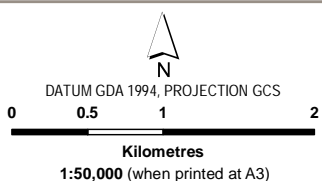
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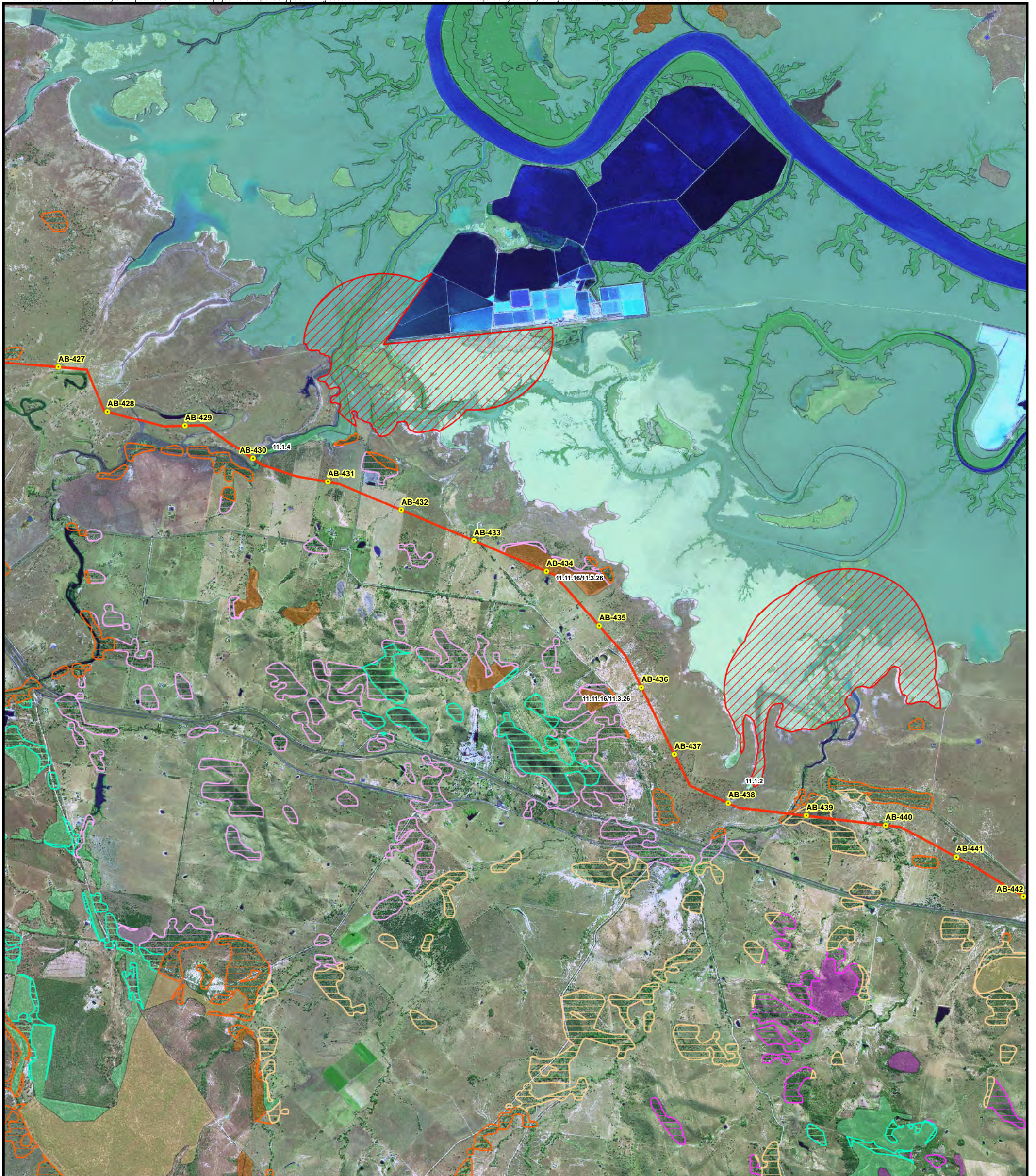
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Isaac to Gladstone, Qld

Map

1 - 28





LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D

Regrowth Vegetation

- Endangered - Sub-dominant
- Endangered - Dominant
- Of Concern - Sub-dominant
- Of Concern - Dominant
- Least Concern

Regional Ecosystem

- Endangered - Sub-dominant
- Endangered - Dominant
- Of Concern - Sub-dominant
- Of Concern - Dominant
- Least Concern

Essential Habitat

- Essential Habitat

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

Map 29 Of 41

Main Line

Kp AB-427 To Kp AB-441

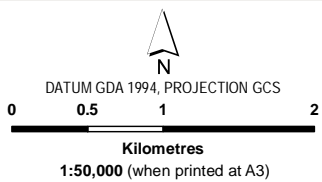
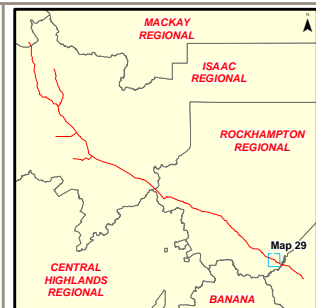
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Isaac to Gladstone, Qld

Map

1 - 29



LEGEND

- 1 Km Kilometrage Point
 - ABP Route Revision D
- | | | |
|--|---|--|
| <p>Regrowth Vegetation</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Regional Ecosystem</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Essential Habitat</p> <ul style="list-style-type: none"> Essential Habitat |
|--|---|--|

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

Map 30 Of 41

Main Line

KP AB-441 To Kp AB-454

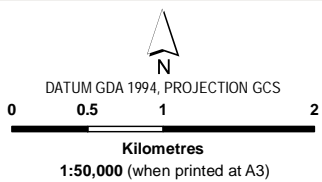
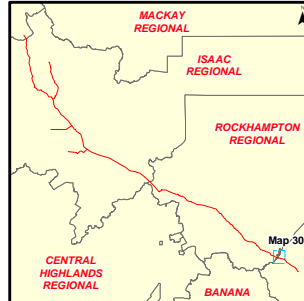
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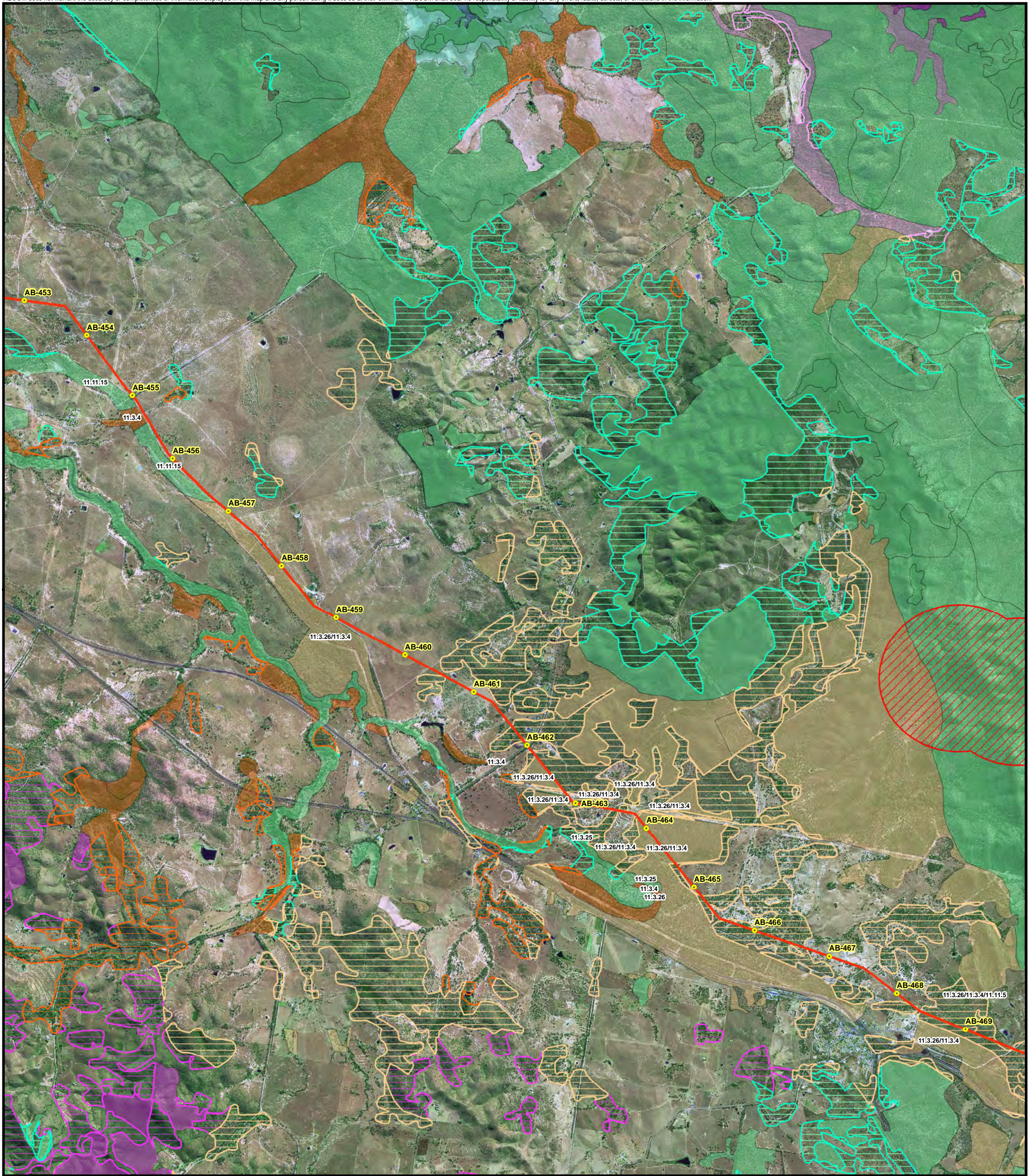
Arrow Bowen Pipeline (ABP)

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Isaac to Gladstone, Qld

Map

1 - 30



LEGEND

- 1 Km Kilometrage Point
 - ABP Route Revision D
- | | | |
|---|--|--|
| <p>Regrowth Vegetation</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Regional Ecosystem</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Essential Habitat</p> <ul style="list-style-type: none"> Essential Habitat |
|---|--|--|

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

Map 31 Of 41

Main Line

Kp AB-453 To Kp AB-469

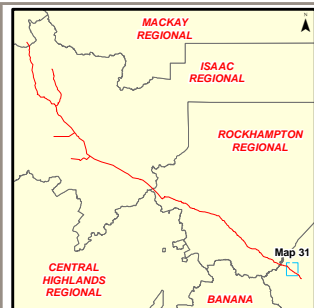
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Data Sources:
 - Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
 - High Value Regrowth Vegetation version 2.0, Regional Ecosystem version 6.0, Essential Habitat and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011

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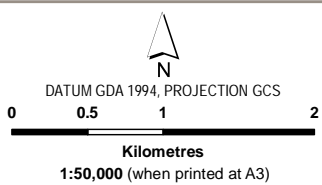
Arrow Bowen Pipeline (ABP)

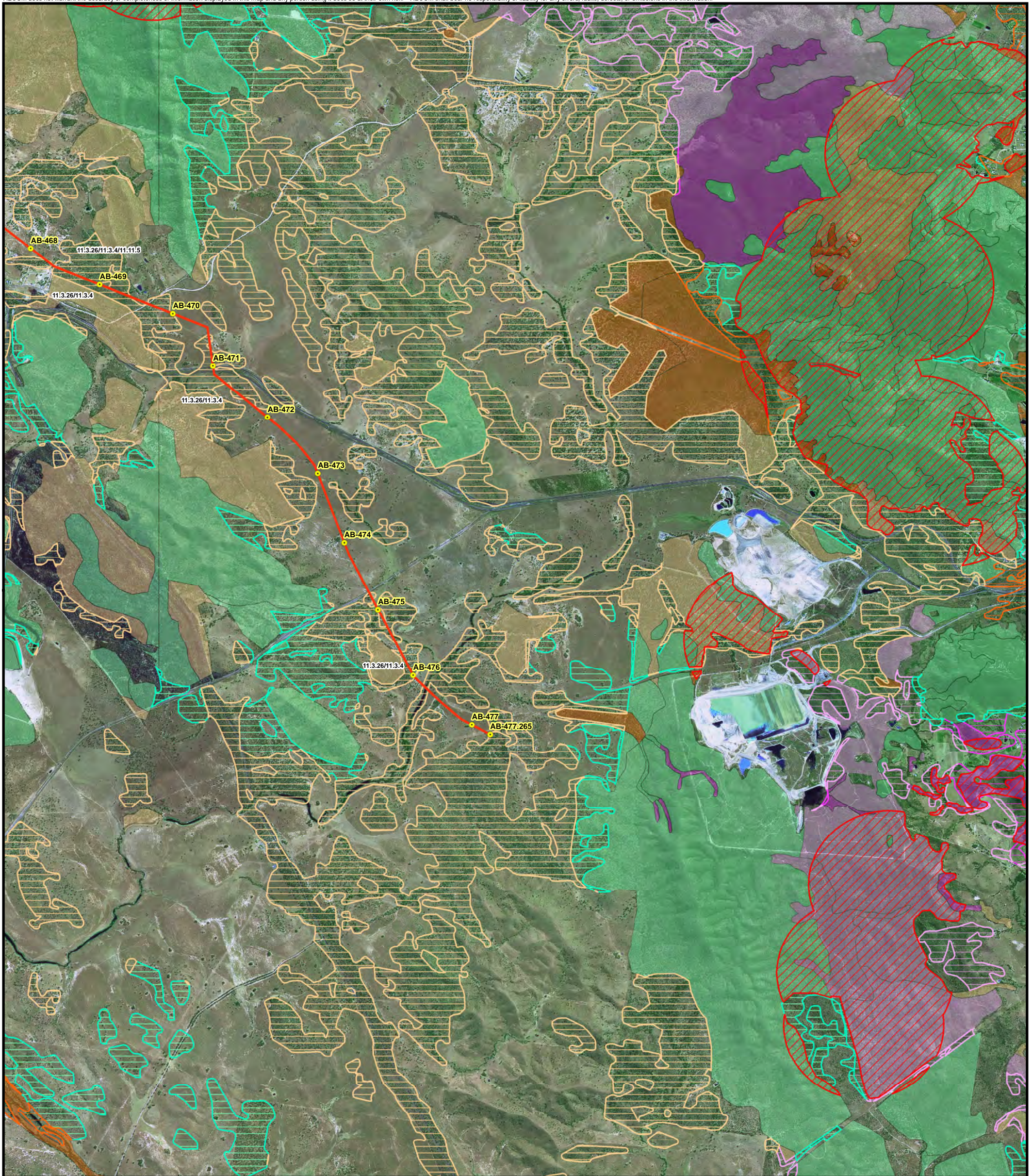
ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

1 - 31





LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D

Regrowth Vegetation

- Endangered - Sub-dominant
- Endangered - Dominant
- Of Concern - Sub-dominant
- Of Concern - Dominant
- Least Concern

Regional Ecosystem

- Endangered - Sub-dominant
- Endangered - Dominant
- Of Concern - Sub-dominant
- Of Concern - Dominant
- Least Concern

Essential Habitat

- Essential Habitat

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

Map 32 Of 41

Main Line

Kp AB-468 To Kp AB-477.3

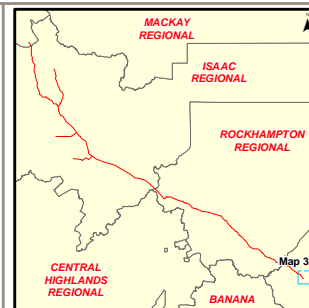
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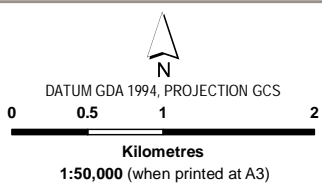
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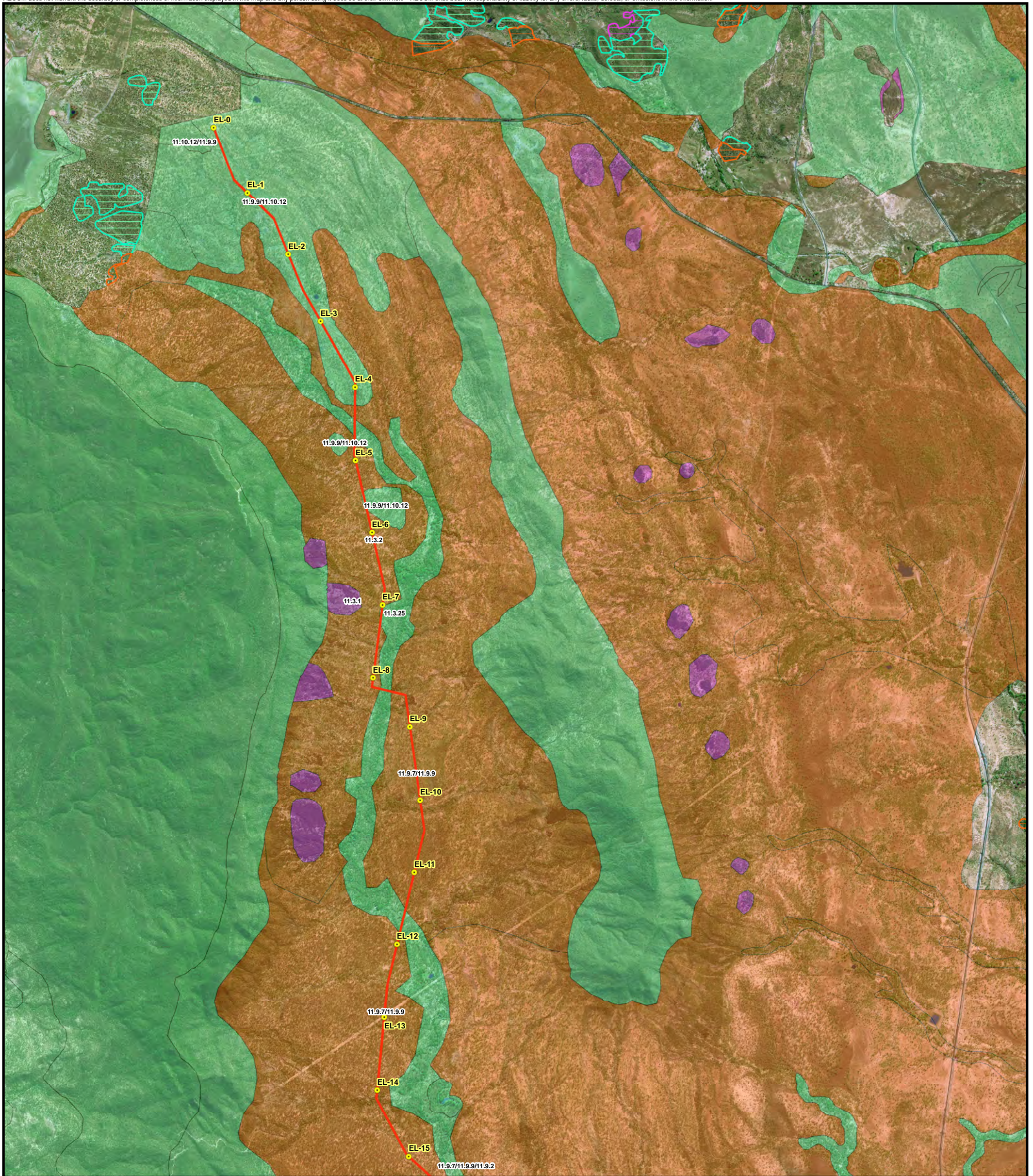
ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

1 - 32





LEGEND

- 1 Km Kilometrage Point
 - ABP Route Revision D
- | | | |
|---|--|---|
| <p>Regrowth Vegetation</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Regional Ecosystem</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Essential Habitat</p> <ul style="list-style-type: none"> Essential Habitat |
|---|--|---|

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

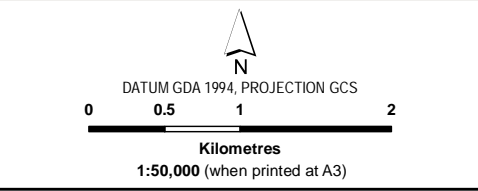
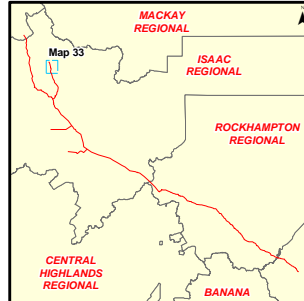
Map 33 Of 41
 Elphinstone Lateral
 Kp EL-0 To Kp EL-15

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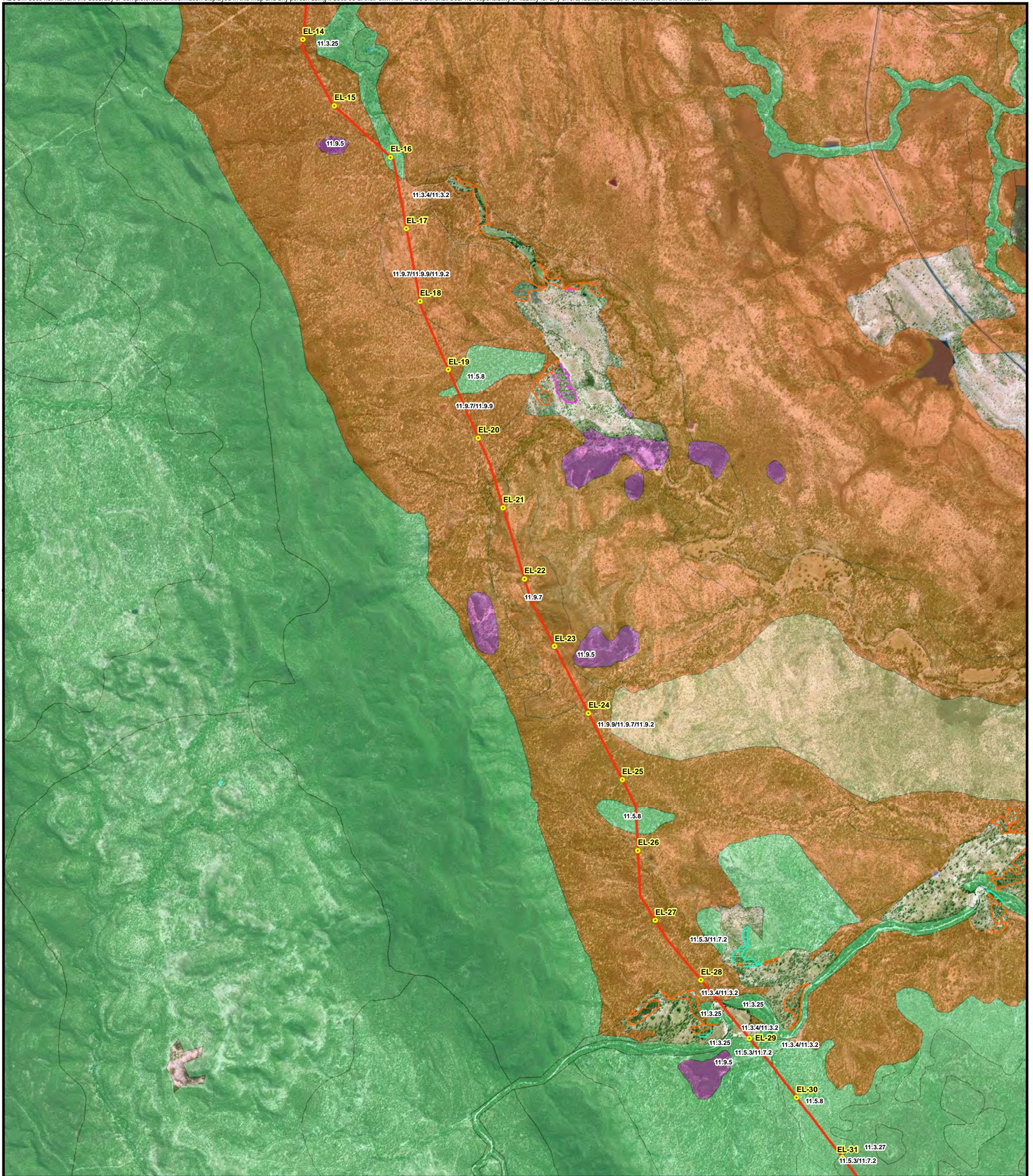
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Arrow Bowen Pipeline (ABP)
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 Isaac to Gladstone, Qld

Map
1 - 33



LEGEND

- 1 Km Kilometrage Point
 - ABP Route Revision D
- | | | |
|---|--|---|
| <p>Regrowth Vegetation</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Regional Ecosystem</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Essential Habitat</p> <ul style="list-style-type: none"> Essential Habitat |
|---|--|---|

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

Map 34 Of 41

Elphinstone Lateral

Kp EL-14 To Kp EL-31

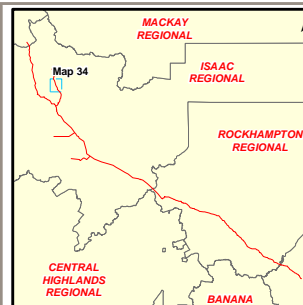
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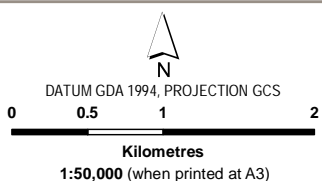
Arrow Bowen Pipeline (ABP)

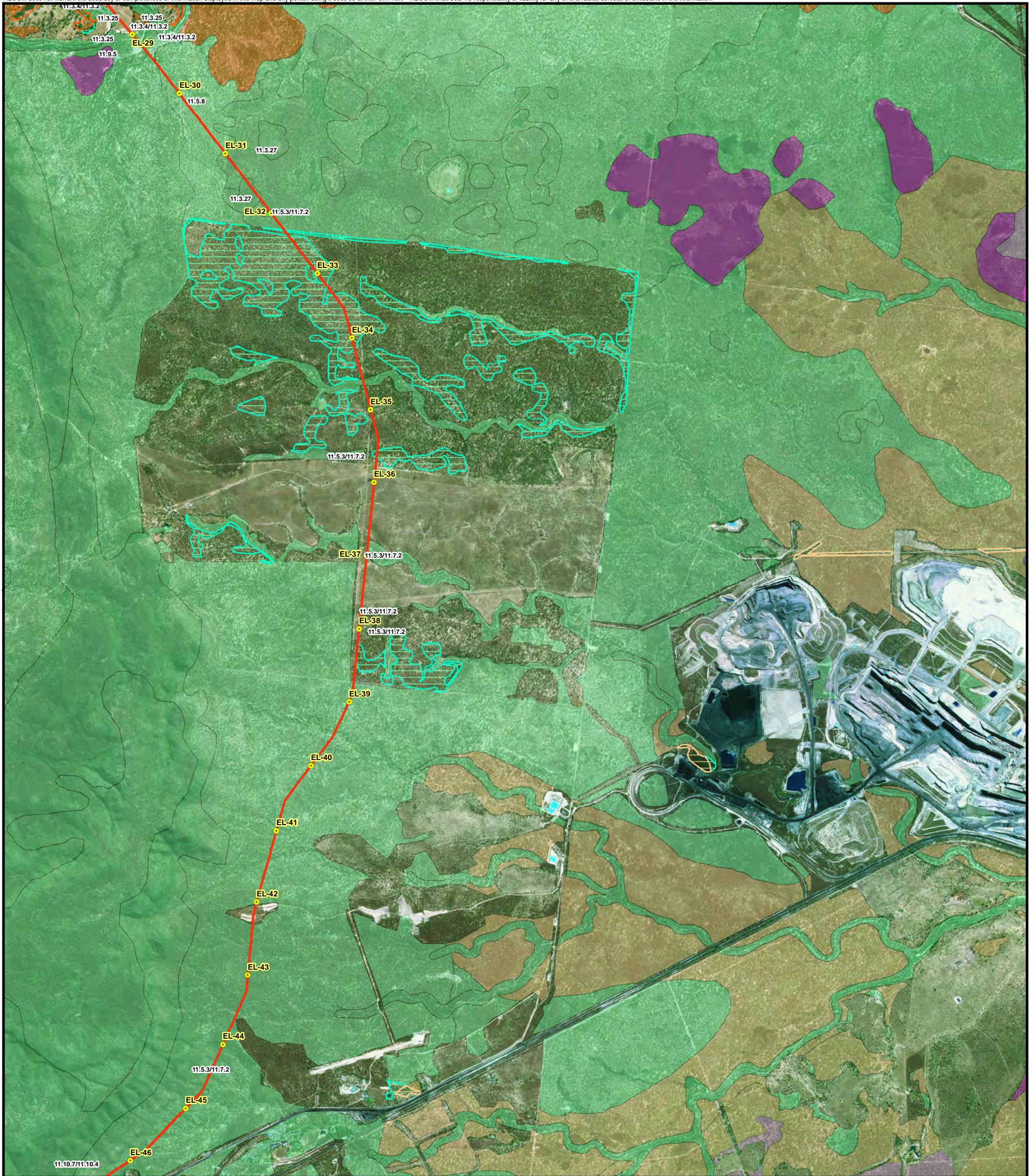
ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

1 - 34





LEGEND

- 1 Km Kilometrage Point
 - ABP Route Revision D
- | | | |
|---|--|---|
| <p>Regrowth Vegetation</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Regional Ecosystem</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Essential Habitat</p> <ul style="list-style-type: none"> Essential Habitat |
|---|--|---|

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

Map 35 Of 41
 Elphinstone Lateral
 Kp EL-29 To EL-46

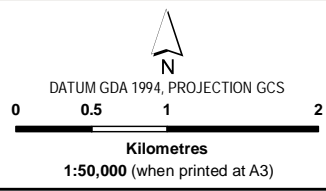
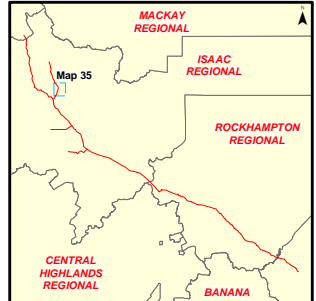
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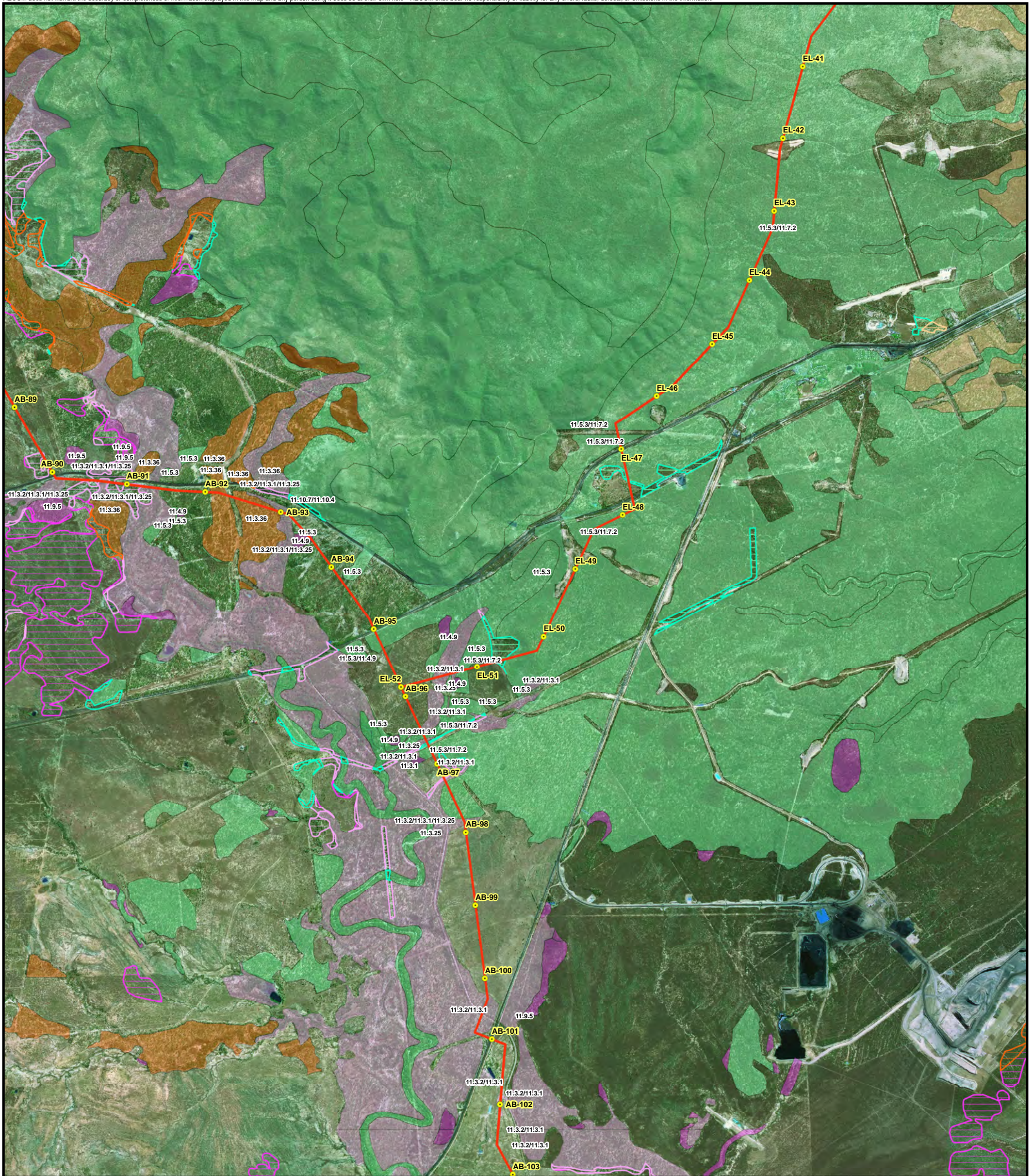
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 Isaac to Gladstone, Qld

Map
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LEGEND

- 1 Km Kilometrage Point
 - ABP Route Revision D
- | | | |
|---|--|---|
| <p>Regrowth Vegetation</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Regional Ecosystem</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Essential Habitat</p> <ul style="list-style-type: none"> Essential Habitat |
|---|--|---|

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

Map 36 Of 41

Elphinstone Lateral

Kp EL-41 To Kp EL-52

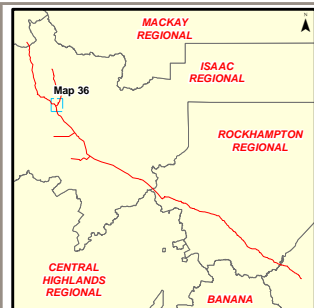
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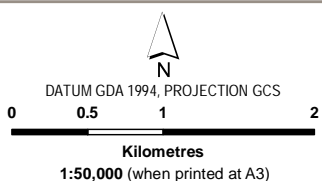
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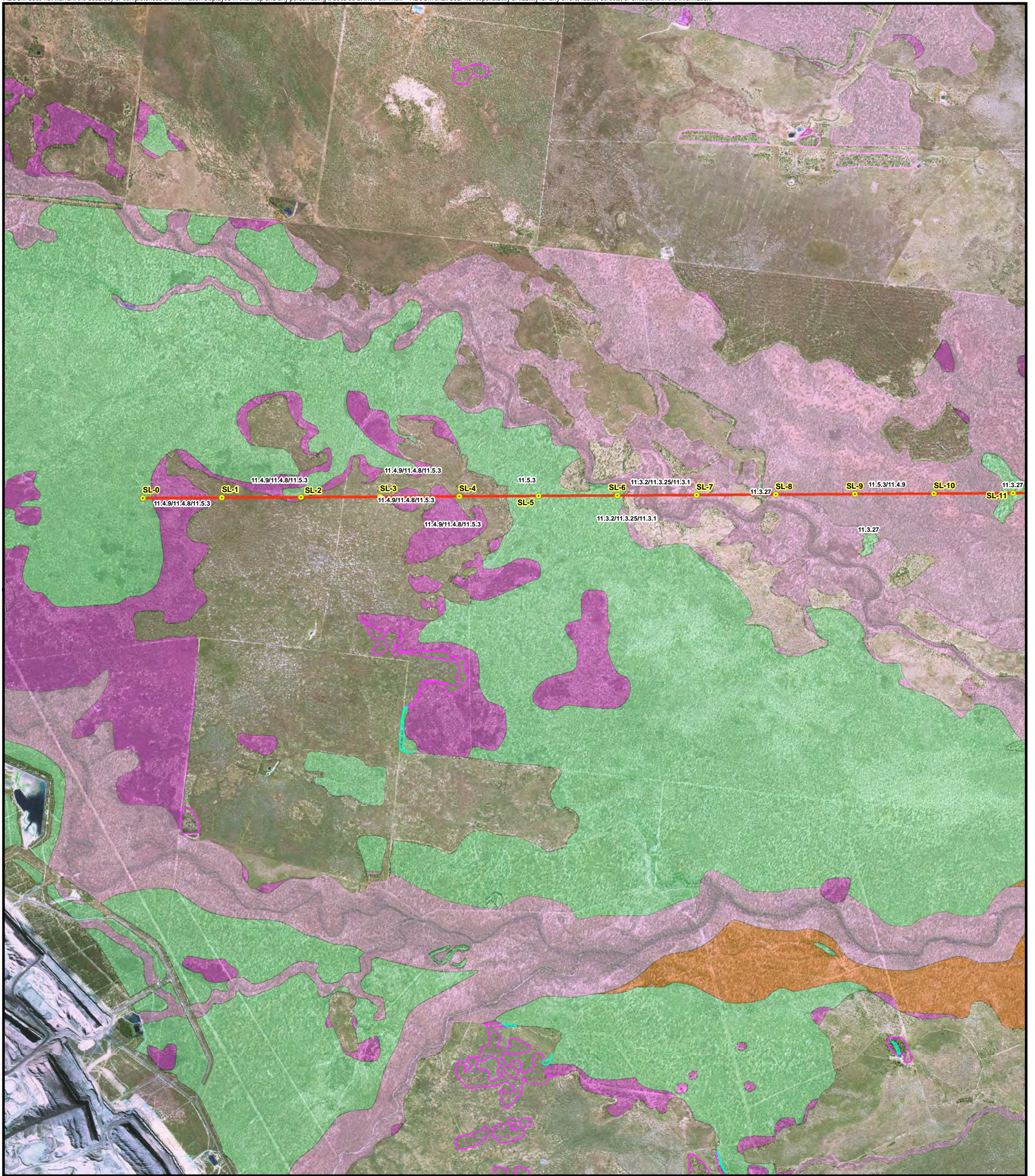
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Isaac to Gladstone, Qld

Map

1 - 36





LEGEND

- 1 Km Kilometrage Point
 - ABP Route Revision D
- | | | |
|--|---|---|
| <p>Regrowth Vegetation</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Regional Ecosystem</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Essential Habitat</p> <ul style="list-style-type: none"> Essential Habitat |
|--|---|---|

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

Map 37 Of 41

Saraji Lateral

Kp SL-0 To Kp SL-11

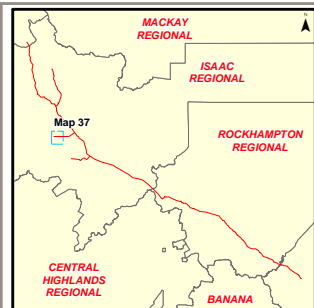
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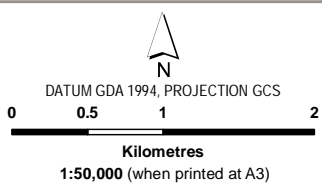
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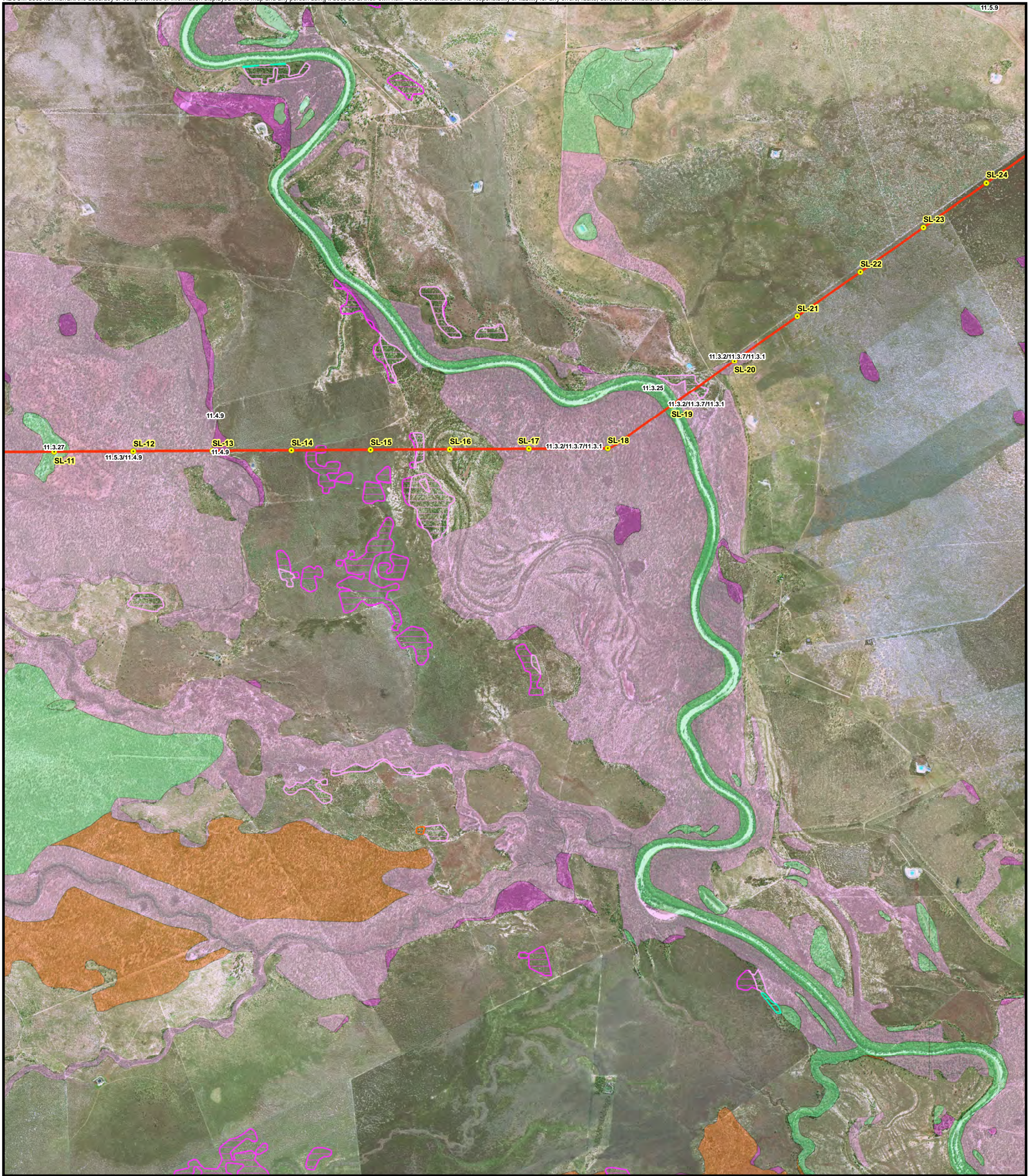
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Isaac to Gladstone, Qld

Map

1 - 37





LEGEND

- 1 Km Kilometrage Point
 - ABP Route Revision D
- | | | |
|---|--|---|
| <p>Regrowth Vegetation</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Regional Ecosystem</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Essential Habitat</p> <ul style="list-style-type: none"> Essential Habitat |
|---|--|---|

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

Map 38 Of 41

Saraji Lateral

Kp SL-11 To Kp SL-24

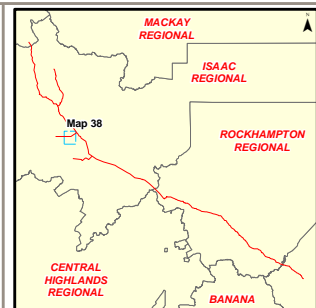
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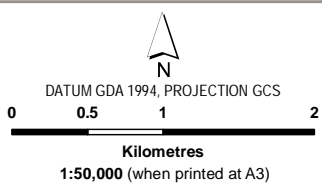
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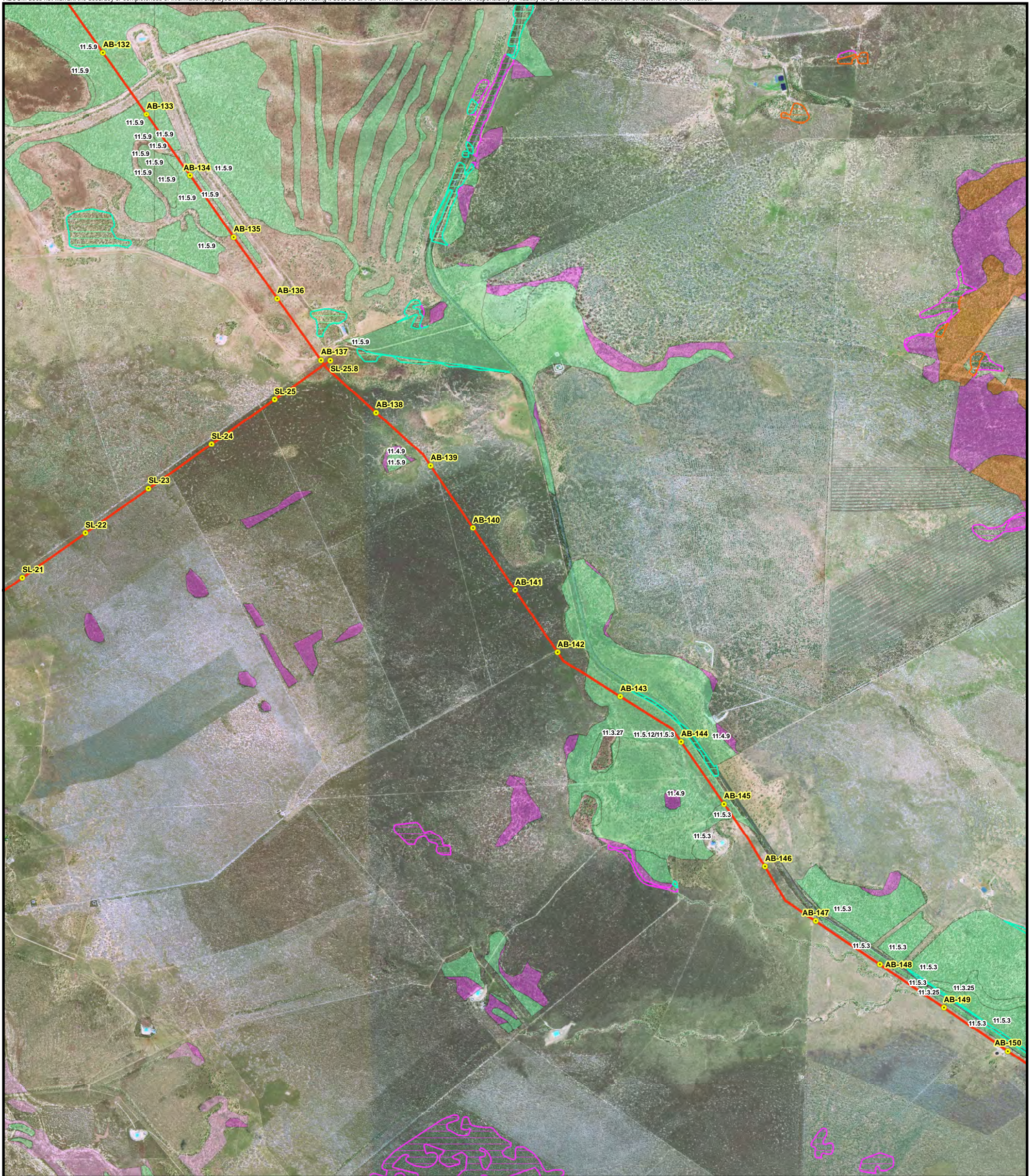
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Isaac to Gladstone, Qld

Map

1 - 38





LEGEND

- 1 Km Kilometrage Point
 - ABP Route Revision D
- | | | |
|---|--|---|
| <p>Regrowth Vegetation</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Regional Ecosystem</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Essential Habitat</p> <ul style="list-style-type: none"> Essential Habitat |
|---|--|---|

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

Map 39 Of 41

Saraji Lateral

Kp SL-21 To Kp SL-25.8

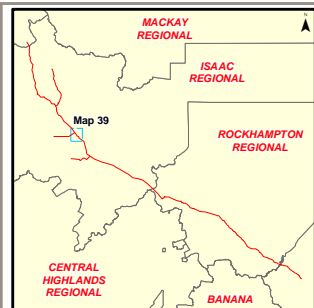
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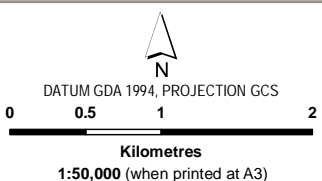
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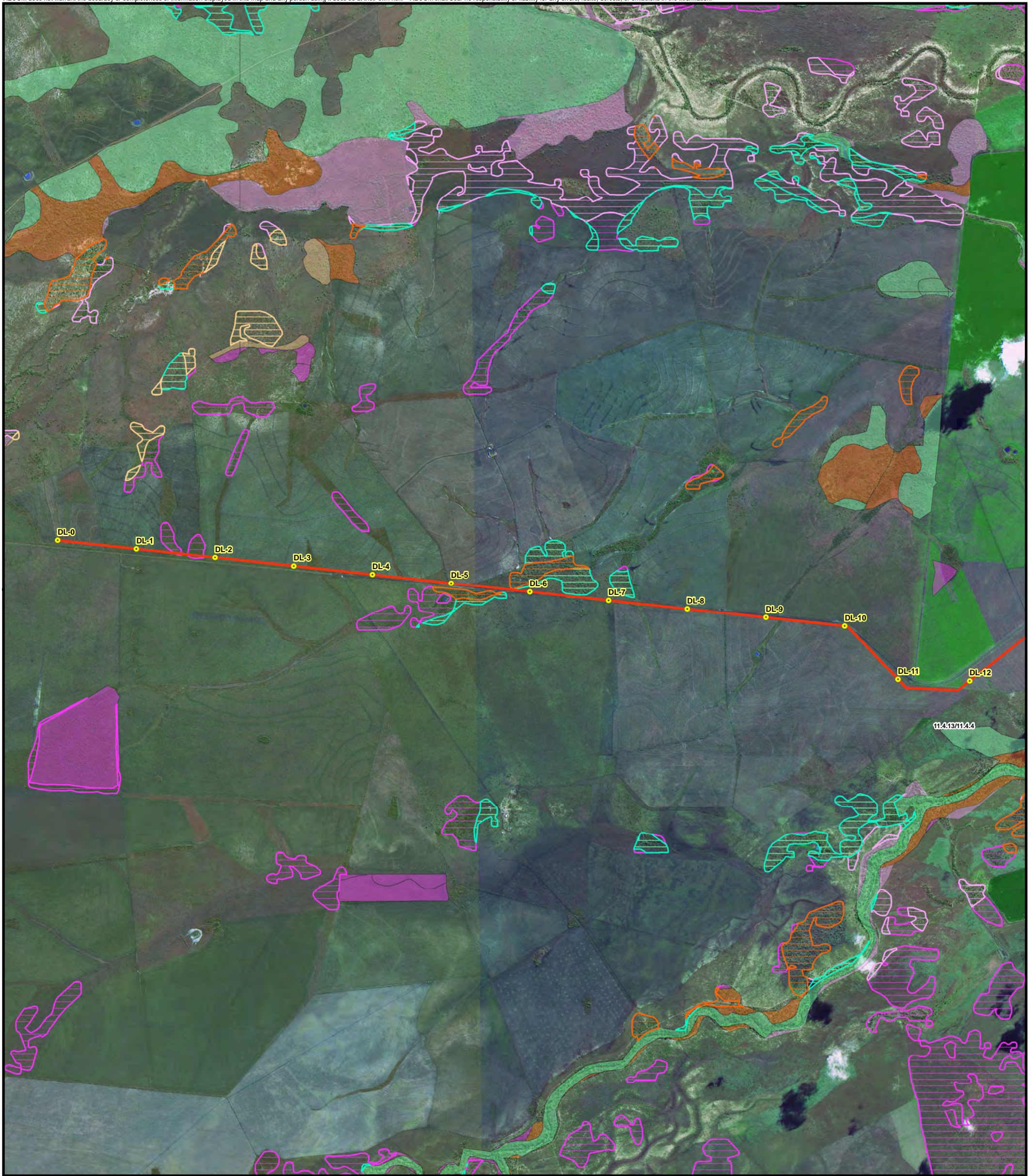
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Isaac to Gladstone, Qld

Map

1 - 39





LEGEND

- 1 Km Kilometrage Point
 - ABP Route Revision D
- | | | |
|--|---|---|
| <p>Regrowth Vegetation</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Regional Ecosystem</p> <ul style="list-style-type: none"> Endangered - Sub-dominant Endangered - Dominant Of Concern - Sub-dominant Of Concern - Dominant Least Concern | <p>Essential Habitat</p> <ul style="list-style-type: none"> Essential Habitat |
|--|---|---|

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

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Dysart Lateral

Kp DL-0 To Kp DL-12

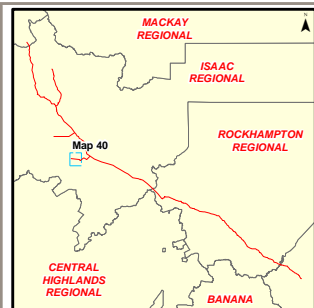
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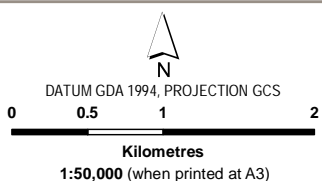
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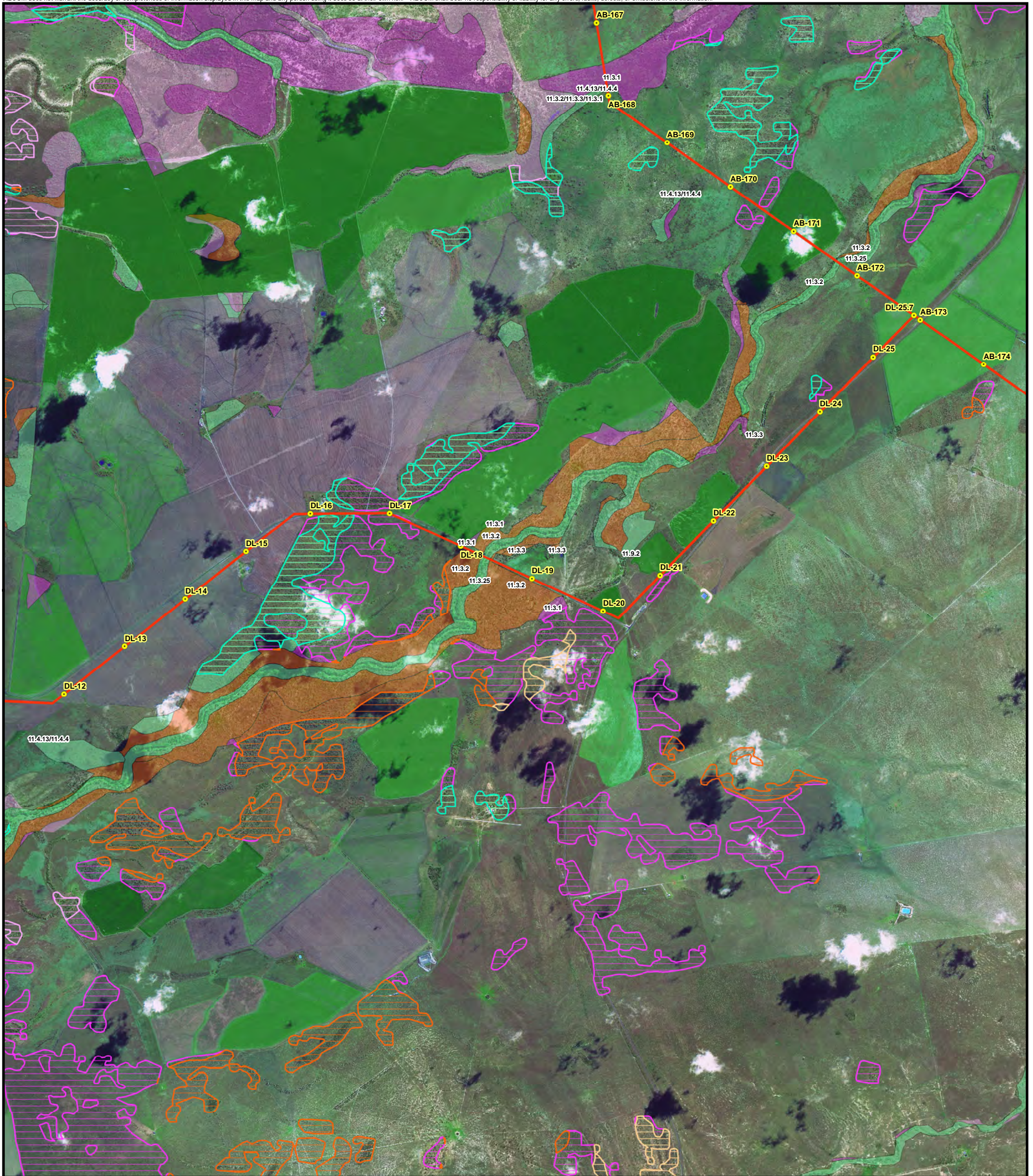
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Isaac to Gladstone, Qld

Map

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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D

Regrowth Vegetation

- Endangered - Sub-dominant
- Endangered - Dominant
- Of Concern - Sub-dominant
- Of Concern - Dominant
- Least Concern

Regional Ecosystem

- Endangered - Sub-dominant
- Endangered - Dominant
- Of Concern - Sub-dominant
- Of Concern - Dominant
- Least Concern

Essential Habitat

- Essential Habitat

High Value Regrowth Vegetation, Regional Ecosystems and Essential Habitat

Map 41 Of 41

Dysart Lateral

Kp DL-12 To Kp DL-25.7

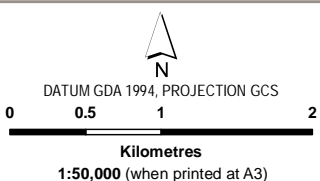
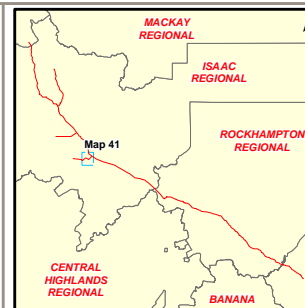
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Data Sources:
 - Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
 - High Value Regrowth Vegetation version 2.0, Regional Ecosystem version 6.0, Essential Habitat and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011

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Regional Ecosystem Map, Date: 13/10/11. Regional ecosystem linework reproduced at scale greater than 1:100,000, except in designated areas, should be used as a guide only. The positional accuracy of RE data mapped at a scale of 1:100,000 is +/- 100 metres. Regional ecosystem mapping reproduced with permission of Department of Environment and Resource Management.



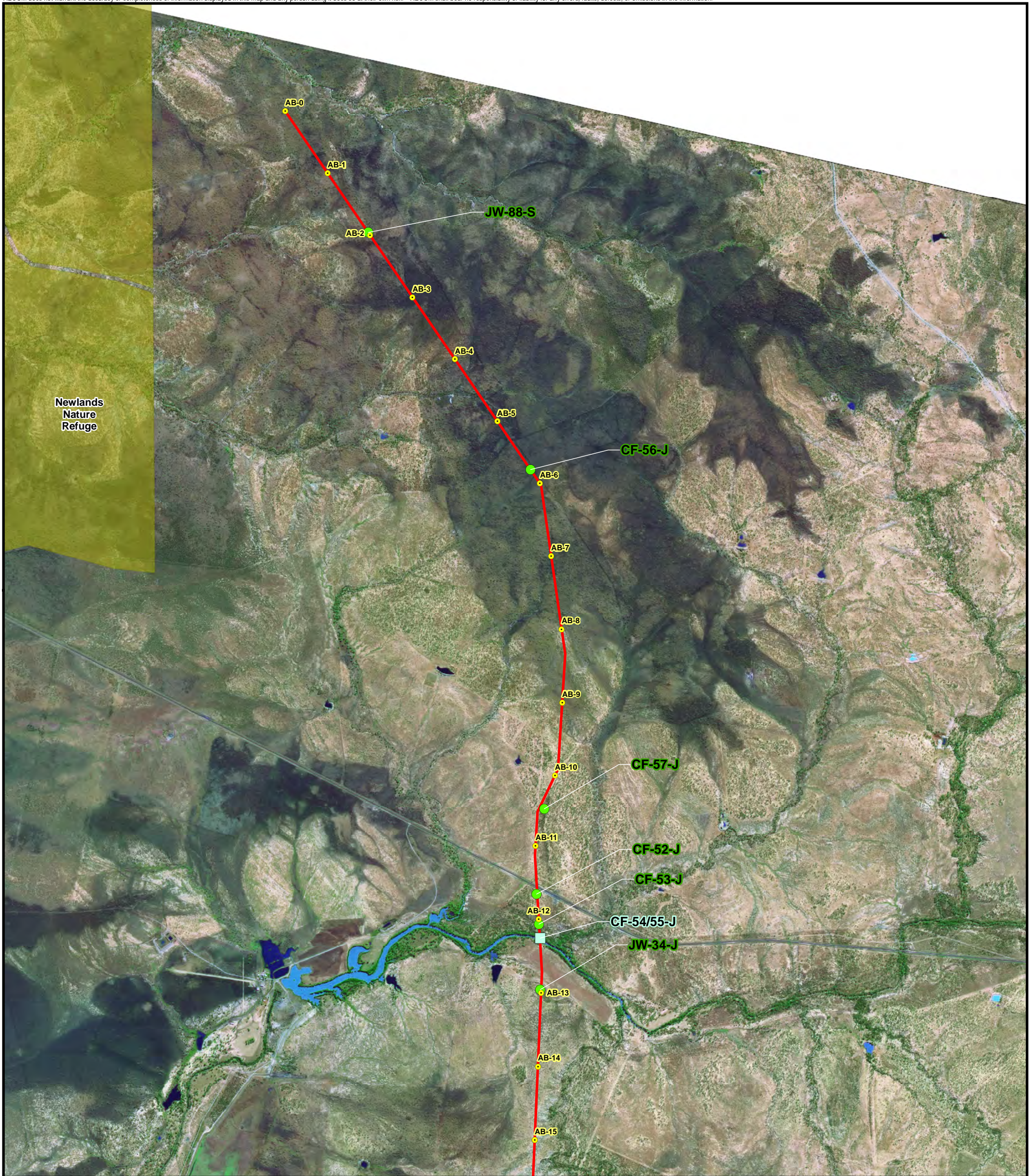
Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

1 - 41



LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Nature Refuges

Protected Areas

- Estate Type**
- National Park
 - Resources Reserve
 - State Forest

Field Survey Sites

- Observation
- ▲ Detailed
- Wetland

Protected Areas and Field Survey Sites

Map 1 Of 41

Main Line

Kp AB-0 To Kp AB-15

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

2 - 1

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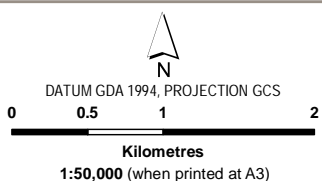
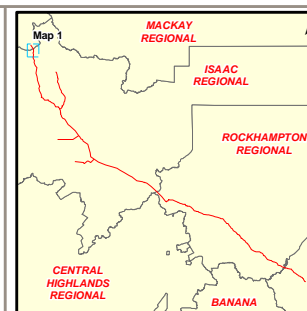


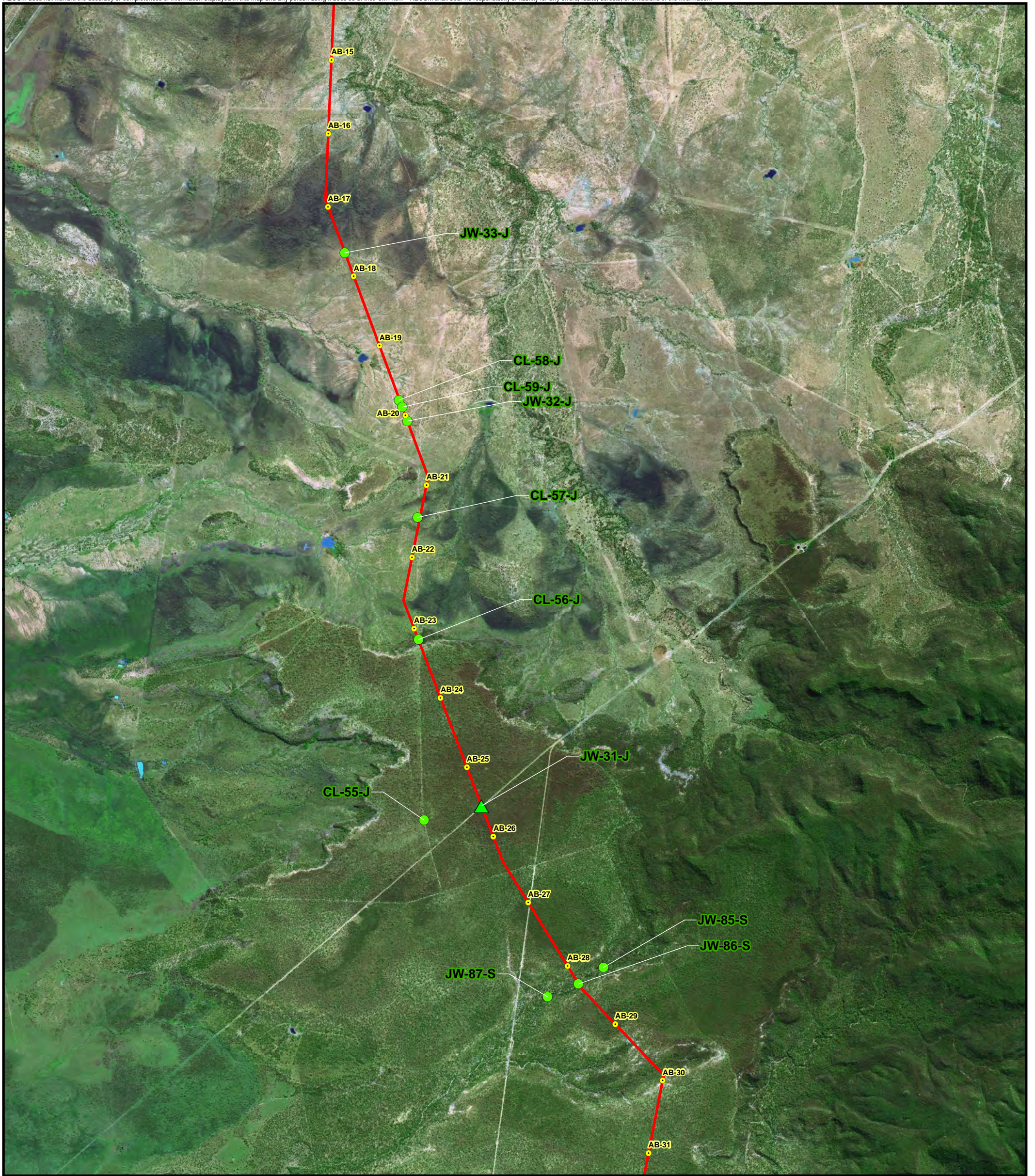
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
 - Protected Areas of Queensland (estate), Nature Refuges and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011

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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Nature Refuges

Protected Areas

Estate Type

- National Park
- Resources Reserve
- State Forest

Field Survey Sites

- Observation
- ▲ Detailed
- Wetland

Protected Areas and Field Survey Sites

Map 2 Of 41

Main Line

Kp AB-15 To Kp AB-31

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

2 - 2

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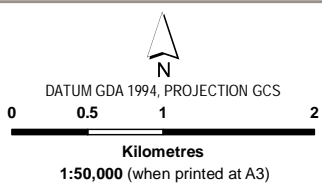
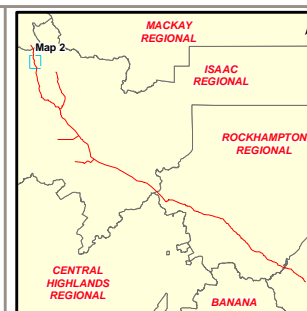


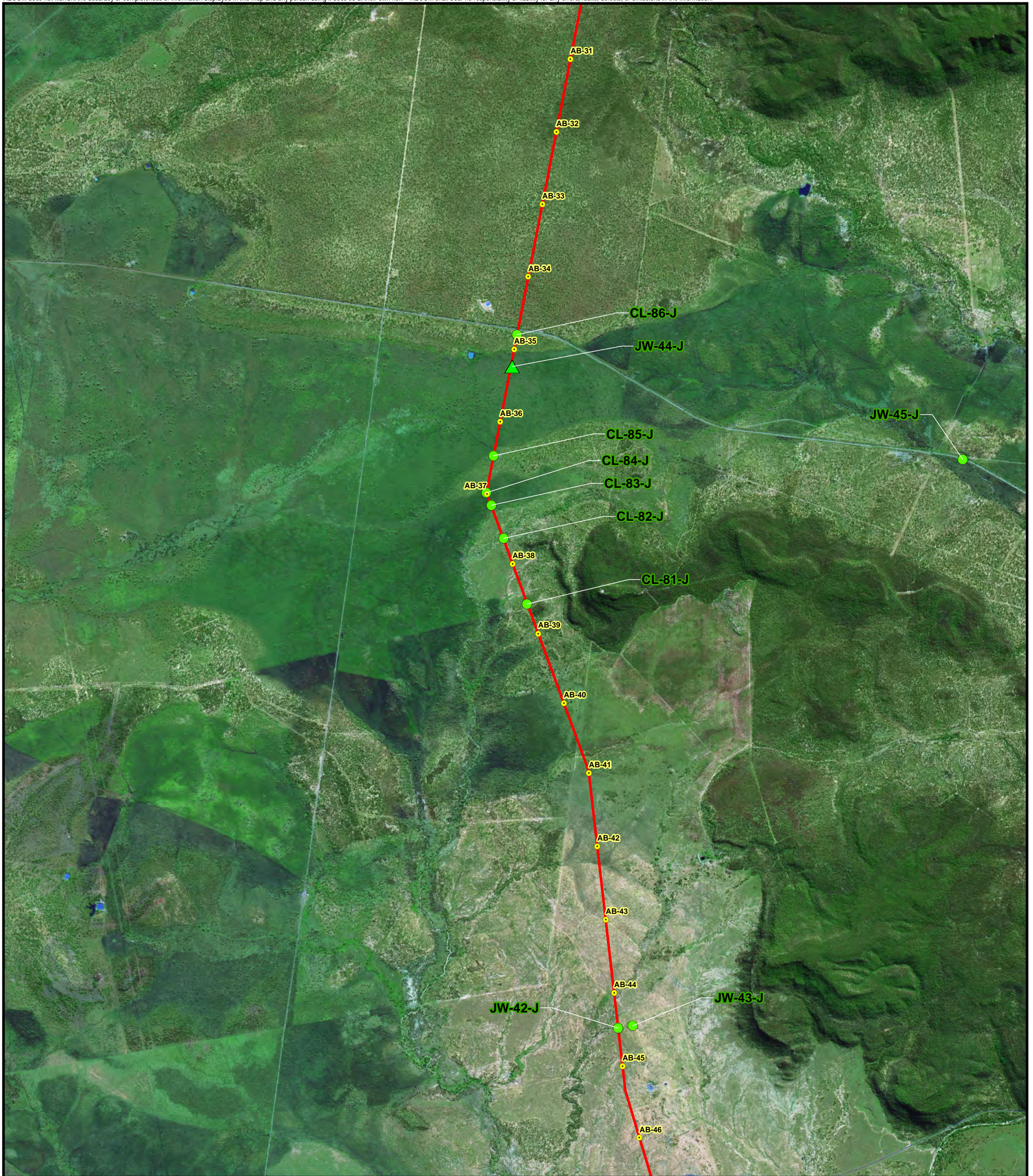
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
 - Protected Areas of Queensland (estate), Nature Refuges and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011

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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Nature Refuges

Protected Areas

- Estate Type**
- National Park
 - Resources Reserve
 - State Forest

Field Survey Sites

- Observation
- ▲ Detailed
- Wetland

Protected Areas and Field Survey Sites

Map 3 Of 41

Main Line

Kp AB-31 To Kp AB-46

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

2 - 3

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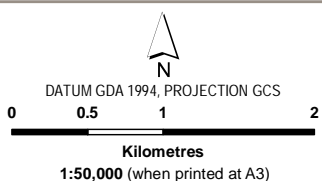
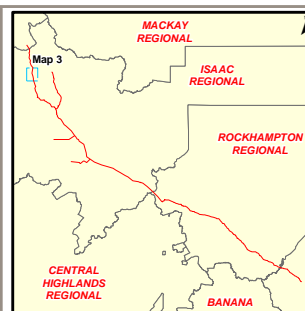


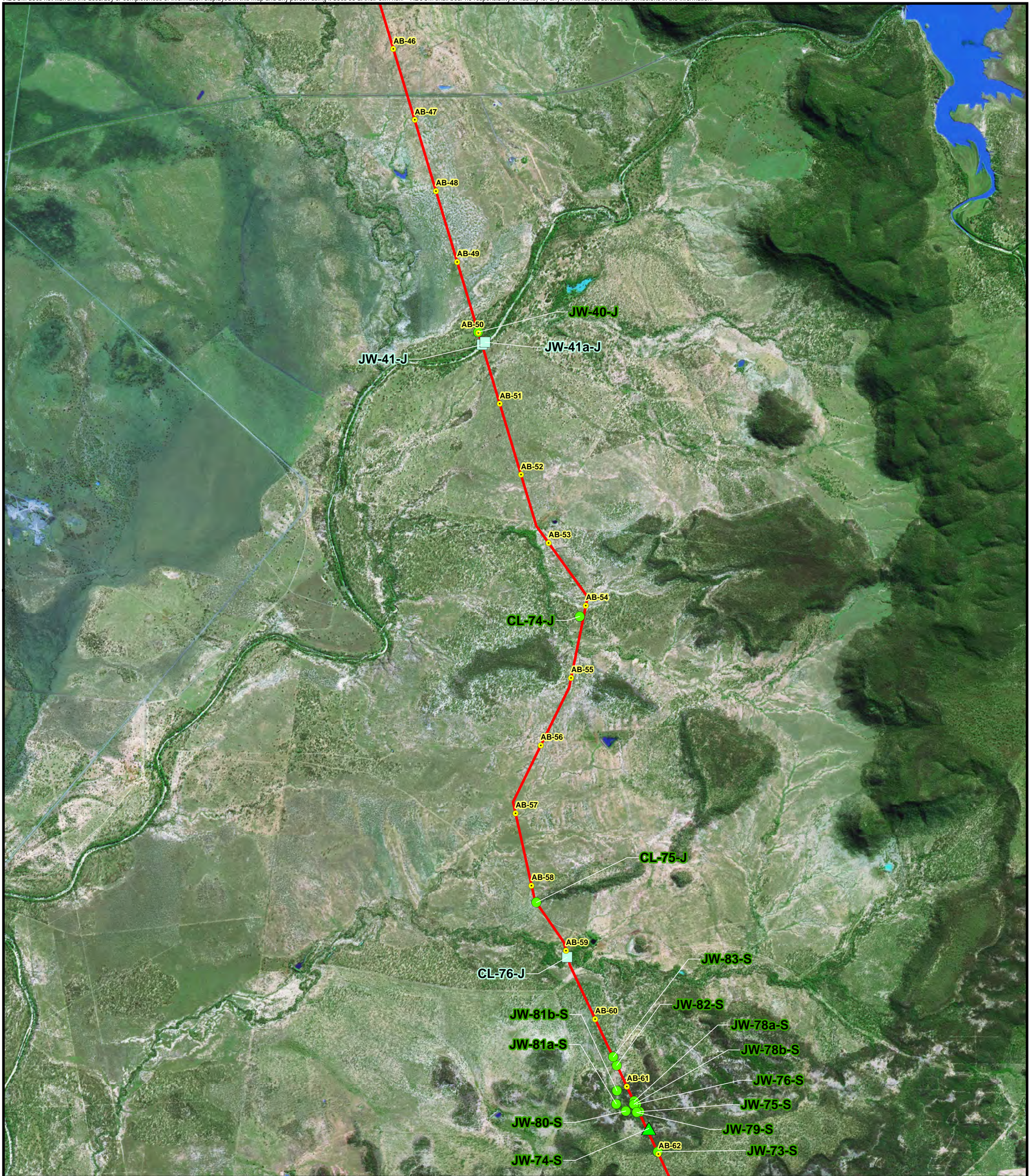
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
 - Protected Areas of Queensland (estate), Nature Refuges and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011

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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Nature Refuges

Protected Areas

- Estate Type**
- National Park
 - Resources Reserve
 - State Forest

Field Survey Sites

- Observation
- ▲ Detailed
- Wetland

Protected Areas and Field Survey Sites

Map 4 Of 41

Main Line

Kp AB-46 To Kp AB-62

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

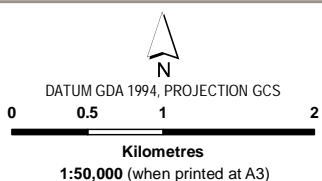
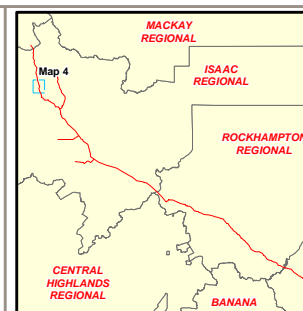
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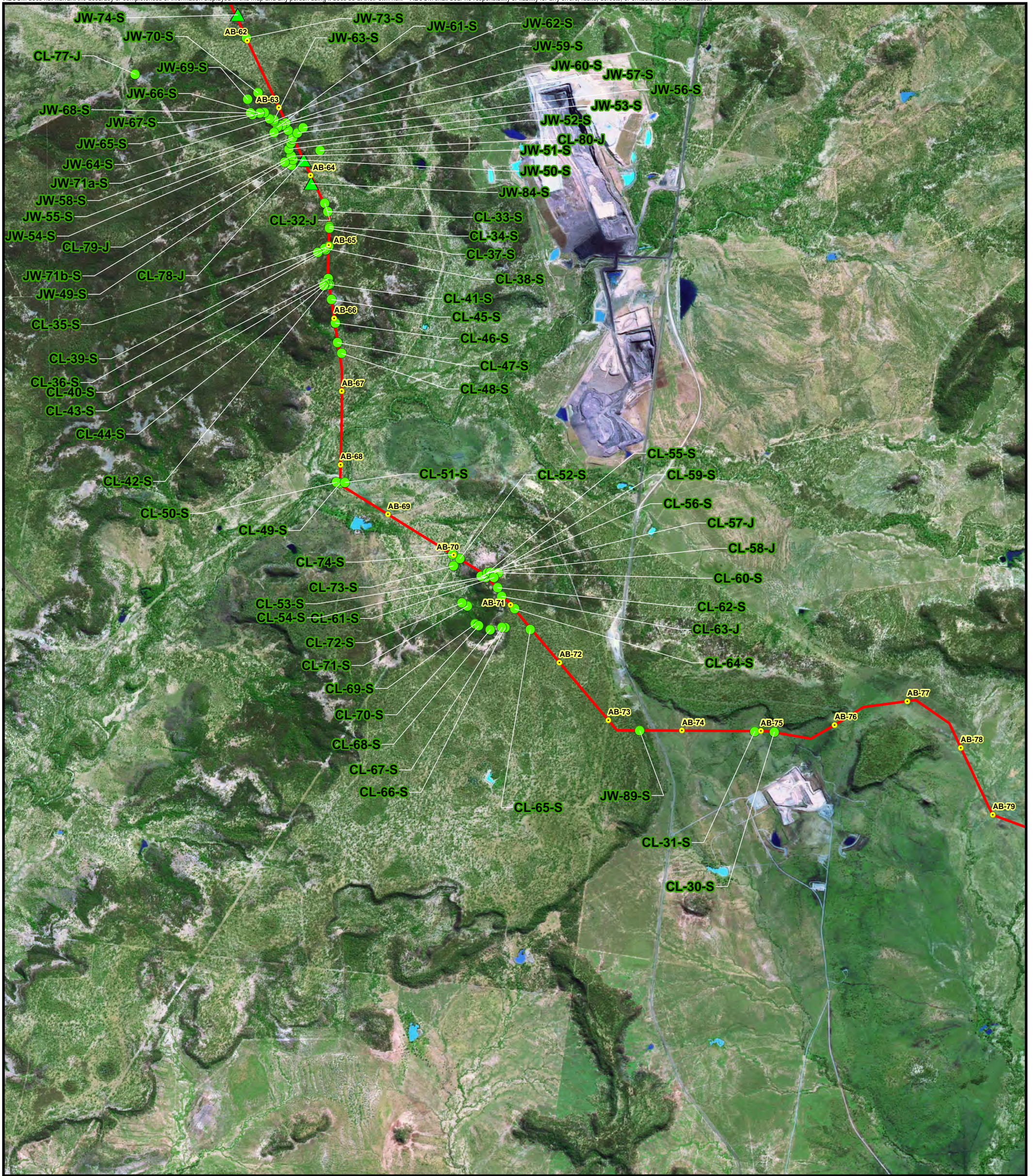
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- LEGEND**
- 1 Km Kilometrage Point
 - ABP Route Revision D
 - Nature Refuges

- Protected Areas**
- Estate Type**
- National Park
 - Resources Reserve
 - State Forest

- Field Survey Sites**
- Observation
 - ▲ Detailed
 - Wetland

Protected Areas and Field Survey Sites

Map 5 Of 41

Main Line

Kp AB-61 To Kp AB-79

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

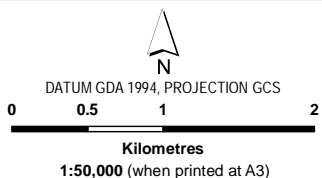
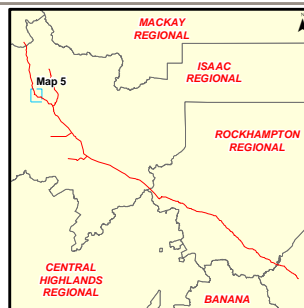
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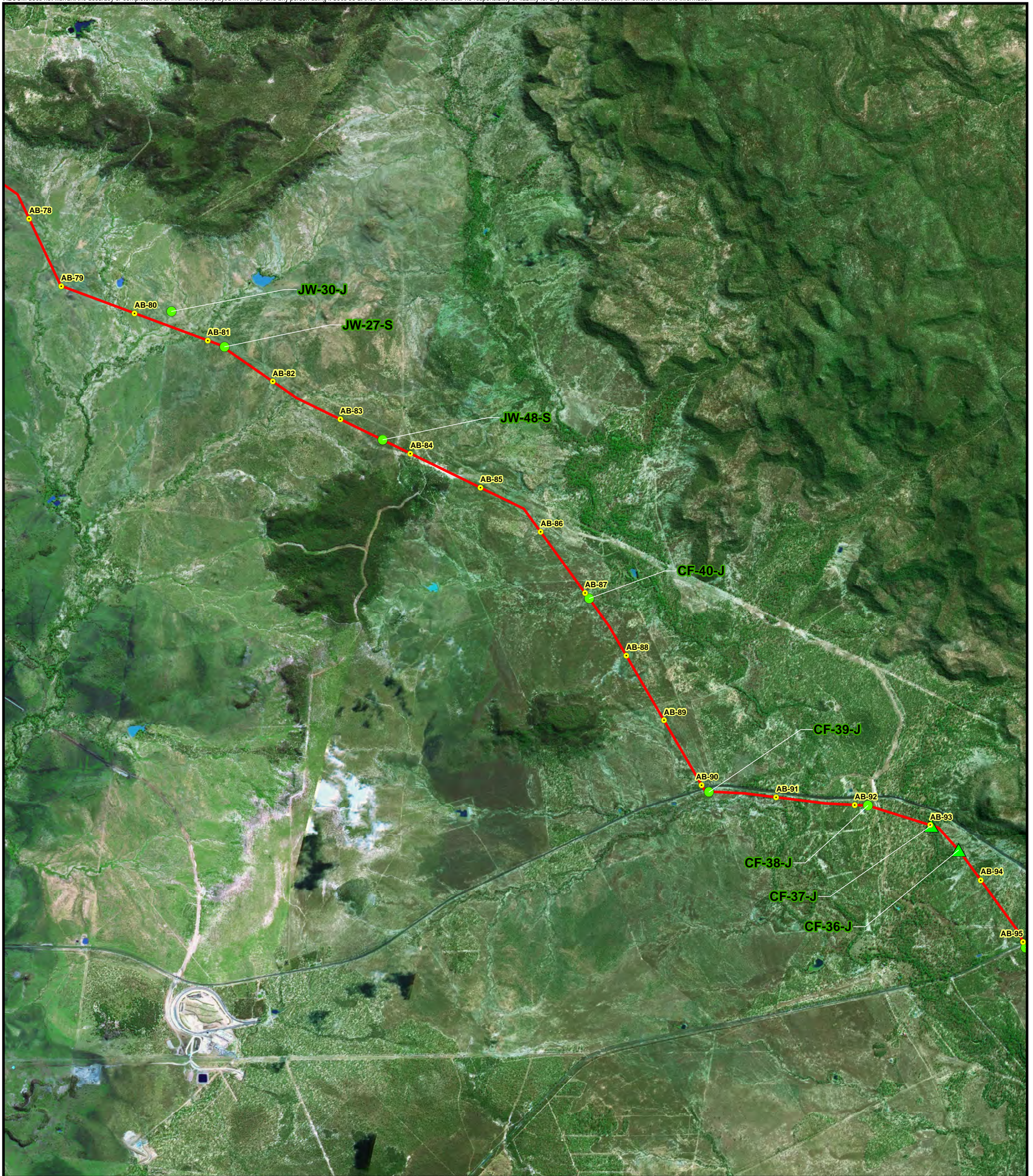
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- LEGEND**
- 1 Km Kilometrage Point
 - ABP Route Revision D
 - Nature Refuges

- Protected Areas**
- Estate Type**
- National Park
 - Resources Reserve
 - State Forest

- Field Survey Sites**
- Observation
 - ▲ Detailed
 - Wetland

Protected Areas and Field Survey Sites

Map 6 Of 41

Main Line

Kp AB-78 To Kp AB-94

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

2 - 6

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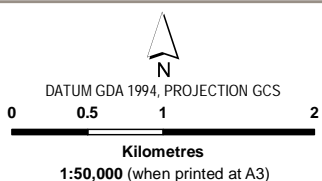


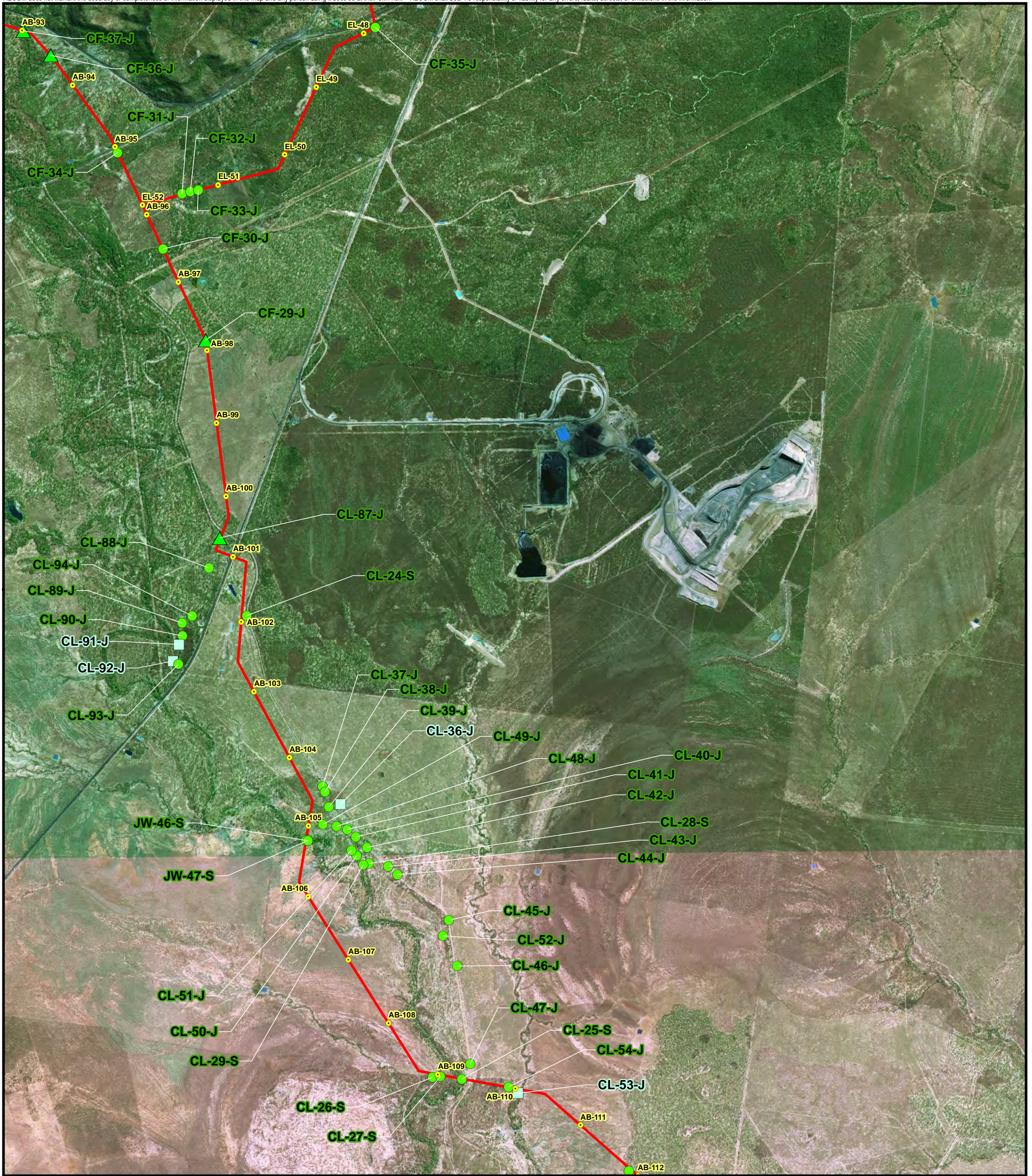
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Nature Refuges

Protected Areas

- Estate Type**
- National Park
 - Resources Reserve
 - State Forest

Field Survey Sites

- Observation
- ▲ Detailed
- Wetland

Protected Areas and Field Survey Sites

Map 7 Of 41

Main Line

Kp AB-94 To Kp AB-111

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

2 - 7

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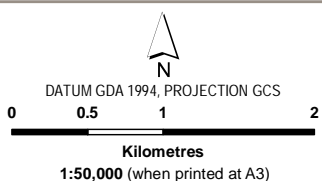
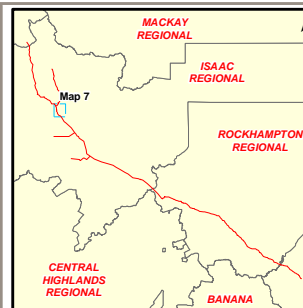


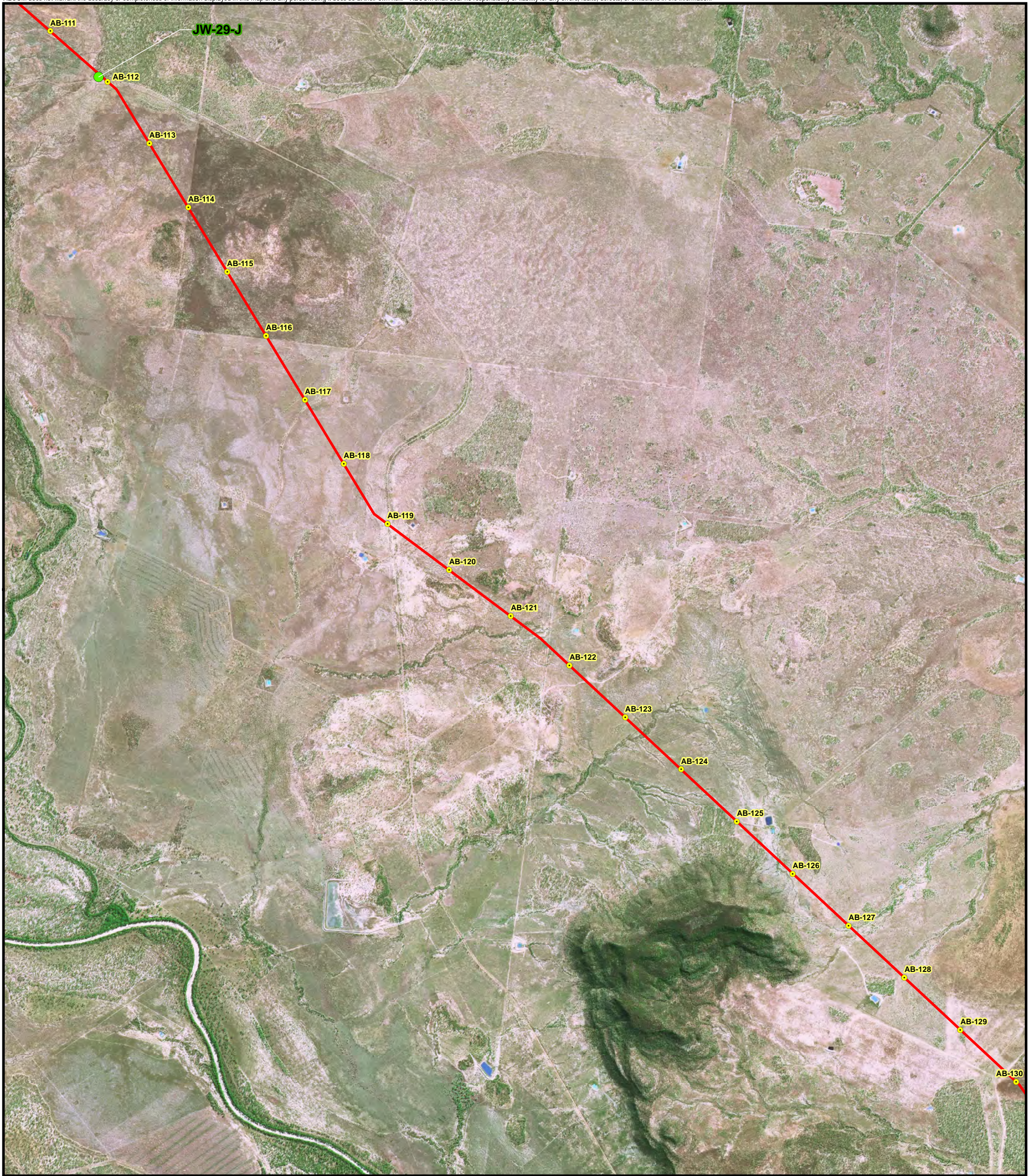
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Nature Refuges

Protected Areas

- Estate Type**
- National Park
 - Resources Reserve
 - State Forest

Field Survey Sites

- Observation
- ▲ Detailed
- Wetland

Protected Areas and Field Survey Sites

Map 8 Of 41

Main Line

Kp AB-111 To Kp AB-129

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

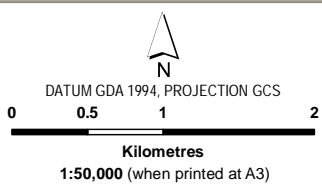
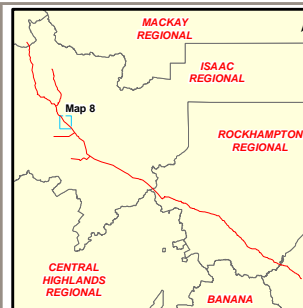
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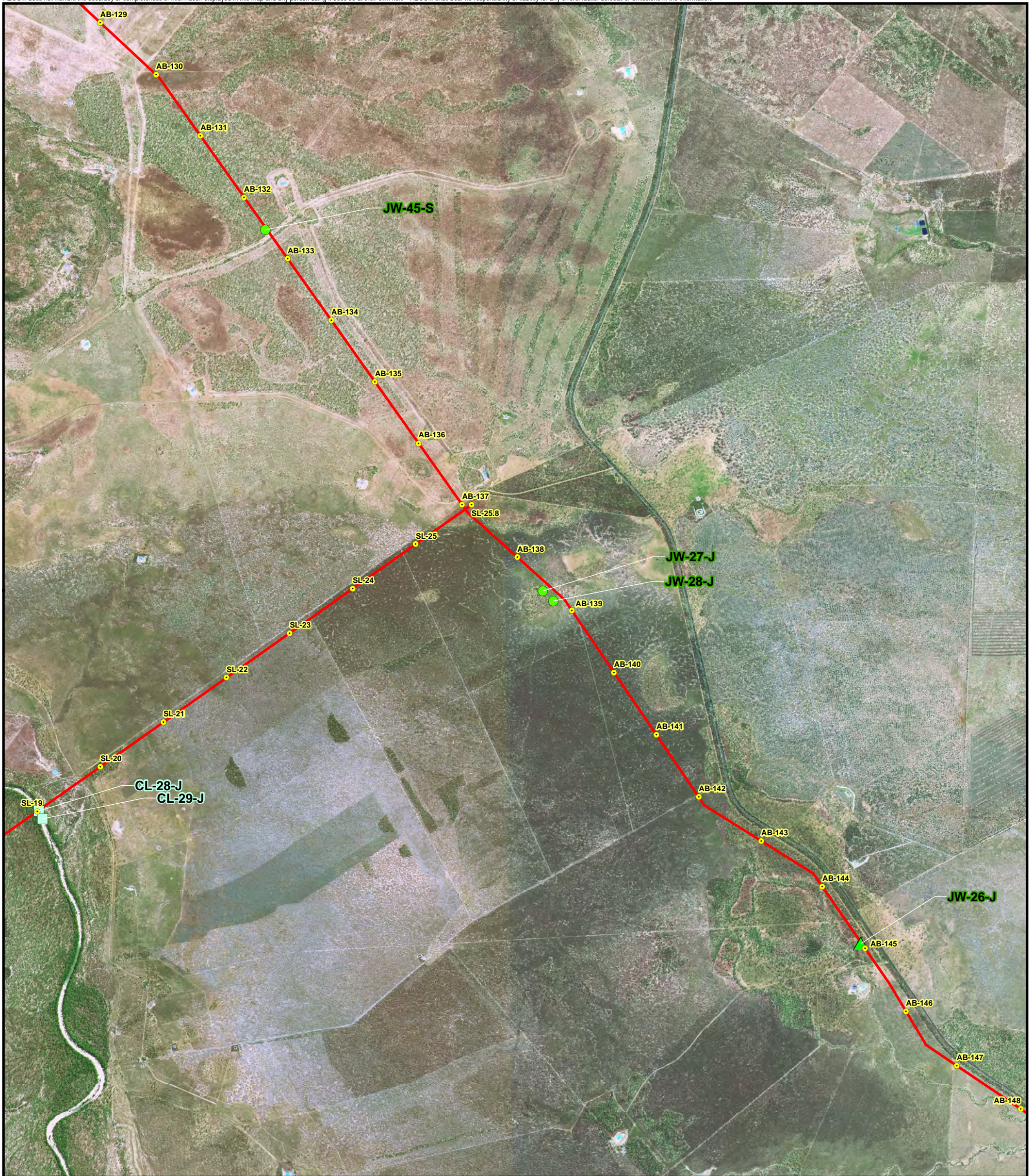
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Nature Refuges

Protected Areas

Estate Type

- National Park
- Resources Reserve
- State Forest

Field Survey Sites

- Observation
- ▲ Detailed
- Wetland

Protected Areas and Field Survey Sites

Map 9 Of 41

Main Line

Kp AB-129 To Kp AB-147

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

2 - 9

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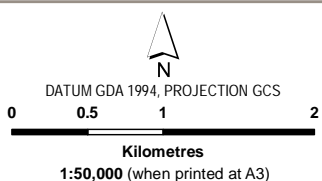
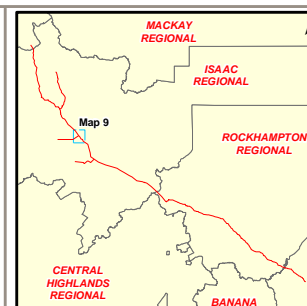


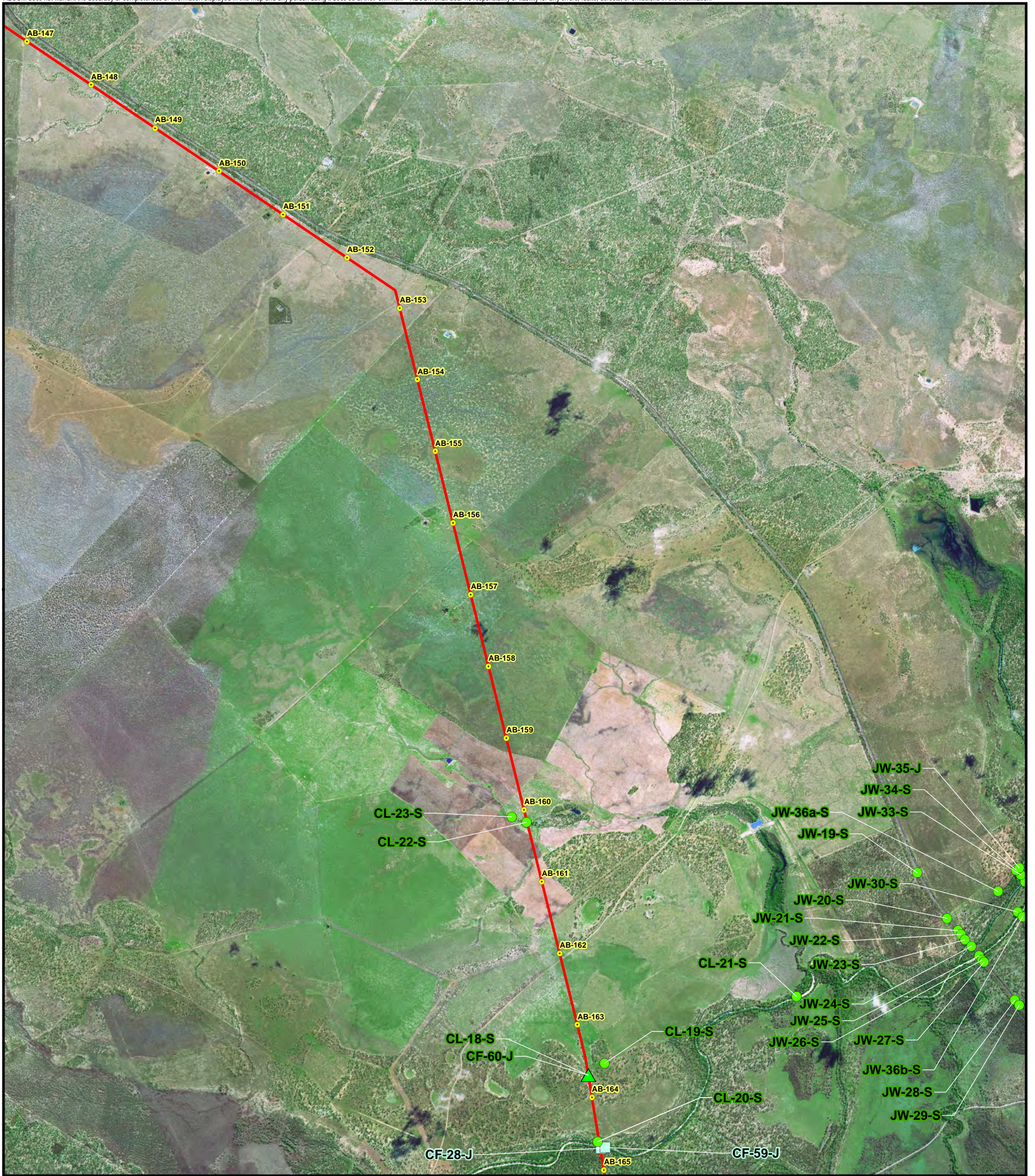
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Nature Refuges

Protected Areas

- Estate Type**
- National Park
 - Resources Reserve
 - State Forest

Field Survey Sites

- Observation
- ▲ Detailed
- Wetland

Protected Areas and Field Survey Sites

Map 10 Of 41

Main Line

Kp AB-147 To Kp AB-165

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

2 - 10

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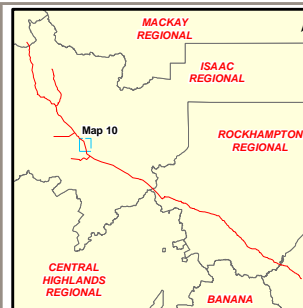


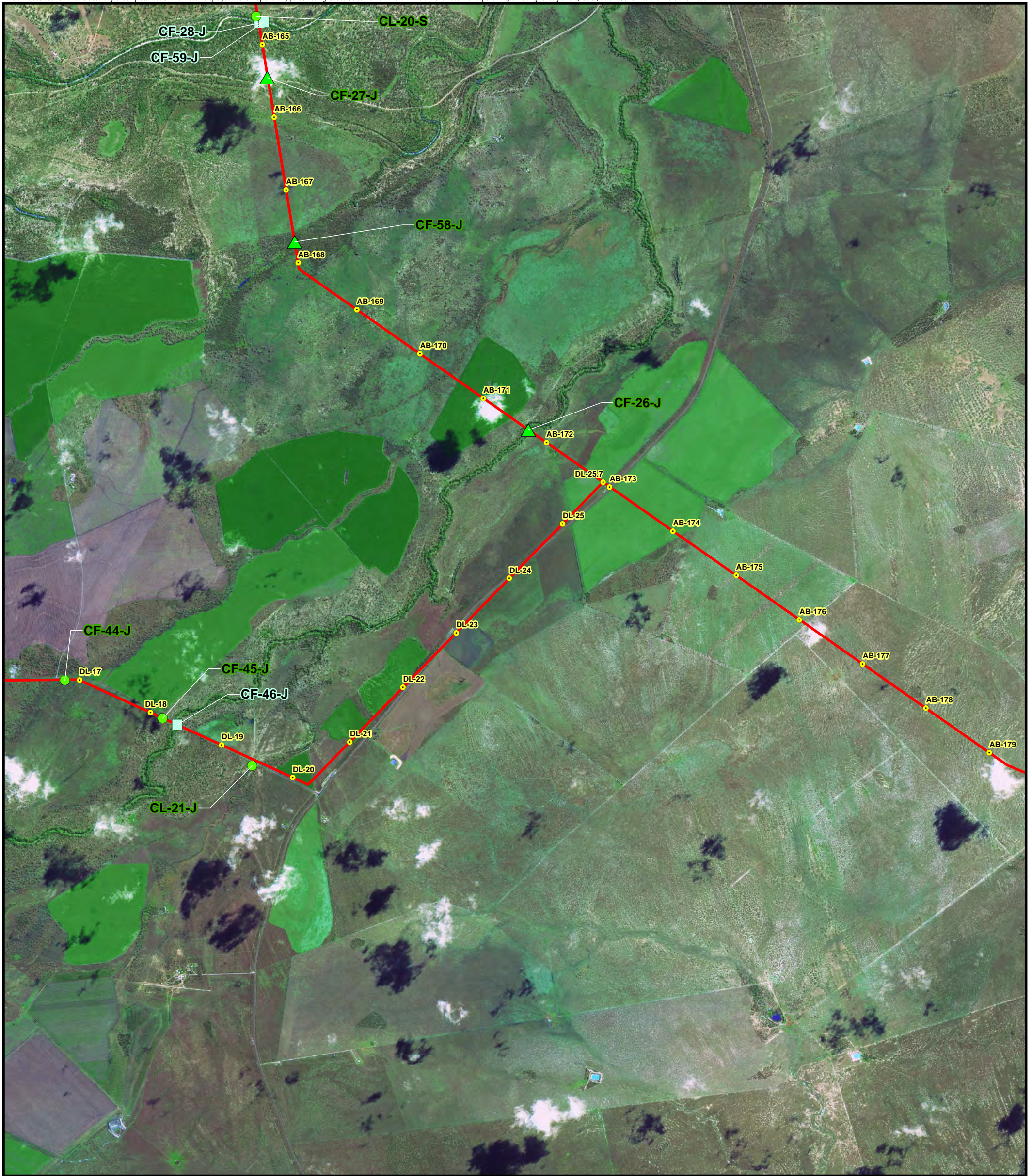
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Nature Refuges

Protected Areas

Estate Type

- National Park
- Resources Reserve
- State Forest

Field Survey Sites

- Observation
- ▲ Detailed
- Wetland

Protected Areas and Field Survey Sites

Map 11 Of 41

Main Line

Kp AB-165 To Kp AB-178

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

2 - 11

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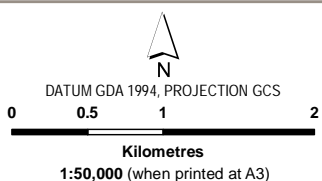
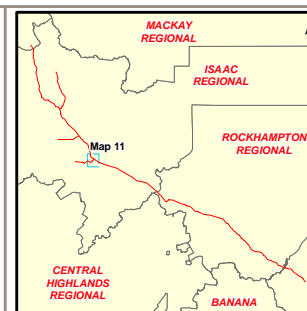


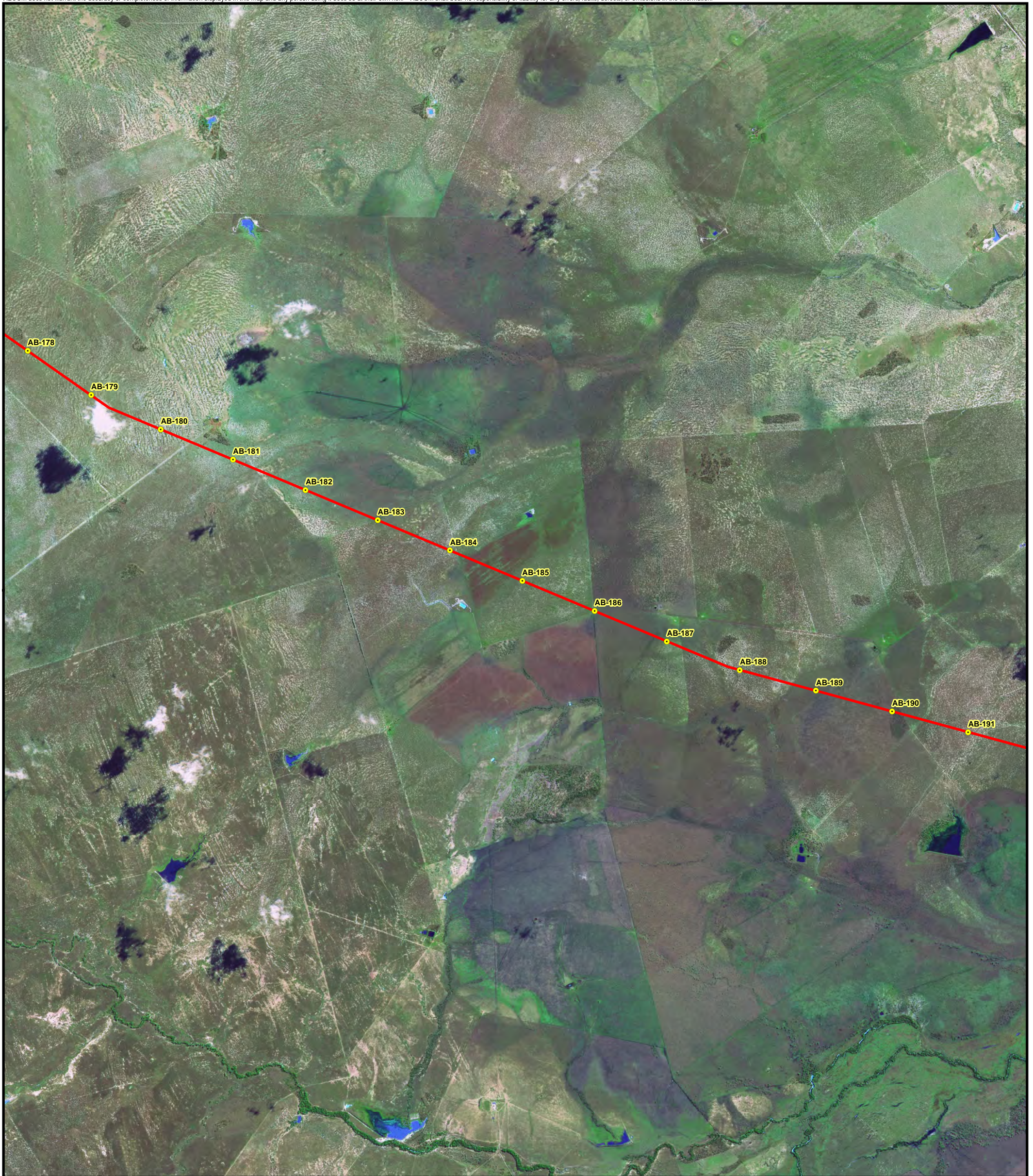
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Nature Refuges

Protected Areas

Estate Type

- National Park
- Resources Reserve
- State Forest

Field Survey Sites

- Observation
- ▲ Detailed
- Wetland

Protected Areas and Field Survey Sites

Map 12 Of 41

Main Line

Kp AB-178 To Kp AB-191

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

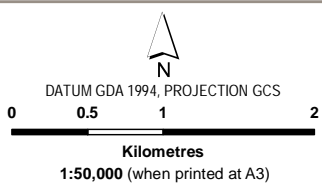
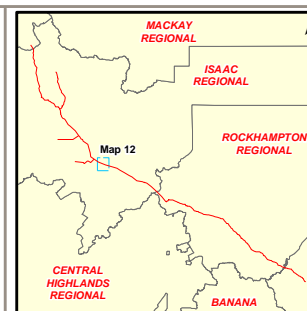
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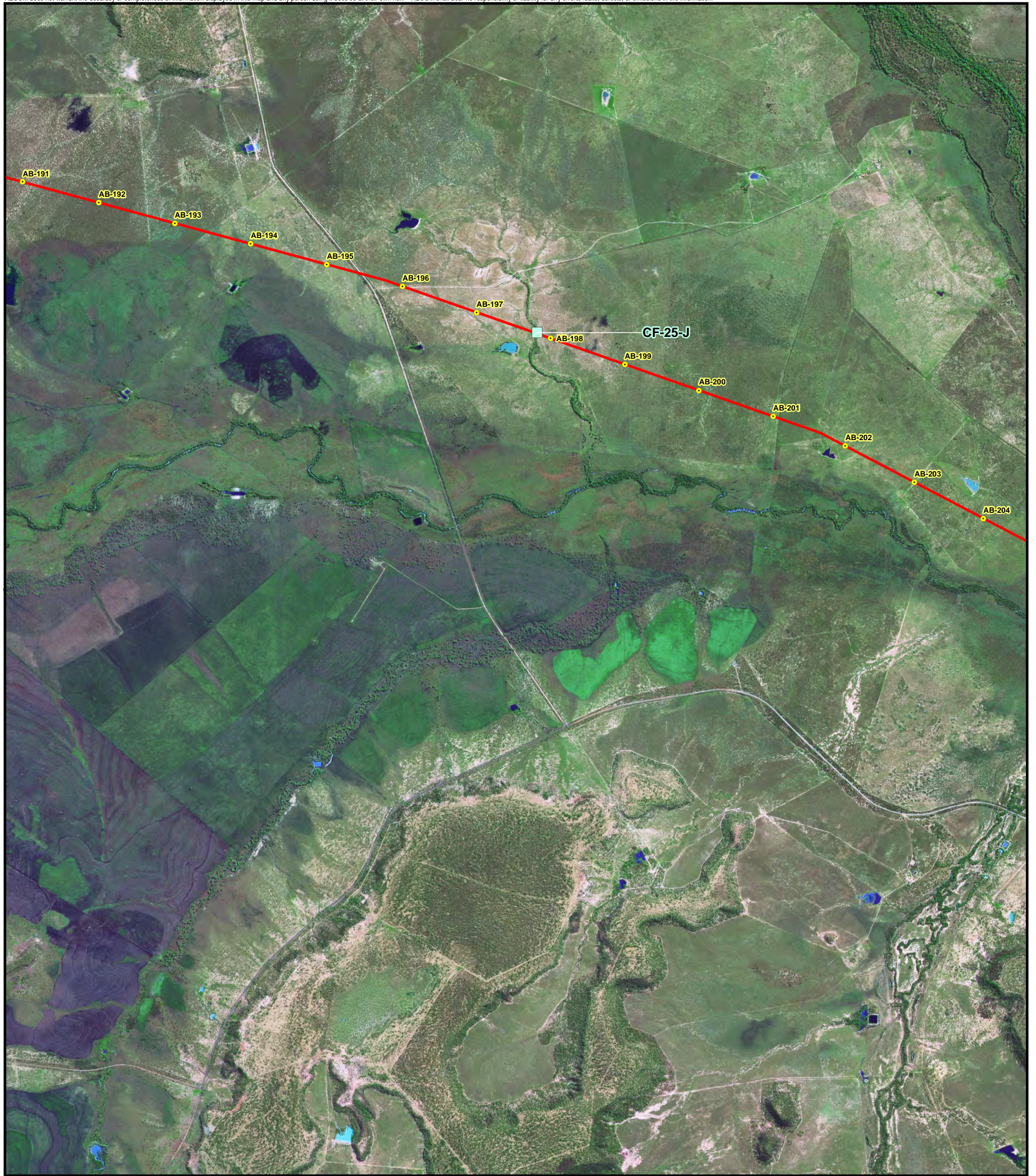
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Nature Refuges

Protected Areas

Estate Type

- National Park
- Resources Reserve
- State Forest

Field Survey Sites

- Observation
- ▲ Detailed
- Wetland

Protected Areas and Field Survey Sites

Map 13 Of 41

Main Line

Kp AB-191 To Kp AB-204

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

2 - 13

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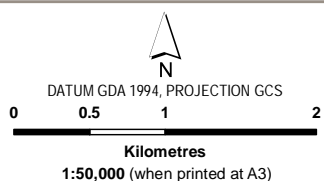
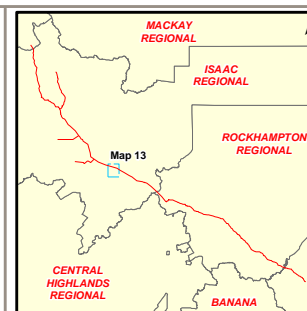


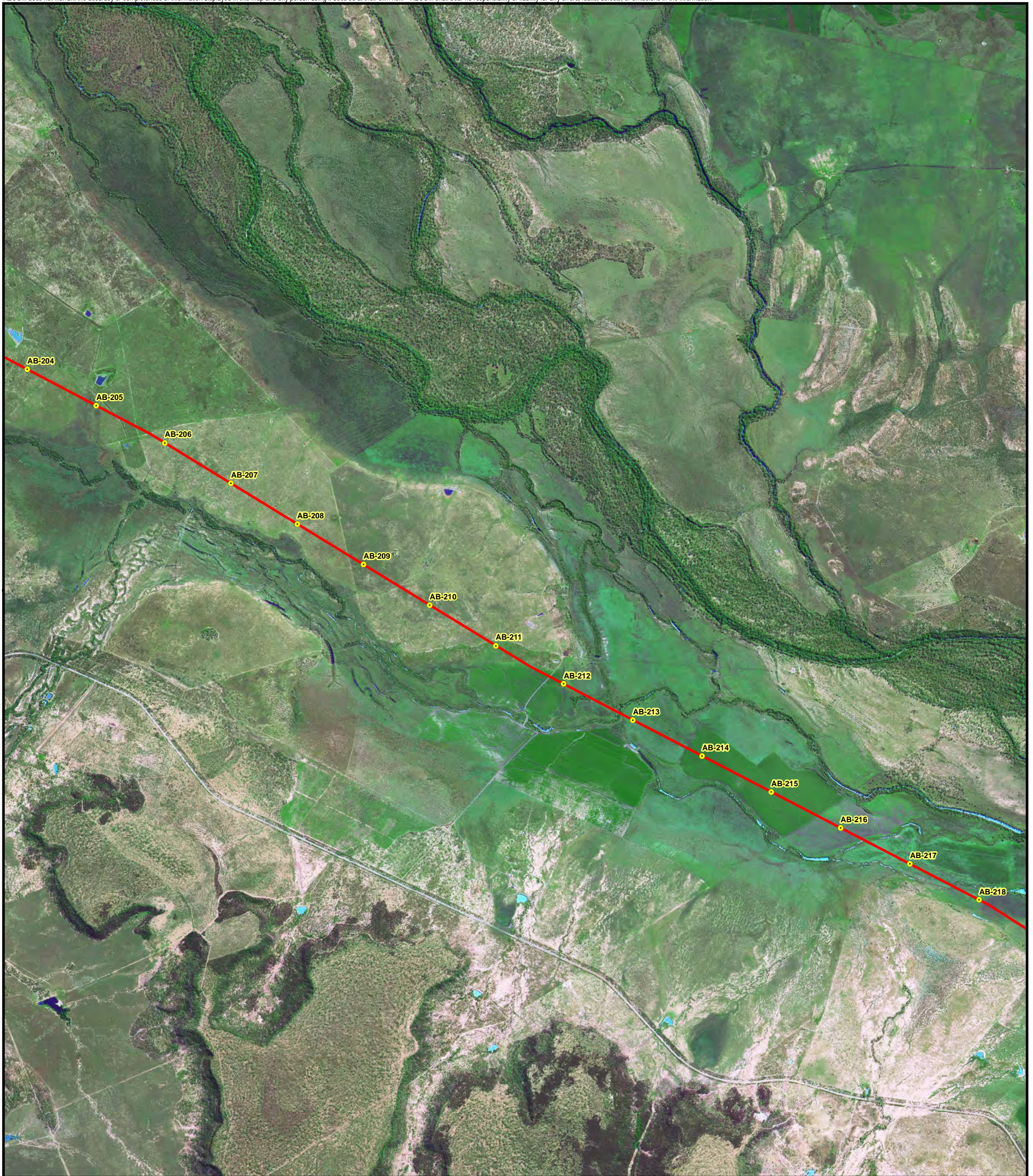
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
 - Protected Areas of Queensland (estate), Nature Refuges and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011

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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Nature Refuges

Protected Areas

Estate Type

- National Park
- Resources Reserve
- State Forest

Field Survey Sites

- Observation
- ▲ Detailed
- Wetland

Protected Areas and Field Survey Sites

Map 14 Of 41

Main Line

Kp AB-204 To Kp AB-218

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

2 - 14

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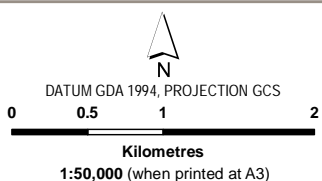
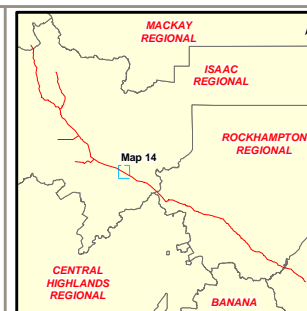


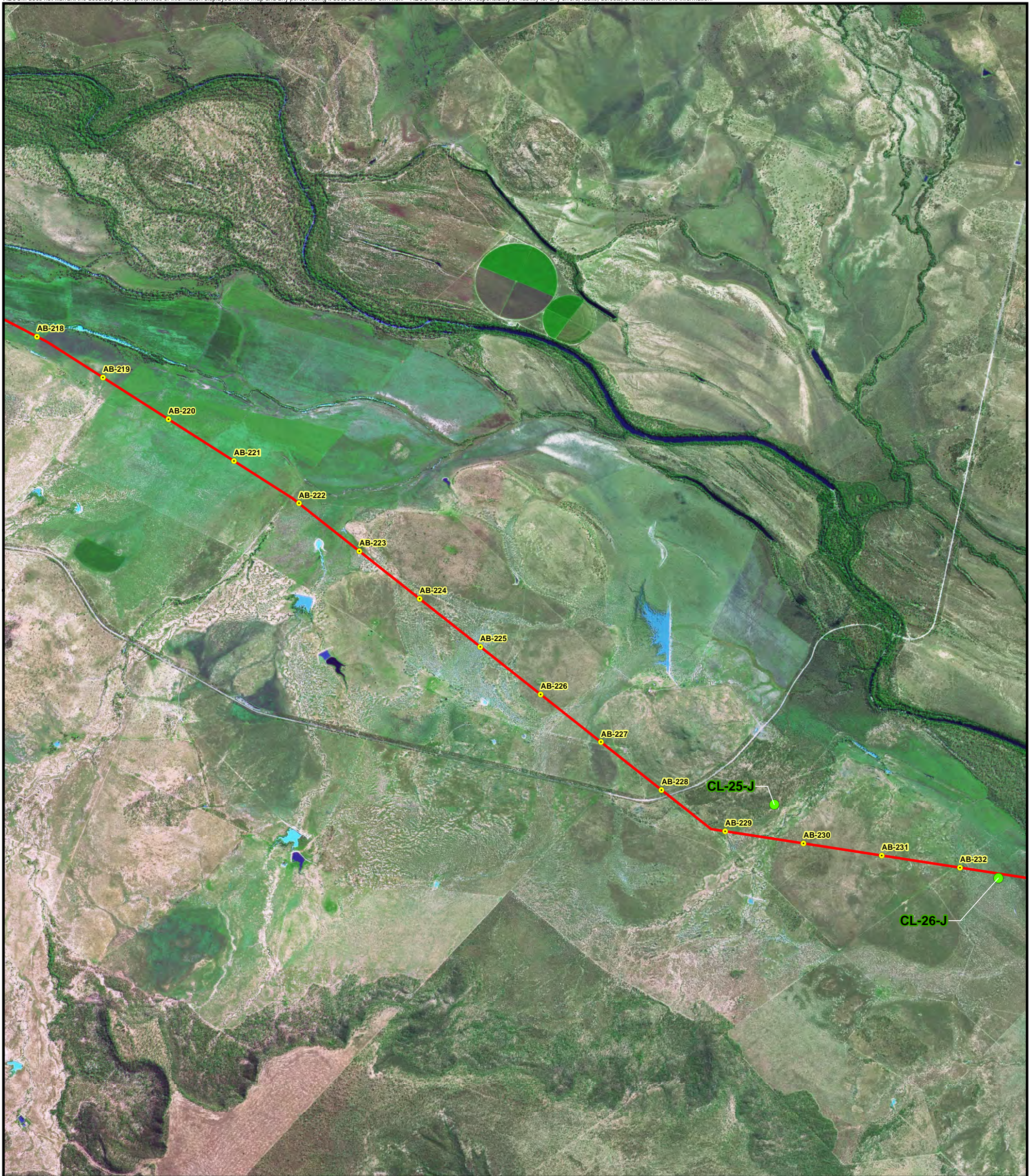
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
 - Protected Areas of Queensland (estate), Nature Refuges and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011

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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Nature Refuges

Protected Areas

Estate Type

- National Park
- Resources Reserve
- State Forest

Field Survey Sites

- Observation
- ▲ Detailed
- Wetland

Protected Areas and Field Survey Sites

Map 15 Of 41

Main Line

Kp AB-218 To Kp AB-232

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

2 - 15

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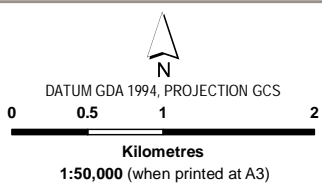


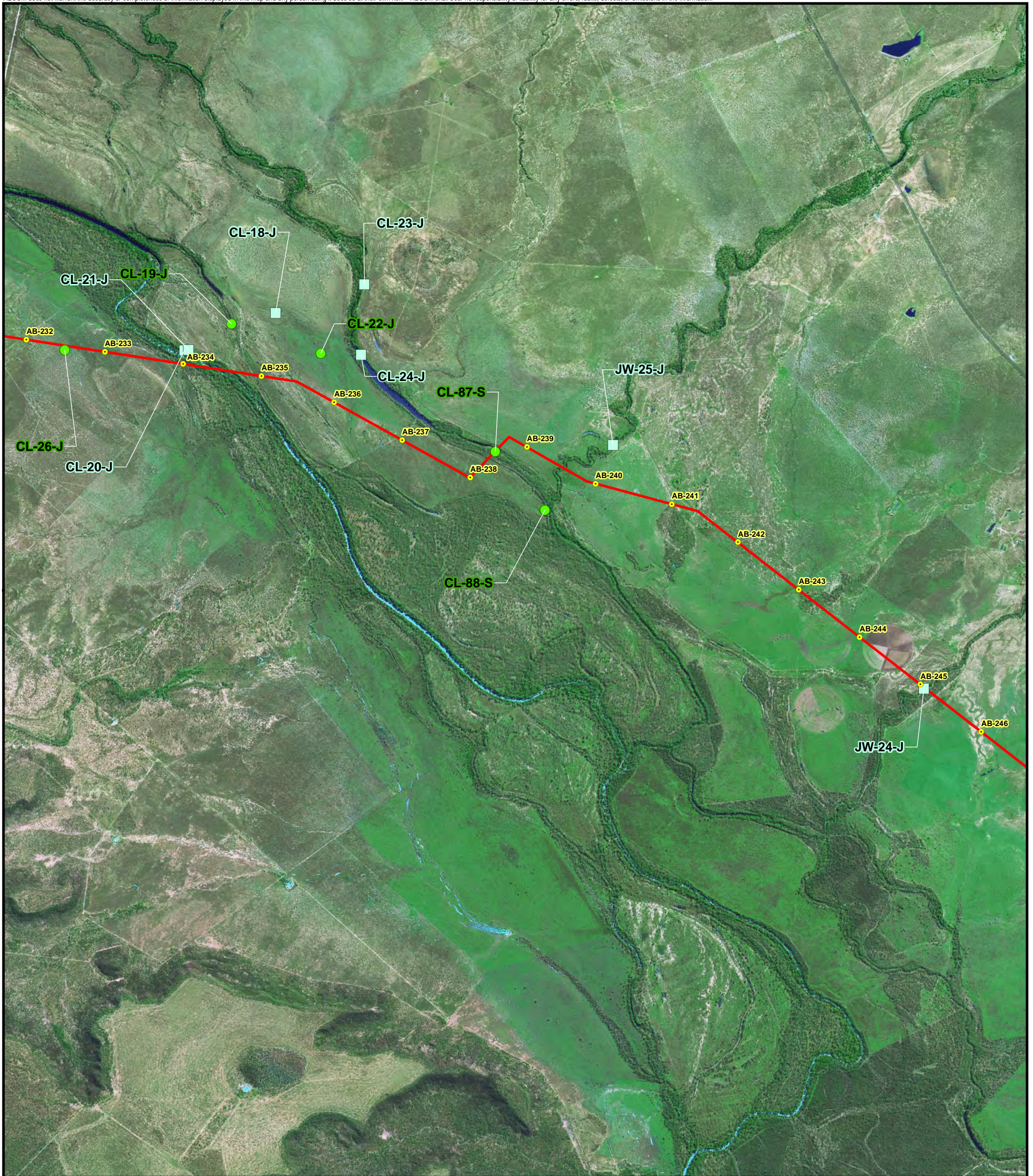
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
 - Protected Areas of Queensland (estate), Nature Refuges and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011

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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Nature Refuges

Protected Areas

- Estate Type**
- National Park
 - Resources Reserve
 - State Forest

Field Survey Sites

- Observation
- ▲ Detailed
- Wetland

Protected Areas and Field Survey Sites

Map 16 Of 41

Main Line

Kp AB-232 To Kp AB-246

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

2 - 16

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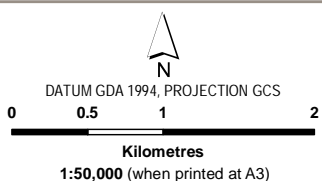


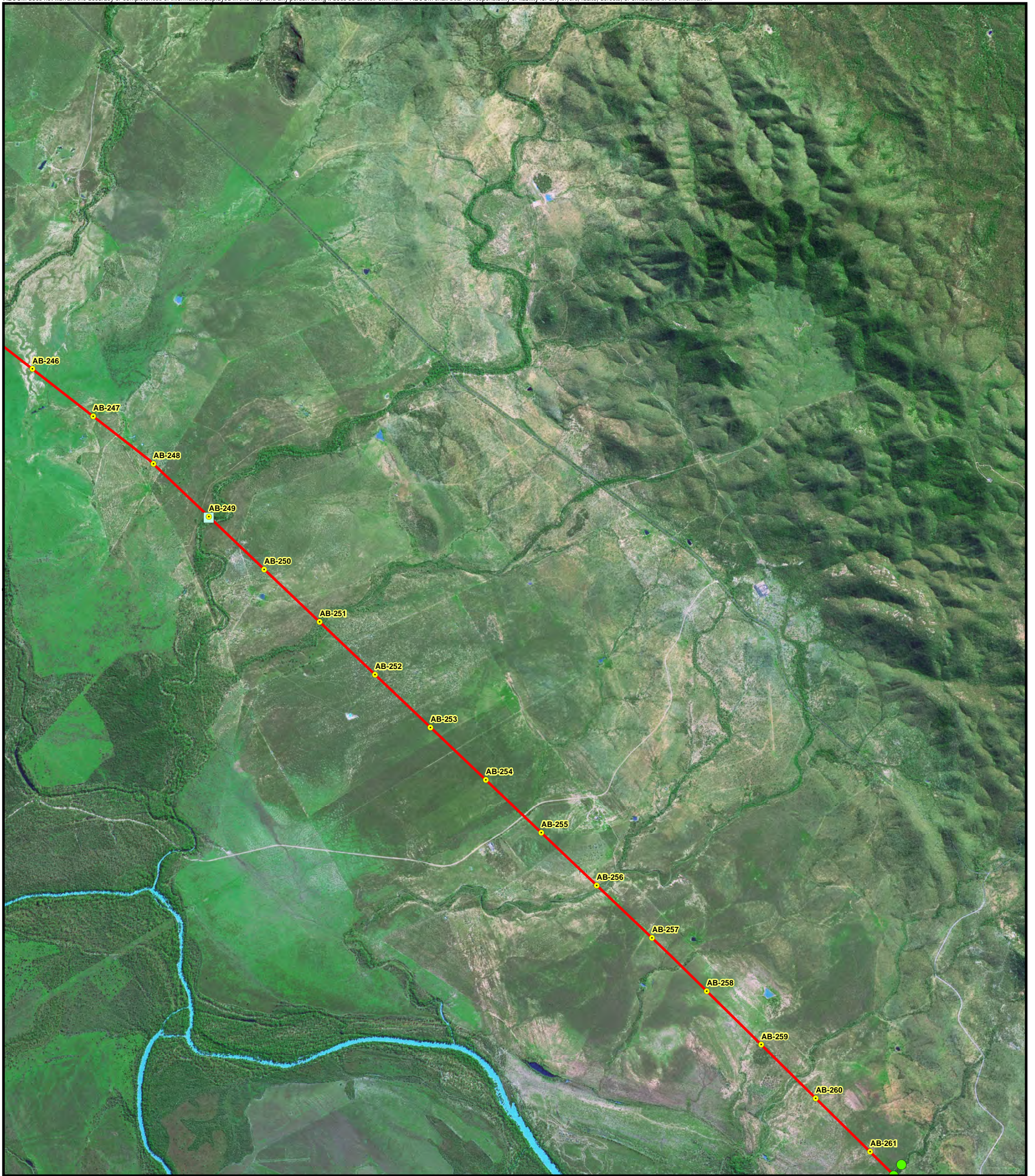
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Nature Refuges

Protected Areas

Estate Type

- National Park
- Resources Reserve
- State Forest

Field Survey Sites

- Observation
- ▲ Detailed
- Wetland

Protected Areas and Field Survey Sites

Map 17 Of 41

Main Line

Kp AB-246 To Kp AB-261

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

2 - 17

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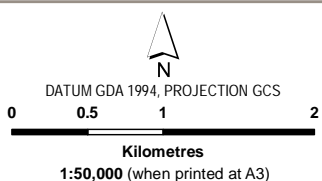
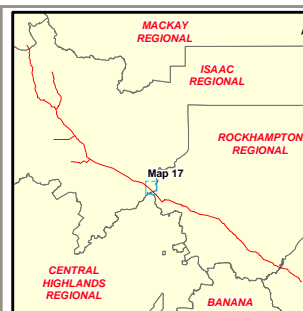


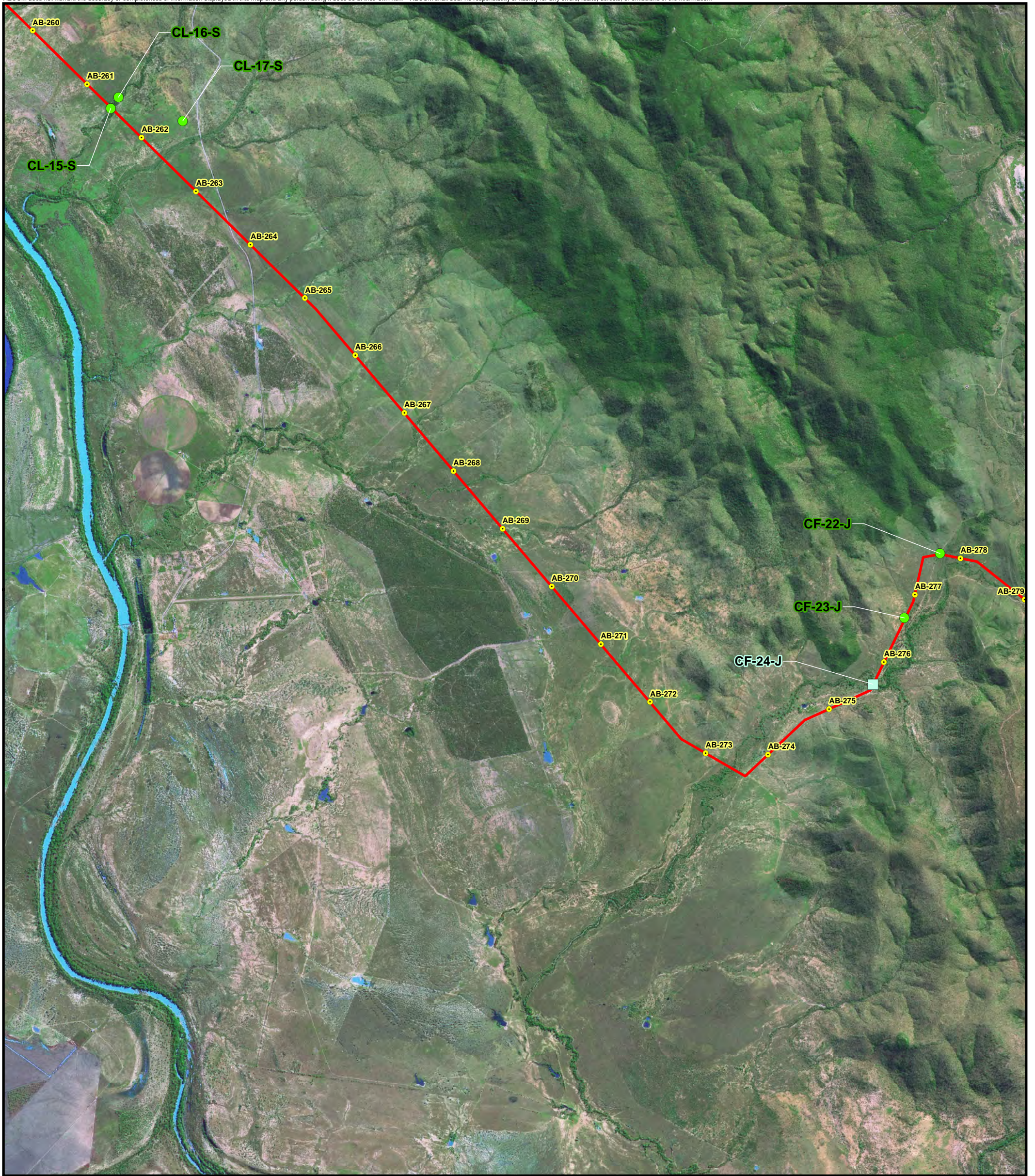
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Nature Refuges

Protected Areas

Estate Type

- National Park
- Resources Reserve
- State Forest

Field Survey Sites

- Observation
- ▲ Detailed
- Wetland

Protected Areas and Field Survey Sites

Map 18 Of 41

Main Line

Kp AB-260 To Kp AB-278

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

2 - 18

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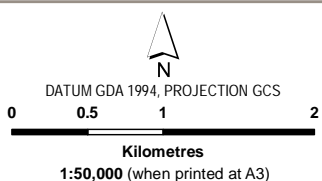
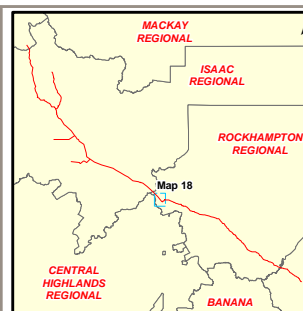


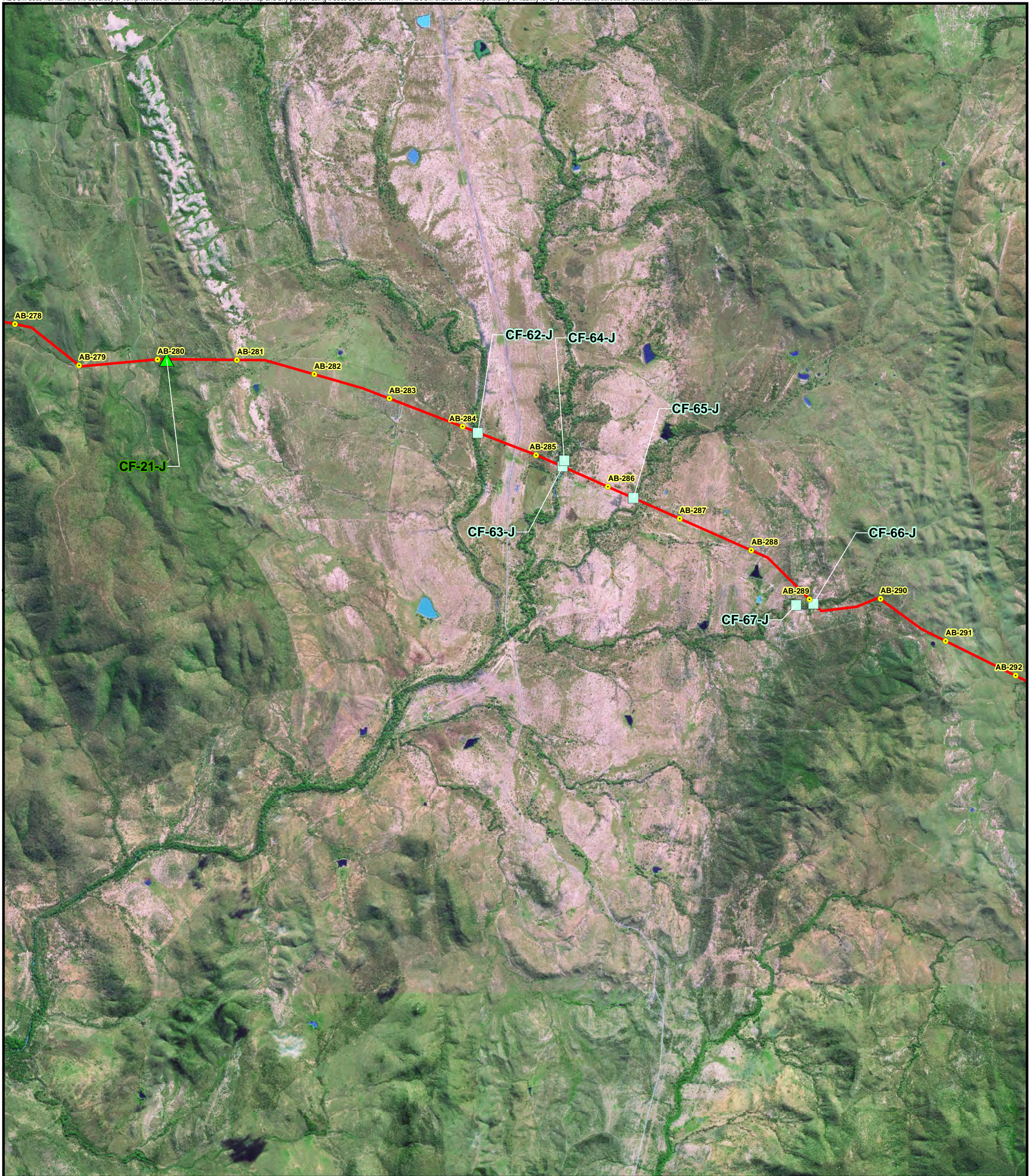
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
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- LEGEND**
- 1 Km Kilometrage Point
 - ABP Route Revision D
 - Nature Refuges

- Protected Areas**
- Estate Type**
- National Park
 - Resources Reserve
 - State Forest

- Field Survey Sites**
- Observation
 - ▲ Detailed
 - Wetland

Protected Areas and Field Survey Sites

Map 19 Of 41

Main Line

Kp AB-278 To Kp AB-291

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

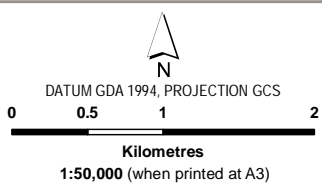
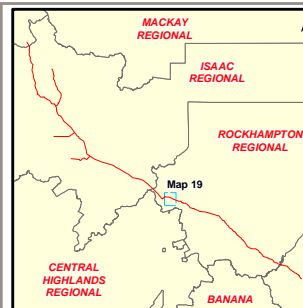
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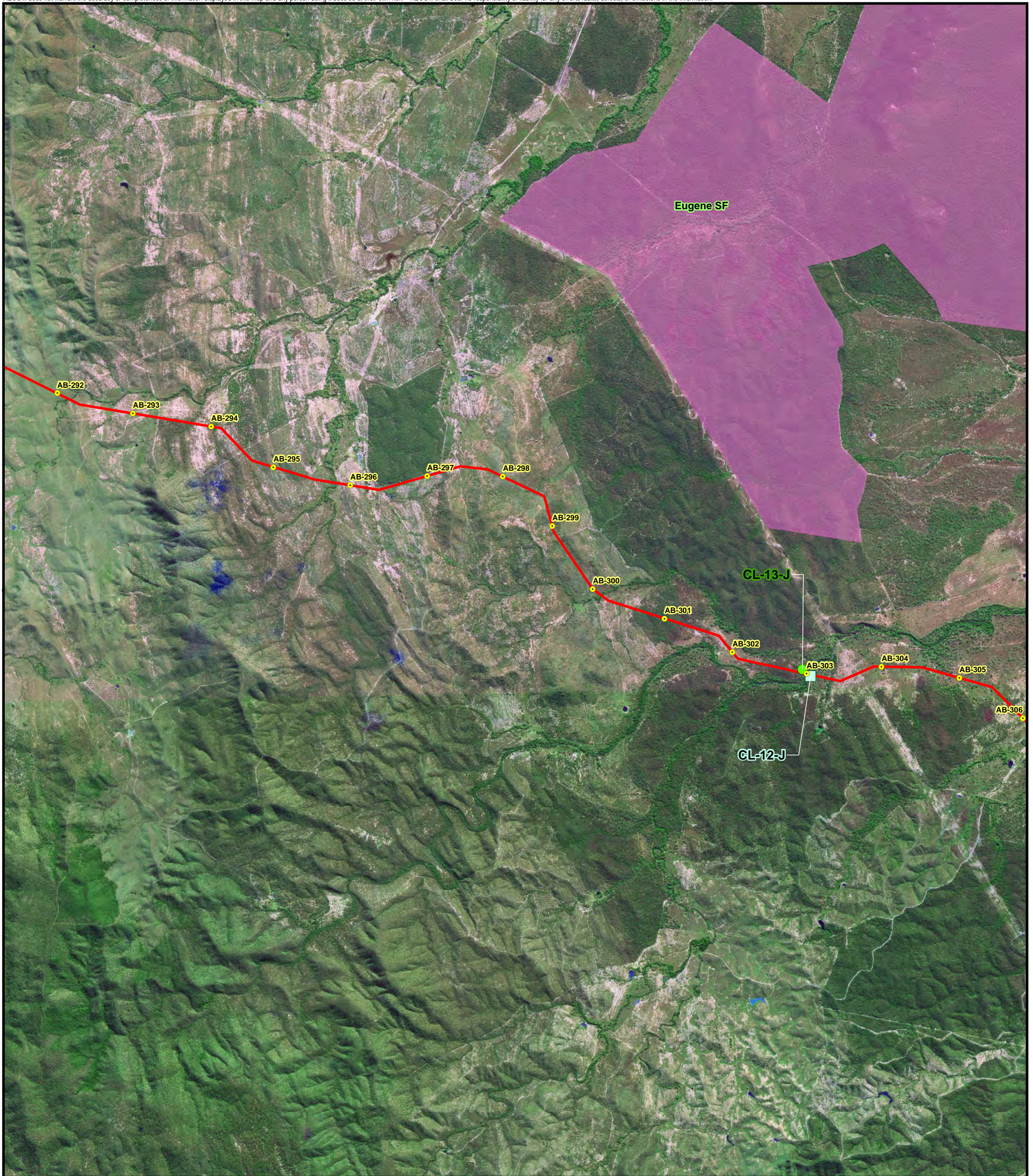
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Nature Refuges

Protected Areas

- Estate Type**
- National Park
 - Resources Reserve
 - State Forest

Field Survey Sites

- Observation
- ▲ Detailed
- Wetland

Protected Areas and Field Survey Sites

Map 20 Of 41

Main Line

Kp AB-292 To Kp AB-305

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

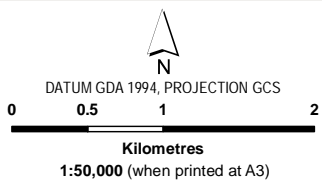
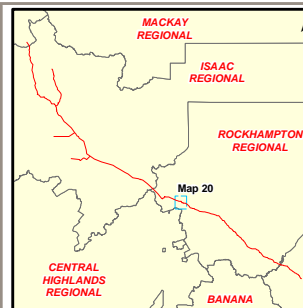
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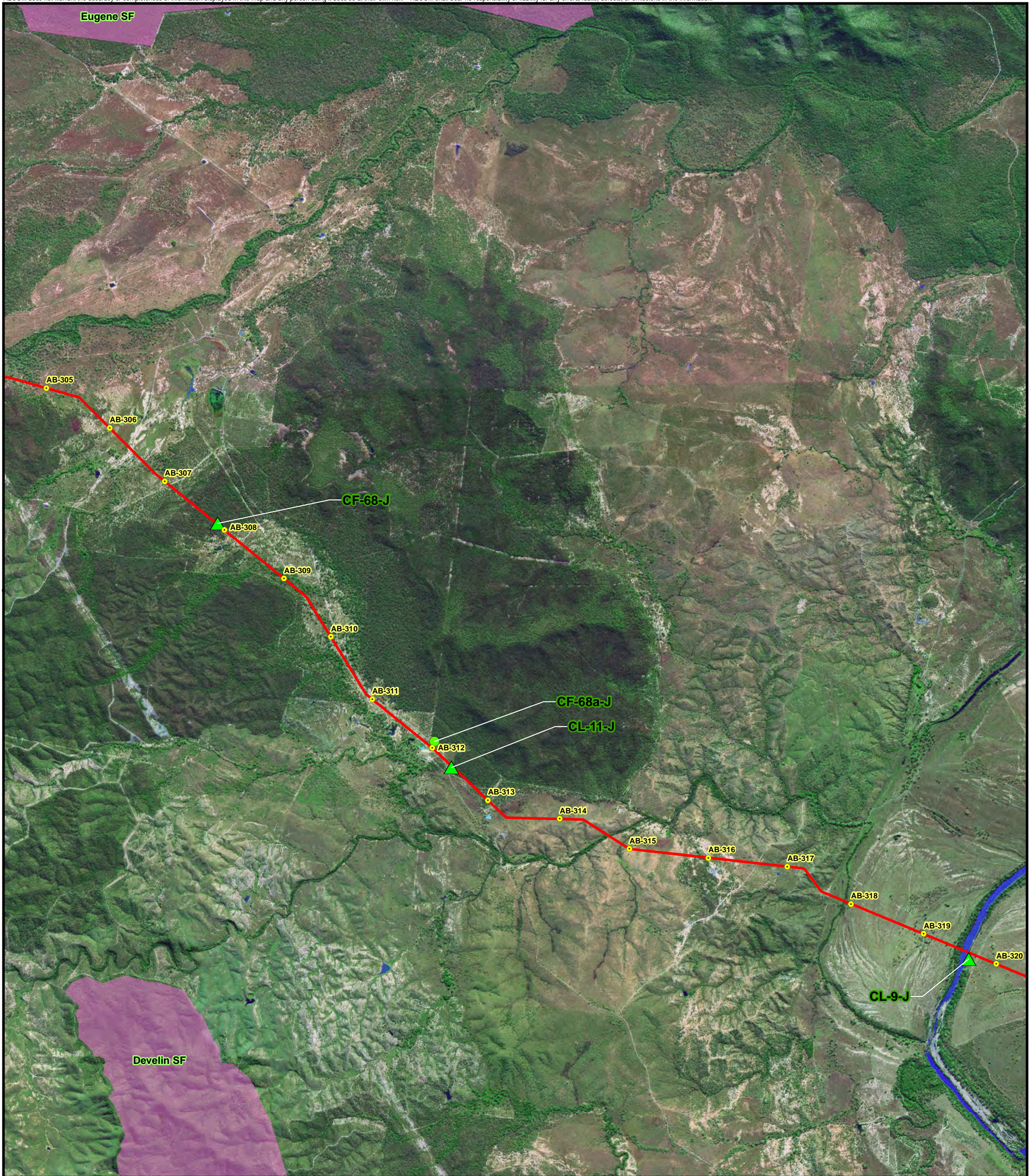
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Data Sources:
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Nature Refuges

Protected Areas

- Estate Type**
- National Park
 - Resources Reserve
 - State Forest

Field Survey Sites

- Observation
- ▲ Detailed
- Wetland

Protected Areas and Field Survey Sites

Map 21 Of 41

Main Line

Kp AB-305 To Kp AB-320

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

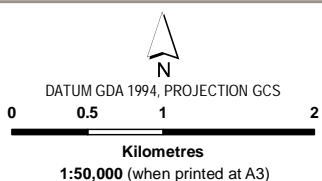
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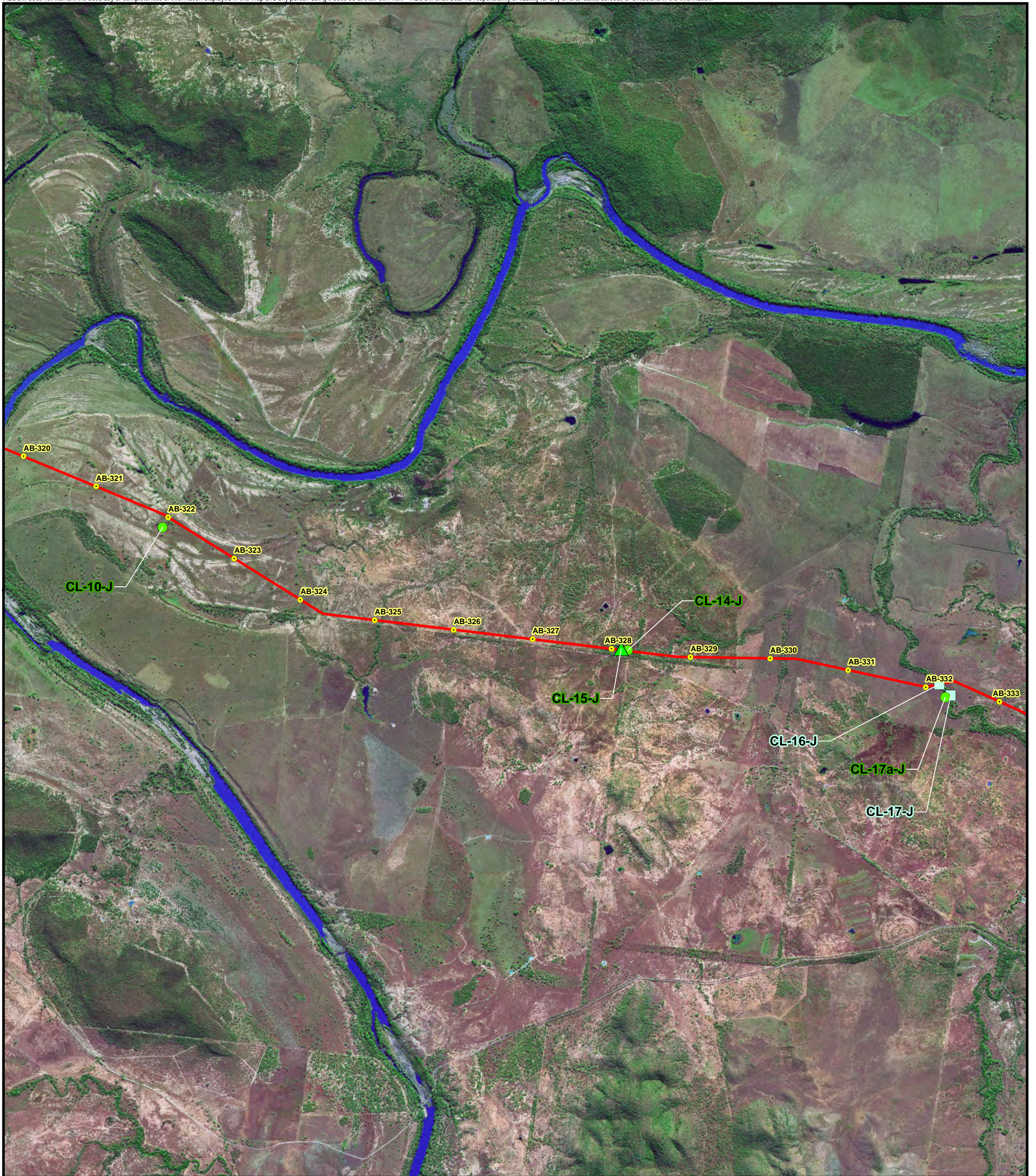
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Nature Refuges

Protected Areas

Estate Type

- National Park
- Resources Reserve
- State Forest

Field Survey Sites

- Observation
- ▲ Detailed
- Wetland

Protected Areas and Field Survey Sites

Map 22 Of 41

Main Line

Kp AB-320 To Kp AB-333

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

2 - 22

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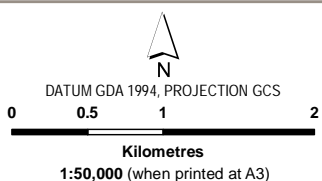
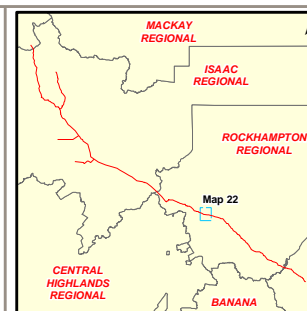


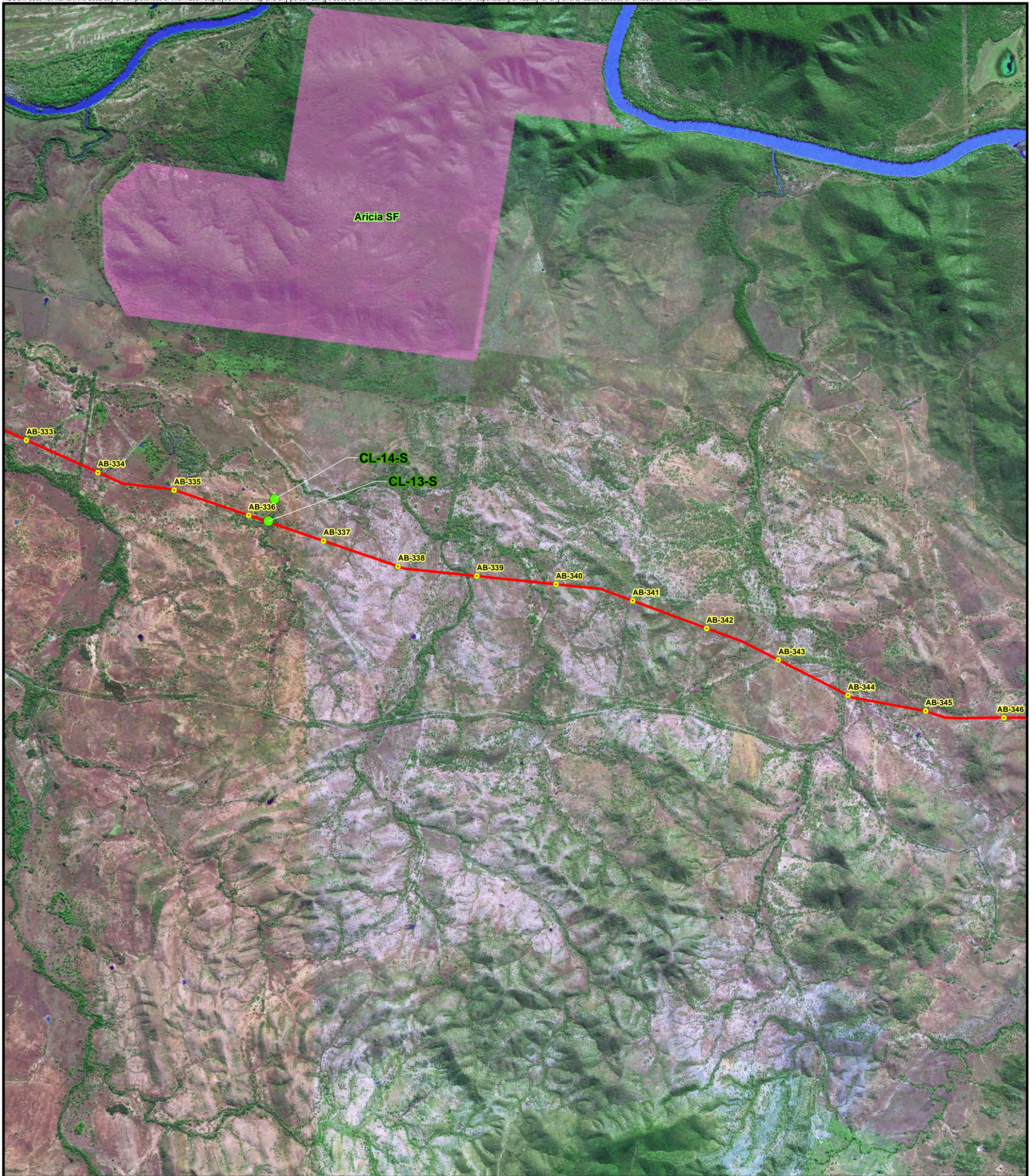
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Nature Refuges

Protected Areas

Estate Type

- National Park
- Resources Reserve
- State Forest

Field Survey Sites

- Observation
- ▲ Detailed
- Wetland

Protected Areas and Field Survey Sites

Map 23 Of 41

Main Line

Kp AB-333 To Kp AB-346

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

2 - 23

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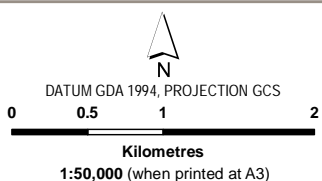


Data Sources:

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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Nature Refuges

Protected Areas

- Estate Type**
- National Park
 - Resources Reserve
 - State Forest

Field Survey Sites

- Observation
- ▲ Detailed
- Wetland

Protected Areas and Field Survey Sites

Map 24 Of 41

Main Line

Kp AB-346 To Kp AB-361

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

2 - 24

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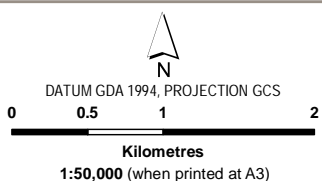
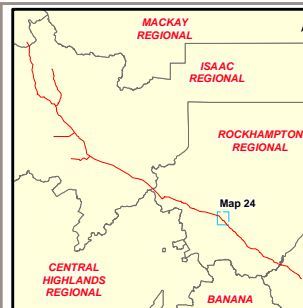


Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Nature Refuges

Protected Areas

- Estate Type**
- National Park
 - Resources Reserve
 - State Forest

Field Survey Sites

- Observation
- ▲ Detailed
- Wetland

Protected Areas and Field Survey Sites

Map 25 Of 41

Main Line

Kp AB-361 To Kp AB-380

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

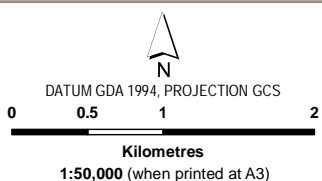
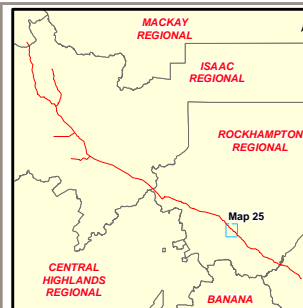
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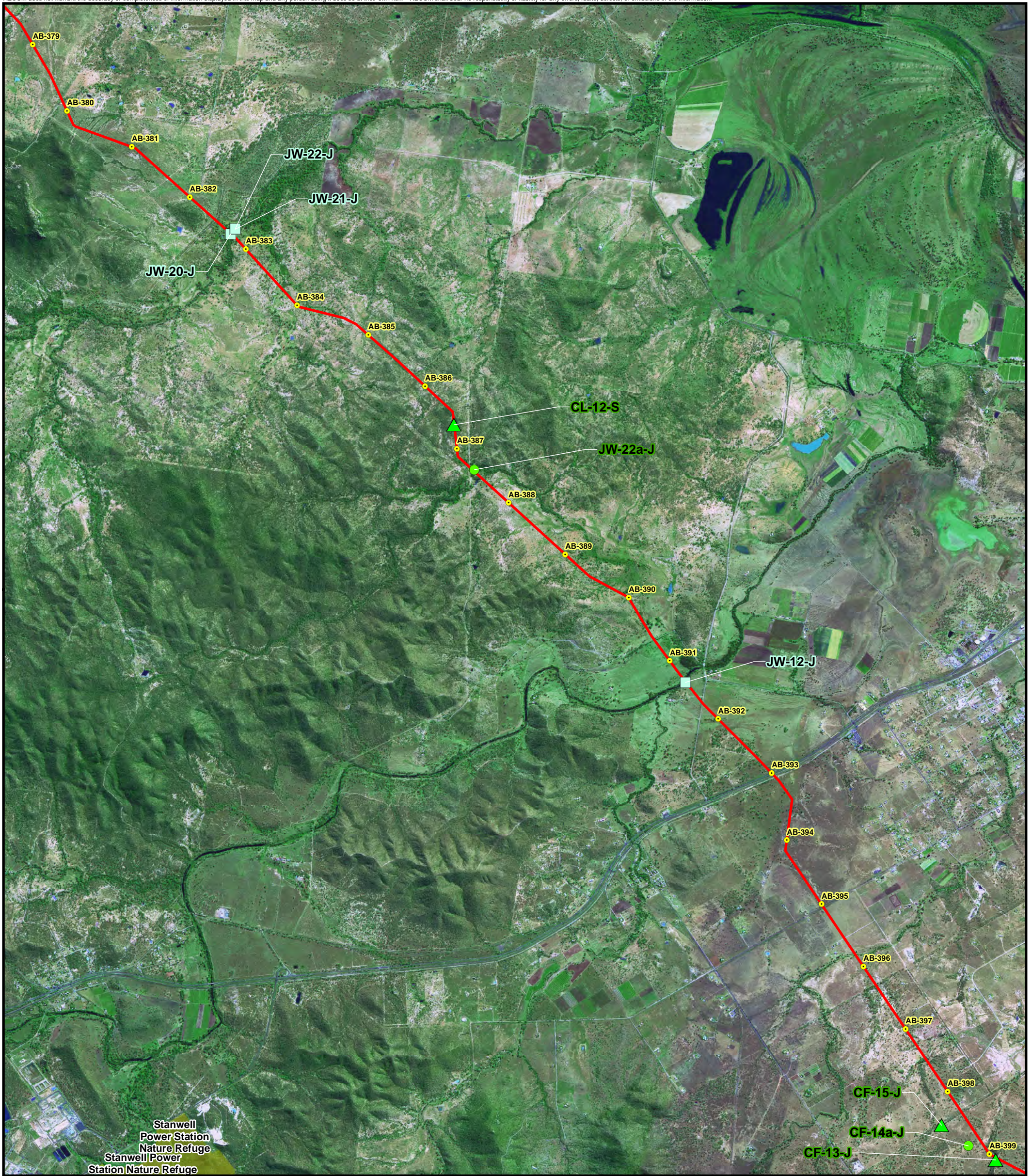
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Data Sources:
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Nature Refuges

Protected Areas

Estate Type

- National Park
- Resources Reserve
- State Forest

Field Survey Sites

- Observation
- ▲ Detailed
- Wetland

Protected Areas and Field Survey Sites

Map 26 Of 41

Main Line

Kp AB-379 To Kp AB-399

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

2 - 26

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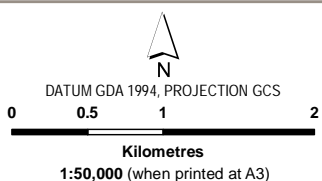
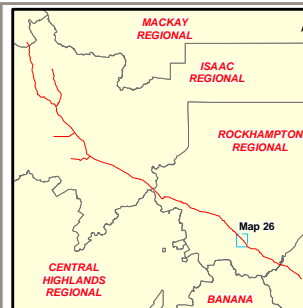


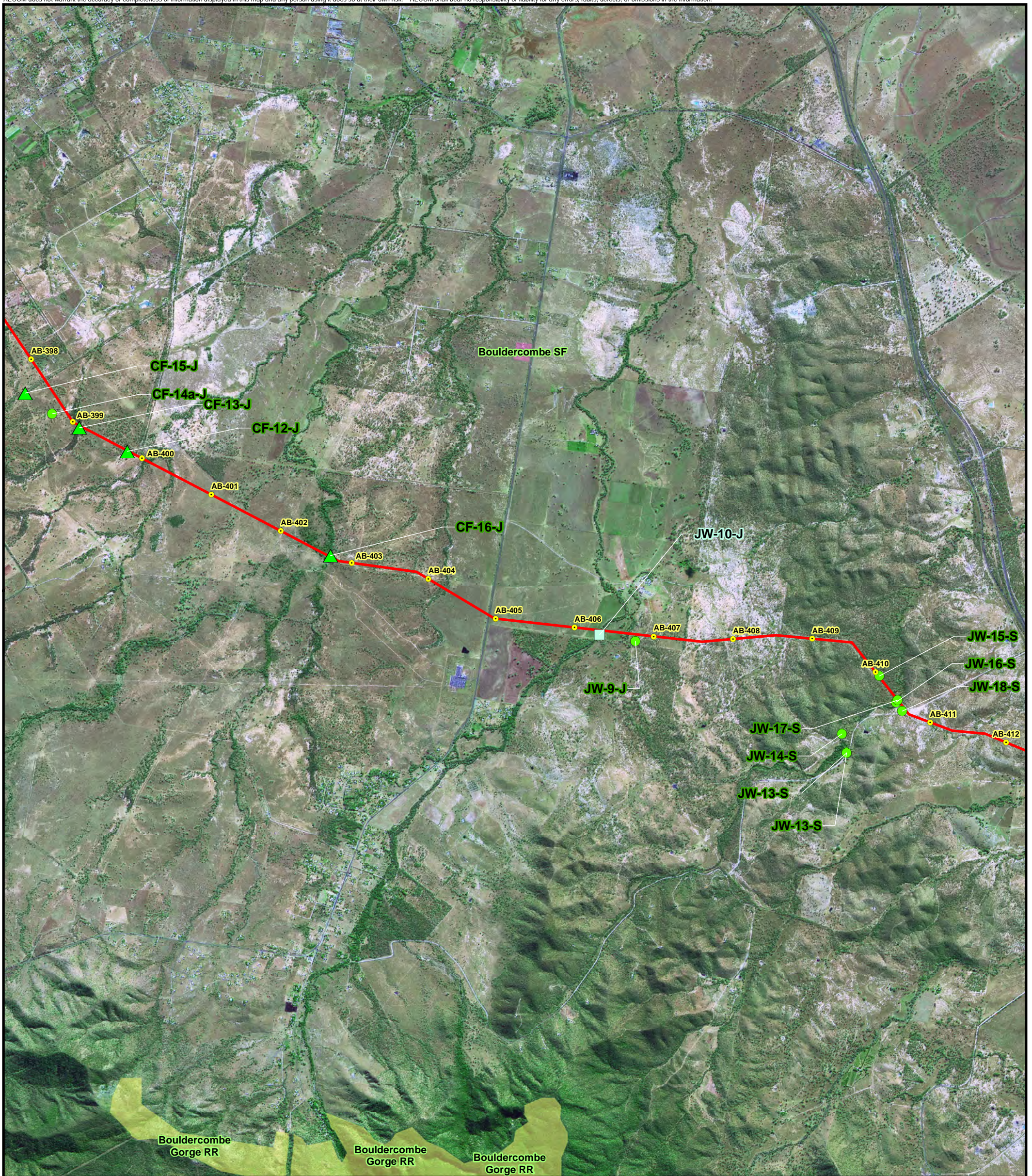
Data Sources:

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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Nature Refuges

Protected Areas

Estate Type

- National Park
- Resources Reserve
- State Forest

Field Survey Sites

- Observation
- Detailed
- Wetland

Protected Areas and Field Survey Sites

Map 27 Of 41

Main Line

Kp AB-398 To Kp AB-412

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

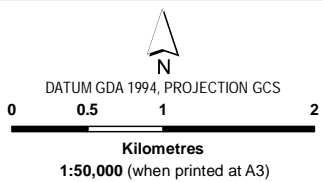
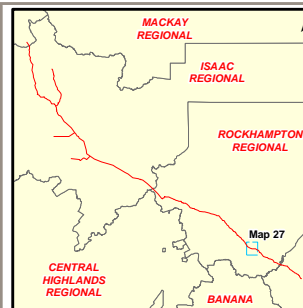
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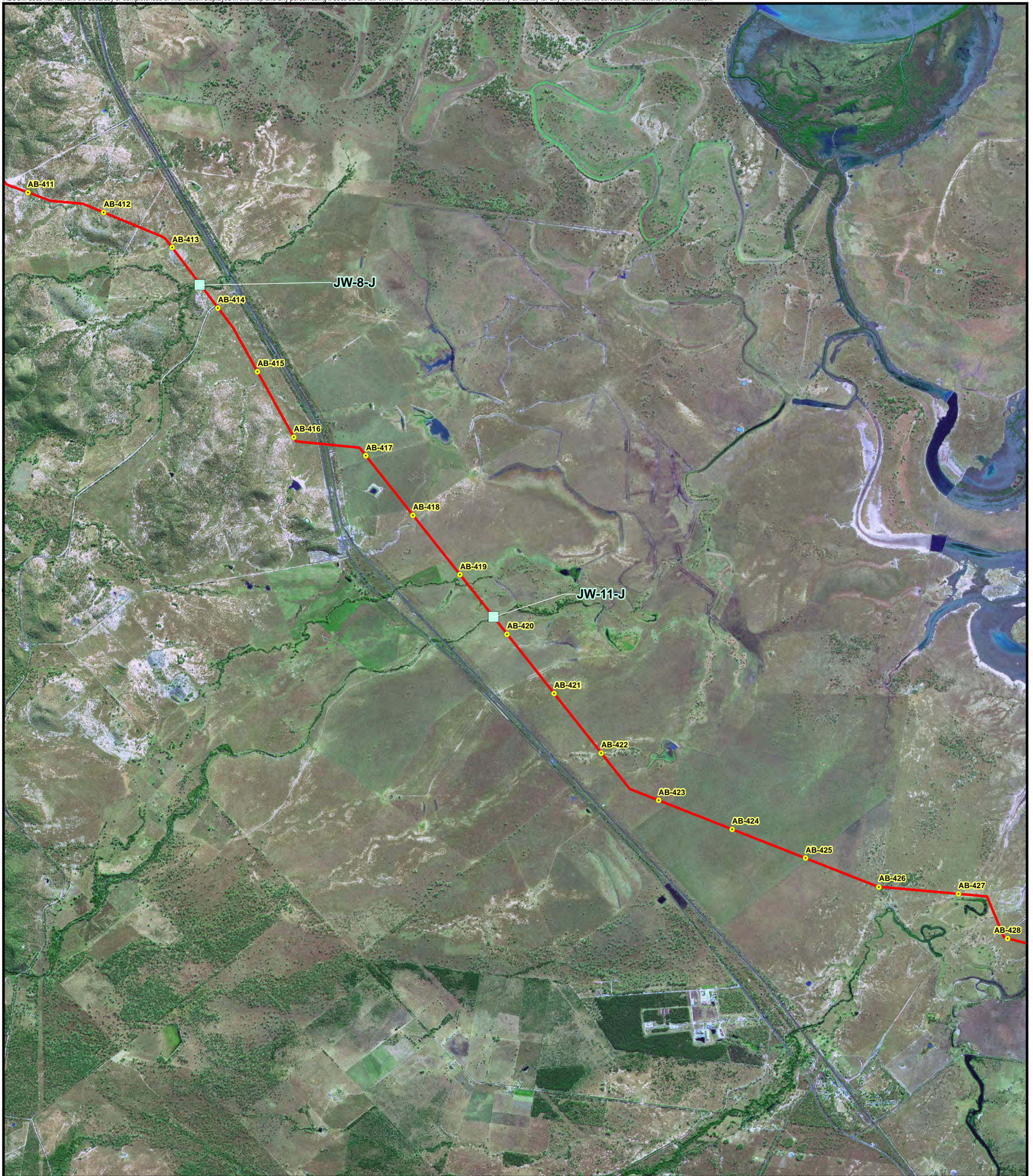
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Data Sources:
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Nature Refuges

Protected Areas

Estate Type

- National Park
- Resources Reserve
- State Forest

Field Survey Sites

- Observation
- ▲ Detailed
- Wetland

Protected Areas and Field Survey Sites

Map 28 Of 41

Main Line

Kp AB-411 To Kp AB-428

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

2 - 28

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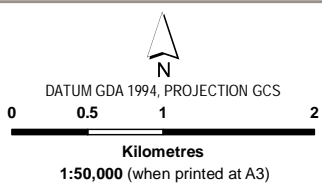
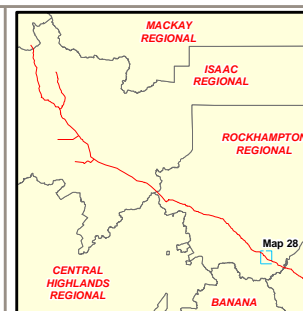


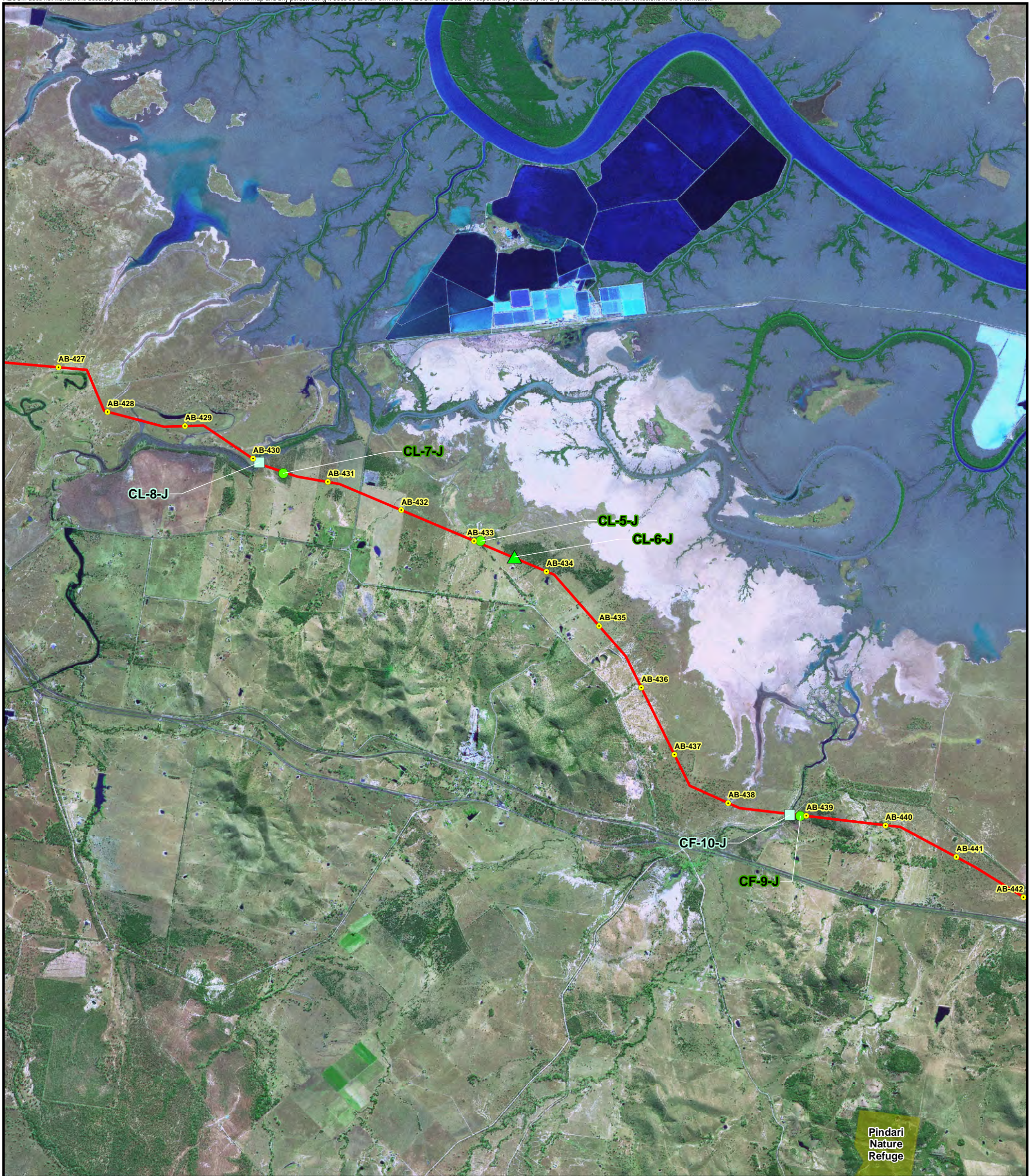
Data Sources:

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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Nature Refuges

Protected Areas

Estate Type

- National Park
- Resources Reserve
- State Forest

Field Survey Sites

- Observation
- ▲ Detailed
- Wetland

Protected Areas and Field Survey Sites

Map 29 Of 41

Main Line

Kp AB-427 To Kp AB-441

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

2 - 29

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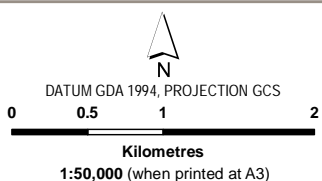
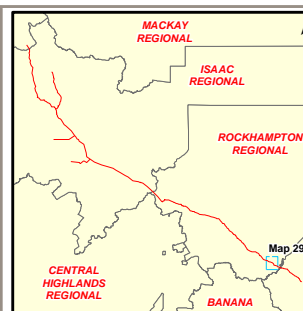


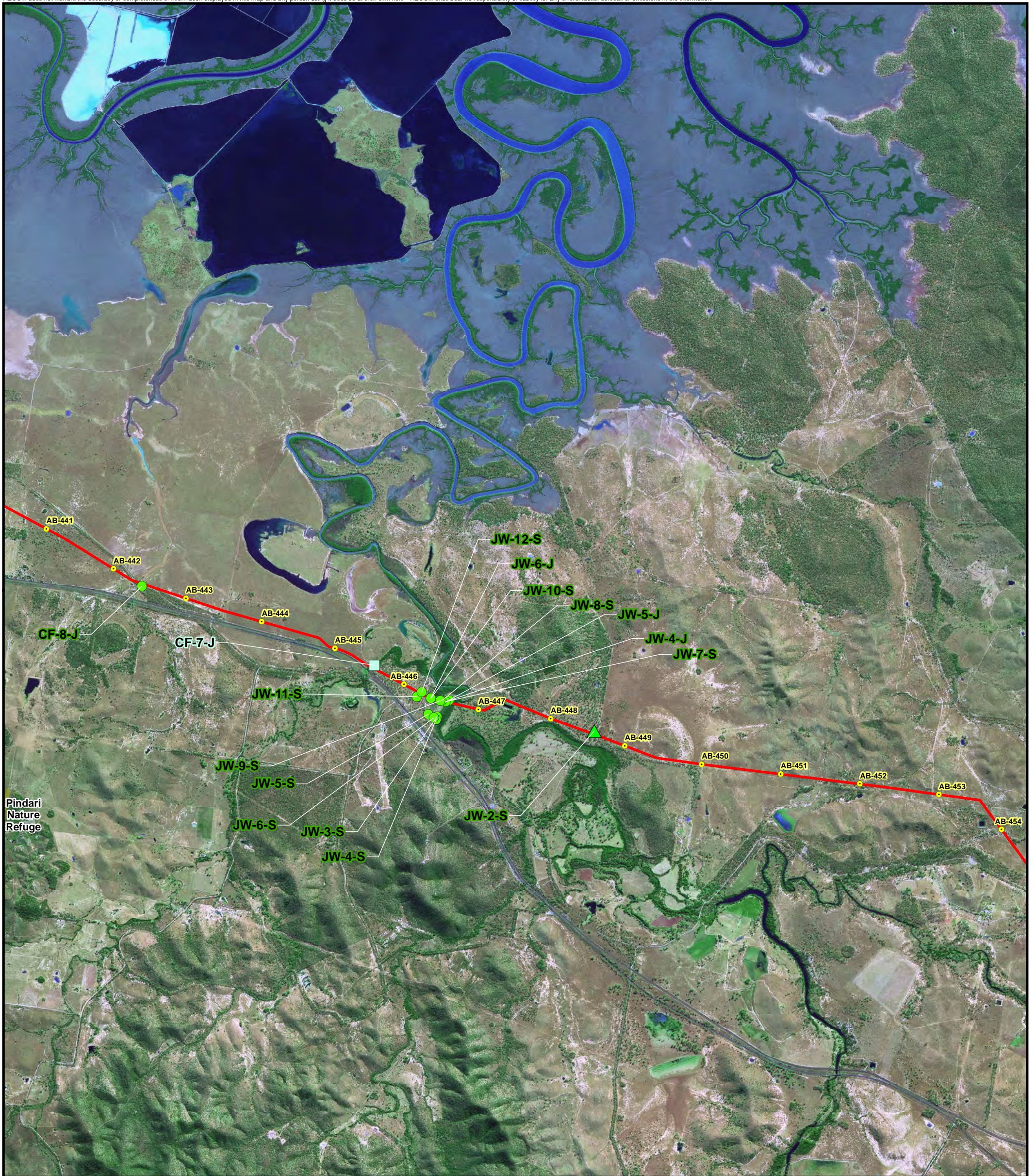
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- LEGEND**
- 1 Km Kilometrage Point
 - ABP Route Revision D
 - Nature Refuges

- Protected Areas**
- Estate Type**
- National Park
 - Resources Reserve
 - State Forest

- Field Survey Sites**
- Observation
 - ▲ Detailed
 - Wetland

Protected Areas and Field Survey Sites

Map 30 Of 41

Main Line

KP AB-441 To Kp AB-454

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

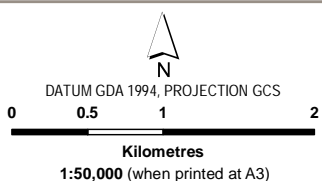
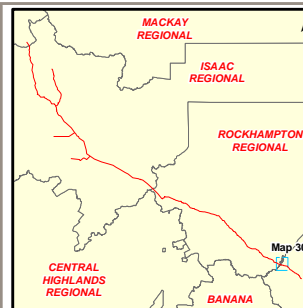
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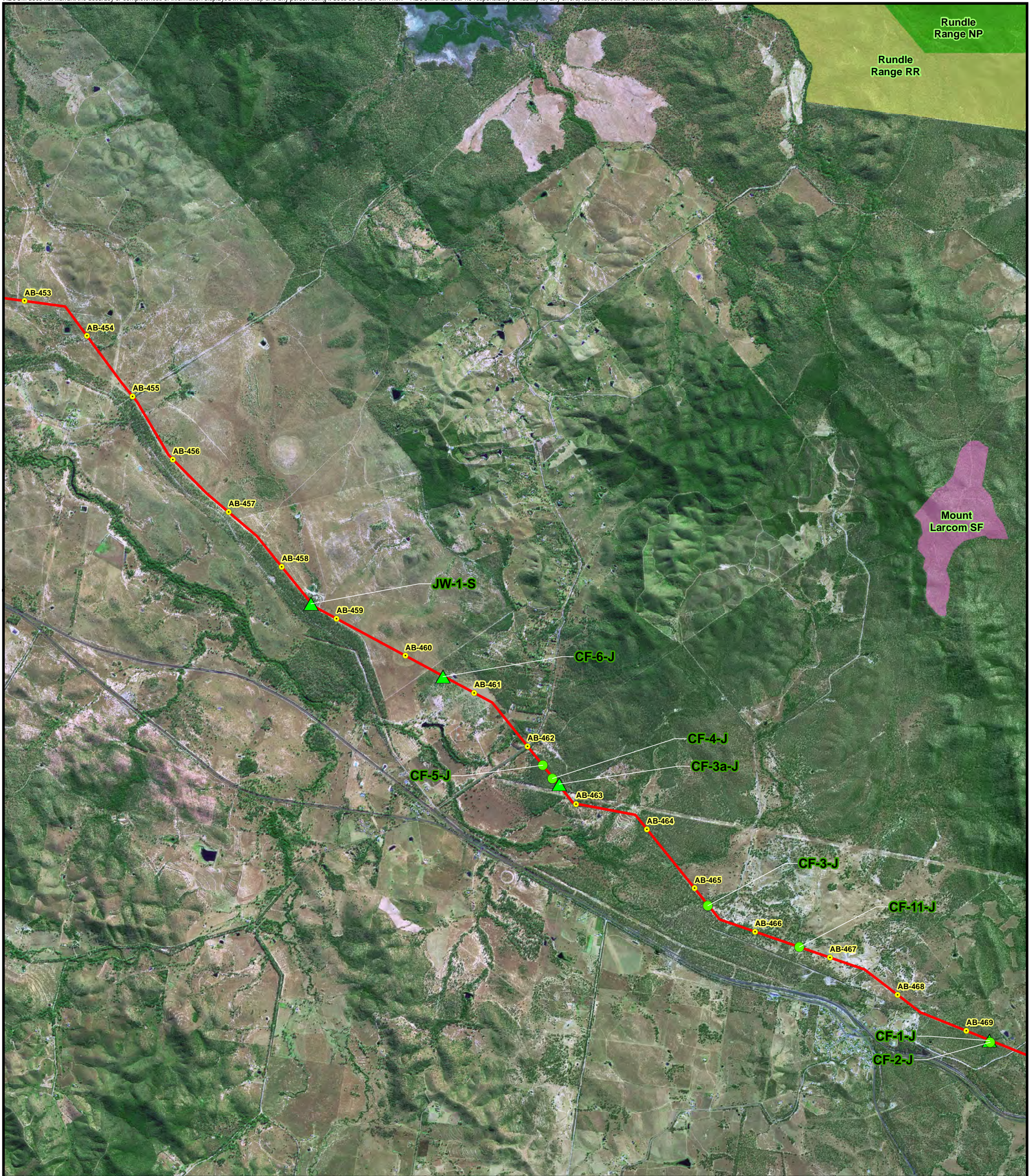
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- LEGEND**
- 1 Km Kilometrage Point
 - ABP Route Revision D
 - Nature Refuges

- Protected Areas**
- Estate Type**
- National Park
 - Resources Reserve
 - State Forest

- Field Survey Sites**
- Observation
 - ▲ Detailed
 - Wetland

Protected Areas and Field Survey Sites

Map 31 Of 41

Main Line

Kp AB-453 To Kp AB-469

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

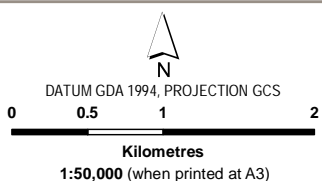
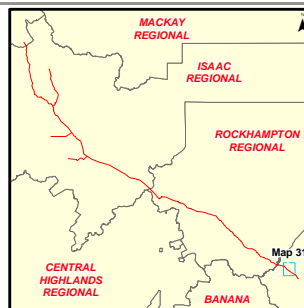
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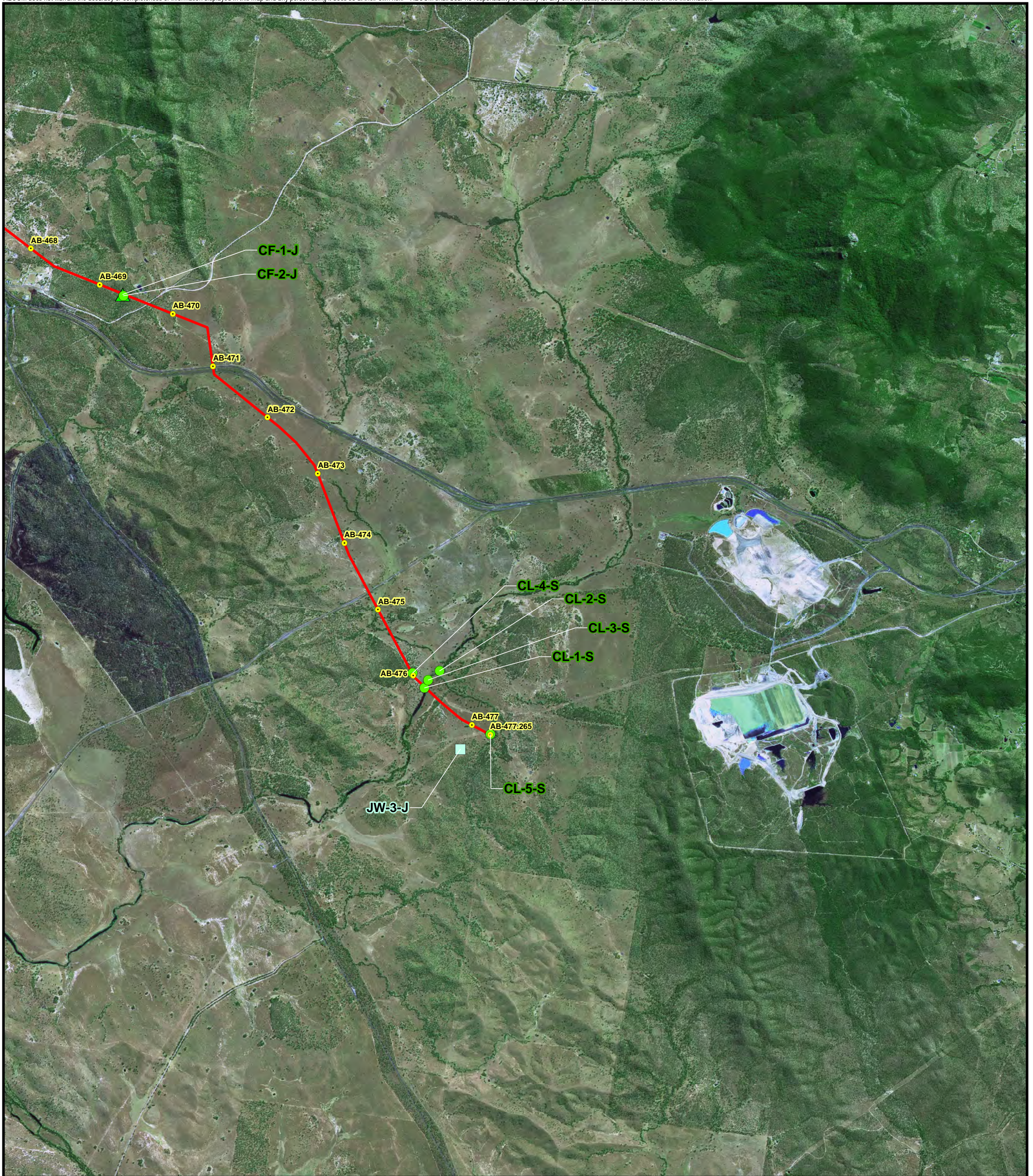
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Nature Refuges

Protected Areas

Estate Type

- National Park
- Resources Reserve
- State Forest

Field Survey Sites

- Observation
- ▲ Detailed
- Wetland

Protected Areas and Field Survey Sites

Map 32 Of 41

Main Line

Kp AB-468 To Kp AB-477.3

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

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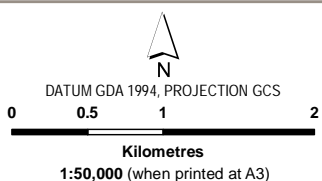


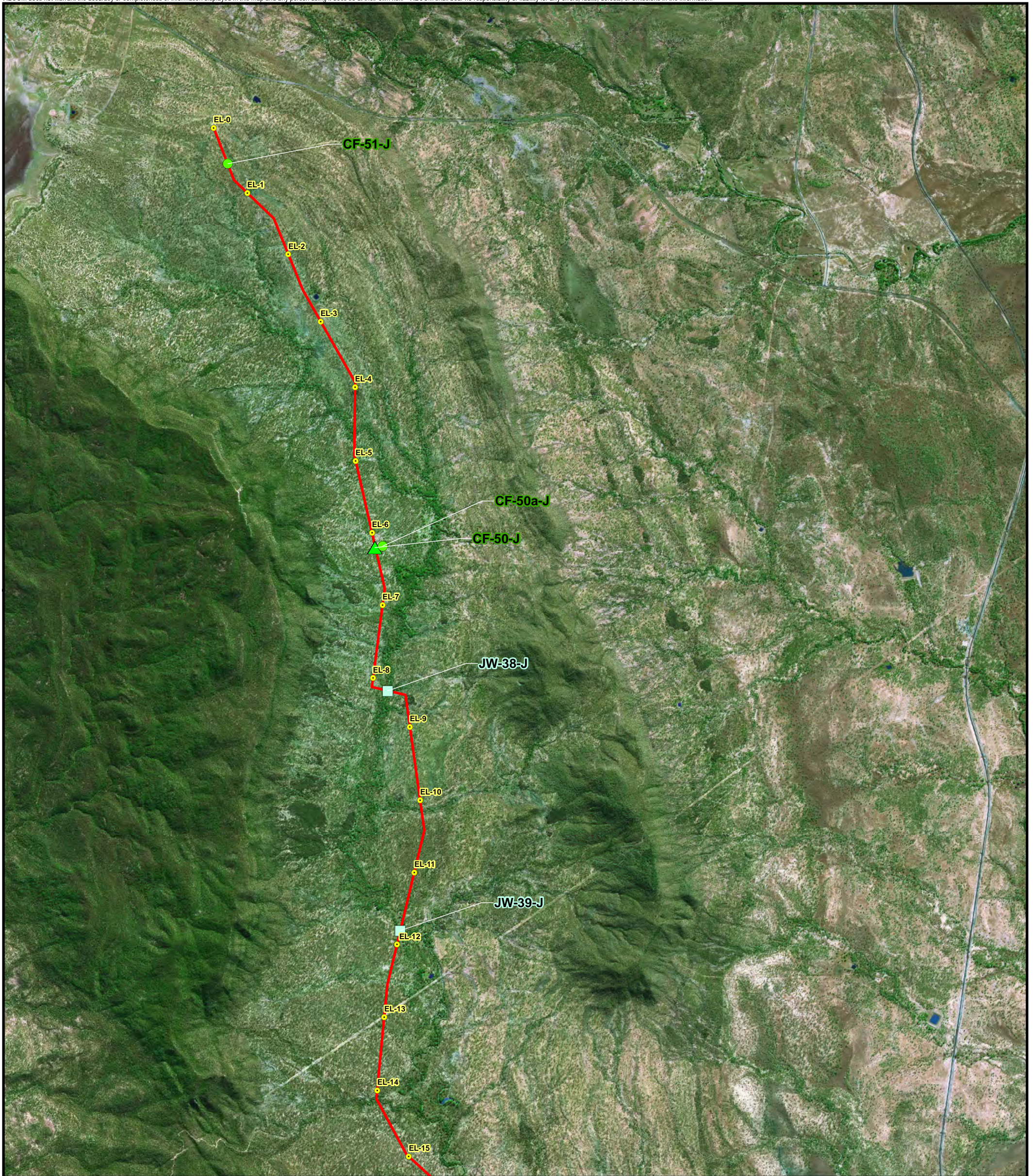
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- LEGEND**
- 1 Km Kilometrage Point
 - ABP Route Revision D
 - Nature Refuges

- Protected Areas**
- Estate Type**
- National Park
 - Resources Reserve
 - State Forest

- Field Survey Sites**
- Observation
 - ▲ Detailed
 - Wetland

Protected Areas and Field Survey Sites

Map 33 Of 41

Elphinstone Lateral

Kp EL-0 To Kp EL-15

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

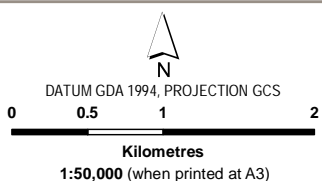
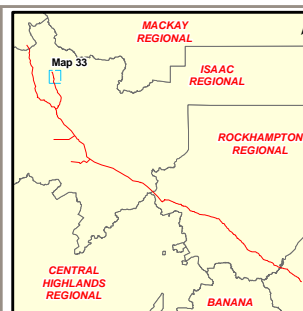
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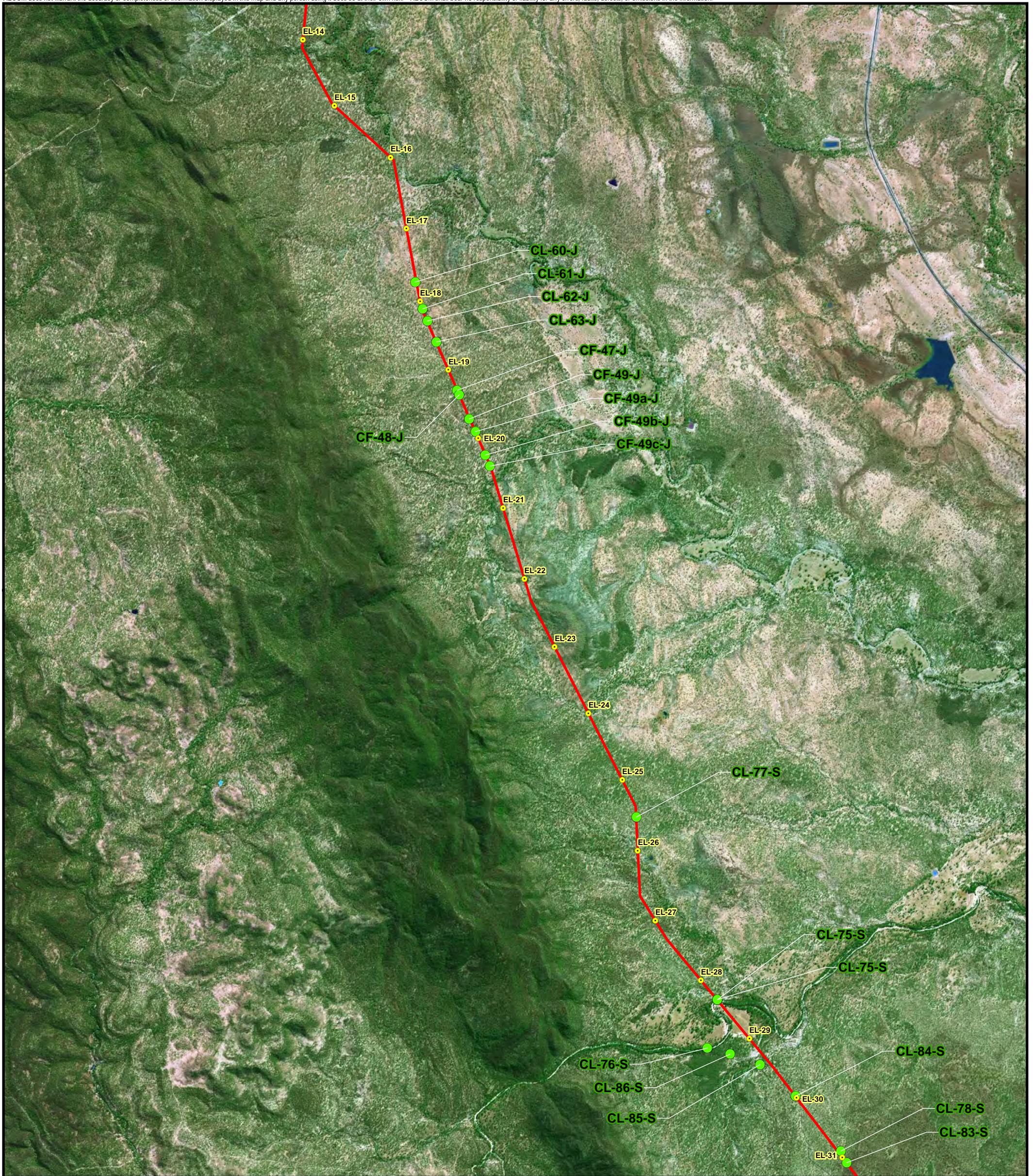
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- LEGEND**
- 1 Km Kilometrage Point
 - ABP Route Revision D
 - Nature Refuges

- Protected Areas**
- Estate Type**
- National Park
 - Resources Reserve
 - State Forest

- Field Survey Sites**
- Observation
 - ▲ Detailed
 - Wetland

Protected Areas and Field Survey Sites

Map 34 Of 41

Elphinstone Lateral

Kp EL-14 To Kp EL-31

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

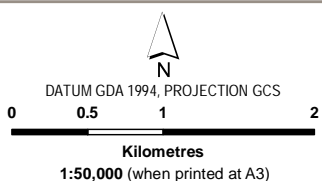
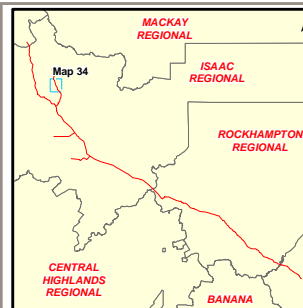
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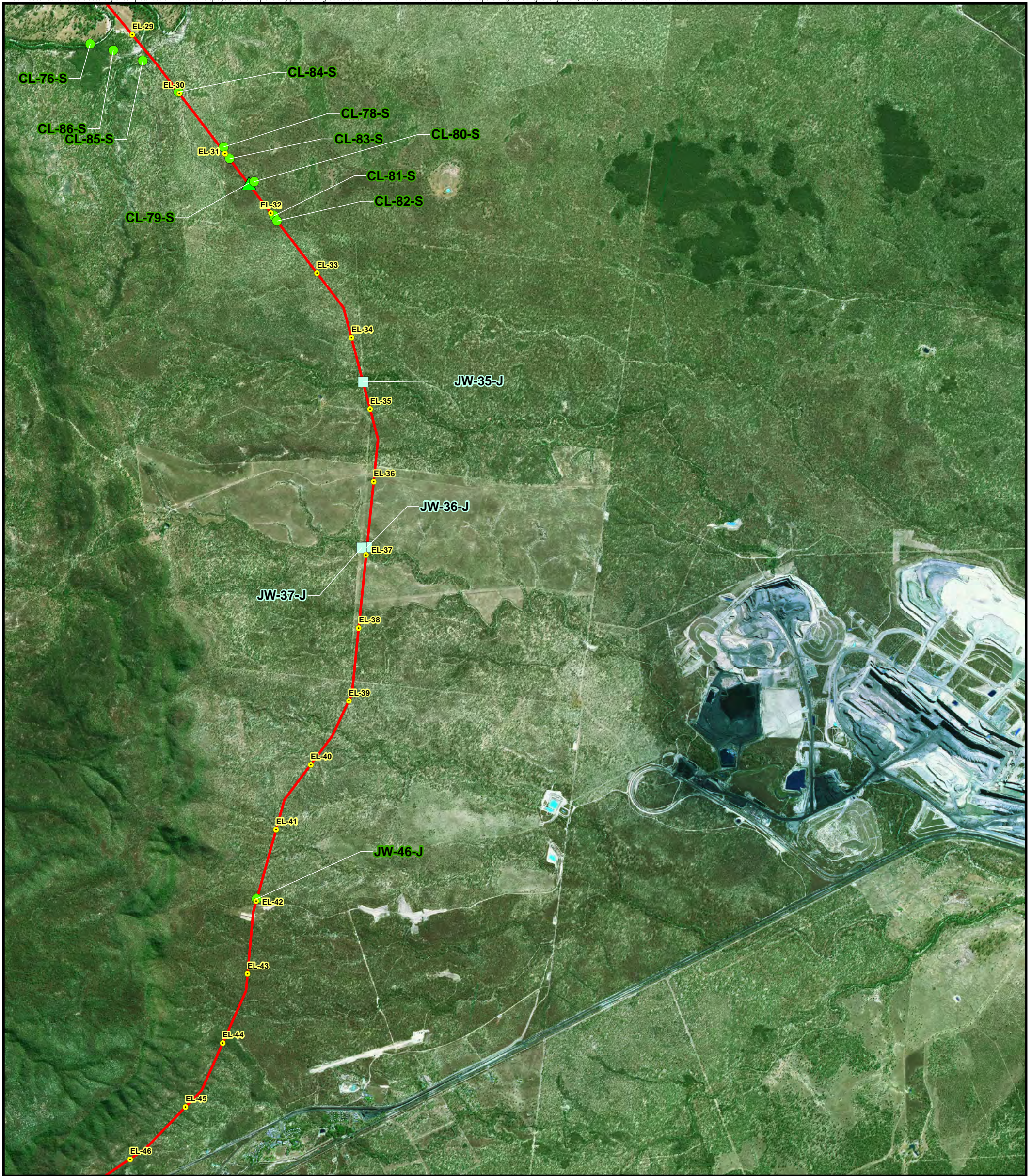
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Nature Refuges

Protected Areas

- Estate Type**
- National Park
 - Resources Reserve
 - State Forest

Field Survey Sites

- Observation
- ▲ Detailed
- Wetland

Protected Areas and Field Survey Sites

Map 35 Of 41

Elphinstone Lateral

Kp EL-29 To EL-46

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

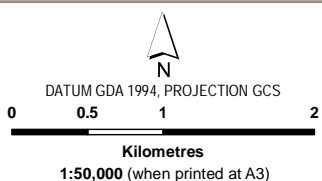
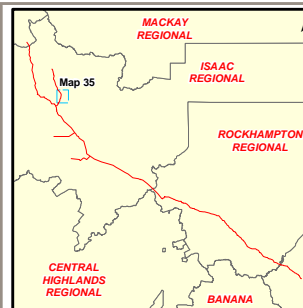
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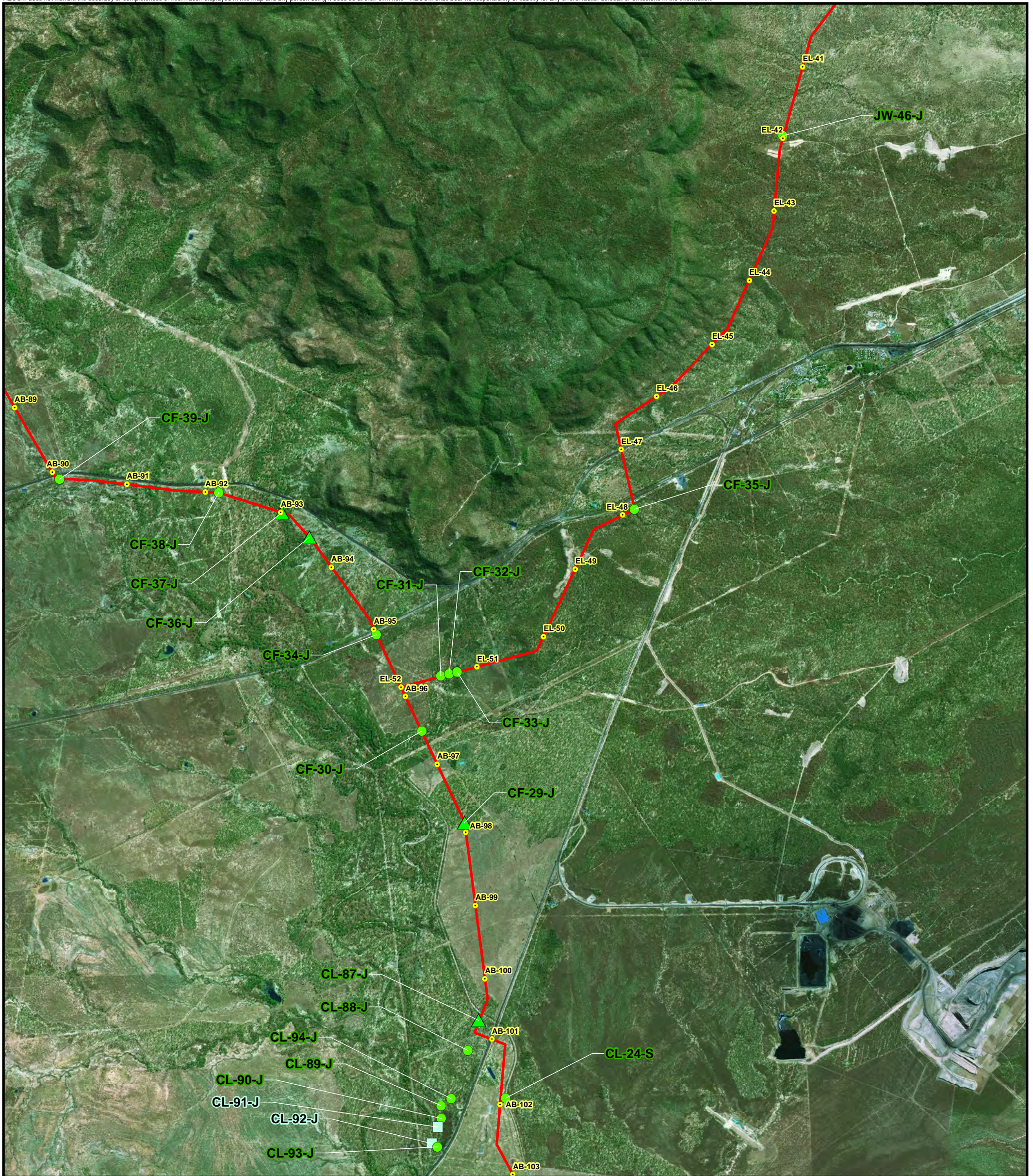
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Nature Refuges

Protected Areas

- Estate Type**
- National Park
 - Resources Reserve
 - State Forest

Field Survey Sites

- Observation
- ▲ Detailed
- Wetland

Protected Areas and Field Survey Sites

Map 36 Of 41

Elphinstone Lateral

Kp EL-41 To Kp EL-52

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

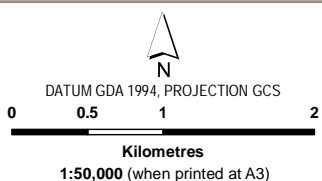
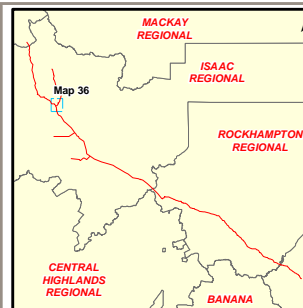
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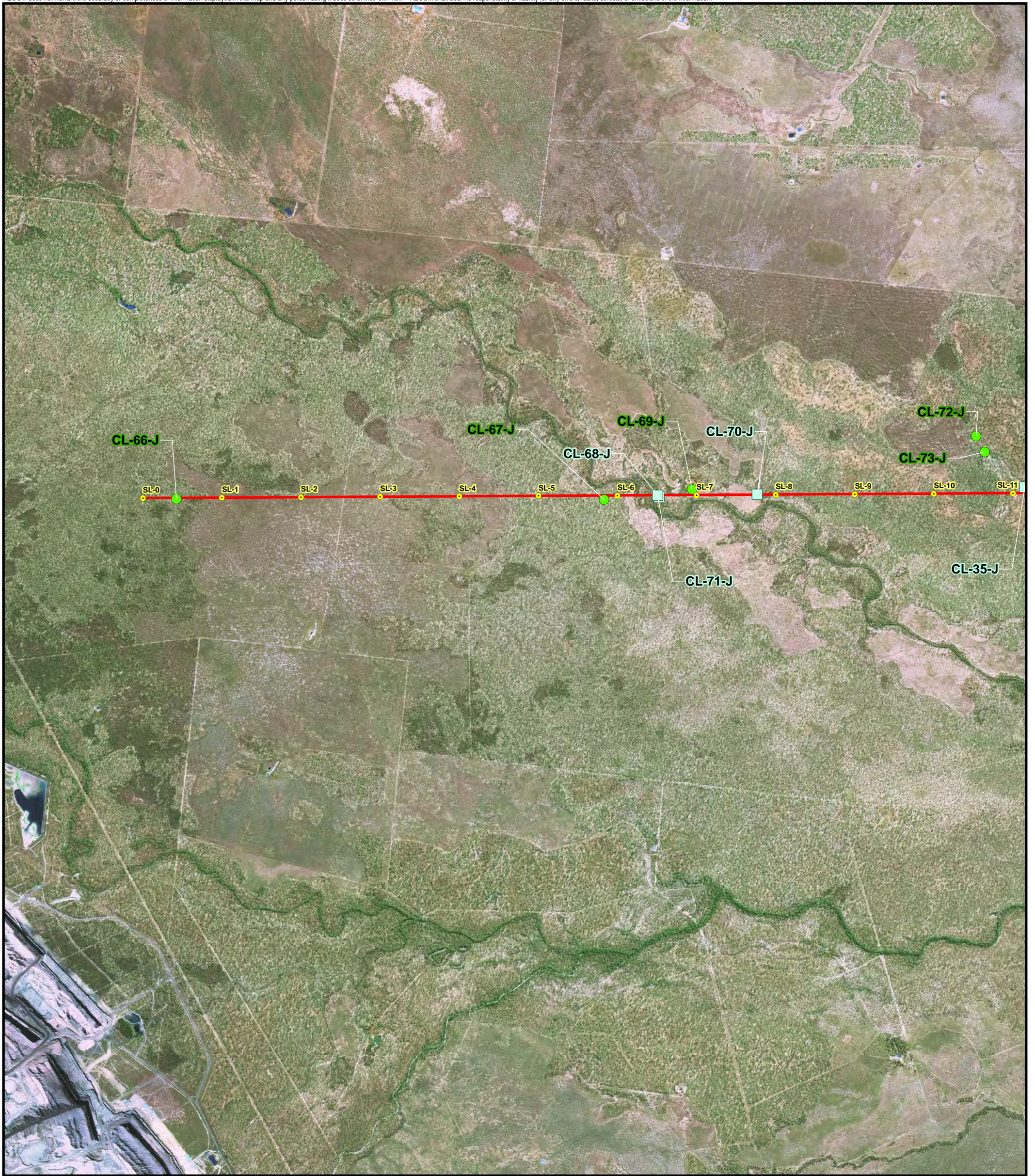
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Nature Refuges

Protected Areas

Estate Type

- National Park
- Resources Reserve
- State Forest

Field Survey Sites

- Observation
- ▲ Detailed
- Wetland

Protected Areas and Field Survey Sites

Map 37 Of 41

Saraji Lateral

Kp SL-0 To Kp SL-11

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

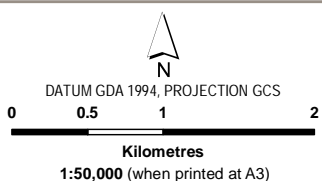
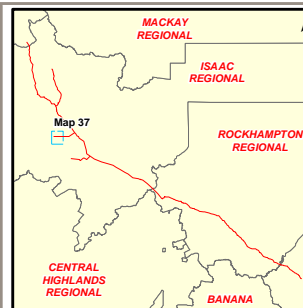
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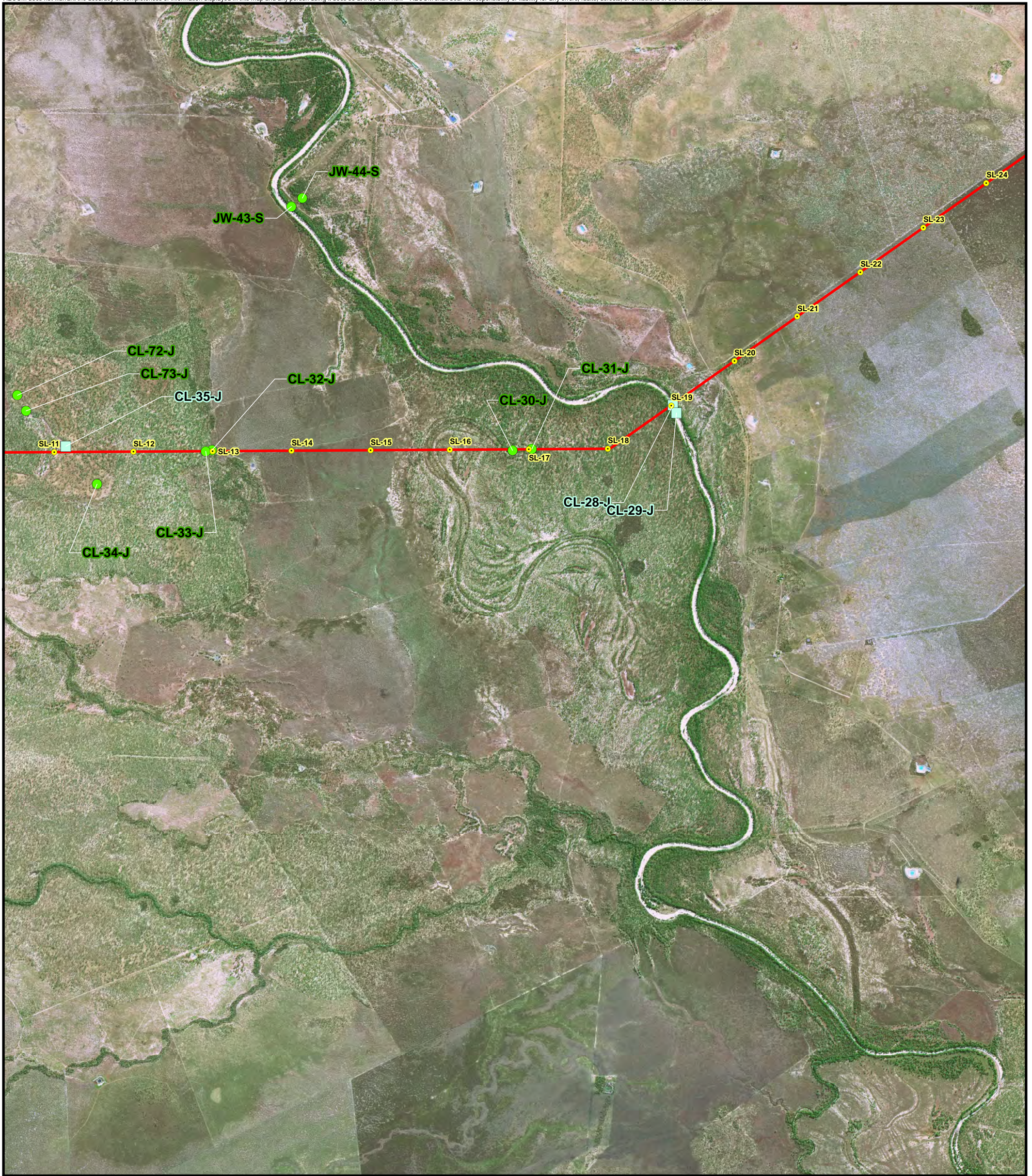
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Nature Refuges

Protected Areas

- Estate Type**
- National Park
 - Resources Reserve
 - State Forest

Field Survey Sites

- Observation
- ▲ Detailed
- Wetland

Protected Areas and Field Survey Sites

Map 38 Of 41

Saraji Lateral

Kp SL-11 To Kp SL-24

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

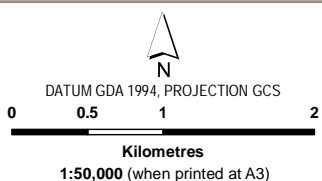
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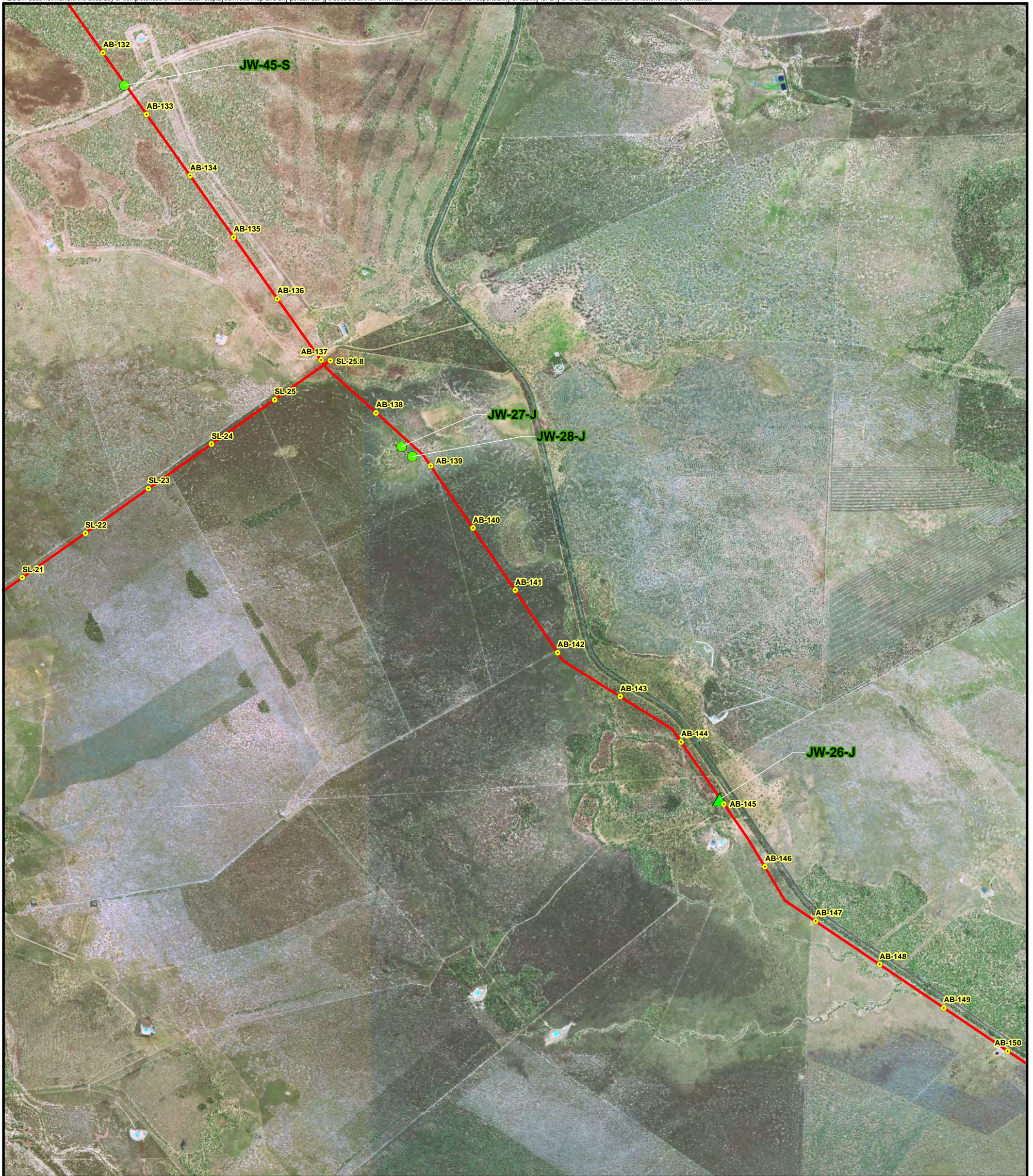
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Nature Refuges

Protected Areas

Estate Type

- National Park
- Resources Reserve
- State Forest

Field Survey Sites

- Observation
- ▲ Detailed
- Wetland

Protected Areas and Field Survey Sites

Map 39 Of 41

Saraji Lateral

Kp SL-21 To Kp SL-25.8

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

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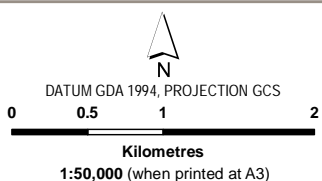
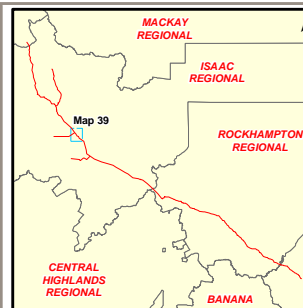


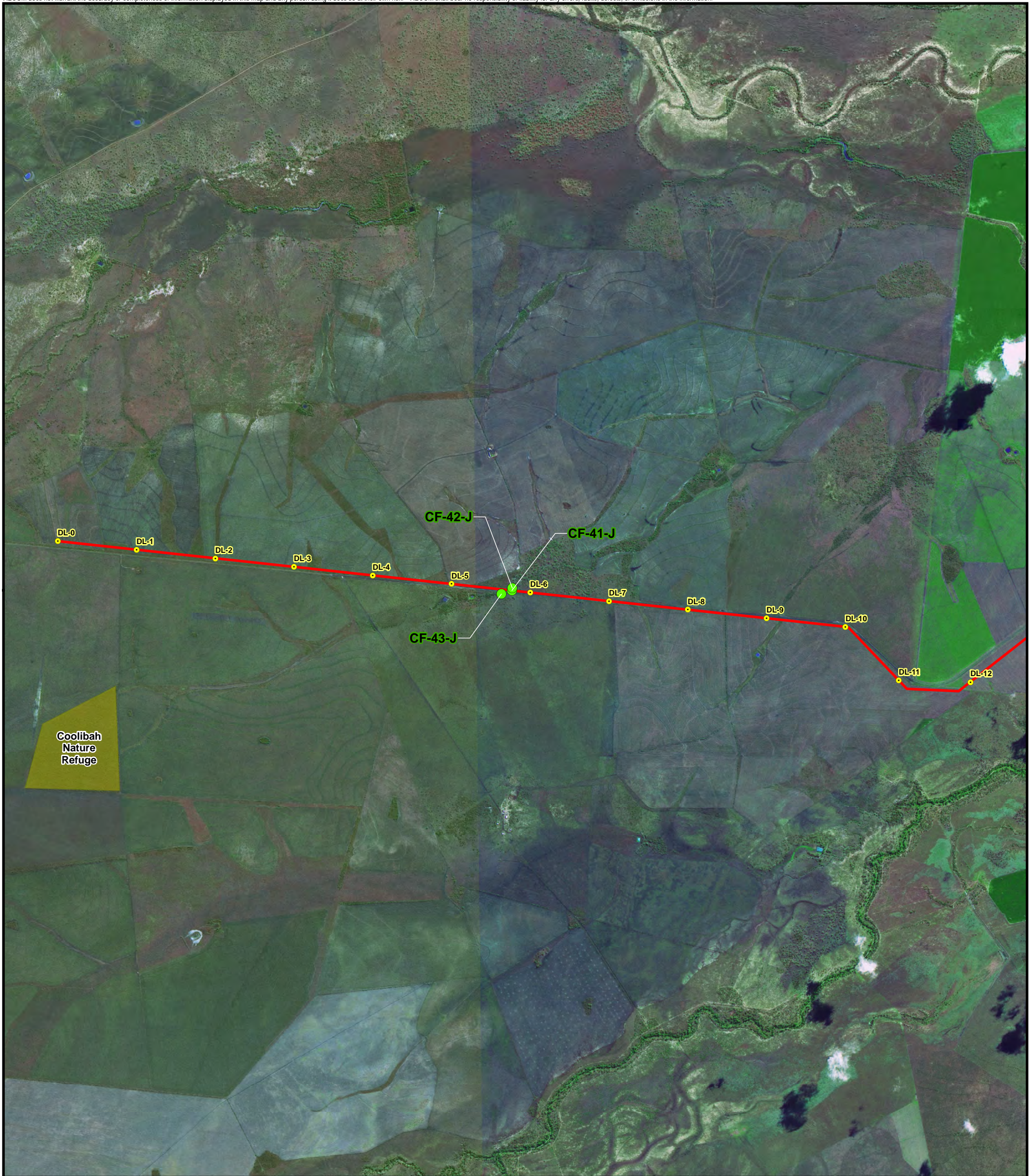
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- LEGEND**
- 1 Km Kilometrage Point
 - ABP Route Revision D
 - Nature Refuges

- Protected Areas**
- Estate Type**
- National Park
 - Resources Reserve
 - State Forest

- Field Survey Sites**
- Observation
 - ▲ Detailed
 - Wetland

Protected Areas and Field Survey Sites

Map 40 Of 41

Dysart Lateral

Kp DL-0 To Kp DL-12

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

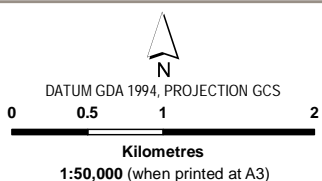
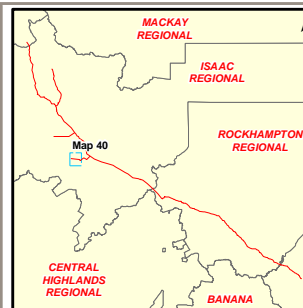
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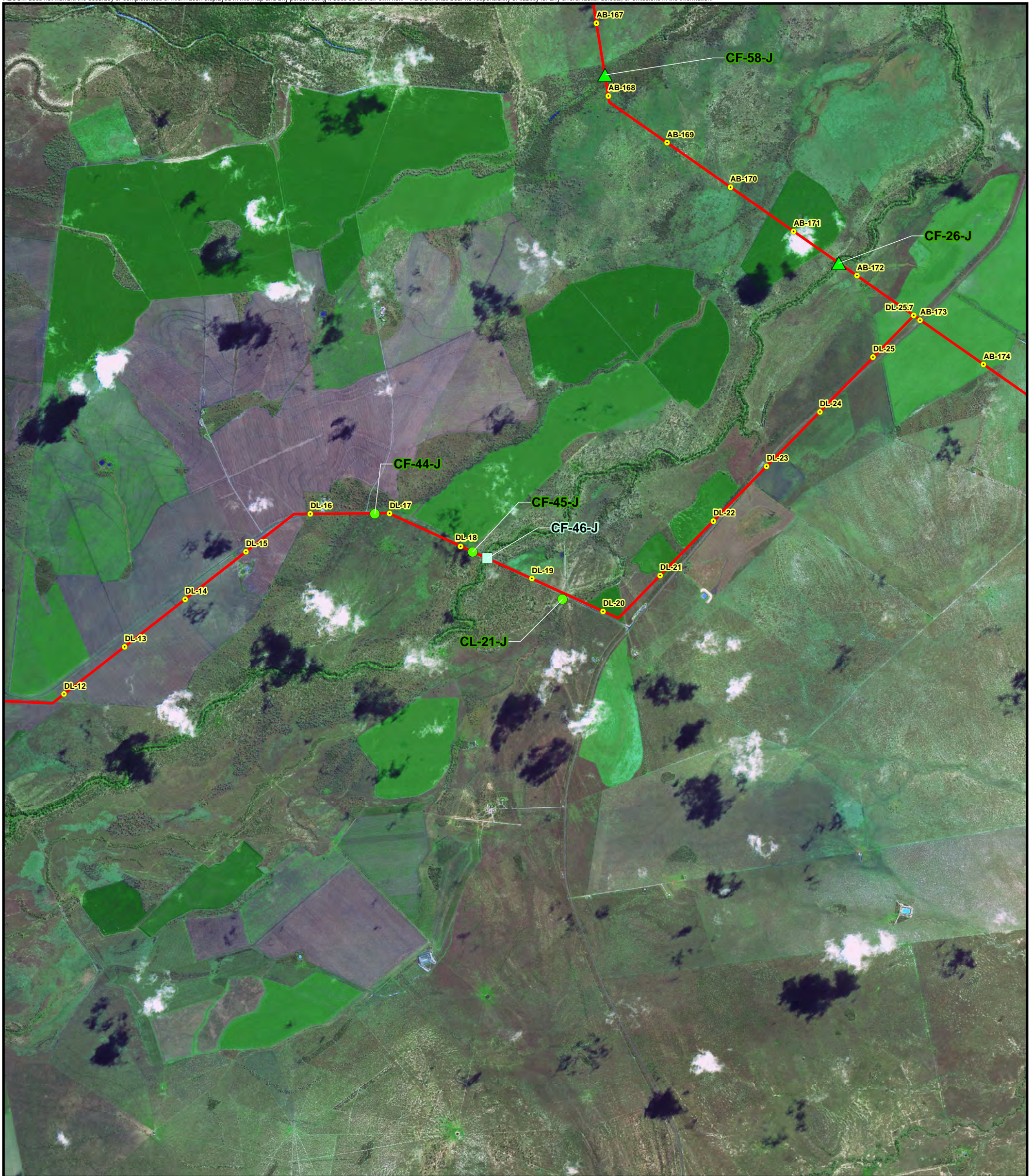
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Nature Refuges

Protected Areas

Estate Type

- National Park
- Resources Reserve
- State Forest

Field Survey Sites

- Observation
- ▲ Detailed
- Wetland

Protected Areas and Field Survey Sites

Map 41 Of 41

Dysart Lateral

Kp DL-12 To Kp DL-25.7

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

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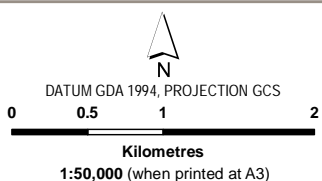
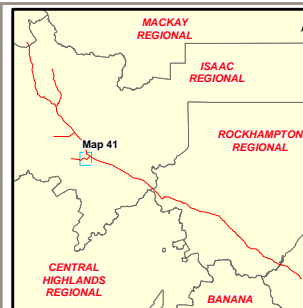


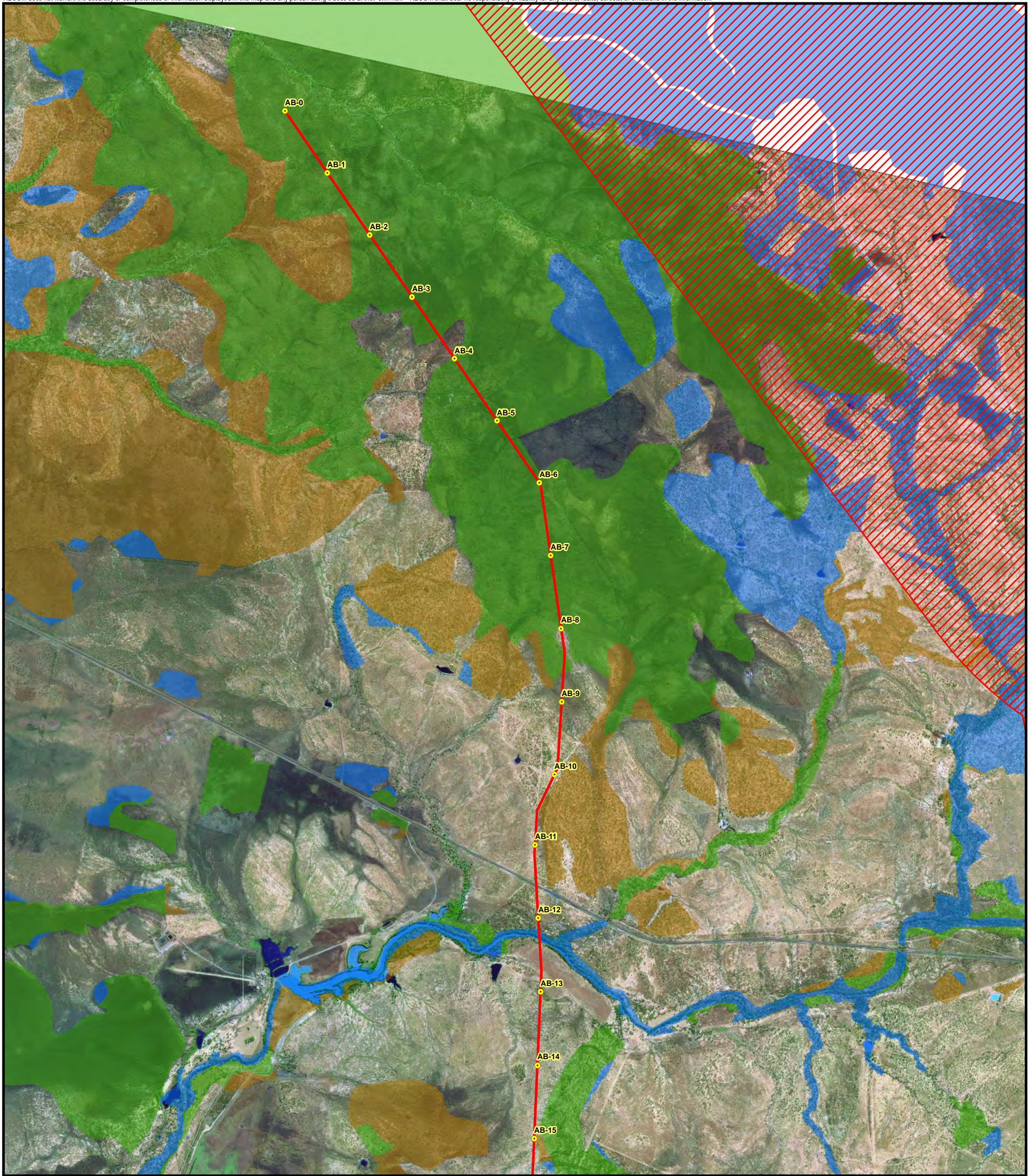
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
 - Protected Areas of Queensland (estate), Nature Refuges and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011

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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Protected Flora Species
- Corridor Buffers Brigalow Belt v1-3
- State
- Regional
- BRB Biodiversity Significance v1-3**
- State Habitat for EVR taxa
- State
- Regional
- Local or Other Values
- Non Bioregion Ecosystem

Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

Map 1 Of 41

Main Line

Kp AB-0 To Kp AB-15

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

3 - 1

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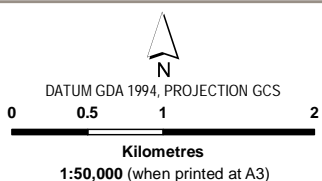
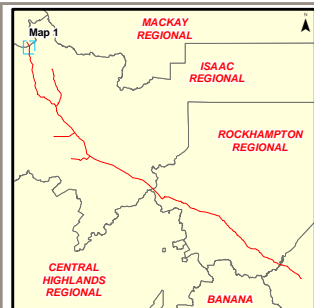


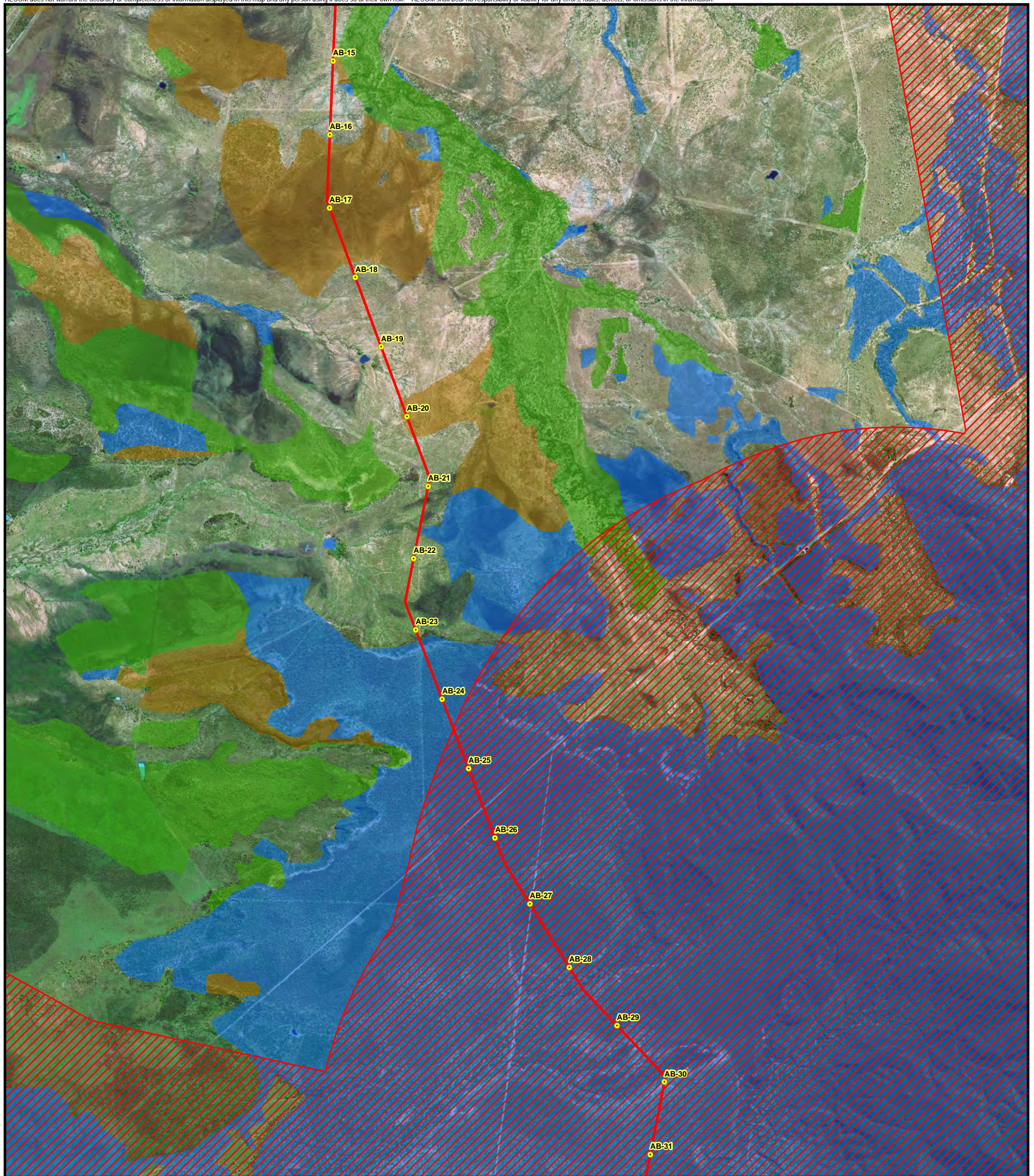
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
 - Corridor Buffers Brigalow Belt v1-3, Corridor Vegetation Brigalow Belt v1-3 and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011
 - Protected Flora Species: © The State of Queensland (Department of Environment and Resource Management - Queensland Herbarium) 2011

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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Protected Flora Species
- State
- Regional

BRB Biodiversity Significance v1-3

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

Corridor Buffers Brigalow Belt v1-3

Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

Map 2 Of 41

Main Line
Kp AB-15 To Kp AB-31

Arrow Bowen Pipeline (ABP)
ABP - EIS - Flora Report
Isaac to Gladstone, Qld

Map
3 - 2

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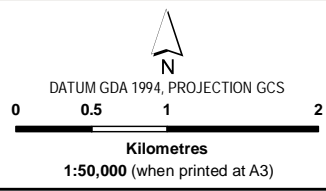
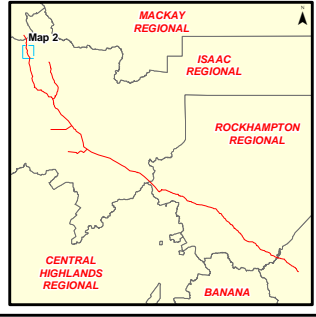
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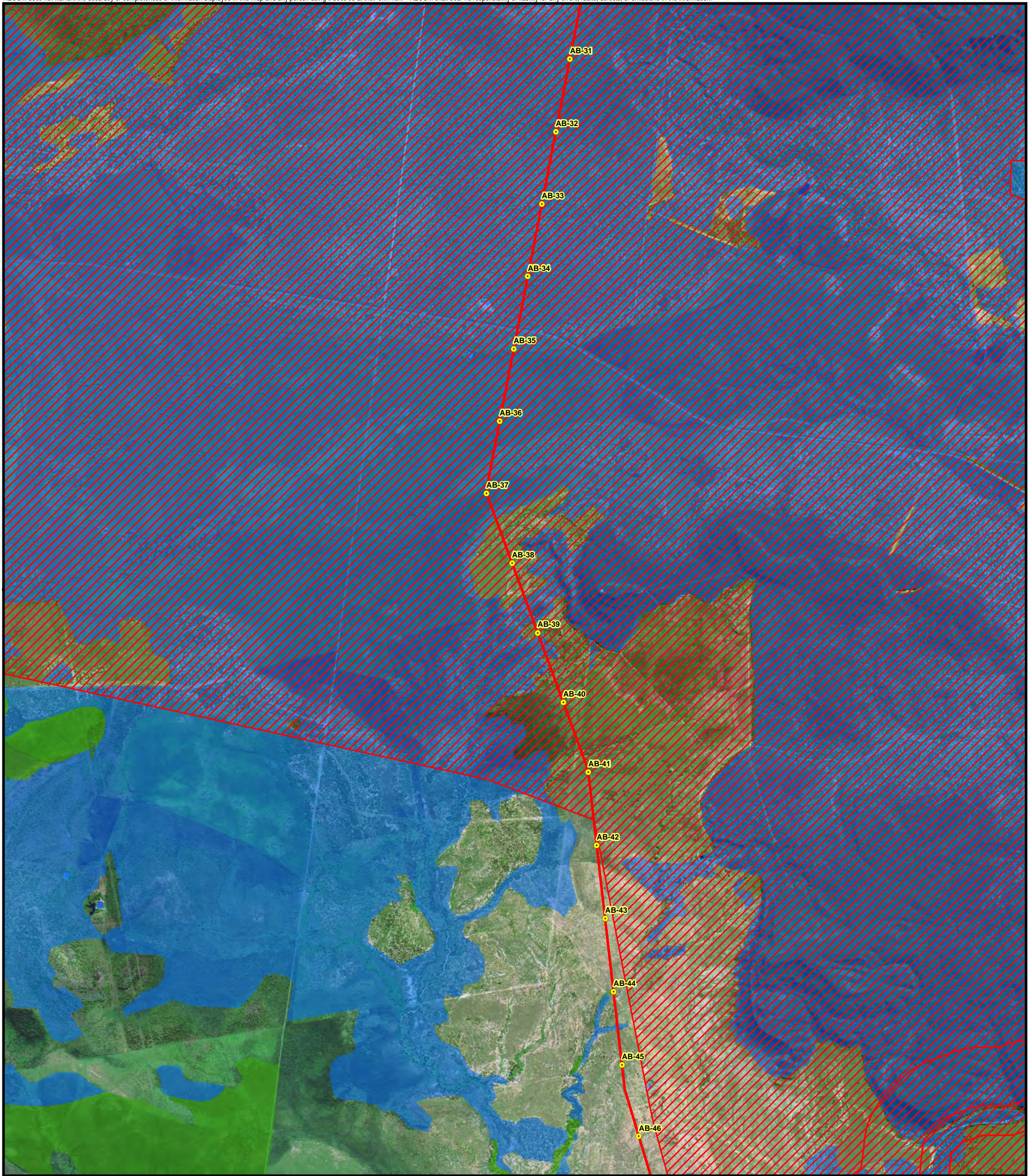
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
- Corridor Buffers Brigalow Belt v1-3, Corridor Vegetation Brigalow Belt v1-3 and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Protected Flora Species
- Corridor Buffers Brigalow Belt v1-3
- State
- Regional
- BRB Biodiversity Significance v1-3**
- State Habitat for EVR taxa
- State
- Regional
- Local or Other Values
- Non Bioregion Ecosystem

Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

Map 3 Of 41

Main Line

Kp AB-31 To Kp AB-46

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

3 - 3

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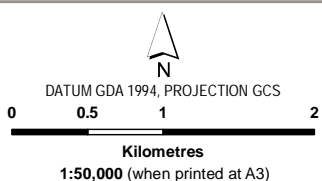
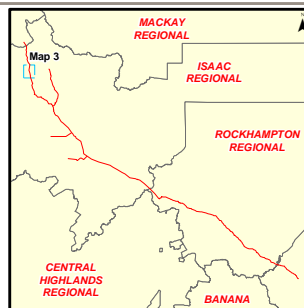


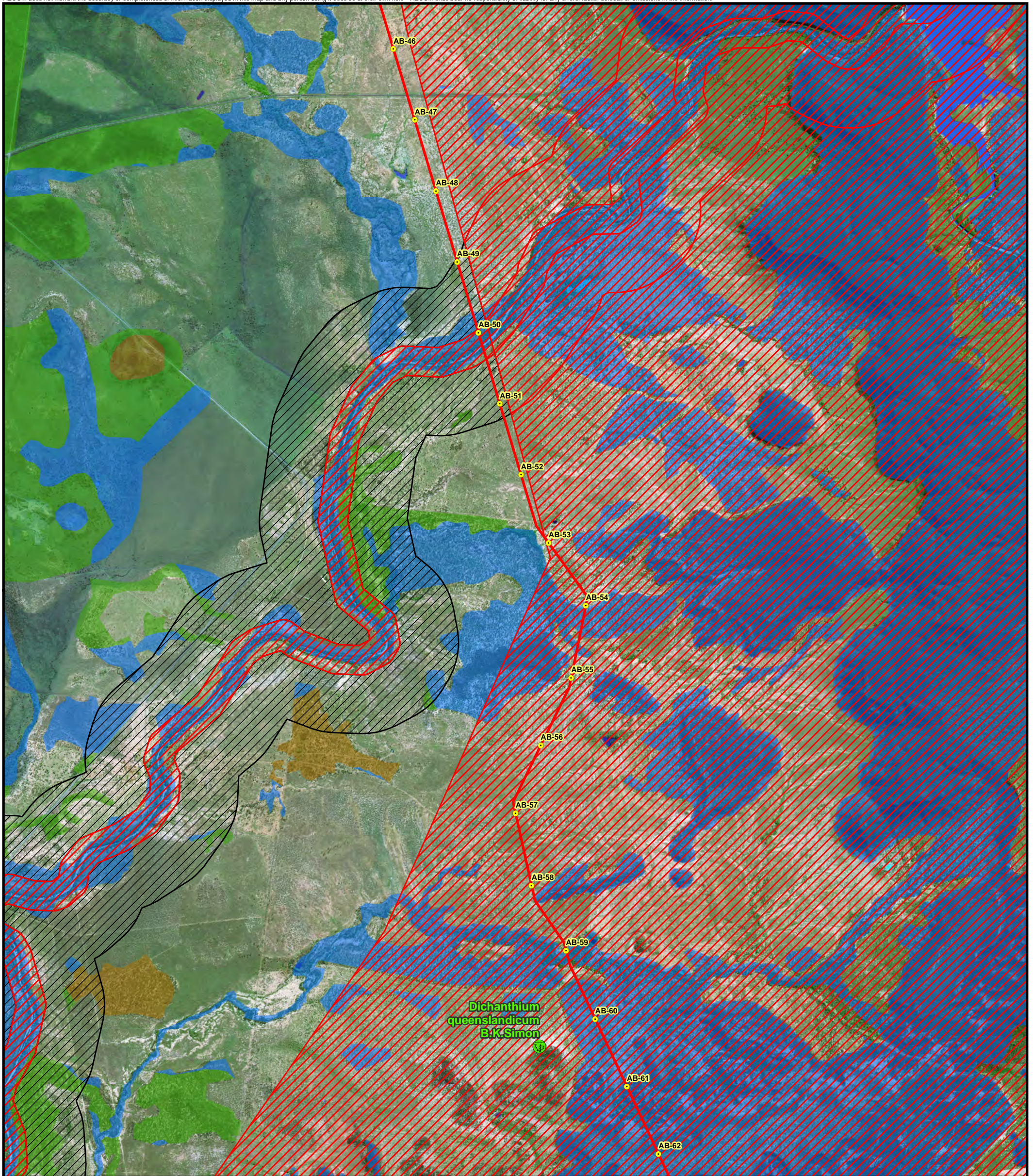
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
- Corridor Buffers Brigalow Belt v1-3, Corridor Vegetation Brigalow Belt v1-3 and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Protected Flora Species
- Corridor Buffers Brigalow Belt v1-3
- State
- Regional
- BRB Biodiversity Significance v1-3**
- State Habitat for EVR taxa
- State
- Regional
- Local or Other Values
- Non Bioregion Ecosystem

Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

Map 4 Of 41

Main Line

Kp AB-46 To Kp AB-62

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

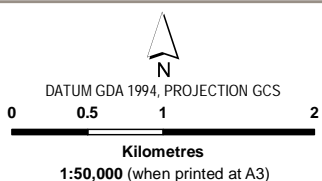
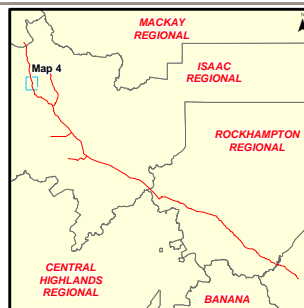
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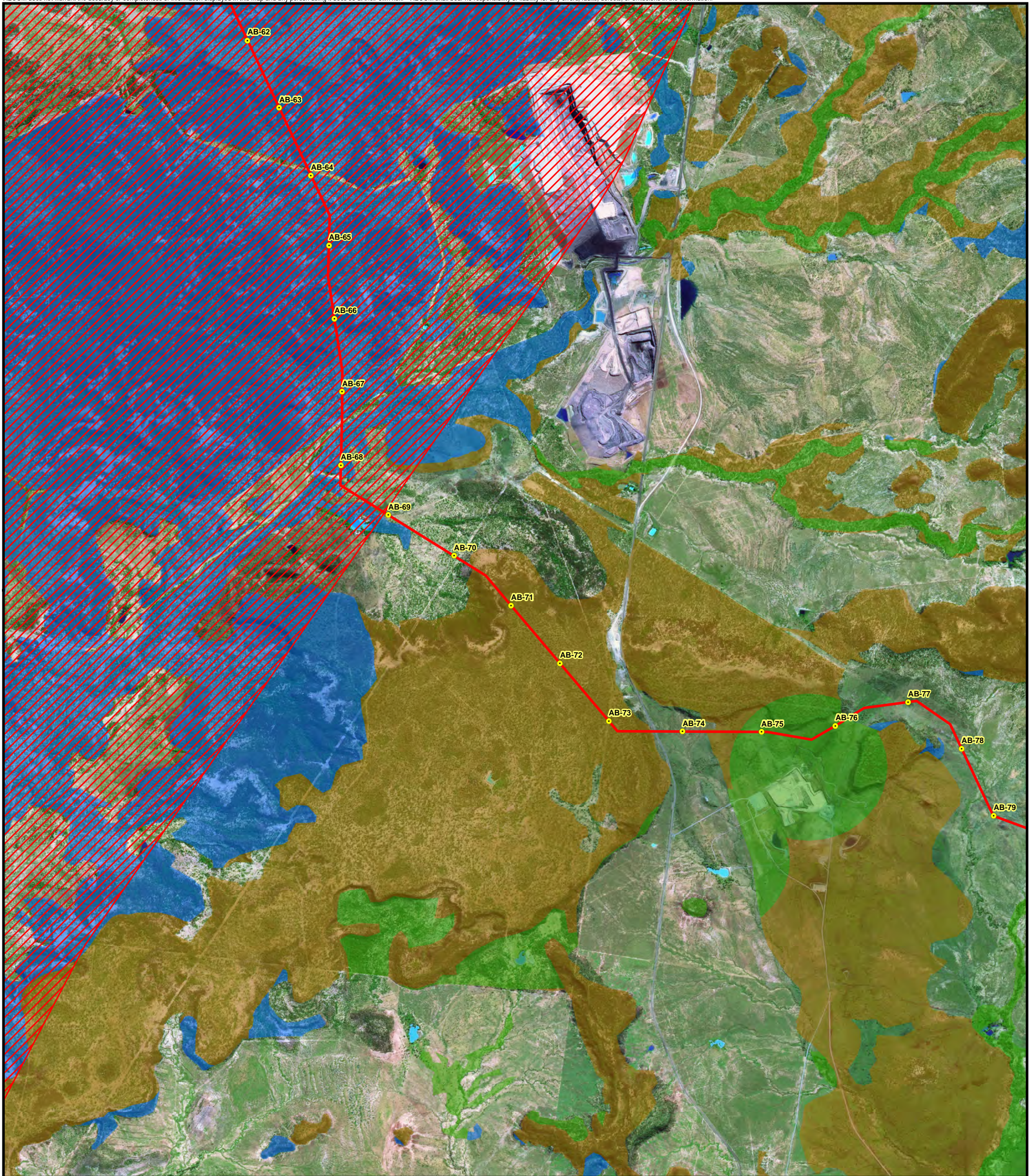
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Data Sources:
 - Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
 - Corridor Buffers Brigalow Belt v1-3, Corridor Vegetation Brigalow Belt v1-3 and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Protected Flora Species
- Corridor Buffers Brigalow Belt v1-3
- State
- Regional
- BRB Biodiversity Significance v1-3**
- State Habitat for EVR taxa
- State
- Regional
- Local or Other Values
- Non Bioregion Ecosystem

Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

Map 5 Of 41

Main Line

Kp AB-61 To Kp AB-79

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

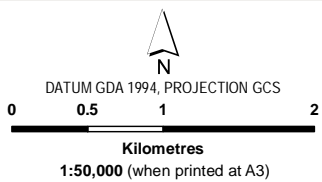
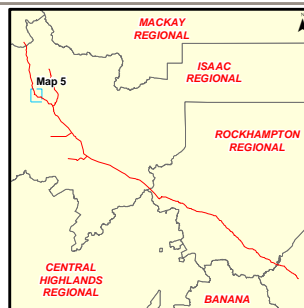
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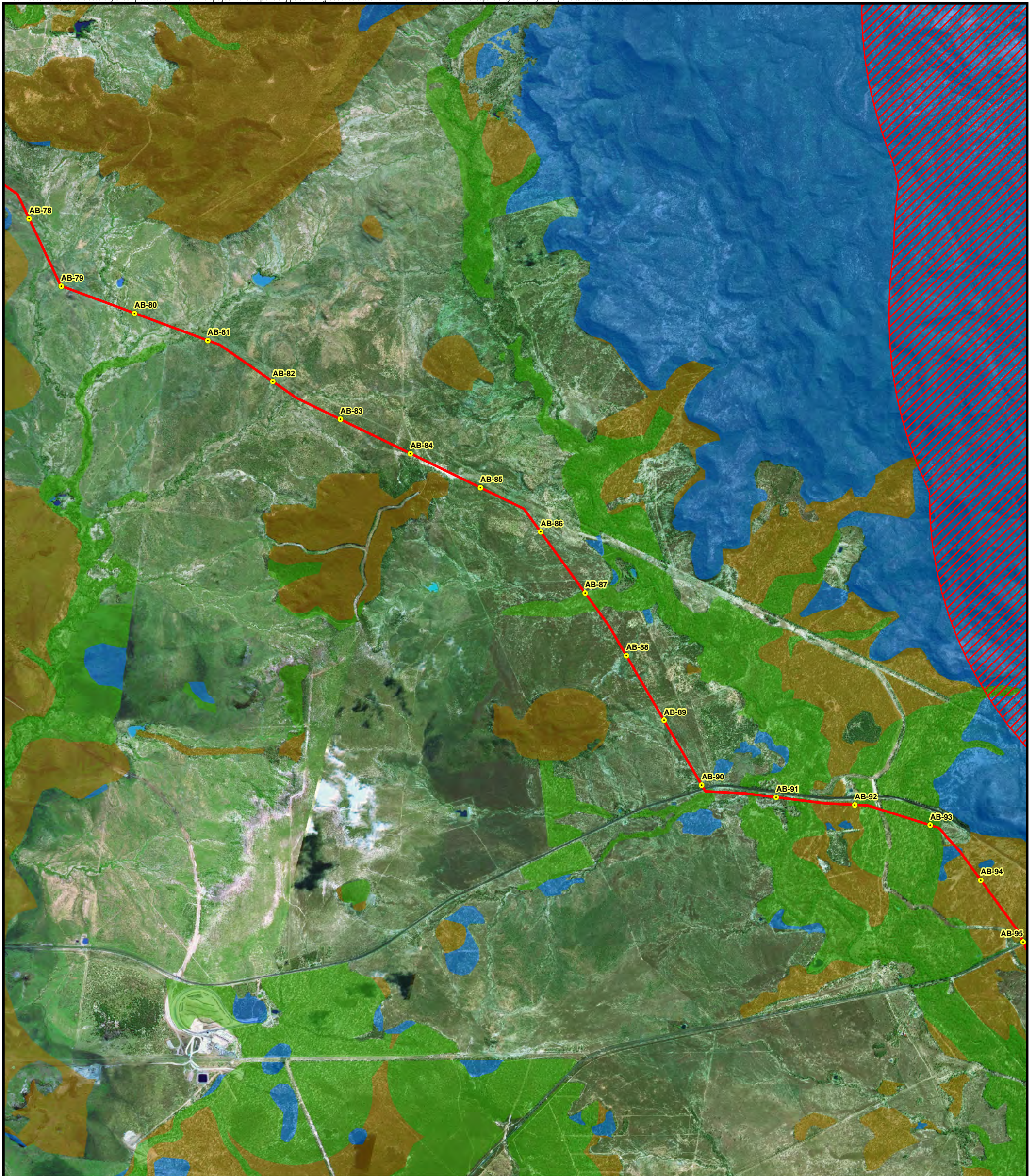
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Data Sources:
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Protected Flora Species
- Corridor Buffers Brigalow Belt v1-3
- State
- Regional
- BRB Biodiversity Significance v1-3**
- State Habitat for EVR taxa
- State
- Regional
- Local or Other Values
- Non Bioregion Ecosystem

Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

Map 6 Of 41

Main Line

Kp AB-78 To Kp AB-94

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

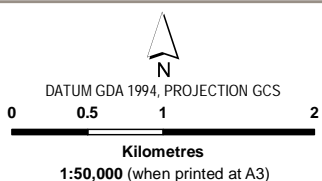
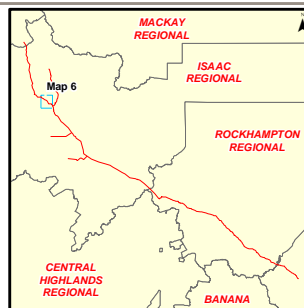
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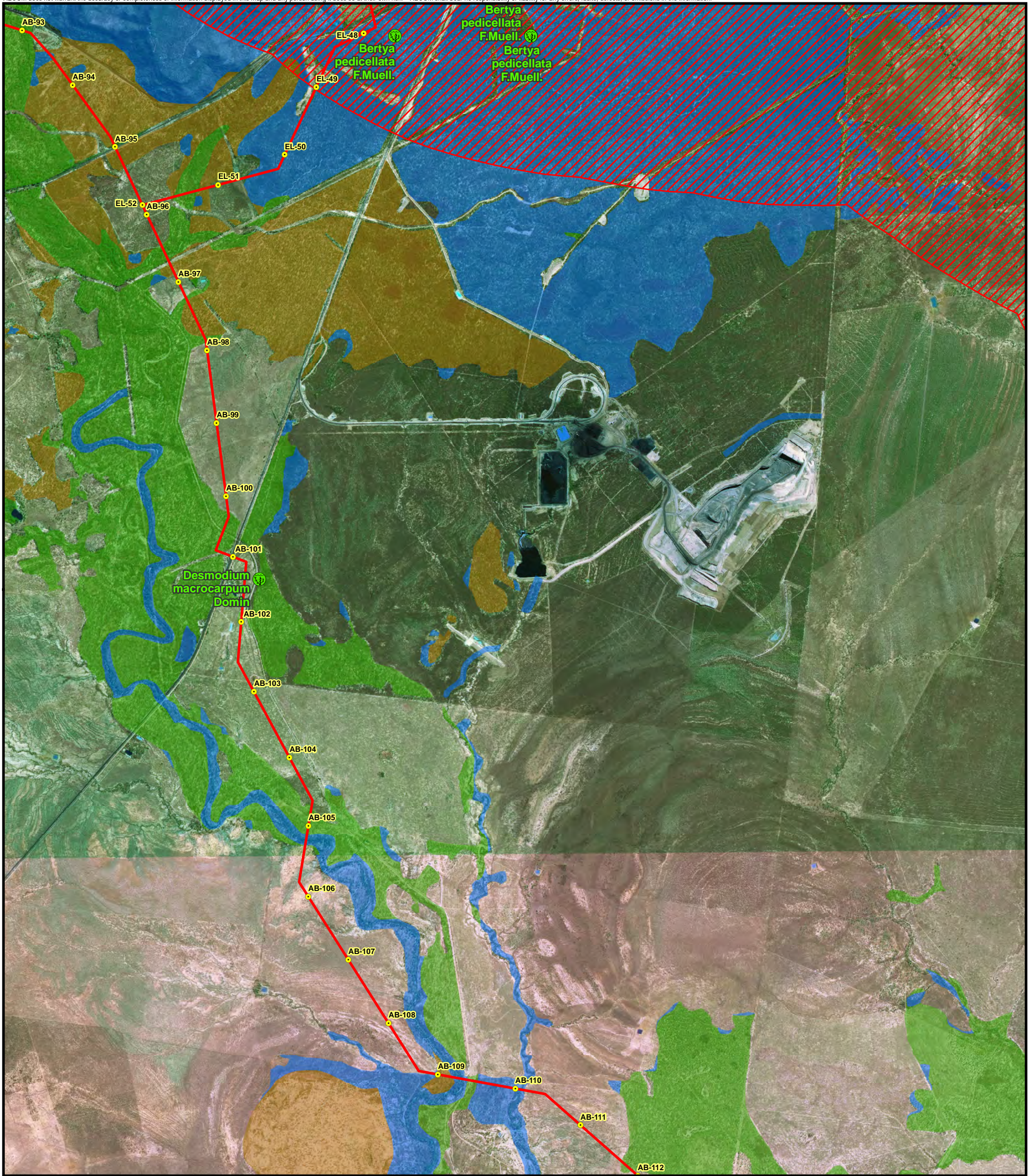
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Data Sources:
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- 🌳 Protected Flora Species
- Corridor Buffers Brigalow Belt v1-3
- State
- Regional
- BRB Biodiversity Significance v1-3**
- State Habitat for EVR taxa
- State
- Regional
- Local or Other Values
- Non Bioregion Ecosystem

Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

Map 7 Of 41

Main Line

Kp AB-94 To Kp AB-111

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

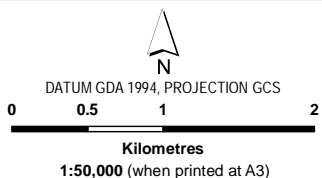
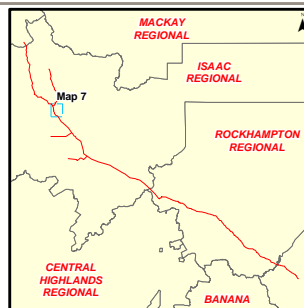
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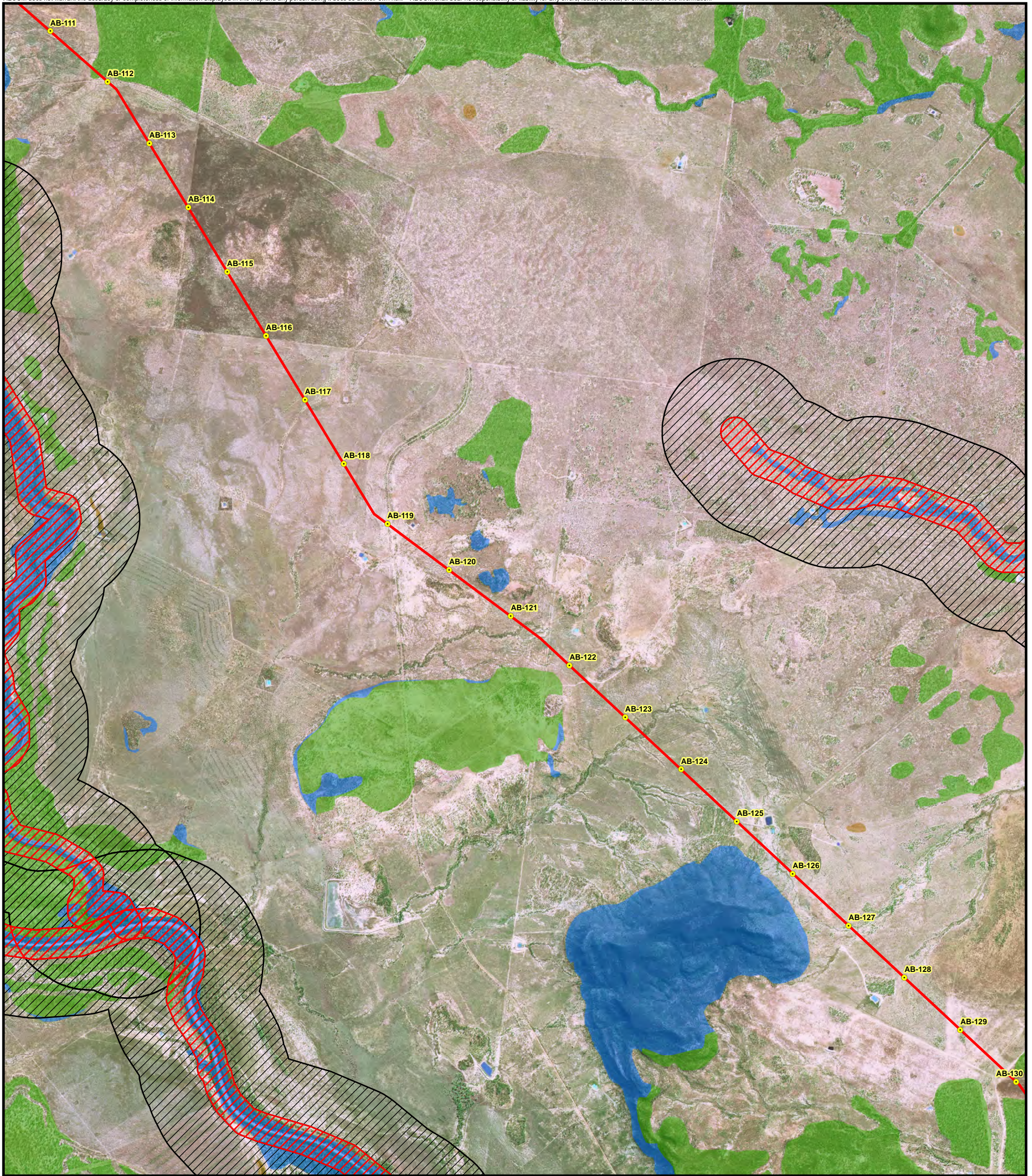
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Data Sources:
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Protected Flora Species
- Corridor Buffers Brigalow Belt v1-3
 - State
 - Regional
- BRB Biodiversity Significance v1-3**
 - State Habitat for EVR taxa
 - State
 - Regional
 - Local or Other Values
 - Non Bioregion Ecosystem

Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

Map 8 Of 41

Main Line
Kp AB-111 To Kp AB-129

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map
3 - 8

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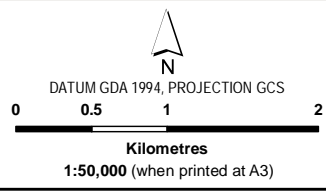
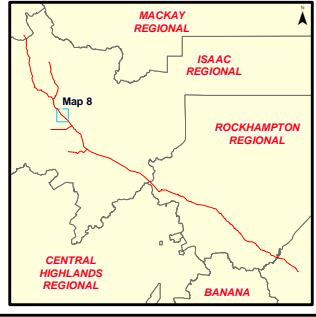


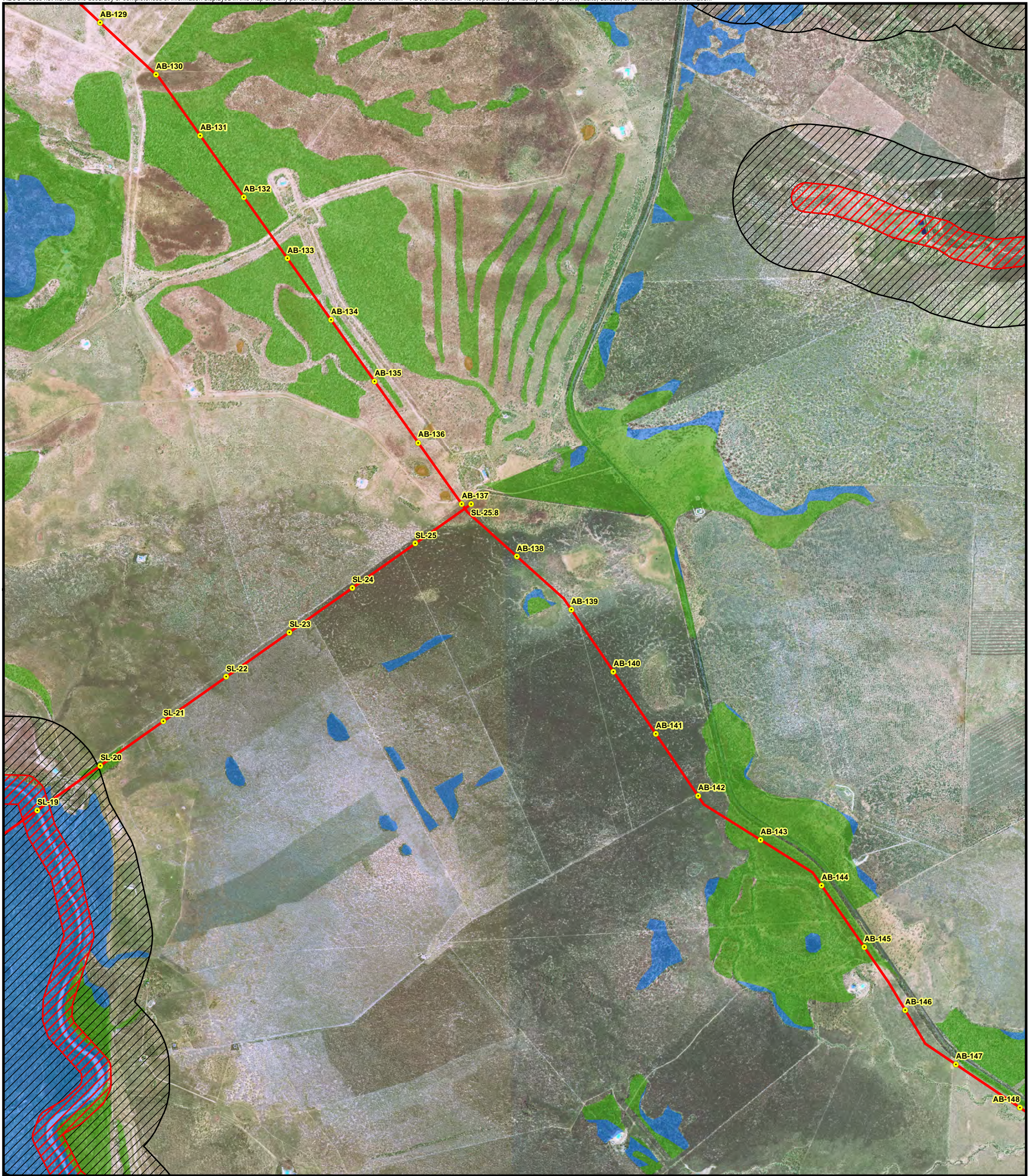
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
- Corridor Buffers Brigalow Belt v1-3, Corridor Vegetation Brigalow Belt v1-3 and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Protected Flora Species
- Corridor Buffers Brigalow Belt v1-3
- State
- Regional
- BRB Biodiversity Significance v1-3**
- State Habitat for EVR taxa
- State
- Regional
- Local or Other Values
- Non Bioregion Ecosystem

Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

Map 9 Of 41

Main Line

Kp AB-129 To Kp AB-147

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

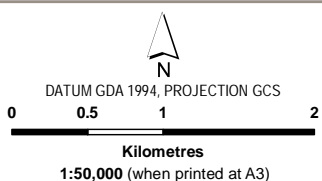
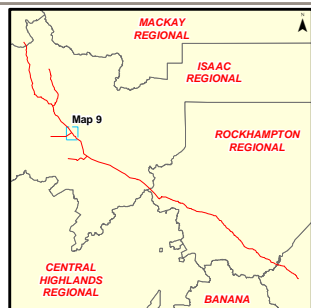
Map
3 - 9

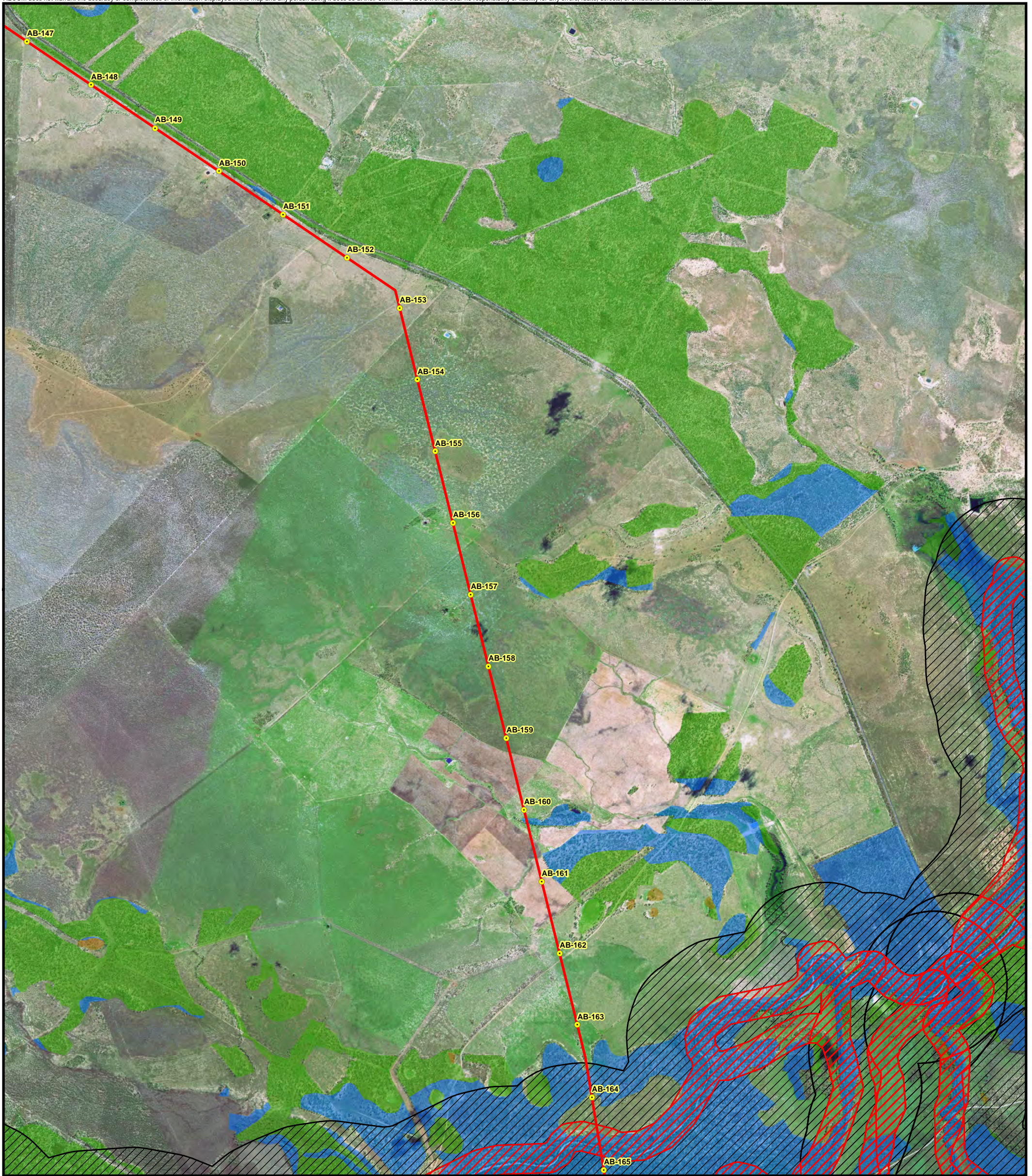
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Protected Flora Species
- Corridor Buffers Brigalow Belt v1-3
- State
- Regional
- BRB Biodiversity Significance v1-3
- State Habitat for EVR taxa
- State
- Regional
- Local or Other Values
- Non Bioregion Ecosystem

Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

Map 10 Of 41

Main Line

Kp AB-147 To Kp AB-165

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

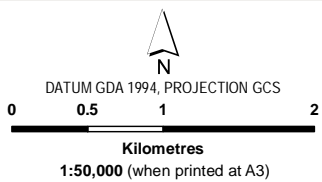
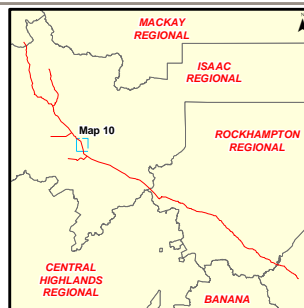
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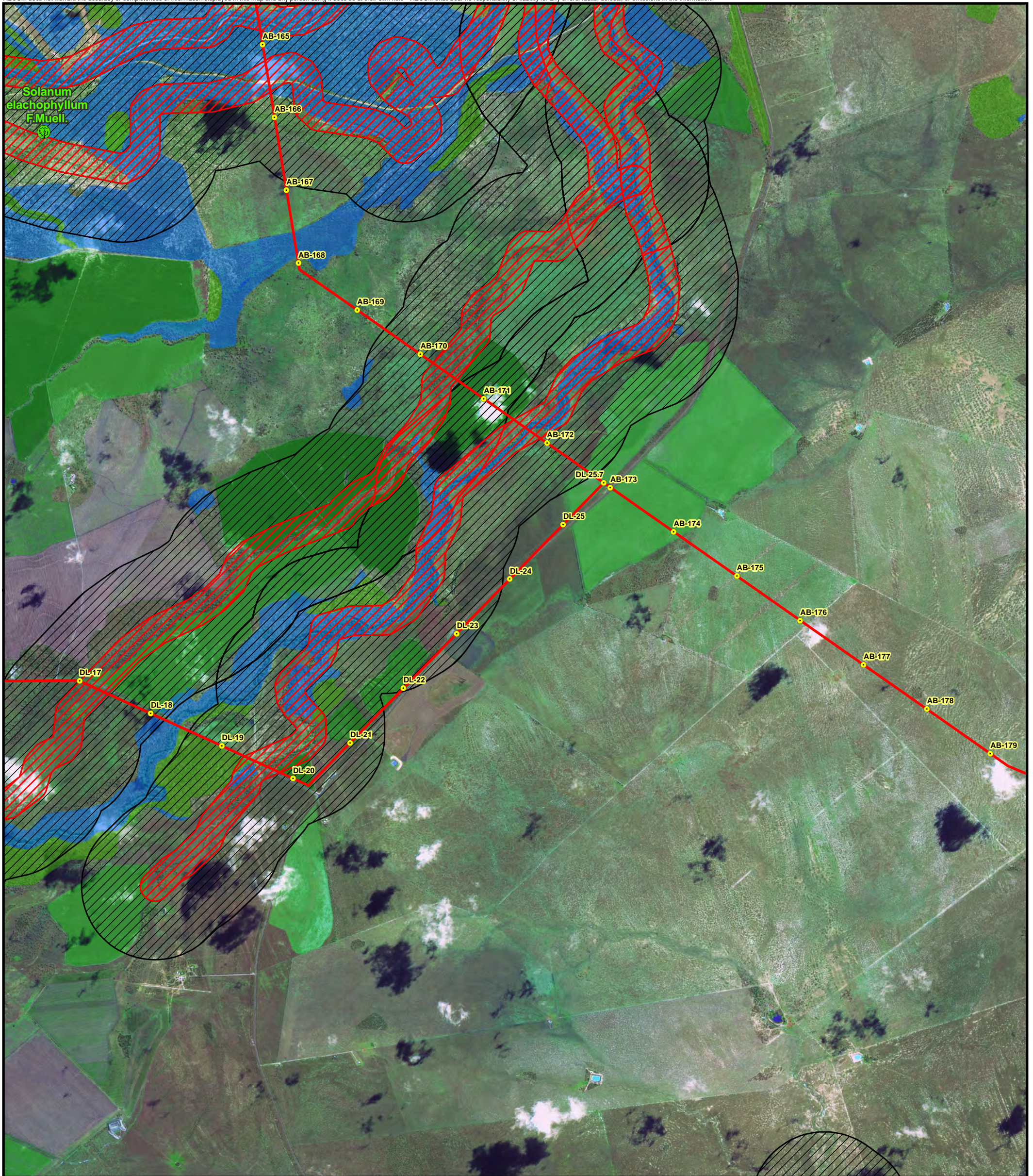
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Data Sources:
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 - Corridor Buffers Brigalow Belt v1-3, Corridor Vegetation Brigalow Belt v1-3 and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Protected Flora Species
- Corridor Buffers Brigalow Belt v1-3**
- ▨ State
- ▨ Regional
- BRB Biodiversity Significance v1-3**
- ▨ State Habitat for EVR taxa
- ▨ State
- ▨ Regional
- ▨ Local or Other Values
- ▨ Non Bioregion Ecosystem

Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

Map 11 Of 41

Main Line
Kp AB-165 To Kp AB-178

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map
3 - 11

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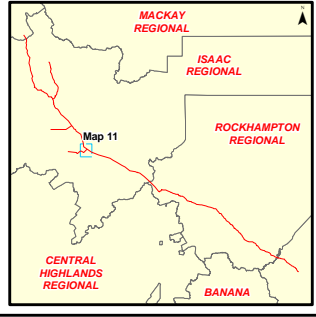
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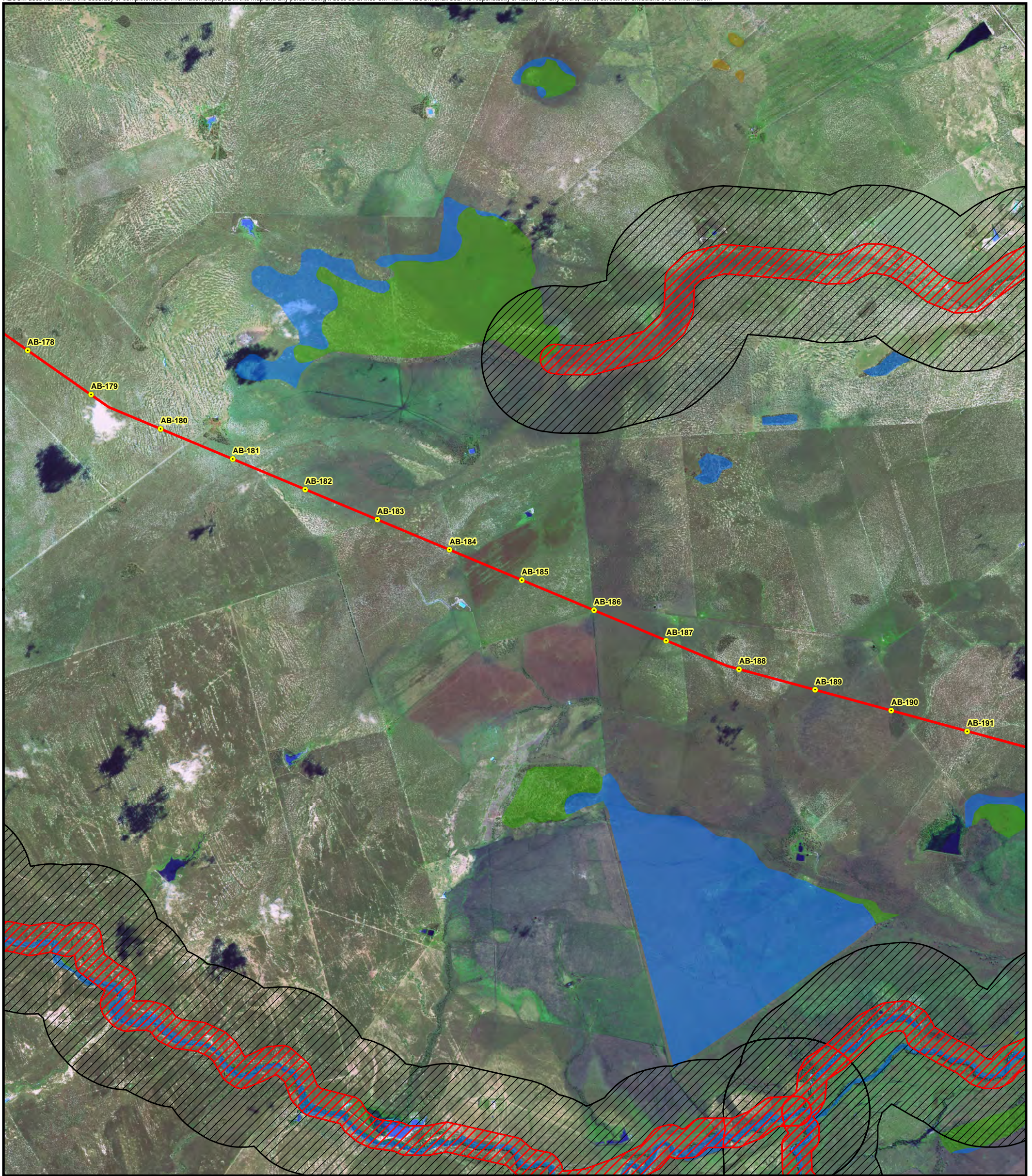
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
- Corridor Buffers Brigalow Belt v1-3, Corridor Vegetation Brigalow Belt v1-3 and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011
- Protected Flora Species: © The State of Queensland (Department of Environment and Resource Management - Queensland Herbarium) 2011

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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Protected Flora Species
- Corridor Buffers Brigalow Belt v1-3
 - State
 - Regional
- BRB Biodiversity Significance v1-3**
 - State Habitat for EVR taxa
 - State
 - Regional
 - Local or Other Values
 - Non Bioregion Ecosystem

Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

Map 12 Of 41

Main Line

Kp AB-178 To Kp AB-191

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

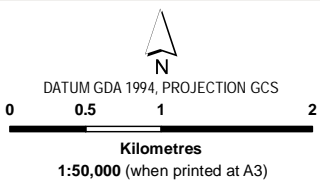
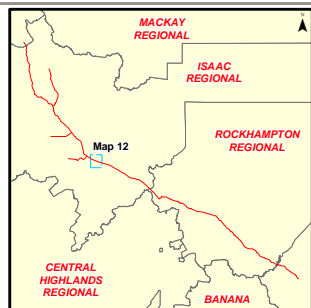
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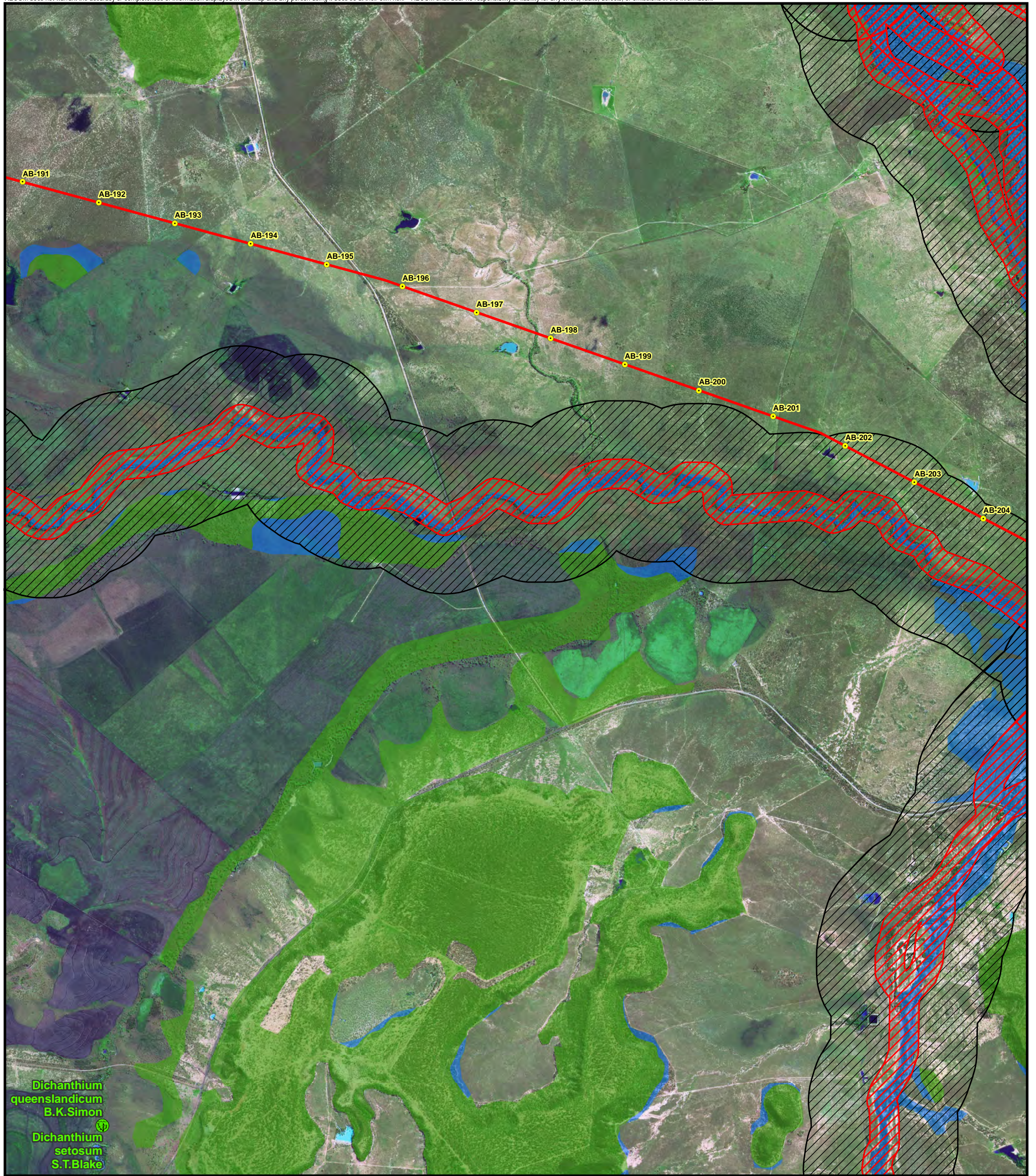
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 LAST MODIFIED BN 17 October 2011



Data Sources:
 - Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
 - Corridor Buffers Brigalow Belt v1-3, Corridor Vegetation Brigalow Belt v1-3 and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Protected Flora Species
- Corridor Buffers Brigalow Belt v1-3
 - State
 - Regional
- BRB Biodiversity Significance v1-3
 - State Habitat for EVR taxa
 - State
 - Regional
 - Local or Other Values
 - Non Bioregion Ecosystem

Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

Map 13 Of 41

Main Line

Kp AB-191 To Kp AB-204

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

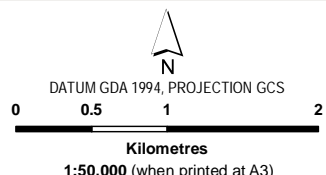
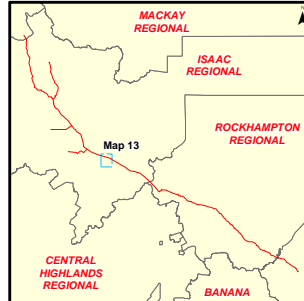
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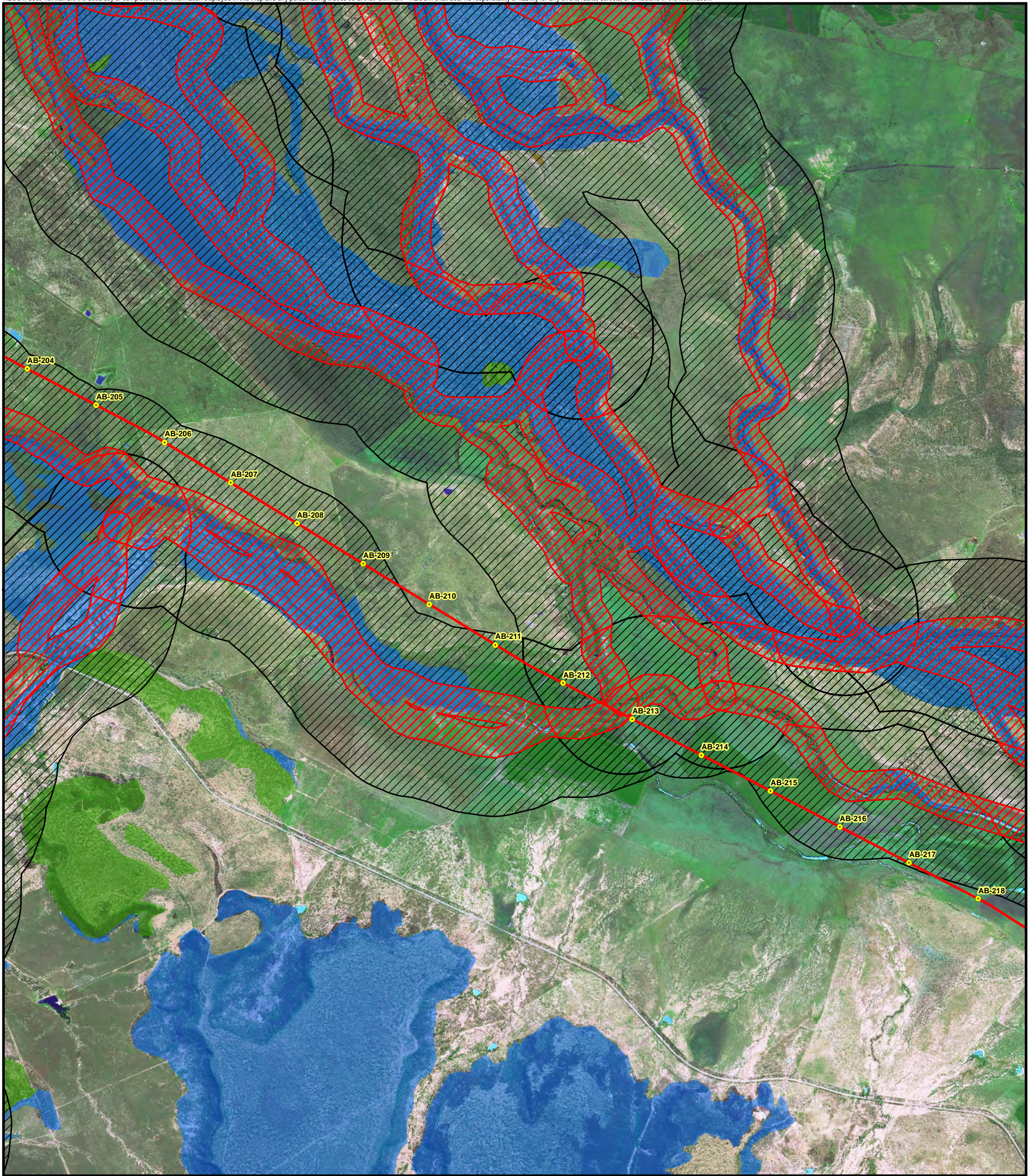
PROJECT ID 60188431
 CREATED BY BN
 LAST MODIFIED BN 17 October 2011



Data Sources:
 - Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
 - Corridor Buffers Brigalow Belt v1-3, Corridor Vegetation Brigalow Belt v1-3 and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Protected Flora Species
- Corridor Buffers Brigalow Belt v1-3
- State
- Regional
- BRB Biodiversity Significance v1-3**
- State Habitat for EVR taxa
- State
- Regional
- Local or Other Values
- Non Bioregion Ecosystem

Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

Map 14 Of 41

Main Line

Kp AB-204 To Kp AB-218

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

3 - 14

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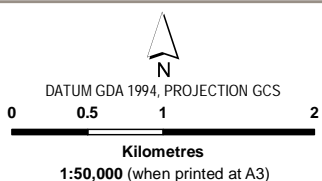
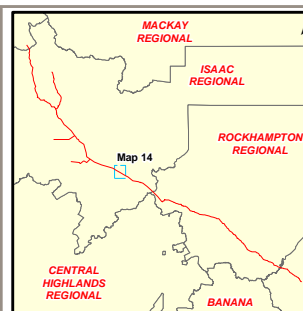


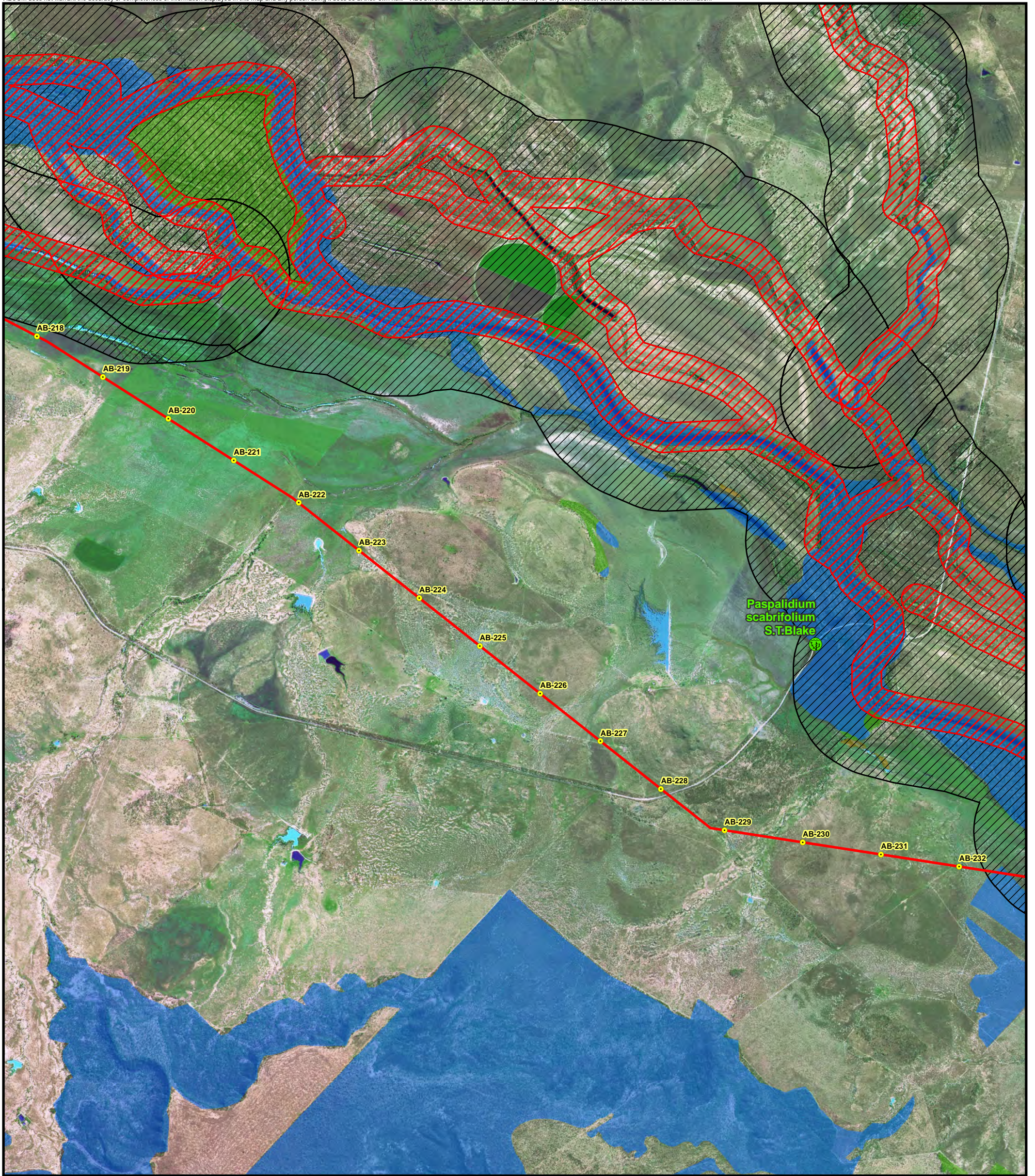
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
 - Corridor Buffers Brigalow Belt v1-3, Corridor Vegetation Brigalow Belt v1-3 and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Protected Flora Species
- Corridor Buffers Brigalow Belt v1-3
- State
- Regional
- BRB Biodiversity Significance v1-3**
- State Habitat for EVR taxa
- State
- Regional
- Local or Other Values
- Non Bioregion Ecosystem

Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

Map 15 Of 41

Main Line

Kp AB-218 To Kp AB-232

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

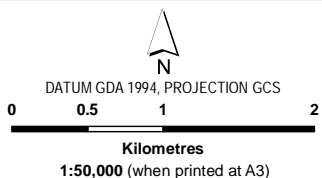
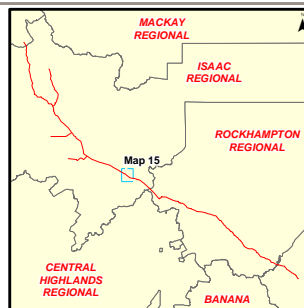
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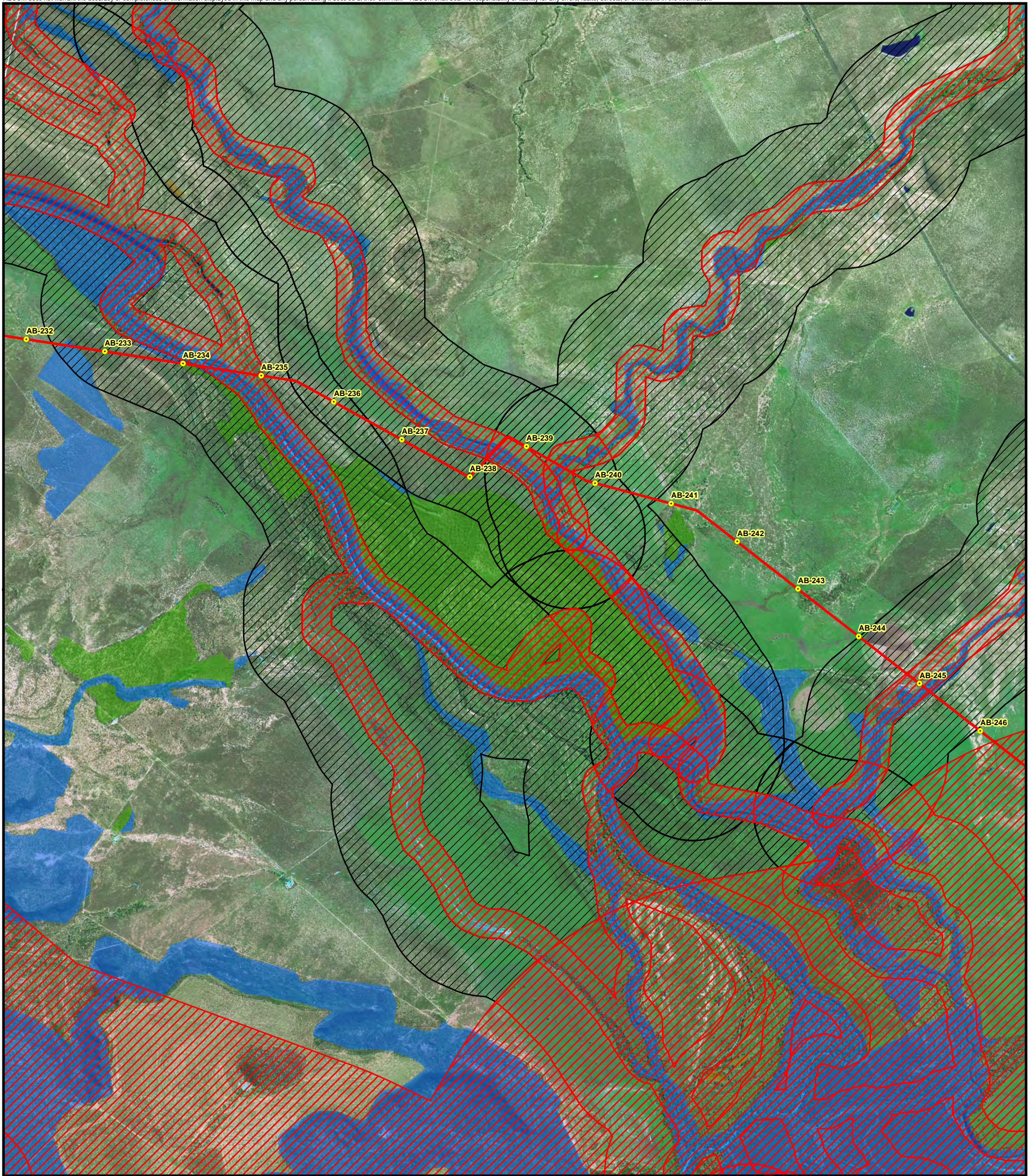
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Data Sources:
 - Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
 - Corridor Buffers Brigalow Belt v1-3, Corridor Vegetation Brigalow Belt v1-3 and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011
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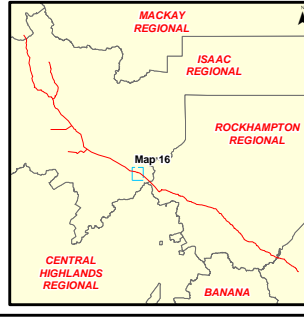
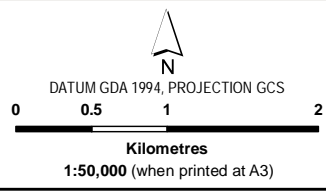
- 1 Km Kilometrage Point
- ABP Route Revision D
- Protected Flora Species
- Corridor Buffers Brigalow Belt v1-3
- State
- Regional
- BRB Biodiversity Significance v1-3**
- State Habitat for EVR taxa
- State
- Regional
- Local or Other Values
- Non Bioregion Ecosystem

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Data Sources:
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 - Corridor Buffers Brigalow Belt v1-3, Corridor Vegetation Brigalow Belt v1-3 and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011
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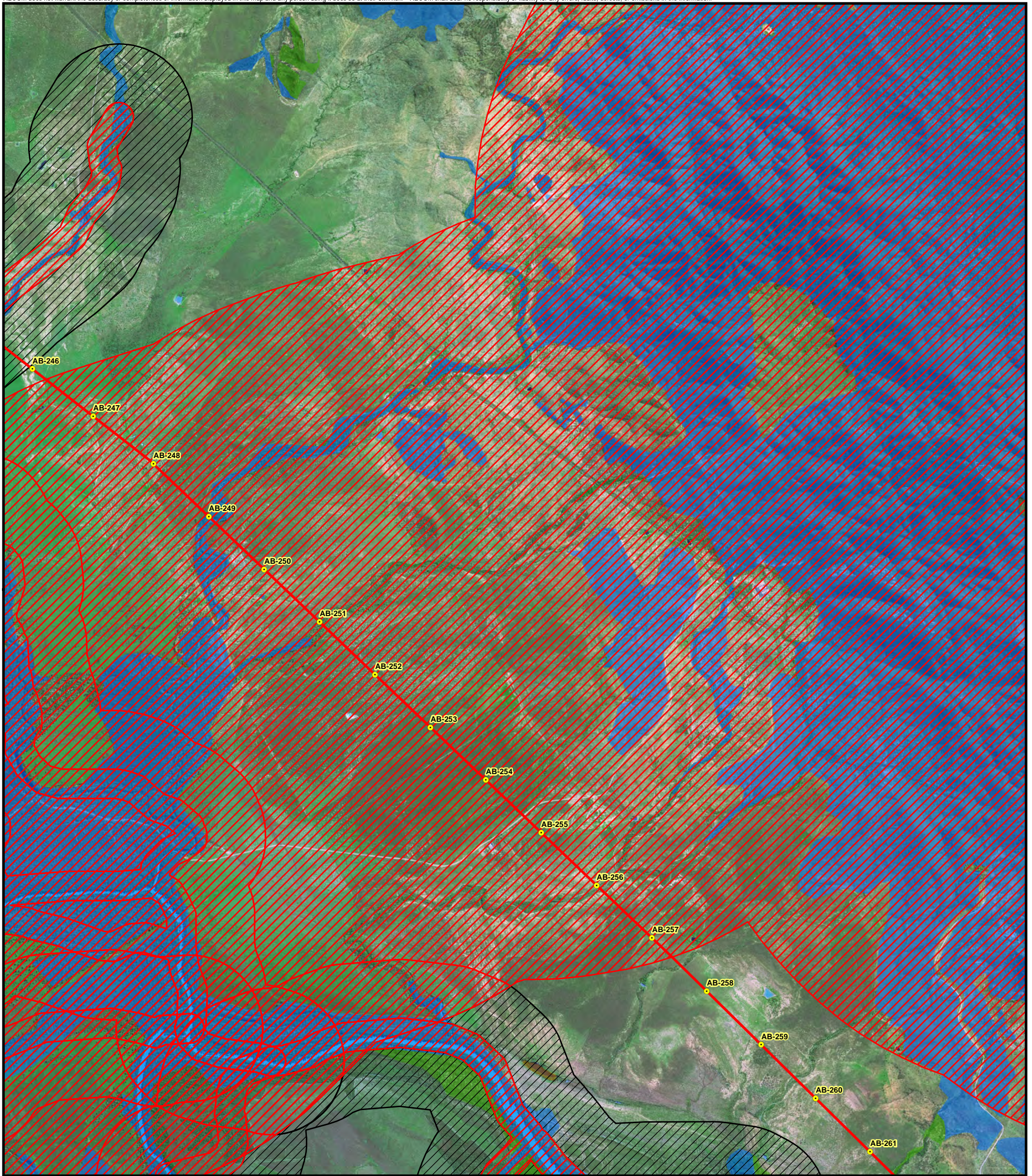
Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

Map 16 Of 41

Main Line
Kp AB-232 To Kp AB-246

Arrow Bowen Pipeline (ABP)
 ABP - EIS - Flora Report
 Isaac to Gladstone, Qld

Map
3 - 16



LEGEND

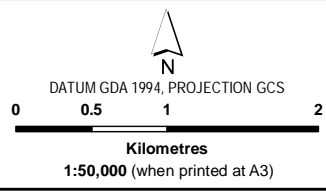
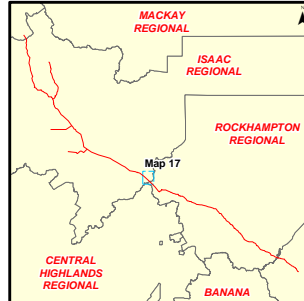
- 1 Km Kilometrage Point
- ABP Route Revision D
- Protected Flora Species
- Corridor Buffers Brigalow Belt v1-3
- State
- Regional
- BRB Biodiversity Significance v1-3**
- State Habitat for EVR taxa
- State
- Regional
- Local or Other Values
- Non Bioregion Ecosystem

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Data Sources:
 - Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
 - Corridor Buffers Brigalow Belt v1-3, Corridor Vegetation Brigalow Belt v1-3 and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011
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Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

Map 17 Of 41

Main Line
Kp AB-246 To Kp AB-261

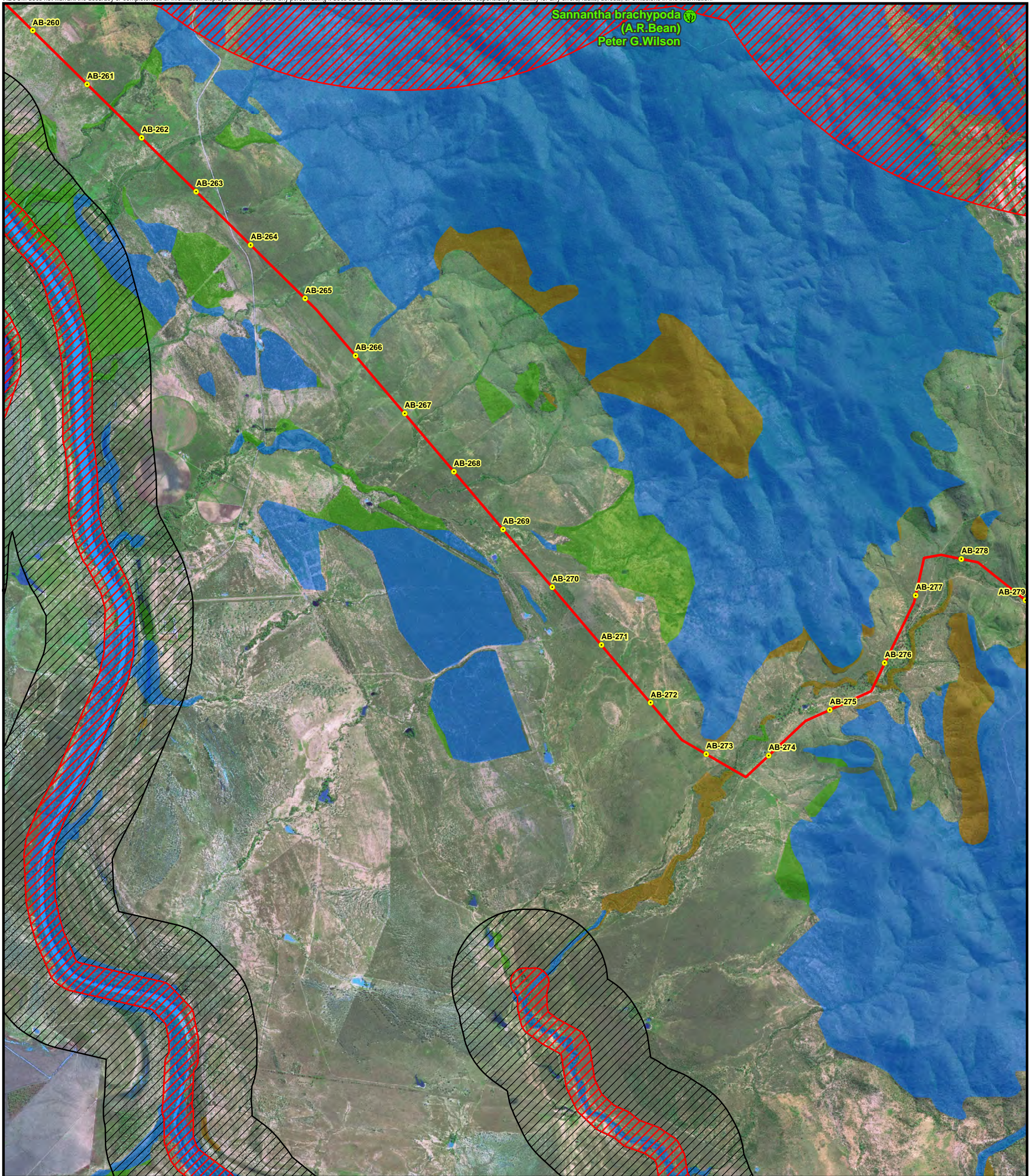
Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

3 - 17



Sannantha brachypoda
(A.R.Bean)
Peter G.Wilson

LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Protected Flora Species
- Corridor Buffers Brigalow Belt v1-3
- State
- Regional
- BRB Biodiversity Significance v1-3**
- State Habitat for EVR taxa
- State
- Regional
- Local or Other Values
- Non Bioregion Ecosystem

Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

Map 18 Of 41

Main Line
Kp AB-260 To Kp AB-278

Arrow Bowen Pipeline (ABP)
ABP - EIS - Flora Report
Isaac to Gladstone, Qld

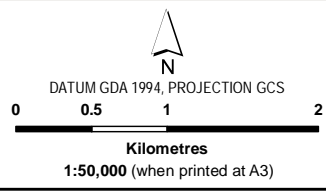
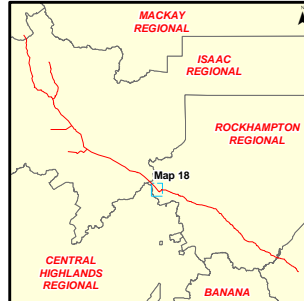
Map
3 - 18

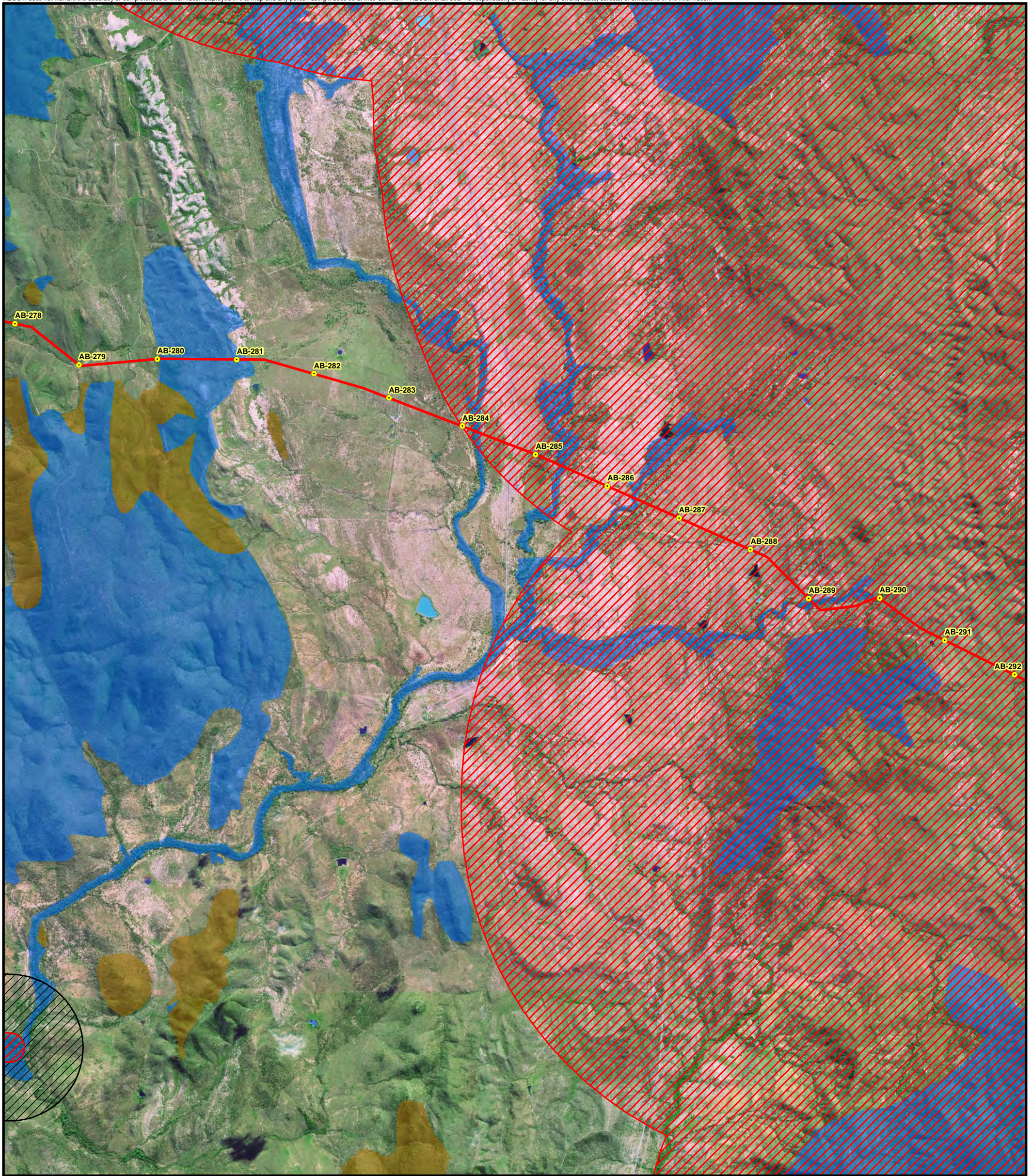
PROJECT ID 60188431
CREATED BY BN
LAST MODIFIED BN 17 October 2011



Data Sources:
- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
- Corridor Buffers Brigalow Belt v1-3, Corridor Vegetation Brigalow Belt v1-3 and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Protected Flora Species
- Corridor Buffers Brigalow Belt v1-3
- State
- Regional
- BRB Biodiversity Significance v1-3**
- State Habitat for EVR taxa
- State
- Regional
- Local or Other Values
- Non Bioregion Ecosystem

Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

Map 19 Of 41

Main Line
Kp AB-278 To Kp AB-291

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

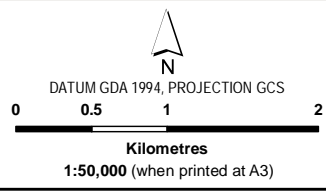
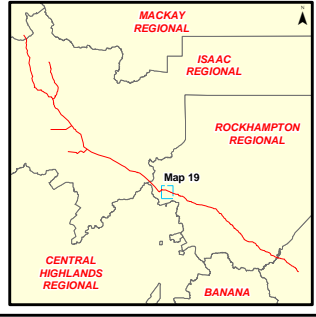
Map
3 - 19

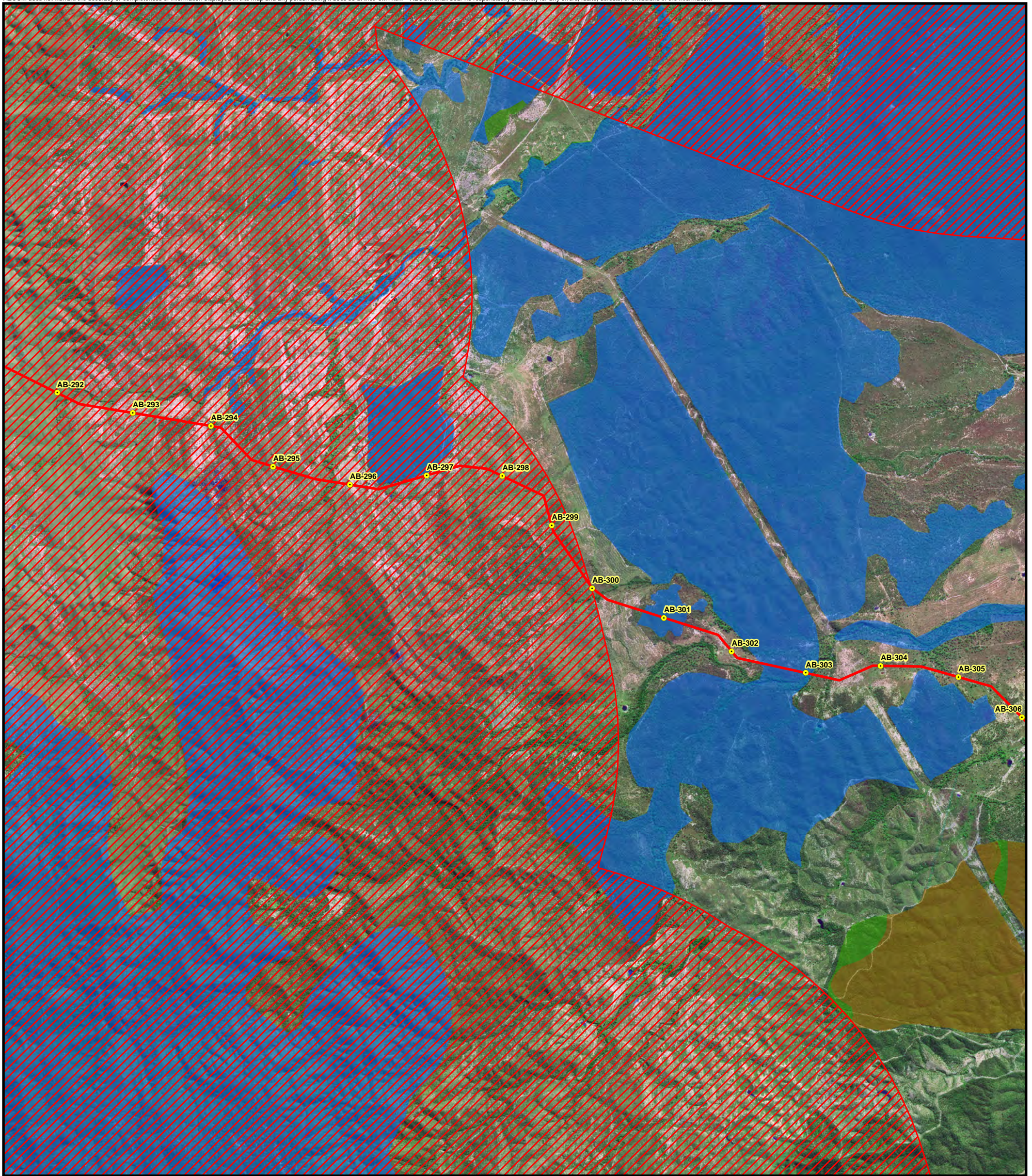
PROJECT ID 60188431
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Data Sources:
 - Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
 - Corridor Buffers Brigalow Belt v1-3, Corridor Vegetation Brigalow Belt v1-3 and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011
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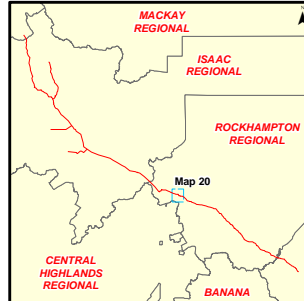
- 1 Km Kilometrage Point
- ABP Route Revision D
- Protected Flora Species
- Corridor Buffers Brigalow Belt v1-3
- State
- Regional
- BRB Biodiversity Significance v1-3**
- State Habitat for EVR taxa
- State
- Regional
- Local or Other Values
- Non Bioregion Ecosystem

PROJECT ID 60188431
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Data Sources:
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 - Corridor Buffers Brigalow Belt v1-3, Corridor Vegetation Brigalow Belt v1-3 and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011
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Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

Map 20 Of 41

Main Line

Kp AB-292 To Kp AB-305

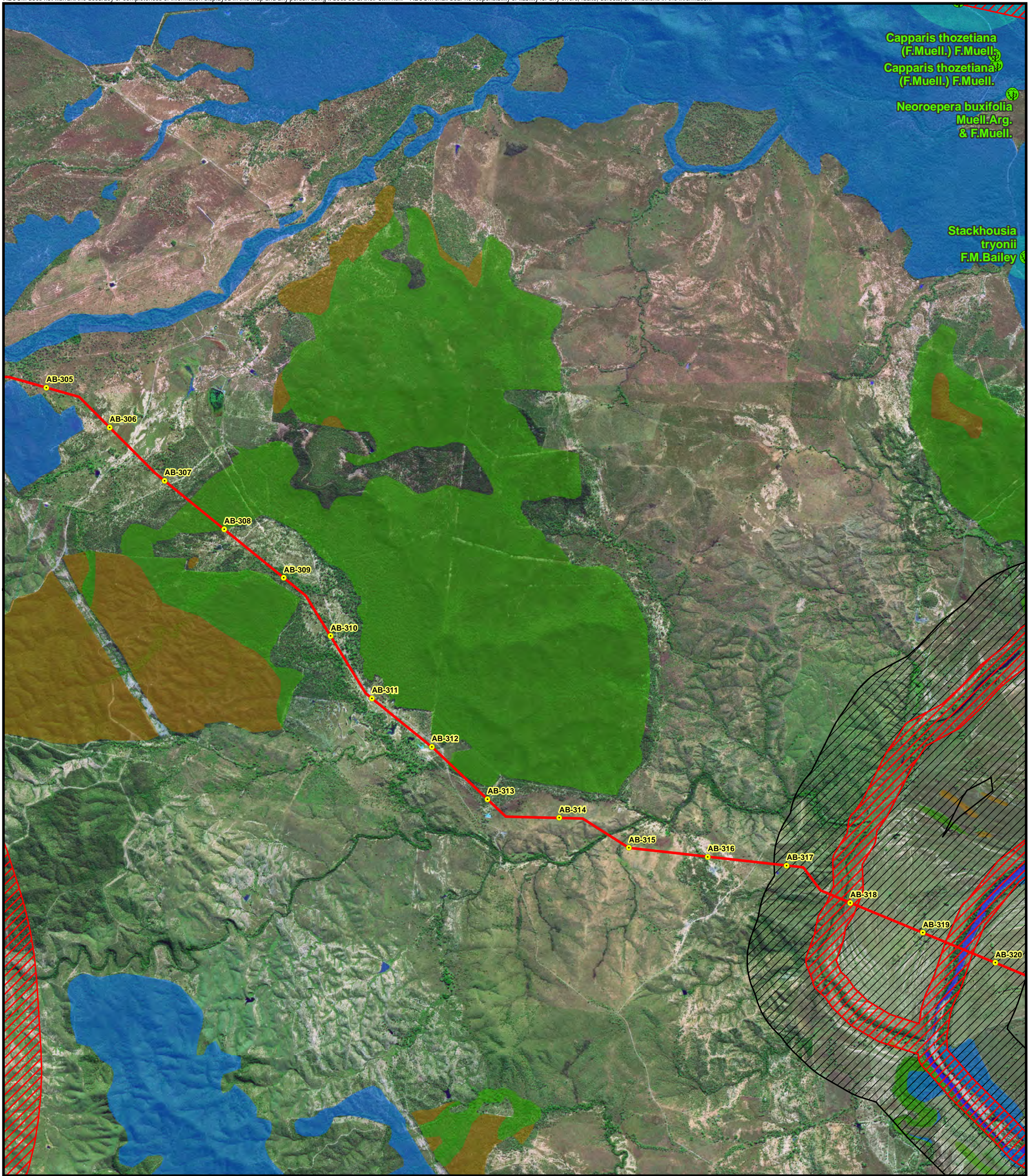
Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

3 - 20



LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Protected Flora Species
- Corridor Buffers Brigalow Belt v1-3
- State
- Regional
- BRB Biodiversity Significance v1-3**
- State Habitat for EVR taxa
- State
- Regional
- Local or Other Values
- Non Bioregion Ecosystem

Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

Map 21 Of 41

Main Line
Kp AB-305 To Kp AB-320

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

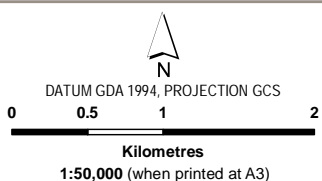
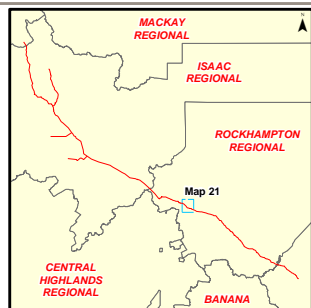
3 - 21

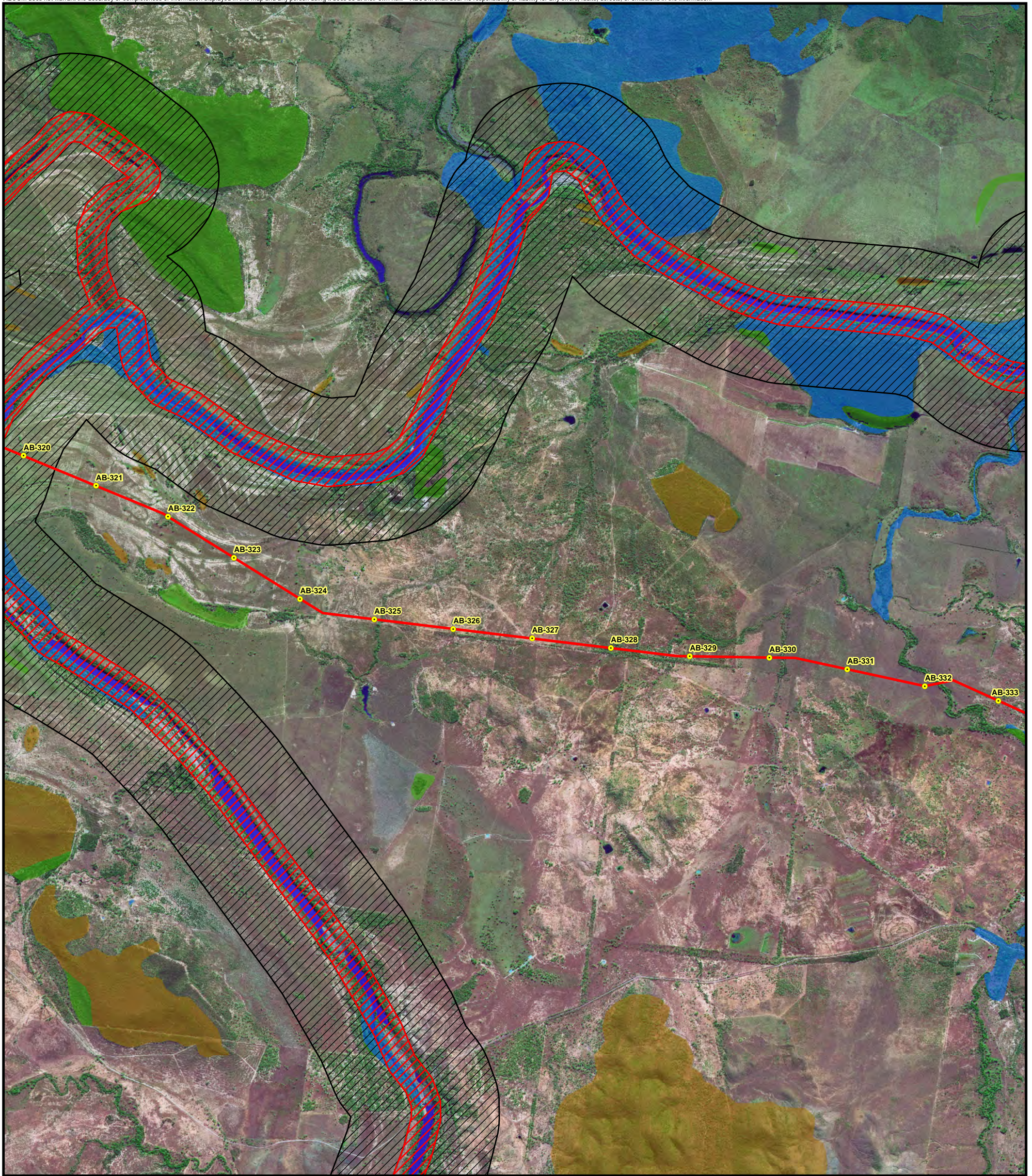
PROJECT ID 60188431
 CREATED BY BN
 LAST MODIFIED BN 17 October 2011



Data Sources:
 - Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
 - Corridor Buffers Brigalow Belt v1-3, Corridor Vegetation Brigalow Belt v1-3 and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Protected Flora Species
- Corridor Buffers Brigalow Belt v1-3
- State
- Regional
- State Habitat for EVR taxa
- State
- Regional
- Local or Other Values
- Non Bioregion Ecosystem

Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

Map 22 Of 41

Main Line

Kp AB-320 To Kp AB-333

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

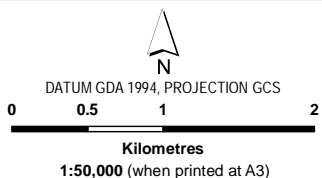
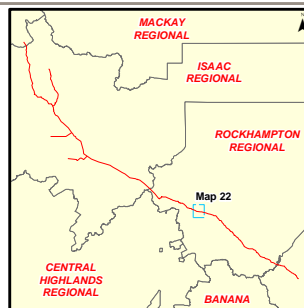
3 - 22

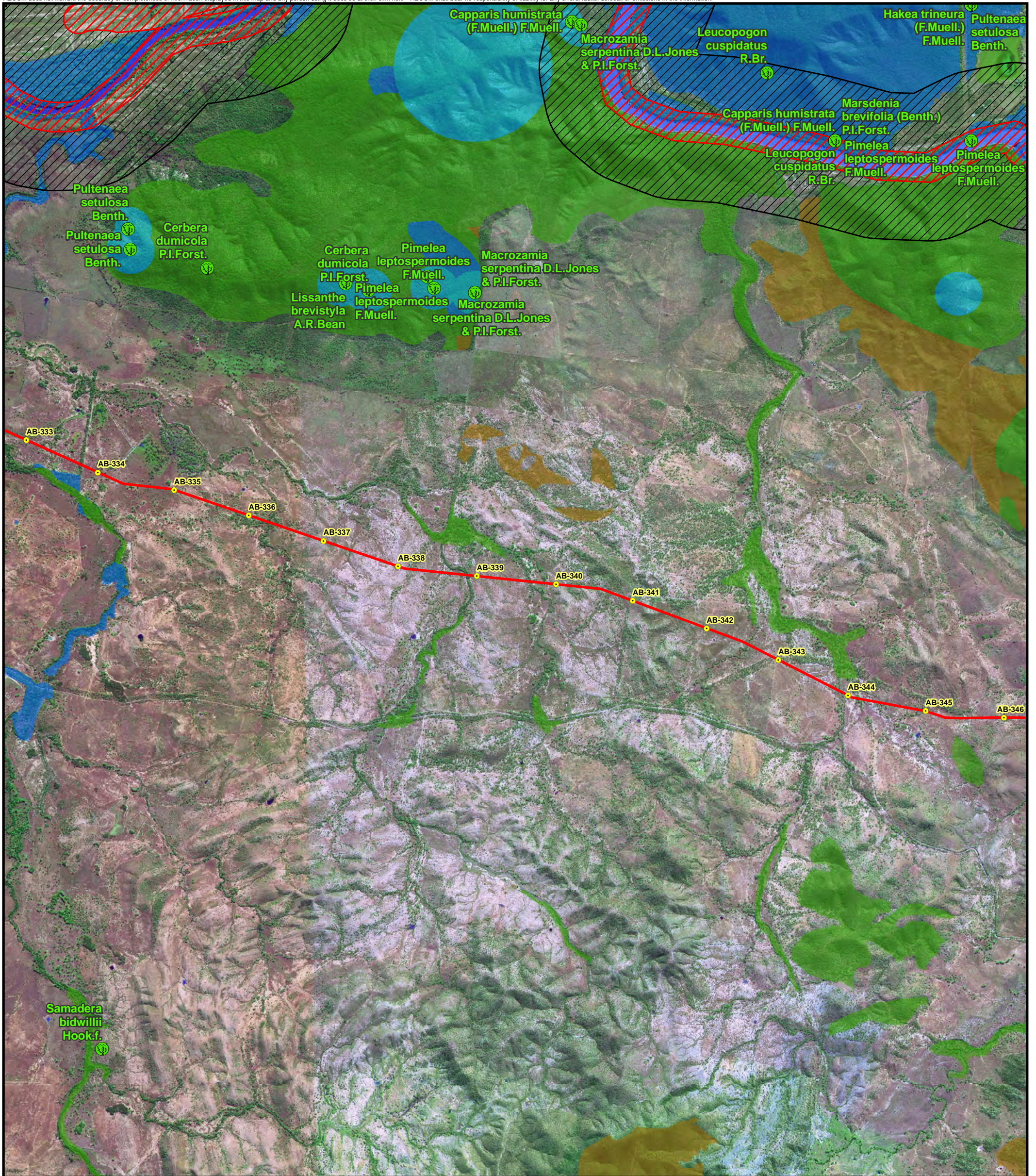
PROJECT ID 60188431
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 LAST MODIFIED BN 17 October 2011



Data Sources:
 - Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
 - Corridor Buffers Brigalow Belt v1-3, Corridor Vegetation Brigalow Belt v1-3 and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- 🌿 Protected Flora Species
- Corridor Buffers Brigalow Belt v1-3**
- ▨ State
- ▨ Regional
- BRB Biodiversity Significance v1-3**
- State Habitat for EVR taxa
- State
- Regional
- Local or Other Values
- Non Bioregion Ecosystem

Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

Map 23 Of 41

Main Line
Kp AB-333 To Kp AB-346

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

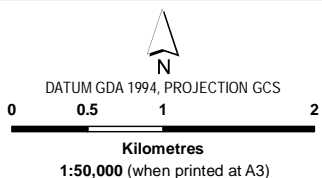
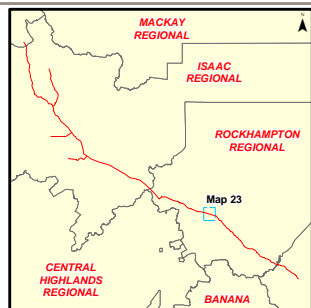
3 - 23

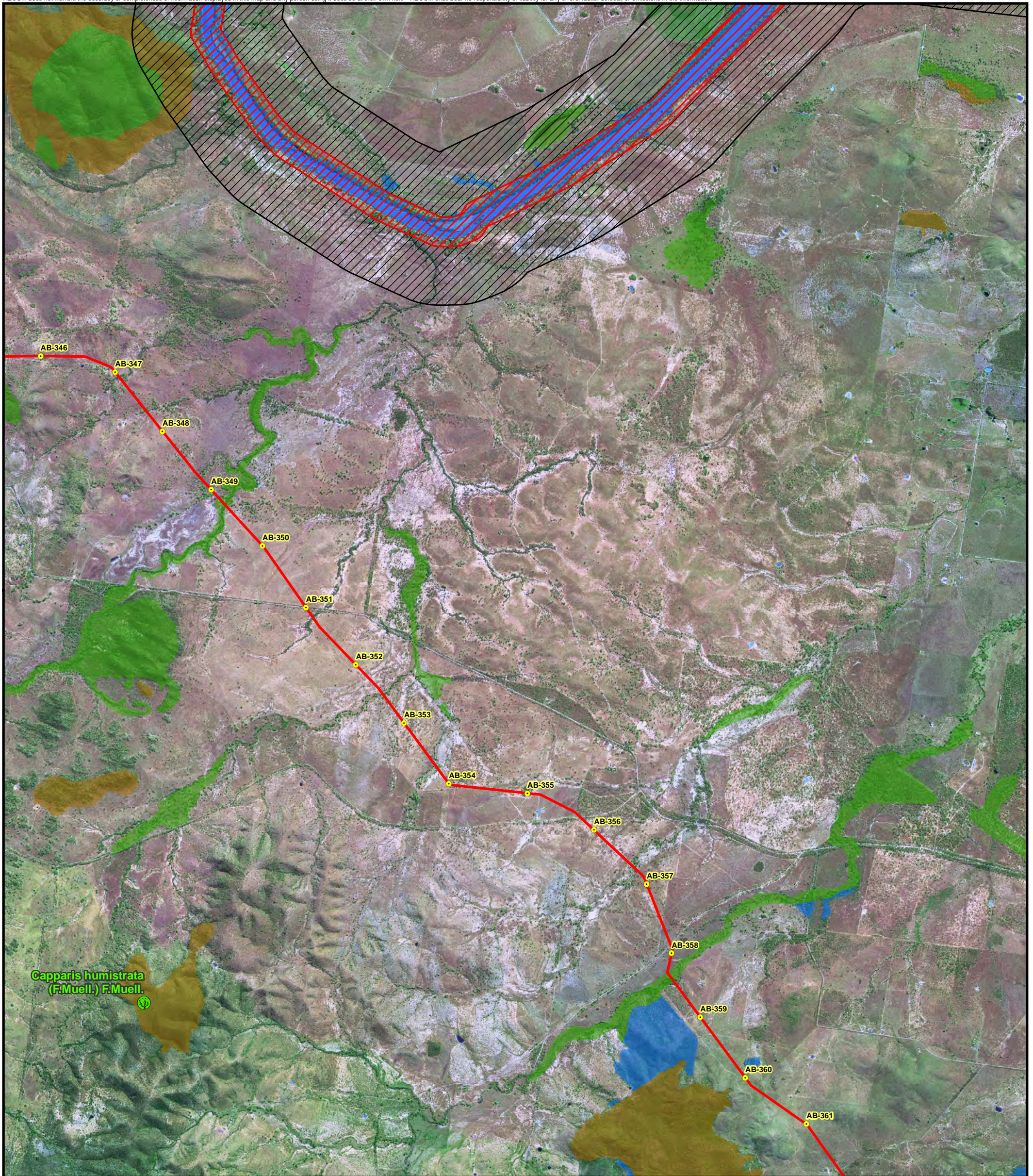
PROJECT ID 60188431
CREATED BY BN
LAST MODIFIED BN 17 October 2011



Data Sources:
 - Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
 - Corridor Buffers Brigalow Belt v1-3, Corridor Vegetation Brigalow Belt v1-3 and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Protected Flora Species
- Corridor Buffers Brigalow Belt v1-3
- State
- Regional
- BRB Biodiversity Significance v1-3**
- State Habitat for EVR taxa
- State
- Regional
- Local or Other Values
- Non Bioregion Ecosystem

Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

Map 24 Of 41

Main Line

Kp AB-346 To Kp AB-361

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

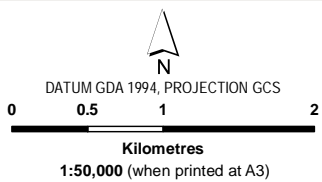
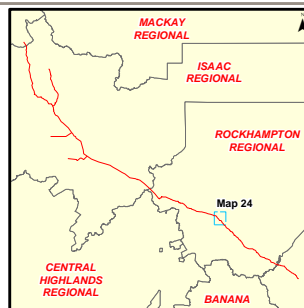
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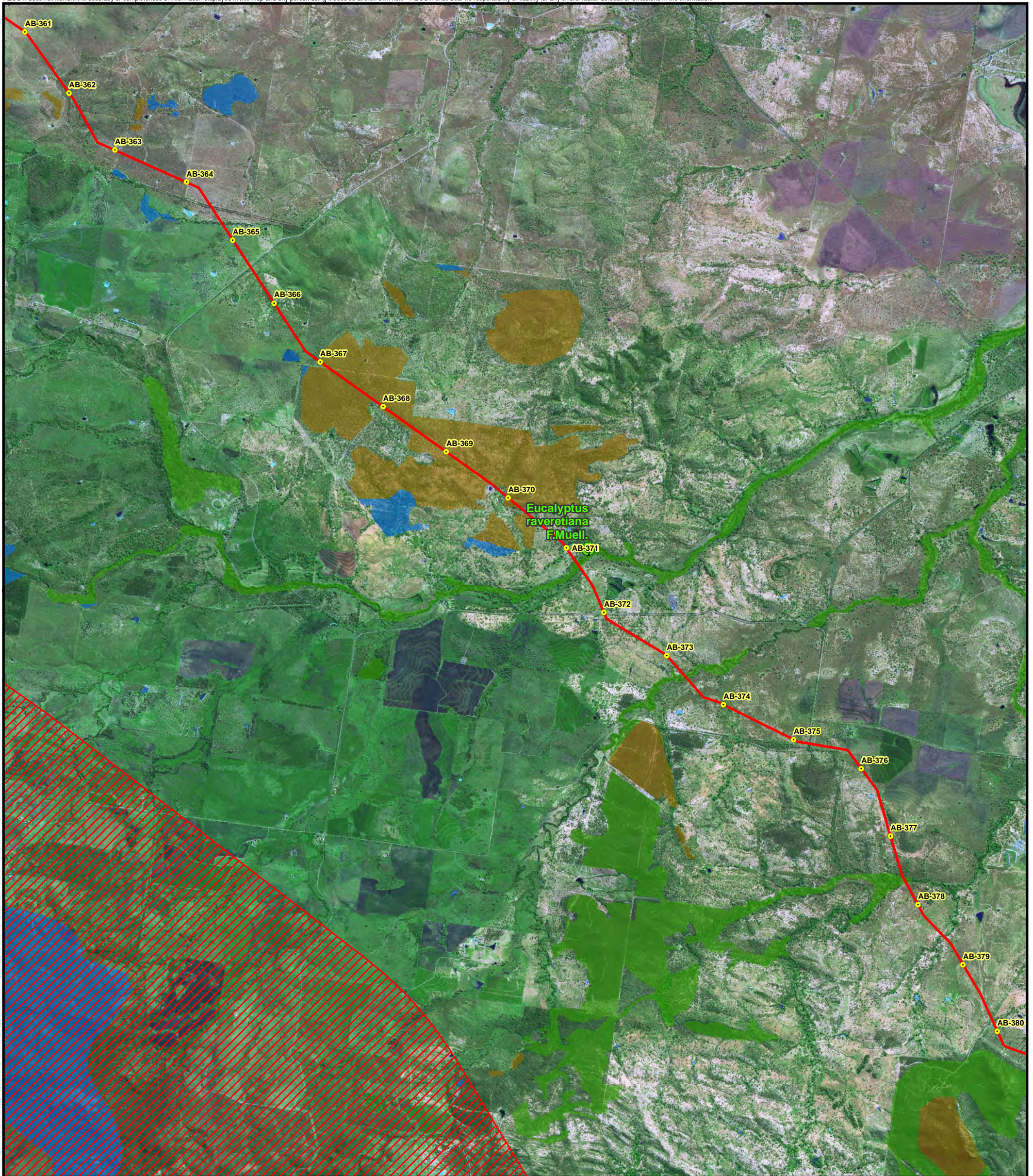
PROJECT ID 60188431
 CREATED BY BN
 LAST MODIFIED BN 17 October 2011



Data Sources:
 - Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
 - Corridor Buffers Brigalow Belt v1-3, Corridor Vegetation Brigalow Belt v1-3 and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Protected Flora Species
- Corridor Buffers Brigalow Belt v1-3
- State
- Regional
- BRB Biodiversity Significance v1-3**
- State Habitat for EVR taxa
- State
- Regional
- Local or Other Values
- Non Bioregion Ecosystem

Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

Map 25 Of 41

Main Line

Kp AB-361 To Kp AB-380

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

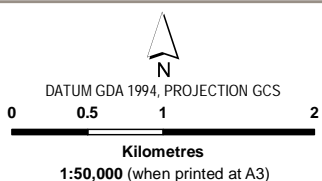
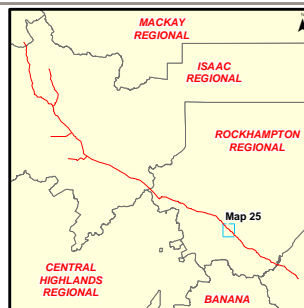
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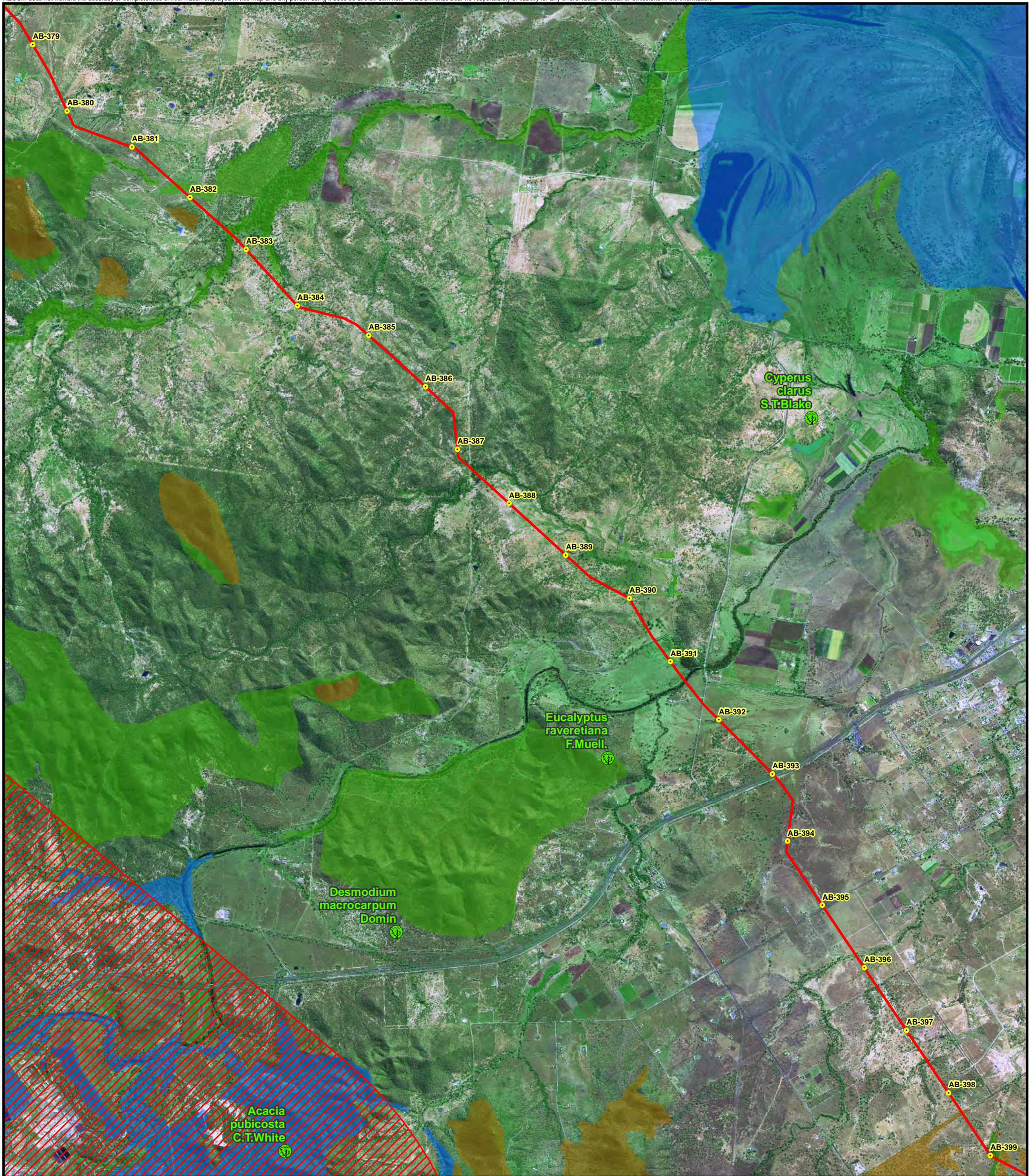
PROJECT ID 60188431
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 LAST MODIFIED BN 17 October 2011



Data Sources:
 - Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
 - Corridor Buffers Brigalow Belt v1-3, Corridor Vegetation Brigalow Belt v1-3 and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- 🌿 Protected Flora Species
- Corridor Buffers Brigalow Belt v1-3**
- ▨ State
- ▨ Regional
- BRB Biodiversity Significance v1-3**
- State Habitat for EVR taxa
- State
- Regional
- Local or Other Values
- Non Bioregion Ecosystem

Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

Map 26 Of 41

Main Line

Kp AB-379 To Kp AB-399

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

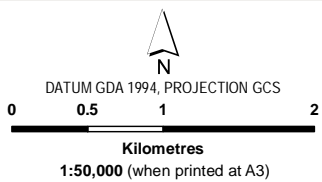
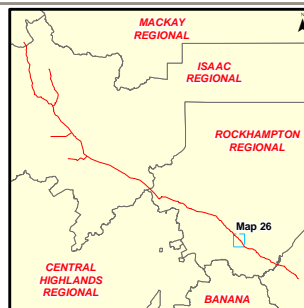
3 - 26

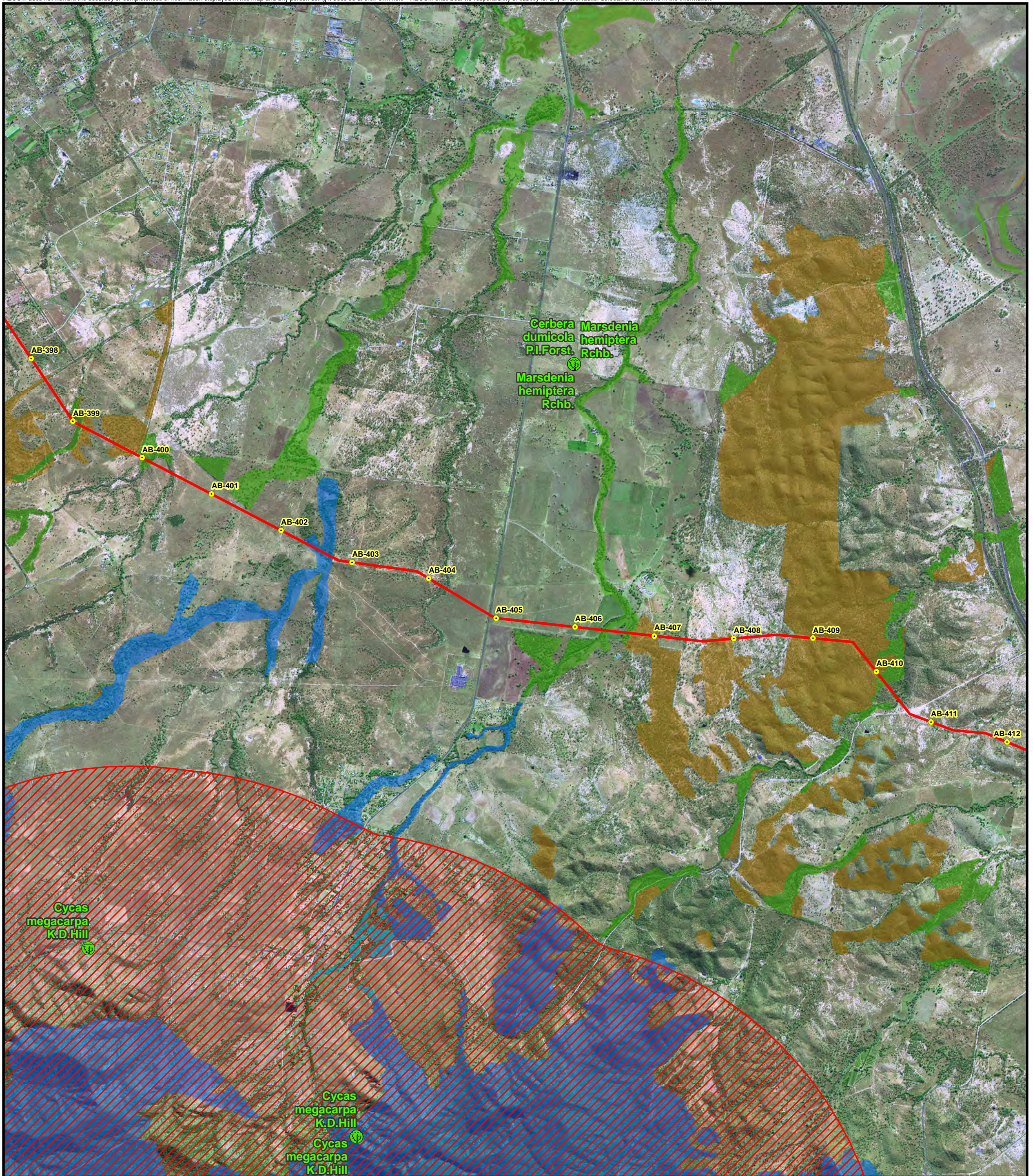
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Data Sources:
 - Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
 - Corridor Buffers Brigalow Belt v1-3, Corridor Vegetation Brigalow Belt v1-3 and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Protected Flora Species
- State
- Regional
- BRB Biodiversity Significance v1-3**
- State Habitat for EVR taxa
- State
- Regional
- Local or Other Values
- Non Bioregion Ecosystem

Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

Map 27 Of 41

Main Line
Kp AB-398 To Kp AB-412

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map
3 - 27

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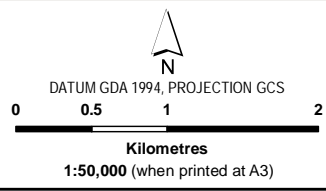
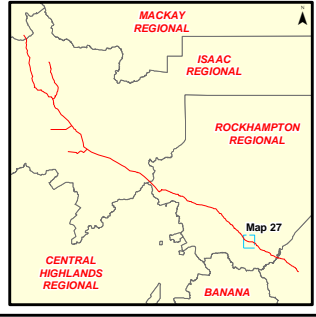
AECOM
www.aecom.com

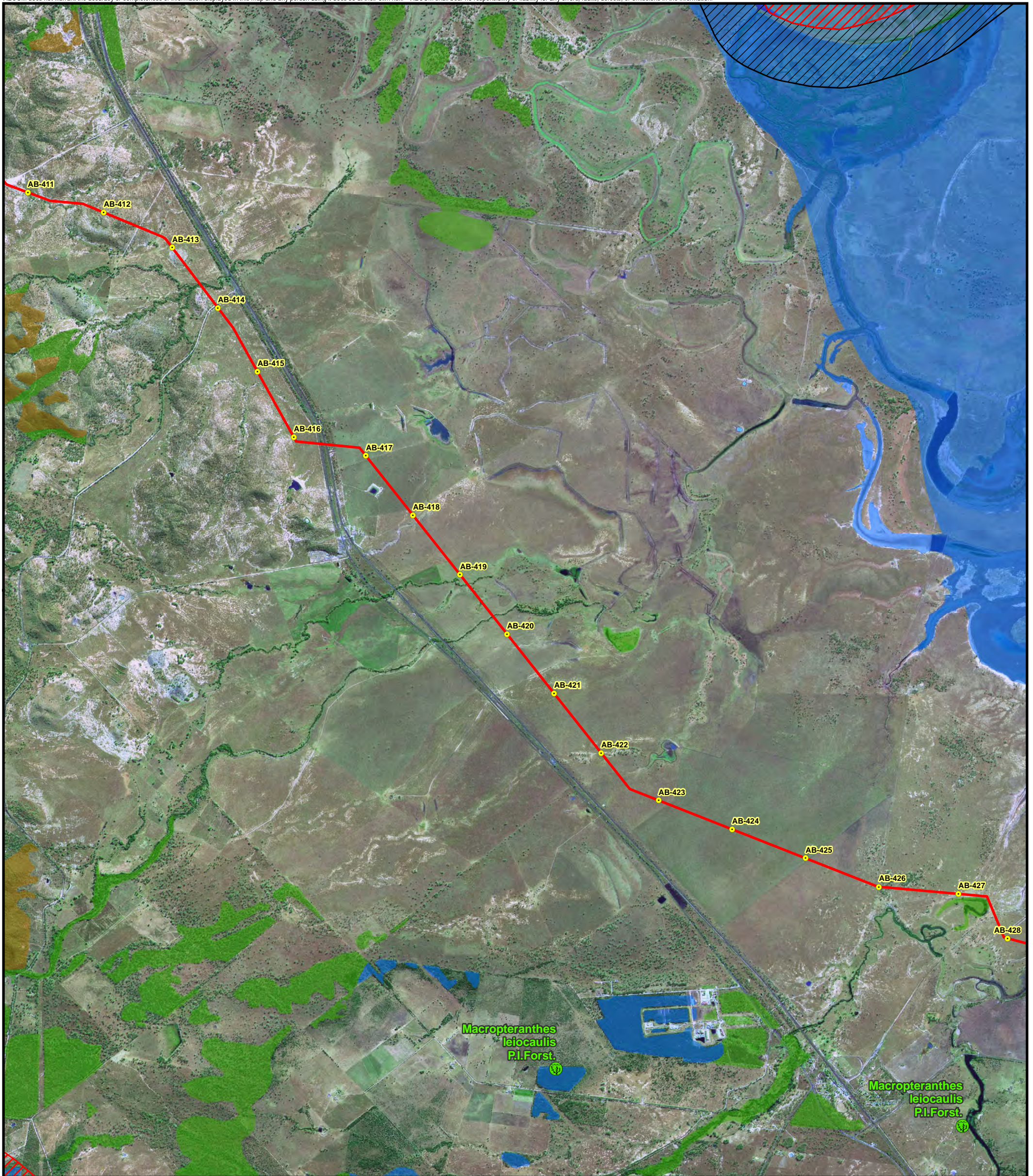
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
- Corridor Buffers Brigalow Belt v1-3, Corridor Vegetation Brigalow Belt v1-3 and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Protected Flora Species
- Corridor Buffers Brigalow Belt v1-3
- State
- Regional
- BRB Biodiversity Significance v1-3**
- State Habitat for EVR taxa
- State
- Regional
- Local or Other Values
- Non Bioregion Ecosystem

Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

Map 28 Of 41

Main Line

Kp AB-411 To Kp AB-428

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

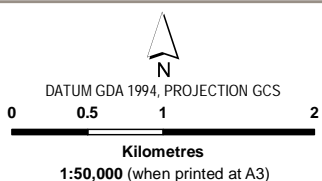
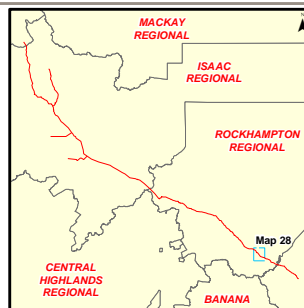
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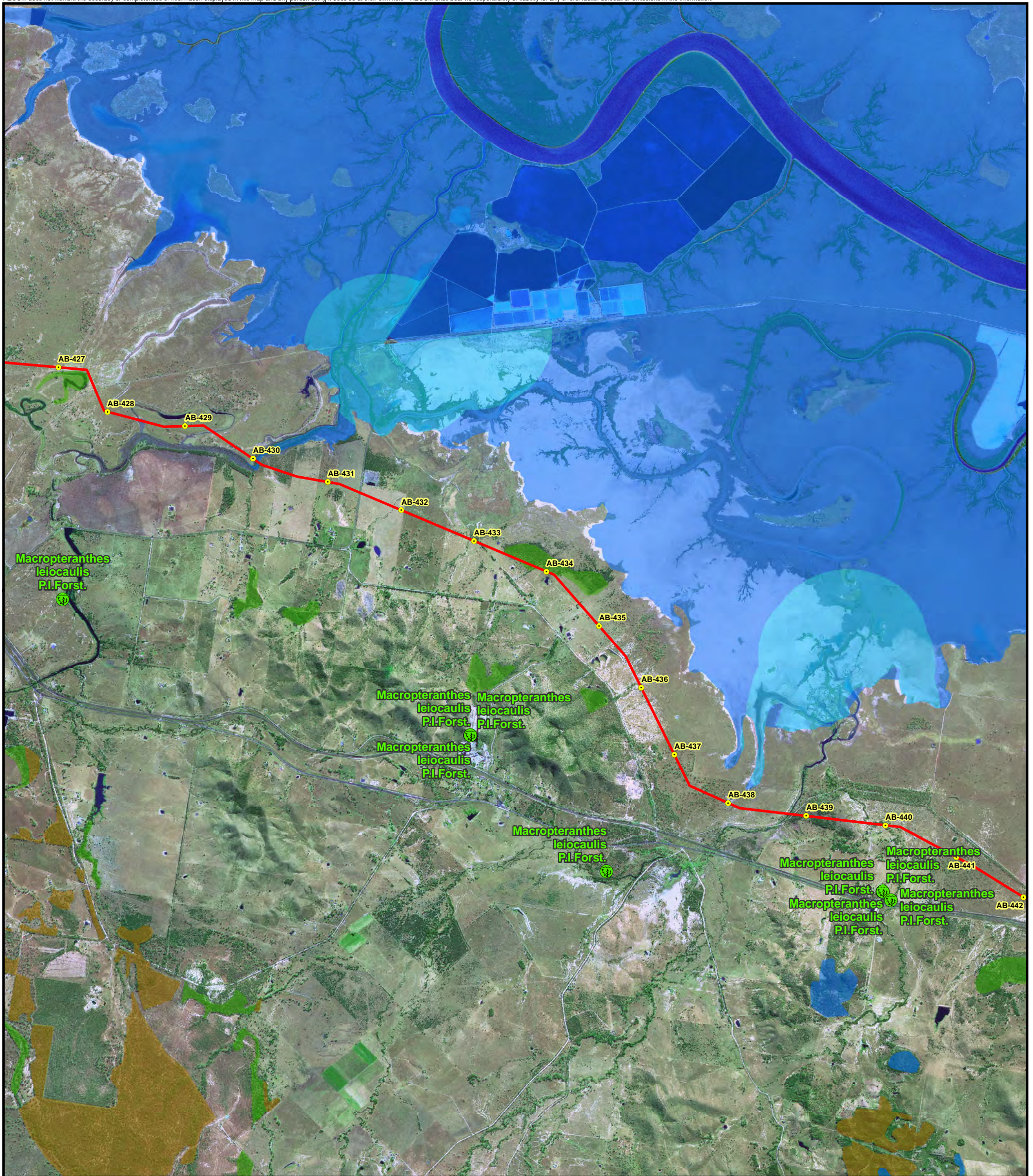
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Data Sources:
 - Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
 - Corridor Buffers Brigalow Belt v1-3, Corridor Vegetation Brigalow Belt v1-3 and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Protected Flora Species
- Corridor Buffers Brigalow Belt v1-3
- State
- Regional
- BRB Biodiversity Significance v1-3**
- State Habitat for EVR taxa
- State
- Regional
- Local or Other Values
- Non Bioregion Ecosystem

Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

Map 29 Of 41

Main Line

Kp AB-427 To Kp AB-441

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

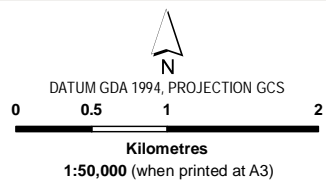
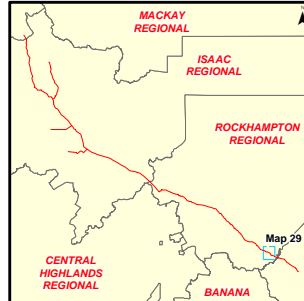
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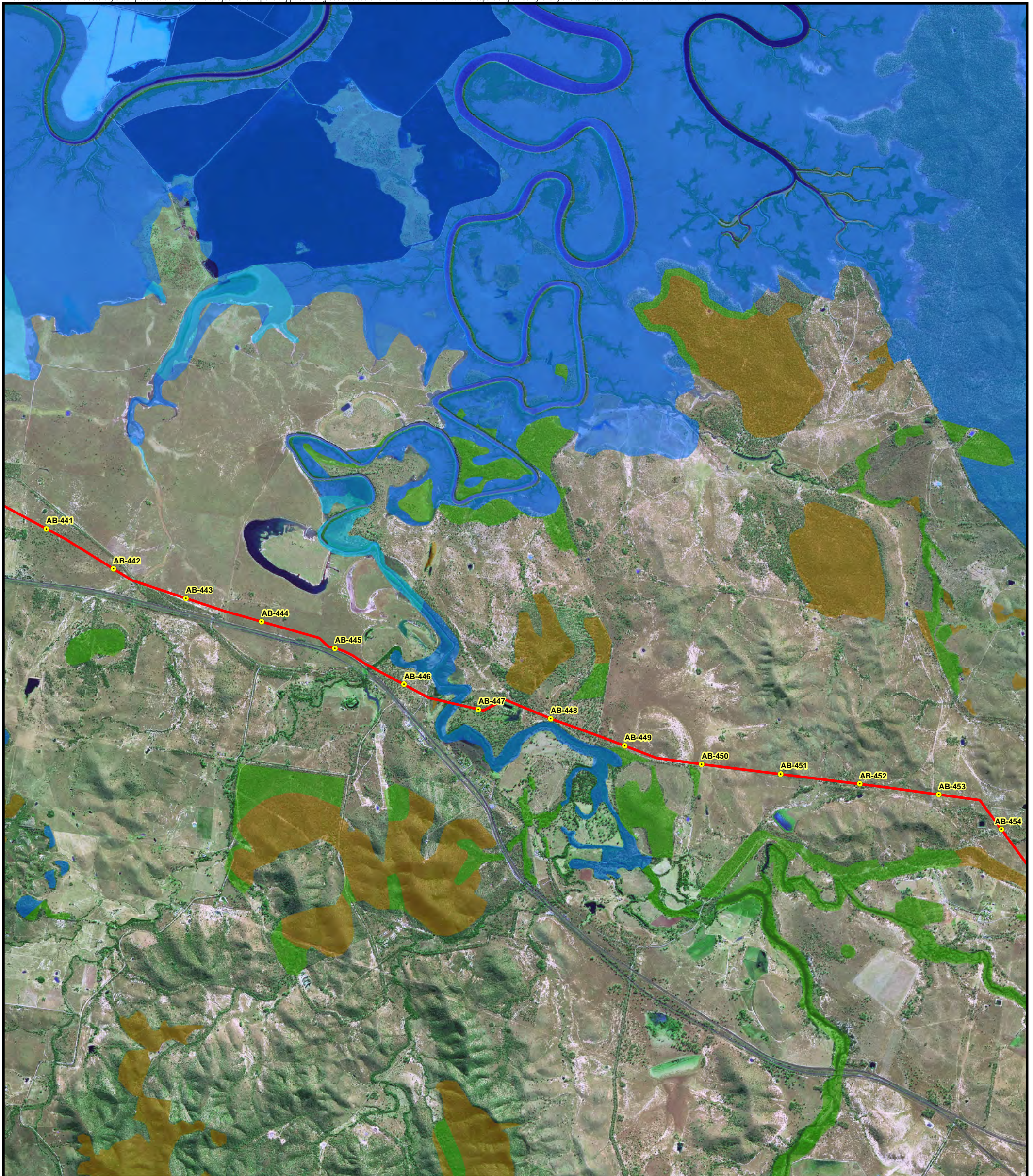
PROJECT ID 60188431
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 LAST MODIFIED BN 17 October 2011



Data Sources:
 - Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
 - Corridor Buffers Brigalow Belt v1-3, Corridor Vegetation Brigalow Belt v1-3 and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Protected Flora Species
- State
- Regional
- BRB Biodiversity Significance v1-3**
- State Habitat for EVR taxa
- State
- Regional
- Local or Other Values
- Non Bioregion Ecosystem

Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

Map 30 Of 41

Main Line

KP AB-441 To Kp AB-454

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

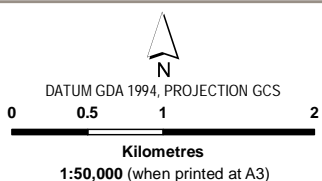
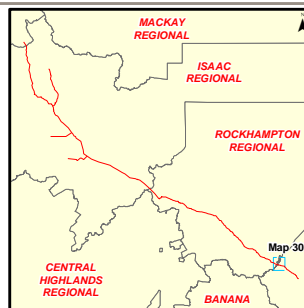
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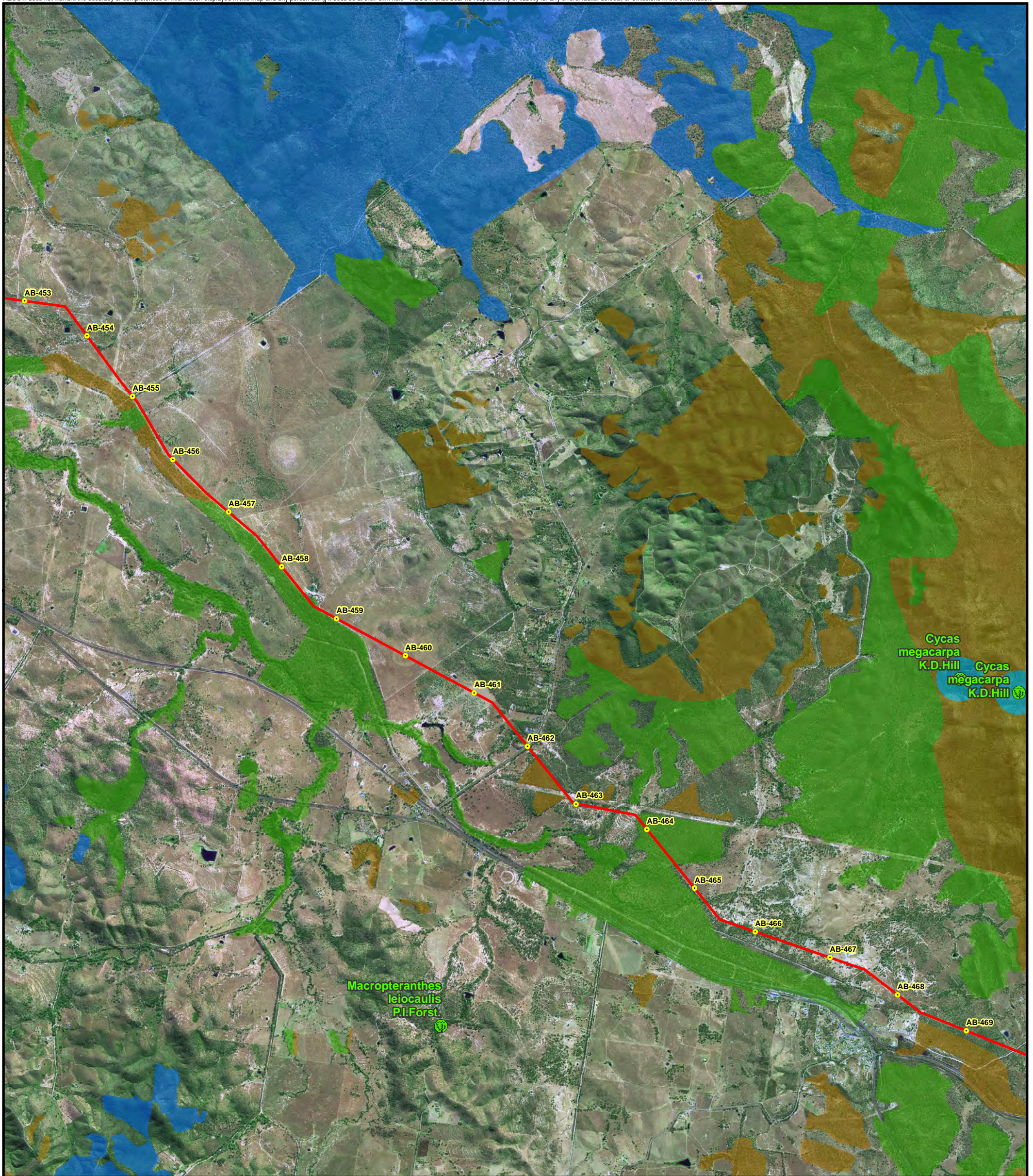
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Data Sources:
 - Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
 - Corridor Buffers Brigalow Belt v1-3, Corridor Vegetation Brigalow Belt v1-3 and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Protected Flora Species
- State
- Regional
- Corridor Buffers Brigalow Belt v1-3**
- State Habitat for EVR taxa
- State
- Regional
- BRB Biodiversity Significance v1-3**
- Local or Other Values
- Non Bioregion Ecosystem

Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

Map 31 Of 41

Main Line

Kp AB-453 To Kp AB-469

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

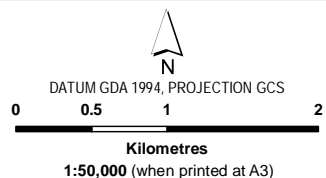
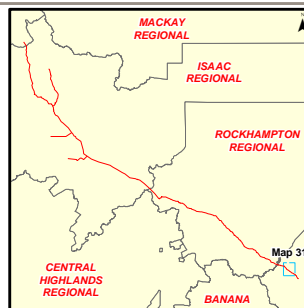
3 - 31

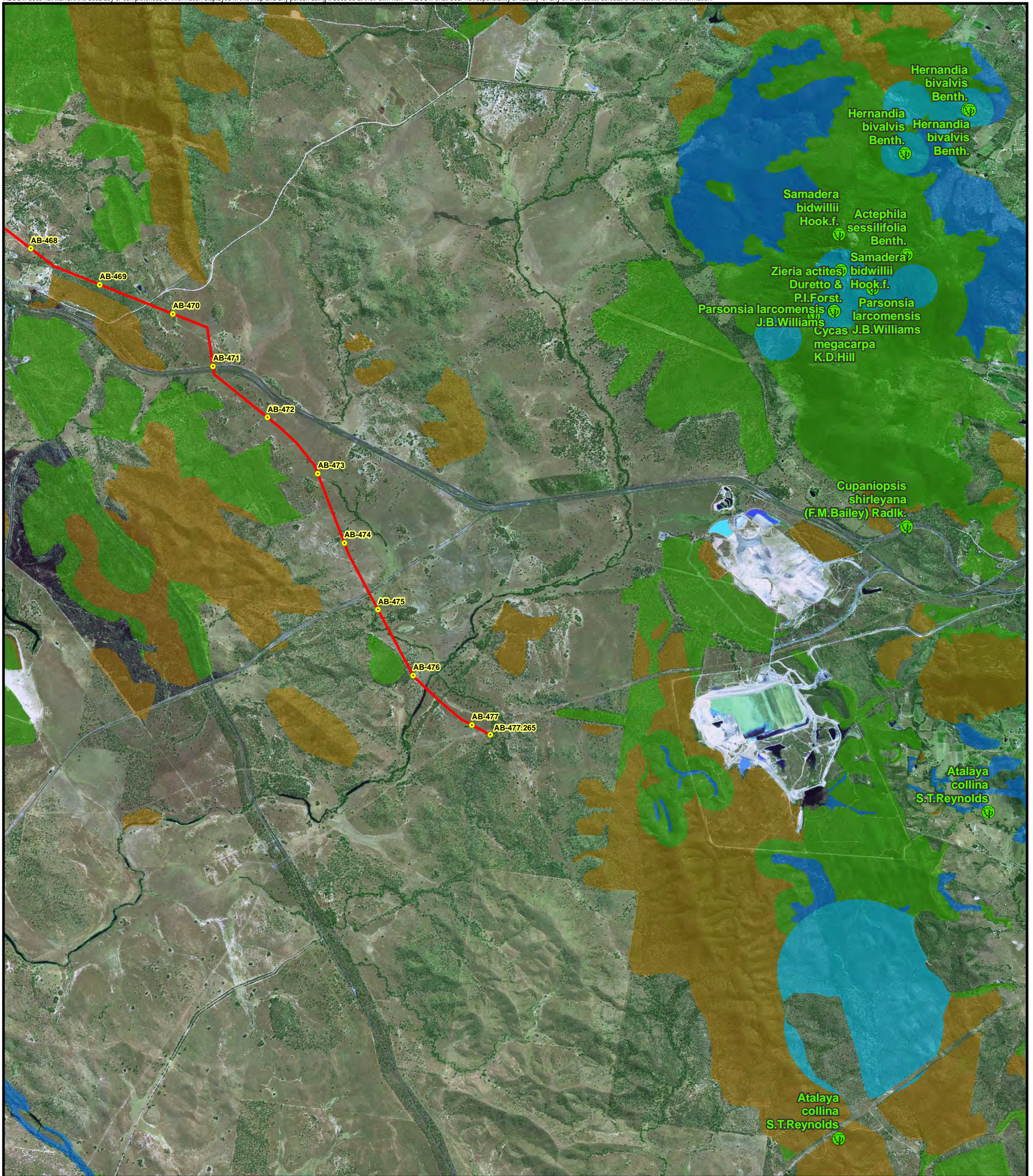
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Data Sources:
 - Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
 - Corridor Buffers Brigalow Belt v1-3, Corridor Vegetation Brigalow Belt v1-3 and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011
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LEGEND

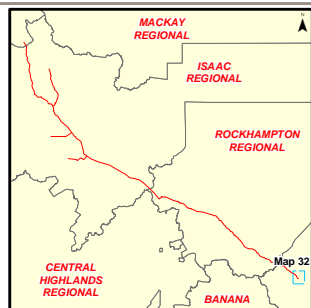
- 1 Km Kilometrage Point
- ABP Route Revision D
- Protected Flora Species
- State
- Regional
- BRB Biodiversity Significance v1-3**
- State Habitat for EVR taxa
- State
- Regional
- Local or Other Values
- Non Bioregion Ecosystem

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Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

Map 32 Of 41

Main Line

Kp AB-468 To Kp AB-477.3

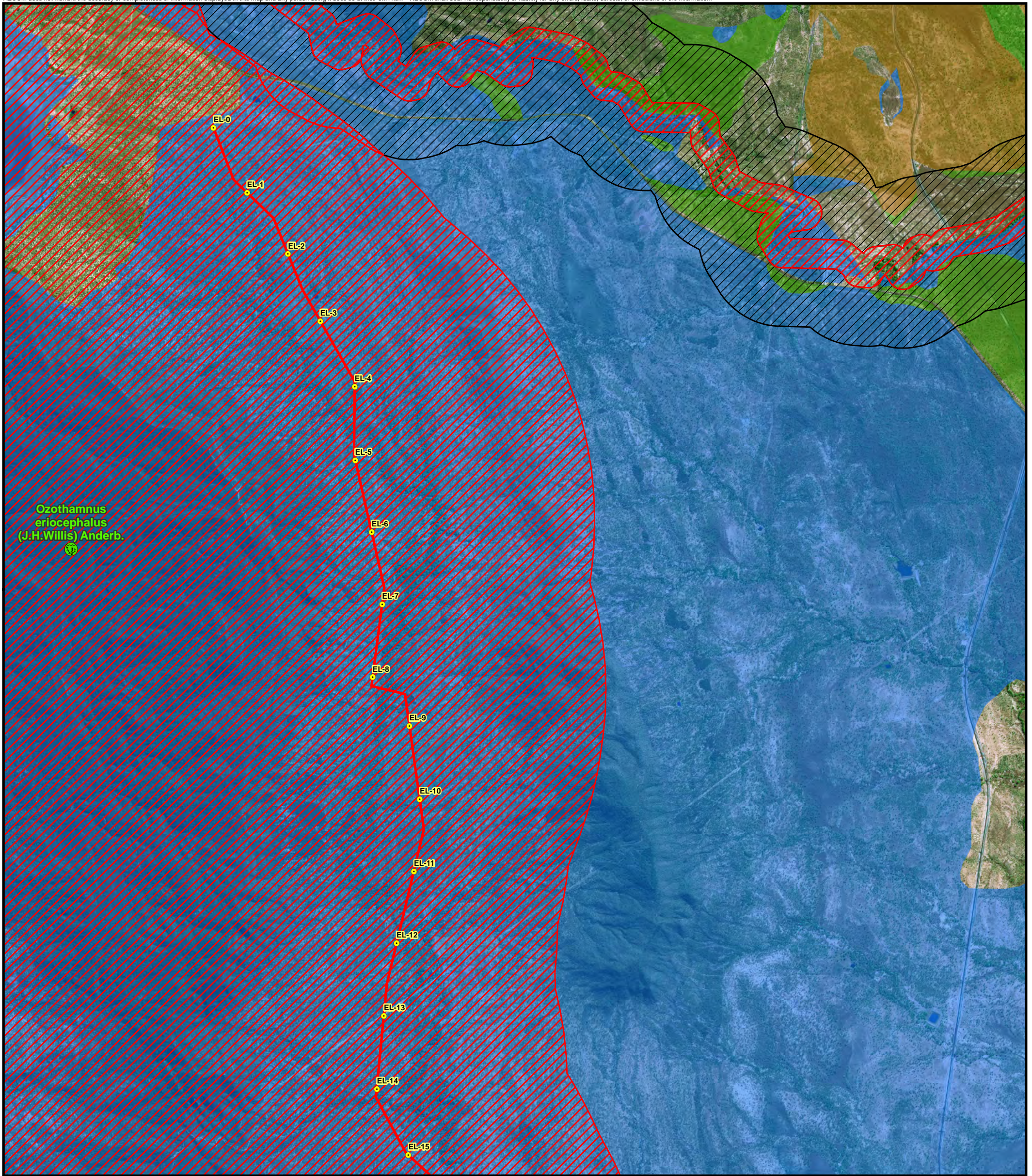
Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

3 - 32



Ozothamnus eriocephalus (J.H. Willis) Anderb.

LEGEND

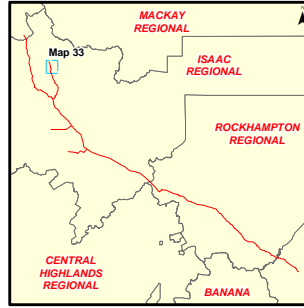
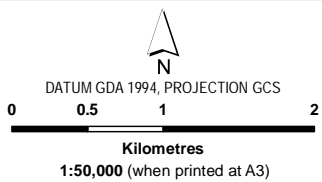
- 1 Km Kilometrage Point
- ABP Route Revision D
- 🌿 Protected Flora Species
- Corridor Buffers Brigalow Belt v1-3**
- ▨ State
- ▨ Regional
- BRB Biodiversity Significance v1-3**
- ▨ State Habitat for EVR taxa
- ▨ State
- ▨ Regional
- ▨ Local or Other Values
- ▨ Non Bioregion Ecosystem

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 - Corridor Buffers Brigalow Belt v1-3, Corridor Vegetation Brigalow Belt v1-3 and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011
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Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

Map 33 Of 41

**Elphinstone Lateral
 Kp EL-0 To Kp EL-15**

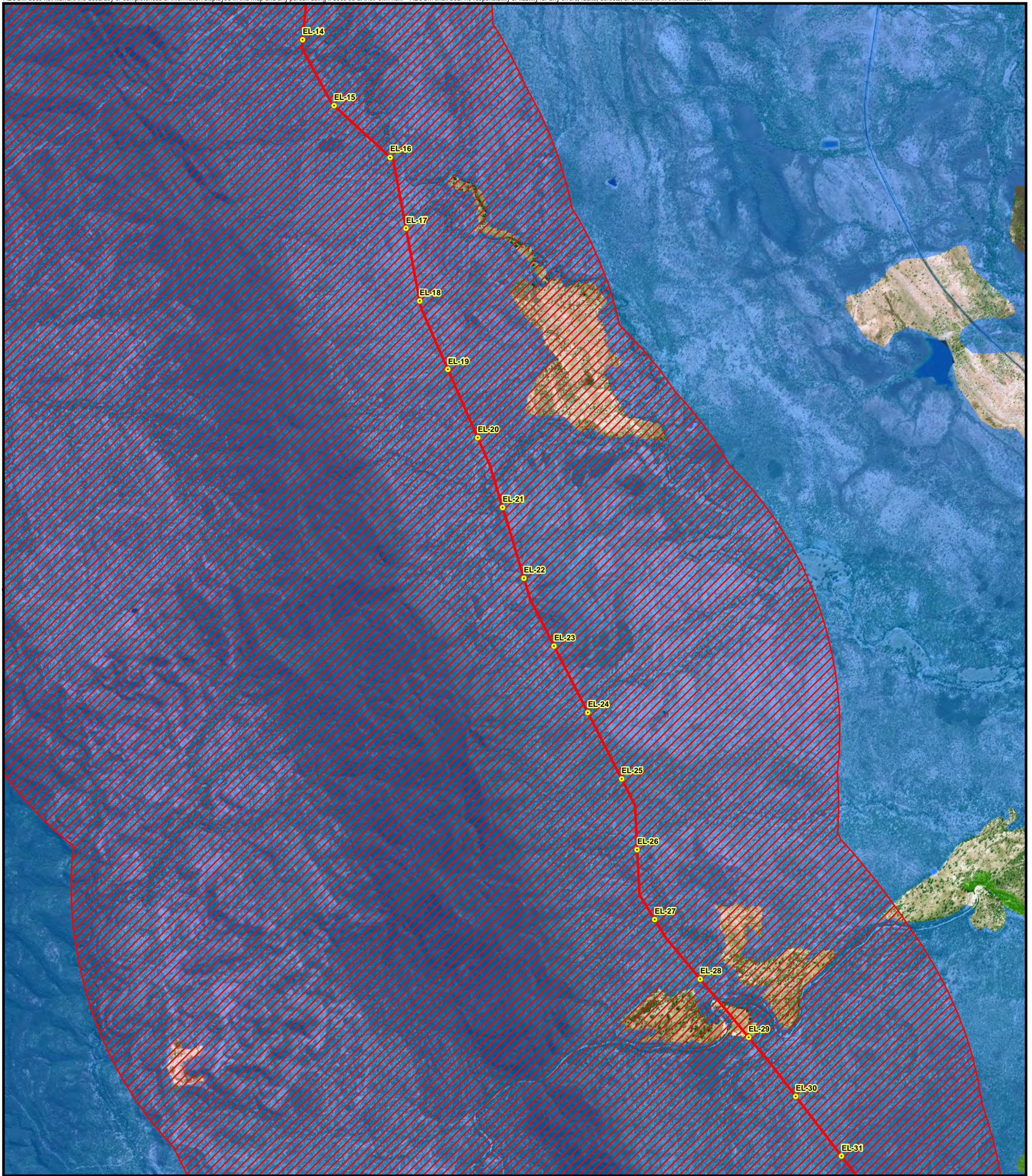
Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

3 - 33



LEGEND

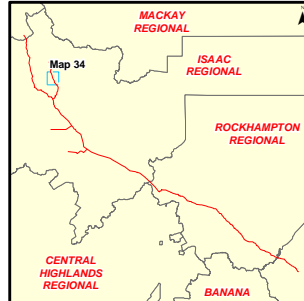
- 1 Km Kilometrage Point
- ABP Route Revision D
- Protected Flora Species
- Corridor Buffers Brigalow Belt v1-3
- State
- Regional
- BRB Biodiversity Significance v1-3
- State Habitat for EVR taxa
- State
- Regional
- Local or Other Values
- Non Bioregion Ecosystem

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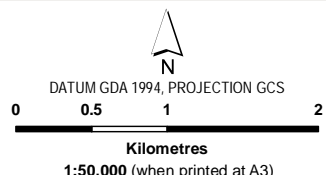
Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

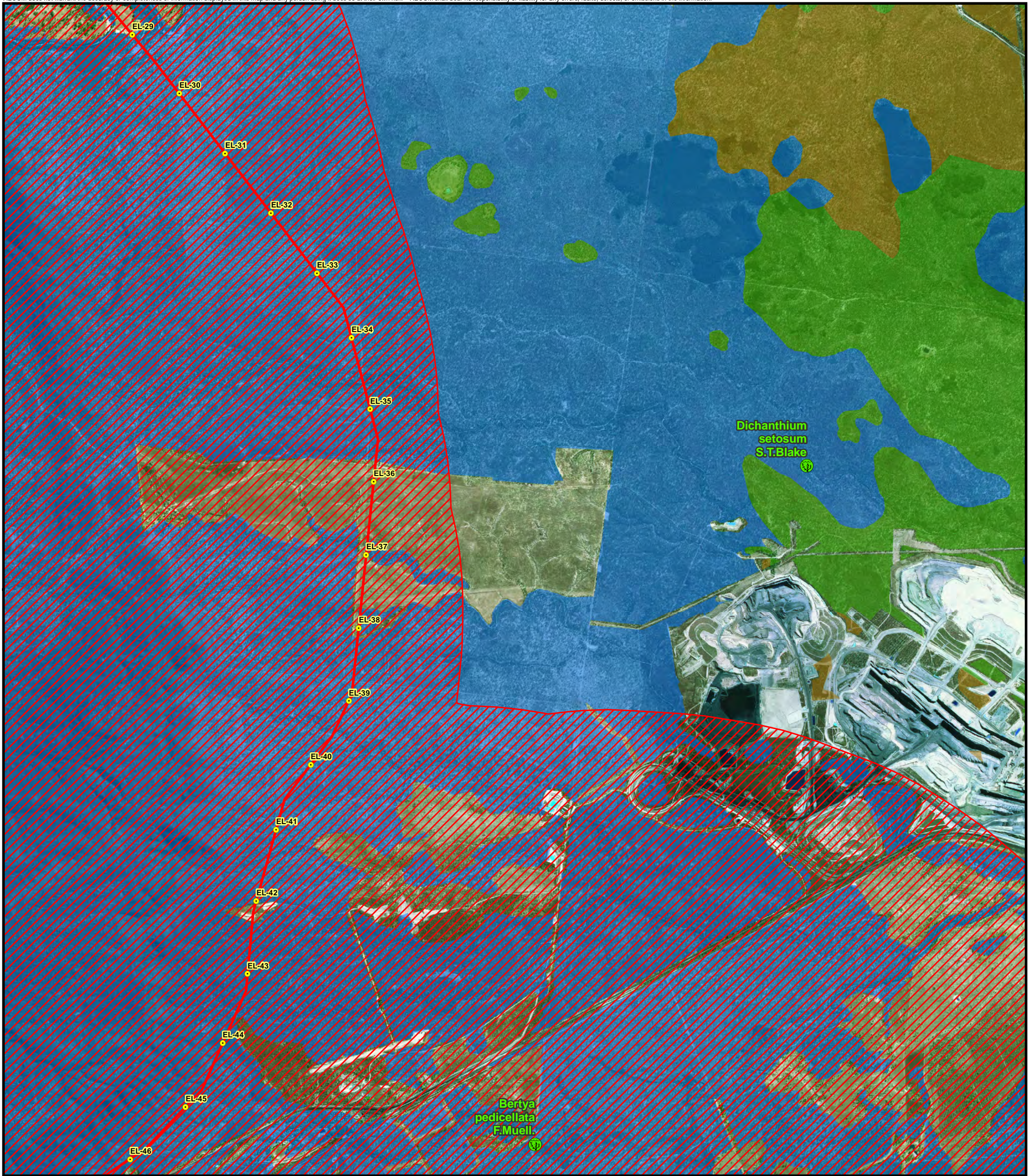
Map 34 Of 41

**Elphinstone Lateral
 Kp EL-14 To Kp EL-31**

Arrow Bowen Pipeline (ABP)
 ABP - EIS - Flora Report
 Isaac to Gladstone, Qld

Map
3 - 34





LEGEND

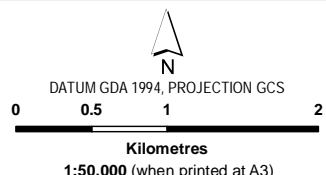
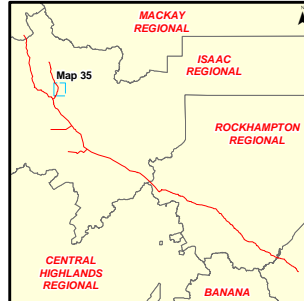
- 1 Km Kilometrage Point
- ABP Route Revision D
- Protected Flora Species
- Corridor Buffers Brigalow Belt v1-3
- State
- Regional
- BRB Biodiversity Significance v1-3
- State Habitat for EVR taxa
- State
- Regional
- Local or Other Values
- Non Bioregion Ecosystem

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Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

Map 35 Of 41

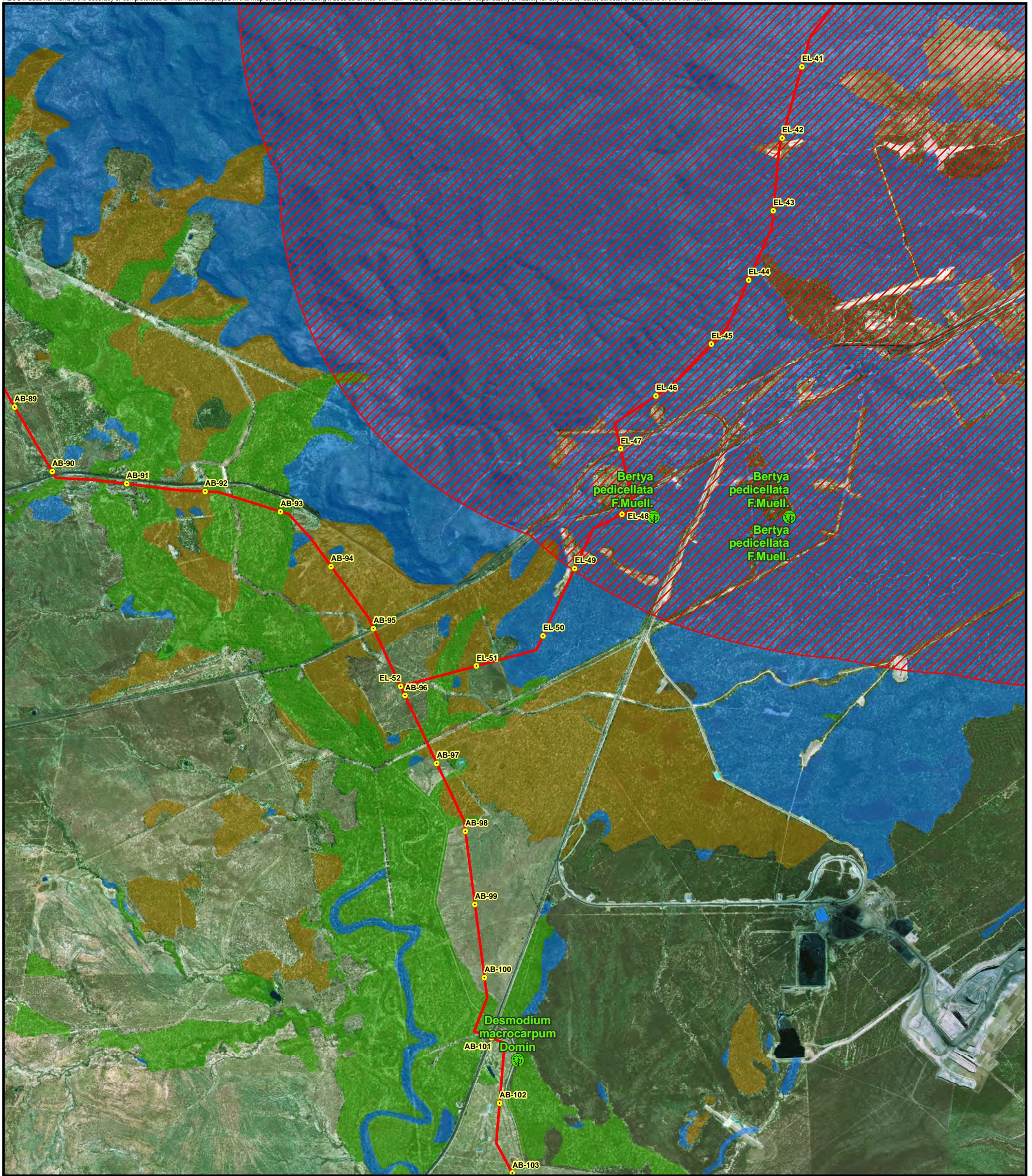
Elphinstone Lateral
Kp EL-29 To EL-46

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map
3 - 35



LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Protected Flora Species
- Corridor Buffers Brigalow Belt v1-3
- State
- Regional
- BRB Biodiversity Significance v1-3**
- State Habitat for EVR taxa
- State
- Regional
- Local or Other Values
- Non Bioregion Ecosystem

Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

Map 36 Of 41

**Elphinstone Lateral
Kp EL-41 To Kp EL-52**

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

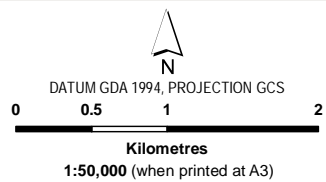
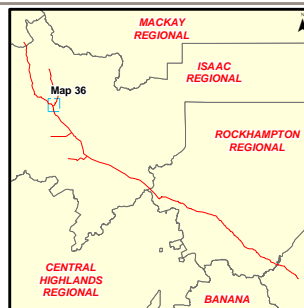
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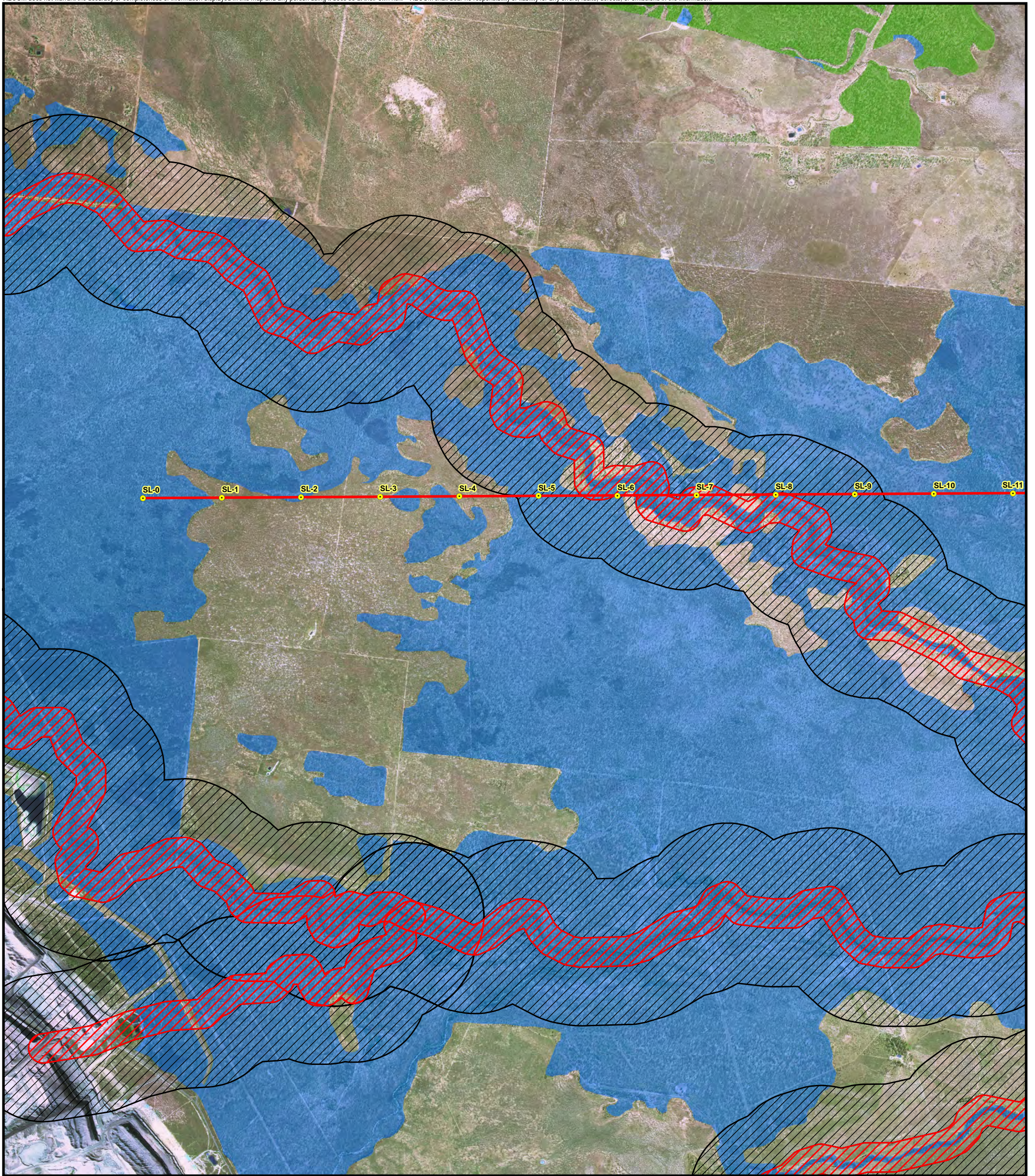
PROJECT ID 60188431
CREATED BY BN
LAST MODIFIED BN 17 October 2011



Data Sources:
 - Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
 - Corridor Buffers Brigalow Belt v1-3, Corridor Vegetation Brigalow Belt v1-3 and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011
 - Protected Flora Species: © The State of Queensland (Department of Environment and Resource Management - Queensland Herbarium) 2011

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LEGEND

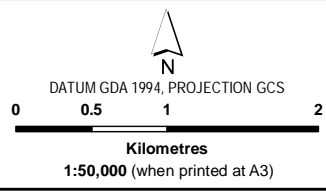
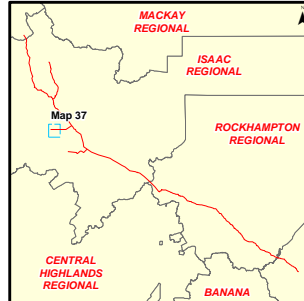
- 1 Km Kilometrage Point
- ABP Route Revision D
- Protected Flora Species
- Corridor Buffers Brigalow Belt v1-3
- State
- Regional
- BRB Biodiversity Significance v1-3**
- State Habitat for EVR taxa
- State
- Regional
- Local or Other Values
- Non Bioregion Ecosystem

PROJECT ID 60188431
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 LAST MODIFIED BN 17 October 2011



Data Sources:
 - Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
 - Corridor Buffers Brigalow Belt v1-3, Corridor Vegetation Brigalow Belt v1-3 and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011
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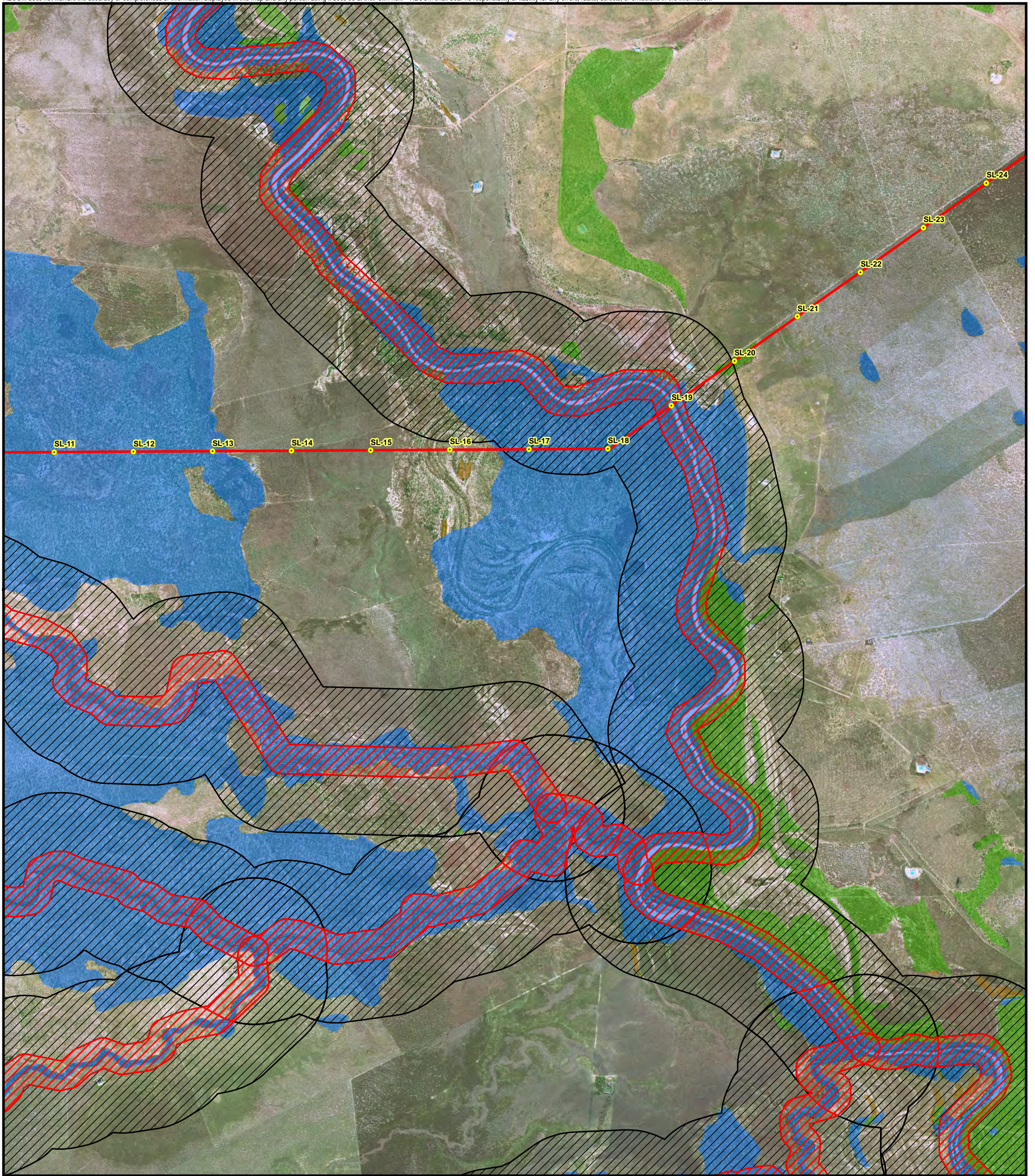


Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

Map 37 Of 41
 Saraji Lateral
 Kp SL-0 To Kp SL-11

Arrow Bowen Pipeline (ABP)
 ABP - EIS - Flora Report
 Isaac to Gladstone, Qld

Map
 3 - 37



LEGEND

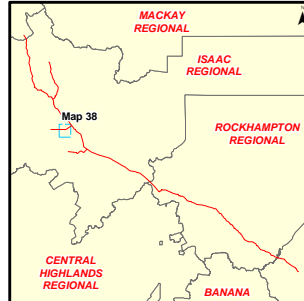
- 1 Km Kilometrage Point
- ABP Route Revision D
- Protected Flora Species
- Corridor Buffers Brigalow Belt v1-3
- State
- Regional
- BRB Biodiversity Significance v1-3**
- State Habitat for EVR taxa
- State
- Regional
- Local or Other Values
- Non Bioregion Ecosystem

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Data Sources:
 - Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
 - Corridor Buffers Brigalow Belt v1-3, Corridor Vegetation Brigalow Belt v1-3 and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011
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Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

Map 38 Of 41

Saraji Lateral

Kp SL-11 To Kp SL-24

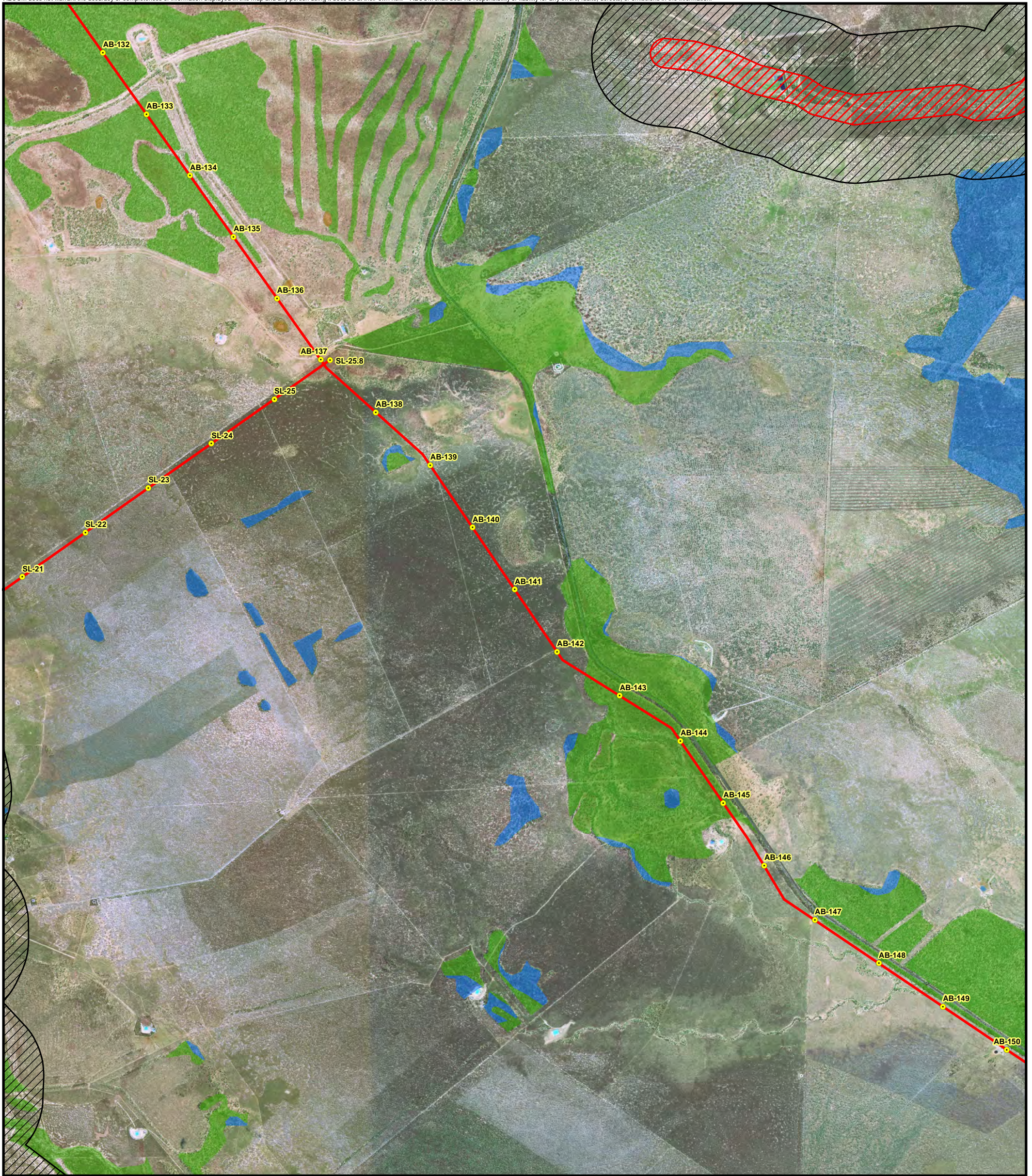
Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

3 - 38



LEGEND

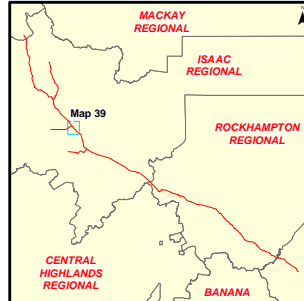
- 1 Km Kilometrage Point
- ABP Route Revision D
- Protected Flora Species
- State
- Regional
- State
- Regional
- State Habitat for EVR taxa
- State
- Regional
- Local or Other Values
- Non Bioregion Ecosystem

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Data Sources:
 - Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
 - Corridor Buffers Brigalow Belt v1-3, Corridor Vegetation Brigalow Belt v1-3 and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011
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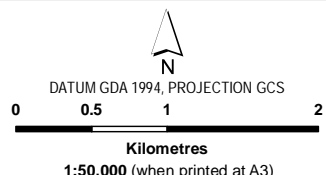


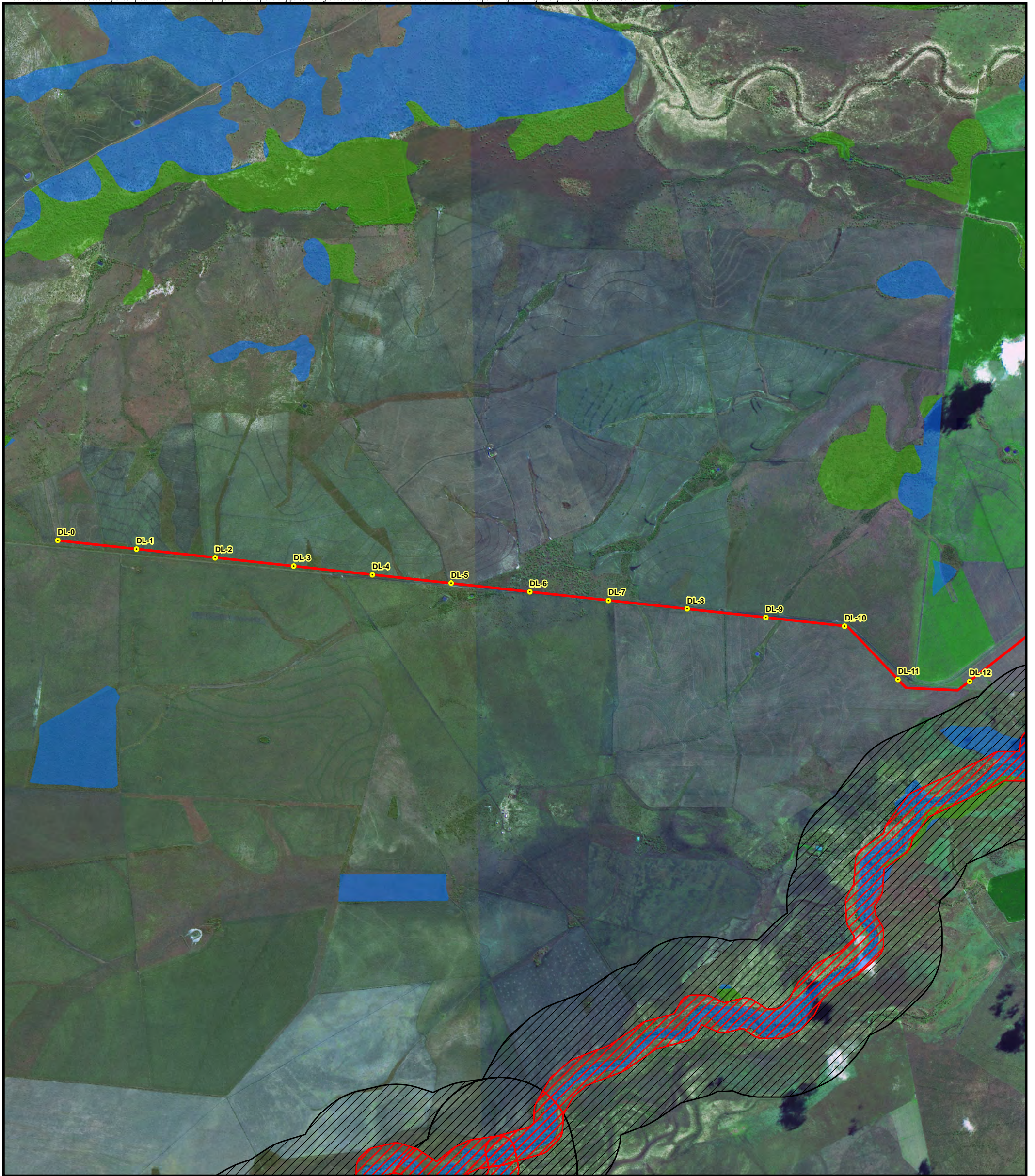
Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

Map 39 Of 41
Saraji Lateral
Kp SL-21 To Kp SL-25.8

Arrow Bowen Pipeline (ABP)
 ABP - EIS - Flora Report
 Isaac to Gladstone, Qld

Map
3 - 39





LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Protected Flora Species
- Corridor Buffers Brigalow Belt v1-3
- State
- Regional
- BRB Biodiversity Significance v1-3**
- State Habitat for EVR taxa
- State
- Regional
- Local or Other Values
- Non Bioregion Ecosystem

Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

Map 40 Of 41

Dysart Lateral

Kp DL-0 To Kp DL-12

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

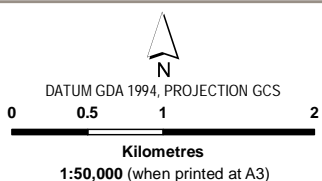
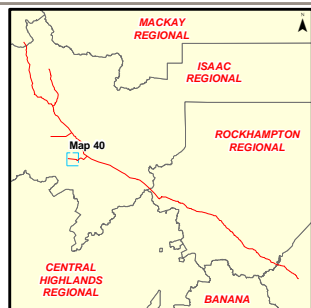
3 - 40

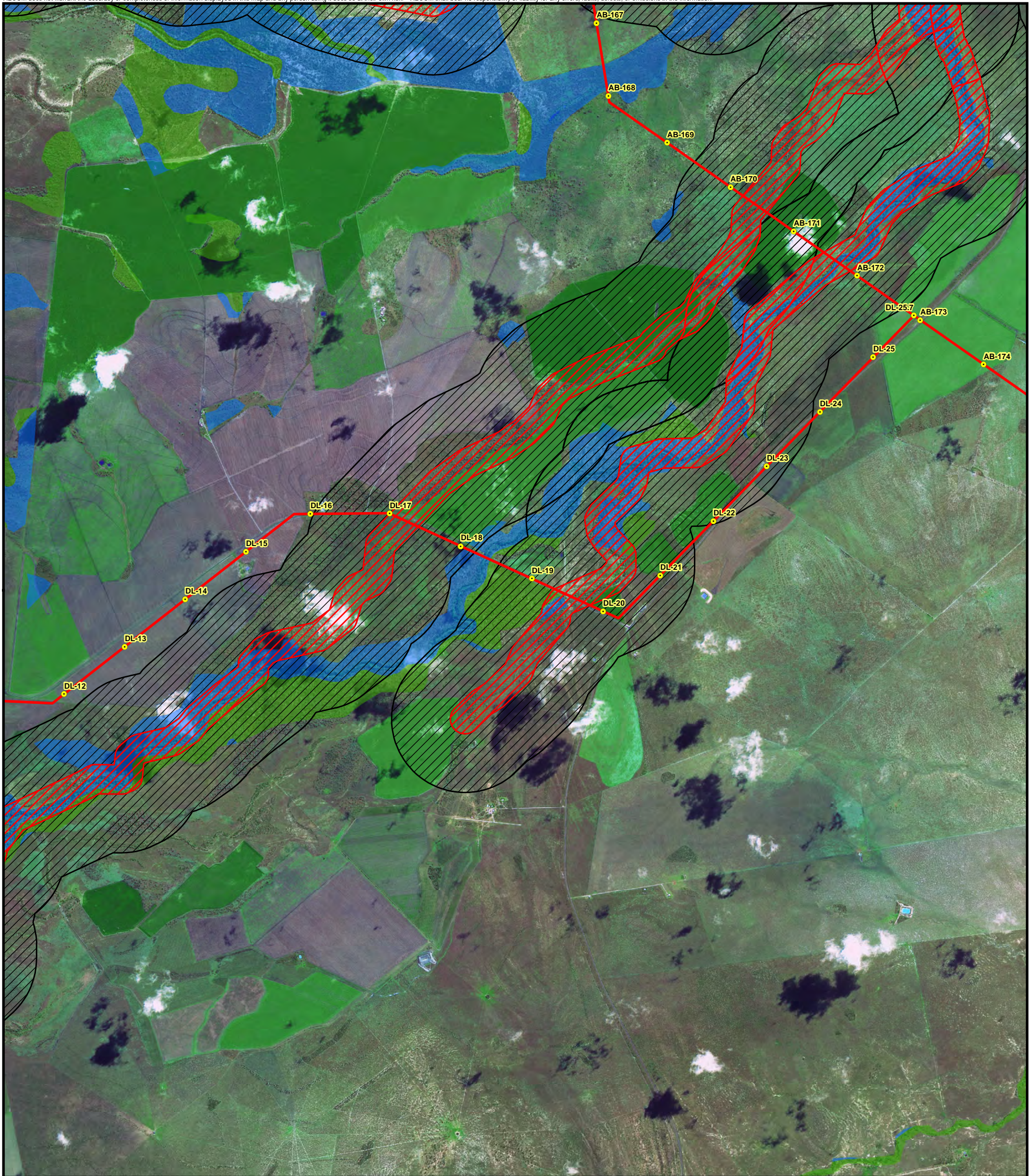
PROJECT ID 60188431
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Data Sources:
 - Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
 - Corridor Buffers Brigalow Belt v1-3, Corridor Vegetation Brigalow Belt v1-3 and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011
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LEGEND

- 1 Km Kilometrage Point
- ABP Route Revision D
- Protected Flora Species
- Corridor Buffers Brigalow Belt v1-3
- State
- Regional
- BRB Biodiversity Significance v1-3**
- State Habitat for EVR taxa
- State
- Regional
- Local or Other Values
- Non Bioregion Ecosystem

Biodiversity Status, Bioregional Corridors and Queensland Herbarium EVNT Flora Records

Map 41 Of 41

Dysart Lateral

Kp DL-12 To Kp DL-25.7

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

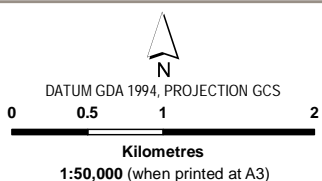
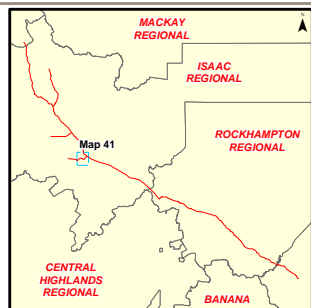
3 - 41

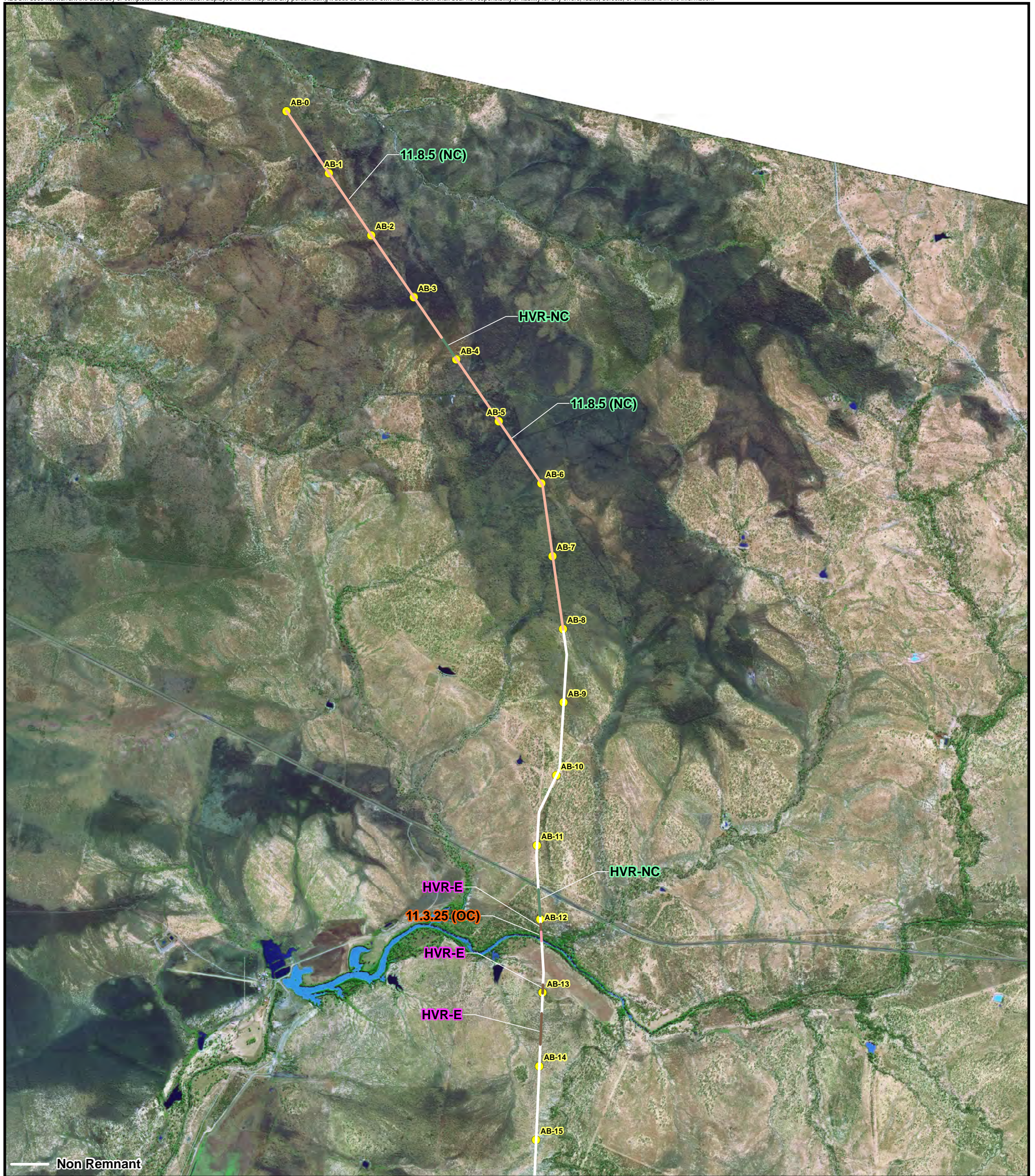
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Data Sources:
 - Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
 - Corridor Buffers Brigalow Belt v1-3, Corridor Vegetation Brigalow Belt v1-3 and Local Government Boundaries: © The State of Queensland (Department of Environment and Resource Management) 2011
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LEGEND

● 1 Km Kilometrage Point

HVR High Value Regrowth Vegetation

E Remnant Endangered Regional Ecosystem

OC Remnant Of Concern Regional Ecosystem

NC Remnant Not Of Concern Regional Ecosystem

EVNT Species

- Euphorbia sarcostemmoides
- Cerbera dumicola
- Desmodium macrocarpum
- ▲ Eucalyptus raveretiana

Regional Ecosystems and Constraints Surveyed along Alignment

Map 1 Of 41

Main Line

Kp AB-0 To Kp AB-15

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

4 - 1

PROJECT ID 60188431
 CREATED BY BN
 LAST MODIFIED BN 21 October 2011

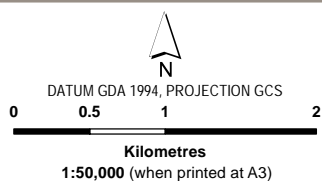


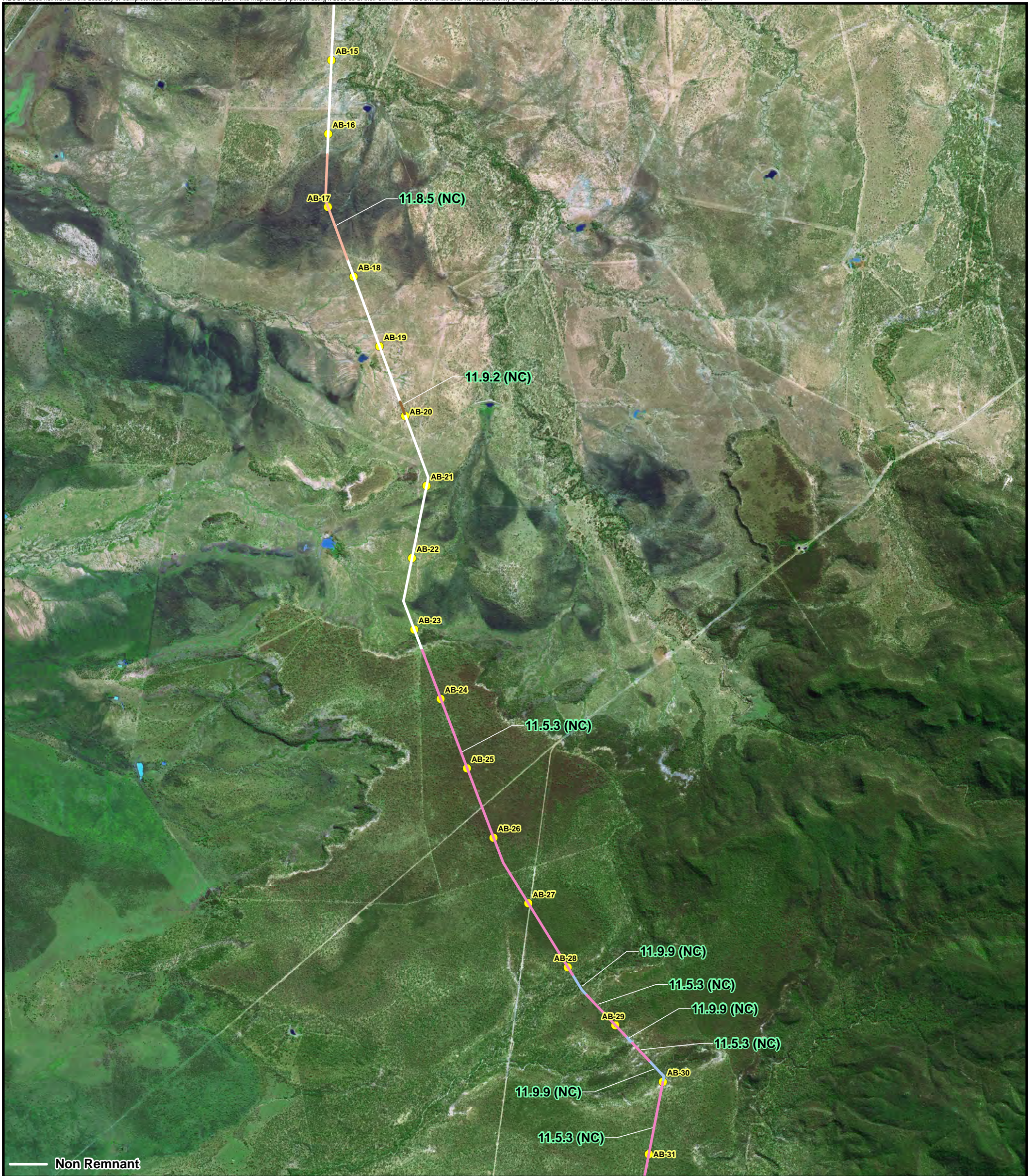
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
- Classified Route and Surveyed EVNT Species: © 2011 AECOM Australia Pty Ltd
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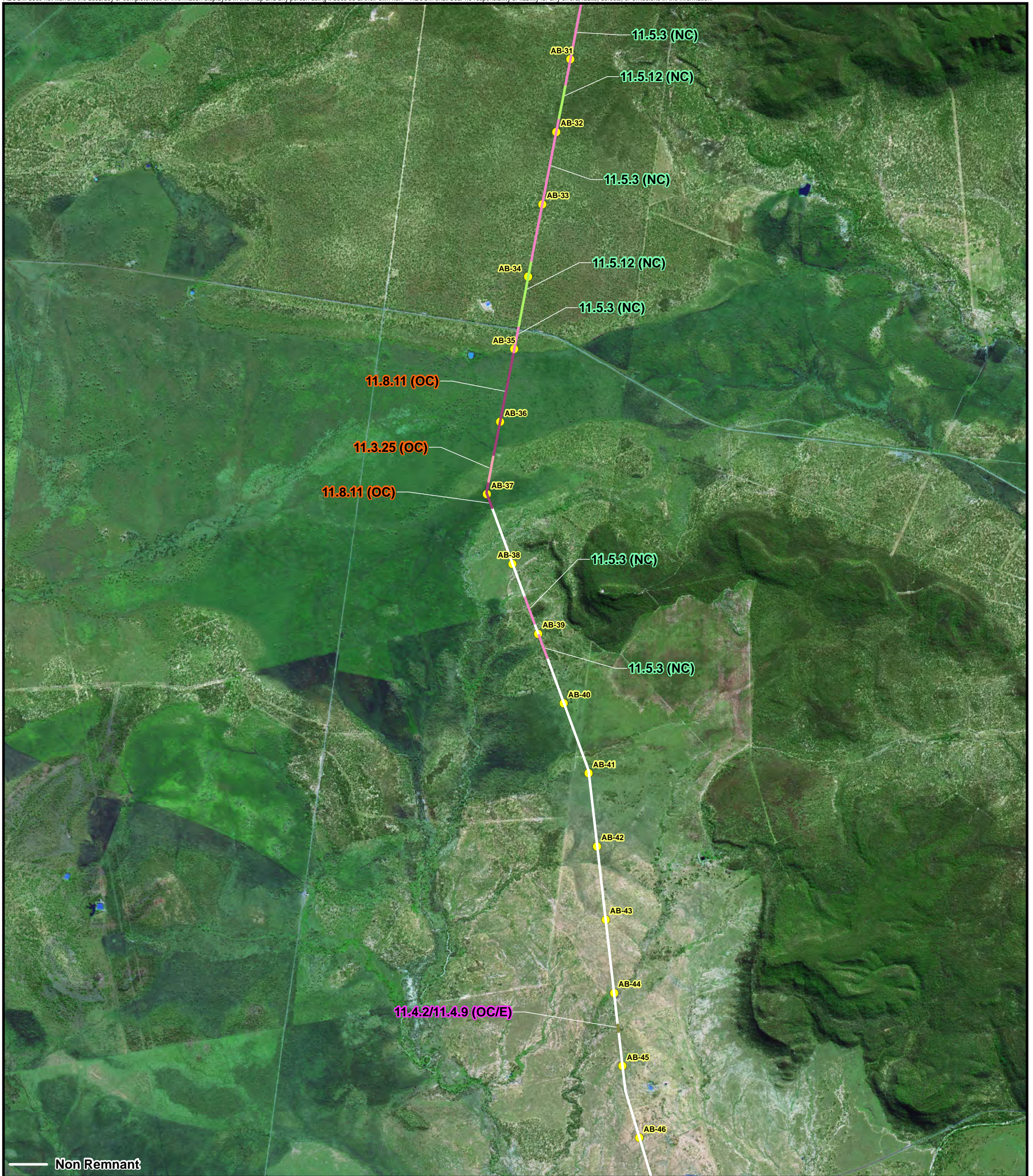
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— Non Remnant

<p>LEGEND</p> <ul style="list-style-type: none"> ● 1 Km Kilometrage Point 	<p>HVR High Value Regrowth Vegetation</p> <ul style="list-style-type: none"> E Remnant Endangered Regional Ecosystem OC Remnant Of Concern Regional Ecosystem NC Remnant Not Of Concern Regional Ecosystem 	<p>EVNT Species</p> <ul style="list-style-type: none"> ● Euphorbia sarcostemmoides ■ Cerbera dumicola ■ Desmodium macrocarpum ▲ Eucalyptus raveretiana 	<p>Regional Ecosystems and Constraints Surveyed along Alignment</p> <p>Map 2 Of 41</p> <p>Main Line</p> <p>Kp AB-15 To Kp AB-31</p> <p>Arrow Bowen Pipeline (ABP)</p> <p>ABP - EIS - Flora Report</p> <p>Isaac to Gladstone, Qld</p>
<p>PROJECT ID 60188431 CREATED BY BN LAST MODIFIED BN 21 October 2011</p> <p>AECOM www.aecom.com</p> <p>DATUM GDA 1994, PROJECTION GCS 0 0.5 1 2 Kilometres 1:50,000 (when printed at A3)</p>	<p>Data Sources:</p> <ul style="list-style-type: none"> - Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline - Classified Route and Surveyed EVNT Species: © 2011 AECOM Australia Pty Ltd - The State of Queensland (Department of Environment and Resource Management) 2011 <p>Disclaimer:</p> <p>© The State of Queensland (Department of Environment and Resource Management) 2011. While every care is taken to ensure the accuracy of the Information Product, the Department of Environment and Resource Management makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the product being inaccurate or incomplete in any way and for any reason.</p>		



LEGEND

● 1 Km Kilometrage Point

HVR High Value Regrowth Vegetation

E Remnant Endangered Regional Ecosystem

OC Remnant Of Concern Regional Ecosystem

NC Remnant Not Of Concern Regional Ecosystem

EVNT Species

- Euphorbia sarcostemmoides
- Cerbera dumicola
- Desmodium macrocarpum
- ▲ Eucalyptus raveretiana

Regional Ecosystems and Constraints Surveyed along Alignment

Map 3 Of 41

Main Line

Kp AB-31 To Kp AB-46

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

4 - 3

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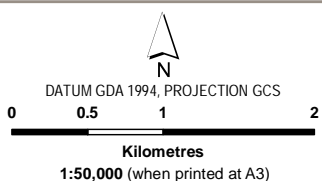
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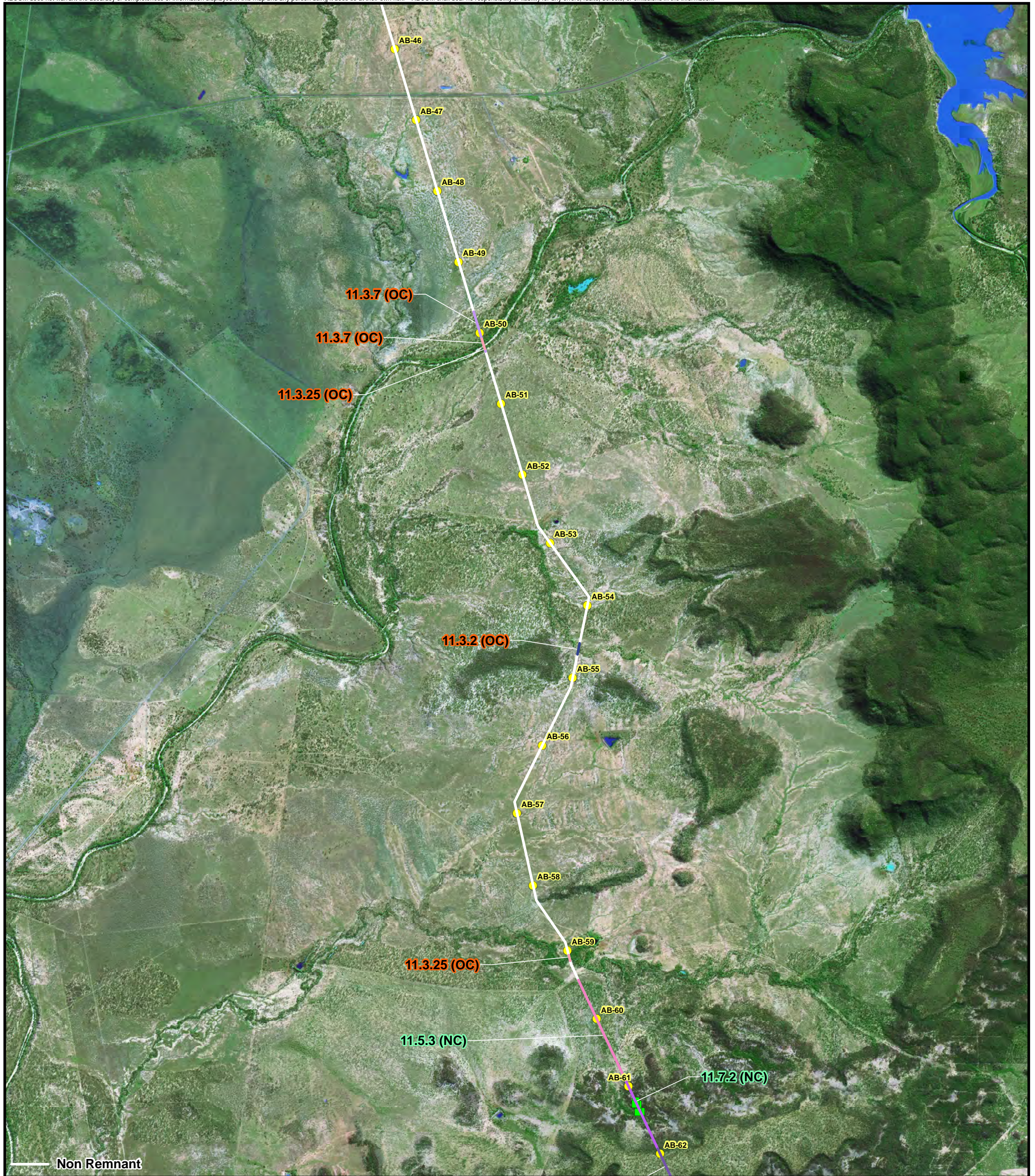
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LEGEND

● 1 Km Kilometrage Point

HVR High Value Regrowth Vegetation

E Remnant Endangered Regional Ecosystem

OC Remnant Of Concern Regional Ecosystem

NC Remnant Not Of Concern Regional Ecosystem

EVNT Species

- Euphorbia sarcostemmoides
- Cerbera dumicola
- Desmodium macrocarpum
- ▲ Eucalyptus raveretiana

Regional Ecosystems and Constraints Surveyed along Alignment

Map 4 Of 41

Main Line

Kp AB-46 To Kp AB-62

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

4 - 4

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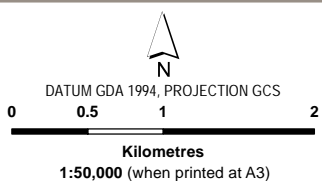
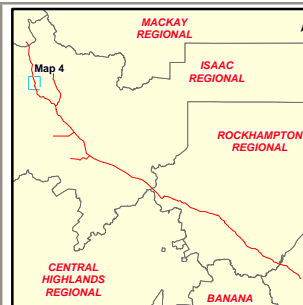


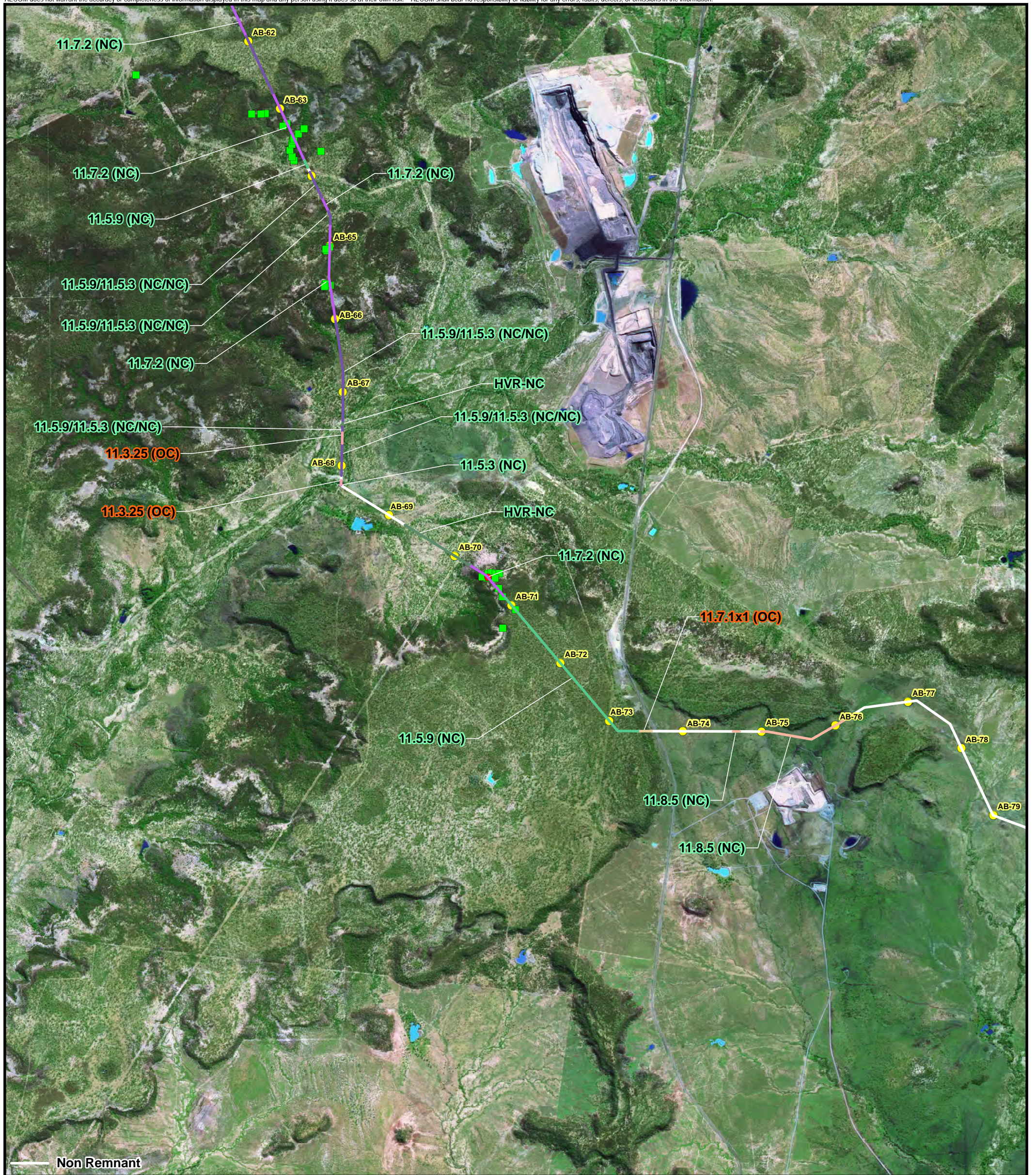
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
- Classified Route and Surveyed EVNT Species: © 2011 AECOM Australia Pty Ltd
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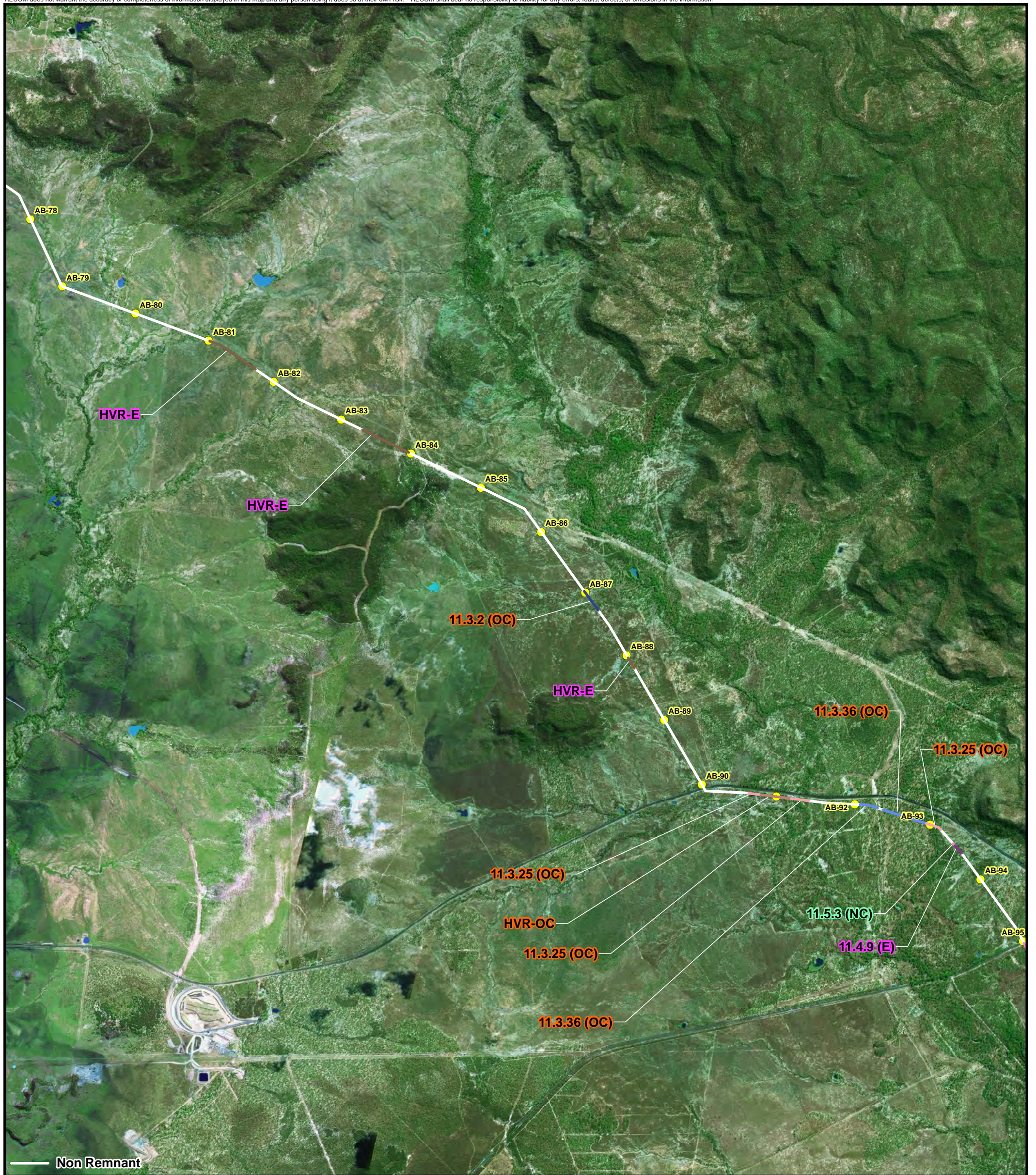
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<p>LEGEND</p> <ul style="list-style-type: none"> ● 1 Km Kilometrage Point 	<p>HVR High Value Regrowth Vegetation</p> <ul style="list-style-type: none"> E Remnant Endangered Regional Ecosystem OC Remnant Of Concern Regional Ecosystem NC Remnant Not Of Concern Regional Ecosystem 	<p>EVNT Species</p> <ul style="list-style-type: none"> ● Euphorbia sarcostemmoides ■ Cerbera dumicola ■ Desmodium macrocarpum ▲ Eucalyptus raveretiana 	<p>Regional Ecosystems and Constraints Surveyed along Alignment</p> <p>Map 5 Of 41</p> <p>Main Line</p> <p>Kp AB-61 To Kp AB-79</p> <p>Arrow Bowen Pipeline (ABP)</p> <p><i>ABP - EIS - Flora Report</i></p> <p>Isaac to Gladstone, Qld</p>
<p>PROJECT ID 60188431 CREATED BY BN LAST MODIFIED BN 21 October 2011</p> <p>AECOM www.aecom.com</p> <p>DATUM GDA 1994, PROJECTION GCS 0 0.5 1 2 Kilometres 1:50,000 (when printed at A3)</p>	<p>Data Sources:</p> <ul style="list-style-type: none"> - Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline - Classified Route and Surveyed EVNT Species: © 2011 AECOM Australia Pty Ltd - © The State of Queensland (Department of Environment and Resource Management) 2011 <p>Disclaimer:</p> <p>© The State of Queensland (Department of Environment and Resource Management) 2011. While every care is taken to ensure the accuracy of the Information Product, the Department of Environment and Resource Management makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the product being inaccurate or incomplete in any way and for any reason.</p>		



LEGEND

● 1 Km Kilometrage Point

HVR High Value Regrowth Vegetation

- E** Remnant Endangered Regional Ecosystem
- OC** Remnant Of Concern Regional Ecosystem
- NC** Remnant Not Of Concern Regional Ecosystem

EVNT Species

- Euphorbia sarcostemmoides
- Cerbera dumicola
- Desmodium macrocarpum
- ▲ Eucalyptus raveretiana

Regional Ecosystems and Constraints Surveyed along Alignment

Map 6 Of 41

Main Line

Kp AB-78 To Kp AB-94

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

4 - 6

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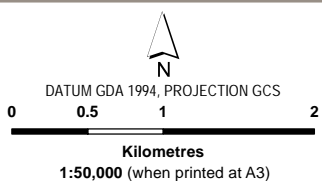
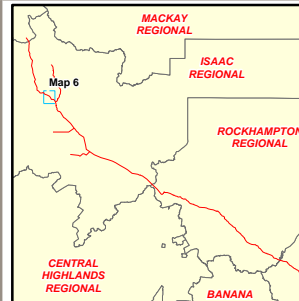


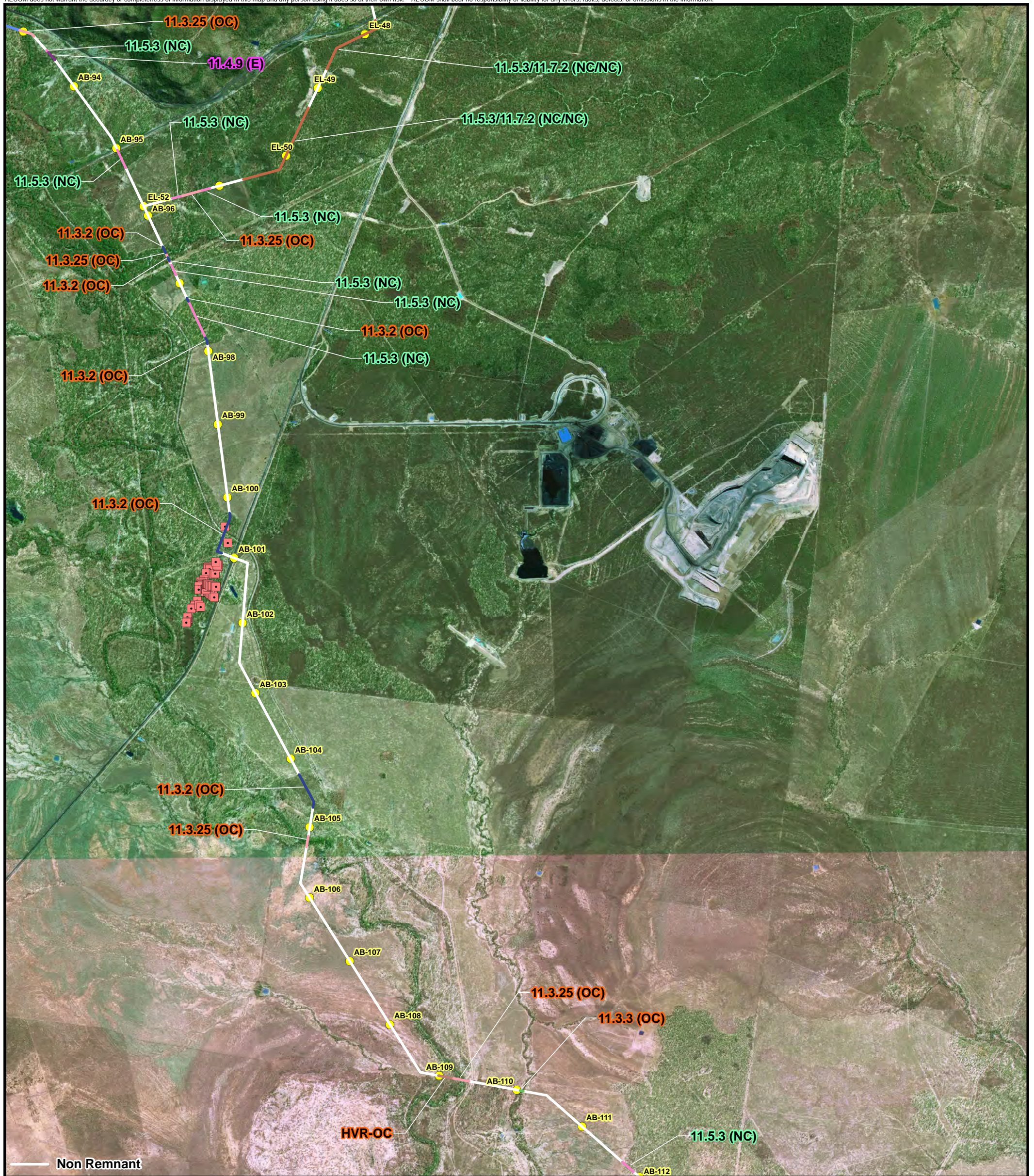
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
- Classified Route and Surveyed EVNT Species: © 2011 AECOM Australia Pty Ltd
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LEGEND

- 1 Km Kilometrage Point

HVR	High Value Regrowth Vegetation
E	Remnant Endangered Regional Ecosystem
OC	Remnant Of Concern Regional Ecosystem
NC	Remnant Not Of Concern Regional Ecosystem

EVNT Species

- **Euphorbia sarcostemmoides**
- **Cerbera dumicola**
- **Desmodium macrocarpum**
- ▲ **Eucalyptus raveretiana**

Regional Ecosystems and Constraints Surveyed along Alignment

Map 7 Of 41

Main Line

Kp AB-94 To Kp AB-111

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

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DATUM GDA 1994, PROJECTION GCS

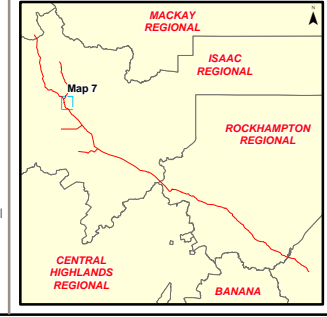
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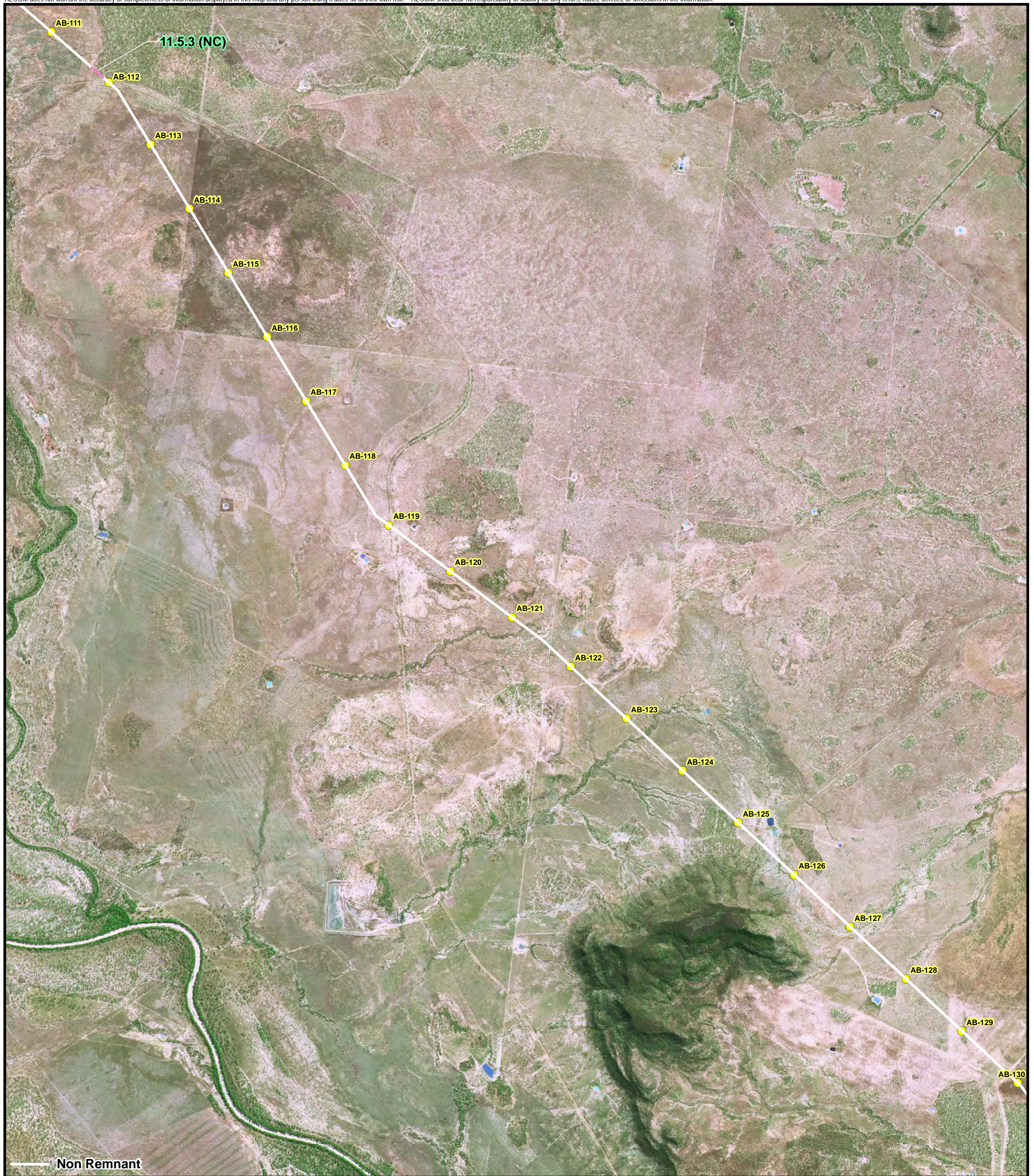
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
- Classified Route and Surveyed EVNT Species: © 2011 AECOM Australia Pty Ltd
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LEGEND

● 1 Km Kilometrage Point

HVR High Value Regrowth Vegetation

- E** Remnant Endangered Regional Ecosystem
- OC** Remnant Of Concern Regional Ecosystem
- NC** Remnant Not Of Concern Regional Ecosystem

EVNT Species

- Euphorbia sarcostemmoides
- Cerbera dumicola
- Desmodium macrocarpum
- ▲ Eucalyptus raveretiana

Regional Ecosystems and Constraints Surveyed along Alignment

Map 8 Of 41

Main Line

Kp AB-111 To Kp AB-129

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

4 - 8

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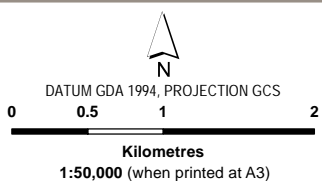
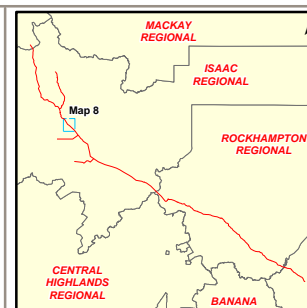


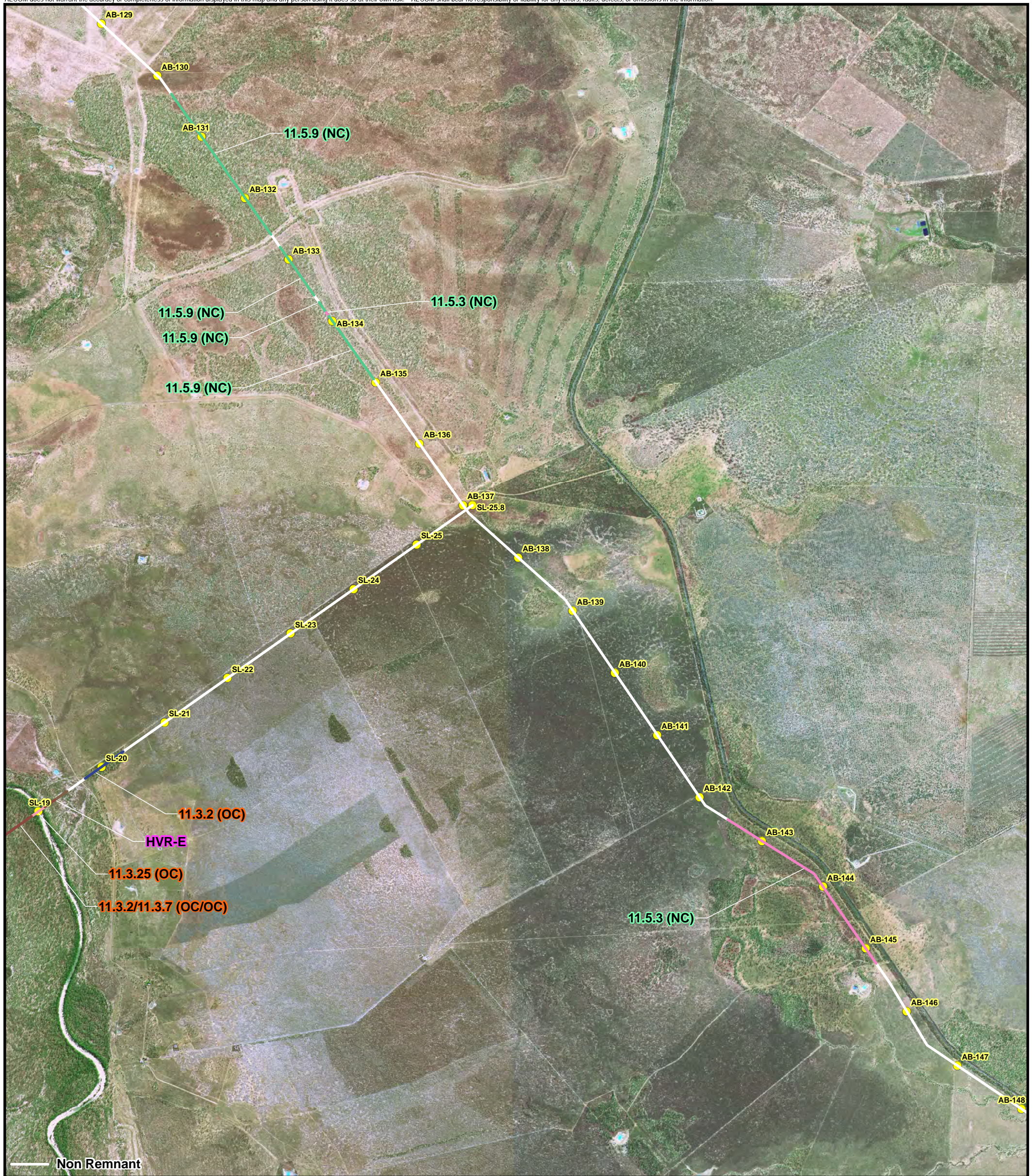
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
- Classified Route and Surveyed EVNT Species: © 2011 AECOM Australia Pty Ltd
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● 1 Km Kilometrage Point

HVR High Value Regrowth Vegetation

- E** Remnant Endangered Regional Ecosystem
- OC** Remnant Of Concern Regional Ecosystem
- NC** Remnant Not Of Concern Regional Ecosystem

EVNT Species

- Euphorbia sarcostemmoides
- Cerbera dumicola
- Desmodium macrocarpum
- ▲ Eucalyptus raveretiana

Regional Ecosystems and Constraints Surveyed along Alignment

Map 9 Of 41

Main Line

Kp AB-129 To Kp AB-147

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

4 - 9

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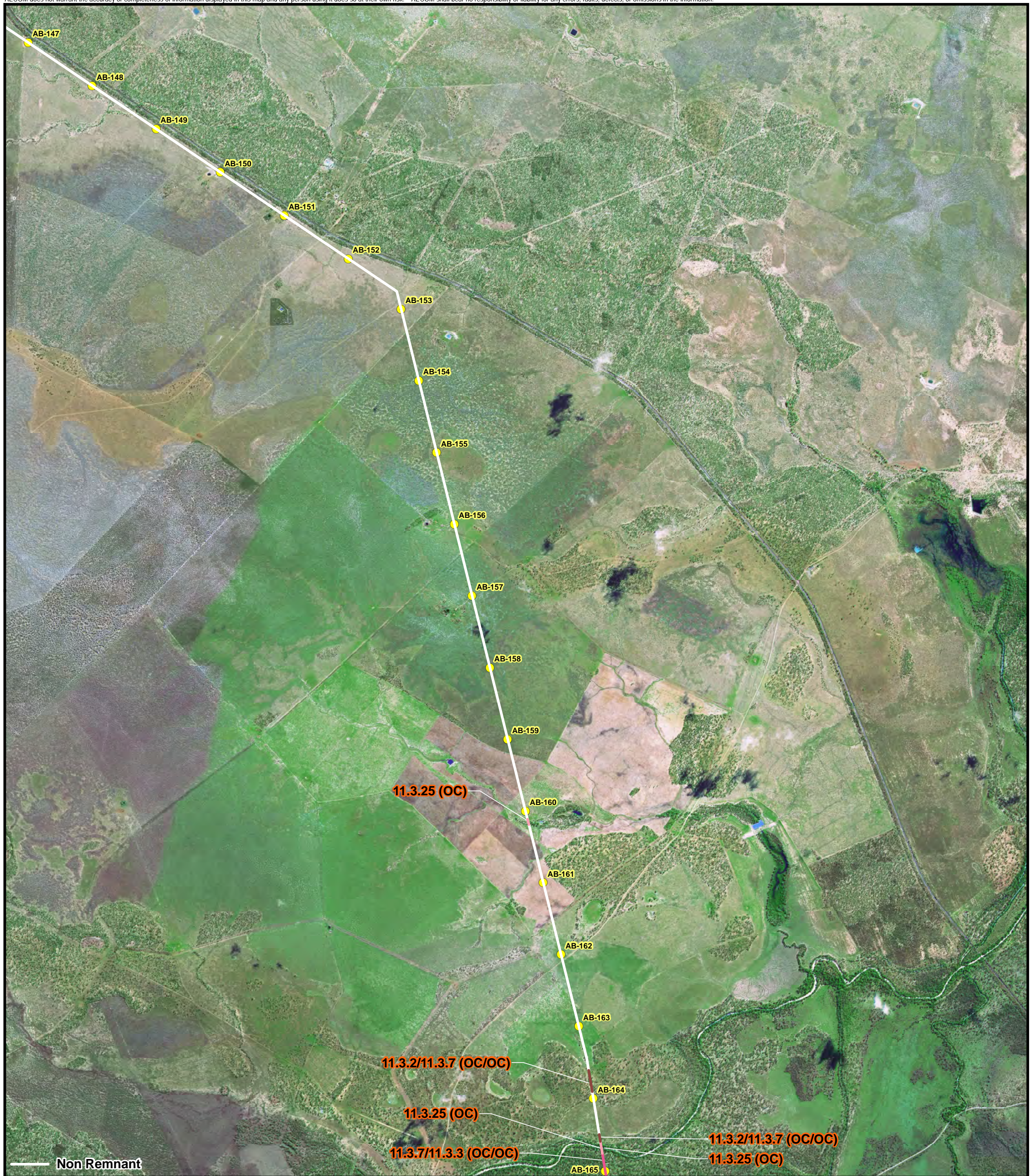
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
- Classified Route and Surveyed EVNT Species: © 2011 AECOM Australia Pty Ltd
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LEGEND

● 1 Km Kilometrage Point

HVR High Value Regrowth Vegetation

E Remnant Endangered Regional Ecosystem

OC Remnant Of Concern Regional Ecosystem

NC Remnant Not Of Concern Regional Ecosystem

EVNT Species

- Euphorbia sarcostemmoides
- Cerbera dumicola
- Desmodium macrocarpum
- ▲ Eucalyptus raveretiana

Regional Ecosystems and Constraints Surveyed along Alignment

Map 10 Of 41

Main Line

Kp AB-147 To Kp AB-165

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

4 - 10

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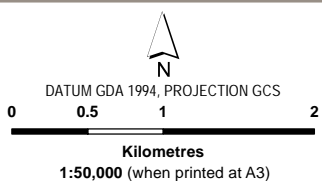
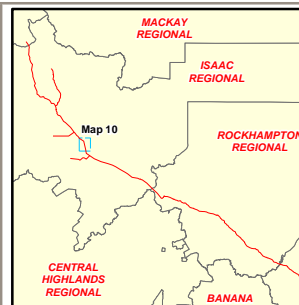


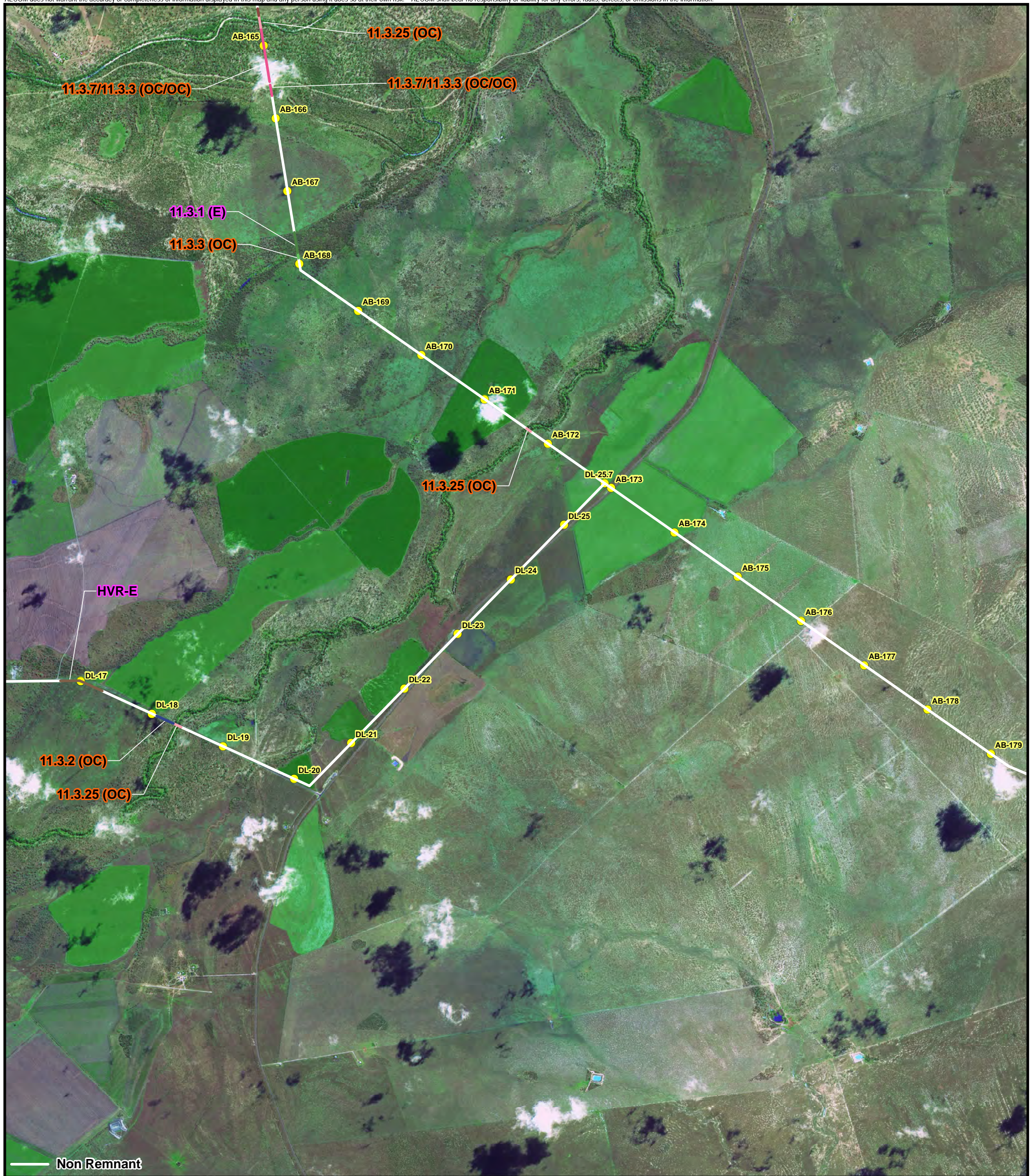
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
- Classified Route and Surveyed EVNT Species: © 2011 AECOM Australia Pty Ltd
- © The State of Queensland (Department of Environment and Resource Management) 2011

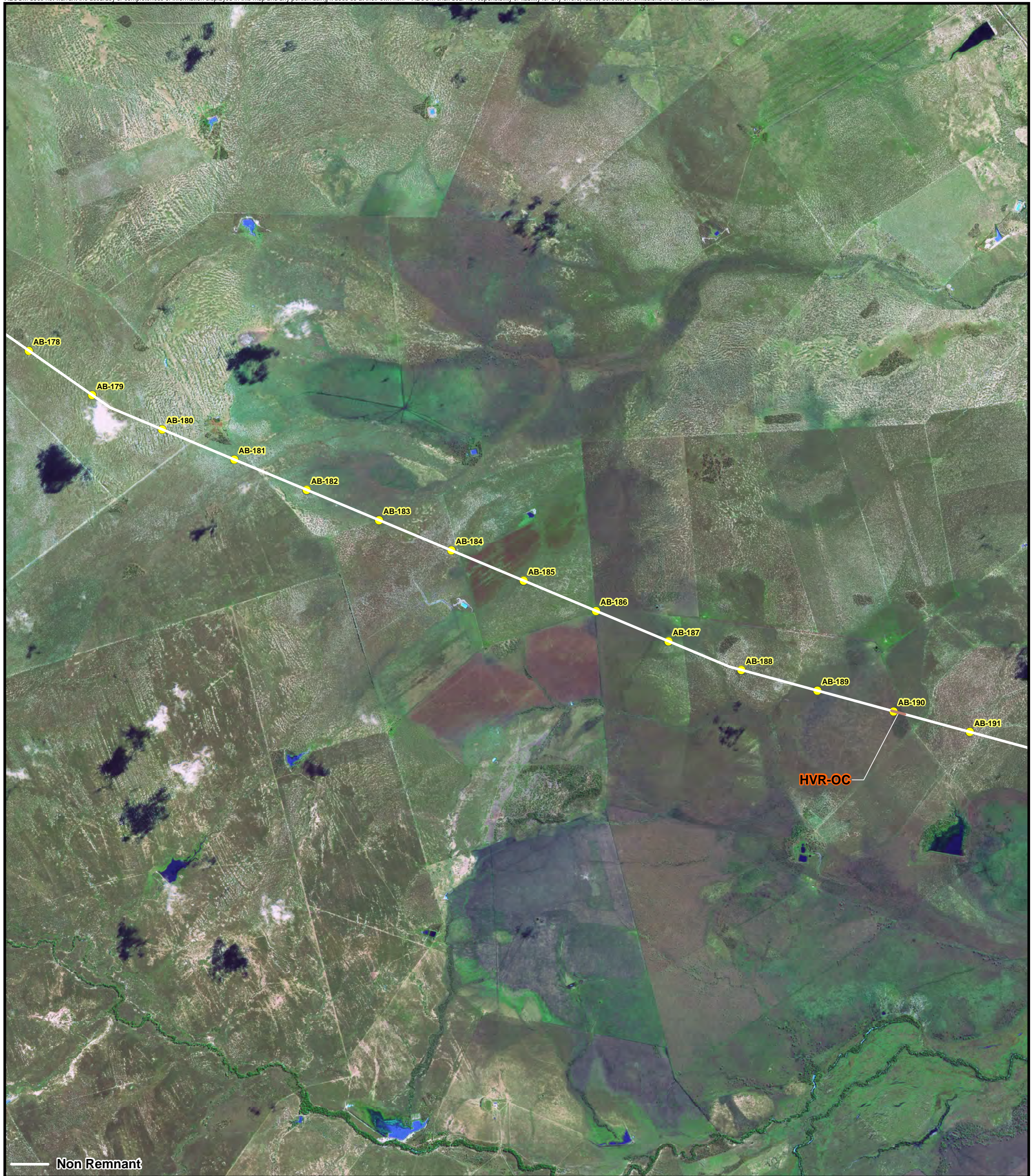
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<p>LEGEND</p> <ul style="list-style-type: none"> ● 1 Km Kilometrage Point 	<p>HVR High Value Regrowth Vegetation</p> <ul style="list-style-type: none"> E Remnant Endangered Regional Ecosystem OC Remnant Of Concern Regional Ecosystem NC Remnant Not Of Concern Regional Ecosystem 	<p>EVNT Species</p> <ul style="list-style-type: none"> ● Euphorbia sarcostemmoides ■ Cerbera dumicola ■ Desmodium macrocarpum ▲ Eucalyptus raveretiana 	<p>Regional Ecosystems and Constraints Surveyed along Alignment</p> <p>Map 11 Of 41</p> <p>Main Line</p> <p>Kp AB-165 To Kp AB-178</p> <p>Arrow Bowen Pipeline (ABP)</p> <p>ABP - EIS - Flora Report</p> <p>Isaac to Gladstone, Qld</p>
<p>PROJECT ID 60188431 CREATED BY BN LAST MODIFIED BN 21 October 2011</p> <p>AECOM www.aecom.com</p> <p>DATUM GDA 1994, PROJECTION GCS 0 0.5 1 2 Kilometres 1:50,000 (when printed at A3)</p>	<p>Data Sources:</p> <ul style="list-style-type: none"> - Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline - Classified Route and Surveyed EVNT Species: © 2011 AECOM Australia Pty Ltd - © The State of Queensland (Department of Environment and Resource Management) 2011 <p>Disclaimer:</p> <p>© The State of Queensland (Department of Environment and Resource Management) 2011. While every care is taken to ensure the accuracy of the Information Product, the Department of Environment and Resource Management makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the product being inaccurate or incomplete in any way and for any reason.</p>		



LEGEND

● 1 Km Kilometrage Point

HVR High Value Regrowth Vegetation

- E** Remnant Endangered Regional Ecosystem
- OC** Remnant Of Concern Regional Ecosystem
- NC** Remnant Not Of Concern Regional Ecosystem

EVNT Species

- Euphorbia sarcostemmoides
- Cerbera dumicola
- Desmodium macrocarpum
- ▲ Eucalyptus raveretiana

Regional Ecosystems and Constraints Surveyed along Alignment

Map 12 Of 41

Main Line

Kp AB-178 To Kp AB-191

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

4 - 12

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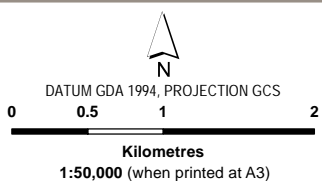
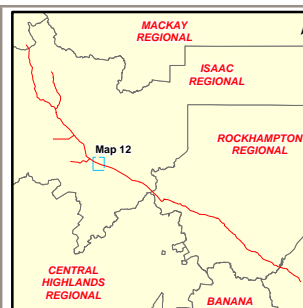


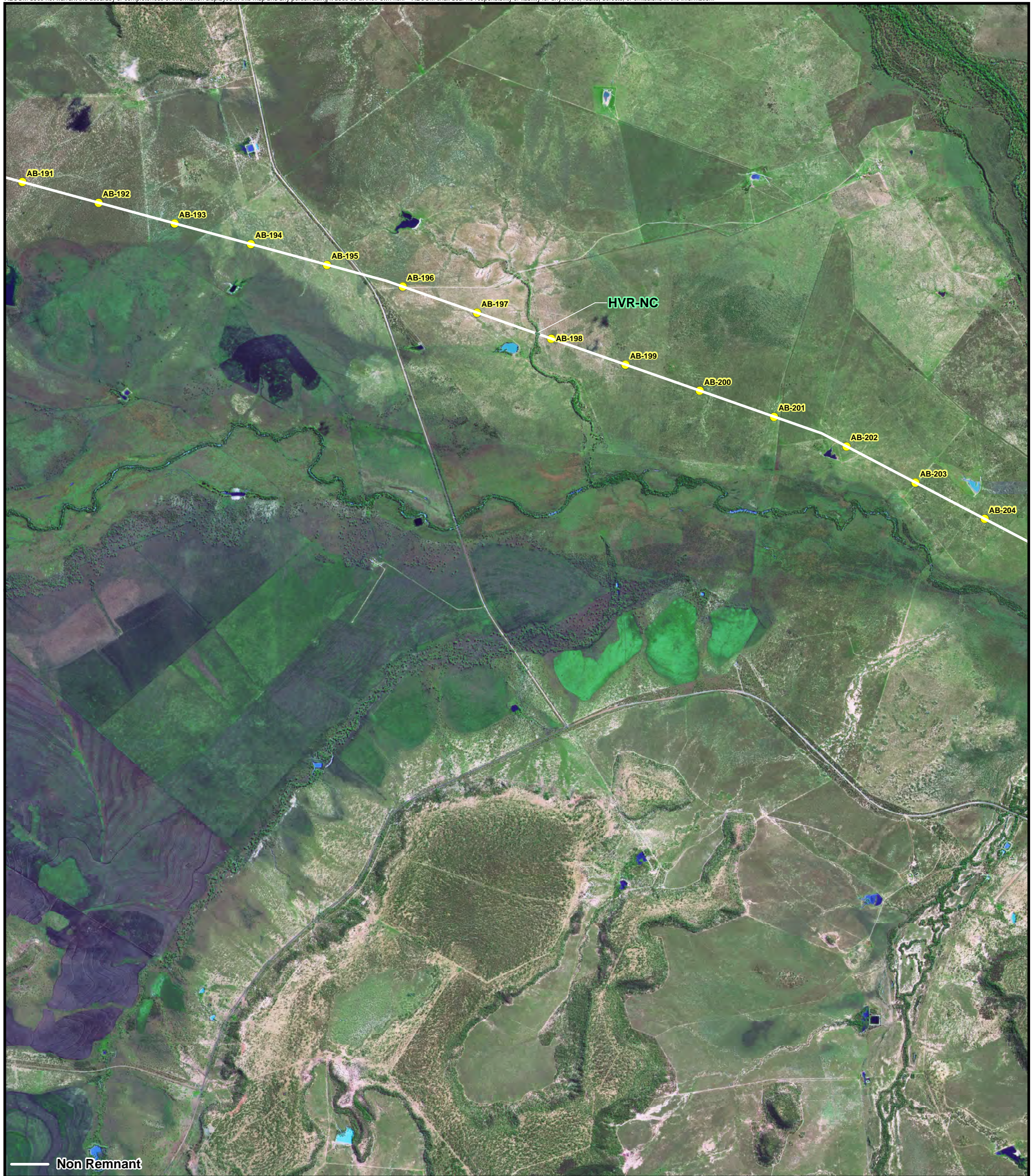
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
- Classified Route and Surveyed EVNT Species: © 2011 AECOM Australia Pty Ltd
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LEGEND

● 1 Km Kilometrage Point

HVR High Value Regrowth Vegetation

E Remnant Endangered Regional Ecosystem

OC Remnant Of Concern Regional Ecosystem

NC Remnant Not Of Concern Regional Ecosystem

EVNT Species

- Euphorbia sarcostemmoides
- Cerbera dumicola
- Desmodium macrocarpum
- ▲ Eucalyptus raveretiana

Regional Ecosystems and Constraints Surveyed along Alignment

Map 13 Of 41

Main Line

Kp AB-191 To Kp AB-204

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

4 - 13

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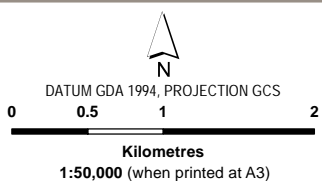
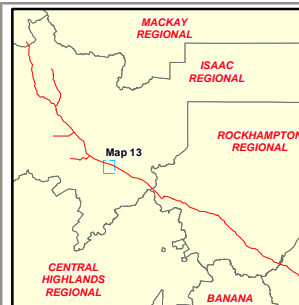


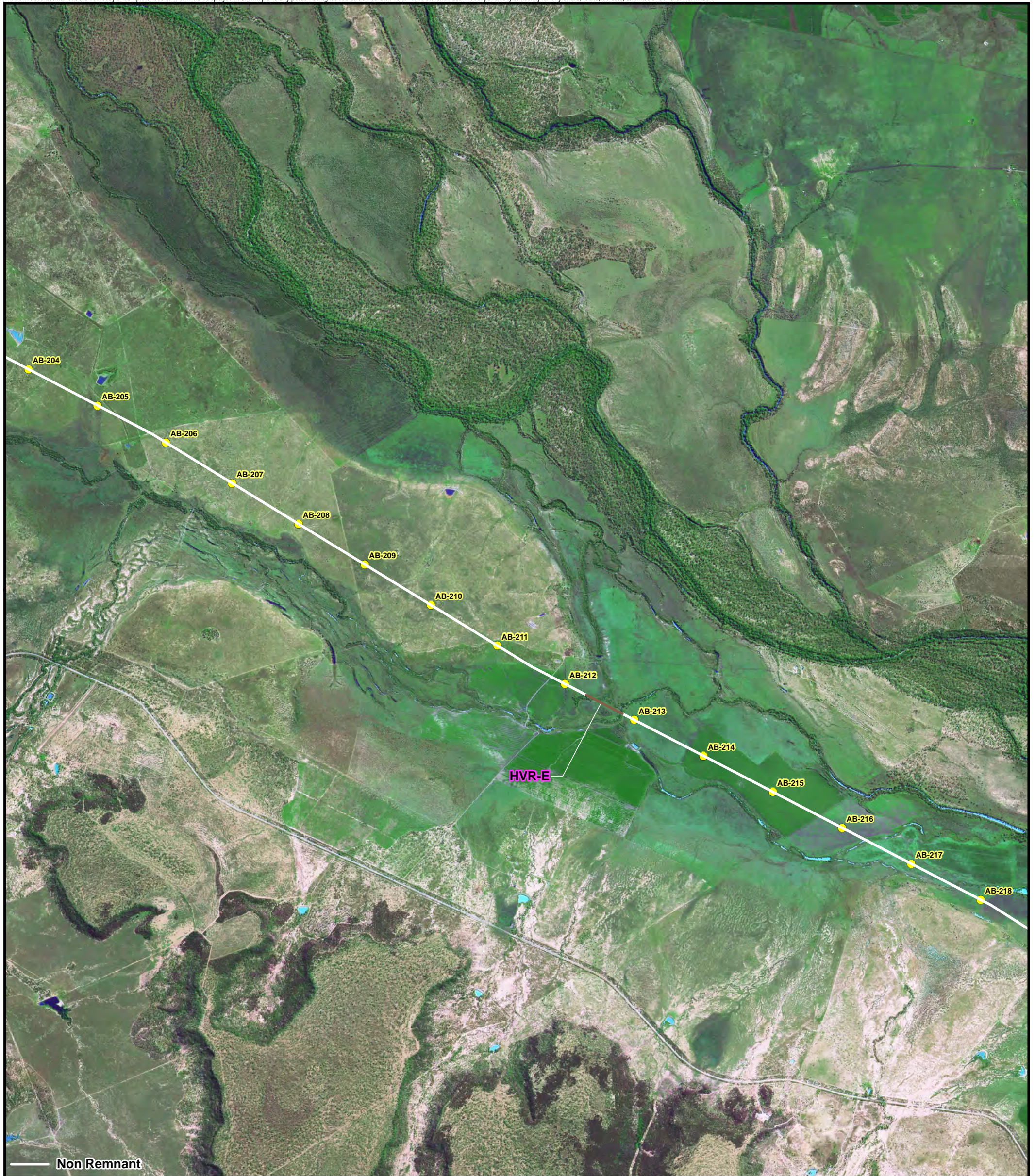
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
- Classified Route and Surveyed EVNT Species: © 2011 AECOM Australia Pty Ltd
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Non Remnant

LEGEND

● 1 Km Kilometrage Point

HVR High Value Regrowth Vegetation

E Remnant Endangered Regional Ecosystem

OC Remnant Of Concern Regional Ecosystem

NC Remnant Not Of Concern Regional Ecosystem

EVNT Species

- Euphorbia sarcostemmoides
- Cerbera dumicola
- Desmodium macrocarpum
- ▲ Eucalyptus raveretiana

Regional Ecosystems and Constraints Surveyed along Alignment

Map 14 Of 41

Main Line

Kp AB-204 To Kp AB-218

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

4 - 14

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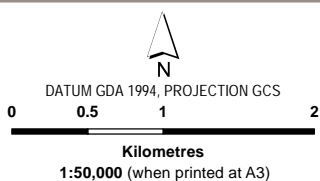
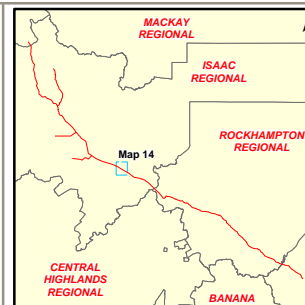


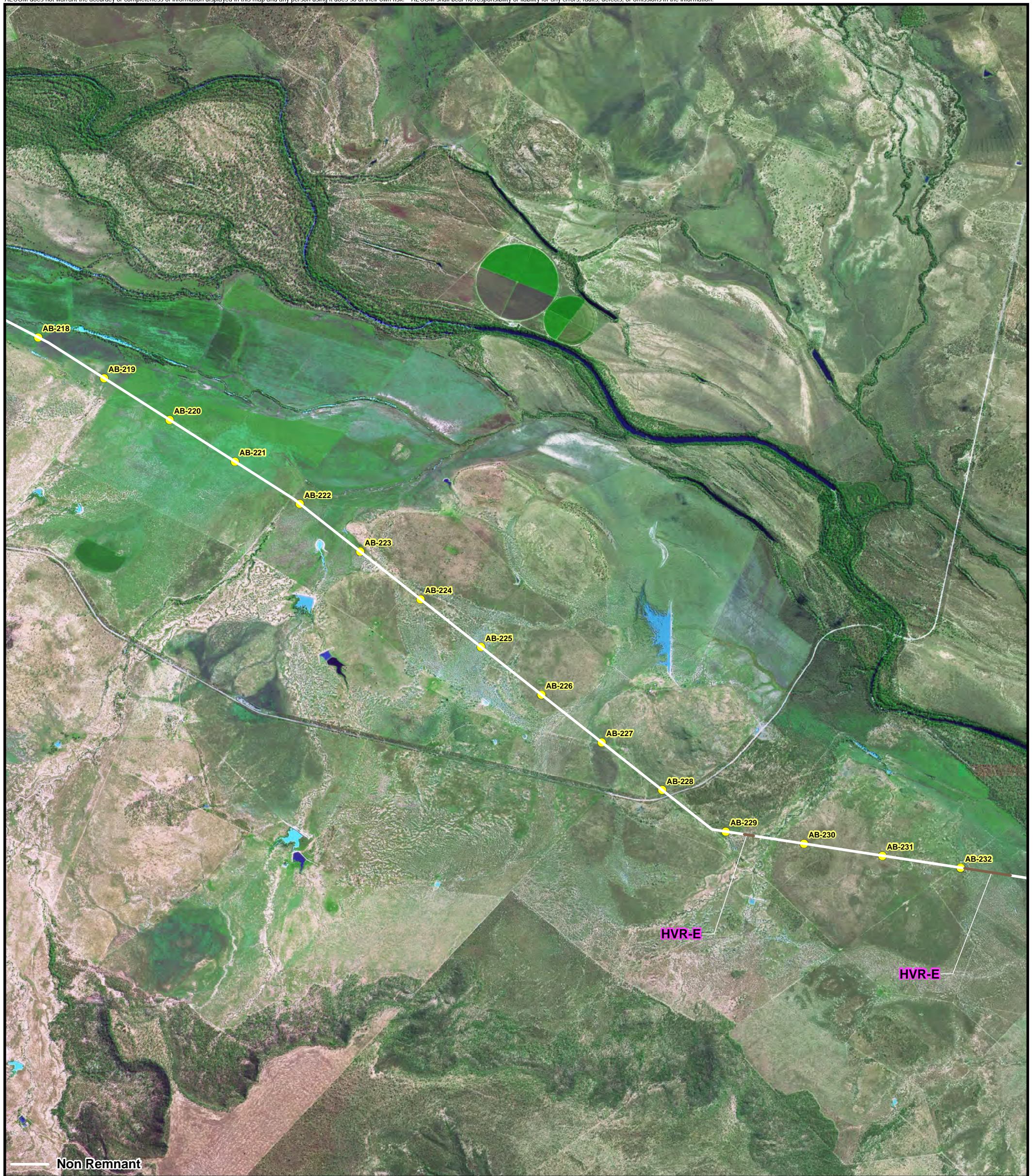
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
- Classified Route and Surveyed EVNT Species: © 2011 AECOM Australia Pty Ltd
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LEGEND

● 1 Km Kilometrage Point

HVR High Value Regrowth Vegetation

- E** Remnant Endangered Regional Ecosystem
- OC** Remnant Of Concern Regional Ecosystem
- NC** Remnant Not Of Concern Regional Ecosystem

EVNT Species

- Euphorbia sarcostemmoides
- Cerbera dumicola
- Desmodium macrocarpum
- ▲ Eucalyptus raveretiana

Regional Ecosystems and Constraints Surveyed along Alignment

Map 15 Of 41

Main Line

Kp AB-218 To Kp AB-232

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

4 - 15

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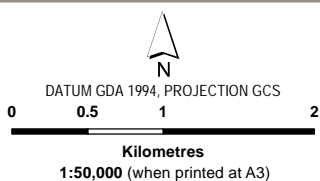
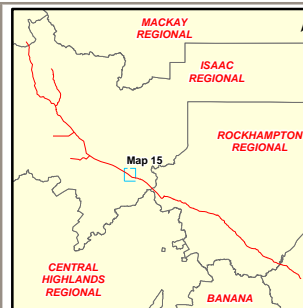


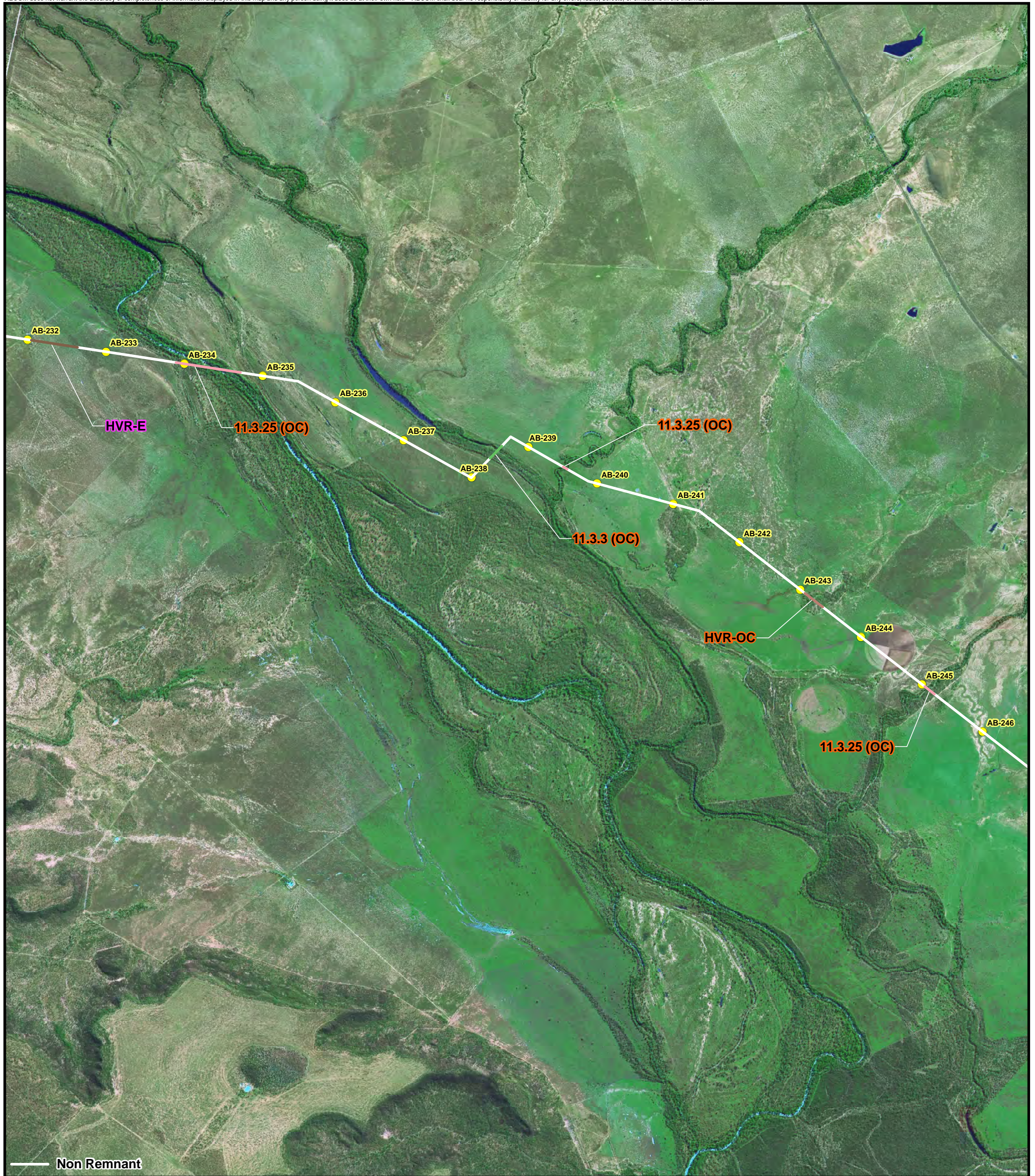
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
- Classified Route and Surveyed EVNT Species: © 2011 AECOM Australia Pty Ltd
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LEGEND

● 1 Km Kilometrage Point

HVR High Value Regrowth Vegetation

- E** Remnant Endangered Regional Ecosystem
- OC** Remnant Of Concern Regional Ecosystem
- NC** Remnant Not Of Concern Regional Ecosystem

EVNT Species

- Euphorbia sarcostemmoides
- Cerbera dumicola
- Desmodium macrocarpum
- ▲ Eucalyptus raveretiana

Regional Ecosystems and Constraints Surveyed along Alignment

Map 16 Of 41

Main Line

Kp AB-232 To Kp AB-246

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

4 - 16

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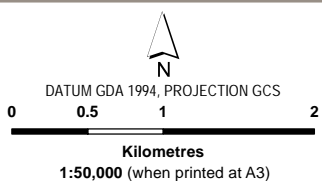


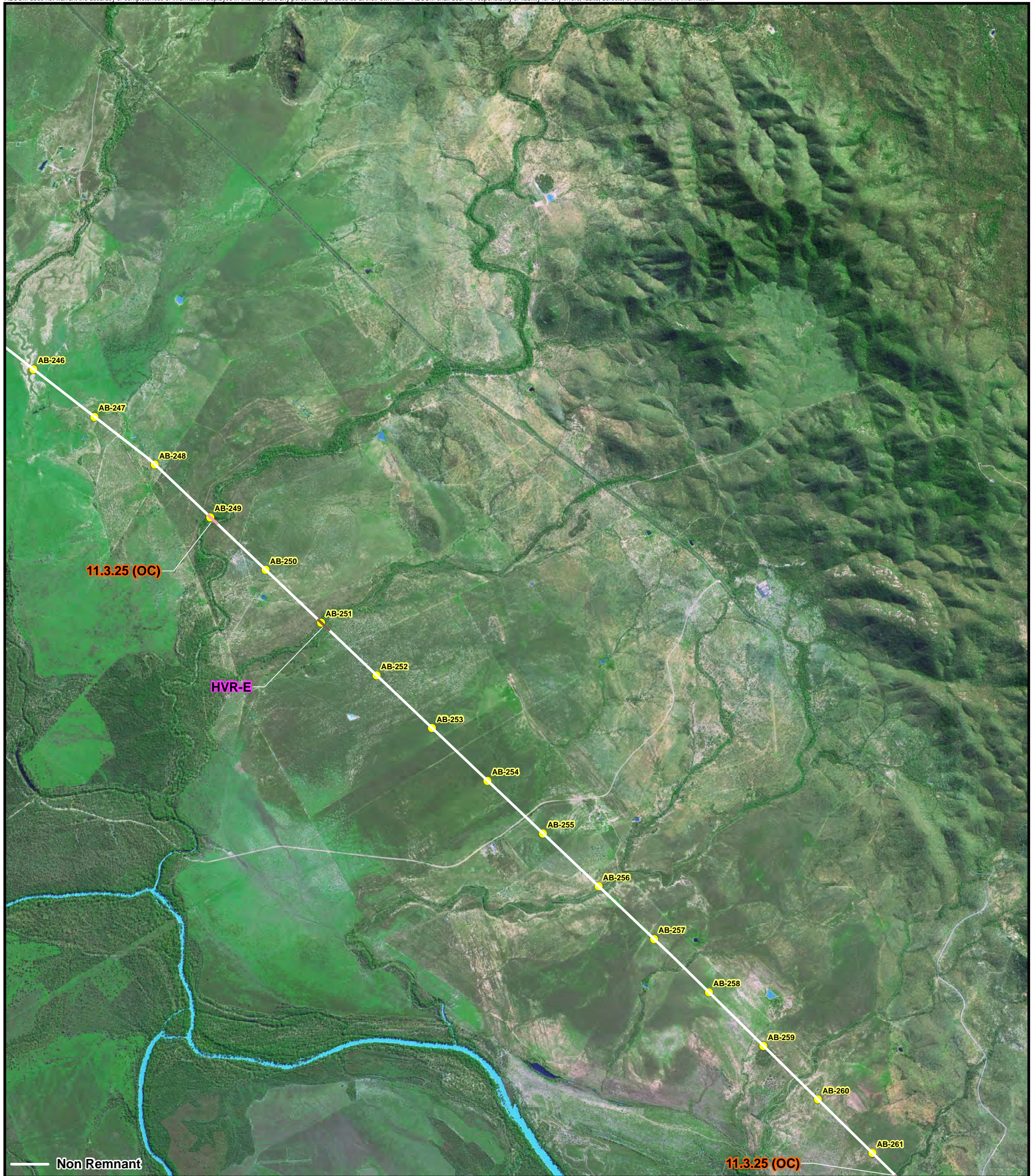
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
- Classified Route and Surveyed EVNT Species: © 2011 AECOM Australia Pty Ltd
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LEGEND

● 1 Km Kilometrage Point

HVR High Value Regrowth Vegetation

- E** Remnant Endangered Regional Ecosystem
- OC** Remnant Of Concern Regional Ecosystem
- NC** Remnant Not Of Concern Regional Ecosystem

EVNT Species

- Euphorbia sarcostemmoides
- Cerbera dumicola
- Desmodium macrocarpum
- ▲ Eucalyptus raveretiana

Regional Ecosystems and Constraints Surveyed along Alignment

Map 17 Of 41

Main Line

Kp AB-246 To Kp AB-261

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

4 - 17

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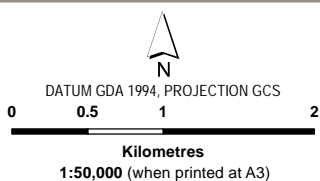
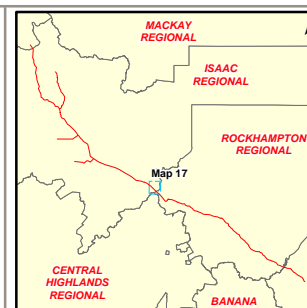


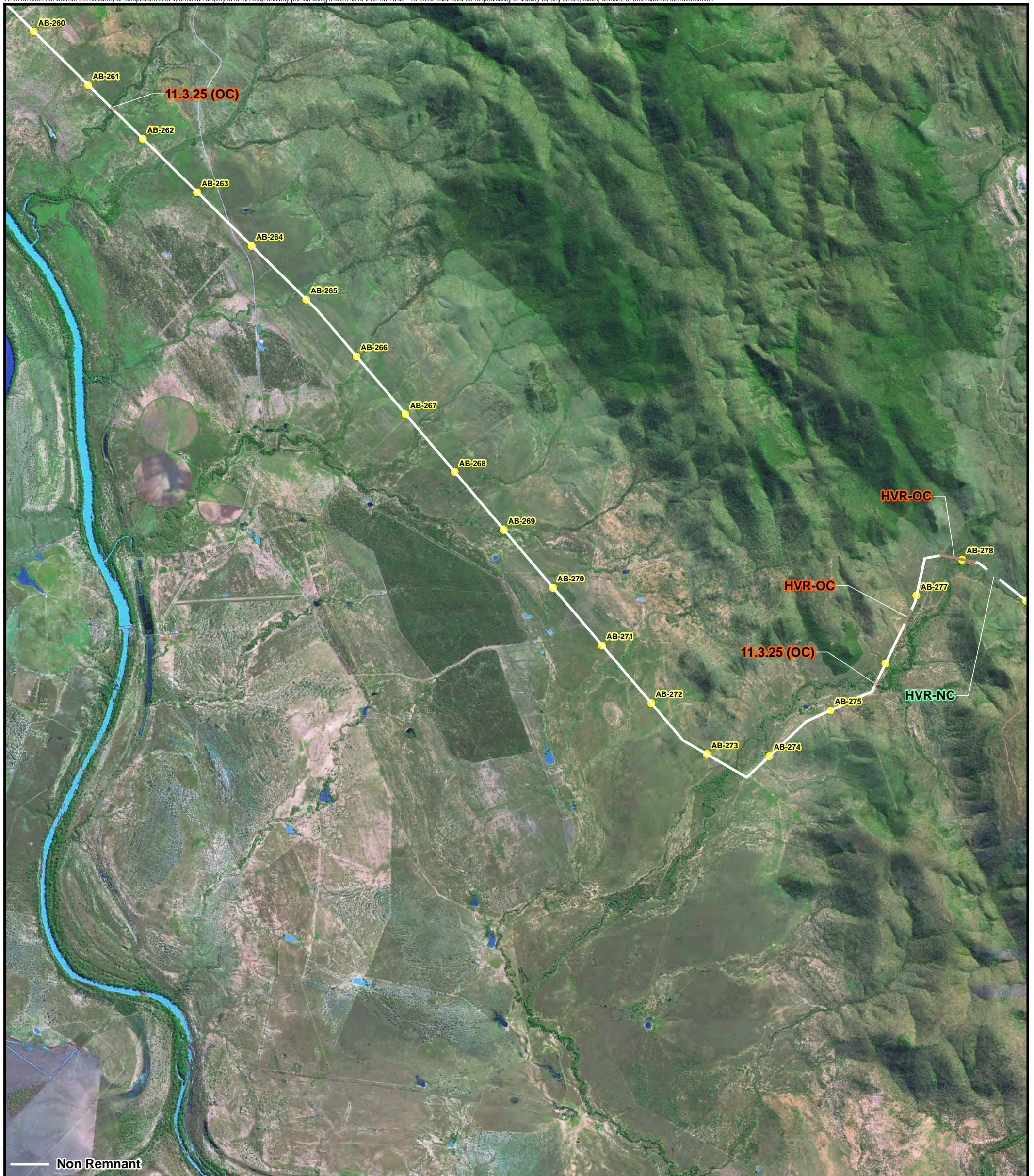
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
- Classified Route and Surveyed EVNT Species: © 2011 AECOM Australia Pty Ltd
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LEGEND

● 1 Km Kilometrage Point

HVR High Value Regrowth Vegetation

E Remnant Endangered Regional Ecosystem

OC Remnant Of Concern Regional Ecosystem

NC Remnant Not Of Concern Regional Ecosystem

EVNT Species

- Euphorbia sarcostemmoides
- Cerbera dumicola
- Desmodium macrocarpum
- ▲ Eucalyptus raveretiana

Regional Ecosystems and Constraints Surveyed along Alignment

Map 18 Of 41

Main Line

Kp AB-260 To Kp AB-278

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

4 - 18

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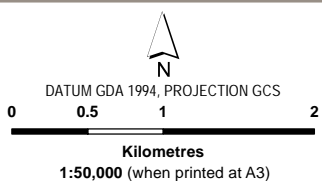
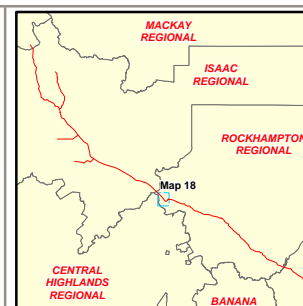


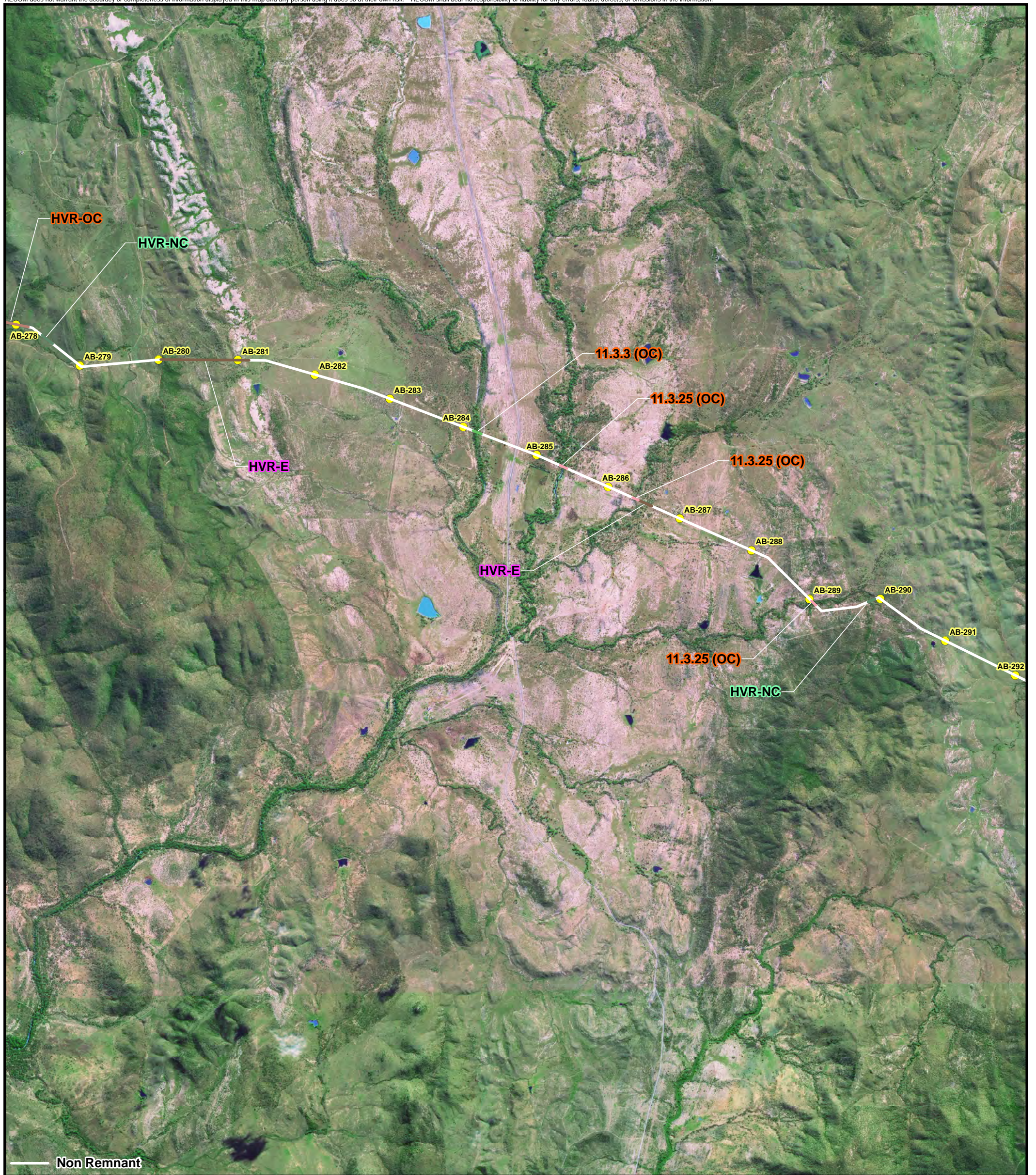
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
- Classified Route and Surveyed EVNT Species: © 2011 AECOM Australia Pty Ltd
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Non Remnant

LEGEND

● 1 Km Kilometrage Point

HVR High Value Regrowth Vegetation

- E** Remnant Endangered Regional Ecosystem
- OC** Remnant Of Concern Regional Ecosystem
- NC** Remnant Not Of Concern Regional Ecosystem

EVNT Species

- Euphorbia sarcostemmoides
- Cerbera dumicola
- Desmodium macrocarpum
- ▲ Eucalyptus raveretiana

Regional Ecosystems and Constraints Surveyed along Alignment

Map 19 Of 41

Main Line

Kp AB-278 To Kp AB-291

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

4 - 19

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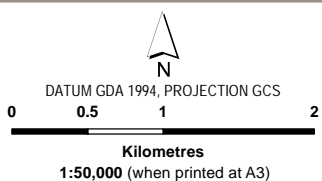
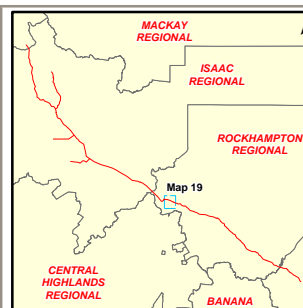


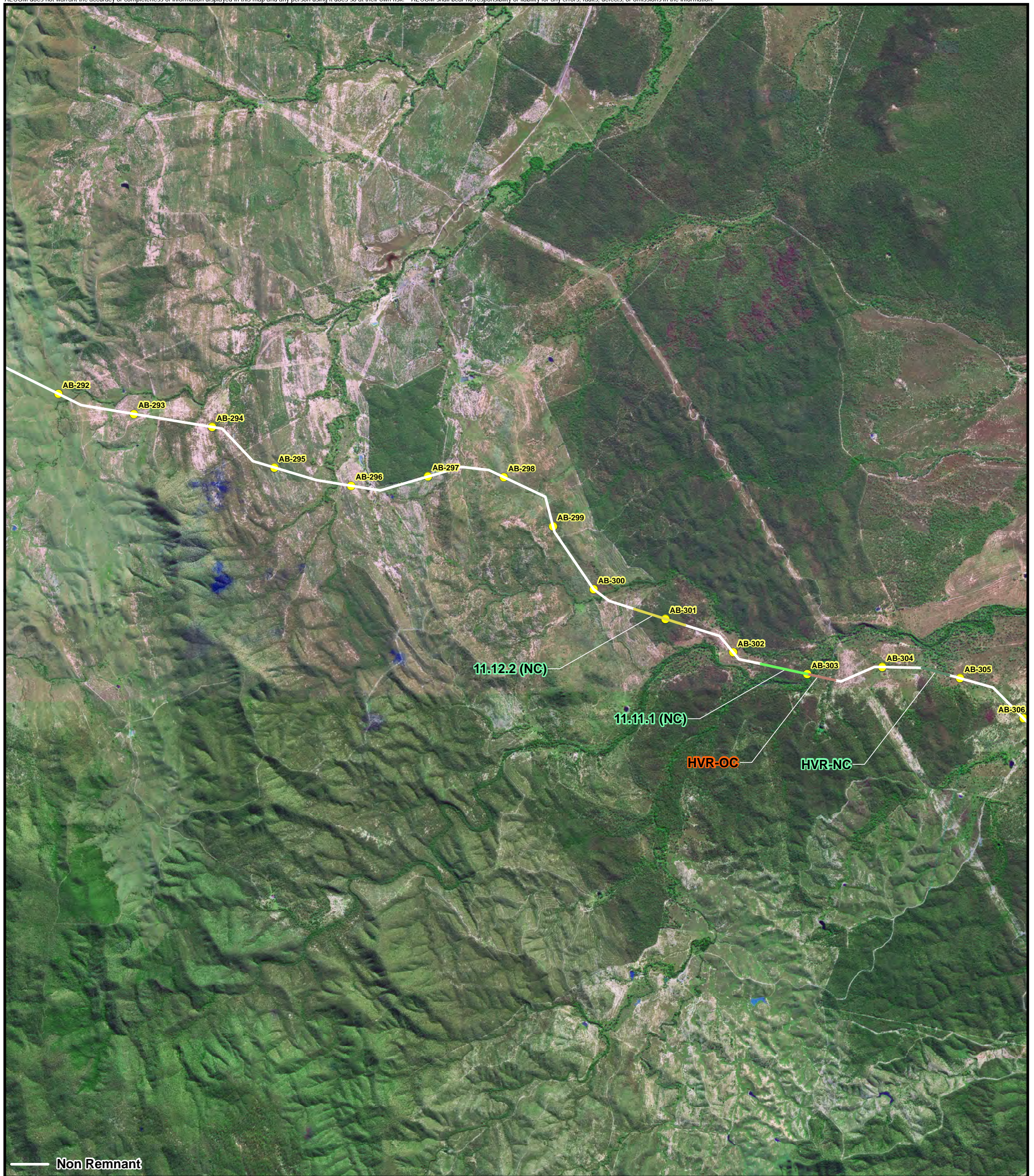
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
- Classified Route and Surveyed EVNT Species: © 2011 AECOM Australia Pty Ltd
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LEGEND

● 1 Km Kilometrage Point

HVR High Value Regrowth Vegetation

- E** Remnant Endangered Regional Ecosystem
- OC** Remnant Of Concern Regional Ecosystem
- NC** Remnant Not Of Concern Regional Ecosystem

EVNT Species

- Euphorbia sarcostemmoides
- Cerbera dumicola
- Desmodium macrocarpum
- ▲ Eucalyptus raveretiana

Regional Ecosystems and Constraints Surveyed along Alignment

Map 20 Of 41

Main Line

Kp AB-292 To Kp AB-305

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

4 - 20

PROJECT ID 60188431
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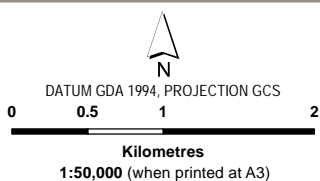
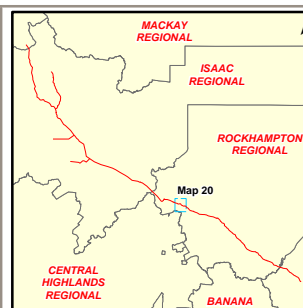


Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
- Classified Route and Surveyed EVNT Species: © 2011 AECOM Australia Pty Ltd
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LEGEND

● 1 Km Kilometrage Point

HVR High Value Regrowth Vegetation

E Remnant Endangered Regional Ecosystem

OC Remnant Of Concern Regional Ecosystem

NC Remnant Not Of Concern Regional Ecosystem

EVNT Species

- Euphorbia sarcostemmoides
- Cerbera dumicola
- Desmodium macrocarpum
- ▲ Eucalyptus raveretiana

Regional Ecosystems and Constraints Surveyed along Alignment

Map 21 Of 41

Main Line

Kp AB-305 To Kp AB-320

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

4 - 21

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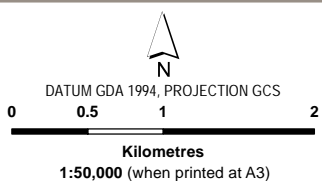
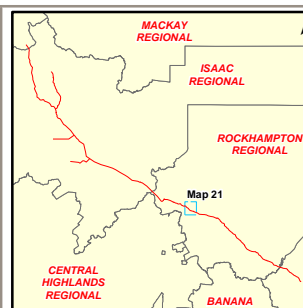


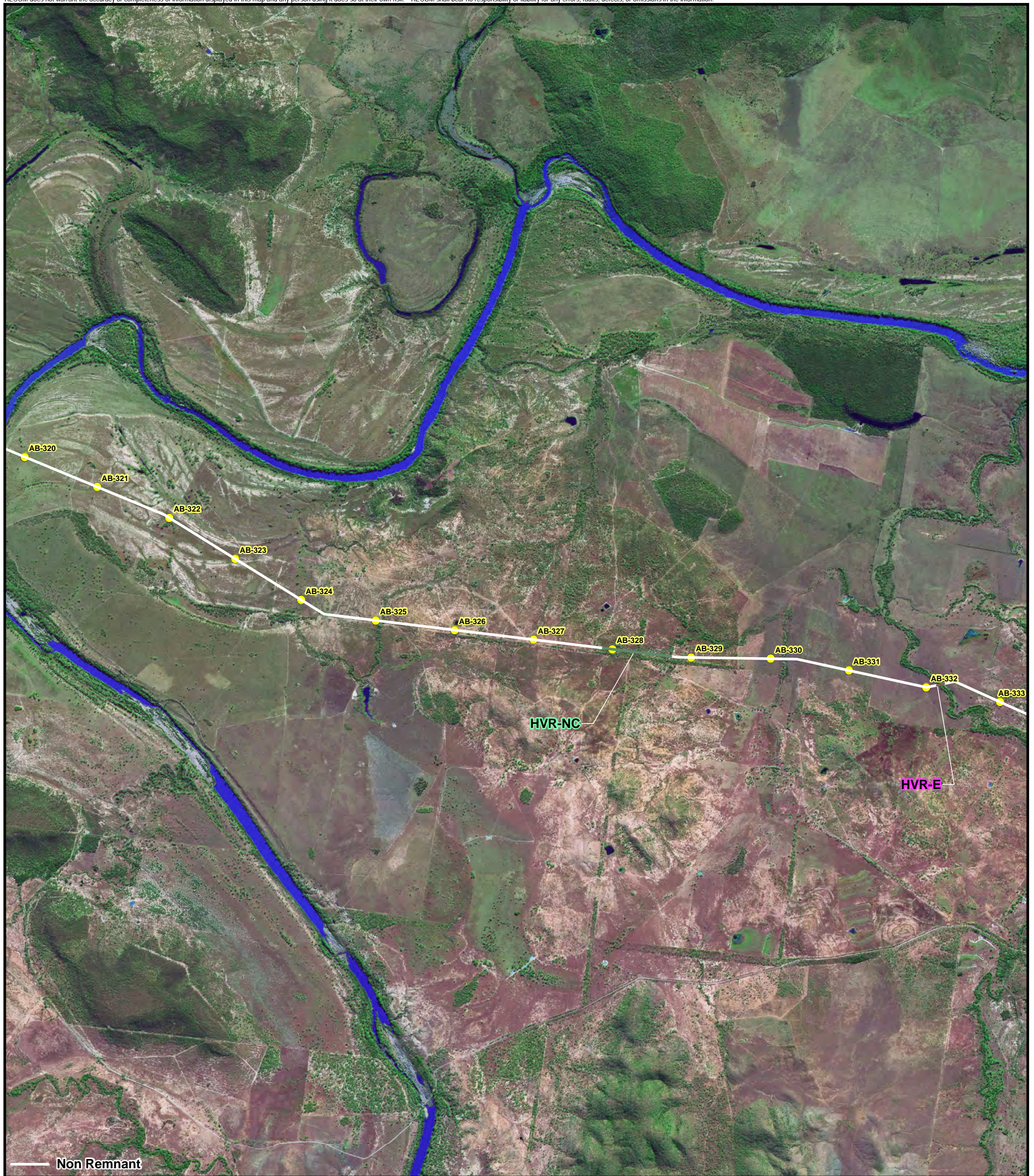
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
- Classified Route and Surveyed EVNT Species: © 2011 AECOM Australia Pty Ltd
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LEGEND
 ● 1 Km Kilometrage Point

HVR High Value Regrowth Vegetation
 E Remnant Endangered Regional Ecosystem
 OC Remnant Of Concern Regional Ecosystem
 NC Remnant Not Of Concern Regional Ecosystem

EVNT Species
 ● Euphorbia sarcostemmoides
 ■ Cerbera dumicola
 ■ Desmodium macrocarpum
 ▲ Eucalyptus raveretiana

Regional Ecosystems and Constraints Surveyed along Alignment

Map 22 Of 41

Main Line
 Kp AB-320 To Kp AB-333

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

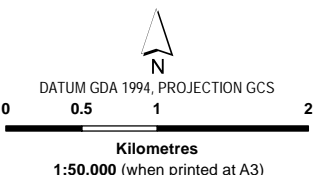
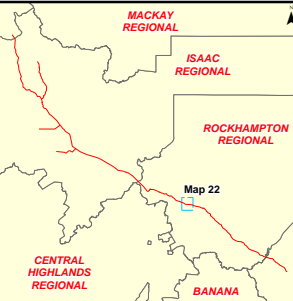
Isaac to Gladstone, Qld

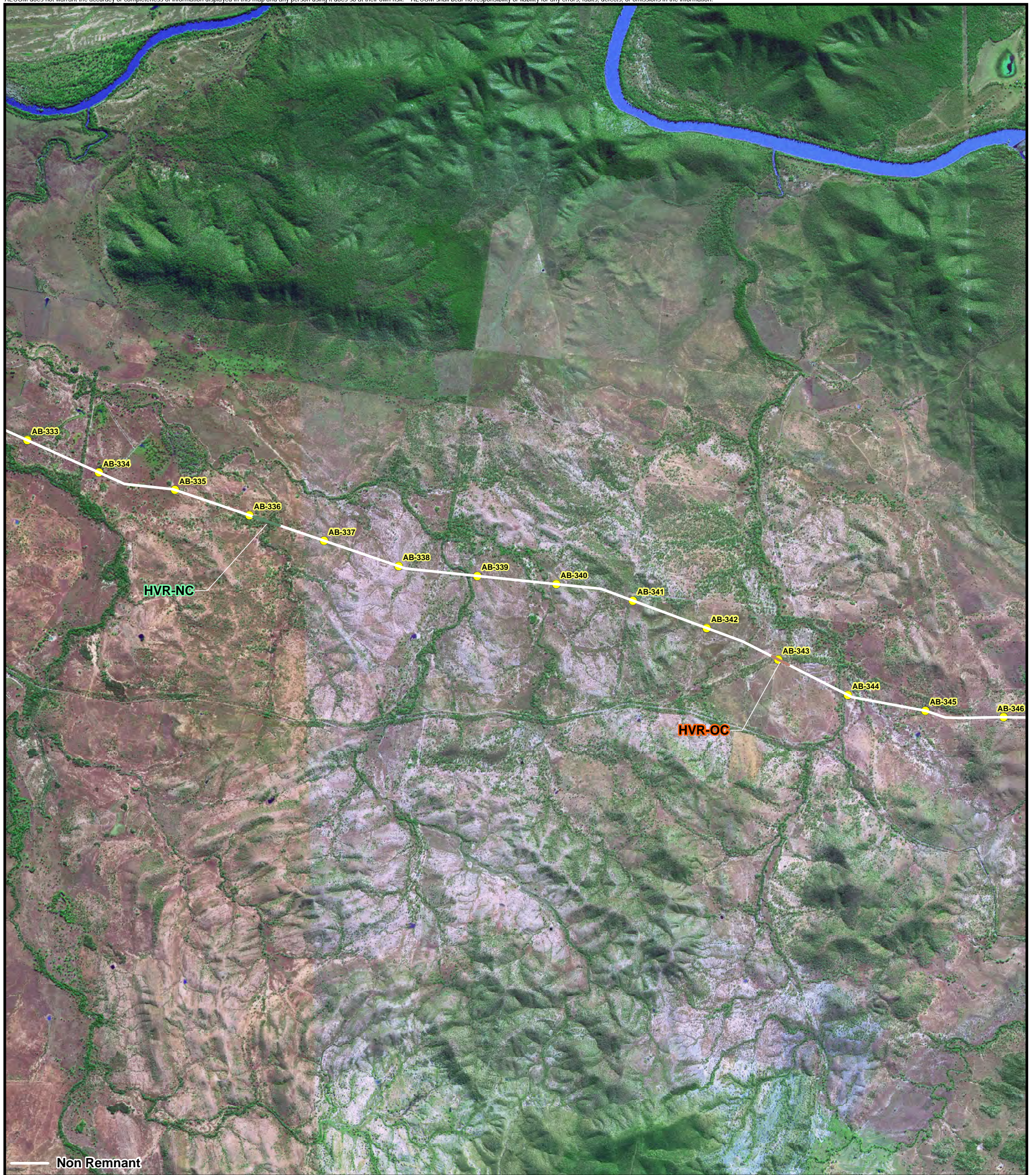
Map
 4 - 22

PROJECT ID 60188431
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 LAST MODIFIED BN 21 October 2011
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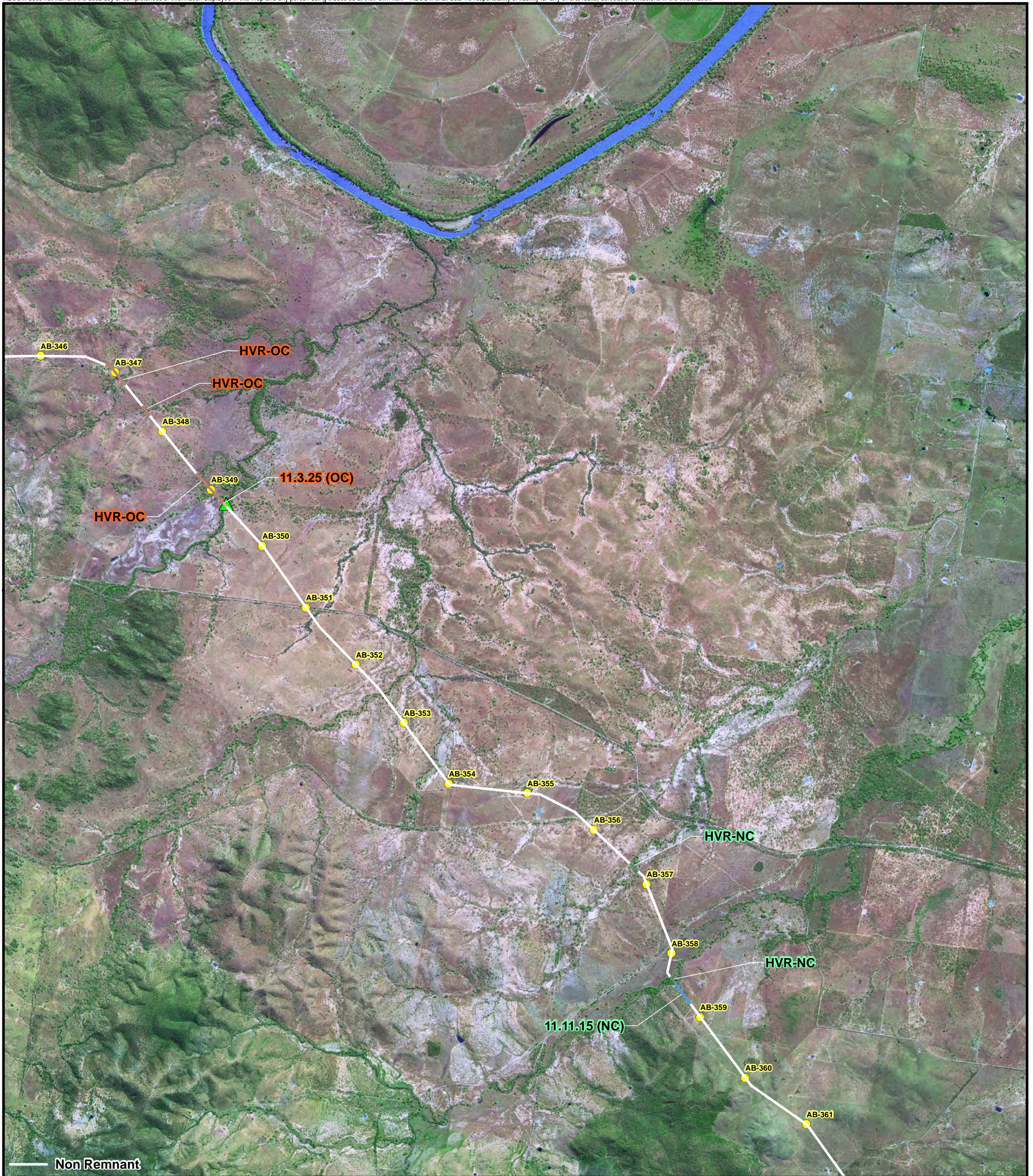
Data Sources:
 - Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
 - Classified Route and Surveyed EVNT Species: © 2011 AECOM Australia Pty Ltd
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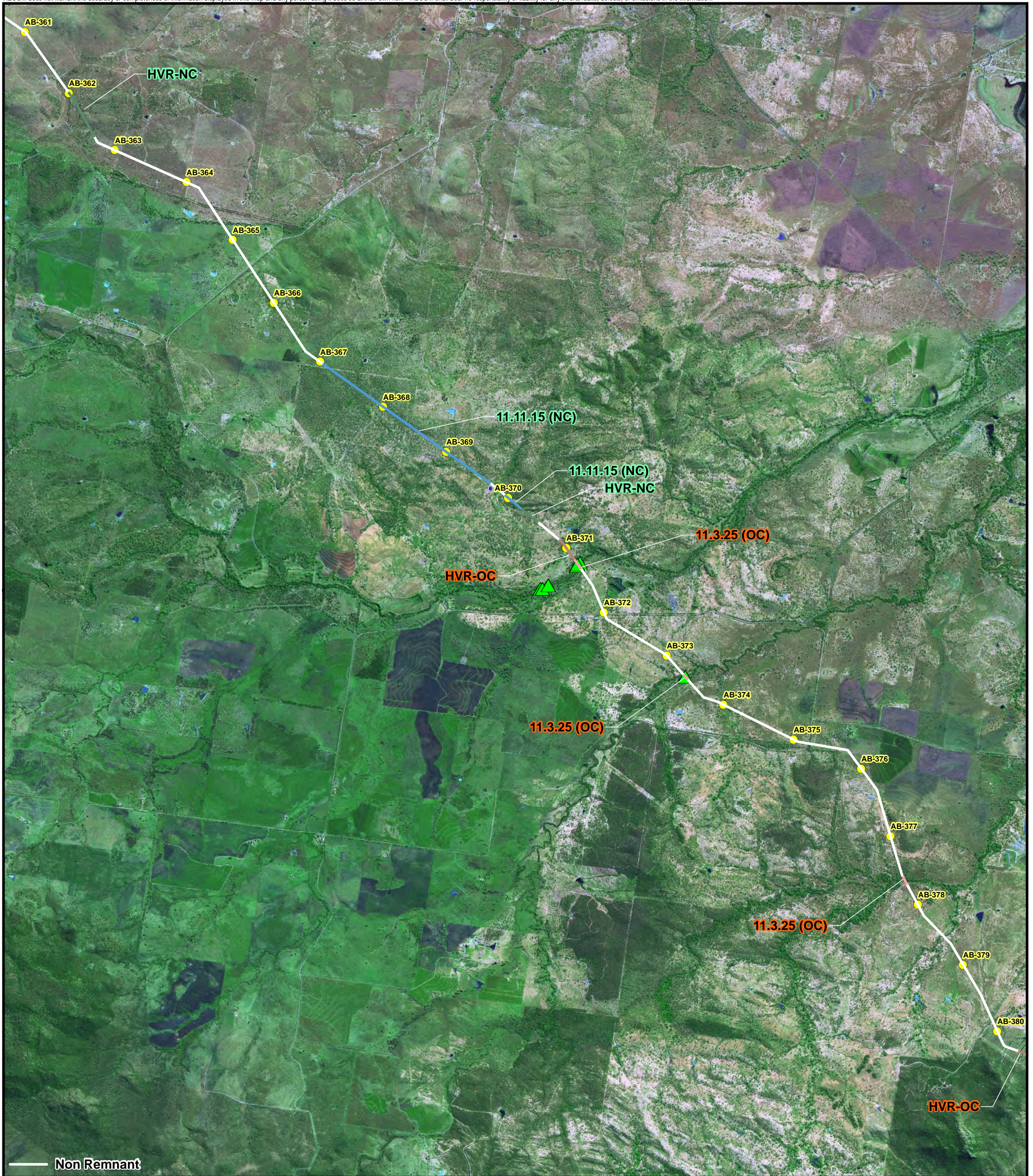


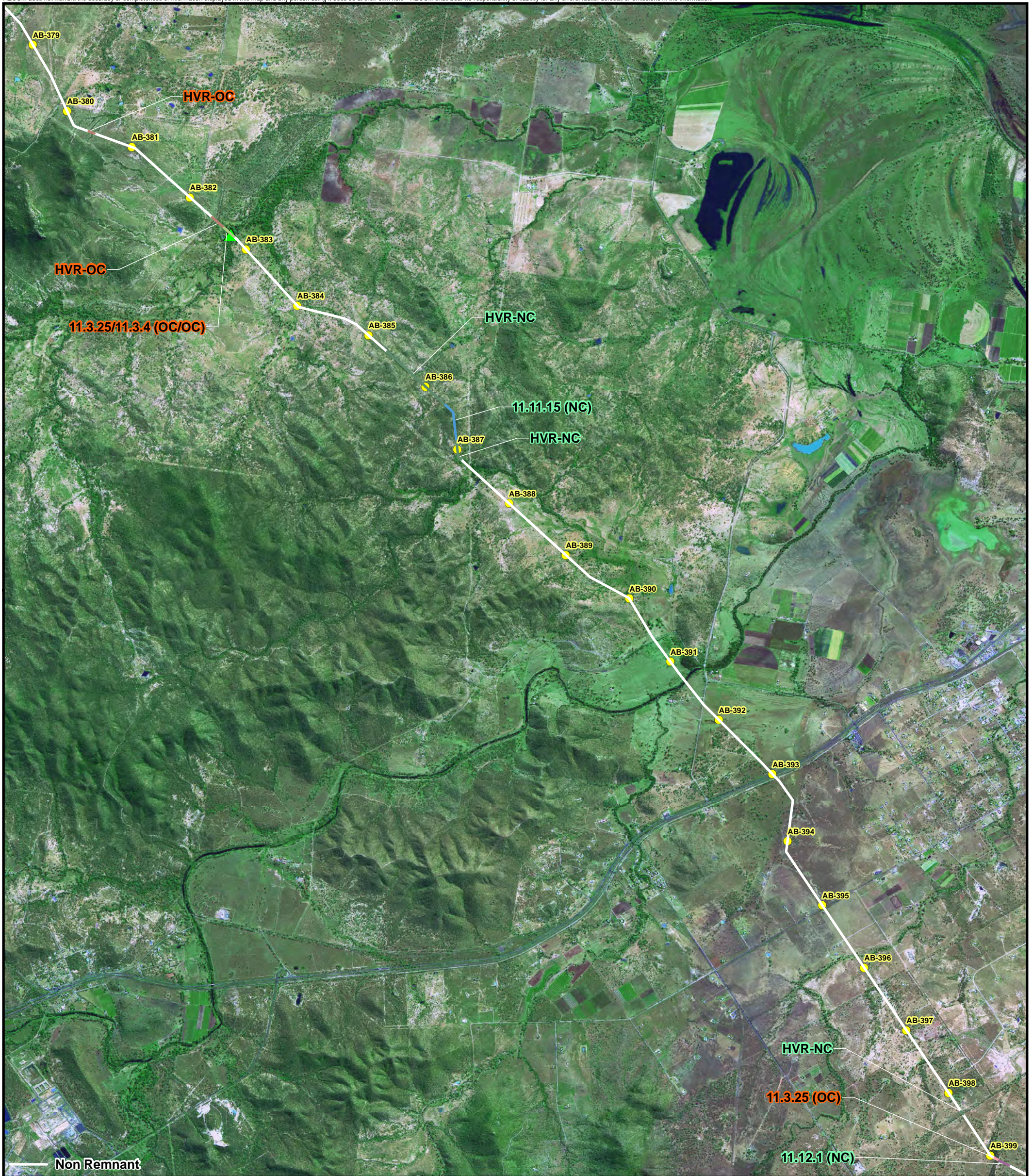


<p>LEGEND</p> <ul style="list-style-type: none"> ● 1 Km Kilometrage Point 	<p>HVR High Value Regrowth Vegetation</p> <ul style="list-style-type: none"> E Remnant Endangered Regional Ecosystem OC Remnant Of Concern Regional Ecosystem NC Remnant Not Of Concern Regional Ecosystem 	<p>EVNT Species</p> <ul style="list-style-type: none"> ● Euphorbia sarcostemmoides ■ Cerbera dumicola ■ Desmodium macrocarpum ▲ Eucalyptus raveretiana 	<p>Regional Ecosystems and Constraints Surveyed along Alignment</p> <p>Map 23 Of 41</p> <p>Main Line</p> <p>Kp AB-333 To Kp AB-346</p> <p>Arrow Bowen Pipeline (ABP)</p> <p>ABP - EIS - Flora Report</p> <p>Isaac to Gladstone, Qld</p>
<p>PROJECT ID 60188431 CREATED BY BN LAST MODIFIED BN 21 October 2011</p> <p>AECOM www.aecom.com</p> <p>DATUM GDA 1994, PROJECTION GCS 0 0.5 1 2 Kilometres 1:50,000 (when printed at A3)</p>	<p>Data Sources:</p> <ul style="list-style-type: none"> - Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline - Classified Route and Surveyed EVNT Species: © 2011 AECOM Australia Pty Ltd - © The State of Queensland (Department of Environment and Resource Management) 2011 <p>Disclaimer:</p> <p>© The State of Queensland (Department of Environment and Resource Management) 2011. While every care is taken to ensure the accuracy of the Information Product, the Department of Environment and Resource Management makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the product being inaccurate or incomplete in any way and for any reason.</p>		



<p>LEGEND</p> <ul style="list-style-type: none"> ● 1 Km Kilometrage Point <p>HVR High Value Regrowth Vegetation</p> <ul style="list-style-type: none"> E Remnant Endangered Regional Ecosystem OC Remnant Of Concern Regional Ecosystem NC Remnant Not Of Concern Regional Ecosystem <p>PROJECT ID 60188431 CREATED BY BN LAST MODIFIED BN 21 October 2011</p> <p>AECOM www.aecom.com</p> <p>DATUM GDA 1994, PROJECTION GCS 0 0.5 1 2 Kilometres 1:50,000 (when printed at A3)</p>	<p>EVNT Species</p> <ul style="list-style-type: none"> ● Euphorbia sarcostemmoides ■ Cerbera dumicola ■ Desmodium macrocarpum ▲ Eucalyptus raveretiana <p>Data Sources: - Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline - Classified Route and Surveyed EVNT Species: © 2011 AECOM Australia Pty Ltd - © The State of Queensland (Department of Environment and Resource Management) 2011</p> <p>Disclaimer: © The State of Queensland (Department of Environment and Resource Management) 2011. While every care is taken to ensure the accuracy of the Information Product, the Department of Environment and Resource Management makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the product being inaccurate or incomplete in any way and for any reason.</p>	<p>Regional Ecosystems and Constraints Surveyed along Alignment</p> <p>Map 24 Of 41</p> <p>Main Line</p> <p>Kp AB-346 To Kp AB-361</p> <p>Arrow Bowen Pipeline (ABP)</p> <p>ABP - EIS - Flora Report</p> <p>Isaac to Gladstone, Qld</p> <p>Map 4 - 24</p> 
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LEGEND

● 1 Km Kilometrage Point

HVR High Value Regrowth Vegetation

E Remnant Endangered Regional Ecosystem

OC Remnant Of Concern Regional Ecosystem

NC Remnant Not Of Concern Regional Ecosystem

EVNT Species

- Euphorbia sarcostemmoides
- Cerbera dumicola
- Desmodium macrocarpum
- ▲ Eucalyptus raveretiana

Regional Ecosystems and Constraints Surveyed along Alignment

Map 26 Of 41

Main Line

Kp AB-379 To Kp AB-399

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

4 - 26

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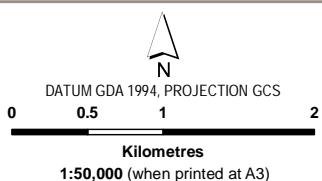
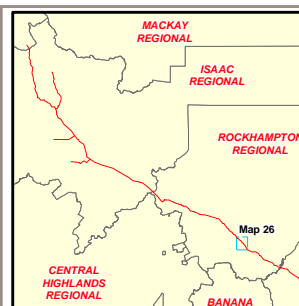


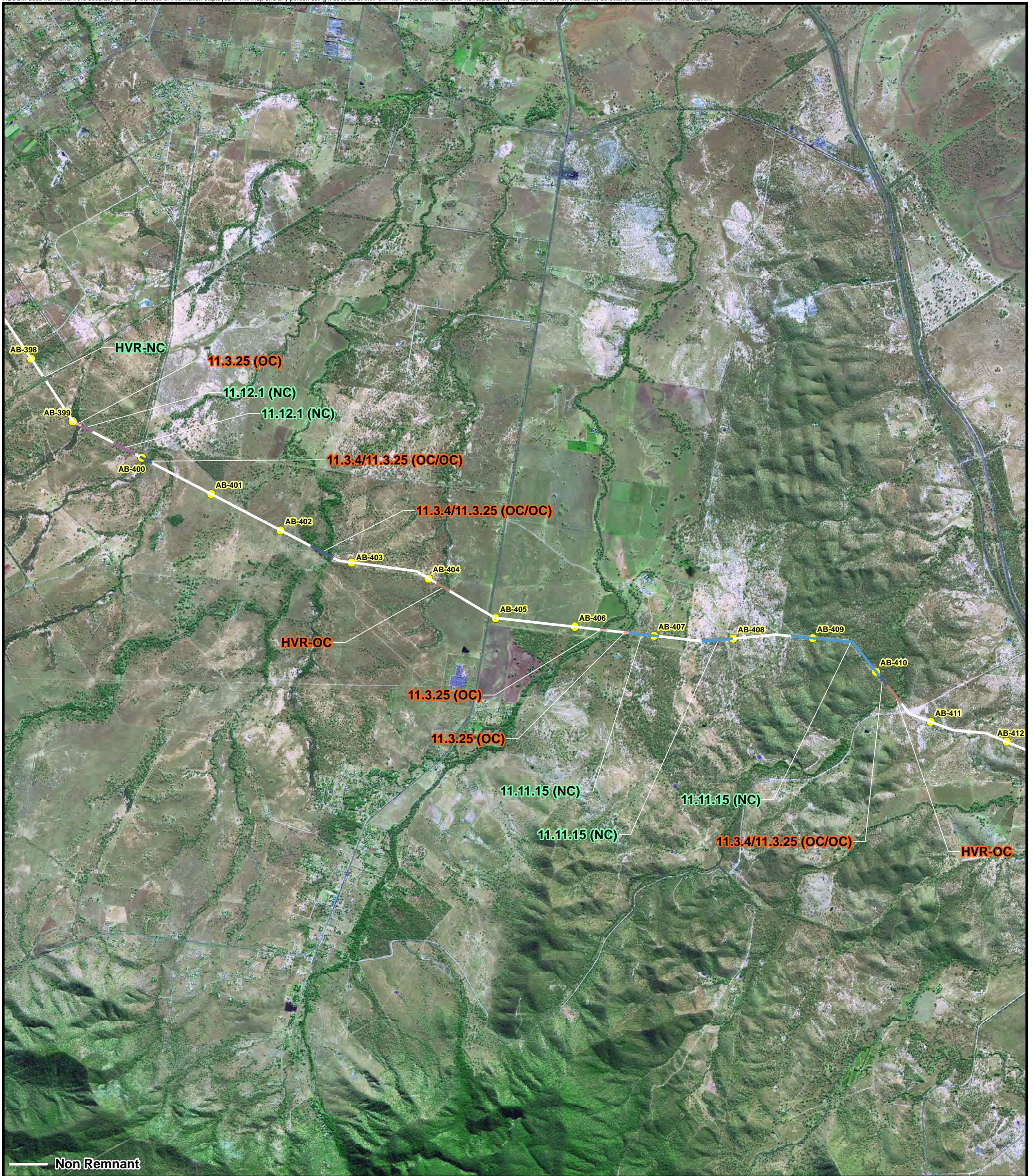
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
- Classified Route and Surveyed EVNT Species: © 2011 AECOM Australia Pty Ltd
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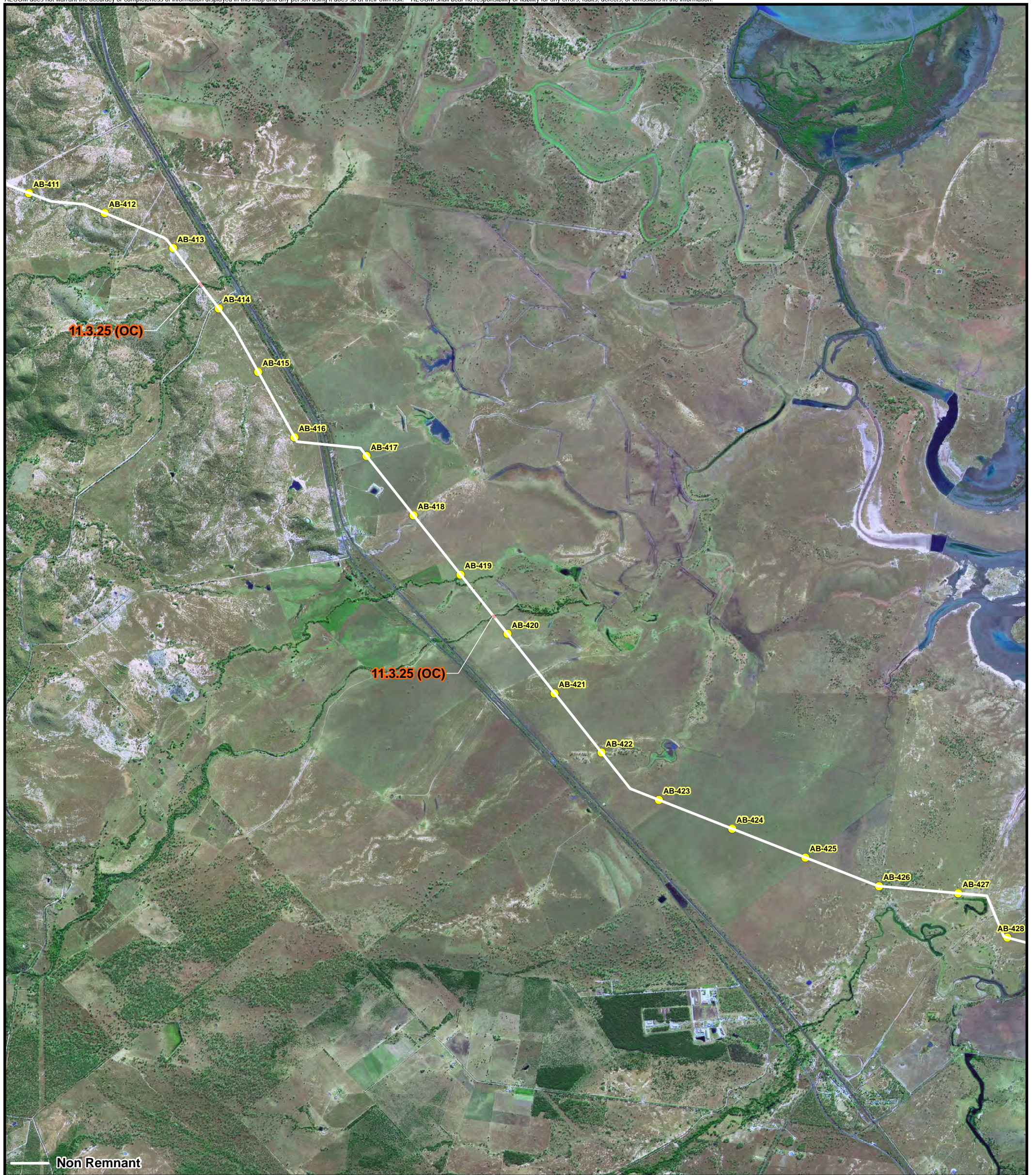
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<p>LEGEND</p> <ul style="list-style-type: none"> ● 1 Km Kilometrage Point 	<p>HVR High Value Regrowth Vegetation</p> <ul style="list-style-type: none"> E Remnant Endangered Regional Ecosystem OC Remnant Of Concern Regional Ecosystem NC Remnant Not Of Concern Regional Ecosystem 	<p>EVNT Species</p> <ul style="list-style-type: none"> ● Euphorbia sarcostemmoides ■ Cerbera dumicola ■ Desmodium macrocarpum ▲ Eucalyptus raveretiana 	<p>Regional Ecosystems and Constraints Surveyed along Alignment</p> <p>Map 27 Of 41</p> <p>Main Line</p> <p>Kp AB-398 To Kp AB-412</p> <p>Arrow Bowen Pipeline (ABP)</p> <p>ABP - EIS - Flora Report</p> <p>Isaac to Gladstone, Qld</p>
<p>PROJECT ID 60188431 CREATED BY BN LAST MODIFIED BN 21 October 2011</p> <p>AECOM www.aecom.com</p> <p>DATUM GDA 1994, PROJECTION GCS 0 0.5 1 2 Kilometres 1:50,000 (when printed at A3)</p>	<p>Data Sources:</p> <ul style="list-style-type: none"> - Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline - Classified Route and Surveyed EVNT Species: © 2011 AECOM Australia Pty Ltd - © The State of Queensland (Department of Environment and Resource Management) 2011 <p>Disclaimer:</p> <p>© The State of Queensland (Department of Environment and Resource Management) 2011. While every care is taken to ensure the accuracy of the Information Product, the Department of Environment and Resource Management makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the product being inaccurate or incomplete in any way and for any reason.</p>		



LEGEND

● 1 Km Kilometrage Point

HVR High Value Regrowth Vegetation

E Remnant Endangered Regional Ecosystem

OC Remnant Of Concern Regional Ecosystem

NC Remnant Not Of Concern Regional Ecosystem

EVNT Species

- Euphorbia sarcostemmoides
- Cerbera dumicola
- Desmodium macrocarpum
- ▲ Eucalyptus raveretiana

Regional Ecosystems and Constraints Surveyed along Alignment

Map 28 Of 41

Main Line

Kp AB-411 To Kp AB-428

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

4 - 28

PROJECT ID 60188431
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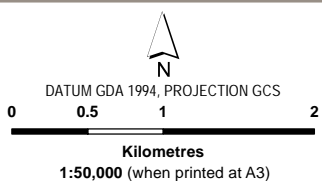
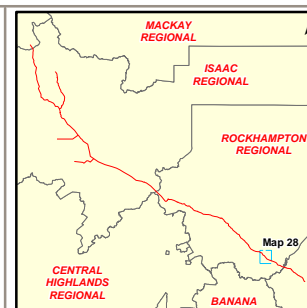


Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
- Classified Route and Surveyed EVNT Species: © 2011 AECOM Australia Pty Ltd
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LEGEND

● 1 Km Kilometrage Point

HVR High Value Regrowth Vegetation

- E** Remnant Endangered Regional Ecosystem
- OC** Remnant Of Concern Regional Ecosystem
- NC** Remnant Not Of Concern Regional Ecosystem

EVNT Species

- Euphorbia sarcostemmoides
- Cerbera dumicola
- Desmodium macrocarpum
- ▲ Eucalyptus raveretiana

Regional Ecosystems and Constraints Surveyed along Alignment

Map 29 Of 41

Main Line

Kp AB-427 To Kp AB-441

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

4 - 29

PROJECT ID 60188431
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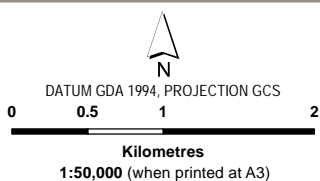
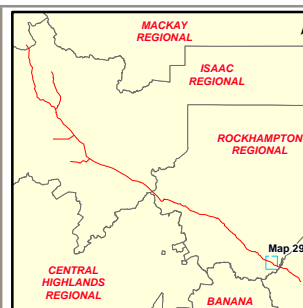


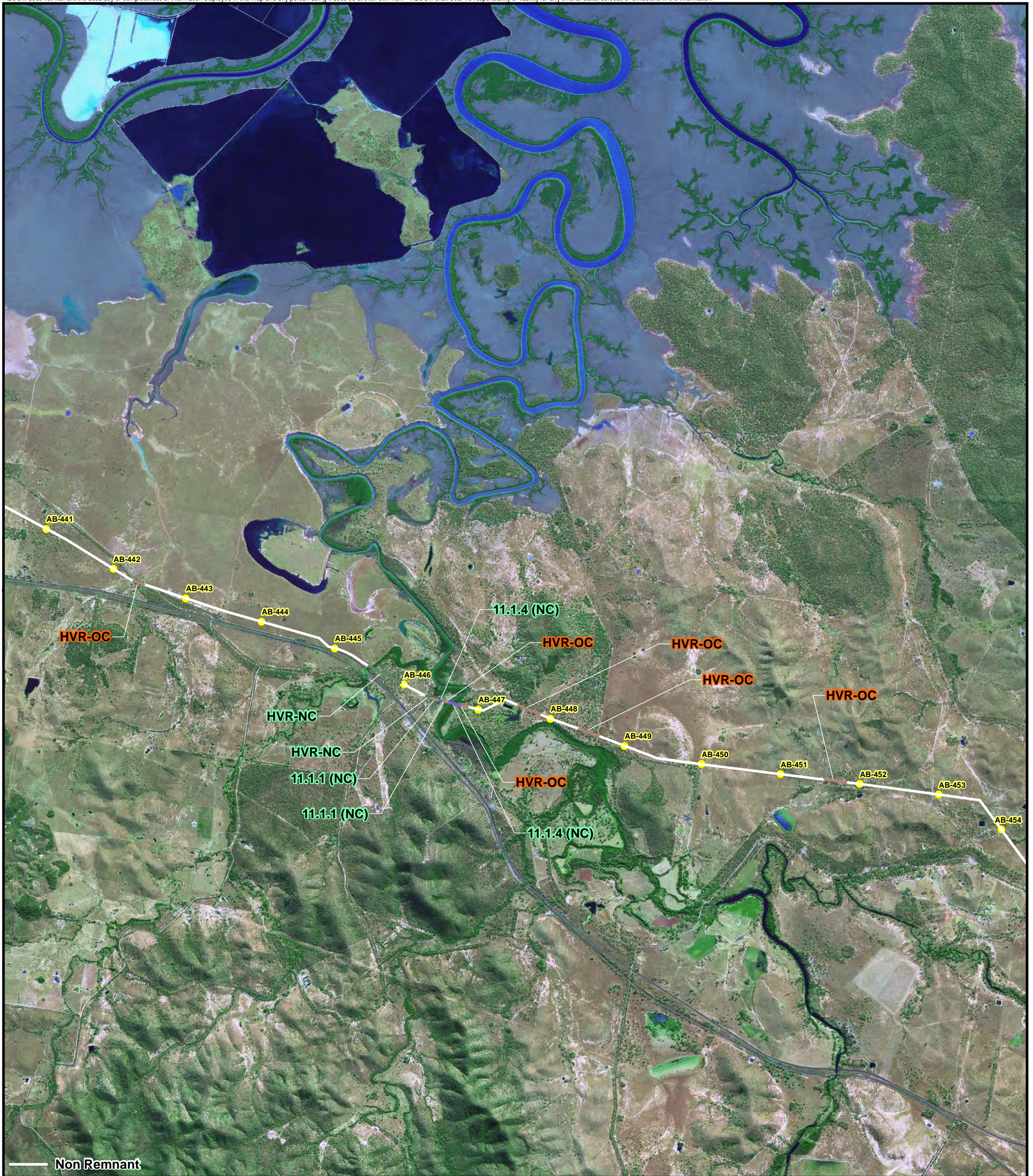
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
- Classified Route and Surveyed EVNT Species: © 2011 AECOM Australia Pty Ltd
- © The State of Queensland (Department of Environment and Resource Management) 2011

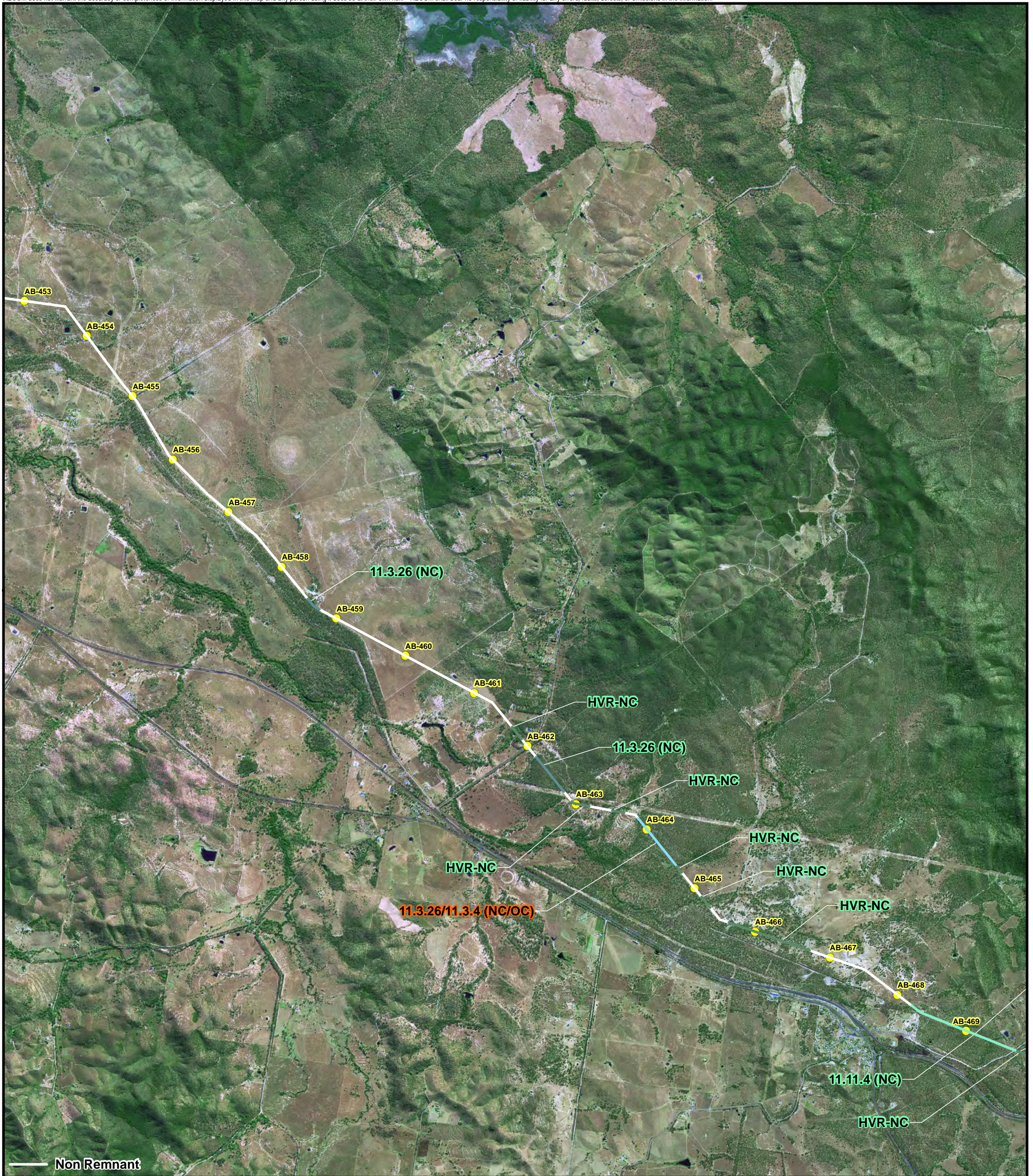
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<p>LEGEND</p> <ul style="list-style-type: none"> ● 1 Km Kilometrage Point 	<p>HVR High Value Regrowth Vegetation</p> <ul style="list-style-type: none"> E Remnant Endangered Regional Ecosystem OC Remnant Of Concern Regional Ecosystem NC Remnant Not Of Concern Regional Ecosystem 	<p>EVNT Species</p> <ul style="list-style-type: none"> ● Euphorbia sarcostemmoides ■ Cerbera dumicola ■ Desmodium macrocarpum ▲ Eucalyptus raveretiana 	<p>Regional Ecosystems and Constraints Surveyed along Alignment</p> <p>Map 30 Of 41</p> <p>Main Line</p> <p>KP AB-441 To Kp AB-454</p> <p>Arrow Bowen Pipeline (ABP)</p> <p>ABP - EIS - Flora Report</p> <p>Isaac to Gladstone, Qld</p>
<p>PROJECT ID 60188431 CREATED BY BN LAST MODIFIED BN 21 October 2011</p> <p>AECOM www.aecom.com</p> <p>DATUM GDA 1994, PROJECTION GCS 0 0.5 1 2 Kilometres 1:50,000 (when printed at A3)</p>	<p>Data Sources:</p> <ul style="list-style-type: none"> - Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline - Classified Route and Surveyed EVNT Species: © 2011 AECOM Australia Pty Ltd - © The State of Queensland (Department of Environment and Resource Management) 2011 <p>Disclaimer:</p> <p>© The State of Queensland (Department of Environment and Resource Management) 2011. While every care is taken to ensure the accuracy of the Information Product, the Department of Environment and Resource Management makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the product being inaccurate or incomplete in any way and for any reason.</p>		



LEGEND

● 1 Km Kilometrage Point

HVR High Value Regrowth Vegetation

E Remnant Endangered Regional Ecosystem

OC Remnant Of Concern Regional Ecosystem

NC Remnant Not Of Concern Regional Ecosystem

EVNT Species

- Euphorbia sarcostemmoides
- Cerbera dumicola
- Desmodium macrocarpum
- ▲ Eucalyptus raveretiana

Regional Ecosystems and Constraints Surveyed along Alignment

Map 31 Of 41

Main Line

Kp AB-453 To Kp AB-469

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

4 - 31

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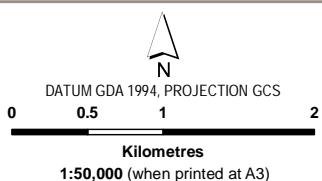
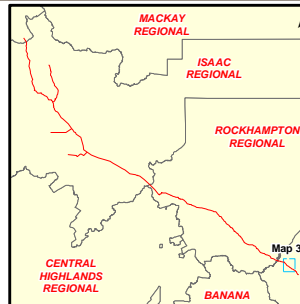


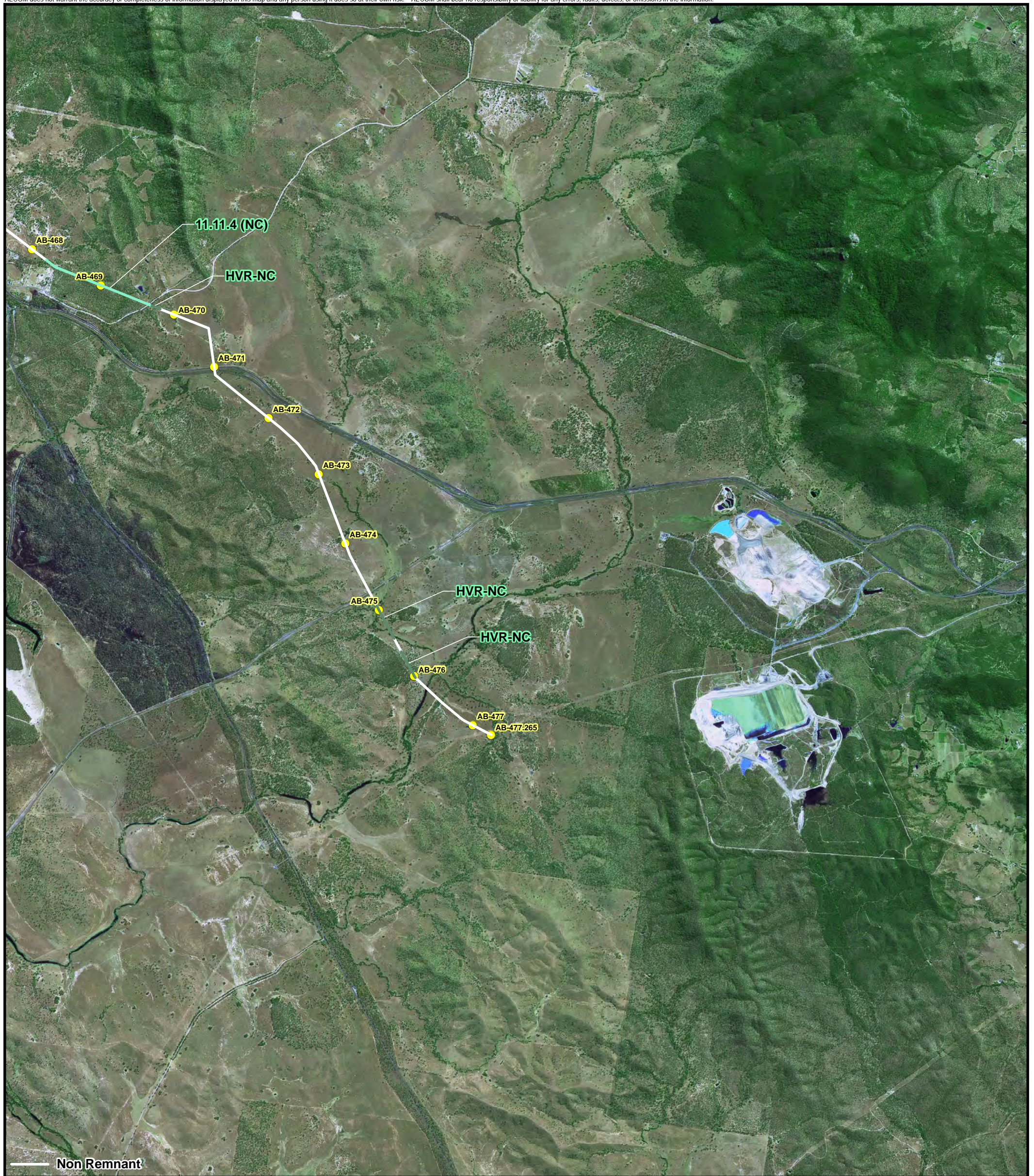
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
- Classified Route and Surveyed EVNT Species: © 2011 AECOM Australia Pty Ltd
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LEGEND

● 1 Km Kilometrage Point

HVR High Value Regrowth Vegetation

E Remnant Endangered Regional Ecosystem

OC Remnant Of Concern Regional Ecosystem

NC Remnant Not Of Concern Regional Ecosystem

EVNT Species

- Euphorbia sarcostemmoides
- Cerbera dumicola
- Desmodium macrocarpum
- ▲ Eucalyptus raveretiana

Regional Ecosystems and Constraints Surveyed along Alignment

Map 32 Of 41

Main Line

Kp AB-468 To Kp AB-477.3

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

4 - 32

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 LAST MODIFIED BN 21 October 2011

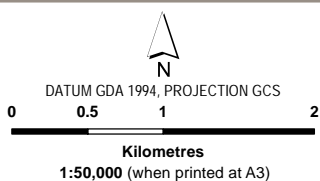
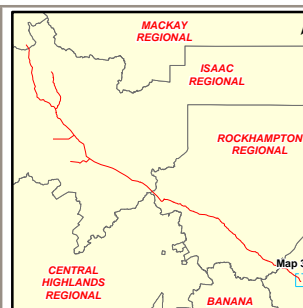


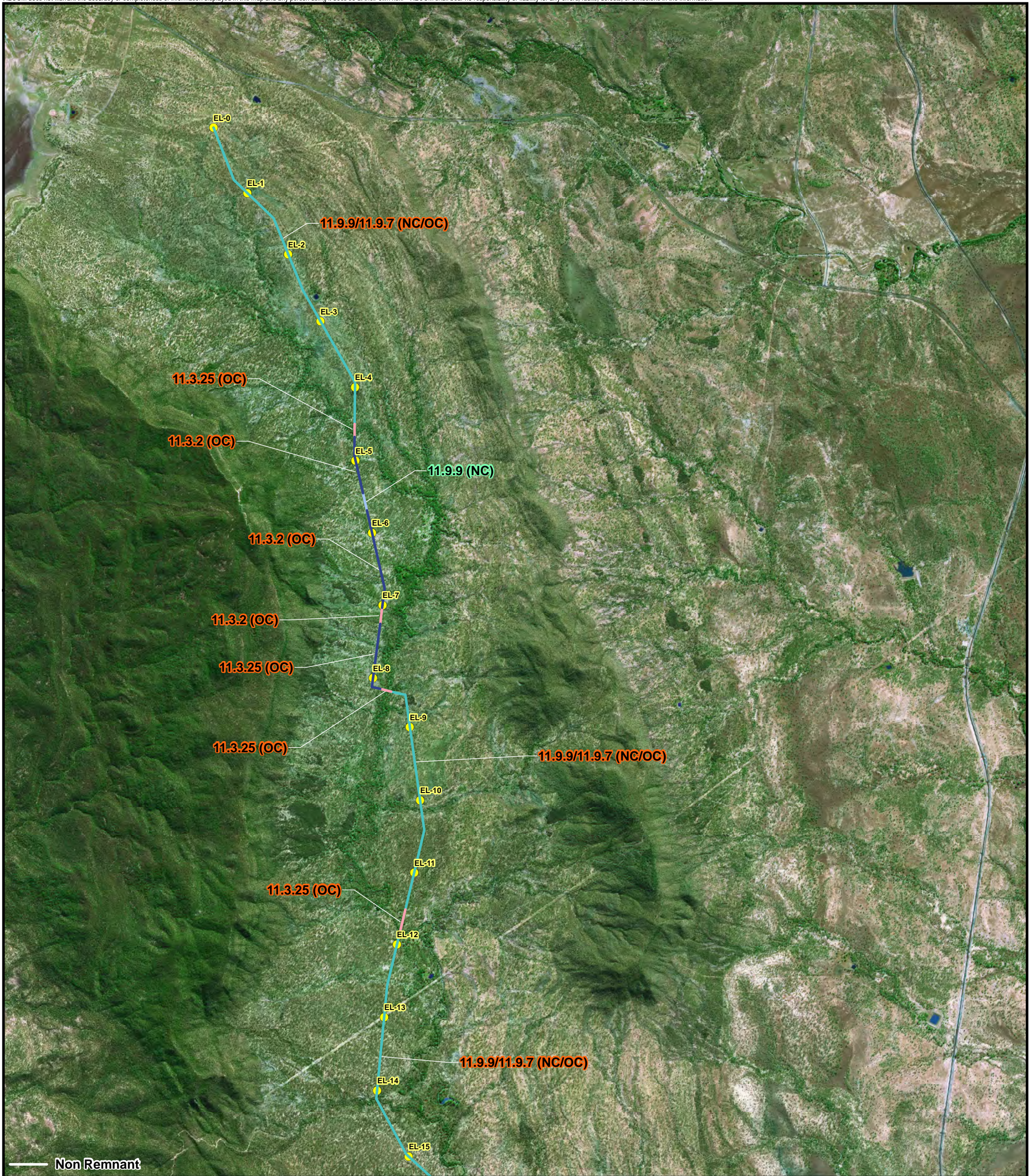
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
- Classified Route and Surveyed EVNT Species: © 2011 AECOM Australia Pty Ltd
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LEGEND

● 1 Km Kilometrage Point

HVR High Value Regrowth Vegetation

- E** Remnant Endangered Regional Ecosystem
- OC** Remnant Of Concern Regional Ecosystem
- NC** Remnant Not Of Concern Regional Ecosystem

EVNT Species

- Euphorbia sarcostemmoides
- Cerbera dumicola
- Desmodium macrocarpum
- ▲ Eucalyptus raveretiana

Regional Ecosystems and Constraints Surveyed along Alignment

Map 33 Of 41

Elphinstone Lateral

Kp EL-0 To Kp EL-15

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

4 - 33

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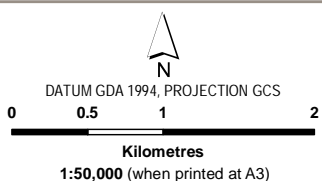
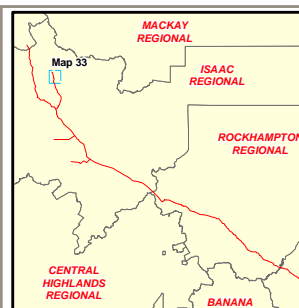


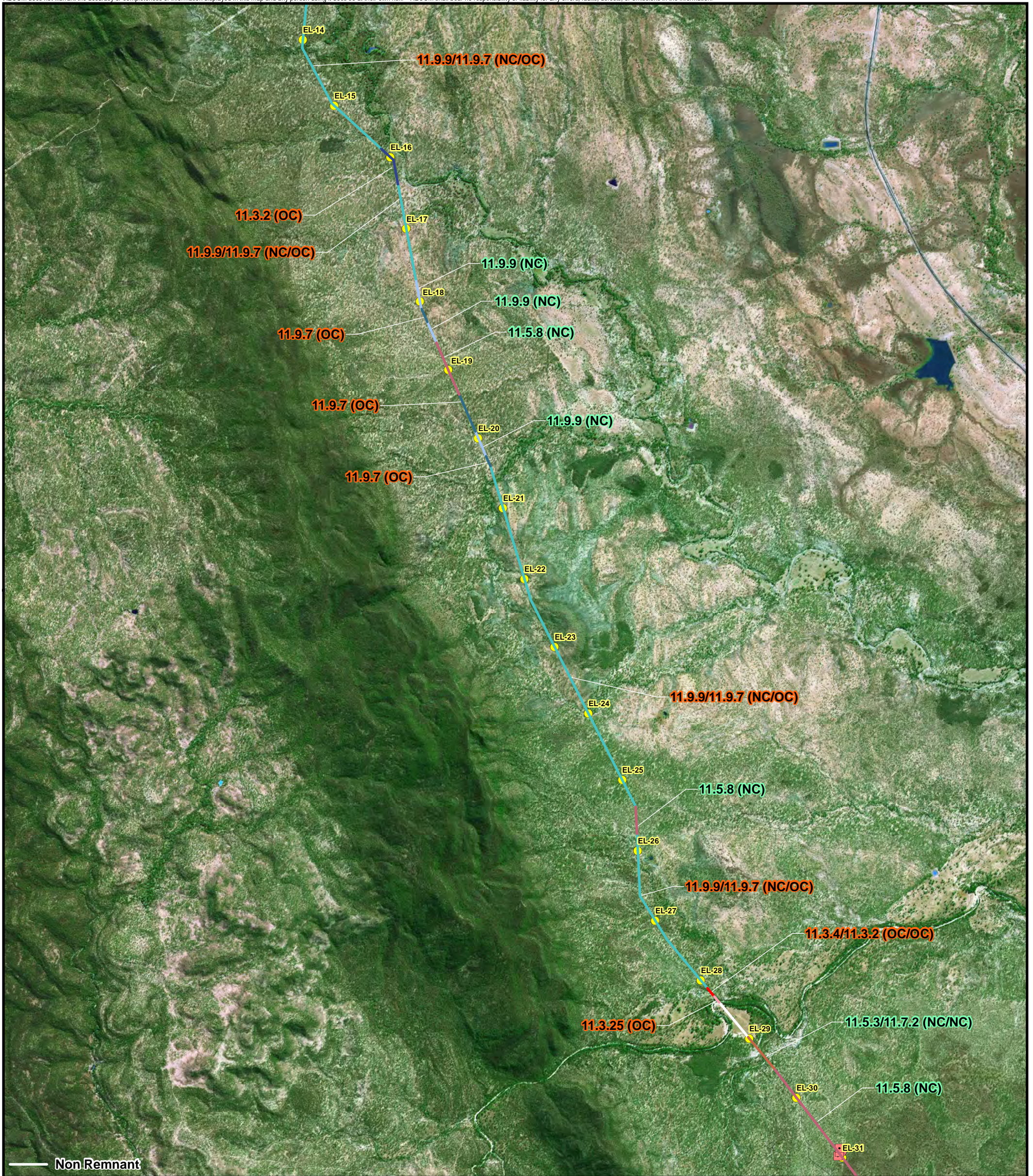
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
- Classified Route and Surveyed EVNT Species: © 2011 AECOM Australia Pty Ltd
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LEGEND

● 1 Km Kilometrage Point

HVR High Value Regrowth Vegetation

- E** Remnant Endangered Regional Ecosystem
- OC** Remnant Of Concern Regional Ecosystem
- NC** Remnant Not Of Concern Regional Ecosystem

EVNT Species

- Euphorbia sarcostemmoides
- Cerbera dumicola
- Desmodium macrocarpum
- ▲ Eucalyptus raveretiana

Regional Ecosystems and Constraints Surveyed along Alignment

Map 34 Of 41

Elphinstone Lateral

Kp EL-14 To Kp EL-31

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

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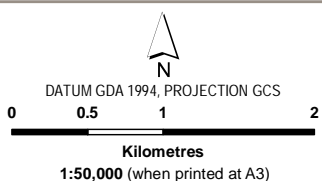
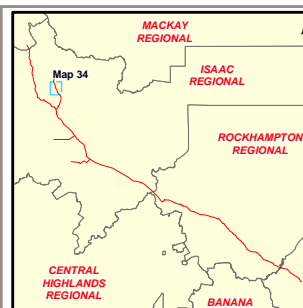


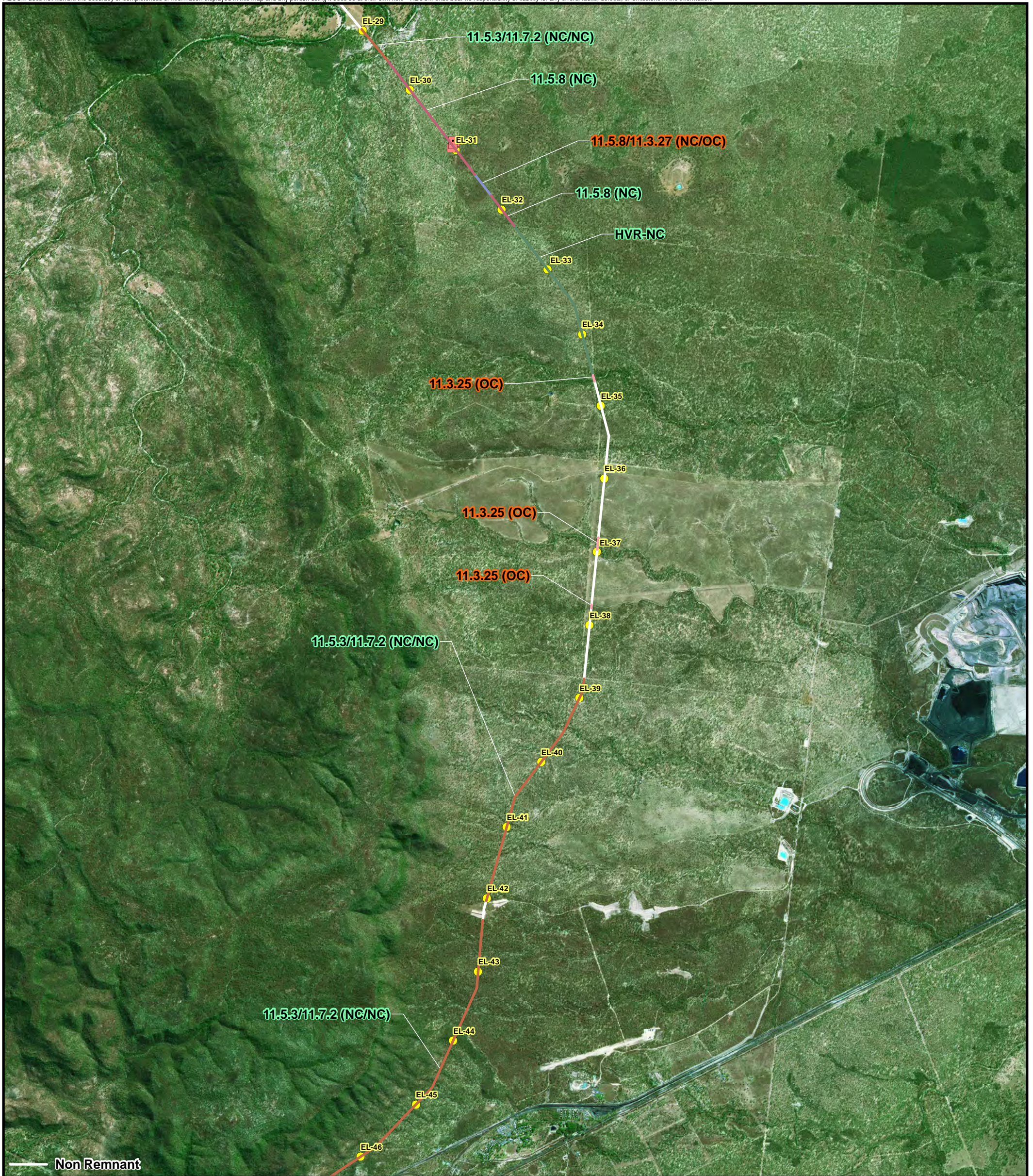
Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
- Classified Route and Surveyed EVNT Species: © 2011 AECOM Australia Pty Ltd

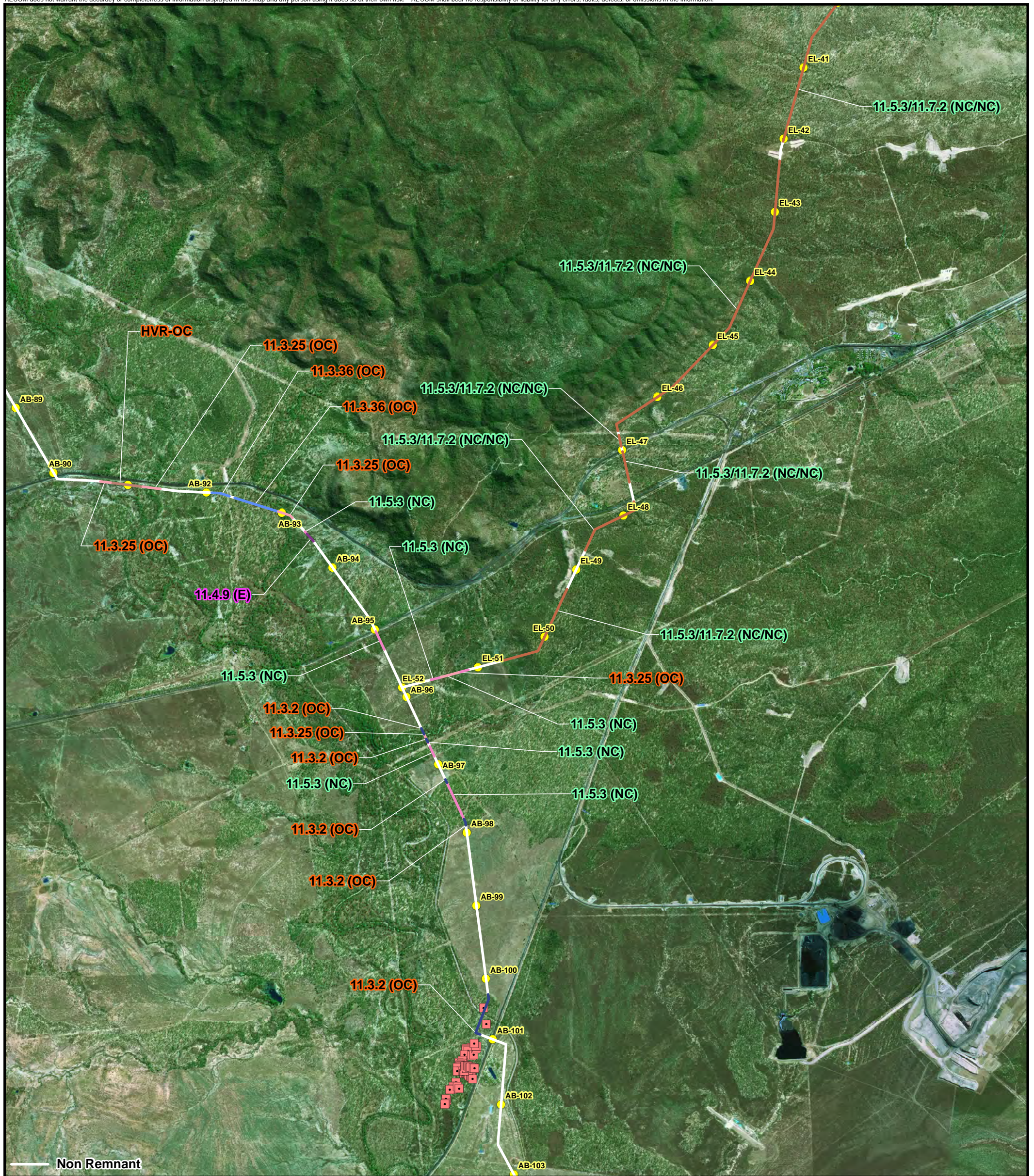
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<p>LEGEND</p> <ul style="list-style-type: none"> ● 1 Km Kilometrage Point 	<p>HVR High Value Regrowth Vegetation</p> <p>E Remnant Endangered Regional Ecosystem</p> <p>OC Remnant Of Concern Regional Ecosystem</p> <p>NC Remnant Not Of Concern Regional Ecosystem</p>	<p>EVNT Species</p> <ul style="list-style-type: none"> ● Euphorbia sarcostemmoides ■ Cerbera dumicola ■ Desmodium macrocarpum ▲ Eucalyptus raveretiana 	<p>Regional Ecosystems and Constraints Surveyed along Alignment</p> <p>Map 35 Of 41</p> <p>Elphinstone Lateral</p> <p>Kp EL-29 To EL-46</p> <p>Arrow Bowen Pipeline (ABP)</p> <p>ABP - EIS - Flora Report</p> <p>Isaac to Gladstone, Qld</p>
<p>PROJECT ID 60188431</p> <p>CREATED BY BN</p> <p>LAST MODIFIED BN 21 October 2011</p> <p>AECOM</p> <p>www.aecom.com</p>	<p>Data Sources:</p> <ul style="list-style-type: none"> - Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline - Classified Route and Surveyed EVNT Species: © 2011 AECOM Australia Pty Ltd - © The State of Queensland (Department of Environment and Resource Management) 2011 <p>Disclaimer:</p> <p>© The State of Queensland (Department of Environment and Resource Management) 2011. While every care is taken to ensure the accuracy of the Information Product, the Department of Environment and Resource Management makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the product being inaccurate or incomplete in any way and for any reason.</p>		



LEGEND

● 1 Km Kilometrage Point

HVR High Value Regrowth Vegetation

- E** Remnant Endangered Regional Ecosystem
- OC** Remnant Of Concern Regional Ecosystem
- NC** Remnant Not Of Concern Regional Ecosystem

EVNT Species

- Euphorbia sarcostemmoides
- Cerbera dumicola
- Desmodium macrocarpum
- ▲ Eucalyptus raveretiana

Regional Ecosystems and Constraints Surveyed along Alignment

Map 36 Of 41

Elphinstone Lateral

Kp EL-41 To Kp EL-52

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

4 - 36

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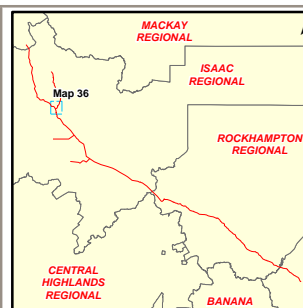


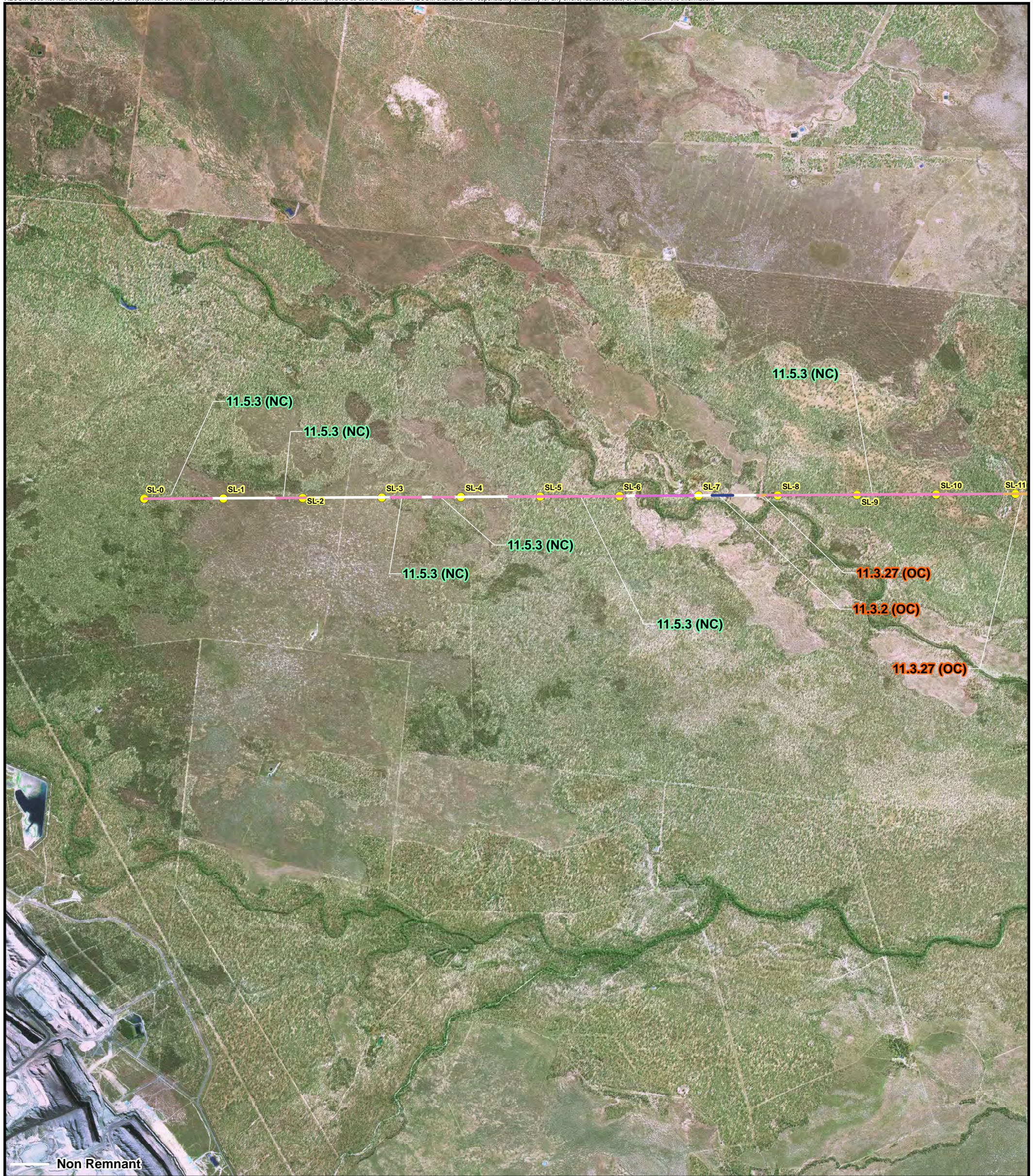
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LEGEND

● 1 Km Kilometrage Point

HVR High Value Regrowth Vegetation

- E** Remnant Endangered Regional Ecosystem
- OC** Remnant Of Concern Regional Ecosystem
- NC** Remnant Not Of Concern Regional Ecosystem

EVNT Species

- Euphorbia sarcostemmoides
- Cerbera dumicola
- Desmodium macrocarpum
- ▲ Eucalyptus raveretiana

Regional Ecosystems and Constraints Surveyed along Alignment

Map 37 Of 41

Saraji Lateral

Kp SL-0 To Kp SL-11

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

4 - 37

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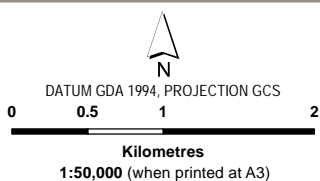
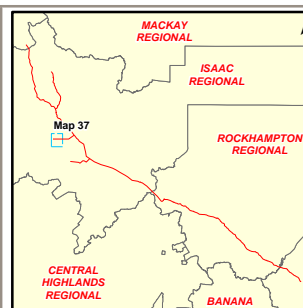


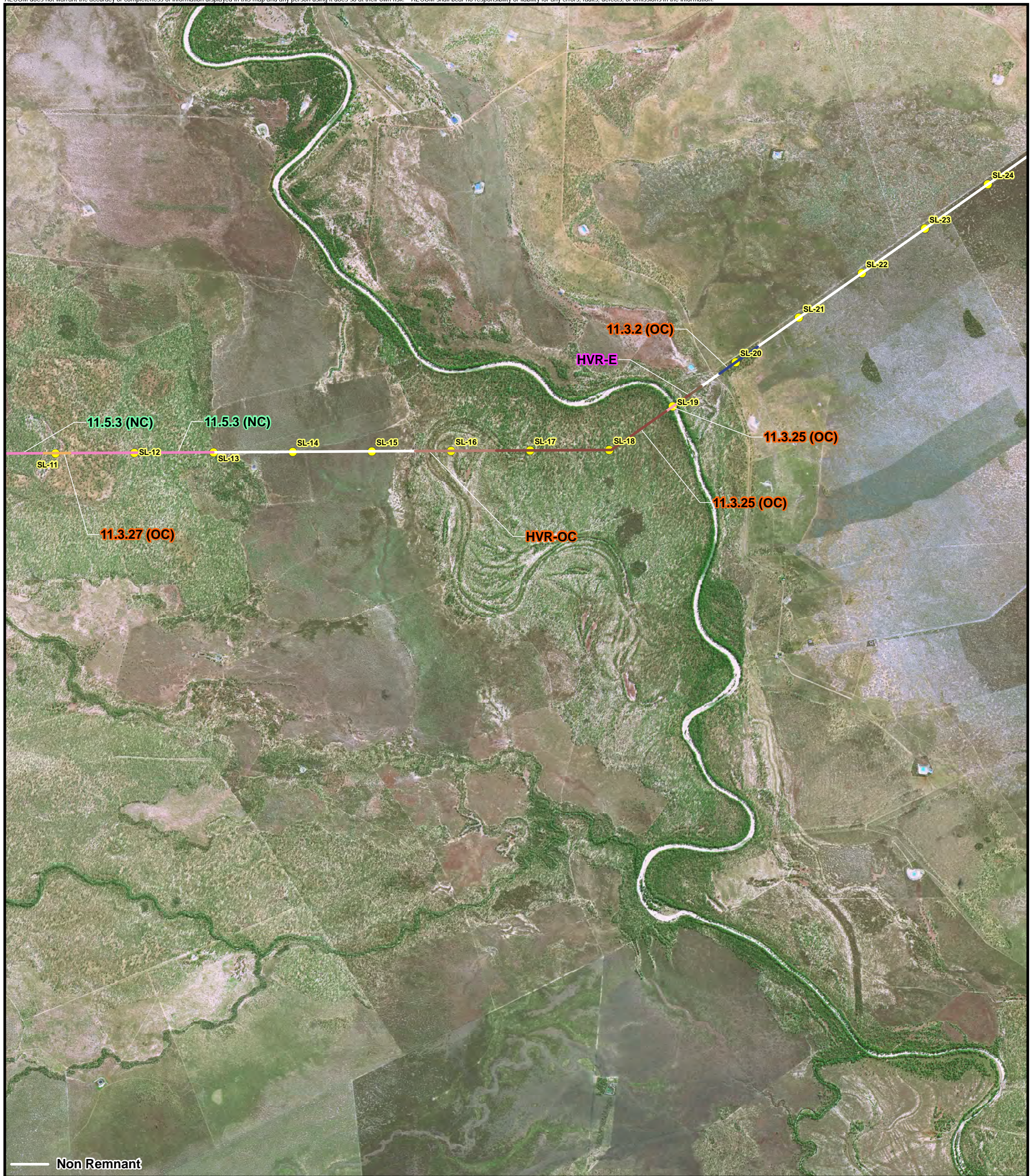
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LEGEND

● 1 Km Kilometrage Point

HVR High Value Regrowth Vegetation

E Remnant Endangered Regional Ecosystem

OC Remnant Of Concern Regional Ecosystem

NC Remnant Not Of Concern Regional Ecosystem

EVNT Species

- Euphorbia sarcostemmoides
- Cerbera dumicola
- Desmodium macrocarpum
- ▲ Eucalyptus raveretiana

Regional Ecosystems and Constraints Surveyed along Alignment

Map 38 Of 41

Saraji Lateral

Kp SL-11 To Kp SL-24

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

4 - 38

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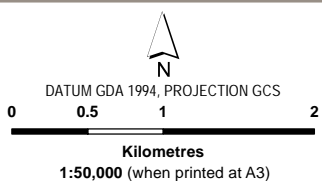


Data Sources:

- Proposed Route, Kilometrage points and Background Spot Images: Arrow Bowen Pipeline
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LEGEND
 ● 1 Km Kilometrage Point

HVR High Value Regrowth Vegetation
 E Remnant Endangered Regional Ecosystem
 OC Remnant Of Concern Regional Ecosystem
 NC Remnant Not Of Concern Regional Ecosystem

EVNT Species
 ● Euphorbia sarcostemmoides
 ■ Cerbera dumicola
 ■ Desmodium macrocarpum
 ▲ Eucalyptus raveretiana

Regional Ecosystems and Constraints Surveyed along Alignment

Map 39 Of 41

Saraji Lateral
Kp SL-21 To Kp SL-25.8

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

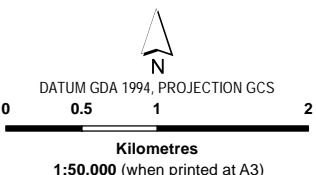
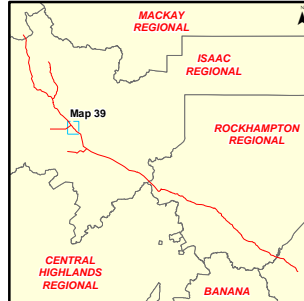
Map
4 - 39

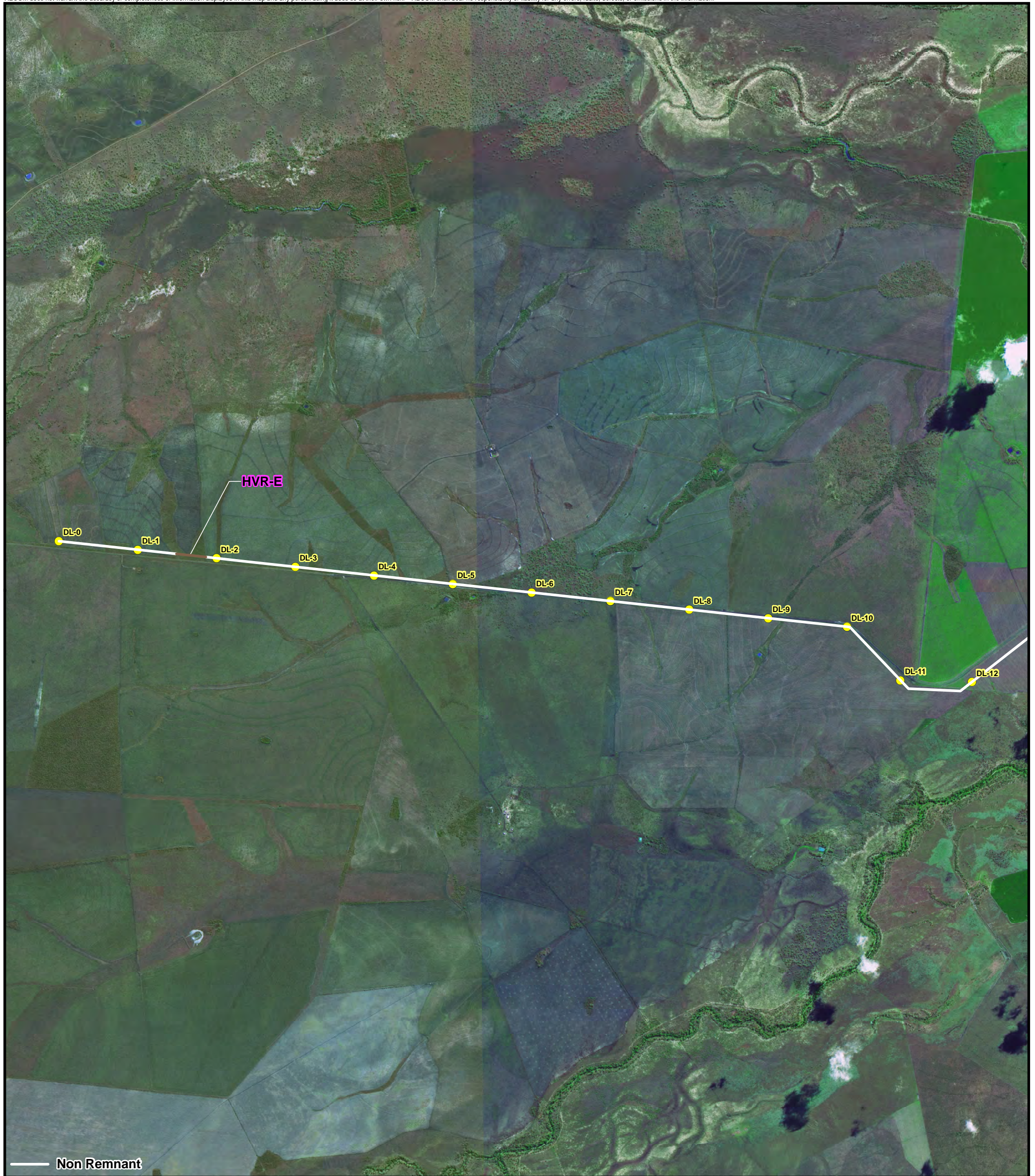
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LEGEND

● 1 Km Kilometrage Point

HVR High Value Regrowth Vegetation

- E** Remnant Endangered Regional Ecosystem
- OC** Remnant Of Concern Regional Ecosystem
- NC** Remnant Not Of Concern Regional Ecosystem

EVNT Species

- Euphorbia sarcostemmoides
- Cerbera dumicola
- Desmodium macrocarpum
- ▲ Eucalyptus raveretiana

Regional Ecosystems and Constraints Surveyed along Alignment

Map 40 Of 41

Dysart Lateral

Kp DL-0 To Kp DL-12

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

4 - 40

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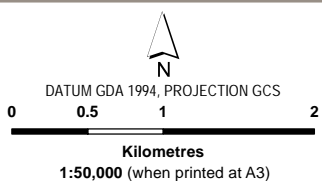
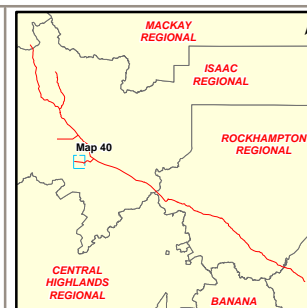


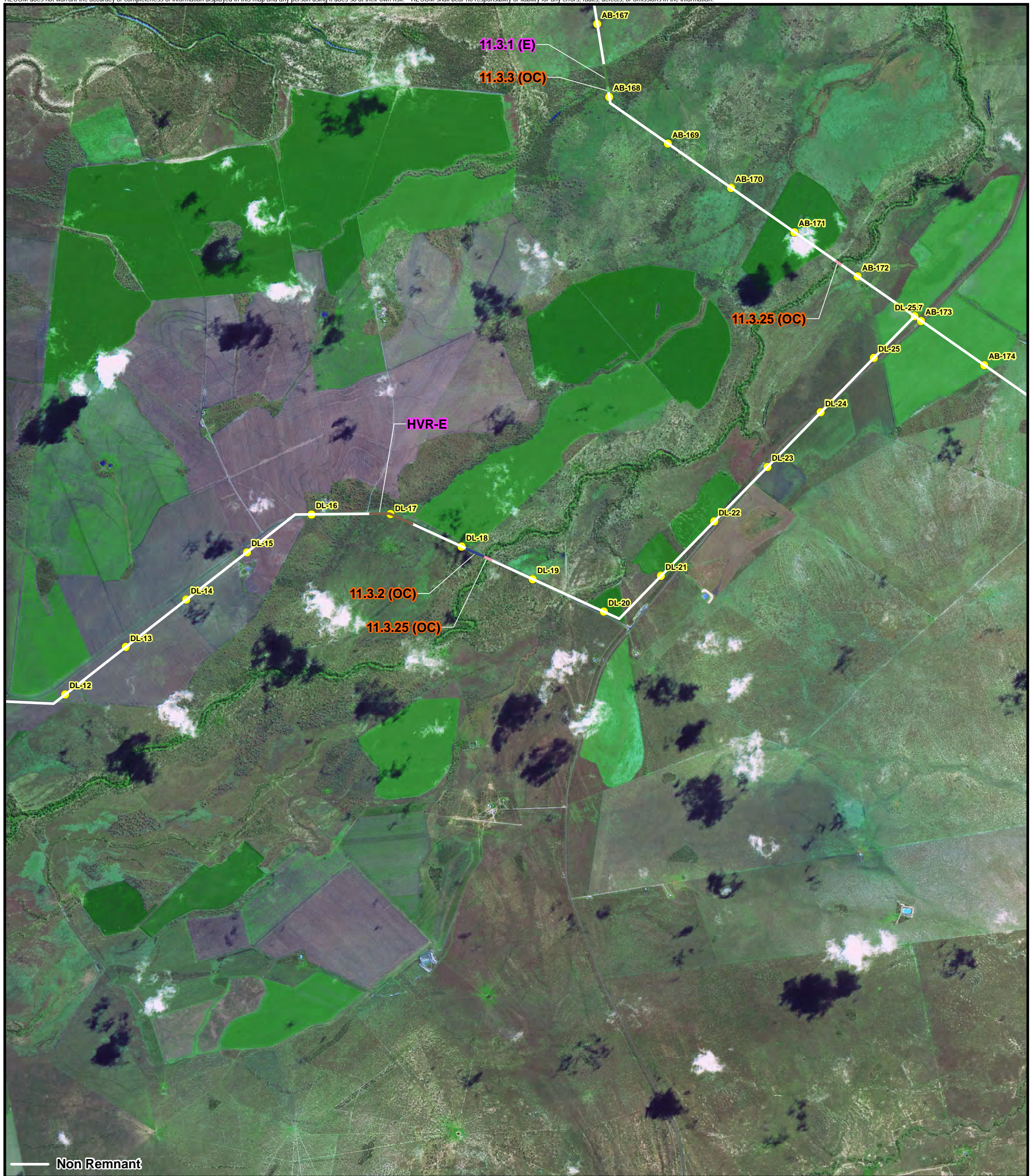
Data Sources:

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LEGEND

● 1 Km Kilometrage Point

HVR High Value Regrowth Vegetation

- E** Remnant Endangered Regional Ecosystem
- OC** Remnant Of Concern Regional Ecosystem
- NC** Remnant Not Of Concern Regional Ecosystem

EVNT Species

- Euphorbia sarcostemmoides
- Cerbera dumicola
- Desmodium macrocarpum
- ▲ Eucalyptus raveretiana

Regional Ecosystems and Constraints Surveyed along Alignment

Map 41 Of 41

Dysart Lateral

Kp DL-12 To Kp DL-25.7

Arrow Bowen Pipeline (ABP)

ABP - EIS - Flora Report

Isaac to Gladstone, Qld

Map

4 - 41

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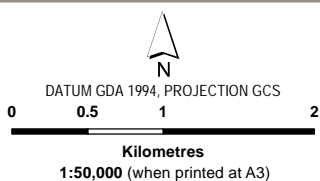
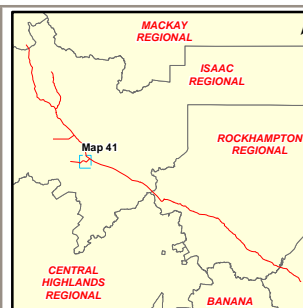


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Appendix B

RE Tables

Appendix B RE Tables

Table 22 Sequential Lengths of Surveyed REs

(a) Mainline

KP start (km)	KP end (km)	Length (km)	Area (ha)	Mapped RE	Surveyed RE	Percentage
0.00	2.39	2.42	7.246766	11.8.5	11.8.5	100
2.39	3.63	1.25	3.755219	11.8.5	11.8.5	100
3.63	3.95	0.32	0.964187	non-rem	HVR-LC	100
3.95	7.98	4.06	12.18284	11.8.5	11.8.5	100
7.98	8.31	0.33	0.987339	non-rem	non-rem	100
8.31	8.59	0.29	0.860713	11.8.5	non-rem	100
8.59	11.57	3.00	9.014688	non-rem	non-rem	100
11.57	11.93	0.36	1.084446	11.9.9/ 11.9.2/ 11.9.5	HVR-LC	100
11.93	12.04	0.11	0.330871	non-rem	non-rem	100
12.04	12.14	0.11	0.32529	non-rem	HVR-E	100
12.14	12.27	0.13	0.37504	11.3.25	11.3.25	100
12.27	12.86	0.60	1.797871	non-rem	non-rem	100
12.86	12.98	0.12	0.359709	11.9.5	HVR-E	100
12.98	13.25	0.27	0.817824	non-rem	non-rem	100
13.25	13.68	0.43	1.280697	non-rem	HVR-E	100
13.68	16.26	2.60	7.801193	non-rem	non-rem	100
16.26	17.72	1.48	4.44312	11.8.5	11.8.5	100
17.72	19.75	2.04	6.130559	non-rem	non-rem	100
19.75	19.77	0.02	0.053167	11.9.5/ 11.8.13	non-rem	100
19.77	19.94	0.18	0.52634	11.9.9/ 11.9.2/ 11.9.5	11.9.2	100
19.94	20.00	0.06	0.168122	non-rem	non-rem	100
20.00	20.29	0.29	0.870593	11.9.9/ 11.9.2/ 11.9.5	non-rem	100
20.29	21.07	0.79	2.359909	non-rem	non-rem	100
21.07	21.57	0.50	1.509475	11.9.5/ 11.8.13	non-rem	100
21.57	21.60	0.03	0.099851	11.8.5	non-rem	100
21.60	21.61	0.01	0.031448	11.9.5/ 11.8.13	non-rem	100
21.61	23.23	1.64	4.905567	non-rem	non-rem	100
23.23	23.27	0.04	0.116622	11.10.4a	non-rem	100

KP start (km)	KP end (km)	Length (km)	Area (ha)	Mapped RE	Surveyed RE	Percentage
23.27	28.09	4.85	14.55108	11.5.3	11.5.3	100
28.09	28.42	0.33	0.994571	11.9.9/ 11.9.2	11.9.9	100
28.42	29.16	0.75	2.245546	11.5.3	11.5.3	100
29.16	29.28	0.13	0.377443	11.9.9/ 11.9.2	11.9.9	100
29.28	29.60	0.32	0.962805	11.5.3	11.5.3	100
29.60	29.97	0.37	1.10656	11.9.9/ 11.9.2	11.9.9	100
29.97	31.33	1.37	4.122024	11.5.3	11.5.3	100
31.33	31.47	0.14	0.418182	11.5.12	11.5.12	100
31.47	31.77	0.30	0.908264	11.5.12	11.5.12	100
31.77	33.77	2.01	6.032055	11.5.3	11.5.3	100
33.77	34.64	0.88	2.625017	11.5.12	11.5.12	100
34.64	35.01	0.37	1.110905	11.5.3	11.5.3	100
35.01	36.45	1.45	4.363579	11.8.11/ 11.8.5	11.8.11	100
36.45	36.79	0.34	1.033294	11.3.2/ 11.3.25	11.3.25	100
36.79	37.00	0.21	0.623244	11.8.11/ 11.8.5	11.8.11	100
37.00	37.15	0.15	0.462173	11.8.11/ 11.8.5	non-rem	100
37.15	37.17	0.01	0.038387	11.3.2/ 11.3.25	non-rem	100
37.17	38.45	1.30	3.890607	non-rem	non-rem	100
38.45	38.83	0.38	1.133648	11.3.2/ 11.3.25	11.5.3	100
38.83	38.99	0.17	0.501074	non-rem	non-rem	100
38.99	39.13	0.13	0.40399	11.3.2/ 11.3.25	11.5.3	100
39.13	39.32	0.19	0.58045	11.8.11/ 11.8.5	11.5.3	100
39.32	44.42	5.13	15.38673	non-rem	non-rem	100
44.42	44.51	0.10	0.287188	11.4.2/ 11.4.9	11.4.2/ 11.4.9	60/40
44.51	49.70	5.21	15.64204	non-rem	non-rem	100
49.70	50.08	0.38	1.152149	11.3.2	11.3.7	100
50.08	50.22	0.15	0.4352	11.3.25	11.3.25	100
50.22	50.26	0.04	0.111225	11.3.2	11.3.7	100
50.26	54.00	3.76	11.2922	non-rem	non-rem	100
54.00	54.42	0.42	1.27012	11.3.2	non-rem	100
54.42	54.52	0.10	0.30877	non-rem	non-rem	100

KP start (km)	KP end (km)	Length (km)	Area (ha)	Mapped RE	Surveyed RE	Percentage
54.52	54.68	0.15	0.462538	11.3.2	11.3.2	100
54.68	58.26	3.60	10.79837	non-rem	non-rem	100
58.26	58.27	0.01	0.041875	11.5.9c/ 11.7.2	non-rem	100
58.27	59.05	0.79	2.361172	non-rem	non-rem	100
59.05	59.07	0.02	0.05788	11.3.25	non-rem	100
59.07	59.14	0.06	0.187524	11.3.25	11.3.25	100
59.14	59.15	0.01	0.043553	11.3.25	non-rem	100
59.15	59.43	0.29	0.855009	non-rem	non-rem	100
59.43	60.89	1.47	4.403312	11.5.3	11.5.3	100
60.89	61.94	1.05	3.152461	11.7.2/ 11.7.3	11.7.2	100
61.94	62.70	0.76	2.289768	11.5.3	11.5.9/ 11.5.3	80/20
62.70	62.78	0.09	0.259426	11.7.2/ 11.7.3	11.5.9/ 11.5.3	80/20
62.78	63.79	1.01	3.017741	11.7.2/ 11.7.3	11.7.2	100
63.79	63.89	0.11	0.329187	11.5.9c/ 11.5.3	11.5.9	100
63.89	63.96	0.07	0.198681	non-rem	non-rem	100
63.96	64.34	0.38	1.136869	11.5.9c/ 11.5.3	11.5.9/ 11.5.3	80/20
64.34	64.54	0.21	0.615652	11.7.2/ 11.7.3	11.7.2	100
64.54	64.72	0.18	0.532741	11.5.9c/ 11.5.3	11.5.9/ 11.5.3	80/20
64.72	66.06	1.34	4.03156	11.7.2/ 11.7.3	11.7.2	100
66.06	67.42	1.37	4.108856	11.5.9c/ 11.5.3	11.5.9/ 11.5.3	80/20
67.42	67.50	0.08	0.254328	non-rem	HVR-LC	100
67.50	67.58	0.08	0.23753	11.5.9c/ 11.5.3	11.5.9/ 11.5.3	80/20
67.58	67.73	0.15	0.444582	11.3.25	11.3.25	100
67.73	68.17	0.44	1.329302	11.5.9c/ 11.5.3	11.5.9/ 11.5.3	80/20
68.17	68.24	0.07	0.196707	non-rem	non-rem	100
68.24	68.28	0.05	0.14568	11.3.25	11.3.25	100
68.28	68.30	0.02	0.046518	11.3.25	11.5.3	100
68.30	69.27	0.98	2.926427	non-rem	non-rem	100
69.27	70.28	1.01	3.027517	non-rem	HVR-LC	100
70.28	70.88	0.61	1.823822	11.7.2/ 11.7.3	11.7.2	100
70.88	73.44	2.58	7.726308	11.5.9c	11.5.9	100

KP start (km)	KP end (km)	Length (km)	Area (ha)	Mapped RE	Surveyed RE	Percentage
73.44	73.57	0.13	0.390348	11.7.2	11.7.1x1	100
73.57	73.62	0.04	0.128218	11.9.7a	11.7.1x1	100
73.62	74.64	1.03	3.079618	non-rem	non-rem	100
74.64	74.72	0.08	0.252121	11.8.5	11.8.5	100
74.72	74.99	0.27	0.814234	11.8.11/ 11.8.5	non-rem	100
74.99	76.29	1.30	3.896182	11.8.5	11.8.5	100
76.29	80.97	4.71	14.12783	non-rem	non-rem	100
80.97	81.67	0.70	2.092834	non-rem	HVR-E	100
81.67	83.25	1.59	4.76831	non-rem	non-rem	100
83.25	83.91	0.66	1.98086	non-rem	HVR-E	100
83.91	86.91	3.01	9.030698	non-rem	non-rem	100
86.91	87.22	0.31	0.941725	11.3.2/ 11.3.25	11.3.2	100
87.22	87.97	0.75	2.264511	non-rem	non-rem	100
87.97	88.14	0.16	0.48789	non-rem	HVR-E	100
88.14	90.02	1.89	5.680289	non-rem	non-rem	100
90.02	90.15	0.13	0.395955	11.3.2/ 11.3.1/ 11.3.25	non-rem	100
90.15	90.58	0.43	1.284553	non-rem	non-rem	100
90.58	90.71	0.13	0.384432	11.3.2/ 11.3.1/ 11.3.25	11.3.25	100
90.71	91.12	0.41	1.232682	non-rem	HVR-OC	100
91.12	91.34	0.22	0.66695	11.3.2/ 11.3.1/ 11.3.25	11.3.25	100
91.34	91.99	0.65	1.953718	non-rem	non-rem	100
91.99	92.22	0.23	0.682667	11.3.36	11.3.36	100
92.22	92.28	0.07	0.208322	non-rem	non-rem	100
92.28	92.86	0.58	1.740563	11.3.36	11.3.36	100
92.86	93.07	0.20	0.610685	11.3.2/ 11.3.1/ 11.3.25	11.3.25	100
93.07	93.31	0.25	0.744353	non-rem	non-rem	100
93.31	93.35	0.04	0.11061	11.5.3	11.5.3	100
93.35	93.48	0.13	0.389077	11.4.9	11.4.9	100
93.48	94.94	1.47	4.404416	non-rem	non-rem	100
94.94	95.21	0.27	0.801065	11.5.3	11.5.3	100
95.21	96.38	1.18	3.537099	non-rem	non-rem	100

KP start (km)	KP end (km)	Length (km)	Area (ha)	Mapped RE	Surveyed RE	Percentage
96.38	96.47	0.09	0.268084	11.3.2/ 11.3.1	11.3.2	100
96.47	96.54	0.07	0.207477	11.3.25	11.3.25	100
96.54	96.59	0.05	0.148416	11.3.2/ 11.3.1	11.3.2	100
96.59	96.60	0.01	0.034226	11.5.3/ 11.7.2	11.5.3	100
96.60	96.65	0.05	0.156892	non-rem	non-rem	100
96.65	96.80	0.15	0.43874	11.5.3/ 11.7.2	11.5.3	100
96.80	97.15	0.35	1.043437	non-rem	non-rem	100
97.15	97.19	0.05	0.144288	11.3.2/ 11.3.1	11.3.2	100
97.19	97.74	0.54	1.630324	11.5.3/ 11.7.2	11.5.3	100
97.74	97.83	0.09	0.267192	11.3.2/ 11.3.1	11.3.2	100
97.83	100.15	2.34	7.009282	non-rem	non-rem	100
100.15	100.77	0.62	1.84695	11.3.2/11.3.1	11.3.2	100
100.77	101.82	1.05	3.152976	non-rem	non-rem	100
101.82	101.87	0.05	0.157022	11.3.2/ 11.3.1	non-rem	100
101.87	101.97	0.10	0.294061	non-rem	non-rem	100
101.97	102.05	0.08	0.243169	11.3.2/ 11.3.1	non-rem	100
102.05	102.29	0.24	0.726719	non-rem	non-rem	100
102.29	104.19	1.91	5.727949	non-rem	non-rem	100
104.19	104.69	0.49	1.483317	non-rem	11.3.2	100
104.69	105.08	0.40	1.193976	11.3.2/ 11.3.1	non-rem	100
105.08	105.23	0.15	0.436095	11.3.25	11.3.25	100
105.23	105.23	0.01	0.015018	11.3.2/ 11.3.1/ 11.3.25	non-rem	100
105.23	108.88	3.65	10.95906	non-rem	non-rem	100
108.88	108.96	0.08	0.242028	11.9.5/ 11.9.1/ 11.9.2	non-rem	100
108.96	109.15	0.19	0.58498	11.5.3/ 11.4.9	HVR-OC	100
109.15	109.35	0.20	0.592002	11.3.25	11.3.25	100
109.35	109.47	0.13	0.381141	11.3.2/ 11.3.1	non-rem	100
109.47	110.00	0.53	1.587558	11.4.9/ 11.5.3	non-rem	100
110.00	110.04	0.04	0.122983	11.4.9/ 11.5.3	11.3.3	100
110.04	110.08	0.04	0.112337	11.4.9/ 11.5.3	non-rem	100

KP start (km)	KP end (km)	Length (km)	Area (ha)	Mapped RE	Surveyed RE	Percentage
110.08	111.66	1.58	4.744366	non-rem	non-rem	100
111.66	111.85	0.19	0.574048	11.5.3/ 11.4.9/ 11.3.35/ 11.5.9c	11.5.3	100
111.85	130.27	18.46	55.38295	non-rem	non-rem	100
130.27	132.57	2.30	6.892409	11.5.9c/ 11.5.9b	11.5.9	100
132.57	132.77	0.21	0.620451	non-rem	non-rem	100
132.77	133.15	0.38	1.147804	11.5.9c/ 11.5.9b	11.5.9	100
133.15	133.56	0.40	1.211892	11.5.9c/ 11.5.9b	11.5.9	100
133.56	133.67	0.12	0.345241	non-rem	non-rem	100
133.67	133.84	0.17	0.50235	11.5.9c/ 11.5.9b	11.5.9	100
133.84	133.87	0.03	0.092709	non-rem	11.5.3	100
133.87	134.23	0.36	1.090446	11.5.9c/ 11.5.9b	11.5.9	100
134.23	134.45	0.21	0.644946	non-rem	11.5.9	100
134.45	134.67	0.22	0.658663	11.5.9c/ 11.5.9b	11.5.9	100
134.67	134.73	0.06	0.191247	non-rem	11.5.9	100
134.73	134.93	0.20	0.588828	11.5.9c/ 11.5.9b	11.5.9	100
134.93	142.48	7.56	22.67612	non-rem	non-rem	100
142.48	145.00	2.53	7.582727	11.5.12/ 11.5.3	11.5.3	100
145.00	145.18	0.18	0.544067	11.5.3	11.5.3	100
145.18	145.24	0.06	0.179966	11.5.12/ 11.5.3	11.5.3	100
145.24	160.17	14.94	44.82026	non-rem	non-rem	100
160.17	160.25	0.07	0.224196	11.3.7/ 11.3.1/ 11.3.1b	11.3.25	100
160.25	163.70	3.46	10.36764	non-rem	non-rem	100
163.70	164.00	0.29	0.882091	11.3.21	11.3.2/ 11.3.7	50/50
164.00	164.59	0.59	1.783605	non-rem	non-rem	100
164.59	164.69	0.10	0.289699	11.3.2/ 11.3.7/ 11.3.1	11.3.2/ 11.3.7	50/50
164.69	164.85	0.17	0.497347	11.3.25	11.3.25	100
164.85	165.60	0.75	2.253379	11.3.2/ 11.3.3/ 11.3.1	11.3.7/ 11.3.3	50/50
165.60	165.65	0.04	0.130867	non-rem	non-rem	100
165.65	165.80	0.15	0.450919	11.3.2/ 11.3.3/ 11.3.1	11.3.7/ 11.3.3	50/50
165.80	167.69	1.90	5.693224	non-rem	non-rem	100

KP start (km)	KP end (km)	Length (km)	Area (ha)	Mapped RE	Surveyed RE	Percentage
167.69	167.98	0.28	0.842991	11.3.1	11.3.1	100
167.98	168.05	0.08	0.228358	11.4.13/ 11.4.4	11.3.3	100
168.05	171.79	3.74	11.20758	non-rem	non-rem	100
171.79	171.85	0.07	0.195618	11.3.25	11.3.25	100
171.85	172.78	0.92	2.768514	non-rem	non-rem	100
172.78	190.04	17.26	51.77876	non-rem	non-rem	100
190.04	190.22	0.17	0.523769	non-rem	HVR-OC	100
190.22	197.82	7.60	22.8045	non-rem	non-rem	100
197.82	197.86	0.04	0.110942	non-rem	HVR-LC	100
197.86	208.06	10.19	30.55521	non-rem	non-rem	100
208.06	212.30	4.23	12.70335	non-rem	non-rem	100
212.30	212.82	0.52	1.563334	non-rem	HVR-E	100
212.82	229.22	16.37	49.12252	non-rem	non-rem	100
229.22	229.34	0.12	0.359877	non-rem	HVR-E	100
229.34	232.01	2.67	8.017459	non-rem	non-rem	100
232.01	232.42	0.41	1.220686	non-rem	HVR-E	100
232.42	232.60	0.18	0.528465	11.3.1	HVR-E	100
232.60	233.85	1.25	3.745019	non-rem	non-rem	100
233.85	234.08	0.23	0.697071	11.3.3/ 11.3.4/ 11.3.25	11.3.25	100
234.08	234.66	0.58	1.743564	11.3.25	11.3.25	100
234.66	238.29	3.62	10.86758	non-rem	non-rem	100
238.29	238.51	0.22	0.657568	11.3.25	11.3.3	100
238.51	239.42	0.90	2.711386	non-rem	non-rem	100
239.42	239.46	0.04	0.127235	11.3.25	non-rem	100
239.46	239.52	0.05	0.164167	11.3.25	11.3.25	100
239.52	243.02	3.49	10.48177	non-rem	non-rem	100
243.02	243.31	0.29	0.871662	non-rem	HVR-OC	100
243.31	244.99	1.68	5.03031	non-rem	non-rem	100
244.99	245.15	0.16	0.481106	11.3.25	11.3.25	100
245.15	248.92	3.76	11.27986	non-rem	non-rem	100
248.92	249.07	0.16	0.467046	11.3.25	11.3.25	100

KP start (km)	KP end (km)	Length (km)	Area (ha)	Mapped RE	Surveyed RE	Percentage
249.07	250.91	1.83	5.486215	non-rem	non-rem	100
250.91	251.10	0.19	0.574369	non-rem	HVR-E	100
251.10	261.42	10.29	30.88407	non-rem	non-rem	100
261.42	261.46	0.05	0.14062	11.4.2/ 11.3.3/ 11.3.1	11.3.25	100
261.46	274.11	12.62	37.85549	non-rem	non-rem	100
274.11	275.73	1.61	4.828271	non-rem	non-rem	100
275.73	275.80	0.07	0.209251	11.5.3/ 11.3.2	11.3.25	100
275.80	276.67	0.87	2.612346	non-rem	non-rem	100
276.67	276.85	0.18	0.536713	non-rem	HVR-OC	100
276.85	277.80	0.94	2.83338	non-rem	non-rem	100
277.80	278.23	0.43	1.296053	non-rem	HVR-OC	100
278.23	278.44	0.21	0.627897	non-rem	non-rem	100
278.44	278.61	0.17	0.523598	non-rem	HVR-LC	100
278.61	280.09	1.48	4.432457	non-rem	non-rem	100
280.09	281.20	1.10	3.304404	11.11.1/ 11.11.18/ 11.11.14	HVR-E	100
281.20	284.18	2.97	8.921676	non-rem	non-rem	100
284.18	284.29	0.11	0.33632	11.3.11	11.3.3	100
284.29	285.37	1.08	3.227327	non-rem	non-rem	100
285.37	285.47	0.09	0.283088	11.3.26/ 11.3.4/ 11.3.25/ 11.3.1	11.3.25	100
285.47	286.38	0.91	2.739962	non-rem	non-rem	100
286.38	286.46	0.08	0.235342	11.3.26/ 11.3.4/ 11.3.25/ 11.3.1	11.3.25	100
286.46	286.65	0.19	0.567003	non-rem	HVR-E	100
286.65	289.08	2.42	7.256456	non-rem	non-rem	100
289.08	289.16	0.08	0.236804	11.3.26/ 11.3.4 / 11.3.25/ 11.3.1	11.3.25	100
289.16	289.86	0.71	2.118156	non-rem	non-rem	100
289.86	289.96	0.09	0.283596	non-rem	HVR-LC	100
289.96	294.60	4.62	13.87217	non-rem	non-rem	100
294.60	300.47	5.86	17.57006	non-rem	non-rem	100
300.47	300.61	0.14	0.434058	non-rem	11.12.2	100

KP start (km)	KP end (km)	Length (km)	Area (ha)	Mapped RE	Surveyed RE	Percentage
300.61	301.28	0.67	2.006109	11.12.2	11.12.2	100
301.28	302.43	1.14	3.413957	non-rem	non-rem	100
302.43	302.94	0.51	1.535525	11.3.4/ 11.3.26/ 11.3.25	11.11.1	100
302.94	303.02	0.08	0.241644	11.3.4/ 11.3.26/ 11.3.25	non-rem	100
303.02	303.38	0.36	1.072627	non-rem	HVR-OC	100
303.38	304.51	1.13	3.396589	non-rem	non-rem	100
304.51	304.87	0.35	1.055757	non-rem	HVR-LC	100
304.87	306.69	1.82	5.458316	non-rem	non-rem	100
306.69	306.81	0.11	0.344145	non-rem	HVR-LC	100
306.81	307.43	0.62	1.863858	non-rem	non-rem	100
307.43	308.03	0.60	1.808591	11.9.9/ 11.3.4	11.9.9	100
308.03	309.66	1.62	4.852448	non-rem	non-rem	100
309.66	310.61	0.95	2.855947	non-rem	HVR-OC	100
310.61	312.32	1.70	5.114831	non-rem	non-rem	100
312.32	312.57	0.25	0.751949	11.9.9/ 11.3.4	11.9.9	100
312.57	313.32	0.74	2.224833	non-rem	HVR-OC	100
313.32	317.91	4.58	13.73488	non-rem	non-rem	100
317.91	317.99	0.08	0.241622	non-rem	HVR-LC	100
317.99	318.88	0.89	2.665576	non-rem	non-rem	100
318.88	319.15	0.27	0.818796	non-rem	HVR-LC	100
319.15	319.46	0.31	0.929064	non-rem	non-rem	100
319.46	319.55	0.08	0.247282	non-rem	11.3.25	100
319.55	327.88	8.31	24.91525	non-rem	non-rem	100
327.88	328.73	0.85	2.554746	non-rem	HVR-LC	100
328.73	332.11	3.37	10.10786	non-rem	non-rem	100
332.11	332.19	0.08	0.247689	non-rem	HVR-E	100
332.19	333.82	1.62	4.860833	non-rem	non-rem	100
333.82	336.01	2.19	6.555967	non-rem	non-rem	100
336.01	336.36	0.35	1.038425	non-rem	HVR-LC	100
336.36	342.84	6.46	19.37326	non-rem	non-rem	100
342.84	343.08	0.24	0.717574	non-rem	HVR-OC	100

KP start (km)	KP end (km)	Length (km)	Area (ha)	Mapped RE	Surveyed RE	Percentage
343.08	346.76	3.67	11.02049	non-rem	non-rem	100
346.76	347.12	0.35	1.064933	non-rem	HVR-OC	100
347.12	347.50	0.38	1.136962	non-rem	non-rem	100
347.50	347.64	0.14	0.423	non-rem	HVR-OC	100
347.64	348.65	1.00	3.01393	non-rem	non-rem	100
348.65	349.08	0.43	1.280804	non-rem	HVR-OC	100
349.08	349.17	0.09	0.282043	11.3.25/ 11.3.2/ 11.3.4	HVR-OC	100
349.17	349.23	0.06	0.168479	11.3.25/ 11.3.2/ 11.3.4	11.3.25	100
349.23	356.61	7.36	22.07852	non-rem	non-rem	100
356.61	356.73	0.12	0.364049	non-rem	HVR-LC	100
356.73	358.22	1.48	4.446191	non-rem	non-rem	100
358.22	358.32	0.10	0.296654	11.3.25/ 11.3.4/ 11.3.2	non-rem	100
358.32	358.38	0.06	0.189351	11.3.25/ 11.3.4/ 11.3.2	HVR-LC	100
358.38	358.42	0.04	0.12583	non-rem	HVR-LC	100
358.42	358.74	0.32	0.955079	non-rem	11.11.15	100
358.74	361.99	3.23	9.704896	non-rem	non-rem	100
361.99	362.26	0.27	0.82279	non-rem	HVR-LC	100
362.26	362.66	0.40	1.194771	non-rem	HVR-LC	100
362.66	367.00	4.33	12.9915	non-rem	non-rem	100
367.00	367.83	0.83	2.478703	11.11.15	11.11.15	100
367.83	369.64	1.80	5.40403	11.11.15	11.11.15	100
369.64	369.90	0.26	0.793803	non-rem	non-rem	100
369.90	370.16	0.26	0.769156	11.11.15	HVR-LC	100
370.16	370.33	0.17	0.499308	non-rem	HVR-LC	100
370.33	370.44	0.11	0.338386	11.11.15	HVR-LC	100
370.44	370.82	0.38	1.128724	non-rem	non-rem	100
370.82	371.16	0.34	1.007536	non-rem	HVR-OC	100
371.16	371.29	0.13	0.385681	11.3.25/ 11.3.4/ 11.3.2	11.3.25	100
371.29	373.31	2.02	6.049001	non-rem	non-rem	100
373.31	373.37	0.07	0.196675	11.3.25/ 11.3.4/ 11.3.2	11.3.25	100
373.37	377.56	4.17	12.51134	non-rem	non-rem	100

KP start (km)	KP end (km)	Length (km)	Area (ha)	Mapped RE	Surveyed RE	Percentage
377.56	377.66	0.10	0.314402	11.3.4/ 11.3.25/ 11.3.2	11.3.25	100
377.66	380.42	2.75	8.245868	non-rem	non-rem	100
380.42	380.49	0.08	0.226124	non-rem	HVR-OC	100
380.49	381.70	1.21	3.617609	non-rem	non-rem	100
381.70	381.77	0.06	0.190922	11.11.10	non-rem	100
381.77	381.92	0.15	0.464106	11.11.1	non-rem	100
381.92	382.39	0.47	1.402205	non-rem	non-rem	100
382.39	382.60	0.21	0.625255	non-rem	HVR-OC	100
382.60	382.77	0.17	0.511552	11.3.25/ 11.3.4/ 11.3.4	11.3.25/ 11.3.4	80/20
382.77	385.33	2.55	7.655802	non-rem	non-rem	100
385.33	386.37	1.03	3.095564	non-rem	HVR-LC	100
386.37	386.88	0.51	1.53029	non-rem	11.11.15	100
386.88	387.17	0.29	0.866618	non-rem	HVR-LC	100
387.17	387.56	0.39	1.173043	non-rem	non-rem	100
387.56	398.16	10.58	31.72577	non-rem	non-rem	100
398.16	398.38	0.22	0.653165	non-rem	non-rem	100
398.38	398.43	0.05	0.140327	11.12.1	HVR-LC	100
398.43	399.16	0.72	2.170826	non-rem	non-rem	100
399.16	399.22	0.07	0.207944	11.3.25/ 11.3.4/ 11.3.4/ 11.3.2	11.3.25	100
399.22	399.36	0.14	0.411866	11.12.1	11.12.1	100
399.36	399.69	0.33	0.984333	non-rem	non-rem	100
399.69	399.98	0.28	0.852459	11.12.1	11.12.1	100
399.98	400.07	0.09	0.279537	non-rem	non-rem	100
400.07	400.22	0.15	0.448639	11.3.25/ 11.3.4/ 11.3.4/ 11.3.2	11.3.4/ 11.3.25	50/50
400.22	402.53	2.30	6.896973	non-rem	non-rem	100
402.53	402.83	0.30	0.901399	11.3.4 /11.3.4/ 11.3.25/ 11.3.2	11.3.4/ 11.3.25	50/50
402.83	404.20	1.37	4.118924	non-rem	non-rem	100
404.20	404.37	0.17	0.509286	non-rem	HVR-OC	100
404.37	406.05	1.68	5.026491	non-rem	non-rem	100

KP start (km)	KP end (km)	Length (km)	Area (ha)	Mapped RE	Surveyed RE	Percentage
406.05	406.39	0.34	1.015095	non-rem	non-rem	100
406.39	406.42	0.03	0.076328	11.3.25/ 11.3.4	11.3.25	100
406.42	406.46	0.04	0.113929	11.3.25/ 11.3.4	non-rem	100
406.46	406.69	0.23	0.703253	non-rem	non-rem	100
406.69	406.73	0.04	0.109603	11.3.25/ 11.3.4	11.3.25	100
406.73	406.76	0.03	0.096417	11.3.25/ 11.3.4	11.11.15	100
406.76	407.10	0.34	1.027637	11.11.15/ 11.3.4	11.11.15	100
407.10	407.67	0.56	1.690058	non-rem	non-rem	100
407.67	408.03	0.36	1.08887	11.11.15	11.11.15	100
408.03	408.78	0.75	2.249533	non-rem	non-rem	100
408.78	410.11	1.32	3.965967	11.11.15	11.11.15	100
410.11	410.26	0.15	0.445574	11.3.4/ 11.3.25	11.3.4/ 11.3.25	90/10
410.26	410.57	0.31	0.92675	non-rem	HVR-OC	100
410.57	413.63	3.05	9.155451	non-rem	non-rem	100
413.63	413.67	0.04	0.127117	non-rem	11.3.25	100
413.67	419.77	6.08	18.23853	non-rem	non-rem	100
419.77	419.79	0.03	0.077462	non-rem	11.3.25	100
419.79	430.12	10.31	30.91595	non-rem	non-rem	100
430.12	430.16	0.03	0.099881	11.1.4d	11.1.4	100
430.16	430.60	0.44	1.334154	non-rem	HVR-E	100
430.60	433.09	2.48	7.44191	non-rem	non-rem	100
433.09	433.18	0.09	0.2796	non-rem	11.11.16	100
433.18	433.45	0.26	0.792183	non-rem	non-rem	100
433.45	433.52	0.07	0.220198	11.11.16/ 11.3.26	non-rem	100
433.52	433.91	0.39	1.158216	11.11.16/ 11.3.26	11.11.16	100
433.91	434.17	0.26	0.786903	11.11.16/ 11.3.26	non-rem	100
434.17	438.82	4.64	13.92877	non-rem	non-rem	100
438.82	438.89	0.07	0.212111	non-rem	HVR-OC	100
438.89	439.42	0.52	1.572494	non-rem	HVR-LC	100
439.42	442.34	2.91	8.737475	non-rem	non-rem	100
442.34	442.48	0.14	0.412566	non-rem	HVR-OC	100

KP start (km)	KP end (km)	Length (km)	Area (ha)	Mapped RE	Surveyed RE	Percentage
442.48	445.51	3.03	9.096045	non-rem	non-rem	100
445.51	445.97	0.46	1.373647	non-rem	HVR-LC	100
445.97	446.33	0.36	1.080924	non-rem	non-rem	100
446.33	446.40	0.07	0.206854	non-rem	HVR-LC	100
446.40	446.52	0.11	0.335864	non-rem	11.1.1	100
446.52	446.54	0.02	0.07057	non-rem	11.1.4	100
446.54	446.59	0.05	0.151808	non-rem	11.1.1	100
446.59	446.64	0.05	0.164778	non-rem	HVR-OC	100
446.64	446.78	0.13	0.392849	11.1.4/ 11.3.4	11.1.4	100
446.78	446.87	0.10	0.292442	non-rem	HVR-OC	100
446.87	447.57	0.70	2.085298	non-rem	non-rem	100
447.57	447.86	0.29	0.875123	non-rem	HVR-OC	100
447.86	448.39	0.53	1.586396	non-rem	non-rem	100
448.39	448.65	0.25	0.761943	non-rem	HVR-OC	100
448.65	451.54	2.89	8.663099	non-rem	non-rem	100
451.54	451.81	0.26	0.794554	non-rem	HVR-OC	100
451.81	458.53	6.72	20.15031	non-rem	non-rem	100
458.53	458.74	0.21	0.618005	11.3.26/ 11.3.4	11.3.26	100
458.74	461.66	2.91	8.734482	non-rem	non-rem	100
461.66	461.86	0.20	0.605753	non-rem	HVR-LC	100
461.86	462.17	0.31	0.922701	non-rem	non-rem	100
462.17	462.31	0.14	0.411255	11.3.26/ 11.3.4	11.3.26	100
462.31	462.75	0.45	1.34113	non-rem	11.3.26	100
462.75	462.92	0.17	0.500016	non-rem	non-rem	100
462.92	463.15	0.23	0.696262	non-rem	HVR-LC	100
463.15	463.45	0.29	0.879683	non-rem	non-rem	100
463.45	463.60	0.15	0.449036	non-rem	HVR-LC	100
463.60	463.80	0.20	0.59856	non-rem	non-rem	100
463.80	464.59	0.79	2.373921	11.3.26/ 11.3.4	11.3.26/ 11.3.4	80/20
464.59	464.71	0.12	0.374191	non-rem	HVR-LC	100
464.71	465.13	0.42	1.258236	non-rem	non-rem	100

KP start (km)	KP end (km)	Length (km)	Area (ha)	Mapped RE	Surveyed RE	Percentage
465.13	465.32	0.18	0.54496	non-rem	HVR-LC	100
465.32	465.64	0.32	0.95902	non-rem	non-rem	100
465.64	466.71	1.07	3.215746	non-rem	HVR-LC	100
466.71	468.21	1.49	4.484124	non-rem	non-rem	100
468.21	469.08	0.88	2.628036	non-rem	11.11.4	100
469.08	469.64	0.55	1.650584	non-rem	11.11.4	100
469.64	469.78	0.14	0.419375	non-rem	HVR-LC	100
469.78	474.93	5.14	15.43235	non-rem	non-rem	100
474.93	475.42	0.50	1.489587	non-rem	HVR-LC	100
475.42	475.63	0.20	0.608095	non-rem	non-rem	100
475.63	476.03	0.40	1.19559	non-rem	HVR-LC	100
476.03	477.26	1.23	3.695078	non-rem	non-rem	100
TOTAL			1431.796 411			

(b) Elphinstone Lateral

KP start (km)	KP end (km)	Length (km)	Area (ha)	Mapped RE	Surveyed RE	Percentage
0.00	4.27	4.27	12.80301	11.9.9/ 11.10.12	11.9.9/ 11.9.7	80/20
4.27	4.45	0.19	0.555875	11.9.7a/ 11.9.9	11.9.9/ 11.9.7	80/20
4.45	4.52	0.07	0.21039	11.3.25	11.9.9/ 11.9.7	80/20
4.52	4.70	0.18	0.541589	11.3.25	11.3.25	100
4.70	5.48	0.78	2.329392	11.3.2	11.3.2	100
5.48	5.72	0.24	0.727811	11.9.9/ 11.10.12	11.9.9	100
5.72	7.08	1.36	4.074821	11.3.2	11.3.2	100
7.08	7.30	0.22	0.655607	11.3.25	11.3.25	100
7.30	8.28	0.98	2.937355	11.3.2	11.3.2	100
8.28	8.42	0.14	0.4277	11.3.25	11.3.25	100
8.42	11.58	3.16	9.479253	11.9.7a/ 11.9.9	11.9.9/ 11.9.7	80/20
11.58	11.91	0.33	0.980573	11.3.25	11.3.25	100
11.91	15.93	4.02	12.05513	11.9.7a/ 11.9.9	11.9.9/ 11.9.7	80/20
15.93	16.34	0.42	1.249386	11.3.25	11.3.2	100
16.34	16.48	0.14	0.413497	11.9.7a/ 11.9.9	11.3.2	100

KP start (km)	KP end (km)	Length (km)	Area (ha)	Mapped RE	Surveyed RE	Percentage
16.48	17.83	1.35	4.0375	11.9.7a/ 11.9.9/ 11.9.2	11.9.9/ 11.9.7	80/20
17.83	18.21	0.39	1.162947	11.9.7a/ 11.9.9/ 11.9.2	11.9.9	100
18.21	18.33	0.12	0.353784	11.9.7a/ 11.9.9/ 11.9.2	11.9.7	100
18.33	18.40	0.07	0.21617	11.9.7a/ 11.9.9	11.9.7	100
18.40	18.71	0.30	0.91405	11.9.7a/ 11.9.9	11.9.9	100
18.71	19.32	0.61	1.825063	11.9.7a/ 11.9.9	11.5.8	100
19.32	19.48	0.16	0.481548	11.5.8c	11.5.8	100
19.48	20.02	0.54	1.62808	11.9.7a/ 11.9.9	11.9.7	100
20.02	20.25	0.23	0.701037	11.9.7a/ 11.9.9	11.9.9	100
20.25	20.39	0.13	0.395714	11.9.7a/ 11.9.9/ 11.9.2	11.9.9	100
20.39	20.53	0.15	0.439583	11.9.7a/ 11.9.9/ 11.9.2	11.9.7	100
20.53	20.59	0.05	0.161032	11.9.7a/ 11.9.9/ 11.9.2	11.9.9/ 11.9.7	80/20
20.59	23.95	3.36	10.08562	11.9.7a	11.9.9/ 11.9.7	80/20
23.95	25.55	1.61	4.819199	11.9.7a/ 11.9.9	11.9.9/ 11.9.7	80/20
25.55	25.92	0.37	1.103663	11.5.8c	11.5.8	100
25.92	28.30	2.38	7.126659	11.9.7a/ 11.9.9	11.9.9/ 11.9.7	80/20
28.30	28.44	0.15	0.439001	11.3.4/ 11.3.2	11.3.4/ 11.3.2	70/30
28.44	28.54	0.10	0.299266	11.3.4/ 11.3.2	11.3.25	100
28.54	29.14	0.60	1.794948	non-rem	non-rem	100
29.14	29.68	0.54	1.612388	11.5.3/ 11.7.2	11.5.3/ 11.7.2	80/20
29.68	31.15	1.47	4.408968	11.5.8c	11.5.8	100
31.15	31.25	0.10	0.289525	11.5.3/ 11.7.2	11.5.8	100
31.25	31.59	0.34	1.028863	11.5.3/ 11.7.2	11.5.8	100
31.59	31.94	0.35	1.05818	11.3.27f	11.5.8/ 11.3.27	75/25
31.94	32.25	0.31	0.935377	11.5.3/ 11.7.2	11.5.8	100
32.25	32.39	0.13	0.396849	11.5.3/ 11.7.2	11.5.8	100
32.39	32.45	0.06	0.187714	11.5.3/ 11.7.2	11.5.8	100
32.45	34.76	2.31	6.928512	non-rem	HVR-LC	100
34.76	34.84	0.09	0.260411	11.5.3/ 11.7.2	11.3.25	100
34.84	37.01	2.16	6.494662	non-rem	non-rem	100
37.01	37.17	0.16	0.491772	11.5.3/ 11.7.2	11.3.25	100

KP start (km)	KP end (km)	Length (km)	Area (ha)	Mapped RE	Surveyed RE	Percentage
37.17	37.93	0.76	2.278476	non-rem	non-rem	100
37.93	37.98	0.04	0.127361	11.5.3/ 11.7.2	11.3.25	100
37.98	38.95	0.98	2.926449	non-rem	non-rem	100
38.95	42.27	3.32	9.961064	11.5.3/ 11.7.2	11.5.3/ 11.7.2	80/20
42.27	42.54	0.27	0.813629	non-rem	non-rem	100
42.54	46.99	4.44	13.33013	11.5.3/ 11.7.2	11.5.3/ 11.7.2	80/20
46.99	47.04	0.06	0.176664	non-rem	non-rem	100
47.04	47.20	0.16	0.475847	11.5.3/ 11.7.2	11.5.3/ 11.7.2	80/20
47.20	47.27	0.07	0.21079	non-rem	non-rem	100
47.27	47.70	0.43	1.291581	11.5.3/ 11.7.2	11.5.3/ 11.7.2	80/20
47.70	47.98	0.27	0.816501	non-rem	non-rem	100
47.98	48.98	1.00	3.002974	11.5.3/ 11.7.2	11.5.3/ 11.7.2	80/20
48.98	49.09	0.11	0.335194	non-rem	non-rem	100
49.09	49.24	0.15	0.458745	11.5.3/ 11.7.2	non-rem	100
49.24	49.56	0.32	0.945179	non-rem	non-rem	100
49.56	50.88	1.33	3.975539	11.5.3/ 11.7.2	11.5.3/ 11.7.2	80/20
50.88	50.95	0.07	0.208635	non-rem	11.5.3/ 11.7.2	80/20
50.95	50.96	0.01	0.017553	non-rem	non-rem	100
50.96	51.39	0.43	1.298482	non-rem	non-rem	100
51.39	51.52	0.13	0.387152	11.5.3	11.5.3	100
51.52	51.75	0.23	0.68296	11.3.2/ 11.3.1	11.3.25	100
51.75	51.85	0.10	0.313641	11.3.2/ 11.3.1	11.5.3	100
51.85	51.88	0.03	0.084198	11.5.3	11.5.3	100
51.88	52.26	0.38	1.133598	non-rem	non-rem	100
TOTAL	476.85		156.771816			

(c) Saraji Lateral

KP start (km)	KP end (km)	Length (km)	Area (ha)	Mapped RE	Surveyed RE	Percentage
0.00	0.11	0.11	0.341834	11.5.3	11.5.3	100
0.11	0.84	0.73	2.190949	11.4.9/ 11.4.8/ 11.5.3	11.5.3	100
0.84	1.66	0.82	2.445124	non-rem	non-rem	100

KP start (km)	KP end (km)	Length (km)	Area (ha)	Mapped RE	Surveyed RE	Percentage
1.66	1.81	0.15	0.462473	11.4.9/ 11.4.8/ 11.5.3	11.5.3	100
1.81	2.07	0.26	0.767963	11.5.3	11.5.3	100
2.07	3.09	1.02	3.054455	non-rem	non-rem	100
3.09	3.46	0.38	1.126081	11.4.9/ 11.4.8/ 11.5.3	11.5.3	100
3.46	3.62	0.15	0.458384	non-rem	non-rem	100
3.62	3.88	0.26	0.777793	11.4.9/ 11.4.8/ 11.5.3	11.5.3	100
3.88	4.56	0.69	2.065702	non-rem	non-rem	100
4.56	6.02	1.45	4.361257	11.5.3	11.5.3	100
6.02	6.16	0.14	0.420409	non-rem	non-rem	100
6.16	6.87	0.72	2.147212	11.3.2/ 11.3.25/ 11.3.1	11.3.2/ 11.3.25	50/50
6.87	7.11	0.23	0.695931	non-rem	non-rem	100
7.11	7.37	0.27	0.798035	11.3.2/ 11.3.25/ 11.3.1	11.3.2	100
7.37	7.67	0.30	0.910567	non-rem	non-rem	100
7.67	7.71	0.04	0.114633	11.3.2/ 11.3.25/ 11.3.1	11.3.25	100
7.71	7.78	0.07	0.195513	11.3.27b	11.3.27	100
7.78	8.02	0.24	0.725522	11.3.2/ 11.3.25/ 11.3.1	11.5.3	100
8.02	10.76	2.74	8.234491	11.5.3/ 11.4.9	11.5.3	100
10.76	11.09	0.33	0.982875	11.3.27b	11.3.27	100
11.09	12.88	1.79	5.377751	11.5.3/ 11.4.9	11.5.3	100
12.88	13.08	0.19	0.570154	11.4.9	non-rem	100
13.08	15.42	2.34	7.02285	non-rem	non-rem	100
15.42	16.43	1.02	3.049664	non-rem	HVR_OC	100
16.43	18.74	2.31	6.918047	11.3.2/ 11.3.7/ 11.3.1	11.3.2/ 11.3.7	75/25
18.74	18.95	0.21	0.631858	11.3.25	11.3.25	100
18.95	19.11	0.16	0.474708	11.3.2/ 11.3.7/ 11.3.1/ 11.3.1b	11.3.2/ 11.3.7	75/25
19.11	19.30	0.19	0.577269	non-rem	HVR-E	100
19.30	19.59	0.29	0.86061	non-rem	non-rem	100
19.59	20.19	0.60	1.805853	11.3.2/ 11.3.7/ 11.3.1/ 11.3.1b	11.3.2	100
20.19	22.93	2.74	8.229522	non-rem	non-rem	100
22.93	25.72	2.79	8.355111	non-rem	non-rem	100

KP start (km)	KP end (km)	Length (km)	Area (ha)	Mapped RE	Surveyed RE	Percentage
TOTAL			77.1506			

(d) Dysart Lateral

KP start (km)	KP end (km)	Length (km)	Area (ha)	Mapped RE	Surveyed RE	Percentage
0.00	1.48	1.48	4.434985	non-rem	non-rem	100
1.48	1.85	0.37	1.111677	non-rem	HVR-E	100
1.85	2.30	0.45	1.349543	non-rem	non-rem	100
2.30	16.64	14.34	43.01594	non-rem	non-rem	100
16.64	17.19	0.56	1.668793	non-rem	HVR-E	100
17.19	17.96	0.76	2.289398	non-rem	non-rem	100
17.96	18.19	0.23	0.694828	non-rem	11.3.2	100
TOTAL			54.565164			

Table 23 Areas of Surveyed RE within the 30 m ROW for Mainline and Laterals

(a) Mainline

RE	Area (ha)	BD Status	VM Act Status
11.1.1	0.49	No concern at present	Least concern
11.1.4	0.56	No concern at present	Least concern
11.3.1	0.84	Endangered	Endangered
11.3.2	6.15	Of concern	Of concern
11.3.3	2.7	Of concern	Of concern
11.3.4	1.64	Of concern	Of concern
11.3.7	3.20	Of concern	Least concern
11.3.25	14.13	Of concern	Least concern
11.3.26	4.25	No concern at present	Least concern
11.3.36	2.42	Of concern	Of concern
11.4.2	0.17	Of concern	Of concern
11.4.9	0.50	Endangered	Endangered
11.5.3	49.56	No concern at present	Least concern
11.5.9	28.90	No concern at present	Least concern
11.5.12	3.95	No concern at present	Least concern
11.7.1x1	0.52	Of Concern	Least Concern
11.7.2	12.64	No concern at present	Least concern
11.8.5	31.78	No concern at present	Least concern
11.8.11	4.99	Of concern	Of concern

RE	Area (ha)	BD Status	VM Act Status
11.9.2	0.53	No concern at present	Least concern
11.9.9	5.04	No concern at present	Least concern
11.11.1	1.54	No concern at present	Least concern
11.11.4	4.28	No concern at present	Least concern
11.11.10		Of concern	Of concern
11.11.15	16.55	No concern at present	Least concern
11.11.16	1.44	Of concern	Of concern
11.12.1	1.26	No concern at present	Least concern
11.12.2	2.44	No concern at present	Least concern
HVR-E	16.23	-	-
HVR-LC	32.85	-	-
HVR-OC	21.78	-	-
non-rem	1158.44	-	-
Total	1431.80	-	-

(b) Elphinstone header

RE	Area (ha)	BD Status	VM Act Status
11.3.2	11.14	Of concern	Of concern
11.3.4	0.31	Of concern	Of concern
11.3.25	4.47	Of concern	Least concern
11.3.27	0.26	Of concern	Least concern
11.5.3	27.87	No concern at present	Least concern
11.5.8	11.45	No concern at present	Least concern
11.7.2	6.77	No concern at present	Least concern
11.9.7	14.90	Of concern	Of concern
11.9.9	52.97	No concern at present	Least concern
HVR-LC	6.93	-	-
non-rem	19.70	-	-
Total	156.77	-	-

(c) Saraji Lateral

RE	Area (ha)	BD Status	VM Act Status
11.3.2	9.22	Of concern	Of concern
11.3.7	1.85	Of concern	Least concern
11.3.25	1.82	Of concern	Least concern
11.3.27	1.18	Of concern	Least concern
11.5.3	24.37	No concern at present	Least concern
HVR-OC	3.05	-	-

RE	Area (ha)	BD Status	VM Act Status
HVR-E	0.58	-	-
non-rem	35.09	-	-
Total	77.15	-	-

(d) Dysart Lateral

RE	Area (ha)	VM Act Status	BD Status
11.3.2	0.69	Of concern	Of concern
11.3.25	0.33	Of concern	Least concern
HVR-E	2.78	-	-
non-rem	73.13	-	-
Total	76.93	-	-

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Appendix C

Flora Survey Data Sheets

Detailed and Watercourse Data Sheets

Ordered by Kilometre Point

WATERCOURSE CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Entered MR

Date: 26/06/2011 Assessor: J.W. A.C.F. Job: 60188431 Datum:

Crossing: Original Name: SUTTON CK

Mapped RE: 11.3.25	Observed RE: 11.3.25	RE Length: 10m	S ↑ ROW direction
Bank Type: <u>Earth</u> ; Sandy; Rocky	Slope: <u>Gentle</u> ; Steep; Cliff	Height: 2 m	
Vegetation on ↑ side: <u>cleared ag/cattle grazing</u>			N ↓ ROW direction
Euc. here (A), Euc. coolibah (A); Allo. cunninghamii (O); Cory. tessularis (O); Euc. crebra (O); Bauhinia caronni (O) 'Prati-painted' (A); Lomandra longifolia (O) Byrophyllum * (O); Opuntia (O); Persicaria sp (O); Red balloon bush * (O); Bothriochloa thick (O)			
Crossing description: <u>clay substrate</u>		Wpt: <u>CROSSJ + cfo 54</u>	N ↓ ROW direction
← Direction <u>E</u>	Photo: <u>JW703</u>	KP: <u>AB.12.3</u>	
Vegetation on ↓ side: <u>AS per south bank</u>			N ↓ ROW direction
Bank Type: Earth; Sandy; Rocky Slope: <u>Gentle</u> ; Steep; Cliff Height: 2 m			
Mapped RE: 11.3.25	Observed RE: 11.3.25	RE Length: 30m	

Wetland Assessment

River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other.....
 Saline; Brackish; Fresh Seasonality Perennial; Seasonal; Intermittent
 Turbid; Clear; Stagnant; Polluted; Algae Stream flow: Dry; Pool; Run; Riffle; Cascade; Fall
 Submerged; Floating; Emergent Non-woody; Emergent Woody
 Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)

Avoid large trees bearing hollows & stags where possible

sulfur crested cockatoo
black duck
Cormorant

Crossing: Proposed Change Name:

Mapped RE:	Observed RE:	RE Length:	↑ ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m	
Vegetation on ↑ side:			N ↓ ROW direction
Crossing description: <u>clay substrate</u>		Wpt:	
← Direction	Photo:	KP:	N ↓ ROW direction
Vegetation on ↓ side:			
Bank Type: Earth; Sandy; Rocky		Slope: Gentle; Steep; Cliff	Height: m
Mapped RE:	Observed RE:	RE Length:	

Ecological Data Sheet (to accompany electronic data sheet)

Job Number: ...60188431...

Site Number: JW-31-J UN216 KP AB 25.6 Sheets completed:

Flora; Fauna; Wetland

Assessor: JW + MR Date: 24/06/2011

Time: 12:25pm

Location: Discards Pipeline ROW (clearca 20m)

Tertiary Flora Assessment (measured in 50m x 10m plot)

All woody species present within 50m x 10m plot (plus dominant, characteristic and threatened non-woody species)

<i>Euc. crebra</i>	T		D				
<i>Cory. clarkeana</i>	T		O				
<i>Petalostigma pubescens</i>	T		D				
<i>Alpholonia excelsa</i>	T		O				
<i>Acacia leiocalyx</i>	T		A				
<i>Acacia sp.</i> <small>Broad leaved, fibrous red/brown bark, 3-5m tall (S)</small>	T		O				
<i>Braynia oblongifolia</i> <small>coffee bush</small>	Sh		O				
<i>Mel. nervosa</i>	T		O				
(S) <small>Rubiaceae</small>	T		R				
<i>Themeda triandra</i>	G						A
<i>Melinis repens</i> *	G						O
<i>Pterocaulin sphacelatum</i>	H						O
<i>Heteropogon contortus</i>	G						O
<i>Sida sp.</i> <small>2cm, 1cm</small>	H						O
<i>Xanthorrhoea sp.</i> <small>grass tree</small>	G						O
<i>Parsonsia sp.</i>	V						R
(S) <small>purple asteraceae</small>	H						O
Median Ht (m)			12	6			0.8
Ht Range (m)			-	-			-
Visual Cover (%)			10%	65%			40%
Recruitment (Yes / No / %)							

Species annotations: S = Specimen Collected; * = Exotic Species; ** = Declared Species; + = Outside but adjoining 50m x 10m plot
 Height categories: E = Emergent; T1 = Tree 1 stratum, T2 = Tree 2 stratum, T3 = Tree 3 stratum, S1 = Shrub 1 stratum, S2 = Shrub 2, G = Ground stratum
 Form: T = Tree; S = Shrub; G = Grass; R = Rush / Sedge; F = Forb (i.e. herb); V = Vine; E = Epiphyte; A = Aquatic; Seed = Seedling; Sap = Sapling
 Relative dominance (abundance within strata): D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare
 Abbreviations: N/A = Not Applicable; N/R = Not Recorded; N/O = None Observed

Site / Waypoint #: JW03.1

Tertiary Flora Assessment (measured in 50m x 10m plot) - continued

RE Map	11.53	—	LC	NCAp
Survey result	11.53	—	LC	NCAp

Width of RE (if linear): n/a; <35m wide; 35-75m; 75-150m; 150-300m; >300m; not linear

Total RE Area: n/a; <1ha; 1-5ha; 5-20ha; 20-50ha; 50-250ha; >250ha

Dominant Stratum Form: tree; Shrub; Forb; Grass; Aquatic

Epiphytes	Absent; Scattered (1-5); Common (6-10); Abundant (>10)	
Vines	Absent; Scattered (1-5); Common (6-10); Abundant (>10)	Cryptogams 0%; 1-25%; 26-75%; >75%

KSE side of existing gas pipeline ROW, less densely vegetation.
 dominated by shrubs approx. 2m.
 Ph: JW630.

WATERCOURSE CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 08/09/11 Assessor: JW + MR Job: 60188431 Datum:

Crossing: Original Name:

Mapped RE: 11.9.9/11.9.2		Observed RE: 11.9.9	RE Length: >100m	S ROW direction →	
Bank Type: Earth; <u>Sandy</u> ; <u>Rocky</u>		Slope: Gentle; <u>Steep</u> ; Cliff	Height: 12 m		Photo: JW6659
Vegetation on ↑ side: Euc. crebra (0); Euc. dallachyona (0); Cory. tachyphloia (R); Pet. pub (F); Alp. excelsa (0); Erethroxylon australe (F); Capparis sp. (0); Grevillea stricta (R)					
Heteropogon contortus (0); Themeda triandra (0); Melinis repens (0); Sida subspicata (0); P. ciliare (A); Eragrostis sp. (0)				50% 12m	← ROW direction N
Crossing description:		Wpt: JW85-S			
← Direction E	Euc. tere (D)	* sandy/rocky	KP: AB28.2 east		
Photo: JW6658	Euc. crebra (0)	* no water	Bed Width: 30m		
	Pet. pub (0)	* ↑ erodable	Direction → W		
Vegetation on ↓ side:				← ROW direction N	
AS SOUTH					
Bank Type: Earth; <u>Sandy</u> ; <u>Rocky</u>		Slope: Gentle; <u>Steep</u> ; Cliff	Height: 12 m		Photo: JW6657
Mapped RE: 11.9.9/11.9.2		Observed RE: 11.9.9	RE Length: >100m		

Wetland Assessment

Type: River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other.....
 Salinity: Saline; Brackish; Fresh Seasonality: Perennial; Seasonal; Intermittent
 Water condition: Turbid; Clear; Stagnant; Polluted; Algae Stream flow: Dry; Pool; Run; Riffle; Cascade; Fall
 Vegetation: Submerged; Floating; Emergent Non-woody; Emergent Woody; Fringing woody
 Instream habitat features: Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)

* not suitable crossing - to steep rocky banks.
Highly erodable.

Crossing: Proposed Change Name:

Mapped RE: 11.9.9/11.9.2		Observed RE: 11.9.9	RE Length: >100m	S ROW direction →	
Bank Type: Earth; <u>Sandy</u> ; <u>Rocky</u>		Slope: Gentle; <u>Steep</u> ; Cliff	Height: 12 m		Photo: JW6667
Vegetation on ↑ side: Euc. crebra (D); Alp. excelsa (F); Pet. pubescens (A); Erethroxylon australe (A) Aca. excelsa (0); cassia brewsteri (0); Capparis sp (0); Sida sp *; Larissa crata (0) Exocarpus sp (R); Bursaria incanta (0) Heteropogon contortus (A); P. ciliare * (A)					
Crossing description:				Wpt: JW87-S	
← Direction E	Heteropogon contortus (0)	sandy	KP: AB28.3 west		
Photo: JW6666	Melinis repens (0)	sm rocks	Width: 50m		
	Euc. tere (R)	* pebbles	Direction → W		
	Harissia cactus **		Photo: JW6668		
Vegetation on ↓ side:				← ROW direction N	
AS per south					
Better crossing due to ↓ erodability potential & ↓ slopes					
Bank Type: <u>Earth</u> ; <u>Sandy</u> ; <u>Rocky</u>		Slope: Gentle; <u>Steep</u> ; Cliff	Height: 12 m	Photo: JW6665	
Mapped RE: 11.9.9/11.9.2		Observed RE: 11.9.9	RE Length: >100m		

Tertiary Flora Assessment (measured in 50m x 10m plot) - continued

RE Map	11.8.11/11.8.15	n/a/E	LC/E	LC/E
Survey result	11.8.11	E	E	E

Width of RE (if linear): n/a; <35m wide; 35-75m; 75-150m; 150-300m; >300m; not linear

Total RE Area: n/a; <1ha; 1-5ha; 5-20ha; 20-50ha; 50-250ha; >250ha

Dominant Stratum Form: Tree; Shrub; Forb; Grass; Aquatic

Epiphytes	<u>Absent</u> ; Scattered (1-5); Common (6-10); Abundant (>10)		
Vines	<u>Absent</u> ; Scattered (1-5); Common (6-10); Abundant (>10)	Cryptogams	<u>0%</u> ; 1-25%; 26-75%; >75%

* EPBC listed EEC

* Western extent =
Eastern Extent.

Entered MK 4

Date: 27/06/2011 Assessor: JW + JB Job: 60188431 Datum:

Crossing: Original Name: Isacc River

Mapped RE: 11325	Observed RE: 11325	RE Length: 10m	ROW direction ↑
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 4 m	
Vegetation on ↑ side: cleared grazing / cattle land			ROW direction ↓
Euc. terebinthifolia; Cory. tess (A); All. cunninghamii (r); Mel. linnaeoides; Bahinia corenii (F) Guinea grass (D); *unable to access due to creek bed saturated with water			
Crossing description: ← Direction E		sandy substrate some pooled water (minimal)	ROW direction ↓
Photo: JB167		Wpt: JW041-J (UN1146) KP: AB 50.2 Bed Width: 5m Direction → W Photo: JB169	
Vegetation on ↓ side: Cory. tess (D); Euc. tess (D); All. cunninghamii (c); Sandpaper fig (c) Mel. linnaeoides (c); Bahinia corenii (F); ground vines x 2 (s) (c) Crotalaria sp (c); Lantana camara (c) **; Calissa orata (c); Fabraceae sp (s) (c); Guinea grass (D); Opuntia ** (c); Chloris virgata (c); Malvastrum americanum (c) 1132 (Wgpt JW040) then cleared cattle leg land			ROW direction ↑
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 3 m	
Mapped RE: 11325	Observed RE: 11325	RE Length: 30m	N

Wetland Assessment

Type: River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other.....

Salinity: Saline; Brackish; Fresh Seasonality: Perennial; Seasonal; Intermittent

Water condition: Turbid; Clear; Stagnant; Polluted; Algae Stream flow: Dry; Pool; Run; Riffle; Cascade; Fall

Vegetation: Submerged; Floating; Emergent Non-woody; Emergent Woody

Instream habitat features: Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)

Avoid large Euc. tere on NW side of ROW.
Avoid large habitat / rem trees where possible.
Potentially move alignment E or W to avoid large habitat trees.
↳ JW042 (JW041A??)

Crossing: Proposed Change Name:

Mapped RE:	Observed RE:	RE Length:	ROW direction ↑
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m	
Vegetation on ↑ side:			ROW direction ↓
Crossing description: ← Direction		Wpt: KP: Width: Direction →	
Photo:		Photo:	
Vegetation on ↓ side:			ROW direction ↓
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m	
Mapped RE:	Observed RE:	RE Length:	N

WATERCOURSE CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 27/6/11 Assessor: CL / MR Job: 60188431 Datum:

Crossing: Original Name: 12 Mile Cr

Mapped RE: 11-3-25	Observed RE: 11-3-25	RE Length: 5m	N ↑ ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 1.5 m	
Vegetation on ↑ side: Euc tereticornus (D) Cortesellaris (O) Ac. haipophylla (O) Pennisetum ciliare* (D) Ac salicina (O) Terminalia oblongata (O)			

Crossing description: ← Direction W	Sandy dry bed well grassed low banks	Wpt: CL 76 JUN 100
Photo: CL 116		KP: AB59.1
		Bed Width: 5m
		Direction → E
		Photo: CL 114

Vegetation on ↓ side: A = for S side	S ↓ ROW direction
Bank Type: Earth; Sandy; Rocky	
Slope: Gentle; Steep; Cliff	
Height: 1.5 m	
Photo: CL 115	
Mapped RE: 11-3-25	
Observed RE: 11-3-25	
RE Length: 25m	

Wetland Assessment

- River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other.....
- Saline; Brackish; Fresh
- Seasonal; Perennial; Seasonal; Intermittent
- Turbid; Clear; Stagnant; Polluted; Algae
- Stream flow: Dry; Pool; Run; Riffle; Cascade; Fall
- Submerged; Floating; Emergent Non-woody; Emergent Woody.
- Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)

Good crossing point.

Crossing: Proposed Change Name:

Mapped RE:	Observed RE:	RE Length:	↑ ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m	
Vegetation on ↑ side:			

Crossing description: ← Direction	Wpt:
Photo:	KP:
	Width:
	Direction →
	Photo:

Vegetation on ↓ side:	↓ ROW direction
Bank Type: Earth; Sandy; Rocky	
Slope: Gentle; Steep; Cliff	
Height: m	
Photo:	
Mapped RE:	
Observed RE:	
RE Length:	

Ecological Data Sheet (to accompany electronic data sheet)

Job Number: ...60188431...

Site Number: ...JW74-S... KP: AB62... Sheets completed:

(Flora) (Fauna); Wetland

Assessor: ...JW... Date: 07/09/2011

Time: ...10:40...

Location: ...CD... population searches - Arran PL

Tertiary Flora Assessment (measured in 50m x 10m plot)

All woody species present within 50m x 10m plot (plus dominant, characteristic and threatened non-woody species)

Species	Form	Relative Dominance (DAFOR)						
		E	T1	T2	T3	S1	S2	G
<i>Acacia catenulata</i>	T		A					
<i>Euc. crebra</i>	T		O					
<i>Acacia shirleyi</i>	T		A					
<i>Alphatonia excelsa</i> (S)	T		O					
<i>Erethroxylan australe</i>	Sh					O		
<i>Acalypha evemorum</i>	Sh					O		
<i>Acacia excelsa</i>	Sh					O		
<i>Alstonia stricta</i>	sh					R		
<i>Aristida capat-meduse</i>	G							F
<i>Themeda triandra</i>	G							O
<i>Entolasia stricta</i>	G							F
<i>Sida subspicata</i> *	F							O
<i>Opuntia</i> sp**	F							R
<i>Goodenia</i> sp (S)	F							O
<i>Stylostanthes scabra</i> *	F							R
<i>Amelia senchifolia</i>	F							O
<i>Pennisetum cillivare</i> *	G							O
<i>Eragrostis</i> sp.	G							F
<i>Dianella</i> sp (S)	F							O
<i>Panicum</i> sp.	G							O
<i>Rutidosia</i> sp.								R
<i>Lindinia crustacea</i>								
<i>Maradenia rostrata</i> ?								
<i>Chorizanthe floribundum</i>								
Median Ht (m)			8				3	0.5
Ht Range (m)		-	-	-	-	-	-	-
Visual Cover (%)			60				20	70
Recruitment (Yes / No / %)								

Species annotations: S = Specimen Collected; * = Exotic Species; ** = Declared Species; + = Outside but adjoining 50m x 10m plot
 Height categories: E = Emergent; T1 = Tree 1 stratum, T2 = Tree 2 stratum, T3 = Tree 3 stratum, S1 = Shrub 1 stratum, S2 = Shrub 2, G = Ground stratum
 Form: T = Tree; S = Shrub; G = Grass; R = Rush / Sedge; F = Forb (i.e. herb); V = Vine; E = Epiphyte; A = Aquatic; Seed = Seedling; Sap = Sapling
 Relative dominance (abundance within strata): D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare
 Abbreviations: N/A = Not Applicable; N/R = Not Recorded; N/O = None Observed

Site / Waypoint #: JW74

Tertiary Flora Assessment (measured in 50m x 10m plot) - continued

	RE Code	EPBC Status	VM Act Status	DERM Status
RE Map	11.7.2/11.7.3	NONE	LC/LC	LC/LC
Survey result	11.7.2	NONE	LC	LC

Width of RE (if linear): n/a; <35m wide; 35-75m; 75-150m; 150-300m; >300m; not linear

Total RE Area: n/a; <1ha; 1-5ha; 5-20ha; 20-50ha; 50-250ha; >250ha

Dominant Stratum Form: Tree; Shrub; Forb; Grass; Aquatic

Epiphytes	Absent; <u>Scattered (1-5)</u> ; Common (6-10); Abundant (>10)	- Tree orchids	cymbidw x3
Vines	Absent; <u>Scattered (1-5)</u> ; Common (6-10); Abundant (>10)	Cryptogams	<u>0%</u> ; 1-25%; 26-75%; >75%

General Notes and Recommendations

- * vegetation in good condition
- * no *Cerbera dumicola* observed / recorded

Ecological Data Sheet (to accompany electronic data sheet)

Job Number: ...60188431...

Site Number: CL 7B-J / KPAB 63:8 Sheets completed:

Flora Fauna; Wetland

Assessor: CL JMR Date: 27/6/2011

Time: 3 pm

Location: Riverside

Tertiary Flora Assessment (measured in 50m x 10m plot)

All woody species present within 50m x 10m plot (plus dominant, characteristic and threatened non-woody species)

<i>Eucalyptus crebra</i>	T	R						
<i>Corymbia trachyphloea</i>	T	O						
<i>Acacia shirleyi</i>	T		D					
<i>Erythroxylum australe</i>	S					R		
<i>Cerbera dumicola</i> (S)	S					A		
≈ 100 plants / ha seedlings to adults 3m tall								
<i>Anastida caput medusae</i>	G							A
<i>Anastida uncinata</i> (S)	G							A
<i>Sida</i> sp	H							O
<i>Melipania oblongifolia</i>	H							O
<i>Pennisetum ciliare</i> *	G							R
<i>Melinis repens</i> *	G							R
<i>Eragrostus</i> sp	G							O
<i>Petalostegia pubescens</i>	SAP					R		
<i>Passiflora foetida</i>	V							
<i>Themeda triandra</i>	G							O
<i>Pterocaulon sphacelatum</i>	H							O
<i>Digitaria ammophila</i>	G							O
<i>Waltheria indica</i>	H							O
Median Ht (m)	12	6						
Ht Range (m)	-	4-10	-	-	-	-	-	-
Visual Cover (%)	<5	40				<5	5	
Recruitment (Yes / No / %)		Y	Y			Y	Y	

Species annotations: S = Specimen Collected; * = Exotic Species; ** = Declared Species; += Outside but adjoining 50m x 10m plot
 Height categories: E = Emergent; T1 = Tree 1 stratum, T2 = Tree 2 stratum, T3 = Tree 3 stratum, S1 = Shrub 1 stratum, S2 = Shrub 2, G = Ground stratum
 Form: T = Tree; S = Shrub; G = Grass; R = Rush / Sedge; F = Forb (i.e. herb); V = Vine; E = Epiphyte; A = Aquatic; Seed = Seedling; Sap = Sapling
 Relative dominance (abundance within strata): D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare
 Abbreviations: N/A = Not Applicable; N/R = Not Recorded; N/O = None Observed

Site / Waypoint #:

Tertiary Flora Assessment (measured in 50m x 10m plot) - continued

RE Map	11.72/11.73	-	LC	NC
Survey result	11.7.2	-	LC	NC

Width of RE (if linear): n/a; <35m wide; 35-75m; 75-150m; 150-300m; >300m; not linear
 Total RE Area: n/a; <1ha; 1-5ha; 5-20ha; 20-50ha; 50-250ha; >250ha
 Dominant Stratum Form: Tree; Shrub; Forb; Grass; Aquatic

Epiphytes	<u>Absent</u> ; Scattered (1-5); Common (6-10); Abundant (>10)		
Vines	Absent; <u>Scattered (1-5)</u> ; Common (6-10); Abundant (>10)	Cryptogams	0%; 1-25%; <u>26-75%</u> ; >75%

Avoid *Cerbera* population

W end of population - CL 79 - more sparse WL → W
Eucalyptus (D) no lancewood (11.5.9)

E end of population - CL 80 - more sparse WL → E
Eucalyptus (D) no lancewood (11.5.9)

Ecological Data Sheet (to accompany electronic data sheet)

Job Number: ...60188431... 5

Site Number: ...JW84-S KPAB 645... Sheets completed: (Flora); (Fauna); Wetland

Assessor: JW Date: 07/09/2011 Time: 2:00pm

Location: ...Cerebra dunicola country - Arrow PL

Tertiary Flora Assessment (measured in 50m x 10m plot)

All woody species present within 50m x 10m plot (plus dominant, characteristic and threatened non-woody species)

Species	Form	Relative Dominance (DAFOR)						
		E	T1	T2	T3	S1	S2	G
Euc. crebra	T		D					
Euc. populnea	T		O					
Cory. clarksonia	T		O					
Acacia shirleyi	T		R					
Lar senalkia ochreate ^{Native} Gardenia (S) ^{Guava} fruit	Sh				R			
Alpatonia excelsa	Sh				F			
Archidondropsis basaltica ^{Dead} Finish	Sh				R			
Carissa ovata	Sh				O			
Petalostigma pubescens	T				A			
Erithroxylon australe	Sh				F			
Acacia leiocalyx	Sh				R			
Everistia vaciniifolia ^{Bubble/} spinu	Sh				R			
Goodenia sp.	F							R
Ludwigia octovalvis	F							R
Whalenbergia sp (prostrata)	F							O
Whalenbergia gracilis	F							O
Sida subspicata *	F							F
Amelia senchifolia	F							R
P. ciliare * ^{Buffel}	G							A
Alternanthera denticulata	F							R
Pterocaulin sphaerelatum	F				o			O
Eragrostis sp. (no seed)	G							A
Themeda triandra	G							O
malvastrum americanum *	F							O
Entolasia stricta	G							O
Chrysocephalum crepidioides ^{* thick} weed	F							O
Dianella rara	R							R
Stylastanthes scabra	F							R
Median Ht (m)		10m			6m			0.2m
Ht Range (m)		-			-			-
Visual Cover (%)		40%			10%			80%
Recruitment (Yes / No / %)								

Species annotations: S = Specimen Collected; * = Exotic Species; ** = Declared Species; += Outside but adjoining 50m x 10m plot
 Height categories: E = Emergent; T1 = Tree 1 stratum, T2 = Tree 2 stratum, T3 = Tree 3 stratum, S1 = Shrub 1 stratum, S2 = Shrub 2, G = Ground stratum
 Form: T = Tree; S = Shrub; G = Grass; R = Rush / Sedge; F = Forb (i.e. herb); V = Vine; E = Epiphyte; A = Aquatic; Seed = Seedling; Sap = Sapling
 Relative dominance (abundance within strata): D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare
 Abbreviations: N/A = Not Applicable; N/R = Not Recorded; N/O = None Observed

Site / Waypoint #: ...JW84...

Tertiary Flora Assessment (measured in 50m x 10m plot) - continued

	RE Code	EPBC Status	VM Act Status	DERM Status
RE Map	11.5.9/11.5.3	-	LC/LC	LC/LC
Survey result	11.5.9	-	LC	LC

Width of RE (if linear): n/a; <35m wide; 35-75m; 75-150m; 150-300m; >300m; not linear
 Total RE Area: n/a; <1ha; 1-5ha; 5-20ha; 20-50ha; 50-250ha; >250ha
 Dominant Stratum Form: Tree Shrub; Forb; Grass; Aquatic

Epiphytes	<u>Absent</u> ; Scattered (1-5); Common (6-10); Abundant (>10)		
Vines	<u>Absent</u> ; Scattered (1-5); Common (6-10); Abundant (>10)	Cryptogams	<u>0%</u> ; 1-25%; 26-75%; >75%

General Notes and Recommendations

- * Good condition
- * no *Cerbera dumicola* present.

WATERCOURSE CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 7/9/11 Assessor: CL/MR Job: 60188431 Datum:

Crossing: Original Name: HAT CR AB68.2

Mapped RE: 11.3.25	Observed RE: 11.5.3	RE Length: ?	S ↑ ROW direction
Bank Type: (Earth) Sandy; Rocky	Slope: Gentle; Steep; (Cliff)	Height: 8 m	
Vegetation on ↑ side: Euc populnea (F) Lyophyllum hookeri (O)			
Crossing description: Sand + Rocks		Wpt: CL 049-5	↓ ROW direction
← Direction: E	Small pool 2m wide x 0.1m deep	KP: AB68.2	
Photo: CL 753	Some large blue gums with hollows present	Bed Width: 10m	
		Direction → W	
Vegetation on ↓ side: Euc tecticornis (A) Cas cunninghamii (A) Ac. salicina (O)		Photo: CL 755	
Argemone ochroleuca* (O) Pantentium hysterophorus** (F)			
Cynodon dactylon* (D) Megathyrsus maximus* (F) Urochloa mosambicensis* (O) Heteropogon setaceus (O)			
Bank Type: (Earth) (Sandy) Rocky	Slope: (Gentle) Steep; Cliff	Height: 3 m	
Mapped RE: 11.3.25	Observed RE: 11.3.25	RE Length: 30m	N

Wetland Assessment

Type: River; (Creek) Lake (>8ha); Pool (<8ha); Dam; Marsh; Other.....
 Salinity: Saline; Brackish; (Fresh) Seasonality: Perennial; Seasonal; (Intermittent)
 Water condition: Turbid; (Clear) Stagnant, Polluted; Algae Stream flow: Dry; (Pool) Run; Riffle; Cascade; Fall
 Vegetation: Submerged; Floating; Emergent Non-woody; Emergent Woody.
 Instream habitat features: Island; Mud flat; (Shallows) Deep open water; (Snags) (Rocks) Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)

South bank has steep eroded cliff 8m tall, deep canyon gullies
 Other options
 Wpt CL 050 - 50m W - old road crossing, 20m cleared gap, bank only 4m tall
 Wpt CL 051 - 75m E - close to haul road crossing, cleared on both sides, bank 4m tall
 - maybe too close to haul road crossing? (ph 760-63)

Crossing: Proposed Change Name: Hat CR - W of line

Mapped RE:	Observed RE: 11.5.3	RE Length:	S ↑ ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m	
Vegetation on ↑ side: 20m gap Veg as for CL 049-5			
Crossing description:		Wpt: CL 050-5	↓ ROW direction
← Direction: E		KP: W of AB68.2	
Photo: CL 757		Width: 15m	
		Direction → W	
Vegetation on ↓ side: 20m gap Veg as for CL 049-5		Photo: CL 759	
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m	
Mapped RE:	Observed RE: 11.3.25	RE Length: 30m	N

- Some large blue gums with hollows present

Ecological Data Sheet (to accompany electronic data sheet)

Job Number: ...60188431...

Site Number: CF-37-JJ(UN189).KPA893.0..... Sheets completed: Flora; Fauna; Wetland

Assessor: DM CF..... Date: 23/6/2011 Time: 10:50.....

Location: "Annandale", Peak Downs Highway.....

Tertiary Flora Assessment (measured in 50m x 10m plot)

All woody species present within 50m x 10m plot (plus dominant, characteristic and threatened non-woody species)

<i>E. terreticornis</i>				D					
<i>Melaleuca fluviatilis</i>				O					
<i>Corymbia clarksoniana</i>				A					
<i>C. tessellaris</i>									
<i>Cassia brewsteri</i>					O				
<i>Alphitonia excelsa</i>						O			
<i>Ficus opposita</i>						O			
<i>Bauhinia</i>						O			
<i>Lophostemon grandiflorus</i> subsp. <i>riparius</i> (northern swamp box/freshwater mangrove)				R					
<i>Crotalaria laburnifolia</i>	S						O		
<i>Petalostigma pubescens</i>							R	F	
<i>bothriochloa</i> (native rhizomous)	G							O	
<i>bothriochloa bladhi</i>	G							O	
apple bush	G							O	
buffel grass	G							D	
black spear grass	G							O	
<i>sida cordifolia</i>	G							F	
<i>Crotalaria disciflora</i>	G							O	
feathertop rhodes	G							O	
Red natal grass	G							F	
bidens	G							R	
<i>Noogoora burra</i>	G							R	
Median Ht (m)				20	8		6	2	0.5
Ht Range (m)				10-22	6-10		5-7	1-2.5	0.2-1.3
Visual Cover (%)				30	<10		<10	<10	80
Recruitment (Yes / No / %)				Yes	Yes		Yes	No	

Species annotations: S = Specimen Collected; * = Exotic Species; ** = Declared Species; + = Outside but adjoining 50m x 10m plot
 Height categories: E = Emergent; T1 = Tree 1 stratum, T2 = Tree 2 stratum, T3 = Tree 3 stratum, S1 = Shrub 1 stratum, S2 = Shrub 2, G = Ground stratum
 Form: T = Tree; S = Shrub; G = Grass; R = Rush / Sedge; F = Forb (i.e. herb); V = Vine; E = Epiphyte; A = Aquatic; Seed = Seedling; Sap = Sapling
 Relative dominance (abundance within strata): D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare
 Abbreviations: N/A = Not Applicable; N/R = Not Recorded; N/O = None Observed

Site / Waypoint #:

Tertiary Flora Assessment (measured in 50m x 10m plot) - continued

RE Map	11.3.2 / 11.3.1 / 11.3.25			
Survey result	11.3.25			

Width of RE (if linear): n/a; <35m wide; 35-75m; 75-150m; 150-300m; >300m; not linear
 Total RE Area: n/a; <1ha; 1-5ha; 5-20ha; 20-50ha; 50-250ha; >250ha
 Dominant Stratum Form: Tree Shrub; Forb; Grass; Aquatic

Epiphytes	<u>Absent</u> ; Scattered (1-5); Common (6-10); Abundant (>10)		
Vines	<u>Absent</u> ; Scattered (1-5); Common (6-10); Abundant (>10)	Cryptogams	<u>0%</u> ; 1-25%; 26-75%; >75%

Photos: CF 641-644

Tertiary Flora Assessment (measured in 50m x 10m plot) - continued

RE Map	11.4.9		E	
Survey result	11.4.9		E	

Width of RE (if linear): n/a; <35m wide; 35-75m; 75-150m; 150-300m; >300m; not linear

Total RE Area: n/a; <1ha; 1-5ha; 5-20ha; 20-50ha; 50-250ha; >250ha

Dominant Stratum Form: (Tree) Shrub; Forb; Grass; Aquatic

Epiphytes	(Absent); Scattered (1-5); Common (6-10); Abundant (>10)		
Vines	Absent; Scattered (1-5); Common (6-10); Abundant (>10)	Cryptogams	(0%); 1-25%; 26-75%; >75%

photos

CF 636-639

Ecological Data Sheet (to accompany electronic data sheet)

Job Number: ...60188431...

Site Number: CF029-5.....KPA^{97.7}..... Sheets completed:

(Flora) (Fauna) Wetland

Assessor: CF DM..... Date: 22/6/2011

Time: 9:20.....

Location:

Tertiary Flora Assessment (measured in 50m x 10m plot)

All woody species present within 50m x 10m plot (plus dominant, characteristic and threatened non-woody species)

Euc. populnea	T		D					
C. carissa ovata	S		F					
Grevilla (beefwood) striata	T		R			R		
Chloris (feathertop rades) virgata	G							A
Buffel grass	G							F
black spear grass	G							O
bothriochloa sp. (indian blue couch)	G							A
stylo	S					O		
carissa ovata *	S							
dogs balls	S						O	
Electryon diversifolius	S					O		
panicum sp.	G							O
harrisia cactus	S						R	
cassia brewsteri (leichardt bean)	T			O				
Opuntia stricta						R		
								A
Red natal								O
spikey thing (collected) (caustic looking thing)						R		
Median Ht (m)			12			2	0.5	0.5
Ht Range (m)			10-14			1.5-2.5	0.2-0.5	0.2-0.5
Visual Cover (%)			30			45	45	70
Recruitment (Yes / No / %)			No			Yes	Yes	

Species annotations: S = Specimen Collected; * = Exotic Species; ** = Declared Species; + = Outside but adjoining 50m x 10m plot
 Height categories: E = Emergent; T1 = Tree 1 stratum, T2 = Tree 2 stratum, T3 = Tree 3 stratum, S1 = Shrub 1 stratum, S2 = Shrub 2, G = Ground stratum
 Form: T = Tree; S = Shrub; G = Grass; R = Rush / Sedge; F = Forb (i.e. herb); V = Vine; E = Epiphyte; A = Aquatic; Seed = Seedling; Sap = Sapling
 Relative dominance (abundance within strata): D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare
 Abbreviations: N/A = Not Applicable; N/R = Not Recorded; N/O = None Observed

Site / Waypoint #:

Tertiary Flora Assessment (measured in 50m x 10m plot) - continued

RE Map	11.3.2 / 11.3.1			
Survey result	11.3.2			

Width of RE (if linear): n/a; <35m wide; 35-75m; 75-150m; 150-300m; >300m; not linear
 Total RE Area: n/a; <1ha; 1-5ha; 5-20ha; 20-50ha; 50-250ha; >250ha
 Dominant Stratum Form: Tree; Shrub; Forb; Grass; Aquatic

Epiphytes	Absent	Scattered (1-5); Common (6-10); Abundant (>10)		
Vines	Absent	Scattered (1-5); Common (6-10); Abundant (>10)	Cryptogams	0%; 1-25%; 26-75%; >75%

Grey-crowned babbler?
 pied butcherbird

WATERCOURSE CROSSING VEGETATION RECORD

Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 30/6/11 Assessor: CL 91-5 (UN 113) Job: 60188431 Datum:

Crossing: Original Name: braid of North Ck

Mapped RE: 11.3.2 / 11.3.1	Observed RE: 11.3.23	RE Length: 20m	E ↑ ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 1.5 m	
Vegetation on ↑ side: Euc. tereticornis (D) Euc. populnea (F) Ac. harpophylla (O) Terminalia oblongata (F) Euc. platyphylla (O) Cor. tessellaris (O) Peritrochium (R) Bugalow RE starts 20m to E of creek, runs to railway line.			W ↓ ROW direction

Crossing description: braid of North Ck (east of main channel) ← Direction N dry with wetland grasses + sedges	Wpt: CL 91-5
Photo: JB 211	KP: AB 102.3 east (rev)
Pseudorhaphis spinescens (A) Marselia nutica (F) Cyperus bifax (O)	Bed Width: 10m
	Direction → S
	Photo: JB 213

Vegetation on ↓ side: Narrow band, then cleared till main bank of North Ck	W ↓ ROW direction
Bank Type: Earth; Sandy; Rocky	
Slope: Gentle; Steep; Cliff	Height: 1.5 m
Photo: JB 214	
Mapped RE: 11.3.2 / 11.3.1	Observed RE: 11.3.25
	RE Length: 10m, then cleared

Wetland Assessment

River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other
 Saline; Brackish; Fresh Perennial; Seasonal; Intermittent
 Turbid; Clear; Stagnant; Polluted; Algae Streamflow; Dry; Pool; Run; Riffle; Cascade; Fall
 Submerged; Floating; Emergent Non-woody; Emergent Woody
 Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)

- line crosses at very shallow angle (20°) - EVNT sp occurs nearby
- section needs redesign eg. other side of rail line - FRE occurs nearby

Indicrossing of North Ck braid

Crossing: Proposed Change Name: Entered MR

Mapped RE: 11.3.2 / 11.3.1	Observed RE: 11.3.25	RE Length:	E ↑ ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m	
Vegetation on ↑ side: Similar to CL 91			W ↓ ROW direction
Crossing description: Similar to CL 91 crossing at 90° small clearing for fence line and track	Wpt: CL 92-5		
← Direction N	KP: AB 102.8 (rev)		
Photo: JB 215	Width: 10m		
	Direction → S		
	Photo: JB 217		
Vegetation on ↓ side: Similar to CL 91			W ↓ ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m	
Photo: JB 218			
Mapped RE:	Observed RE:	RE Length:	

Comments as above - need redesign

WATERCOURSE CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 3/9/11 Assessor: JW046-S Job:60188431..... Datum:

Crossing: Original Name: MR/AM KP AB105.2 North Creek

Mapped RE: <u>11.3.25</u>	Observed RE: <u>11.3.25</u>	RE Length: <u>25m</u>	S ROW direction →	
Bank Type: <u>Earth</u> ; Sandy; Rocky	Slope: <u>Gentle</u> ; Steep; Cliff	Height: <u>10</u> m		Photo: <u>JW6554</u>
Vegetation on ↑ side: <u>E. tetracornis (0)</u> <u>Casuarina cunninghamiana (A)</u> <u>E. crebra (F)</u> <u>Lysiphyllum hookeri</u> <u>Corymbia tessellaris (0)</u> <u>P. ciliaris (understorey) **</u>				

Crossing description: ← Direction <u>E</u>	Wpt: <u>JW046-S</u>
Photo: <u>JW6553</u>	KP: <u>AB105.2</u>
	Bed Width: <u>7</u>
	Direction → <u>W</u>
	Photo: <u>JW6555</u>

Vegetation on ↓ side:

SAME AS FOR SOUTH.

Bank Type: <u>Earth</u> ; Sandy; Rocky	Slope: <u>Gentle</u> ; Steep; Cliff	Height: <u>10</u> m	Photo: <u>JW6552</u>	N ← ROW direction
Mapped RE: <u>11.3.25</u>	Observed RE: <u>11.3.25</u>	RE Length: <u>25m</u>		

Wetland Assessment

River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other.....
 Saline; Brackish; Fresh Seasonal; Perennial; Seasonal; Intermittent
 Turbid; Clear; Stagnant; Polluted; Algae Stream flow; Dry; Pool; Run; Riffle; Cascade; Fall
 Submerged; Floating; Emergent Non-woody; Emergent Woody.
 Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)
Move line Eastwards to JW047-S Less large trees - approx 25m gap

Crossing: Proposed Change Name: JW047-S KP 105.2

Mapped RE: <u>11.3.25</u>	Observed RE: <u>11.3.25</u>	RE Length: <u>25</u>	S ROW direction →	
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m		Photo: <u>JW6562</u>
Vegetation on ↑ side: <u>As for JW046</u>				

Crossing description: ← Direction <u>E</u>	Wpt: <u>JW047-S</u>
Photo: <u>JW6561</u>	KP: <u>AB105.2</u> <u>cast</u>
	Width: <u>7</u>
	Direction → <u>W</u>
	Photo: <u>JW6563</u>

Vegetation on ↓ side:

As for JW046

Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m	Photo: <u>6560</u>	N ← ROW direction
Mapped RE: <u>11.3.25</u>	Observed RE: <u>11.3.25</u>	RE Length: <u>25</u>		

Ecological Data Sheet (to accompany electronic data sheet)

Job Number: ...60188431... 11

Site Number: ¹⁰¹²⁰³ CL 87-J¹ KPAB106.0 Sheets completed: Flora, Fauna; Wetland

Assessor: CL/JB Date: 30.1.6.2011 Time:

Location: KP 101 - beside railway line

Tertiary Flora Assessment (measured in 50m x 10m plot)

All woody species present within 50m x 10m plot (plus dominant, characteristic and threatened non-woody species)

<i>Euc populnea</i>	T		D					
<i>Owenia acidula</i>	T		R					
<i>Cassia brewsteri</i>	T			F				
<i>Archidendropsis basaltea</i>	T			O				
<i>Pennisetum ciliare</i> *	G							D
<i>Pterocaulon sphacelatum</i>	H							O
<i>Parsonsia</i> (check sp)	H							O
<i>Heteropogon contortus</i>	G							O
<i>Panicum effusum</i>	G							O
<i>Cynia retusifolia</i>	S							O
<i>Stylisanthes scabra</i> *	S							O
<i>Urochloa norambicensis</i> *	G							O
<i>Waltheria indica</i>	H							O
<i>Themeda triandra</i>	G							O
<i>Eremochloa bimaculata</i>	G							O
<i>Melinis repens</i>	G							O
<i>Cynthillium cinereum</i>	H							O
Median Ht (m)	15		15	2.5				0.5
Ht Range (m)	-	-	-	-	-	-	-	-
Visual Cover (%)	2%		20%	<5%				40%
Recruitment (Yes / No / %)	1		Y	Y				

Species annotations: S = Specimen Collected; * = Exotic Species; ** = Declared Species; += Outside but adjoining 50m x 10m plot
 Height categories: E = Emergent; T1 = Tree 1 stratum, T2 = Tree 2 stratum, T3 = Tree 3 stratum, S1 = Shrub 1 stratum, S2 = Shrub 2, G = Ground stratum
 Form: T = Tree; S = Shrub; G = Grass; R = Rush / Sedge; F = Forb (i.e. herb); V = Vine; E = Epiphyte; A = Aquatic; Seed = Seedling; Sap = Sapling
 Relative dominance (abundance within strata): D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare
 Abbreviations: N/A = Not Applicable; N/R = Not Recorded; N/O = None Observed

Site / Waypoint #:

Tertiary Flora Assessment (measured in 50m x 10m plot) - continued

RE Map	11.3.2 / 11.3.1	-	OC / E	OC
Survey result	11.3.2	-	OC	OC

Width of RE (if linear): n/a; <35m wide; 35-75m; 75-150m; 150-300m; >300m; not linear

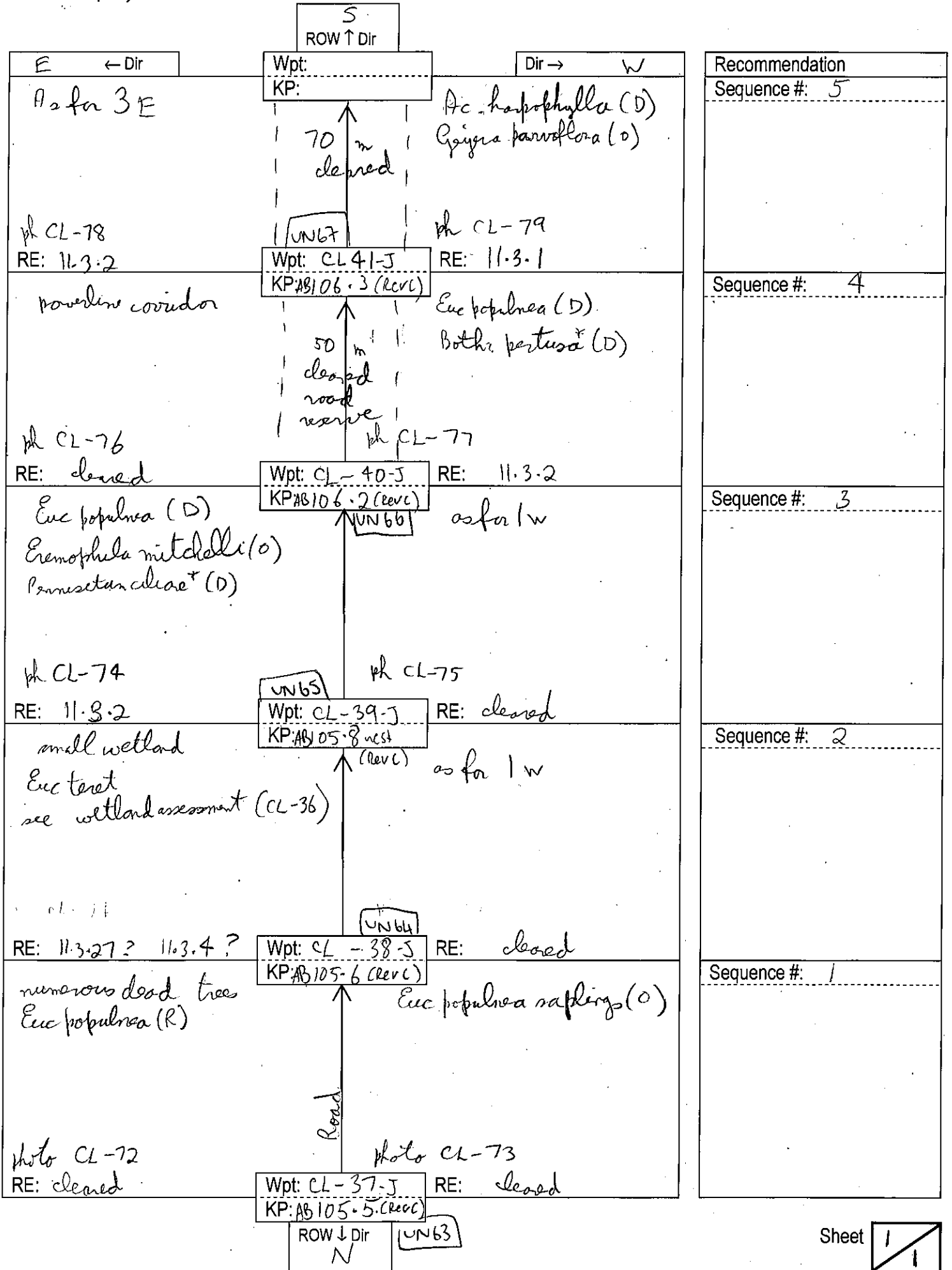
Total RE Area: n/a; <1ha; 1-5ha; 5-20ha; 20-50ha; 50-250ha; >250ha

Dominant Stratum Form: Tree; Shrub; Forb; Grass; Aquatic

Epiphytes	Absent; Scattered (1-5); Common (6-10); Abundant (>10)		
Vines	Absent; Scattered (1-5); Common (6-10); Abundant (>10)	Cryptogams	0%; 1-25%; 26-75%; >75%

LINEAR VEGETATION RECORD For each side, record waypoint / KP at each boundary, direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location. Enter data from bottom of form upwards.

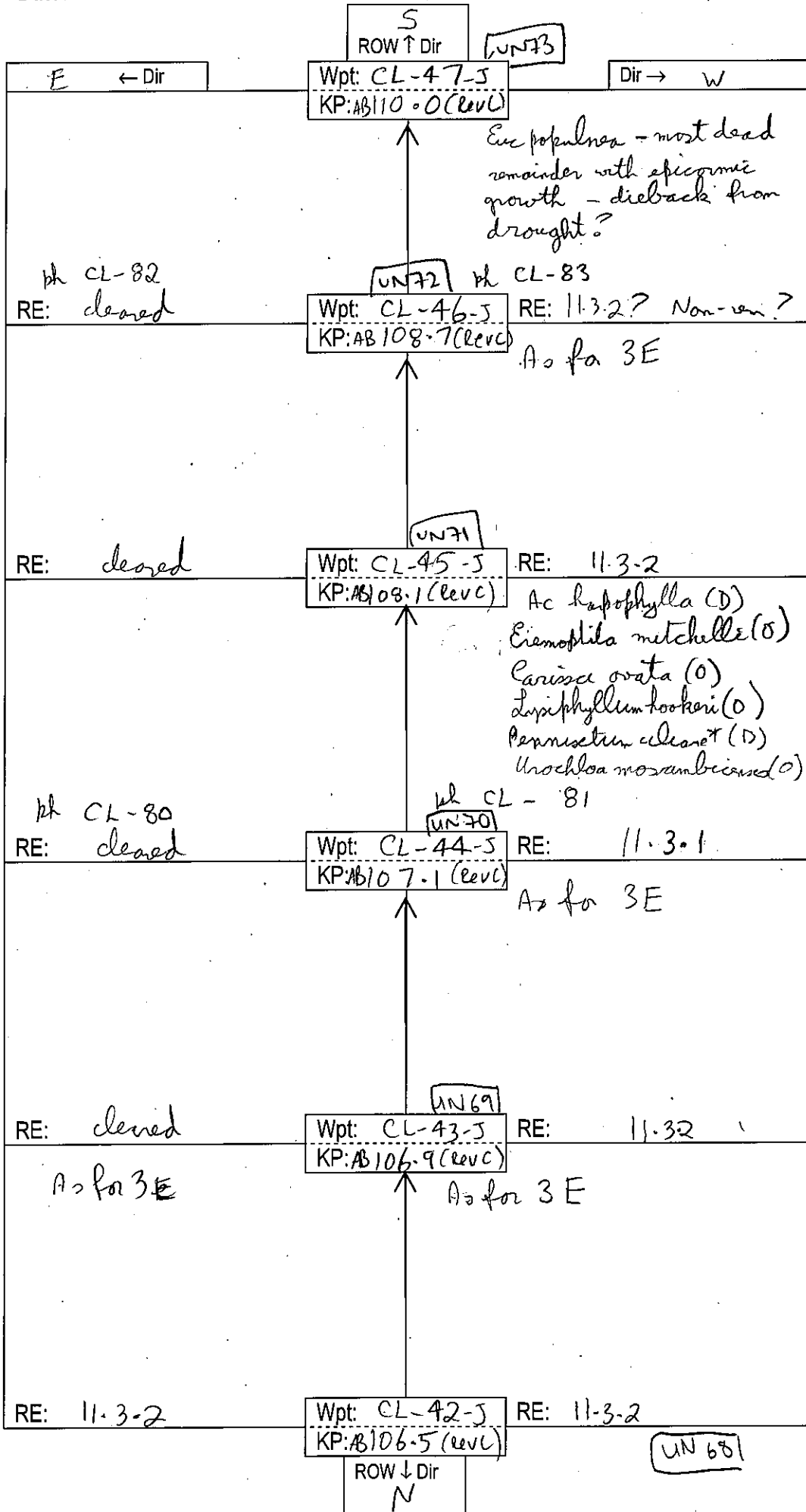
Date 23/6/11 Location Maxis Downs Assessor CL+JB Job # 60188431



Recommendation
Sequence #: 5
Sequence #: 4
Sequence #: 3
Sequence #: 2
Sequence #: 1

LINEAR VEGETATION RECORD For each side, record waypoint / KP at each boundary, direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location. Enter data from bottom of form upwards.

Date..... Location..... Assessor..... Job #...60188431.....



Recommendation
Sequence #: 10
Sequence #: 9
Sequence #: 8 <i>Terminalia oblongata</i> (5) (Bark fissured almost tessellated) (F) <i>Erythroxylum australe</i> (R) <i>Pithecolobium</i> ** (O) <i>Alectryon diversifolium</i> (R)
Sequence #: 7
Sequence #: 6

UN 238

Entered MK 13

Ecological Data Sheet – Fauna Habitat

Job Number:60188431

Site Number: CL-36-J Sheets completed: Flora; Fauna; Wetland

Assessor: JB-CL Date: 23/6/2011 Bioregion: 11

Location: KP: AB/05.8 (level)

GPS Projection: Lat-Long; UTM Datum: GDA94; WGS84; AGD84 Zone: not on Rev D

Latitude / Northing: Longitude / Easting: Waypoint #:

Altitude:m Slope: Aspect: N; NE; E; SE; S; SW; W; NW

Notes:

Table with 5 columns: Down: open, rolling, ashy, pebbly; Slope or hill not specified; Fossil coastal dune, high dune; Permanent lake, river, stream, water course, levees and / or their banks; Freshwater lake, lagoon, spring

Table with 8 columns: Class, Level, Very gentle, Gentle incline, Moderate, steep, Very steep, Precipitous

Table with 8 columns: Very High (>300 m), High (90-300 m), Low (30-90 m), Very Low (9-30 m), Extremely low (<9 m)

Geology: Alluvial; Clay; Sand; Coarse sedimentary; Fine sedimentary; Igneous(coarse); Volcanic(fine); Metamorphic; Limestone; Laterite
Soil Colour: Whitish; Yellow; Orange; Brown; Red; Black; Grey; Pale; Dark; Mottled
Soil Secondary Texture: Clayey; Silty; Loamy; Sandy; Gravelly; Stony
Soil Primary Texture: Clay; Silt; Loam; Sand; Gravel; Saline Mud
Soil Notes:

Notes

Health: Pristine Very Good Good Average Poor Degraded Completely Degraded (almost without natives)

Vegetation: Remnant (>70% height, >50% canopy density); Regrowth; Exotic; Cleared

Dominant stratum: Tree; Shrubland; Grassland; Forbland; Wetland % Coverage: >70%; 30-70%; 10-30%; <10%

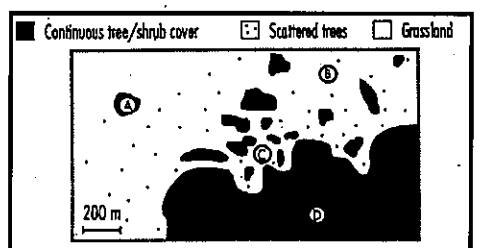
Overall patch size: <1ha; 1-5ha; 5-20ha; 20-50ha; 50-250ha; >250ha

Patch shape: Square/Circular; Semi-irregular; Very irregular; Linear

Linear type: None; Watercourse; Road; Rail; Windbreak; Fence; Stockroute

Width (if linear): <35m wide; 35-75m; 75-150m; 150-300m; >300m

Connectivity: A (Isolated); B (Semi-isolated); C (Not isolated); D (Continuous)



Notes

Erosion: Absent; Scattered; Frequent // Sheet; Rill (<30cm); Gully (>30cm); Mass Failure; Stream-bank

Dieback: 0%; 1-25%; 26-75%; >75% Notes:

Weeds: Absent; Scattered; Frequent; Dominant. // tree shrub ground vine Notes:

Fire scars: Absent; Scattered; Frequent. // Recent; Old // Av height:m

Agriculture: None; Grazing; Feedlot; Crop; Orchard; Plantation Type:

Other: Timber-cutting; Ring-barking; Mining; Quarry; Other:

Notes

Conservation; Cultural; Recreational; Gov Reserve; Details:

Facing N
E CL-71
S
W

Fauna Habitat

(Measured / extrapolated in 1 ha plot - e.g. 100m X 100m; 20m X 500m)

Large Hollows (> 20 cm)	Absent; Scattered (1-5);	Common (6-10);	Abundant (>10)
Small Hollows (< 20 cm)	Absent; Scattered (1-5);	Common (6-10);	Abundant (>10)
Hollow status	Mostly Dead; Mostly Alive;	Mixture	
Large logs (> 50cm)	Absent; Scattered (1-5);	Common (6-10);	Abundant (>10)
Small logs (10-50cm)	Absent; Scattered (1-10);	Common (11-20);	Abundant (>20)
Cliffs / outcrops	Absent; Scattered (1-10%);	Common (11-50%);	Abundant (>50%)
Large rocks (> 30cm)	Absent; Scattered (1-10%);	Common (11-50%);	Abundant (>50%)
Small rocks (10-30cm)	Absent; Scattered (1-10%);	Common (11-50%);	Abundant (>50%)
Leaf litter	Absent; Scattered (1-25%);	Common (26-75%);	Abundant (>75%)
Dense shrub / grass shelter	Absent; Scattered (1-10%);	Common (11-50%);	Abundant (>50%)
Termite mounds (> 50cm high)	Absent; Scattered (1-10);	Frequent (>10)	
Seeding grass cover	Absent; Scattered (1-10%);	Common (11-50%);	Abundant (>50%)
Fleshy fruiting plants	Absent; Scattered (1-10%);	Common (11-50%);	Abundant (>50%)
Nectar/pollen producing plant	Absent; Scattered (1-10%);	Common (11-50%);	Abundant (>50%)
Koala trees	Absent; Scattered (1-10%);	Common (11-50%);	Abundant (>50%)
Mistletoe	Absent; Scattered (1-10);	Common (11-20);	Abundant (>20)
Macropod scats	Absent; Scattered;	Frequent	
Scats, pellets, food remains:	.....	
Animal tracks:	.....	
Animal trails:	.....	
Bones, feathers:	.....	
Diggings, burrows:	.....	
Shelters, nests:	.....	
Tree scratches; feeding scars:	.....	

- Circle koala food trees
- E. grandis*
 - E. microcorys*
 - E. pilularis*
 - E. propinqua*
 - E. resinifera*
 - E. tereticornis*
 - C. citriodora / maculata*
 - C. intermedia*,
 - E. bancroftii*
 - E. camaldulensis*
 - E. camea*
 - E. crebra*,
 - E. dunnii*
 - E. fibrosa*
 - E. major*
 - E. moluccana*
 - E. platyphyla*
 - E. punctata*
 - E. robusta*
 - E. saligna*
 - E. seeana*
 - E. siderophloia*
 - E. signata / racemosa*
 - E. tindaliae*
 - E. viminialis*
 - Lophostemon confertus*

River; Creek; Lake (>8ha); Pool (<8ha); Wooded Swamp; Treeless Marsh; Gilgai; Claypan; Floodplain; Spring
 NA Large Dam (>8 ha); Small Dam (<8ha); Irrigation Channel; Drainage Channel; Sewage Pond; Salt Field
 NA Coral reef; Rocky Shore; Beach; Estuary; Mud Flat; Saltmarsh; Mangrove; Lagoon (<8ha); Lake (>8ha)
5.....ha. Saline; Brackish; Fresh Perennial; Seasonal; Intermittent
 NA Turbid; Clear; Stagnant, Polluted; Algae NA Dry; Pool; Run; Riffle; Cascade; Fall
 Submerged; Floating; Emergent Non-woody; Emergent Woody; Fringing Non-woody; Fringing Woody
 Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber
 Exclusion fence; Earth banks; Rocky banks

No water present. Damp ground under sedges
Marsilea drummondii (F) Sedge sp. (5) (0) 100% cover.

Site / Waypoint #:

WATERCOURSE CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 3/9/11 Assessor: CLA JW Job: 60188431 Datum:

Crossing: Original Name: South crossing of North creek KP AB109.3

Mapped RE: 11.3.25	Observed RE: 11.3.25	RE Length: 10m	N ↑ ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 4 m	
Vegetation on ↑ side: Euc. here (A) Cory. tess. (A) (surred from E side)		Observational point CL026-S + CL027-S	N ↑ ROW direction
Euc. here (A) Cory. tess. (O) Allo. cunn (A)	Gully erosion from track	Mexican poppy * (O) Sida cordifolia * (O) Leucas linearifolia (O) Eynidia dactylon (A) Crotalaria sp. (O) Amelita senchifolia Lonicera alliare * (O)	
Crossing description: ← Direction S	Sandy substrate	currently holds water - probably due to recent rains.	N ↑ ROW direction
Photo: CL 714	20m	Wpt: CL025-S KP: AB109.3 Bed Width: 12m Direction → N Photo: CL712	
Vegetation on ↓ side: Same as western side of creek	Severe gully erosion from track.		E ↓ ROW direction
Euc. populnea (D) Horisacoccus * (O) Lysephyllum hookeri (O) Chloris virgata (F) Euc. here (R) Coriaria orata (R) Sylotanthus sp. (O)		Cenchrus alliare * (D) Eremophila mitchellii (O) Capparis sepiaria (O)	
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 4 m	
Mapped RE: 11.3.25	Observed RE: 11.3.25	RE Length: 5m	

Wetland Assessment

Type: River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other.....
 Salinity: Saline; Brackish; Fresh
 Seasonality: Perennial; Seasonal; Intermittent
 Water condition: Turbid; Clear; Stagnant; Polluted; Algae
 Stream flow: Dry; Pool; Run; Riffle; Cascade; Fall
 Vegetation: Submerged; Floating; Emergent Non-woody; Emergent Woody; Fringing Woody
 Instream habitat features: Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)

- Good crossing point
- old vehicle crossing, some gully erosion (especially to E)

Crossing: Proposed Change Name:

Mapped RE:	Observed RE:	RE Length:	↑ ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m	
Vegetation on ↑ side:		Photo:	↑ ROW direction
Crossing description: ← Direction		Wpt: KP: Width: Direction → Photo:	
Vegetation on ↓ side:			↓ ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m	
Mapped RE:	Observed RE:	RE Length:	

Entered MK.

WATERCOURSE CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 23/6/11 Assessor: CL/JB Job: 60188431 Datum:

Crossing: Original Name: Unnamed Creek Downstream

Mapped RE: 11.4.9/115.3	Observed RE: 11-3-3	RE Length: 10	E
Bank Type: <u>Earth</u> Sandy; Rocky	Slope: Gentle; <u>Steep</u> ; Cliff	Height: 4 m	Photo: JB98
Vegetation on ↑ side: <u>Eucalyptus</u> (A) <u>Terminalia oblongata</u> (A), <u>Acacia harpophylla</u> (F); <u>Lysophyllum caranni</u> (F); <u>Carissa ovata</u> (O) <u>Portulacum</u> sp. **; <u>Lamiaceae</u> forb; <u>Cenchrus ciliare</u> ; <u>Urochloa</u> sp; <u>Cyperaceae</u> sp;			↑ ROW direction

Crossing description: ← Direction <u>N</u> Photo: JB97	* Sandy bed * 2 channels approx 15-20m apart * dry * see wetland assessment	Wpt: CL-53-JW79 KP: AB10.0 Bed Width: 5m Direction → S Photo: JB99
--	--	--

Vegetation on ↓ side: <p style="text-align: center;">AS per E bank</p>	↓ ROW direction		
Bank Type: <u>Earth</u> Sandy; Rocky	Slope: Gentle; <u>Steep</u> ; Cliff	Height: 4 m	Photo: JB100
Mapped RE: 11.4.9/115.3	Observed RE: 11-3-3	RE Length: 20m	W

Wetland Assessment Upstream

Type: River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other.....

Salinity: Saline; Brackish; Fresh **Seasonality:** Perennial; Seasonal; Intermittent

Water condition: Turbid; Clear; Stagnant; Polluted; Algae **Stream flow:** Dry; Pool; Run; Riffle; Cascade; Fall

Vegetation: Submerged; Floating; Emergent Non-woody; Emergent Woody

Instream habitat features: Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)

Avoid large trees where possible
Utilise existing clearing/thin veg.

Crossing: Proposed Change Name:

Mapped RE:	Observed RE:	RE Length:	↑ ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m	Photo:
Vegetation on ↑ side:			↑ ROW direction
Crossing description: ← Direction Photo:			↓ ROW direction
Vegetation on ↓ side:			↓ ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m	Photo:
Mapped RE:	Observed RE:	RE Length:	

Ecological Data Sheet (to accompany electronic data sheet)

Job Number: ...60188431...

Site Number: JN0265 UNA15 KP AB 1449 Sheets completed:

(Flora) (Fauna) Wetland

Assessor: JN & MR Date: 22/06/2011

Time: 10:45am

Location: Along Beef Rd

Tertiary Flora Assessment (measured in 50m x 10m plot)

All woody species present within 50m x 10m plot (plus dominant, characteristic and threatened non-woody species)

<i>Euc. crebra</i>	T		A				
<i>Euc. populnea</i>	T		A				
<i>Ang. leiocarpa</i>	T		R				
<i>Mel. vindiiflora</i> (S)	T		R				
<i>Cory. trachyphloia</i>	T		F				
<i>A. leiocalyx</i>	Sh					A	
<i>Pet. pubescens</i>	Sh					R	
<i>Ac. sp</i> (S)	sh					A	
Sample (whorled leaf, mottled bark, 2m, 1.5m tall)	Sh					R	
<i>Alp. exselca</i>	Sh					R	
<i>Cenchrus ciliaris</i> * Buffel grass	G						D
<i>Melinis repens</i> *	G						A
<i>Ameletia semichalolia</i>	H						O
* thick weed	H						R
<i>Opuntia sp.</i> **	H						R
<i>Stylosanthes scabra</i> *	H						O
Yellow flower "sido" (S)	H						R
Burr grass (S) <i>Cenchrus echinatus</i> ? ^{Tragus australensis}	G						O
<i>Whalenbergia gracilis</i>	H						O
<i>Parthenium hyper.</i> ** located on the property to South							
Median Ht (m)			12	3			0.5
Ht Range (m)	-	-	-	-	-	-	-
Visual Cover (%)			15%	45%			90
Recruitment (Yes / No / %)							

Species annotations: S = Specimen Collected; * = Exotic Species; ** = Declared Species; += Outside but adjoining 50m x 10m plot
 Height categories: E = Emergent; T1 = Tree 1 stratum, T2 = Tree 2 stratum, T3 = Tree 3 stratum, S1 = Shrub 1 stratum, S2 = Shrub 2, G = Ground stratum
 Form: T = Tree; S = Shrub; G = Grass; R = Rush / Sedge; F = Forb (i.e. herb); V = Vine; E = Epiphyte; A = Aquatic; Seed = Seedling; Sap = Sapling
 Relative dominance (abundance within strata): D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare
 Abbreviations: N/A = Not Applicable; N/R = Not Recorded; N/O = None Observed

Site / Waypoint #: JN026

Tertiary Flora Assessment (measured in 50m x 10m plot) - continued

RE Map	11.5.12/11.5.3	-	LC	NCAp
Survey result	11.5.3	-		

Width of RE (if linear): n/a; <35m wide; 35-75m; 75-150m; 150-300m; >300m; not linear

Total RE Area: n/a; <1ha; 1-5ha; 5-20ha; 20-50ha; 50-250ha; >250ha

Dominant Stratum Form: Tree; Shrub; Forb; Grass; Aquatic

Epiphytes	Absent	Scattered (1-5); Common (6-10); Abundant (>10)		
Vines	Absent	Scattered (1-5); Common (6-10); Abundant (>10)	Cryptogams	0%; 1-25%; 26-75%; >75%

WATERCOURSE CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 2/9/11 Assessor: CL/AH Job: 60188431 Datum:

Crossing: Original Name: KP AB160.1

Mapped RE: 11.3.7/11.3.1	Observed RE: 11.3.25/11.3.4	RE Length: 10m	N ↑ ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 0.5 m	
Vegetation on ↑ side: <i>Euc tenticornis</i> (A) <i>Euc platyphylla</i> (A) <i>Cortessellaris</i> (O) <i>Euc populnea</i> (O) <i>Petalostigma pubescens</i> (O) <i>Alphitonia excelsa</i> (R) <i>Ac. salicina</i> (R) <i>Cassia breusteri</i> (R) <i>Carissa ovata</i> (R) <i>Eurythrocylum australe</i> (R) <i>Aristida</i> sp (O) <i>Macroptilium atropurpureum</i> * (O) <i>Indigofera suffruticosa</i> (R) <i>Cyperus bifax</i> (O) <i>Cynodon dactylon</i> * (A) <i>Urochloa mosambicensis</i> * (A) <i>Bothriochloa blakelyi</i> (O) <i>Cucumis anguria</i> (O)			E → ROW direction
Crossing description: Sandy bed ≈ 5 m wide ← Direction W Photo: CL 710		Wpt: CL 022-5 KP: AB160.1 Bed Width: 5m Direction → Photo: CL 708	
Vegetation on ↓ side: <i>Conyza</i> 18m, 20% CONT: <i>Parthenium hysterophorus</i> (R)			S ← ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 0.5 m	
Mapped RE: 11.3.7/11.3.1	Observed RE: 11.3.25?	RE Length: 10m	

Wetland Assessment

Type: River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other.....
 Salinity: Saline; Brackish; Fresh Seasonality: Perennial; Seasonal; Intermittent
 Water condition: NA Turbid; Clear; Stagnant; Polluted; Algae Stream flow: Dry; Pool; Run; Riffle; Cascade; Fall
 Vegetation: Submerged; Floating; Emergent Non-woody; Emergent Woody.
 Instream habitat features: Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)
Leucaena plantation on either side.
 Move line west to avoid native vegetation.

Crossing: Proposed Change Name:

Mapped RE: non-remnant	Observed RE: non-run	RE Length:	↑ ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m	
Vegetation on ↑ side: No native trees - <i>Leucaena leucocephala</i> abundant on both sides			↓ ROW direction
Crossing description: ← Direction Photo:		Wpt: CL 023-5 KP: w of AB160.1 Width: 5m Direction → Photo:	
Vegetation on ↓ side:			
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m	
Mapped RE:	Observed RE:	RE Length:	

WATERCOURSE CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 02/09/2011 Assessor: JW Job: 60188431 Datum:

Crossing: (Original) Name: Isacc River KP E of AB162.8

Mapped RE: 11.3.25 Observed RE: 11.3.25 RE Length: 10m

Bank Type: (Earth) Sandy; Rocky Slope: Gentle; (Steep) Cliff Height: 8 m Photo: JW1372(a)

Vegetation on ↑ side: Non-rem (as per JW31)

Euc. leve (A) mcl. fluviatilis (O) Nagora burr **
Cory tess (F) Ficus opposita (F) Lantana **
Allo cunning (O) Parisonia **
Parthenium **

Crossing description: Wpt: JW037-S

← Direction: N Water (maybe due to recent rains) KP: E of AB162.8

Photo: JW1375(a) Bed Width: 20m

Direction → E Photo: JW1373(a)

Vegetation on ↓ side: As per N

Cory tess (A) A. salicaria (O) 11.3.7. 20% As mapped Lantana **

Bank Type: (Earth) Sandy; Rocky Slope: Gentle; (Steep) Cliff Height: 8 m Photo: JW1374(a)

Mapped RE: 11.3.25 Observed RE: 11.3.25 RE Length: 30m

Wetland Assessment

Type: (River) Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other

Salinity: Saline; Brackish; (Fresh) Seasonality: Perennial; (Seasonal); Intermittent

Water condition: (Turbid); Clear; Stagnant; Polluted; Algae Stream flow: Dry; Pool; (Run); Riffle; Cascade; Fall

Vegetation: Submerged; Floating; Emergent Non-woody; Emergent Woody.

Instream habitat features: Island; Mud flat; (Shallows); (Deep open water); (Snags); Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)

Avoid large trees where possible

Crossing: Proposed Change Name:

Mapped RE: Observed RE: RE Length:

Bank Type: Earth; Sandy; Rocky Slope: Gentle; Steep; Cliff Height: m Photo:

Vegetation on ↑ side:

Crossing description: Wpt:

← Direction KP:

Photo: Width:

Direction → Photo:

Vegetation on ↓ side:

Bank Type: Earth; Sandy; Rocky Slope: Gentle; Steep; Cliff Height: m Photo:

Mapped RE: Observed RE: RE Length:

WATERCOURSE CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 02/09/2011 Assessor: JW A MR Job: 60188431 Datum:

Crossing: Original Name:

Mapped RE: 11.3.25	Observed RE: 11.3.25d	RE Length: see below	SE ROW direction →
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 4 m		Photo: JW6521
Vegetation on ↑ side: Non rem (as JW32)			ROW direction →
11.3.25 (As per JW32)			
mel. fluviatilis (A) Allo-cunning (O) Agertium ** Caster oil *		100m	
mel. (paperbark) (S)(A) Ficus opposita (F) parthenium sp. **		5m	
Crossing description: sandy substrate	Wpt: JW33 - S		N ← ROW direction
← Direction E	KP: E of AB1628		
Photo: JW6520	Bed Width: 15m		
Vegetation on ↓ side: As per south + 2 x small channels & flood plain		Direction → W	
11.3.7 (as per JW34-S)		Photo: JW6522	
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 4 m	Photo: JW6519
Mapped RE: 11.3.25	Observed RE: 11.3.25d	RE Length: 100m	

Wetland Assessment

Type: River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other.....
 Salinity: Saline; Brackish; Fresh Seasonality: Perennial; Seasonal; Intermittent
 Water condition: Turbid; Clear; Stagnant; Polluted; Algae Stream flow: Dry; Pool; Run; Riffle; Cascade; Fall
 Vegetation: Submerged; Floating; Emergent Non-woody; Emergent Woody
 Instream habitat features: Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)

* Avoid lrg trees where possible
 * Alt route from 164 (W of Fit. Dev. Rd)

Crossing: Proposed Change Name:

Mapped RE:	Observed RE:	RE Length:	ROW direction →	
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m		Photo:
Vegetation on ↑ side:			ROW direction →	
Crossing description:				
← Direction	Wpt:		N ← ROW direction	
Photo:	KP:			
Vegetation on ↓ side:		Width:		
Bank Type: Earth; Sandy; Rocky		Slope: Gentle; Steep; Cliff	Height: m	Photo:
Mapped RE:	Observed RE:	RE Length:		

164.8 (CF 028 original)

Alternate Crossings x 3

CF 059, Alternate July (1)

CL 21 Sept (2)

JW 25 - Sept (3)

JW 30 - Sept (4)

JW 31 - Sept (5)

JW 37 - Sept (6)

JW 33 - ~~Anterior~~ ^{Anatomical} Branches of (ancestral)
no/CI in spreadsheet

Tertiary Flora Assessment (measured in 50m x 10m plot) - continued

	RE Code	EPBC Status	VM Act Status	DERM Status
RE Map	11.3.21	E	E	E
Survey result	11.3.7	-		

Width of RE (if linear): n/a; <35m wide; 35-75m; 75-150m; 150-300m; >300m; not linear
 Total RE Area: n/a; <1ha; 1-5ha; 5-20ha; 20-50ha; 50-250ha; >250ha
 Dominant Stratum Form: Tree; Shrub; Forb; Grass; Aquatic

Epiphytes	<u>Absent</u> ; Scattered (1-5); Common (6-10); Abundant (>10)		
Vines	<u>Absent</u> ; Scattered (1-5); Common (6-10); Abundant (>10)	Cryptogams	0%; <u>1-25%</u> ; 26-75%; >75%

General Notes and Recommendations

Most spp characteristic of 11.3.21 not present in ground stratum or emergent stratum

- canopy sufficient to be woodland?
- ground stratum dominated by exotic grasses
- small drainage running along site
(very small , poorly defined channel)

Ecological Data Sheet (to accompany electronic data sheet)

Job Number: ...60188431... 16

Site Number: CF0605 UNM2 KPAB/037... Sheets completed:

Flora; Fauna; Wetland

Assessor: CF+ DM Date: 30/6/2011

Time: 1100

Location: Carfax Station

Tertiary Flora Assessment (measured in 50m x 10m plot)

All woody species present within 50m x 10m plot (plus dominant, characteristic and threatened non-woody species)

<i>E. platyphylla</i>	T	D						
<i>E. terebinthifolius</i>	T	F						
<i>C. clarksoniana</i>	T	D						
Mountain Coolibah	T	O						
<i>Acacia fraxilifera</i>	S	O						
<i>Cassia brewsteri</i>	S							
<i>Crotalaria parallela</i>	T	R						
Dead Finish	S					F		
<i>Dicanthium sericeum</i>	G							F
<i>Bothriochloa bladhii</i>	G							D
<i>Heteropogon contortus</i>	G							D
<i>Themeda triandra</i>	G							F
<i>Pennisetum ciliare</i>	G							O
<i>Stylosanthes scabra</i>	H							O
<i>V. sida</i> sp.	H							R
Median Ht (m)								
Ht Range (m)								
Visual Cover (%)								
Recruitment (Yes / No / %)								

Species annotations: S = Specimen Collected; * = Exotic Species; ** = Declared Species; += Outside but adjoining 50m x 10m plot
 Height categories: E = Emergent; T1 = Tree 1 stratum, T2 = Tree 2 stratum, T3 = Tree 3 stratum, S1 = Shrub 1 stratum, S2 = Shrub 2, G = Ground stratum
 Form: T = Tree; S = Shrub; G = Grass; R = Rush / Sedge; F = Forb (i.e. herb); V = Vine; E = Epiphyte; A = Aquatic; Seed = Seedling; Sap = Sapling
 Relative dominance (abundance within strata): D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare
 Abbreviations: N/A = Not Applicable; N/R = Not Recorded; N/O = None Observed

Site / Waypoint #:

Tertiary Flora Assessment (measured in 50m x 10m plot) - continued

RE Map	11.3.21			
Survey result	11.3.21			

Width of RE (if linear): n/a; <35m wide; 35-75m; 75-150m; 150-300m; >300m; not linear
 Total RE Area: n/a; <1ha; 1-5ha; 5-20ha; 20-50ha; 50-250ha; >250ha
 Dominant Stratum Form: Tree; Shrub; Forb; Grass; Aquatic

Epiphytes	Absent; Scattered (1-5); Common (6-10); Abundant (>10)		
Vines	Absent; Scattered (1-5); Common (6-10); Abundant (>10)	Cryptogams	0%; 1-25%; 26-75%; >75%

drainage depression,
 Grasses understory - mostly native
 Track to east.

photos CF 730-733

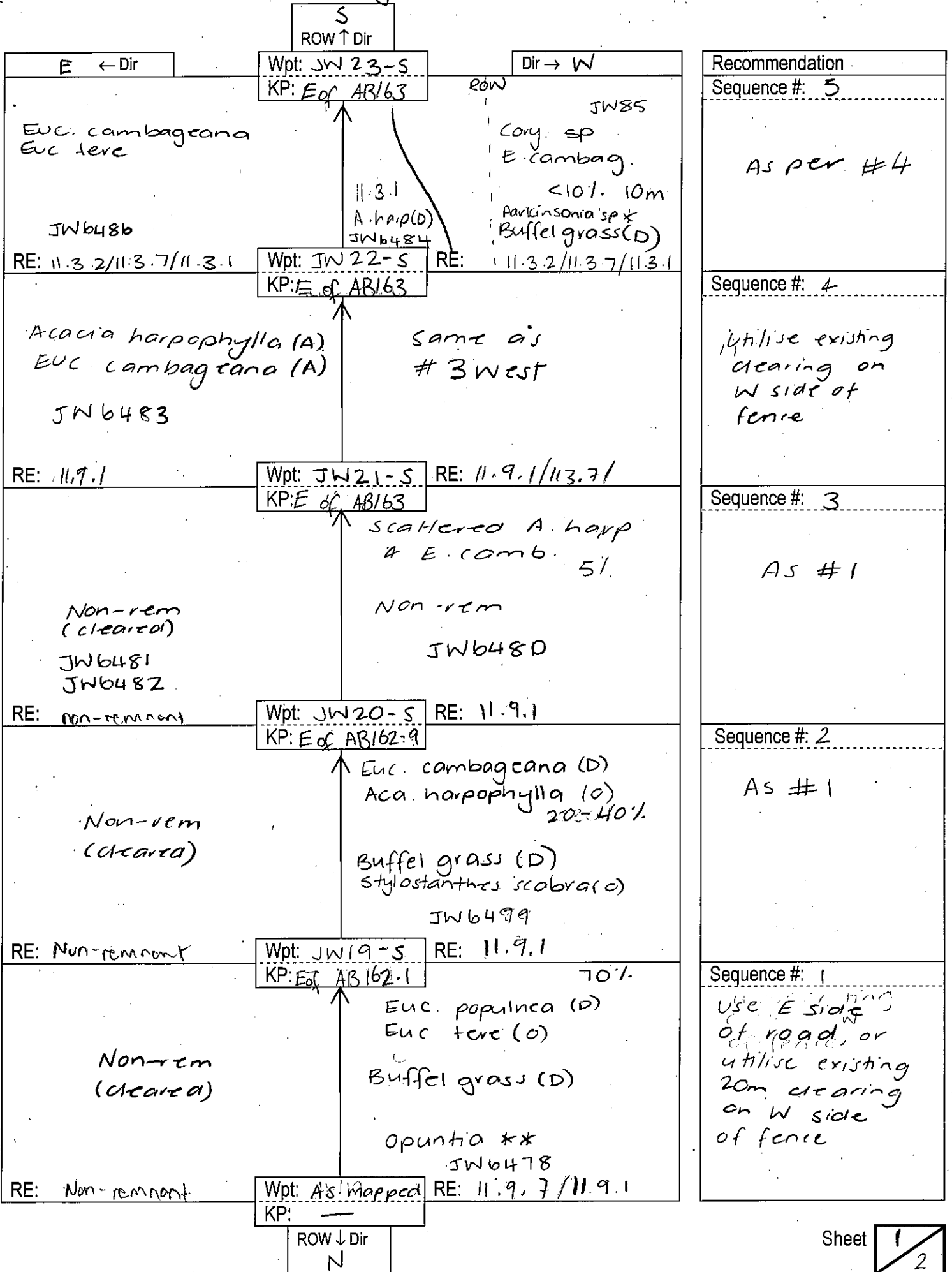
LINEAR VEGETATION RECORD For each side, record waypoint / KP at each boundary, direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location. Enter data from bottom of form upwards.

Date 31/08/11 Location W. of F13 Develop. Rd Assessor JWAH Job # 60188431

S ROW ↑ Dir		Dir → W	Recommendation
E ← Dir	Wpt: [] KP: []		Sequence #: []
RE: []	Wpt: JW29-S KP: E of AB164	RE: []	Sequence #: 9
AS per #8 east JW6502	AS per #8 WEST JW6500 fence JW6501 A. harp. (D) Cory tess (F) JW6498 6499 Actual 11.3.3 Actual 11.3.1	AS per mapping ↑ Same as mapping	AS per #6
RE: []	Wpt: JW28-S KP: E of AB164	RE: 11.3.3 / 11.3.1	Sequence #: 8
AS per west JW6497	Euc. coolibah (A) Euc. tere (O) Gidgee? Cory tess (O) Euc. pop (R) JW6496 Actual 11.3.3		AS per #6
RE: 11.3.3 / 11.3.1	Wpt: JW27-S KP: E of AB163.5	RE: 11.3.3 / 11.3.1	Sequence #: 7
Same as west Actual 11.3.4a	Cory tess (A) Euc. tere (A) Acacia sp. (s) gidgee? JW6495 Actual 11.3.4a Only narrow 30m band		AS per #6
RE: 11.3.7 / 11.3.1	Wpt: JW26-S KP: E of AB163.5	RE: 11.3.7 / 11.3.1	Sequence #: 6
Same as west JW6488 / JW6490	Cory tess Euc. tere (D) Allo. cunninghamii (F) Melaleuca sp. (O) Euc. cambageana (O) JW6487 / JW6489 * Creek JW24 (JW6491-west, JW6492-east)		Avoid lg trees where possible
RE: 11.3.25	Wpt: JW23-S KP: E of AB163	RE: 11.3.25	
ROW ↓ Dir N	JW25 (JW6493-west, JW6494-east) Lantana ** costar cik Parksoniana		

LINEAR VEGETATION RECORD For each side, record waypoint / KP at each boundary, direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location. Enter data from bottom of form upwards.

Date: 31/08/11 Location: West of Fitzroy Develop Rd Assessor: JNTAH Job #: 60188431



Recommendation
Sequence #: 5 As per #4
Sequence #: 4 utilise existing clearing on W side of fence
Sequence #: 3 As #1
Sequence #: 2 As #1
Sequence #: 1 Use E side of road, or utilise existing 20m clearing on W side of fence

WATERCOURSE CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 2/9/11 Assessor: CL/AH Job: 60188431 Datum:

Crossing: Original Name: Isaac River alternate alignment KP AB164.7

Mapped RE: 11.3.25	Observed RE: 11.3.25	RE Length: 20m	S ↑ ROW direction
Bank Type: (Earth) Sandy; Rocky	Slope: Gentle; (Steep); Cliff	Height: 6 m	
Vegetation on ↑ side: Same as N side, but wider.		Photo: CL 698	

Parkinsonia aculeata * (R)

Crossing description: Sandy bed	Wpt: CL 021-5
← Direction: E	KP: East AB164.7
Photo: CL 697	Bed Width: 50m
- flowing channel 50m wide	Direction: → W
- recent flow from rains	Photo: CL 699

Vegetation on ↓ side: <i>Euc tereticornis</i> (D) <i>Mel fluviatilis</i> (F) <i>Cor tessellaris</i> (O) <i>Ficus opposita</i> (O) <i>Mel linanifolia</i> (O) <i>Luziphylum hookeri</i> (O) <i>Alstonia constricta</i> (O) <i>Bryonia oblongifolia</i> (R) <i>Diospyros humilis</i> (R) <i>Antonia camara</i> * (O) <i>Ac. salicina</i> (O) <i>Bothriochloa blakdii</i> (O) <i>Urochloa morambicensis</i> (O) <i>Agrostum haustorianum</i> * (O) <i>Megathyrsus maximus</i> * (D) <i>Parthenium hysterophorus</i> * (F) <i>Xanthium occidentale</i> * (O) <i>Pennisetum ciliat</i> * (O)	N ↓ ROW direction	
Bank Type: (Earth) Sandy; Rocky		
Slope: Gentle; (Steep); Cliff		
Height: 6 m	Photo: CL 696	
Mapped RE: 11.3.25	Observed RE: 11.3.25	RE Length: 10m

Wetland Assessment

Type: (River) Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other.....

Salinity: Saline; Brackish; (Fresh)

Seasonality: Perennial; (Seasonal) Intermittent

Water condition: (Turbid) Clear; Stagnant; Polluted; Algae

Stream flow: Dry; Pool; (Run) Riffle; Cascade; Fall

Vegetation: Submerged; Floating; Emergent Non-woody; Emergent Woody. (Fungus)

Instream habitat features: Island; Mud flat; (Shallows) Deep open water; (Snags) Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)

Mostly cleared on N bank. Cultivation to N of river
 Parthenium abundant near cultivation.
 Slight bend in river to east.

Crossing: Proposed Change Name:

Mapped RE:	Observed RE:	RE Length:	↑ ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m	
Vegetation on ↑ side:		Photo:	

Crossing description:	Wpt:
← Direction:	KP:
Photo:	Width:
	Direction: →
	Photo:

Vegetation on ↓ side:	↓ ROW direction	
Bank Type: Earth; Sandy; Rocky		
Slope: Gentle; Steep; Cliff		
Height: m	Photo:	
Mapped RE:	Observed RE:	RE Length:

WATERCOURSE CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 20/6/11 Assessor: CFE + AM Job: 60188431 Datum:

Crossing: Original Name: ISAAC RIVER

Mapped RE: 11.3.25		Observed RE: 11.3.25		RE Length: 50	
Bank Type: <u>Earth</u> ; Sandy; Rocky		Slope: Gentle; Steep; Cliff		Height: m	
Vegetation on ↑ side: Mel. fluviatilis (D), E. coolibah (O), Ficus opposita, E. tereticornis (O), Naqurra burr (D), Bille Goats weed (R), Megathyrsus maximus		Photo: 608		Wpt: CF-28-J	
Crossing description: ← Direction W		Very large Mel. fluviatilis, move crossing to east to avoid v. lge Mel. Sandy Bed		KP: AB/164.7	
Photo: 600				Bed Width: 30	
Vegetation on ↓ side: same as other, Casuarina cunninghamii				Direction → E	
Photo: 601				Photo: 609	
Bank Type: <u>Earth</u> ; Sandy; Rocky		Slope: Gentle; Steep; Cliff		Height: m	
Mapped RE: 11.3.25		Observed RE: 11.3.25		RE Length: 50	

- River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other.....
- Saline; Brackish; Fresh ■ Perennial; Seasonal; Intermittent
- Turbid; Clear; Stagnant; Polluted; Algae ■ Dry; Pool; Run; Riffle; Cascade; Fall
- Submerged; Floating; Emergent Non-woody; Emergent Woody.
- Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)

Move line 40 m east into small gap

Crossing: Proposed Change		Name:			
Mapped RE: 11.3.25		Observed RE: 11.3.25		RE Length:	
Bank Type: Earth; Sandy; Rocky		Slope: Gentle; Steep; Cliff		Height: m	
Vegetation on ↑ side: less lge trees, small gap may be result of clearing previously.		Photo:		Wpt: CF-059-J	
Crossing description: ← Direction				KP: 40m E. of 164.7	
Photo:				Width:	
Vegetation on ↓ side:				Direction →	
Photo:				Photo:	
Bank Type: Earth; Sandy; Rocky		Slope: Gentle; Steep; Cliff		Height: m	
Mapped RE:		Observed RE:		RE Length:	

Ecological Data Sheet (to accompany electronic data sheet)

Job Number: ...60188431... ¹⁸

Site Number: CF027J (UN 185) KPAB 165.5 Sheets completed:

Flora; Fauna; Wetland

Assessor: CF, AH Date: 20.1.16.1.2011

Time: ~50c

Location: nth of middlemant, Carfax Rd

ph 593-596

Tertiary Flora Assessment (measured in 50m x 10m plot)

All woody species present within 50m x 10m plot (plus dominant, characteristic and threatened non-woody species)

<i>C. Kesselaris</i>	T	A					
<i>E. populnea</i>	T	O					
<i>E. coolibagh</i>	T	A					
<i>A. fasciculifera</i>	T		F				
<i>Lysiphillum hookeri</i>	S				F		
<i>Ficus opposita</i>	S				O		
<i>themeda trianda</i>	G						O
<i>Pennisetum ciliare</i> *	G						D
<i>Megathyrus maximus</i> *	G						F
<i>Malvastrum americanum</i> *	S				F		
<i>Lantana camara</i> **	S				O		
Median Ht (m)			25	10			0.5
Ht Range (m)			20-25	8-10			0.2-0.6
Visual Cover (%)			20	10			100
Recruitment (Yes / No / %)							

Species annotations: S = Specimen Collected; * = Exotic Species; ** = Declared Species; += Outside but adjoining 50m x 10m plot
 Height categories: E = Emergent; T1 = Tree 1 stratum, T2 = Tree 2 stratum, T3 = Tree 3 stratum, S1 = Shrub 1 stratum, S2 = Shrub 2, G = Ground stratum
 Form: T = Tree; S = Shrub; G = Grass; R = Rush / Sedge; F = Forb (i.e. herb); V = Vine; E = Epiphyte; A = Aquatic; Seed = Seedling; Sap = Sapling
 Relative dominance (abundance within strata): D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare
 Abbreviations: N/A = Not Applicable; N/R = Not Recorded; N/O = None Observed

Site / Waypoint #:

Tertiary Flora Assessment (measured in 50m x 10m plot) - continued

RE Map	11.3.2/11.3.3/11.3.1	—	OC/OC/E	OC/OC/E
Survey result	11.3.3	—	OC	OC

Width of RE (if linear): n/a; <35m wide; 35-75m; 75-150m; 150-300m; >300m; not linear

Total RE Area: n/a; <1ha; 1-5ha; 5-20ha; 20-50ha; 50-250ha; >250ha

Dominant Stratum Form: Tree; Shrub; Forb; Grass; Aquatic

Epiphytes	Absent; Scattered (1-5); Common (6-10); Abundant (>10)		
Vines	Absent; Scattered (1-5); Common (6-10); Abundant (>10)	Cryptogams	0%; 1-25%; 26-75%; >75%

good condition ex. for buffel grass.

Creek crossing - creek 20m wide, gentle earth banks.
banks 1m-2m high

creek running NNE - SSW.
no water, covered in grass.
some trees growing middle

no better place for alignment, Vtge complete

Ecological Data Sheet (to accompany electronic data sheet)

Job Number: ...60188431...

Site Number: CF058-J KP 1/67.5 Sheets completed:

Flora Fauna Wetland

Assessor: CF, DM Date: 21.6.1.2011

Time: ~1100

Location: Carfax Station

Tertiary Flora Assessment (measured in 50m x 10m plot)

All woody species present within 50m x 10m plot (plus dominant, characteristic and threatened non-woody species)

Acacia harpophylla.	T		D.					
Euc. coolibah	T	D						
Acacia ficulifera.								
Unknown grass (S)	G							D
Alternanthera sp. (S)	F							O
Rosewood - Terminalia oblongifolia	T							O
Parkinsonia aculeata (juvenile) **	S							R
Along drainage line								
Sphaeranthus indicus (S)								
Unknown sp.								
Muehlenbeckia florulenta (S)								
Mangrove tree								
Median Ht (m)		20	16	8				0.6
Ht Range (m)		18-20	6-18	16-10				03-06
Visual Cover (%)		10	40					80
Recruitment (Yes / No / %)								

Species annotations: S = Specimen Collected; * = Exotic Species; ** = Declared Species; + = Outside but adjoining 50m x 10m plot
 Height categories: E = Emergent; T1 = Tree 1 stratum, T2 = Tree 2 stratum, T3 = Tree 3 stratum, S1 = Shrub 1 stratum, S2 = Shrub 2, G = Ground stratum
 Form: T = Tree; S = Shrub; G = Grass; R = Rush / Sedge; F = Forb (i.e. herb); V = Vine; E = Epiphyte; A = Aquatic; Seed = Seedling; Sap = Sapling
 Relative dominance (abundance within strata): D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare
 Abbreviations: N/A = Not Applicable; N/R = Not Recorded; N/O = None Observed

Site / Waypoint #:

Tertiary Flora Assessment (measured in 50m x 10m plot) - continued

RE Map	11.3.1	E	E	E
Survey result	11.3.1	E	E	E

Width of RE (if linear): n/a; <35m wide; 35-75m; 75-150m; 150-300m; >300m; not linear
 Total RE Area: n/a; <1ha; 1-5ha; 5-20ha; 20-50ha; 50-250ha; >250ha
 Dominant Stratum Form: Tree; Shrub; Forb; Grass; Aquatic

Epiphytes	<u>Absent</u> ; Scattered (1-5); Common (6-10); Abundant (>10)		
Vines	<u>Absent</u> ; Scattered (1-5); Common (6-10); Abundant (>10)	Cryptogams	<u>0%</u> ; 1-25%; 26-75%; >75%

brgalow woodland with emergent trees + grassy understorey. Few midstorey species.
 drainage line to north with *Casuarina cristata* along it.
 Photos. of 724 - 727

WATERCOURSE CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 20/6/11 Assessor: CF & AH Job: 60188431 Datum:

Crossing: Original Name: SANDY GULLY

Mapped RE: H1R 11.325	Observed RE: 11.325 H1R	RE Length: 10m	NE ROW direction ↑
Bank Type: Earth; (Sandy) Rocky	Slope: Gentle; Steep; Cliff	Height: m	
Vegetation on ↑ side: Allocasuarina heughmanii (F), E. tereticornis (O), Oolme (F) Buffed Grass (D), ^{Virgate} <i>Cassia ovata</i> (R), <i>Megathyrsus maximus</i> (D), <i>Panicum</i> sp. <i>Chloris</i> sp. , 30% cover by T1, 40% cover by T2, 20% by shrubs, 80% by grasses. Height of T1=22m, T2=			ROW direction ↓
Crossing description: Sandy bed, banks 0.5m high on both sides, Sandy banks, CF 576			
← Direction N	Wpt: CF 025 JUN 11	KP: AB 198.8	SW ROW direction ↓
Photo: CF 574	Bed Width: 12	Direction → S	
Vegetation on ↓ side: Allo. heughmanii (F), E. tereticornis (F), <i>Petalosthyma pubescens</i> (O) Oolme ?? (F) (O), Buffed Grass (D), <i>Sida cordifolia</i> (O), <i>Santalum lanceolatum</i> (O) <i>Alphitonia excelsa</i> (O), <i>Corymbia verticillifera</i> (R), <i>Cyperus</i> sp (O).			SW ROW direction ↓
Bank Type: Earth; (Sandy) Rocky	Slope: Gentle; Steep; Cliff	Height: m	
Mapped RE:	Observed RE:	RE Length: 10m	

Wetland Assessment

Type: River; (Creek); Lake (>8ha); Pool (<8ha); Dam; Marsh; Other.....

Salinity: Saline; Brackish; (Fresh) Seasonality: Perennial; (Seasonal); Intermittent

Water condition: Turbid; Clear; Stagnant; Polluted; Algae NA Stream flow: (Dry); Pool; Run; Riffle; Cascade; Fall

Vegetation: N Submerged; Floating; (Emergent Non-woody); (Emergent Woody).

Instream habitat features: (Island); Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)

Original

Crossing: Proposed Change Name: BLACKBURN CK upstream

Mapped RE: 11325	Observed RE: 11325	RE Length: 30	SW ROW direction ↑
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m	
Vegetation on ↑ side: E. tereticornis (F), <i>Acasurina cunninghamii</i> (O) <i>Bauhinia</i> sp (O), <i>E. coolabah</i> (R), <i>Capparis</i> sp. (O), <i>Acacia</i> sp <i>Castor Oil</i> (R), <i>Pennisetum ciliare</i> (F), <i>Megathyrsus maximus</i> (D)			ROW direction ↓
Crossing description: Crossing an existing clearing for road, 113.2 to left right of line, Powerline in clearing. <i>Erauverhana</i> to Sth. need to clear to of trees. CF 590 - <i>Erauverhana</i>			
← Direction S	Wpt: CF 026 JUN 11	KP: AB 171.7	SE ROW direction ↓
Photo: CF 587	Width: 20	Direction → NW	
Vegetation on ↓ side: <i>E. coolabah</i> (R), <i>Bauhinia</i> sp. (O), <i>Naupaka burr</i> (R) <i>E. tereticornis</i> (O), <i>Acacia</i> sp. (O) (O) <i>Bregaloo</i> to Sth (approx 50m from alignment). <i>Megathyrsus maximus</i> (D), <i>Castor Oil</i> (R), <i>Pennisetum ciliare</i> (F)			SE ROW direction ↓
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m	
Mapped RE:	Observed RE:	RE Length: 30	

downstream

WATERCOURSE CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 19/6/11 15:00 Assessor: CL ZO UN126 Job: 60188431 Datum:

Crossing: Original Name: Isaac River

Mapped RE: 11.3.25	Observed RE: 11.3.25	RE Length:	S ↑ ROW direction	
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 7 m		Photo: DM 945
Vegetation on ↑ side: As for northern bank				

Crossing description:	Wpt: CL 20-J
← Direction E	KP: AB 234.3 south (REV)
Photo: DM 948	Bed Width: 50 m (40 used)
	Direction → W
	Photo: DM 946

Vegetation on ↓ side:	gully leading NW	Argemone ochroleuca (mexican poppy)	(C) (O) (O) (O) ↓ ROW direction
Eucalyptus (A)	Ficus opposita (R)	Ricinus communis (castor oil plant)	
E. coolibah (F)	Corymbia tessellaris (R)	Parthenium hysterophorus (parthenium)	
Mel. fluviatilis (A)		Xanthium occidentale (Neogoora burra)	
Mel. linearifolia (F)			
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 6.5 m	Photo: DM 947
Mapped RE:	Observed RE:	RE Length:	N

Wetland Assessment

Type: River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other.....

Salinity: Saline; Brackish; Fresh Seasonality: Perennial; Seasonal; Intermittent

Water condition: Turbid; Clear; Stagnant; Polluted; Algae Stream flow: Dry; Pool; Run; Riffle; Cascade; Fall

Vegetation: Submerged; Floating; Emergent Non-woody; Emergent Woody

Instream habitat features: Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)

Recommend moving line south of gully (approx 100m)

Crossing: Proposed Change Name: Isaac River Entered MR

Mapped RE: 11.3.25	Observed RE: 11.3.25	RE Length:	S ↑ ROW direction	
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m		Photo: DM 949
Vegetation on ↑ side:				

Crossing description:	Wpt: CL 21 (UN127)
← Direction E	KP: AB 234.3 south
Photo: DM 952	Width: (REV)
	Direction → W
	Photo: DM 950

Vegetation on ↓ side:			N ↓ ROW direction	
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 6.5 m		Photo: DM 951
Mapped RE:	Observed RE:	RE Length:		

WATERCOURSE CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 19/6/11, 4:30pm Assessor: CL/DM Job: 60188431 Datum:

Crossing: Original Name: CLARKE CREEK - Ungle Waterhole upstream

Mapped RE: 11.3.25	Observed RE: 11.3.25	RE Length: 20m	W ROW direction →
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 4 m	
Vegetation on ↑ side: Aro for East bank		Photo: DM 957	

Crossing description: Ungle Waterhole		Wpt: CL-24 UN30
← Direction: S	80m wide deep channel	KP: 236.5 (REV C)
Photo: DM 960	Landholder said depth up to 8m and numerous fish eg. saratoga, golden perch, catfish.	Bed Width: 80m
		Direction → N
		Photo: DM 958

Vegetation on ↓ side:			ROW direction ↓
Euc. tereticornis (F)	Lysiphillum (O)	Ac. farnesiana (O)	
Euc. coolabah (O)	Alectryon diversifolius (O)	Argemone ochroleuca (O)	
Ac. salicina (F)	Sanandra (F)	Cardiospermum (O)	
Cor. terrellaris (F)			
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 4 m	Photo: DM 959
Mapped RE: 11.3.25	Observed RE: 11.3.25	RE Length: 50m	

River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other
 Saline; Brackish; Fresh Perennial; Seasonal; Intermittent
 Turbid; Clear; Stagnant; Polluted; Algae Dry; Pool; Run; Riffle; Cascade; Fall
 Submerged; Floating; Emergent Non-woody; Emergent Woody
 Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)

Avoid crossing natural waterhole

Crossing: Proposed Change Name: CLARKE CREEK above Ungle Waterhole

Mapped RE: 11.3.25	Observed RE: 11.3.25	RE Length:	W ROW direction →
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 4 m	
Vegetation on ↑ side: Same as E side		Photo: DM 954 953	
No endangered regrowth			

Crossing description: Island in middle ~50m wide		Wpt: CL-23
← Direction: S	E channel 6m wide, pool >1m deep, snags	KP: 600m N of 236.5
Photo: DM 956	W channel, 4m wide, small shallow pools	Width: 6 (REV C)
Island more densely vegetated 30-70% canopy		Direction → N
		Photo: DM 954

Vegetation on ↓ side:			ROW direction ↓
Acacia harpophylla (O)	Lysiphillum (R)	* Xanthium occidentale (O)	
Euc. coolabah (A)		* Ageratum houstonianum (O)	
Euc. tereticornis (A)		* Argemone ochroleuca (O)	
Mel. linearifolia (F)		* Pennisetum ciliare (O)	
		* Cardiospermum sp (O) (E)	
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 4 m	Photo: DM 955
Mapped RE: 11.3.25	Observed RE: 11.3.25	RE Length:	

small rock ridge to E

NOT ON REV D line

NOT ON REV D line - #16 inside

JUN 29

WATERCOURSE CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 10/9/11 Assessor: CL/DB Job: 60188431 Datum:

Crossing: Original Name: Clarke Cr - Rev D downstream

Mapped RE: 11.3.25	Observed RE: 11.3.3	RE Length: 20m	NE
Bank Type: (Earth) Sandy; Rocky	Slope: (Gentle) Steep; Cliff	Height: 6 m	Photo: CL 860
Vegetation on ↑ side: <i>Euc coolabah</i> (D) <i>Euc tereticornis</i> (O) <i>Cortessellaris</i> (O) <i>Ficus opposita</i> (O) <i>Mel linariifolia</i> (F) <i>Ac salicina</i> (O) <i>Las cunninghamii</i> (O) <i>Ac haprophylla</i> (O) <i>Lycopodium hookeri</i> (O) (Scattered bigland along veg boundary but not 11.3.1.05) <i>Aragmone ochroleuca</i> (O) <i>Digitaria</i> sp (F) <i>Basilicum polystachyan</i> (O) ^{190 trees to be considered community - HVR mapped.} <i>Harissia maritima</i> (O) <i>Xanthium pungens</i> (O) <i>Cynodon dactylon</i> (F) <i>Commersonia hystrix</i> (F) <i>Cyperus</i> sp (O)			↑ ROW direction
Crossing description: 2 channels		Wpt: CL 087-S	↓ ROW direction
← Direction: NW	Man channel 8m bed. Pool to NW.	KP: AB238.5	
Photo: CL 863	Island ≈ 100m	Bed Width: 8m +	
Vegetation on ↓ side: Same as NE bank.		Direction: → SE	SW
Photo: CL 861	Second channel 5m bed. Dry	Photo: CL 861	
Bank Type: (Earth) Sandy; Rocky	Slope: (Gentle) Steep; Cliff	Height: 6 m	Photo: CL 862
Mapped RE: 11.3.25	Observed RE: 11.3.3	RE Length: 20m	

Wetland Assessment

Type: River; (Creek); Lake (>8ha); Pool (<8ha); Dam; Marsh; Other..... upstream

Salinity: Saline; Brackish; (Fresh) Seasonality: Perennial; Seasonal; (Intermittent)

Water condition: Turbid; (Clear); Stagnant; Polluted; Algae Stream flow: (Dry); (Pool); Run; Riffle; Cascade; Fall

Vegetation: Submerged; Floating; Emergent Non-woody; Emergent Woody. (Fragging)

Instream habitat features: (Island); Mud flat; (Shallows); Deep open water; (Snags); Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)

Good crossing point

Crossing: Proposed Change Name:

Mapped RE:	Observed RE:	RE Length:	
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m	Photo:
Vegetation on ↑ side:			↑ ROW direction
Crossing description:		Wpt:	↓ ROW direction
← Direction:		KP:	
Photo:		Width:	
		Direction: →	
Vegetation on ↓ side:		Photo:	
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m	Photo:
Mapped RE:	Observed RE:	RE Length:	

WATERCOURSE CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 20/06/2011 Assessor: J.W. + J.B. Job: 60188431 Datum:

Crossing: Original Name: Stockyard creek (on Brigalow Property)

Mapped RE: 11.3.25	Observed RE: 11.3.25	RE Length: 5m	N ↑ ROW direction
Bank Type: (Earth) Sandy; Rocky	Slope: Gentle; (Steep) Cliff	Height: 8 m		Photo: JB108-53
Vegetation on ↑ side:		Ag grazing land	
Euc. tere (D); Cory tess (A); Euc. coolibah (a); Mel. linariifolia (A); Allo. cunninghamii (a); Sand. fig (a) Bauhinia edis (a)		Lepidium/lumex (s) Anthus (s)	Weeds: Parthenium hyper ** Opuntia sp ** Inoocacia burr
Crossing description: ← Direction S Photo: JB108-52		See wetland assessment puddly Sandy substrate Alignment	Island - Euc tere - Cory tess - Euc coolibah
Mostly dry with some pooling Vegetation on ↓ side:		As per N of bank but: + A. harpophylla (a)	
Bank Type: (Earth) Sandy; Rocky Mapped RE: 11.3.25		Slope: Gentle; (Steep) Cliff Observed RE: 11.3.25 RE Length: 15	
Photo: JB108-51		Wpt: JN025J (N 178) KP: 240.2 (REVC) Bed Width: 12m Direction → N Photo: JB108-50	
		* not on Rev D	
		Ag grazing land	
		Photo: JB108-51	
		Wpt: JN025J (N 178) KP: 240.2 (REVC) Bed Width: 12m Direction → N Photo: JB108-50	
		* not on Rev D	
		Ag grazing land	
		Photo: JB108-51	

- River; (Creek) Lake (>8ha); Pool (<8ha); Dam; Marsh; Other.....
- Saline; Brackish; (Fresh) Perennial; Seasonal; (intermittent)
- Turbid; (Clear) Stagnant; Polluted; (Algae) (Dry) Pool Run; Riffle; Cascade; Fall
- (Submerged) Floating; Emergent Non-woody; (Emergent Woody)
- (Island) Mud flat; (Shallows) Deep open water; (Snags) Rocks; (Standing dead timber)

Notes / Recommendations (if clearance exists, estimate length)

* mapped WMA

* debris in vegetation up to 8m vegetation & knocked over trees (flood)

* Avoid large rem trees & snags

Luen's honeyeater
Kingfisher
Sulfur crested cock
Striated pardalote
grey fantail

* Nest in tree

Crossing: Proposed Change Name:

Mapped RE:	Observed RE:	RE Length:	↑ ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m		Photo:
Vegetation on ↑ side:			
Crossing description: ← Direction Photo:		Wpt: KP: Width: Direction → Photo:	
Vegetation on ↓ side:			
Bank Type: Earth; Sandy; Rocky		Slope: Gentle; Steep; Cliff Height: m	
Photo:		Photo:	
Mapped RE:		Observed RE: RE Length:	

WATERCOURSE CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 20/06/2011 Assessor: JW + JB Job: 60188431 Datum:

Crossing Original Name: Bora Creek (on Olive Property) down

Mapped RE: 113.25	Observed RE: 113.25	RE Length: 30m	SE ↑ ROW direction
Bank Type: <u>Earth</u> Sandy, Rocky	Slope: Gentle; <u>Steep</u> ; Cliff moderate	Height: 8 m		Photo: JB108-42
Vegetation on ↑ side: Agricultural grazing land			↓ ROW direction
Cory tess (0); Euc. coolibah (A); Euc. tere (A); Mel linnaifolia (0) Alloca Cunninghamhamii (0); Alacia sp (0); sample (0); Alternanthera sp (s); Lepidium kumera sp. (s)		Needs: Opuntia sp. ** Noogoora bush.	
Crossing description: ← Direction NE	See wetland assessment below	Wpt: JW0245 (UN 196)	NW ↓ ROW direction
Photo: JB108-41	Pebbly/sand substrate mostly dry with some pooling.	KP: 245.31 Bed Width: 8m Direction → SW Photo: JB108-43	
Vegetation on ↓ side: Same as SE bank.			
Agricultural grazing land			
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; <u>Steep</u> ; Cliff	Height: 8 m	Photo: JB108-40
Mapped RE: 113.25	Observed RE: 113.25	RE Length: 20m	

- River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other.....
- Saline; Brackish; Fresh Perennial; Seasonal; Intermittent
- Turbid; Clear; Stagnant, Polluted; Algae Dry; Pool; Run; Riffle; Cascade; Fall
- Submerged; Floating; Emergent Non-woody; Emergent Woody.
- Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)

* Mapped as WMA
 * debris in vegetation located on banks up to 6m (flood)
 Avoid large rem trees and stags
 Antitidal: Icoala; greater glider;
 grey fantail
 striated pardalote
 willy wagtail
 freshwater mussel shell

Crossing: Proposed Change **Name:**

Mapped RE:	Observed RE:	RE Length:	↑ ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m		Photo:
Vegetation on ↑ side:			↓ ROW direction
Crossing description: ← Direction		Wpt:	
Photo:		KP:	
		Width:	
		Direction →	
		Photo:	
Vegetation on ↓ side:			
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m	Photo:
Mapped RE:	Observed RE:	RE Length:	

WATERCOURSE CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

KATERA MK 25

Date: 1/7/11 Assessor: CL / CF Job: 60188431 Datum:

Crossing: Original Name: Clive Ck down

Mapped RE: 11.3.25	Observed RE: 11.3.25	RE Length: 50m	ROW direction ↑
Bank Type: (Earth) Sandy Rocky	Slope: Gentle; Steep; Cliff	Height: 9 m	
Vegetation on ↑ side: A/c for North side canopy 18m, < 5% at crossing, ≈ 50% in less degraded areas			ROW direction ↓
Lantana camara** (0)			
Crossing description: - flowing pool ≈ 5 m wide X < 1 m deep		Wpt: CF 61 VN229	ROW direction ↓
← Direction E - no aquatic flora		KP: AB249.0	
Photo: CL 194		Bed Width: 8m	ROW direction ↓
Vegetation on ↓ side: Euc tereticornis (0) Euc populnea (0) Cor tessellaris (0)		Direction → W	
Acacia salicina (0) Ficus opposita (0) Mel. fluviatilis (F) Casuarina cunninghamii (0)		Photo: CL 196	ROW direction ↓
Canavalia papuana (R) Alectryon diversifolius (0) Megathyrsus maximus* (0) Mel. leucifolia (0)			
Cryptostegia grandiflora** (F) Pennisetum ciliare* (D) Haroussia mortini** (0) Opuntia tomentosa** (0)			ROW direction ↓
Bank Type: (Earth) Sandy Rocky Slope: Gentle; Steep; Cliff Height: 9 m		Photo: CL 193	
Mapped RE: 11.3.25	Observed RE: 11.3.25	RE Length: 50m	ROW direction ↓

Wetland Assessment

River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other
 Saline; Brackish; Fresh Seasonal; Perennial; Seasonal; Intermittent
 Turbid; Clear; Stagnant; Polluted; Algae Stream flow; Dry; Pool; Run; Riffle; Cascade; Fall
 Submerged; Floating; Emergent Non-woody; Emergent Woody
 Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)
 Good crossing point as open, few large trees

Crossing: Proposed Change Name:

Mapped RE:	Observed RE:	RE Length:	ROW direction ↑
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m	
Vegetation on ↑ side:			ROW direction ↓
Crossing description:			
← Direction		Wpt:	ROW direction ↓
Photo:		KP:	
Vegetation on ↓ side:		Width:	ROW direction ↓
Bank Type: Earth; Sandy; Rocky		Direction →	
Slope: Gentle; Steep; Cliff		Photo:	ROW direction ↓
Height: m			
Mapped RE:	Observed RE:	RE Length:	ROW direction ↓

WATERCOURSE CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 1/9/11 Assessor: CL/MR Job: 60188431 Datum:

Crossing: Original Name: Tartus Station

Mapped RE: 11.4.2/11.3.3) 11.3.1	Observed RE: 11.3.25	RE Length: 20m	SE ↑ ROW direction
Bank Type: Earth, Sandy, Rocky	Slope: Gentle, Steep, Cliff	Height: 2 m	
Vegetation on ↑ side: Mel bracteata (O) Mel fluviatilis (R) Euc tereticornis (R) Pleiogynium timoense (O) Diospyros humilis (O) Diospyros geminata (R) Bradychiton rupestris (O) Drypetes lasiocarpa (F) Psidium odorata? (R) Acacia salicina (O) Exocarpos latifolia (F) Hovea (P, p.646) (R) Abutilon micropetalum (O) Ac. fasciculifera (O) Cryptostegia grandiflora** (A) Parthenium hysterophorus* (O) Megathyrus maximus* (D)			S ← ROW direction
Crossing description: 1m channel with pool ≈ 0.1m deep cobble bed		Wpt: CL 015-5	
← Direction N		KP: AB 261.5	
Photo: CL 642		Bed Width: 5m	
		Direction → S	
		Photo: CL 644	
Vegetation on ↓ side: Narrow band of veg ⁿ as steep bank Continued: Alyxia ruscifolia (O) Canopy 10m, 25% Harrisia martinii** (R) Opuntia tomentosa** (R)			NW ↓ ROW direction
Bank Type: Earth, Sandy, Rocky	Slope: Gentle, Steep, Cliff	Height: 3 m	
Mapped RE:	Observed RE:	RE Length: 5m	

River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other
 Saline; Brackish; Fresh; Perennial; Seasonal; Intermittent
 Turbid; Clear; Stagnant; Polluted; Algae; Dry; Pool; Run; Riffle; Cascade; Fall
 Submerged; Floating; Emergent Non-woody; Emergent Woody
 Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)

Numerous dead trees - cause unknown - maybe rubber vine (some vine towers present)
Move to north where narrower band of vegetation

Crossing: Proposed Change Name:

Mapped RE:	Observed RE: 11.3.25	RE Length: 5m	SE ↑ ROW direction
Bank Type: Earth, Sandy, Rocky	Slope: Gentle, Steep, Cliff	Height: 2 m	
Vegetation on ↑ side: Similar to original crossing, but much narrower band of vegetation, less diversity of vine thicket spp.			SW ← ROW direction
Crossing description: 1m channel, pool + riffle cattle crossing cobble bed		Wpt: CL 016-5	
← Direction N.E.		KP: NE of 261.2	
Photo: CL 657		Width: 5m	
		Direction → SW	
		Photo: CL 659	
Vegetation on ↓ side:			NW ↓ ROW direction
Bank Type: Earth, Sandy, Rocky	Slope: Gentle, Steep, Cliff	Height: 2 m	
Mapped RE:	Observed RE:	RE Length: 5m	

CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 19/6/11 Assessor: CF, AH Job: 60188431 Datum:

Crossing: Original; Proposed Change **Name:** Auto Ch. **Type:** Road; Powerline; Pipeline; Other *wood as str*

Mapped RE: 11.3.5/11.3.2	Observed RE: 11.3.25	RE Length: 10	N ↑ ROW direction
Vegetation on ↑ side: <i>C. tessellaris, E. tecticornis, Melaleuca gungahurra (R), Melaleuca bracteata (F), Rubber Urel (A), Ficus sp. (R), Grass Panic (D), Bauhinia (R), Horia sp. (R)</i>		Photo: 566	
Crossing description: <i>no flowing, seasonal, fish, algae water quality good</i>		Wpt: CF 024	UN228 ↓ ROW direction
← Direction: NW		KP: 275.6	
Photo: 567		Width: 8	
		Direction → NE	
Vegetation on ↓ side: <i>same as right</i>		Photo: 568	
Mapped RE: 11.3.5/11.3.2	Observed RE: 11.3.25	RE Length: 10	S

Notes / Recommendations (if clearance exists, estimate length)

ups stream

Crossing: Original; Proposed Change **Name:** **Type:** Road; Powerline; Pipeline; Other

Mapped RE:	Observed RE:	RE Length:	↑ ROW direction
Vegetation on ↑ side:		Photo:	
Crossing description:		Wpt:	↓ ROW direction
← Direction:		KP:	
Photo:		Width:	
		Direction →	
Vegetation on ↓ side:		Photo:	
Mapped RE:	Observed RE:	RE Length:	

Notes / Recommendations (if clearance exists, estimate length)

Ecological Data Sheet (to accompany electronic data sheet)

Job Number: ...60188431... ²⁷

Site Number: CF021-JUN201 KP AB280.1 Sheets completed: Flora; Fauna; Wetland

Assessor: CF + Ari Date: 19.16.2011 Time: 1200

Location: Nth of Murrumbidgee near Aps. Cr.

Tertiary Flora Assessment (measured in 50m x 10m plot)

All woody species present within 50m x 10m plot (plus dominant, characteristic and threatened non-woody species)

<i>Bursaria spinosa</i>	S				F	
<i>Drypetes deblanchei</i>	S				F	
<i>Melia azedarach</i>	T	O			F	
<i>Acacia fasciculata</i>	T		F		F	
<i>Hovea</i> sp.	S				F	
<i>Alphitonia excelsa</i>	T				O	
<i>Cassia ovata</i>	S				F	
<i>Alectryon oleifolius</i> (S)	T		O			
<i>Corymbia clarksoniana</i> L	T	O				
<i>Pterocaulon sphaletum</i>	F				O	
<i>Heteropogon confertus</i>	G				O	
<i>Anstida</i> sp.	G				R	
<i>Melinis repens</i> *	G					R
<i>Lantana camara</i> **	S				O	
<i>Malvastrum americanum</i> *	F				O	
<i>Sida cordifolia</i> †	F				O	
<i>Pennisetum ciliare</i> *	G					R
Median Ht (m)		10	5		25	05
Ht Range (m)		9-10	-	-	2-3	-
Visual Cover (%)		<5	<5		60	20
Recruitment (Yes / No / %)						

Species annotations: S = Specimen Collected; * = Exotic Species; ** = Declared Species; † = Outside but adjoining 50m x 10m plot
 Height categories: E = Emergent; T1 = Tree 1 stratum, T2 = Tree 2 stratum, T3 = Tree 3 stratum, S1 = Shrub 1 stratum, S2 = Shrub 2, G = Ground stratum
 Form: T = Tree; S = Shrub; G = Grass; R = Rush / Sedge; F = Forb (i.e. herb); V = Vine; E = Epiphyte; A = Aquatic; Seed = Seedling; Sap = Sapling
 Relative dominance (abundance within strata): D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare
 Abbreviations: N/A = Not Applicable; N/R = Not Recorded; N/O = None Observed

Site / Waypoint #:

Tertiary Flora Assessment (measured in 50m x 10m plot) - continued

RE Map	11.11.11 / 11.11.18 / 11.11.14			
Survey result	HVR			

Width of RE (if linear): n/a; <35m wide; 35-75m; 75-150m; 150-300m; >300m; not linear

Total RE Area: n/a; <1ha; 1-5ha; 5-20ha; 20-50ha; 50-250ha; >250ha

Dominant Stratum Form: Tree; Shrub; Forb; Grass; Aquatic

Epiphytes	Absent; Scattered (1-5); Common (6-10); Abundant (>10)		
Vines	Absent; Scattered (1-5); Common (6-10); Abundant (>10)	Cryptogams	0%; 1-25%; 26-75%; >75%

WATERCOURSE CROSSING VEGETATION RECORD

Entered MK

beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 2/7/11 Assessor: CL/CF Job: 60188431 Datum:

Crossing: Original Name: Amo ck

upstream

Mapped RE: 11-3-11	Observed RE: 11-3-3	RE Length: 30m	W ↑ ROW direction
Bank Type: <u>Earth</u> ; Sandy; Rocky	Slope: Gentle; <u>Steep</u> ; Cliff	Height: 5 m		Photo: CL 257
Vegetation on ↑ side: <u>Euc coolabah</u> (D) <u>Euc tereticornis</u> (F) <u>Mel linanfolia</u> (F) <u>Ficus opposita</u> (F) <u>Lysiphyllum hookeri</u> (O) <u>Casuarina cunninghamii</u> (O) <u>Agrostis houstonianum</u> * (O) <u>Urochloa mosambicensis</u> * (A) (canopy 70%, 20m) <u>Cryptostegia gracilliflora</u> * (F) <u>Xanthum occidentale</u> * (O) <u>Asclepias curassavica</u> * (R)			↓ ROW direction
Crossing description: flowing channel - 4m wide x <1m deep earth bed with cobbles (5-10cm)		Wpt: CF 62-JUN130		Photo: CL 256
← Direction: S			Photo: CL 258
Vegetation on ↓ side: More open than west side (5%) - Non-remnant <u>Bothriochloa blakleyi</u> (A) <u>Melaleuca bracteata</u> (R)			↑ ROW direction
Bank Type: <u>Earth</u> ; Sandy; Rocky	Slope: Gentle; <u>Steep</u> ; Cliff	Height: 6 m		Photo: 40m
Mapped RE: 11-3-11	Observed RE: 11-3-3	RE Length: CL 259	F ↓ ROW direction

Wetland Assessment

- River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other.....
- Saline; Brackish; Fresh
- Seasonal; Perennial; Seasonal; Intermittent
- Turbid; Clear; Stagnant; Polluted; Algae
- Streamflow; Dry; Pool; Run; Riffle; Cascade; Fall
- Submerged; Floating; Emergent Non-woody; Emergent Woody
- Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)

good crossing point

Crossing: Proposed Change Name:

Mapped RE:	Observed RE:	RE Length:	↑ ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m		Photo:
Vegetation on ↑ side:			↓ ROW direction
Crossing description:		Wpt:		Photo:
← Direction:			Photo:
Photo:			Width:
Vegetation on ↓ side:			Direction →
			Photo:
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m	↑ ROW direction
Mapped RE:	Observed RE:	RE Length:	

WATERCOURSE CROSSING VEGETATION RECORD

beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Entered MR 29

Date: 2/7/11 Assessor: CL/CF Job: 60188431 Datum:

Crossing: Original Name: Endrick Ck

Downstream

Mapped RE: 11.3.26/11.3.4/11.3.25/11.3.1	Observed RE: 11.3.25	RE Length: 15m	E ↑ ROW direction
Bank Type: (Earth) Sandy; Rocky Slope: Gentle; (Steep) Cliff Height: 3 m	Photo: CL 261		
Vegetation on ↑ side: Euc tereticornis (D) Mel linariifolia (F) Ficus opposita (O) Lycopodium hookeri (O) Ac. fasciculifera (O) Euc populnea (O) Ac. salicina (O) Urochloa mosambicensis* (F) Heteropogon contortus (F) Cryptoslegia grandiflora* (O) Xanthium occidentale (O) Megathyrsus maximus* (F)			↓ ROW direction
Crossing description: Permanent pool 6-8m wide X > 1m deep		Wpt: CF-63-J UN231	
← Direction N	Photo: CL 260	Bed Width:	S → Photo: CL 262
Vegetation on ↓ side: Same as east side		Direction → S	
Bank Type: (Earth) Sandy; Rocky Slope: Gentle; (Steep) Cliff Height: 3 m	Photo: CL 263		W ↓ ROW direction
Mapped RE: 11.3.26/11.3.4/11.3.25/11.3.1	Observed RE: 11.3.25	RE Length: 20m	

Wetland Assessment

River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other
 Saline; Brackish; Fresh Seasonal; Perennial; Seasonal; Intermittent landholder, pers comm
 Turbid; Clear; Stagnant; Polluted; Algae Stream flow; Dry; Pool; Run; Riffle; Cascade; Fall
 Submerged; Floating; Emergent Non-woody; Emergent Woody
 Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)
 Move away from permanent hole - ≈ 100m to N (upstream)

Entered MR

Crossing: Proposed Change Name:

Mapped RE:	Observed RE: 11.3.25	RE Length:	E ↑ ROW direction
Bank Type: (Earth) Sandy; Rocky Slope: Gentle; (Steep) Cliff Height: 3 m	Photo: CL 265		
Vegetation on ↑ side: Similar to CF63 also Geigeria salicifolia (O)			↓ ROW direction
Crossing description: Seasonal pool, 6m wide X < 1m deep		Wpt: CF 64-J	
← Direction N	Photo: CL 264	KP: AB 285.4 north	S → Photo: CL 266
Vegetation on ↓ side:		Width:	
Bank Type: (Earth) Sandy; Rocky Slope: Gentle; (Steep) Cliff Height: 4 m	Photo: CL 267		W ↓ ROW direction
Mapped RE:	Observed RE:	RE Length: 30m	

WATERCOURSE CROSSING VEGETATION RECORD

Entered MK

Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 2/7/11 Assessor: CL/CF Job: 60188431 Datum:

Crossing: Original Name: Tributary of Endrick Cr

Mapped RE: 11.3.26/11.3.4/11.3.25/11.3.1	Observed RE: 11.3.25	RE Length: 20m	ROW direction ↑
Bank Type: Earth ; Sandy; <u>Rocky</u> Slope: <u>Gentle</u> ; Steep; Cliff Height: 2 m	Photo: CL 269		
Vegetation on ↑ side: <i>Euc tereticornis</i> (O) <i>Mel bracteata</i> (O) <i>Mel (3 veined leaf)</i> (O) ~ 8m tall <i>Euphyllium hookeri</i> (O) <i>Euc populnea</i> (O) <i>Mel linariifolia</i> (O) <i>Xanthium occidentale</i> * (O) <i>Heteropogon contortus</i> (F) <i>Urochloa sambicensis</i> * (F) <i>Cryptostegia grandiflora</i> ** (O) <i>Passiflora suberosa</i> * (O) <i>Bathrachloa benthamii</i> * (F)			ROW direction ↓
Crossing description: Shale outcrops along creek bed + banks ← Direction N Pool 1-3m wide x < 0.5m deep		Wpt: CF-65-J (UN 232)	
Photo: CL 268	Spangled perch	KP: AB 286-4	
		Bed Width: 3m	
		Direction → S	
		Photo: CL 270	
Vegetation on ↓ side: Similar but less dense			W
Bank Type: Earth ; Sandy; <u>Rocky</u> Slope: <u>Gentle</u> ; Steep; Cliff Height: 2 m	Photo: CL 271		
Mapped RE: 11.3.26/11.3.4/11.3.25/11.3.1	Observed RE: 11.3.25	RE Length: 10m	

Wetland Assessment

River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other
 Saline; Brackish; Fresh Seasonality: Perennial; Seasonal; Intermittent
 Turbid; Clear; Stagnant; Polluted; Algae Streamflow: Dry; Pool; Run; Riffle; Cascade; Fall
 Submerged; Floating; Emergent Non-woody; Emergent Woody
 Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)

not quite right angle.
good crossing point

Crossing: Proposed Change Name:

Mapped RE:	Observed RE:	RE Length:	ROW direction ↑
Bank Type: Earth; Sandy; Rocky Slope: Gentle; Steep; Cliff Height: m	Photo:		
Vegetation on ↑ side:			ROW direction ↓
Crossing description: ← Direction		Wpt:	
Photo:		KP:	
		Width:	
		Direction →	
		Photo:	
Vegetation on ↓ side:			← ROW direction
Bank Type: Earth; Sandy; Rocky Slope: Gentle; Steep; Cliff Height: m	Photo:		
Mapped RE:	Observed RE:	RE Length:	

WATERCOURSE CROSSING VEGETATION RECORD

Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 2/7/11 Assessor: CL/CF Job: 60188431 Datum:

Crossing: Original Name: Tributary of Endrick Cr Downstream

Mapped RE: 11.3.26/11.3.24/11.3.25	Observed RE: 11.3.25	RE Length: 20m	SE
Bank Type: Earth, Sandy, Rocky	Slope: Gentle, Steep, Cliff	Height: 4 m	Photo: CL 274
Vegetation on ↑ side: Mel fluviatilis (D) Euc tereticornis (O) Mel linanifolia Cyperus latifolius (R) Lycopodium hookeri (O) Drypetes deplanchei (O) Cor tessellaris (O) Ac salicina (O) Mel bracteata (O) Maclura cochinchinensis (R) Mallotus philippinensis (O) Ac fasciculifera (O) Conarium australicum (R) Lantana camara** (A) Urochloa mosambicensis* (F) Cryptostegia grandiflora** (F)			↑ ROW direction
Crossing description: flowing channel 2m wide x <0.5m deep		Wpt: CF-66-J UN 50	
← Direction NE		KP: AB 289.2	
Photo: CL 273		Bed Width: 6m	
		Direction → SW	
		Photo: CL 275	
Vegetation on ↓ side: Same as SE side (canopy 15m, 80%)			↓ ROW direction
Sclerum safothiarum* (O) Rivina humilis* (O)			
Bank Type: Earth, Sandy, Rocky	Slope: Gentle, Steep, Cliff	Height: 3 m	Photo: CL 272
Mapped RE:	Observed RE: 11.3.25	RE Length: 20m	NW

Wetland Assessment Upstream

Type: River, Creek, Lake (>8ha), Pool (<8ha), Dam, Marsh, Other.....

Salinity: Saline, Brackish, Fresh Seasonality: Perennial, Seasonal, Intermittent

Water condition: Turbid, Clear, Stagnant, Polluted, Algae Stream flow: Dry, Pool, Run, Riffle, Cascade, Fall

Vegetation: Submerged, Floating, Emergent Non-woody, Emergent Woody

Instream habitat features: Island, Mud flat, Shallows, Deep open water, Snags, Rocks, Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)

Move crossing downstream

Crossing: Proposed Change	Name:		
Mapped RE: Non rem	Observed RE: Non rem	RE Length: —	SW
Bank Type: Earth, Sandy, Rocky	Slope: Gentle, Steep, Cliff	Height: 3 m	Photo: CL 278
Vegetation on ↑ side: Mel fluviatilis (O) Mel linanifolia (O) Ac salicina (O) Lycopodium hookeri (O) Mel bracteata (O) Lantana camara** (O) Cryptostegia grandiflora** (F) Urochloa mosambicensis* (A) (Canopy 10m <5%)			↑ ROW direction
Crossing description: - flowing channel 1-2m wide x <0.5m deep		Wpt: CF67-J UN 51	
← Direction SE		KP: Wpt 289.2 west	
Photo: CL 277		Width: 6m	
		Direction → NW	
		Photo: CL 279	
Vegetation on ↓ side: Same as SW side			↓ ROW direction
Bank Type: Earth, Sandy, Rocky	Slope: Gentle, Steep, Cliff	Height: 3 m	Photo: CL 276
Mapped RE: Non rem	Observed RE: Non rem	RE Length: —	NE

Entered M.K.

WATERCOURSE CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 17/6/11 Assessor: CL-12-J [UN239] Job: 60188431 Datum:

Crossing: Original Name: DEVELIN CK upstream

Mapped RE: 11.3.4/11.3.26/11.3.25	Observed RE: 11.3.25	RE Length:	W ↑ ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 6 m		Photo: CL 43
Vegetation on ↑ side: Euc tereticornis (0), Cor tessellaris (D), Lophostemon grandiflorus (F), Lysiphyllum hookeri (0), Mel fluviatilis (F), Mallotus philippinensis (0), Cryptostegia grandiflora ** (0)			

Crossing description:	cobbles abundant	Wpt: CL-12-J
← Direction S	channel flowing 4 m wide	KP: AB303.1
Photo: CL 41	bed 10 m wide	Bed Width:
		Direction → N
		Photo: CL 39

Vegetation on ↓ side: Aofa W side	E ↓ ROW direction		
Bank Type: Earth; Sandy; Rocky		Slope: Gentle; Steep; Cliff	Height: 9 m	Photo: CL 40
Mapped RE: 11.3.4/11.3.26/11.3.25	Observed RE: 11.3.25	RE Length:	

- River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other
- Saline; Brackish; Fresh; Perennial; Seasonal; Intermittent
- Turbid; Clear; Stagnant; Polluted; Algae; Dry; Pool; Run; Riffle; Cascade; Fall
- Submerged; Floating; Emergent Non-woody; Emergent Woody
- Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)
 Avoid rainforest to south
 Avoid pool to north

Crossing: Proposed Change	Name:		
Mapped RE:	Observed RE:	RE Length:	↑ ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m		Photo:
Vegetation on ↑ side:			
Crossing description:	Wpt:	KP:	↑ ROW direction
← Direction	Width:	Direction →	
Photo:	Photo:		
Vegetation on ↓ side:			
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m	Photo:
Mapped RE:	Observed RE:	RE Length:	↓ ROW direction

Tertiary Flora Assessment (measured in 50m x 10m plot) - continued

RE Map	11.9.9 / 11.3.4	—	LC/OC	NC/OC
Survey result	11.9.9	—	LC	NC

Width of RE (if linear): n/a; <35m wide; 35-75m; 75-150m; 150-300m; >300m; not linear

Total RE Area: n/a; <1ha; 1-5ha; 5-20ha; 20-50ha; 50-250ha; >250ha

Dominant Stratum Form: Tree; Shrub; Forb; Grass; Aquatic

Epiphytes	<u>Absent</u> ; Scattered (1-5); Common (6-10); Abundant (>10)		
Vines	<u>Absent</u> ; Scattered (1-5); Common (6-10); Abundant (>10)	Cryptogams	0%; <u>1-25%</u> ; 26-75%; >75%

Ecological Data Sheet (to accompany electronic data sheet)

Job Number: ...60188431...

Site Number: CL-11-5 KP AB 312.4 Sheets completed:

Flora; Fauna; Wetland

Assessor: CL UN211 Date: 17.6.2011

Time: 2 pm

Location:

Tertiary Flora Assessment (measured in 50m x 10m plot)

11.9.9

All woody species present within 50m x 10m plot (plus dominant, characteristic and threatened non-woody species)

<i>Euc moluccana</i>	T		D				
<i>Brachychiton rupestris</i>	T		R				
" <i>australis</i>	T		R				
<i>Alphitonia excelsa</i>	T			O			
<i>Cyclophyllum coprosmoides</i>	T			F			
<i>Diospyros</i> sp	T			F			
<i>Archidendropsis basaltica</i>	T			O			
<i>Cyrtina latifolia</i>	T			O			
<i>Bussaria sp</i>	S					O	
<i>Lycophyllum</i>	F				R		
<i>Carissa ovata</i>	S					F	
<i>Ficus opposita</i>	S					R	
<i>Jasminum dichyllum</i>	V					O	
<i>Calyptochloa gracillima</i>	G						D
<i>Opuntia tomentosa</i> **	S			R			
<i>Harrissia martinii</i> **	S						R
<i>Solanum mauritianum</i> *	V			R			
<i>Gahnia aspera</i>	R						R
Median Ht (m)			20	4		1.5	0.2
Ht Range (m)			-	-		-	-
Visual Cover (%)			25	40		10	70
Recruitment (Yes / No / %)			Y	Y			

Species annotations: S = Specimen Collected; * = Exotic Species; ** = Declared Species; + = Outside but adjoining 50m x 10m plot
 Height categories: E = Emergent; T1 = Tree 1 stratum, T2 = Tree 2 stratum, T3 = Tree 3 stratum, S1 = Shrub 1 stratum, S2 = Shrub 2, G = Ground stratum
 Form: T = Tree; S = Shrub; G = Grass; R = Rush / Sedge; F = Forb (i.e. herb); V = Vine; E = Epiphyte; A = Aquatic; Seed = Seedling; Sap = Sapling
 Relative dominance (abundance within strata): D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare
 Abbreviations: N/A = Not Applicable; N/R = Not Recorded; N/O = None Observed

Site / Waypoint #:

Tertiary Flora Assessment (measured in 50m x 10m plot) - continued

RE Map	11.9.9 / 11.3.4		LC/OC	
Survey result	11.9.9		LC	

Width of RE (if linear): n/a; <35m wide; 35-75m; 75-150m; 150-300m; >300m; not linear

Total RE Area: n/a; <1ha; 1-5ha; 5-20ha; 20-50ha; 50-250ha; >250ha

Dominant Stratum Form: Tree; Shrub; Forb; Grass; Aquatic

Epiphytes	Absent; Scattered (1-5); Common (6-10); Abundant (>10)		
Vines	Absent; Scattered (1-5); Common (6-10); Abundant (>10)	Cryptogams	0%; 1-25%; 26-75%; >75%

Ecological Data Sheet (to accompany electronic data sheet)

Job Number: ...60188431... SS

Site Number: CL-9-J KP AB 319.7 Sheets completed: Flora; Fauna; Wetland

Assessor: VN208 Date: 17.1.6 / 2011 Time:

Location: Fitzroy River

Tertiary Flora Assessment (measured in 50m x 10m plot)

All woody species present within 50m x 10m plot (plus dominant, characteristic and threatened non-woody species)

* E bank								
<i>Mel. linariifolia</i>	T	O						
<i>Parthenium hysterophorus</i> **	H							R
<i>Chrysobogon filipes</i>	G							R
<i>Xanthium occidentale</i> *	S							F
<i>Pennisetum cilense</i> *	G							F
<i>Cynodon dactylon</i> *	G							F
<i>Panicum sp</i>	H							O
<i>Cyperus rotundus</i> *	R							O
Ht		3						0.2-0.5
%		<<5%						80%
<hr/>								
* W bank								
<i>Mel. fluviatilis</i>	T		D					
<i>Mel. linariifolia</i>	T			O				
<i>Euc. tereticornis</i>	T		R					
<i>Euc. coolabah</i>	T		O					
<i>Mel. saligna</i>	T			O				
<i>Pennisetum cilense</i> *	G							F
<i>Cynodon dactylon</i> *	G							F
<i>Panicum sp</i>	H							O
<i>Cyperus rotundus</i> *	R							O
<i>Argemone ochroleuca</i> *								
Median Ht (m)			20	4				0.3
Ht Range (m)								
Visual Cover (%)			50%	5%				50%
Recruitment (Yes / No / %)			Y	Y				

Species annotations: S = Specimen Collected; * = Exotic Species; ** = Declared Species; + = Outside but adjoining 50m x 10m plot
 Height categories: E = Emergent; T1 = Tree 1 stratum, T2 = Tree 2 stratum, T3 = Tree 3 stratum, S1 = Shrub 1 stratum, S2 = Shrub 2, G = Ground stratum
 Form: T = Tree; S = Shrub; G = Grass; R = Rush / Sedge; F = Forb (i.e. herb); V = Vine; E = Epiphyte; A = Aquatic; Seed = Seedling; Sap = Sapling
 Relative dominance (abundance within strata): D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare
 Abbreviations: N/A = Not Applicable; N/R = Not Recorded; N/O = None Observed

Site / Waypoint #:

Tertiary Flora Assessment (measured in 50m x 10m plot) - continued

RE Map	Non-remnant boundary of HVR			
Survey result	11-3.25 on west bank, Non-rem on east bank			

Width of RE (if linear): n/a; <35m wide; 35-75m; 75-150m; 150-300m; >300m; not linear

Total RE Area: n/a; <1ha; 1-5ha; 5-20ha; 20-50ha; 50-250ha; >250ha

Dominant Stratum Form: Tree; Shrub; Forb; Grass; Aquatic

Epiphytes	Absent; Scattered (1-5); Common (6-10); Abundant (>10)		
Vines	Absent; Scattered (1-5); Common (6-10); Abundant (>10)	Cryptogams	0%; 1-25%; 26-75%; >75%

Pig diggings common.

Dead trees common

Avoid large trees where possible

WATERCOURSE CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 17/6/11 9:45 am Assessor: CL-9 Job: 60188431 Datum:

Crossing: Original Name: Fitzroy River

Mapped RE: HVR	Observed RE: 11.3.25	RE Length:	W ↑ ROW direction	
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 10 m		Photo: CL-30
Vegetation on ↑ side: Euc. coolabah (O) Mel linariifolia (O) Melaleuca flavratilis (D) Euc tereticornis (R)		see detailed (Survey sheet)		

Crossing description: 50 m wide flowing channel	Wpt: CL-9-5 (un208)
← Direction S	KP: AB 319.7
Photo: CL-29	Bed Width: 100 m
- wood ducks, ascent flood has killed trees on lower bank, no floating or emergent vegetation evident	
Direction → N	
Photo: CL-26	

Vegetation on ↓ side: cleared - Cynodon dactylon (A) Pennisetum ulion (A) Xanthum occidentale (A) Melaleuca linariifolia (O)	W ↓ ROW direction
Bank Type: Earth; Sandy; Rocky	
Mapped RE: non-remnant, HVR bandish	
Observed RE: Non-rem	RE Length:

- River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other
- Saline; Brackish; Fresh
- Turbid; Clear; Stagnant; Polluted; Algae
- Dry; Pool; Run; Riffle; Cascade; Fall
- Submerged; Floating; Emergent Non-woody; Emergent Woody.
- Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)

Crossing: Proposed Change Name:

Mapped RE:	Observed RE:	RE Length:	W ↑ ROW direction	
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m		Photo:
Vegetation on ↑ side:				

Crossing description:	Wpt:
← Direction	KP:
Photo:	Width:
Direction →	
Photo:	

Vegetation on ↓ side:	W ↓ ROW direction
Bank Type: Earth; Sandy; Rocky	
Mapped RE:	
Observed RE:	RE Length:

Ecological Data Sheet (to accompany electronic data sheet)

Job Number: ...60188431... 37

Site Number: CL-15-J KP AB 328.1 Sheets completed:

Flora: Fauna; Wetland

Assessor: CL UN22 Date: 18.1.6.2011

Time: 11:50 am

Location: Redbank

Tertiary Flora Assessment (measured in 50m x 10m plot)

All woody species present within 50m x 10m plot (plus dominant, characteristic and threatened non-woody species)

<i>Euc crebra</i>	T		D				
<i>Euc melanophloia</i>	T		O				
<i>Cor dallachyana</i>	T		R				
<i>Poydhase sp</i>	T			O			
<i>Acacia bidwillii</i>	S				O		
<i>Carissa ovata</i>	S				O		
<i>Caprois mitchellii</i>	S				R		
<i>Cryptostegia grandiflora</i> **	V						
<i>Bothriochloa pertusa</i> *	G						F
<i>Enchylaena tomentosa</i>	H						O
<i>Heteropogon contortus</i>	G						O
<i>Themeda triandra</i>	G						O
<i>Eragrostis sp</i>	G						IF
<i>Chloris divaricata</i>	G						F
<i>Chloris virgata</i> *	G						O
<i>Melinis repens</i> *	G						O
<i>Stachytarpheta jamaicensis</i> *	H						R
<i>Stylosanthes scabra</i> *	H						O
<i>Urochloa mosambicensis</i> †	G						O
<i>Panicum effusum</i>	G						F
<i>Pterocaulon sphacelatum</i>	H						O
Median Ht (m)			8		3	1	0.4
Ht Range (m)			6-12				
Visual Cover (%)			5%		<<5%	<<5%	50%
Recruitment (Yes / No / %)			Y		Y	Y	

Species annotations: S = Specimen Collected; * = Exotic Species; ** = Declared Species; += Outside but adjoining 50m x 10m plot
 Height categories: E = Emergent; T1 = Tree 1 stratum, T2 = Tree 2 stratum, T3 = Tree 3 stratum, S1 = Shrub 1 stratum, S2 = Shrub 2, G = Ground stratum
 Form: T = Tree; S = Shrub; G = Grass; R = Rush / Sedge; F = Forb (i.e. herb); V = Vine; E = Epiphyte; A = Aquatic; Seed = Seedling; Sap = Sapling
 Relative dominance (abundance within strata): D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare
 Abbreviations: N/A = Not Applicable; N/R = Not Recorded; N/O = None Observed

Site / Waypoint #:

Tertiary Flora Assessment (measured in 50m x 10m plot) - continued

RE Map	HVR - E	-	E	-
Survey result	HVR of 11.9.9?	-	LC	-

Width of RE (if linear): n/a; <35m wide; 35-75m; 75-150m; 150-300m; >300m; not linear
 Total RE Area: n/a; <1ha; 1-5ha; 5-20ha; 20-50ha; 50-250ha; >250ha
 Dominant Stratum Form: Tree; Shrub; Forb; Grass; Aquatic

Epiphytes	Absent; Scattered (1-5); Common (6-10); Abundant (>10)		
Vines	Absent; Scattered (1-5); Common (6-10); Abundant (>10)	Cryptogams	0%; 1-25%; 26-75%; >75%

WATERCOURSE CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 18/6/11 Assessor: CL Job: 60188431 Datum:

Crossing: Original Name: Entered MR. Downstream

Mapped RE: Non-rem	Observed RE: HVR of 11.3-1	RE Length:	N ↑ ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 4 m		Photo: CL 50
Vegetation on ↑ side: Ac. harpophylla (D), Cas cristata (O) Cryptostegia grandiflora** (A) Lycopodium hookeri (O) Mel linariifolia (O) Euc. coolibah (O) Xanthium occidentale (O) Megathyrsus maximus* (D) Parthenium hysterophus**			S ↓ ROW direction
Crossing description: pool 5m wide, >1m deep, ~1m visibility channel 10m wide straight for 500m? Some Nymphaea nearby		Wpt: CL-165 UN240 KP: AB 332.2 Bed Width: Direction → E Photo: CL 51	
Vegetation on ↓ side: As for N side			
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 4 m	Photo: CL 52
Mapped RE: As above	Observed RE: As above	RE Length:	

Wetland Assessment upstream

Type: River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other.....

Salinity: Saline; Brackish; Fresh

Seasonality: Perennial; Seasonal; Intermittent

Water condition: Turbid; Clear; Stagnant; Polluted; Algae

Stream flow: Dry; Pool; Run; Riffle; Cascade; Fall

Vegetation: Submerged; Floating; Emergent Non-woody; Emergent Woody.

Instream habitat features: Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)

Numerous rubber vine towers.

Entered MR.

Crossing: Proposed Change Name: Entered MR.

Mapped RE: Non-remnant	Observed RE: Non rem.	RE Length:	N ↑ ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 4 m		Photo: 54
Vegetation on ↑ side: no trees for 50m			S ↓ ROW direction
Crossing description: floating waterplant (F) Ottelia? photo		Wpt: CL-17 UN241 KP: AB 332.2 south Width: E Direction → Photo: CL 55	
Vegetation on ↓ side: Ac harpophylla (O) Cryptostegia grandiflora** (A) Pardiospermum sp (O) Lycopodium hookeri (O)			
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 4 m	Photo: CL 57
Mapped RE:	Observed RE: Non rem	RE Length:	

WATERCOURSE CROSSING VEGETATION RECORD

Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 1/9/11 Assessor: CL/ML Job: 60188431 Datum:

Crossing: Original Name: Wet Pully (HVR of 11.3.25?) KP AB 336.2

Mapped RE: HVR (E)	Observed RE: HVR (LC)	RE Length: 10m	S ↑ ROW direction	
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 1 m		Photo: CL 636
Vegetation on ↑ side: Mel. fluviatilis (D) Ac. harpophylla (O) Ac. farnesiana (O) Ac. salicina (O) Ac. fasciculifera (O) Cor. tessellaris (O) Geigeria latifolia (O) Diospyros humilis (R) Mal. bracteata (O) Canopy 10m, 10% Gomphocarpus physocarpus* (O) Cryptostegia grandiflora* (O) Plectranthus hysterocephalus (O) Pennisetum ciliare* (O) Heteropogon contortus (A)				
Crossing description: 4m channel		Wpt: CL 013-S	N ← ROW direction	
← Direction E recent flow.		KP: AB 336.2		
Photo: CL 635		Bed Width: 4m		
		Direction → W Photo: CL 637		
Vegetation on ↓ side: As for S bank. further to N - regrowth / partially cleared patch of Euc. populnea (HVR of 11.3.2)				
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 1 m	Photo: CL 634	
Mapped RE: HVR (E)	Observed RE: HVR (LC)	RE Length: 10m		

Wetland Assessment

Type: River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other.....
 Salinity: Saline; Brackish; Fresh Seasonality: Perennial; Seasonal; Intermittent
 Water condition: Turbid; Clear; Stagnant; Polluted; Algae Stream flow: Dry; Pool; Run; Riffle; Cascade; Fall
 Vegetation: Submerged; Floating; Emergent Non-woody; Emergent Woody
 Instream habitat features: Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)

Matto just north of cell grazing paddock fence (reduced grazing impacts, less riparian veg →)

Crossing: Proposed Change Name:

Mapped RE:	Observed RE: cleared	RE Length:	S ↑ ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 1 m		Photo: CL 640
Vegetation on ↑ side: Mel. fluviatilis (F) Mel. bracteata (R) Ac. fasciculifera (F) Cor. tessellaris (R) Canopy 10m, <5% Weeds as for original crossing			
Crossing description: 3m channel, recent flow		Wpt: CL 014-S	N ← ROW direction
← Direction E		KP: End AB 336.2	
Photo: CL 639		Width: 3m	
		Direction → W Photo: CL 641	
Vegetation on ↓ side: As for S bank.			
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 1 m	Photo: CL 638
Mapped RE:	Observed RE: cleared	RE Length:	

WATERCOURSE CROSSING VEGETATION RECORD

Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 19/06/11 Assessor: JB+JW Job: 60188431 Datum:

Crossing: Original Name: 2 mile creek / Kallawero Creek

Mapped RE: 11.3.25/11.3.4/11.3.2 Observed RE: 11.3.25 RE Length: 5m
 Bank Type: Earth Sandy; Rocky Slope: Gentle; Steep Cliff Height: 5 m Photo: JB1080-19
 Vegetation on ↑ side: cleared ag/grazing land

mei fluviatilis (F); Allo-cunninghamiana (O); Euc tere (O), cong tess (O);
 Bauhinia carolin (O), Santalum tanie (O); Euc rareretiana (F)
 Weeds: A. horst, Parthenium **; Ac fainesiana, Noogoera buer; cobbles peg; Melinus repens
 Lian's tail

Crossing description:
 ← Direction N see waterway assessment below
 Photo: JB1080-18
 Wpt: JW0235 + JW023a + JW023b
 KP: ~~AB 349.3~~ (a-b) north
 Bed Width: 4m
 Direction → S
 Photo: JB1080-20

Vegetation on ↓ side: AS E of bank
 cleared ag/grazing land

Bank Type: Earth Sandy; Rocky Slope: Gentle Steep; Cliff Height: 3 m Photo: JB1080-21
 Mapped RE: 11.3.25/11.3.4/11.3.2 Observed RE: 11.3.25 RE Length: 10m

Wetland Assessment

Type: River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other.....
 Salinity: Saline; Brackish; Fresh Seasonality: Perennial; Seasonal; Intermittent
 Water condition: Turbid; Clear; Stagnant, Polluted; Algae Stream flow: Dry; Pool; Run; Riffle; Cascade; Fall
 Vegetation: Submerged; Floating; Emergent Non-woody; Emergent Woody.
 Instream habitat features: Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)
 Avoid large hollow bearing trees (JW023A + JW023B)
 Avoid Euc rareretiana trees by constructing between JW025 & JW024
 ↳ JB1080-22 → 25

Crossing: Proposed Change Name:

Mapped RE: Observed RE: RE Length:
 Bank Type: Earth; Sandy; Rocky Slope: Gentle; Steep; Cliff Height: m Photo:
 Vegetation on ↑ side:

Crossing description:
 ← Direction Wpt:
 Photo: KP:
 Width:
 Direction → Photo:

Vegetation on ↓ side:

Bank Type: Earth; Sandy; Rocky Slope: Gentle; Steep; Cliff Height: m Photo:
 Mapped RE: Observed RE: RE Length:

Ecological Data Sheet (to accompany electronic data sheet)

Job Number: ...60188431... 40

Site Number: CFO20 JUN200 KP AB358.7 Sheets completed: (Flora) Fauna; Wetland

Assessor: CF & AH Date: 18/6/2011 Time: ~1200

Location: East of Laisa Cr.

Tertiary Flora Assessment (measured in 50m x 10m plot)

All woody species present within 50m x 10m plot (plus dominant, characteristic and threatened non-woody species)

<i>E. acubra</i>	T	D					
<i>Dryopteris deplanchei</i>							
<i>Gimbidium canaliculatum</i>	E	O					
<i>Parsonsia</i> sp. (S)	V					R	
Unknown <i>Spindaceae</i> (S)	S					R	
<i>Grewia</i> sp.?? (S)	S					O	
<i>Curatella ovata</i>	S					F	
<i>Aracia fasciculata</i>	T		O				
<i>Bursera spinosa</i>	S					R	
<i>Santalum lanceolatum</i>	T		R				
<i>Mulaleuca</i> sp. (S)	T					R	
<i>Alphitonia excelsa</i>	S					R	
<i>Themeda triandra</i>	G						A
<i>Pennisetum ciliare</i>	G						A
<i>Heteropogon contortus</i>	G						O
<i>Stylosanthes scabra</i>	S						O
<i>Diantha stricta</i>	S					R	R
<i>Chloris virgata</i>	G						T
<i>Imelina repens</i>	G						F
<i>Sida cordifolia</i>	F						O
<i>Stachytarpheta jamaicensis</i>	F						T
<i>Pennisetum ciliare</i>	FG						O
<i>Megathyrsus maritimus</i>	G						O
<i>Lantana camara</i>	S					O	R
Rubber vine	V						R
Median Ht (m)			20				0.5
Ht Range (m)			18-22				0.20-7
Visual Cover (%)			10				100
Recruitment (Yes / No / %)			N				

Species annotations: S = Specimen Collected; * = Exotic Species; ** = Declared Species; + = Outside but adjoining 50m x 10m plot
 Height categories: E = Emergent; T1 = Tree 1 stratum, T2 = Tree 2 stratum, T3 = Tree 3 stratum, S1 = Shrub 1 stratum, S2 = Shrub 2, G = Ground stratum
 Form: T = Tree; S = Shrub; G = Grass; R = Rush / Sedge; F = Forb (i.e. herb); V = Vine; E = Epiphyte; A = Aquatic; Seed = Seedling; Sap = Sapling
 Relative dominance (abundance within strata): D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare
 Abbreviations: N/A = Not Applicable; N/R = Not Recorded; N/O = None Observed

Site / Waypoint #:

Tertiary Flora Assessment (measured in 50m x 10m plot) - continued

RE Map	HVR - E	—	E	—
Survey result	11.11.15	—	LC	LC

Width of RE (if linear): n/a; <35m wide; 35-75m; 75-150m; 150-300m; >300m; not linear
 Total RE Area: n/a; <1ha; 1-5ha; 5-20ha; 20-50ha; 50-250ha; >250ha
 Dominant Stratum Form: Tree; Shrub; Forb; Grass; Aquatic

Epiphytes	Absent; Scattered (1-5); Common (6-10); Abundant (>10)		
Vines	Absent; Scattered (1-5); Common (6-10); Abundant (>10)	Cryptogams	0%; 1-25%; 26-75%; >75%

PCFCF544-547 (N to W)

large amount of dieback on hill, some ringbarked trees, possibly abandoned; Mostly weeds in lower midstorey.

Crowned,

CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 18/6/11 Assessor: CF + AH Job: 60188431 Datum: WRF018

Crossing: Original; Proposed Change Name: ^{TRIBUTARY OF} RIDGELANDS CK Type: (Road) Powerline; Pipeline; Other

Mapped RE: non-remnant	Observed RE: non-remnant	RE Length: 20m thru fence	N ↑ ROW direction
Vegetation on ↑ side: <i>Acacia harpophylla</i> regrowth, <i>E. crebra</i> regrowth, <i>Dicanthium</i> sp. Weeds - <i>Chloris gayana</i> , <i>Stylosanthes scabra</i> , <i>Ageratum hastatum</i>		Photo:	

Crossing description: Road-dirt track 2-3 m wide.	Wpt: C F 018 J UN10
← Direction SE	KP: AB 365.5
Photo: CF 536	Width: 2-3m
	Direction → NW
	Photo: CF 535

Vegetation on ↓ side: same as other side, small drainage depression with <i>Cyperus</i> sp.	S ← ROW direction	
Photo:		
Mapped RE: Non-remnant	Observed RE: non-remnant	RE Length: 20m thru fence

Notes / Recommendations (if clearance exists, estimate length)
- PCF 0531-534 (N to W) Road, not a water crossing. Photos missing.

Entered MR downstream

Crossing: Original; Proposed Change Name: LOUISA CK Type: Road; Powerline; Pipeline; Other (Watercourse)

Mapped RE: H 11.3.25/11.3.4/11.3.2	Observed RE: cleared hvc LC	RE Length: 45m	SE ↑ ROW direction
Vegetation on ↑ side: <i>E. tereticornis</i> adult (O), <i>E. tereticornis</i> regrowth (F), <i>Melaleuca fluviatilis</i> (R), <i>Lantana camara</i> (A), Tobacco (A), Green Panic (A), everything else run by macrophytes , <i>Rubricium</i>		Photo: CF 539	

Crossing description: Permanent water, macrophytes, water quality average, earth banks suitable for <i>Pardalipicus</i> etc.	Wpt: C F 019 J UN11
← Direction E	KP: AB 358.4
Photo: CF 541	Width: 30m
	Direction → SW
	Photo: CF 542

Vegetation on ↓ side: same as other + <i>Ficus opposita</i> (R), <i>Cupaniopsis</i> sp. (R), mostly weeds, <i>Mallotus philippensis</i> (R).	NW ← ROW direction	
Photo: CF 0540		
Mapped RE: 11.3.25/11.3.4/11.3.2	Observed RE: cleared	RE Length: 45m (stops at edge of bank)

Notes / Recommendations (if clearance exists, estimate length)
move > 20m east to avoid v. lge *tereticornis* (> 30m with hollows) upstream

P CF 537-540
540 (lge *tereticornis*)

Ecological Data Sheet (to accompany electronic data sheet)

Job Number: ...60188431...

Site Number: CF-1-J UN 193 KP AB 369.3 Sheets completed:

(Flora) (Fauna) Wetland

Assessor: all Date: 15/6/2011

Time: 1020

Location: Mt. Larcom

Tertiary Flora Assessment (measured in 50m x 10m plot)

All woody species present within 50m x 10m plot (plus dominant, characteristic and threatened non-woody species)

<i>Eucalyptus crebra</i>	D		D					
<i>Corymbia clarksonian</i>			O	O				
<i>Lophostemon scaveolans</i>			O					
<i>Acacia floribunda</i>								
<i>Corymbia erythrophloea</i>				O				
^{asc} <i>Acacia fasciculata</i>							O	
<i>Themeda triandra</i>								R
<i>Heteropogon contortus</i>								O
<i>Panicum</i> sp.								O
<i>Perocaulon saphalatum</i>							O	
<i>Dianella</i> sp.							O	
<i>Hypochaeris rufa</i> *								O
<i>Melinis repens</i> *								R
<i>Sida rhombifolia</i> *								
<i>Lantana camara</i> *							F	
<i>Stylosanthes scabra</i> *							O	
<i>Conyza</i> sp *							R	
<i>Ageratum hastatum</i> *							R	
<i>Gomphocarpus physocarpus</i> *							R	
<i>Emilia sonchifolia</i> *								R
Median Ht (m)								
Ht Range (m)								
Visual Cover (%)								
Recruitment (Yes / No / %)								

Species annotations: S = Specimen Collected; * = Exotic Species; ** = Declared Species; + = Outside but adjoining 50m x 10m plot
 Height categories: E = Emergent; T1 = Tree 1 stratum, T2 = Tree 2 stratum, T3 = Tree 3 stratum, S1 = Shrub 1 stratum, S2 = Shrub 2, G = Ground stratum
 Form: T = Tree; S = Shrub; G = Grass; R = Rush / Sedge; F = Forb (i.e. herb); V = Vine; E = Epiphyte; A = Aquatic; Seed = Seedling; Sap = Sapling
 Relative dominance (abundance within strata): D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare
 Abbreviations: N/A = Not Applicable; N/R = Not Recorded; N/O = None Observed

Site / Waypoint #:

Tertiary Flora Assessment (measured in 50m x 10m plot) - continued

RE Map	HVR - OC			
Survey result	11.11.4			

Width of RE (if linear): n/a; <35m wide; 35-75m; 75-150m; 150-300m; >300m; not linear
 Total RE Area: n/a; <1ha; 1-5ha; 5-20ha; 20-50ha; 50-250ha; >250ha
 Dominant Stratum Form: Tree; Shrub; Forb; Grass; Aquatic

Epiphytes	<u>Absent</u> ; Scattered (1-5); Common (6-10); Abundant (>10)		
Vines	<u>Absent</u> ; Scattered (1-5); Common (6-10); Abundant (>10)	Cryptogams	<u>0</u> %; 1-25%; 26-75%; >75%

Cattle tracks.

WATERCOURSE CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 18/06/11 Assessor: JW+DM Job: 60188431 Datum:

Crossing: Original Name: Limestone Creek Entered upstream

Mapped RE: 11.3.25/11.3.4/11.3.2 Observed RE: 11.3.25 RE Length: 7m
Bank Type: Earth; Sandy; Rocky Slope: Gentle; Steep; Cliff Height: 5 m Photo: DM0911
Vegetation on ↑ side: grazing land w scattered Euc pop & Cory. tess
(weeds: noogoora burr, melini's repens, lucena, A. hoast, snake weed, Malva. americana, Balloon vine)

Euc. raver (D) V; Cory. tess (F); Euc. tere (O); Allocas. cunninghamiana (F); Bauhinia caricata (O); Mel. viminalis (F); Mel. bract (O); Acacia sp (O); Alp. eye (O); White cedar (O)

Crossing description: ← Direction SW
Photo: DM0914
Algae substrate see wetland assessment below
Wpt: JW013 UN162
KP: AB 371
Bed Width: 0
Direction → NE
Photo: DM0912

Vegetation on ↓ side: AS per veg on NW bank

Grazing land w scattered Euc pop & Cory tess.

Bank Type: Earth; Sandy; Rocky Slope: Gentle; Steep; Cliff Height: 5 m Photo: DM0913
Mapped RE: 11.3.25/11.3.4/11.3.2 Observed RE: 11.3.25 RE Length: 10m

River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other
Saline; Brackish; Fresh Perennial; Seasonal; Intermittent (has been for 100yr)
Turbid; Clear; Stagnant; Polluted; Algae Substrate Dry; Pool; Run; Riffle; Cascade; Fall
Submerged; Floating; Emergent Non-woody; Emergent Woody
Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber Bar-shouldered dove, Argy fan tail

Notes / Recommendations (if clearance exists, estimate length)
* vulnerable Euc. raveretiana along banks of water course see alt route below.
* If use this location, HDD required
Ph: DM0909-910
Ph: JW468-478
JW013 SW 50m = 21 Euc rav NE 50m = 10 Euc rav.

Crossing: Proposed Change Name:

Mapped RE: 11.3.25/11.3.4/11.3.2 Observed RE: RE Length: 7m
Bank Type: Earth; Sandy; Rocky Slope: Gentle; Steep; Cliff Height: 5 m Photo: DM0915
Vegetation on ↑ side:
Euc. raveretiana Euc. raveretiana
Euc. tere (O) Euc. tere (O)
Mel. bracteata (F) Mel. bracteata (F)
Mel. viminalis
5m clearing

Crossing description: Trade crossing *Good cond
← Direction SW Water not permanent
Photo: DM0918 Would clear approx:
2 Euc. rav. (10m)
4 Euc. rav. (20m)
8 Euc. rav. (30m)
Wpt: JW014 UN163
KP: 371.3 east
AB Width: 8m
Direction → NE
Photo: DM0916

Vegetation on ↓ side:
Euc. raveretiana 10m Euc. raveretiana
Euc. tere clearing Euc. tere
Mel. brack Mel. brack

Bank Type: Earth; Sandy; Rocky Slope: Gentle; Steep; Cliff Height: 4 m Photo: DM0917
Mapped RE: Observed RE: RE Length: 10m

WATERCOURSE CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Entered MR 45

Date: 4/7/11 Assessor: CL/CF Job: 60188431 Datum:

Crossing: Original Name: Black Gin Ck

Mapped RE: 11-3-4/11-3-25/11-3-2	Observed RE: 11-3-25	RE Length: 20m	↑ ROW direction ↑
Bank Type: (Earth) Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 6 m	
Vegetation on ↑ side: More open than S side. (<5%)			
Crossing description: 10m wide pool > 1m deep		Wpt: CF69-JUN25	↓ ROW direction ↓
← Direction W	Photo: CL 327	KP: AB377.6	
Vegetation on ↓ side: Cor tessellaris (A) Cas. cunninghamii (F) Ac. salicina (O) Mel. quinquinervia (F) Erythrina vespertilio (O) Ac. bidwillii (R) Ficus opposita (O) Euc. crebra (R) Psychas (O) Bothriochloa blakdii (O) Euc. tereticornis (R) Leonotis sp* (O) Heteropogon contortus (F) Ficus rubiginosa (R) (Canopy 12m, 20%) Cryptostegia grandiflora (F) Lantana camara (D) Euphorbia cyathophora (O) Magathyrus maximus* (F)		Bed Width:	S
Bank Type: (Earth) Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 6 m	
Mapped RE: "	Observed RE: 11-3-25	RE Length: 30m	

Wetland Assessment

River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other.....
 Saline; Brackish; Fresh
 Turbid; Clear; Stagnant; Polluted; Algae
 Submerged; Floating; Emergent Non-woody; Emergent Woody
 Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)

Zizyphus mauritiana* on property
Use crossing to east (downstream)

Crossing: Proposed Change Name:

Mapped RE: Non-rem	Observed RE: Regrowth 11-3-25	RE Length: 10m	↑ ROW direction ↑
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 6 m	
Vegetation on ↑ side: Zizyphus mauritiana* (O) Senna occidentalis* (R) Magathyrus maximus (F)			
Crossing description: small flowing channel 2m wide x <0.5m deep		Wpt: CF70-JUN54	↓ ROW direction ↓
← Direction W	Photo: CL 331	KP: AB377.6 east	
Vegetation on ↓ side: Cas. cunninghamii (D) Cor tessellaris (F) Mel quinquinervia (F) Psychas sp (O) Erythrina vespertilio (O) Mallotus philippinensis (R) Heteropogon contortus (F) Ficus rubiginosa (R) Cor. clarksoniana (R) Euphorbia cyathophora* (O) Lantana camara** (F) Cryptostegia grandiflora** (F) Acquatium houstonianum* (O) Passiflora suberosa* (O)		Width: 10m	S
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 6 m	
Mapped RE: Non rem	Observed RE: Regrowth	RE Length: 10m	

11-3-25

WATERCOURSE CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 18/06/2011 Assessor: JW + DM Job: 60188431 Datum:

Crossing: Original **Name:** Lion Creek downstream

Mapped RE: 11.3.25/11.3.4	Observed RE: 11.3.25	RE Length: 15m	SE ↑ ROW direction ↓
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff moderate	Height: 6 m		Photo: DM929
Vegetation on ↑ side: Horneskiad. Ag. grazing land w scath Cory tess & Ang leiocarp			
Euc varerctiana (O); M. fluviatilis (p) Ficus opposita (O); Rubber vine (O); Lantana (F), Solanum sp., Bauhinia sp. ** **		Rubber vine dominant and smothering native veg. **	
Crossing description: ← Direction NE Photo: DM932		see wetland assessment below	
		Wpt: JW020-JUN169 KP: AB 382.7 Bed Width: 8m Direction → SW Photo: DM930	
Vegetation on ↓ side: Same as SE bank.			
Ag grazing land w scath Cory tess & Ang leiocarp			
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 8 m	Photo: DM931
Mapped RE: 11.3.25/11.3.4	Observed RE: 11.3.25	RE Length: 15m	NW

River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other.....

Saline; Brackish; Fresh Perennial; Seasonal; Intermittent

Turbid; Clear; Stagnant; Polluted; Algae - Dam Dry; Pool; Run; Riffle; Cascade; Fall

Submerged; Floating; Emergent Non-woody; Emergent Woody.

Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)
 Euc. varerctiana located along creek, to avoid change crossing to Wpt JW021
 1515 grey fantail
 Restless fly catcher
 crow

Crossing: Proposed Change **Name:** Lion Creek

Mapped RE: 11.3.25/11.3.4	Observed RE: 11.3.25	RE Length: 15m	SE ↑ ROW direction ↓
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 6 m		Photo: JW492
Vegetation on ↑ side: Cory tess (A) Rubber vine (D) Lantana (A)			
No Euc. varerctiana Euc. tess (F) Lantana (A) Rubber vine (A)		Euc. varerctiana (O) Rubber vine (D) Lantana (A)	
Crossing description: ← Direction NE Photo: JW493		see wetland assessment for JW020 12m	
		Wpt: JW021-022J KP: AB 382.7 north Width: 8m Direction → SW Photo: JW493	
Vegetation on ↓ side: Cory tess (A) Rubber vine (D) Lantana (A)			
No Euc. varerctiana same as SE bank		Euc. tess (O) * Avoid large E. tess * Euc. varerctiana (O) to NW Rubber vine (D) ** Lantana (A) ** Opuntia **	
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 4 m	Photo: JW494
Mapped RE: 11.3.25/11.3.4	Observed RE: 11.3.25	RE Length: 15m	NW

Watercourse - JW496

Tertiary Flora Assessment (measured in 50m x 10m plot) - continued

	RE Code	EPBC Status	VM Act Status	DERM Status
RE Map	HVR-0C			
Survey result	11.11.15 ?			

Width of RE (if linear): n/a; <35m wide; 35-75m; 75-150m; 150-300m; >300m; not linear

Total RE Area: n/a; <1ha; 1-5ha; 5-20ha; 20-50ha; 50-250ha; >250ha

Dominant Stratum Form: Tree; Shrub; Forb; Grass; Aquatic

Epiphytes	Absent; Scattered (1-5); Common (6-10); Abundant (>10)		
Vines	Absent; Scattered (1-5); Common (6-10); Abundant (>10)	Cryptogams	0% 1-25%; 26-75%; >75%

General Notes and Recommendations

WATERCOURSE CROSSING VEGETATION RECORD

Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 17/06/2011 Assessor: JWH DM Job: 60188431 Datum:

Crossing: Original Name: Scrubby Creek

Upstream

Mapped RE: <u>Non-rem</u>	Observed RE: <u>Non-rem</u>	RE Length: <u>—</u>	NW ↑ ROW direction
Bank Type: <u>Earth</u> ; Sandy; Rocky	Slope: <u>Gentle</u> ; <u>Steep</u> ; Cliff	Height: <u>6</u> m		Photo: DM0905
Vegetation on ↑ side: <u>Agricultural grazing</u>			↓ ROW direction
<u>Lantana camara (A)*, Luchanap (F) (S); Rubber vine***, Leonotis nepetifolia*</u> <u>Sida sp; macroptilian vine (smothering veg); castor oil*, paria grass, A house</u> <u>Euc tere (O); Cory tess (O); Mel bract (R)</u>			
Crossing description:		<u>Pennisetum elatior (R)</u>	Wpt: <u>JW012-JUN161</u>
← Direction <u>SW</u>		<u>AS per wetland assessment below</u>	KP: <u>B391.4</u>
Photo: <u>DM0908</u>			Bed Width: <u>20</u>
Vegetation on ↓ side: <u>AS NW side of bank</u>			Direction → <u>NE</u>
			Photo: <u>DM0906</u>
Vegetation on ↓ side: <u>Agricultural grazing</u>			SE ↓ ROW direction
Bank Type: <u>Earth</u> ; Sandy; Rocky	Slope: <u>Gentle</u> ; <u>Steep</u> ; Cliff	Height: <u>4</u> m		Photo: DM0907
Mapped RE: <u>Non-rem</u>	Observed RE: <u>Non-rem</u>	RE Length: <u>—</u>	Downstream

Wetland Assessment

Type: River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other.....

Salinity: Saline; Brackish; Fresh Seasonality: Perennial; Seasonal; Intermittent

Water condition: Turbid; Clear; Stagnant; Polluted; Algae Stream flow: Dry; Pool; Run; Riffle; Cascade; Fall

Vegetation: Submerged; Floating; Emergent Non-woody; Emergent Woody.

Instream habitat features: Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)

*cattle tracks near creek edge

grey fantail
redwing parrot
duke
crow
willie wagtail

Crossing: Proposed Change Name:

Mapped RE:	Observed RE:	RE Length:	↑ ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m		Photo:
Vegetation on ↑ side:			↓ ROW direction
Crossing description:				Wpt:
← Direction			KP:
Photo:			Width:
Vegetation on ↓ side:			Direction →
			Photo:
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m	← ROW direction
Mapped RE:	Observed RE:	RE Length:	

UN196 KEVL line, Not on KEV D. 1
Ecological Data Sheet (to accompany electronic data sheet)

Job Number: ...60188431... 48

Site Number: ...CF015... KPI 398.1... Sheets completed: (Flora) Fauna; Wetland

Assessor: ...CF, AH... Date: 7.16.2011 Time: ~1130

Location: ...near Graceville...

Tertiary Flora Assessment (measured in 50m x 10m plot)

PCF496-699

All woody species present within 50m x 10m plot (plus dominant, characteristic and threatened non-woody species)

<i>E. crebra</i>	T	D	F			
<i>C. tessellaris</i>	T					
<i>Coenanthophloia</i>	T	O	F			
<i>Acacia</i> sp.	S		O			
<i>Petalostigma pubescens</i>	T		O			
<i>Bantalum lanceolatum</i>	ST		O			
<i>Heteropogon contortus</i>	G					III
<i>Panicum</i> sp.	G					O
<i>Dicanthium</i> sp.	G					O
<i>Stylosanthes viscosa</i>	S				D	
<i>Aedius repens</i>	G					D
<i>Lantana camara</i>	S				F	
<i>Harrisia cactus</i>	S				R	I
<i>Sida rhombifolia</i>	S				F	
<i>Lantana montioidensis</i>	FS					G
Median Ht (m)		18	6		2	0.75
Ht Range (m)		16-18	5-7		1-2	0.5-1
Visual Cover (%)		15	10		50	50-55
Recruitment (Yes / No / %)						

Species annotations: S = Specimen Collected; * = Exotic Species; ** = Declared Species; += Outside but adjoining 50m x 10m plot
 Height categories: E = Emergent; T1 = Tree 1 stratum, T2 = Tree 2 stratum, T3 = Tree 3 stratum, S1 = Shrub 1 stratum, S2 = Shrub 2, G = Ground stratum
 Form: T = Tree; S = Shrub; G = Grass; R = Rush / Sedge; F = Forb (i.e. herb); V = Vine; E = Epiphyte; A = Aquatic; Seed = Seedling; Sap = Sapling
 Relative dominance (abundance within strata): D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare
 Abbreviations: N/A = Not Applicable; N/R = Not Recorded; N/O = None Observed

master style.

Site / Waypoint #:

Tertiary Flora Assessment (measured in 50m x 10m plot) - continued

RE Map	11-12-1			
Survey result	Resprouts			

Width of RE (if linear): n/a; <35m wide; 35-75m; 75-150m; 150-300m; >300m; not linear
 Total RE Area: n/a; <1ha; 1-5ha; 5-20ha; 20-50ha; 50-250ha; >250ha
 Dominant Stratum Form: Tree; Shrub; Forb; Grass; Aquatic

Epiphytes	Absent	Scattered (1-5);	Common (6-10);	Abundant (>10)		
Vines	Absent	Scattered (1-5);	Common (6-10);	Abundant (>10)	Cryptogams	0%; 1-25%; 26-75%; >75%

PCF 500 - erthyrophora
 501 - /
 502 - stylo cover
 503 - lantana cover

- some remnant trees, cleared mostly weeds, some shrubs.
 east of F point remnant E. crebra woodland.



CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 17/6/11 Assessor: CF & AH Job: 60188431 Datum:

Crossing: Original: Proposed Change Name: tributary of Tea tree CK Type: Road; Powerline; Pipeline; Other

Mapped RE: 11-3-25 / 11-3-4 / 11-3-2	Observed RE: 11-3-25d	RE Length:
Vegetation on ↑ side:	Photo: 487	
see detailed assessment		WPT 197 - see detailed sheet

Crossing description: Riffle, runs, shallows, pools,	Wpt: CF 013-J
← Direction Sth	KP: AB 399.1
Photo: 489	Width: 1.5m
Upstream - S	Direction → Nth
	Photo: 490

Vegetation on ↓ side:	
see detailed assessment	(used to be CF 016 in gps pt)
no better place to cross	
Mapped RE: same as left	Observed RE:
Photo: 485	RE Length:

Notes / Recommendations (if clearance exists, estimate length)

Crossing: Original: Proposed Change Name: CF 016 Type: Road; Powerline; Pipeline; Other

Mapped RE:	Observed RE:	RE Length:
Vegetation on ↑ side:	Photo:	
see detailed sheet		ROW direction ↑

Crossing description: rocky bed with cobbles, flowing in parts, riffles, abundant algae growth, gently sloping banks with riparian vege low bank, 8m (East bank), little erosion, signs of flooding	Wpt: CF 016-J (UN 199)
← Direction S	KP: AB 402.7
Photo: 516	Width: 5.8
Upstream	Direction → N
	Photo:

Vegetation on ↓ side:	
see detailed sheet	Downstream
PCF 512 - SIS	
Mapped RE:	Observed RE:
Photo:	RE Length:

Notes / Recommendations (if clearance exists, estimate length)

is very weedy on both banks, few natives in understory on mid stream

Ecological Data Sheet (to accompany electronic data sheet)

Job Number: ...60188431... 50

Site Number: C.F.O. 35 (UN 197) KP 399.1 Sheets completed: (Flora) (Fauna) Wetland

Assessor: C.F. & A.H. Date: 17/1/2011 Time: ~1100

Location: Near grasses

Tertiary Flora Assessment (measured in 50m x 10m plot)

Entered M.R.

All woody species present within 50m x 10m plot (plus dominant, characteristic and threatened non-woody species)

<i>Melaleuca bracteata</i>	T		D				
<i>Melaleuca flunitilis</i>	T		O				
juvenile <i>Melaleuca bracteata</i>	S				O		
<i>Eremophila debile</i>	S					R	
<i>Cymbidium canaliculatum</i>	Ep		R				
<i>Chloris virgata</i> (S)	G						FF
<i>Dicranthium</i> sp.	G						O
<i>Aristida</i> sp.	G						R
<i>Paspalum</i> (S)	G						R
Grass sp. (S)	G						D
<i>Melinis repens</i>	G						F
Mother of millions	S				O		
<i>Lantana camara</i>	S				D		
Median Ht (m)			15		1.5		0.2
Ht Range (m)			14-15		1-1.5		0.1-0.5
Visual Cover (%)			50-60		5 < 5		60
Recruitment (Yes / No / %)			Y (limited)				

Species annotations: S = Specimen Collected; * = Exotic Species; ** = Declared Species; + = Outside but adjoining 50m x 10m plot
 Height categories: E = Emergent; T1 = Tree 1 stratum, T2 = Tree 2 stratum, T3 = Tree 3 stratum, S1 = Shrub 1 stratum, S2 = Shrub 2, G = Ground stratum
 Form: T = Tree; S = Shrub; G = Grass; R = Rush / Sedge; F = Forb (i.e. herb); V = Vine; E = Epiphyte; A = Aquatic; Seed = Seedling; Sap = Sapling
 Relative dominance (abundance within strata): D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare
 Abbreviations: N/A = Not Applicable; N/R = Not Recorded; N/O = None Observed

Site / Waypoint #:

Tertiary Flora Assessment (measured in 50m x 10m plot) - continued

RE Map	11.3.25 / 11.3.4 / 11.3.2			
Survey result	11.3.25a " - E. tereticornis			

Width of RE (if linear): n/a; <35m wide; 35-75m; 75-150m; 150-300m; >300m; not linear

Total RE Area: n/a; <1ha; 1-5ha; 5-20ha; 20-50ha; 50-250ha; >250ha

Dominant Stratum Form: (Tree) Shrub; Forb; Grass; Aquatic
Cymbidium

Epiphytes	Absent; Scattered (1-5); Common (6-10); Abundant (>10)		
Vines	Absent; Scattered (1-5); Common (6-10); Abundant (>10)	Cryptogams	0%; 1-25%; 26-75%; >75%

creek trampled by cattle, E. tereticornis ~~nearby~~ upslope of
~~Acacia~~ trees drainage lines (0)

484 - 487

P CF0488 - cattle trampling

489 - creek sth.

490 - creek nth

491 - cymbidium

492 - E. tereticornis on fringe of drainage line

Dog tracks in the creek bed

Ecological Data Sheet (to accompany electronic data sheet)

Job Number: ...60188431... 51

Site Number: CFORZ-J KP AB 3918 Sheets completed: (Flora) Fauna; Wetland

Assessor: C.F. AH Date: 17.16.2011 Time: 925

Location: Nth of Rockhampton near Graceville

Tertiary Flora Assessment (measured in 50m x 10m plot)

All woody species present within 50m x 10m plot (plus dominant, characteristic and threatened non-woody species)

E. webra	T		D					
E. moluccana (juvenile)	T			R				
Mel. gunnakerusia (near drainage line)	T			O				
E. populnea	T			R				
Grewillea striata	S			O				
juv. eucalypts (webra)							O	
Acacia sp.	S						R	
Gymnopogon refractus	G							R
Sporobolus sp.	G							R
Chloris virgata	G							F
Heteropogon contortus	G							D
Eragrostis sp	G							F
Digitaria sp	G							F
Melinis repens	G							F
Lantana camara	S						F	
Stylosanthes scabra	S						F	
Sida sp.							R	
E. erythrophloea outside plot								
Median Ht (m)			2.2	1.4			1	
Ht Range (m)			20-23	12-16			0.7-1	0.1-0.6
Visual Cover (%)			10-30	10-30			5%	90%
Recruitment (Yes / No / %)			Y (limited)	Y			Y	

Species annotations: S = Specimen Collected; * = Exotic Species; ** = Declared Species; + = Outside but adjoining 50m x 10m plot
 Height categories: E = Emergent; T1 = Tree 1 stratum, T2 = Tree 2 stratum, T3 = Tree 3 stratum, S1 = Shrub 1 stratum, S2 = Shrub 2, G = Ground stratum
 Form: T = Tree; S = Shrub; G = Grass; R = Rush / Sedge; F = Forb (i.e. herb); V = Vine; E = Epiphyte; A = Aquatic; Seed = Seedling; Sap = Sapling
 Relative dominance (abundance within strata): D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare
 Abbreviations: N/A = Not Applicable; N/R = Not Recorded; N/O = None Observed

Site / Waypoint #:

Tertiary Flora Assessment (measured in 50m x 10m plot) - continued

RE Map	11.12.1	—	LC	LC
Survey result	11.12.1	—	LC	LC

Width of RE (if linear): n/a; <35m wide; 35-75m; 75-150m; 150-300m; >300m; not linear

Total RE Area: n/a; <1ha; 1-5ha; 5-20ha; 20-50ha; 50-250ha; >250ha

Dominant Stratum Form: Tree; Shrub; Forb; Grass; Aquatic

Epiphytes	Absent; Scattered (1-5); Common (6-10); Abundant (>10)		
Vines	Absent; Scattered (1-5); Common (6-10); Abundant (>10)	Cryptogams	0%; 1-25%; 26-75%; >75%

Ecological Data Sheet (to accompany electronic data sheet)

Entered MK Job Number: ...60188431... 52

Site Number: CFO16-JUN199 KP AB 4027 Sheets completed: Flora; Fauna; Wetland
 Assessor: CF AH Date: 17.1.6.2011 Time: ~1800
 Location: near Graeme - FOUR MILE CK

Tertiary Flora Assessment (measured in 50m x 10m plot) Mapped 11.3.25 / 11.3.4 / 11.3.2

All woody species present within 50m x 10m plot (plus dominant, characteristic and threatened non-woody species)

Species	Form	Relative Dominance (DAFOR)						
		E	T1	T2	T3	S1	S2	G
Melaleuca quinquenervia	T		D					
Melaleuca bracteata	T		F					
Alphacisurina cunninghamii	T		F					
Eucalyptus krivicornis	T	O	O					
Ficus (S)	T	B						R
Nauclera orientalis ?? (S)								R
Unknown (S)								R
Grass sp. (S)	G							O
Rubropyrus lanceolatus	G							R
Lomandra sp.	G							O
Mistletoe sp.	V							O
Acacia sp. (S) bipinnate								
Lantana camara **	S					F		
Crotalaria sp.	S					R		
Castor Oil *	S					O		
Melinis repens *	G							O
Rubber vine **	V					O		
Lions mane weed (S) *	F					F		
Chilli bush *	S					O		
Median Ht (m)		30	18			2		0.6
Ht Range (m)		-	-	-	-	1-3		0.3-0.6
Visual Cover (%)		<5	40			<5		10
Recruitment (Yes / No / %)								

Species annotations: S = Specimen Collected; * = Exotic Species; ** = Declared Species; += Outside but adjoining 50m x 10m plot
 Height categories: E = Emergent; T1 = Tree 1 stratum, T2 = Tree 2 stratum, T3 = Tree 3 stratum, S1 = Shrub 1 stratum, S2 = Shrub 2, G = Ground stratum
 Form: T = Tree; S = Shrub; G = Grass; R = Rush / Sedge; F = Forb (i.e. herb); V = Vine; E = Epiphyte; A = Aquatic; Seed = Seedling; Sap = Sapling
 Relative dominance (abundance within strata): D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare
 Abbreviations: N/A = Not Applicable; N/R = Not Recorded; N/O = None Observed

Site / Waypoint #:

Tertiary Flora Assessment (measured in 50m x 10m plot) - continued

RE Map	11.3.4/11.3.4/11.3.25/11.3.2			
Survey result	11.3.25			

Width of RE (if linear): n/a; <35m wide; 35-75m; 75-150m; 150-300m; >300m; not linear
 Total RE Area: n/a; <1ha; 1-5ha; 5-20ha; 20-50ha; 50-250ha; >250ha
 Dominant Stratum Form: Tree; Shrub; Forb; Grass; Aquatic

Epiphytes	Absent; Scattered (1-5); Common (6-10); Abundant (>10)		
Vines	Absent; Scattered (1-5); Common (6-10); Abundant (>10)	Cryptogams	0%; 1-25%; 26-75%; >75%

WATERCOURSE CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 17/06/11 Assessor: JW + DM Job: 60188431 Datum:

Crossing: Original Name: CAVIAL CREEK down

Mapped RE: 11325 / 1132	Observed RE: 11325	RE Length: 10m	ROW direction →
Bank Type: <u>Earth</u> Sandy; Rocky	Slope: <u>Gentle</u> ; <u>Steep</u> ; Cliff	Height: 4 m	
Vegetation on ↑ side: Agricultural grazing			↑
Euc. leve (A): Mel. fluviatilis (S), Cory. less (F), Fl. ... sp (S), Lucca? (S), Allo. ... (S), Cocky apple (R), Lolly bush (R),		macroptilian vine - non-toxic Lantana camara A. haust. Guinea grass Snakehead	
Biden. pilosa Cocky apple chinese apple mother of Milk on			↑
Crossing description: Pet. pub. (R)		Wpt: JW1010JUN159	
← Direction N		KP: 100.2	↑
Photo: DM891		Bed Width: 5m	
		Direction → S	↑
		Photo: DM889	
Vegetation on ↓ side: AS E of creek			↓
Agricultural grazing			
Bank Type: <u>Earth</u> Sandy; Rocky		Slope: <u>Gentle</u> ; <u>Steep</u> ; Cliff	↓
Height: 4 m		Photo: 10m	
Mapped RE: 11325	Observed RE: 11325	RE Length: DM890	↓

- River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other.....
- Saline; Brackish; Fresh
- Perennial; Seasonal; Intermittent
- Turbid; Clear; Stagnant; Polluted; Algae
- Dry; Pool; Run; Riffle; Cascade; Fall
- Submerged; Floating; Emergent Non-woody; Emergent Woody. Ph: N=DM892
- Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)

Acid large rem trees where possible. * large glider stretches on Euc here

Red ring parrot
Brown tree creeper
white faced heron
Crest
grey fantail
par head rosella
Grey butcher bird

Crossing: Proposed Change Name:

Mapped RE:	Observed RE:	RE Length:	ROW direction →
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m	
Vegetation on ↑ side:			↑
Crossing description:		Wpt:	
← Direction		KP:	↑
Photo:		Width:	
		Direction →	↑
		Photo:	
Vegetation on ↓ side:			↓
Bank Type: Earth; Sandy; Rocky			
Slope: Gentle; Steep; Cliff		Height: m	↓
Photo:		Photo:	
Mapped RE:	Observed RE:	RE Length:	↓

WATERCOURSE CROSSING VEGETATION RECORD

Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 31/08/2011 Assessor: JN + AH Job: 60188431 Datum:

Crossing: Original Name: KP AB410.4

Mapped RE: HVR	Observed RE: HVR	RE Length: 10m	E ↑ ROW direction
Bank Type: <u>Earth</u> , Sandy, Rocky	Slope: <u>Gentle</u> , Steep, Cliff	Height: 0.5 m	
Vegetation on ↑ side: Cory. kas (0) Euc. tere (→) remnant indiv. (0) then HVR further EAST. Allo. cas (0) Lantana camara ** Ficus sp (5)			↓ ROW direction
Crossing description: mel bracteata ← Direction N mel fluviatilis Photo: Allo. cunninghamii 11.3.25d (10m)			
Vegetation on ↓ side: Ficus sp. (R) Allo. cunninghamii (0) mel bracteata (0)			N ↓ ROW direction
Bank Type: <u>Earth</u> , Sandy, Rocky	Slope: <u>Gentle</u> , Steep, Cliff	Height: 0.5 m	
Mapped RE: HVR	Observed RE: HVR	RE Length: 10m	

Wetland Assessment

Type: River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other.....
 Salinity: Saline; Brackish; Fresh Seasonality: Perennial; Seasonal; Intermittent
 Water condition: Turbid; Clear; Stagnant, Polluted; Algae Stream flow; Dry; Pool Run; Riffle; Cascade; Fall
 Vegetation: Submerged; Floating; Emergent Non-woody; Emergent Woody.
 Instream habitat features: Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)

* move S to alt crossing, next to already cleared alignment for gas pipeline.
 Either N or S of existing align.
 * orig crossing larger habitat trees + veg to E

Crossing: Proposed Change Name:

Mapped RE: Non-rem	Observed RE: Non-rem	RE Length: —	E ↑ ROW direction
Bank Type: <u>Earth</u> , Sandy, Rocky	Slope: <u>Gentle</u> , Steep, Cliff	Height: 0.5 m	
Vegetation on ↑ side: cleared w juv/young Euc crebra Lantana ** Ficus cleared pasture red balloon cotton bus Lantana **			↓ ROW direction
Crossing description: mel bract ← Direction N mel linear? Photo: JW6470 A. cunning creek/pool/fresh clear/ripple/emerged woody/emergent non woody			
Vegetation on ↓ side: Lantana camara ** Cyperus sp Ficus sp (5)			N ↓ ROW direction
Bank Type: <u>Earth</u> , Sandy, <u>Rocky</u>	Slope: <u>Gentle</u> , Steep, Cliff	Height: 0.5 m	
Mapped RE: Non-rem	Observed RE: Non-rem	RE Length: 10m	

WATERCOURSE CROSSING VEGETATION RECORD

Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 17/06/2011 Assessor: JW+DM Job: 60188431 Datum:

Crossing: Original Name: Bob's Creek

Mapped RE: Non-rem	Observed RE: 11.3.25	RE Length: 10m	NW ↑ ROW direction
Bank Type: <u>Earth</u> Sandy; Rocky	Slope: Gentle; <u>Steep</u> ; Cliff	Height: 8 m		Photo: DMO880
Vegetation on ↑ side: cleared pasture			↓ ROW direction
Euc. tere (A); Mel. linar (A); Mel. viminalis (F); Allocas. cunn (F); Cory. tess (E); Cory. intermedia (O)		A. haust * L. camara ** guinta grass * hyp. ratis *	
Crossing description: ← Direction SW		See wetland assessment below	
Photo: DMO883		Wpt: JW008-JUN157 KP: 413.6 Bed Width: 7m Direction → NE Photo: DMO881	
Vegetation on ↓ side: Euc. tere (A); Mel. linar (A); Mel. viminalis (F); Allocas. cunn (F); Cory. tess (E);			SE ↓ ROW direction
cleared pasture		A. haust * L. camara ** guinta grass * thatch grass *	
Bank Type: <u>Earth</u> Sandy; Rocky	Slope: <u>Gentle</u> ; <u>Steep</u> ; Cliff	Height: 8 m	Photo: DMO882
Mapped RE: Non-rem	Observed RE: 11.3.25	RE Length: 20m	DOWN

- River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other.....
- Saline; Brackish; Fresh Perennial; Seasonal; Intermittent
- Turbid; Clear; Stagnant; Polluted; Algae Dry; Pool; Run; Riffle; Cascade; Fall
- Submerged; Floating; Emergent Non-woody; Emergent Woody
- Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber further W

Notes / Recommendations (if clearance exists, estimate length)
Avoid large remnant large trees where possible
Grey fantail

Crossing: Proposed Change Name:

Mapped RE:	Observed RE:	RE Length:	↑ ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m		Photo:
Vegetation on ↑ side:			↓ ROW direction
Crossing description: ← Direction		Wpt: KP: Width: Direction → Photo:	
Vegetation on ↓ side:			← ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m		Photo:
Mapped RE:	Observed RE:	RE Length:	

Entered MR

WATERCOURSE CROSSING VEGETATION RECORD

Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 17/06/2011 Assessor: JN & DM Job: 60188431 Datum:

Crossing: Original Name: Oakey Crk

Mapped RE: Non-rem	Observed RE: 11.3.25	RE Length: 5m	NW ↑ ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 4 m	
Vegetation on ↑ side: Agricultural grazing		Photo: 895 DM	↑ ROW direction
mel. viminalis (A); Melaleucitilis (A) (S); Eucalyptus (D) Ficus spp. (o)		macrophilan sp. cobbles peg chionis gayana noogoora birr Guinea grass balloon cotton bu A. hast Amelia sa m. Hyperhenia rufus Asparaeg fern.	
Crossing description:		Wpt: JW011-J UN160	↓ ROW direction
← Direction SW Photo: DM898		Filamentas algae Potamogeton sulcatus? KP: AB 419.7 Bed Width: 3 Direction → NE Photo: DM896	
Vegetation on ↓ side: Same as N side of bank.			↓ ROW direction
Agricultural grazing			
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 3 m	SE
Mapped RE: Non-rem	Observed RE: 11.3.25	RE Length: 5m	

- River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other.....
- Saline; Brackish; Fresh Perennial; Seasonal; intermittent
- Turbid; Clear; Stagnant; Polluted; Algae Dry; Pool; Run; Riffle; Cascade; Fall
- Submerged; Floating; Emergent Non-woody; Emergent Woody.
- Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)

DM 900, DM 901 - Ph of creek. Rainbow fish Spangle perch *cattle

Crossing: Proposed Change Name:

Mapped RE:	Observed RE:	RE Length:	↑ ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m	
Vegetation on ↑ side:		Photo:	↑ ROW direction
Crossing description:		Wpt:	
← Direction		KP:	↓ ROW direction
Photo:		Width:	
Vegetation on ↓ side:		Direction →	↓ ROW direction
Bank Type: Earth; Sandy; Rocky		Photo:	
Mapped RE:	Observed RE:	RE Length:	

WATERCOURSE CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 16/6/11 1:15am Assessor: CL Job: 60188431 Datum:

Crossing: Original Name: INKERMAN CK Upstream

Mapped RE: 11.1.4	Observed RE: 11.1.4	RE Length:	W ↑ ROW direction	
Bank Type: <u>Earth</u> ; Sandy; Rocky	Slope: <u>Gentle</u> ; Steep; Cliff	Height: m		Photo: JB-953
Vegetation on ↑ side: <u>Crucifera (O)</u> <u>Avicennia marina (F)</u>				

Crossing description: ← Direction: <u>S</u> Photo: JB-952	Wpt: <u>C1-8-J</u> <u>UM?0</u> KP: <u>AB 430.1</u> Bed Width: <u>20m</u> Direction: → <u>N</u> Photo: JB-950
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Vegetation on ↓ side: <u>Regrowth - Ac. harpophylla (b)</u> <u>Cryptostegia grandiflora (O)</u> <u>Agave (spiny leaf margins) (O)</u> <u>streambank erosion</u>	(O) ↓ ROW direction E		
Bank Type: <u>Earth</u> ; Sandy; Rocky	Slope: <u>Gentle</u> ; <u>Steep</u> ; Cliff	Height: m	Photo: JB-951
Mapped RE: 11.1.4	Observed RE:	RE Length:	

Wetland Assessment Downstream

Type: River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other.....

Salinity: Saline; Brackish; Fresh Seasonality: Perennial; Seasonal; Intermittent

Water condition: Turbid; Clear; Stagnant; Polluted; Algae Stream flow: Dry; Pool; Run; Riffle; Cascade; Fall

Vegetation: Submerged; Floating; Emergent Non-woody; Emergent Woody.

Instream habitat features: Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)

Aq fauna - some fish (mullet?), waterbird (un ID), oysters
crab holes, mudskipper

Crossing: Proposed Change Name:

Mapped RE:	Observed RE:	RE Length:	↑ ROW direction	
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m		Photo:
Vegetation on ↑ side:				

Crossing description: ← Direction: Photo:	Wpt: KP: Width: Direction: → Photo:
---	---

Vegetation on ↓ side:	↓ ROW direction		
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m	Photo:
Mapped RE:	Observed RE:	RE Length:	

Tertiary Flora Assessment (measured in 50m x 10m plot) - continued

RE Map	11.11.16 / 11.3.26			
Survey result	11.11.16 ?			

Width of RE (if linear): n/a; <35m wide; 35-75m; 75-150m; 150-300m; >300m; not linear
 Total RE Area: n/a; <1ha; 1-5ha; 5-20ha; 20-50ha; 50-250ha; >250ha
 Dominant Stratum Form: Tree; Shrub; Forb; Grass; Aquatic

Epiphytes	Absent; Scattered (1-5); Common (6-10); Abundant (>10)		
Vines	Absent; Scattered (1-5); Common (6-10); Abundant (>10)	Cryptogams	0%; 1-25%; 26-75%; >75%

Frog - JB - 945

Entered MR

CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 16/6/11 Assessor: CF AH Job: 60188431 Datum: 1/6/84

Crossing: ~~Original~~ Proposed Change Name: HARRIGAN CK Type: Road; Powerline; Pipeline; Other

Mapped RE: HVR	Observed RE:	RE Length:	ROW direction ↑
Vegetation on ↑ side: Melaleuca bractenta (F), Melaleuca linearifolia (F), Excoecia sp. Maklura cochinchinensis Ruellia sp (O), E. crebra (on banks) (O), Senna cassia (O), Alp. excelsa (O) Acacia fastuifera (O), Lantana camara (R), Cocos Panic (O), Agrostium hastatum (O)		Photo: 438-441 (N-W)	
Crossing description: ← Direction	Water with no flow, floating vegetation, upstream fringing woody & non woody vege, algal growth with macrophytes, fish present		ROW direction ↓
Photo: CF444 Downstream	Banks with gentle slope, sm. amount of erosion, signs of flooding		
Vegetation on ↓ side: Same as other side	Photo: CF449-452 (N-W)		
Mapped RE:	Observed RE:	RE Length:	

Notes / Recommendations (if clearance exists, estimate length)

Crossing: Original; Proposed Change Name: Type: Road; Powerline; Pipeline; Other

Mapped RE:	Observed RE:	RE Length:	ROW direction →
Vegetation on ↑ side:		Photo:	
Crossing description: ← Direction			ROW direction ↓
Photo:			
Vegetation on ↓ side:	Photo:		
Mapped RE:	Observed RE:	RE Length:	

Notes / Recommendations (if clearance exists, estimate length)

Entered (wetland) MK

Ecological Data Sheet - Flora

Job Number: 60188431.....

Site Number: JW005 - UN 154 Sheets completed: Flora, Fauna, Wetland

Assessor: JW + DM Date: 16/1/2011 Bioregion:

Location: Raglan Creek KPA 446.4

GPS Projection: Lat-Long; UTM Datum: GDA94; WGS84; AGD84 Zone:

Latitude / Northing: Longitude / Easting: Waypoint #:

Altitude: m Slope: See fauna sheet Aspect: N; NE; E; SE; S; SW; W; NW

Notes:

Table with 5 columns: Down, Slope or hill, Fossil coastal dune, Permanent lake, Freshwater lake. Rows include Alluvial plain, Inland clay pan, Coastal tidal flat, Unspecified terrain.

Table with 8 columns: Class, Level, Very gentle, Gentle incline, Moderate, steep, Very steep, Precipitous. Rows include Percentage, Degree.

Table with 8 columns: Class, Level, Very gentle, Gentle incline, Moderate, steep, Very steep, Precipitous. Rows include Very High, High, Low, Very Low, Extremely low.

Geology: Alluvial; Clay; Sand; Coarse sedimentary; Fine sedimentary; Igneous(coarse); Volcanic(fine); Metamorphic; Limestone; Laterite

Soil Colour: Whitish; Yellow; Orange; Brown; Red; Black; Grey; Pale; Dark; Mottled

Soil Secondary Texture: Clayey; Silty; Loamy; Sandy; Gravelly; Stony

Soil Primary Texture: Clay; Silt; Loam; Sand; Gravel; Saline Mud

Soil Notes:

Notes

Health: Pristine Very Good Good Average Poor Degraded Completely Degraded (almost without natives)

Vegetation: Remnant (>70% height, >50% canopy density); Regrowth; Exotic; Cleared

Dominant stratum: Tree; Shrubland; Grassland; Forbland; Wetland % Coverage: >70%; 30-70%; 10-30%; <10%

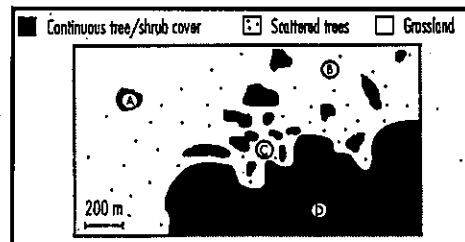
Overall patch size: <1ha; 1-5ha; 5-20ha; 20-50ha; 50-250ha; >250ha

Patch shape: Square/Circular; Semi-irregular; Very irregular; Linear

Linear type: None; Watercourse; Road; Rail; Windbreak; Fence; Stockroute

Width (if linear): <35m wide; 35-75m; 75-150m; 150-300m; >300m

Connectivity: A (Isolated); B (Semi-isolated); C (Not isolated); D (Continuous)



Notes

Erosion: Absent; Scattered; Frequent // Sheet; Rill (<30cm); Gully (>30cm); Mass Failure; Stream-bank

Dieback: 0%; 1-25%; 26-75%; >75%

Notes:

Weeds: Absent; Scattered; Frequent; Dominant // tree shrub ground vine

Notes:

Fire scars: Absent; Scattered; Frequent. // Recent; Old // Av height: m

Agriculture: None; Grazing; Feedlot; Crop; Orchard; Plantation Type:

Other: Timber-cutting; Ring-barking; Mining; Quarry; Other:

Notes

Conservation; Cultural; Recreational; Gov Reserve; Details:

Table with 2 columns: Facing, Direction. Rows include N, E, S, W.

Tertiary Flora Assessment (measured in 50m x 10m plot)

RE Map	11.1.4 (SE) / HVR (OC) (NW)	==		
Survey result	11.1.4 (SE) / cleared (NW)	==		

Width of RE (if linear): n/a; <35m wide; 35-75m; 75-150m; 150-300m; >300m; not linear

Total RE Area: n/a; <1ha; 1-5ha; 5-20ha; 20-50ha; 50-250ha; >250ha

Dominant Stratum Form: (Tree) Shrub; Forb; Grass; Aquatic

Epiphytes	(Absent) Scattered (1-5); Common (6-10); Abundant (>10)		
Vines	(Absent) Scattered (1-5); Common (6-10); Abundant (>10)	Cryptogams	(0%) 1-25%; 26-75%; >75%

All woody species present within 50m x 10m plot (plus dominant, characteristic and threatened non-woody species)

SE bank								
<i>Avicennia marina</i>	grey mangrove	T	A					
<i>Aegiceras corniculatum</i>	River mangrove	T	A					
				3m				
				80%				
NW bank								
<i>Euc tessularis</i>		T	D					
<i>Breynia oblongifolia</i>	(s) AH leaf red fruit	S					O	
<i>Bursaria spinosa</i>		S					O	
<i>Elipla prostrata</i>		H						O
<i>Bathriochloa pertusa</i> *	Indian blue grass	G						A
<i>A. haustonianum</i> *	Willy goat weed	H						F
<i>Heliotrope</i> sp.		H						R
<i>Emelia sonchifolia</i>		H						O
<i>Xanthium occidentale</i>	Nagoro burr	H						O
<i>Stachytarpheta jamaicensis</i>	Snake weed *	H						O
<i>Cryptostegia grandiflora</i>	rubber vine *	V						R
	Solanera sp. (s)	H						O
	purple top Asteraceae (s)	H						O
	pratia? (s)	G						F
Median Ht (m)				10	3			0.5
Ht Range (m)				-	-			-
Visual Cover (%)				<5'	<5'			90%
Recruitment (Yes / No / %)								

Species annotations: S = Specimen Collected; * = Exotic Species; ** = Declared Species; += Outside but adjoining 50m x 10m plot
 Height categories: E = Emergent; T1 = Tree 1 stratum, T2 = Tree 2 stratum, T3 = Tree 3 stratum, S1 = Shrub 1 stratum, S2 = Shrub 2, G = Ground stratum
 Form: T = Tree; S = Shrub; G = Grass; R = Rush / Sedge; F = Forb (i.e. herb); V = Vine; E = Epiphyte; A = Aquatic; Seed = Seedling; Sap = Sapling
 Relative dominance (abundance within strata): D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare
 Abbreviations: N/A = Not Applicable; N/R = Not Recorded; N/O = None Observed

Site / Waypoint #: JW005

Ecological Data Sheet - Fauna Habitat

Job Number:60188431

Site Number: JN005 Sheets completed: Flora Fauna Wetland

Assessor: DM + JW Date: 16/06/2011 Bioregion: 11

Location: Raglan creek - SE bank a veg KPAB446.4

GPS Projection: Lat-Long; UTM Datum: GDA94; WGS84; AGD84 Zone:

Latitude / Northing: Longitude / Easting: Waypoint #:

Altitude:m Slope: Aspect: N; NE; E; SE; S; SW; W; NW

Notes:

Table with 5 columns: Down, Slope or hill not specified, Fossil coastal dune, Permanent lake, Freshwater lake, etc.

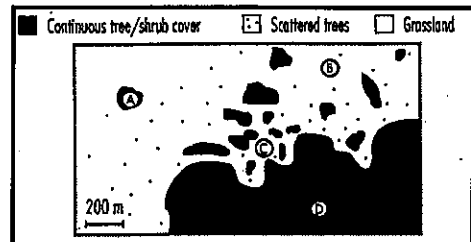
Table with 8 columns: Class, Level, Very gentle, Gentle incline, Moderate, steep, Very steep, Precipitous

Table with 8 columns: Very High (>300 m), High (90-300 m), Low (30-90 m), Very Low (9-30 m), Extremely low (<9 m)

Geology: Alluvial Clay; Sand; Coarse sedimentary; Fine sedimentary; Igneous(coarse); Volcanic(fine); Metamorphic; Limestone; Laterite
Soil Colour: Whitish; Yellow; Orange; Brown Red; Black; Grey; Pale; Dark; Mottled
Soil Secondary Texture: Clayey Silty; Loamy; Sandy; Gravelly; Stony
Soil Primary Texture: Clay; Silt; Loam; Sand; Gravel; Saline Mud
Soil Notes:

Notes

Health: Pristine Very Good Good Average Poor Degraded Completely Degraded (almost without natives)
Vegetation: Remnant >70% height, >50% canopy density; Regrowth; Exotic; Cleared
Dominant stratum: Tree; Shrubland; Grassland; Forbland; Wetland % Coverage: >70%; 30-70%; 10-30%; <10%
Overall patch size: <1ha; 1-5ha; 5-20ha; 20-50ha; 50-250ha; >250ha
Patch shape: Square/Circular; Semi-irregular; Very irregular; Linear
Linear type: None; Watercourse; Road; Rail; Windbreak; Fence; Stockroute
Width (if linear): <35m wide; 35-75m; 75-150m; 150-300m; >300m
Connectivity: A (Isolated); B (Semi-isolated); C (Not isolated); D (Continuous)



Notes

Erosion: Absent; Scattered; Frequent // Sheet; Rill (<30cm); Gully (>30cm); Mass Failure; Stream-bank
Dieback: 0%; 1-25% 26-75%; >75% Notes:
Weeds: Absent; Scattered; Frequent; Dominant. // tree shrub ground vine Notes:.....
Fire scars: Absent; Scattered; Frequent. // Recent; Old // Av height:m
Agriculture: None; Grazing; Feedlot; Crop; Orchard; Plantation Type:
Other: Timber-cutting; Ring-barking; Mining; Quarry; Other:

Notes marine vegetation

Conservation; Cultural; Recreational; Gov Reserve; Details:

SE bank - 11.1

(Ph 0865(DM))

Facing N 0861 (DM)

NW bank - clearing of 30m with scattered

copy trees. (1x mature, 1x juv). (Ph 0866 (DM))

E 0862 (DM)

S 0863 (DM)

W 0864 (DM)

↑ NW

↓ SE

Fauna Habitat

(Measured / extrapolated in 1 ha plot - e.g. 100m X 100m; 20m X 500m)

Circle koala food trees

Large Hollows (> 20 cm)	Absent;	Scattered (1-5);	Common (6-10);	Abundant (>10)
Small Hollows (< 20 cm)	Absent;	Scattered (1-5);	Common (6-10);	Abundant (>10)
Hollow status	Mostly Dead;	Mostly Alive;	Mixture	
Large logs (> 50cm)	Absent;	Scattered (1-5);	Common (6-10);	Abundant (>10)
Small logs (10-50cm)	Absent;	Scattered (1-10);	Common (11-20);	Abundant (>20)
Cliffs / outcrops	Absent;	Scattered (1-10%);	Common (11-50%);	Abundant (>50%)
Large rocks (> 30cm)	Absent;	Scattered (1-10%);	Common (11-50%);	Abundant (>50%)
Small rocks (10-30cm)	Absent;	Scattered (1-10%);	Common (11-50%);	Abundant (>50%)
Leaf litter	Absent;	Scattered (1-25%);	Common (26-75%);	Abundant (>75%)
Dense shrub / grass shelter	Absent;	Scattered (1-10%);	Common (11-50%);	Abundant (>50%)
Termite mounds (> 50cm high)	Absent;	Scattered (1-10);	Frequent (>10)	

- E. grandis*
- E. microcorys*
- E. pilularis*
- E. propinqua*
- E. resinifera*
- E. tereticornis*
- C. citriodora / maculata*
- C. intermedia*,
- E. bancrofti*
- E. camaldulensis*
- E. camea*
- E. crebra*,
- E. dunnii*
- E. fibrosa*
- E. major*
- E. moluccana*
- E. platyphyla*
- E. punctata*
- E. robusta*
- E. saligna*
- E. seeana*
- E. siderophloia*
- E. signata / racemosa*
- E. tindaliae*
- E. viminalis*
- Lophostemon confertus*

Seeding grass cover	Absent;	Scattered (1-10%);	Common (11-50%);	Abundant (>50%)
Fleshy fruiting plants	Absent;	Scattered (1-10%);	Common (11-50%);	Abundant (>50%) ^{many to}
Nectar/pollen producing plant	Absent;	Scattered (1-10%);	Common (11-50%);	Abundant (>50%) "
Koala trees	Absent;	Scattered (1-10%);	Common (11-50%);	Abundant (>50%)
Mistletoe	Absent;	Scattered (1-10);	Common (11-20);	Abundant (>20)

Macropod scats Absent; Scattered; Frequent

Scats, pellets; food remains:

Animal tracks:

Animal trails:

Bones, feathers:

Diggings, burrows:

Shelters, nests:

Tree scratches; feeding scars:

Assessed from opposite bank.

River; Creek Lake (>8ha); Pool (<8ha); Wooded Swamp; Treeless Marsh; Gilgai; Claypan; Floodplain; Spring

Large Dam (>8 ha); Small Dam (<8ha); Irrigation Channel; Drainage Channel; Sewage Pond; Salt Field

Coral reef; Rocky Shore; Beach; Estuary; Mud Flat; Saltmarsh; Mangrove; Lagoon (<8ha); Lake (>8ha)

.....ha. Saline; Brackish; Fresh Perennial; Seasonal; Intermittent

: Turbid; Clear; Stagnant, Polluted; Algae : Dry; Pool; Run; Riffle; Cascade; Fall

Submerged; Floating; Emergent Non-woody; Emergent Woody; Fringing Non-woody; Fringing Woody

: Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

: Exclusion fence; Earth banks; Rocky banks

Site / Waypoint #:

Ecological Data Sheet (to accompany electronic data sheet)

Job Number: ...60188431...

Site Number: ...JW02-S... KP: AB 448.5 Sheets completed:

Flora Fauna Wetland

Assessor: ...JW + AH... Date: 30/08/2011

Time: ...11:30am...

Location: ...Raglan station...

Tertiary Flora Assessment (measured in 50m x 10m plot)

All woody species present within 50m x 10m plot (plus dominant, characteristic and threatened non-woody species)

Species	Form	Relative Dominance (DAFOR)						
		E	T1	T2	T3	S1	S2	G
<i>Euc. tereticornis</i>	T		D					
<i>Euc. tessularis</i>	T		O					
<i>Euc. siderophloia (s)</i>	T		O					
<i>Acacia disparrima (s)</i>	T					4		0
<i>Bursaria spinosa</i>	Sh					2		0
<i>Carissa ovata</i>	Sh					2		0
<i>Acacia salicina</i>	T					6		
<i>Pterocaulin sphaerelatum</i>	F							0
<i>Heteropogon contortus</i>	G							A
<i>Opuntia sp.</i> ✓ **	F							0
<i>Stylosanthes scabra</i> *	F							0
<i>Themeda triandra</i>	G							A
<i>Panicum sp</i>	G							0
<i>Pennisetum ciliare</i> *	E							R
<i>Cryptostegia grandiflora</i> Rubber vine **	V							R
<i>Chloris virgata</i>	G							0
<i>Dianella sp.</i>	R							R
Median Ht (m)		12				3		0-5
Ht Range (m)		-	-	-	-	-	-	-
Visual Cover (%)		20%				10%		95%
Recruitment (Yes / No / %)								

Species annotations: S = Specimen Collected; * = Exotic Species; ** = Declared Species; + = Outside but adjoining 50m x 10m plot
 Height categories: E = Emergent; T1 = Tree 1 stratum, T2 = Tree 2 stratum, T3 = Tree 3 stratum, S1 = Shrub 1 stratum, S2 = Shrub 2, G = Ground stratum
 Form: T = Tree; S = Shrub; G = Grass; R = Rush / Sedge; F = Forb (i.e. herb); V = Vine; E = Epiphyte; A = Aquatic; Seed = Seedling; Sap = Sapling
 Relative dominance (abundance within strata): D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare
 Abbreviations: N/A = Not Applicable; N/R = Not Recorded; N/O = None Observed

Site / Waypoint #: JW02-S

Tertiary Flora Assessment (measured in 50m x 10m plot) - continued

	RE Code	EPBC Status	VM Act Status	DERM Status
RE Map	HVR (0C)	—	—	0C
Survey result	HVR (11.3.4)	—	—	(0CHNR)

Width of RE (if linear): n/a; <35m wide; 35-75m; 75-150m; 150-300m; >300m; not linear

Total RE Area: n/a; <1ha; 1-5ha; 5-20ha; 20-50ha; 50-250ha; >250ha

Dominant Stratum Form: tree Shrub; Forb; Grass; Aquatic

Epiphytes	Absent; <u>Scattered (1-5)</u> ; Common (6-10); Abundant (>10)		
Vines	Absent; <u>Scattered (1-5)</u> ; Common (6-10); Abundant (>10)	Cryptogams	0%; 1-25%; 26-75%; >75%

General Notes and Recommendations

* shrub cover - 20%
 grass cover - 100% } note for fauna sheet.

Ecological Data Sheet – Fauna Habitat

Job Number:60188431

Site Number: JW007 - No gas pit for this location Sheets completed: Flora, Fauna, Wetland
Assessor: DM & JW Date: 16 / 6 / 2011 Bioregion: 11
Location: Raglan Station Road KPA 58:3
GPS Projection: Lat-Long; UTM Datum: GDA94; WGS84; AGD84 Zone:
Latitude / Northing: Longitude / Easting: Waypoint #: JW007
Altitude: Slope: Aspect: N; NE; SE; S; SW; W; NW

Notes:

Table with 5 columns: Downs: open, rolling, ashy, pebbly; Alluvial plain or flat, flood plain; Inland clay pan, salt flat, salt pan; Coastal tidal flat or salt flat; Unspecified, flat gentle, slopes, undulating terrain; Slope or hill not specified; Cliff, steep rock, rocky ledge rocky outcrop, scarp, crevice; Coastal rocky headland; Top, crest of mountain or ridge; Jump-up, mesa, tableland, plateau; Fossil coastal dune, high dune; Coastal dune: unspecified, beach dune, recent dune, low dune, coastal sandhill; Inland dune, inland sandhill; Permanent lake, river, stream, water course, levees and / or their banks; Seasonal or intermittent creek, gully, drainage line, ravine, gorge, outwash; Inland channel country, stream distributary system, intermittently flooded; Freshwater lake, lagoon, spring; Freshwater swamp, marsh, soak, seepage area; Gilgai, melon hole, sinkhole; Saltwater, sea, saltwater, swamp

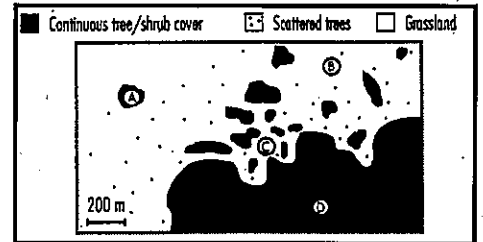
Table with 8 columns: Class, Level, Very gentle, Gentle incline, Moderate, steep, Very steep, Precipitous. Rows for Percentage and Degree.

Table with 8 columns: Very High (>300 m), High (90-300 m), Low (30-90 m), Very Low (9-30 m), Extremely low (<9 m), Level plain, Gently undulating plain, Undulating plain, Rolling plain, Rolling mountains, Steep mts, Very steep mts, Precipitous mts, Undulating hills, Rolling hills, Steep hills, Very steep hills, Precipitous hills, Undulating low hills, Rolling low hills, Steep low hills, Very steep low hills, badlands, Gently undulating rises, Undulating rises, Rolling rises, Steep rises, badlands, badlands, badlands, badlands

Geology: Alluvial; Clay; Sand; Coarse sedimentary; Fine sedimentary; Igneous(coarse); Volcanic(fine); Metamorphic; Limestone; Laterite
Soil Colour: Whitish; Yellow; Orange; Brown; Red; Black; Grey; Pale; Dark; Mottled
Soil Secondary Texture: Clayey; Silty; Loamy; Sandy; Gravelly; Stony
Soil Primary Texture: Clay; Silt; Loam; Sand; Gravel; Saline Mud
Soil Notes:

Notes

Health: Pristine Very Good Good Average Poor Degraded Completely Degraded (almost without natives)
Vegetation: Remnant (>70% height, >50% canopy density); Regrowth; Exotic; Cleared
Dominant stratum: Tree; Shrubland; Grassland; Forbland; Wetland % Coverage: >70%; 30-70%; 10-30%; <10%
Overall patch size: <1ha; 1-5ha; 5-20ha; 20-50ha; 50-250ha; >250ha
Patch shape: Square/Circular; Semi-irregular; Very irregular; Linear
Linear type: None; Watercourse; Road; Rail; Windbreak; Fence; Stockroute
Width (if linear): <35m wide; 35-75m; 75-150m; 150-300m; >300m
Connectivity: A (Isolated); B (Semi-isolated); C (Not isolated); D (Continuous)



Notes

Erosion: Absent; Scattered; Frequent // Sheet; Rill (<30cm); Gully (>30cm); Mass Failure; Stream-bank
Dieback: 0%; 1-25%; 26-75%; >75% Notes:
Weeds: Absent; Scattered; Frequent; Dominant. // tree shrub ground vine Notes:
Fire scars: Absent; Scattered; Frequent. // Recent; Old // Av height: m
Agriculture: None; Grazing; Feedlot; Crop; Orchard; Plantation Type: Brahmin cattle
Other: Timber-cutting; Ring-barking; Mining; Quarry; Other: very old

Notes

Conservation; Cultural; Recreational; Gov Reserve; Details:

Facing N DM0871

E DM0872

S DM0873

W DM0874

possible scar tree - DM0877 - 879

skink - DM0876

Fauna Habitat

(Measured / extrapolated in 1 ha plot - e.g. 100m X 100m; 20m X 500m)

Circle koala food trees

Large Hollows (> 20 cm)	Absent; Scattered (1-5); <u>Common (6-10)</u> ; Abundant (>10)
Small Hollows (< 20 cm)	Absent; Scattered (1-5); <u>Common (6-10)</u> ; Abundant (>10)
Hollow status	<u>Mostly Dead</u> ; Mostly Alive; Mixture
Large logs (> 50cm)	Absent; <u>Scattered (1-5)</u> ; Common (6-10); Abundant (>10)
Small logs (10-50cm)	Absent; Scattered (1-10); Common (11-20); <u>Abundant (>20)</u>
Cliffs / outcrops	<u>Absent</u> ; Scattered (1-10%); Common (11-50%); Abundant (>50%)
Large rocks (> 30cm)	<u>Absent</u> ; Scattered (1-10%); Common (11-50%); Abundant (>50%)
Small rocks (10-30cm)	<u>Absent</u> ; Scattered (1-10%); Common (11-50%); Abundant (>50%)
Leaf litter	Absent; Scattered (1-25%); <u>Common (26-75%)</u> ; Abundant (>75%)
Dense shrub / grass shelter	Absent; Scattered (1-10%); <u>Common (11-50%)</u> ; Abundant (>50%)
Termite mounds (> 50cm high)	Absent; <u>Scattered (1-10)</u> ; Frequent (>10) <i>asbestos</i>

- E. grandis*
- E. microcorys*
- E. pilularis*
- E. propinqua*
- E. resinifera*
- E. tereticornis*
- C. citriodora / maculata*
- C. intermedia*,
- E. bancroftii*
- E. camaldulensis*
- E. camea*
- E. crebra*,
- E. dunnii*
- E. fibrosa*
- E. major*
- E. moluccana*
- E. platyphyla*
- E. punctata*
- E. robusta*
- E. saligna*
- E. seeana*
- E. siderophloia*
- E. signata / racemosa*
- E. tindaliae*
- E. viminalis*
- Lophostemon confertus*

Seeding grass cover	Absent; Scattered (1-10%); <u>Common (11-50%)</u> ; Abundant (>50%)
Fleshy fruiting plants	Absent; Scattered (1-10%); <u>Common (11-50%)</u> ; Abundant (>50%)
Nectar/pollen producing plant	Absent; Scattered (1-10%); <u>Common (11-50%)</u> ; Abundant (>50%)
Koala trees	Absent; Scattered (1-10%); <u>Common (11-50%)</u> ; Abundant (>50%)
Mistletoe	<u>Absent</u> ; Scattered (1-10); Common (11-20); Abundant (>20)

Macropod scats: Absent Scattered; Frequent

Scats, pellets; food remains:

Animal tracks: *fox/dog, cattle, pig*

Animal trails: *cattle*

Bones, feathers:

Diggings, burrows:

Shelters, nests:

Tree scratches; feeding scars:

- | | |
|------------------------------|----------------------------|
| <i>white-faced heron</i> | <i>forest kingfisher</i> |
| <i>kookaburra - laughing</i> | <i>willy wag-tail</i> |
| <i>rainbow bee-eater</i> | <i>bustard</i> |
| <i>rufous whistler</i> | <i>double-barred finch</i> |
| <i>grey fantail</i> | <i>photo-skink</i> |

River; Creek; Lake (>8ha); Pool (<8ha); Wooded Swamp; Treeless Marsh; Gilgai; Claypan; Floodplain; Spring
 Large Dam (>8 ha); Small Dam (<8ha); Irrigation Channel; Drainage Channel; Sewage Pond; Salt Field
 Coral reef; Rocky Shore; Beach; Estuary; Mud Flat; Saltmarsh; Mangrove; Lagoon (<8ha); Lake (>8ha)
ha. Saline; Brackish; Fresh Perennial; Seasonal; Intermittent
 : Turbid; Clear; Stagnant, Polluted; Algae : Dry; Pool; Run; Riffle; Cascade; Fall
 : Submerged; Floating; Emergent Non-woody; Emergent Woody; Fringing Non-woody; Fringing Woody
 : Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber
 : Exclusion fence; Earth banks; Rocky banks

Site / Waypoint #:

Ecological Data Sheet – Flora

Job Number: ...60188431.....

Site Number: ...JN007..... Sheets completed: (Flora) (Fauna) Wetland

Assessor: ...JW & DM..... Date: 16/06/2011. Bioregion:

Location: East of Raglan Station Road KPAB 458.3

GPS Projection: Lat-Long; UTM Datum: GDA94; WGS84; AGD84 Zone:

Latitude / Northing: Longitude / Easting: Waypoint #:

Altitude:m Slope: See fauna habitat sheet Aspect: N; NE; E; SE; S; SW; W; NW

Notes:

Table with 5 columns: Downs: open, rolling, ashy, pebbly; Alluvial plain or flat, flood plain; Inland clay pan, salt flat, salt pan; Coastal tidal flat or salt flat; Unspecified, flat gentle, slopes, undulating terrain. Slope or hill not specified; Cliff, steep rock, rocky ledge; rocky outcrop, scarp, crevice; Coastal rocky headland; Top, crest of mountain or ridge; Jump-up, mesa, tableland, plateau. Fossil coastal dune, high dune; Coastal dune: unspecified, beach dune, recent dune, low dune, coastal sandhill; Inland dune, inland sandhill. Permanent lake, river, stream, water course, levees and / or their banks; Seasonal or intermittent creek, gully, drainage line, ravine, gorge, outwash; Inland channel country, stream distributary system, intermittently flooded. Freshwater lake, lagoon, spring; Freshwater swamp, marsh, soak, seepage area; Gilgai, melon hole, sinkhole; Saltwater, sea, saltwater, swamp.

Table with 8 columns: Class, Level, Very gentle, Gentle incline, Moderate, steep, Very steep, Precipitous. Percentage, Degree.

Table with 8 columns: Very High (>300 m), High (90-300 m), Low (30-90 m), Very Low (9-30 m), Extremely low (<9 m). Level plain, Gently undulating plain, Undulating plain, Rolling plain, Rolling mountains, Steep mts, Very steep mts, Precipitous mts, Undulating hills, Rolling hills, Steep hills, Very steep hills, Precipitous hills, Undulating low hills, Rolling low hills, Steep low hills, Very steep low hills, badlands, Gently undulating rises, Undulating rises, Rolling rises, Steep rises, badlands, badlands, Gently undulating plain, Undulating plain, Rolling plain, badlands, badlands, badlands.

Geology: Alluvial; Clay; Sand; Coarse sedimentary; Fine sedimentary; Igneous(coarse); Volcanic(fine); Metamorphic; Limestone; Laterite

Soil Colour: Whitish; Yellow; Orange; Brown; Red; Black; Grey; Pale; Dark; Mottled

Soil Secondary Texture: Clayey; Silty; Loamy; Sandy; Gravelly; Stony

Soil Primary Texture: Clay; Silt; Loam; Sand; Gravel; Saline Mud

Soil Notes:

Notes

Health: Pristine Very Good Good Average Poor Degraded Completely Degraded (almost without natives)

Vegetation: Remnant (>70% height, >50% canopy density); Regrowth; Exotic; Cleared

Dominant stratum: Tree; Shrubland; Grassland; Forbland; Wetland % Coverage: >70%; 30-70%; 10-30%; <10%

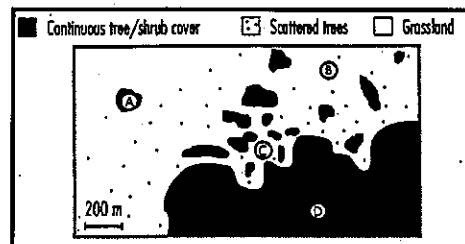
Overall patch size: <1ha; 1-5ha; 5-20ha; 20-50ha; 50-250ha; >250ha

Patch shape: Square/Circular; Semi-irregular; Very irregular; Linear

Linear type: None; Watercourse; Road; Rail; Windbreak; Fence; Stockroute

Width (if linear): <35m wide; 35-75m; 75-150m; 150-300m; >300m

Connectivity: A (Isolated); B (Semi-isolated); C (Not isolated); D (Continuous)



Notes

Erosion: Absent; Scattered; Frequent // Sheet; Rill (<30cm); Gully (>30cm); Mass Failure; Stream-bank

Dieback: 0%; 1-25%; 26-75%; >75% Notes:

Weeds: Absent; Scattered; Frequent; Dominant // tree shrub, ground vine Notes:

Fire scars: Absent; Scattered; Frequent. // Recent; Old // Av height:m

Agriculture: None; Grazing; Feedlot; Crop; Orchard; Plantation Type:

Other: Timber-cutting; Ring-barking; Mining; Quarry; Other:

Notes

Conservation; Cultural; Recreational; Gov Reserve; Details:

Table with 2 columns: Facing, N, E, S, W.

Ecological Data Sheet (to accompany electronic data sheet)

Job Number: ...60188431... 20

Site Number:JWO1-S...KP AB 468:6 Sheets completed:

Flora: Fauna: Wetland

Assessor: ...JW, AH, CL, MR..... Date: 30/08/2011

Time: ...10.05am.....

Location: ...Raglan station.....

Tertiary Flora Assessment (measured in 50m x 10m plot)

All woody species present within 50m x 10m plot (plus dominant, characteristic and threatened non-woody species)

Species	Form	Relative Dominance (DAFOR)						
		E	T1	T2	T3	S1	S2	G
<i>Euc. molucanna</i>	T		D					
<i>Euc. tereticornis</i> (to east)	T		O					
<i>Carissa ovata</i>	Sh					A		
<i>Cryptostegia grandiflora</i> (rubber vine **)	V					O		
<i>Bursaria spinosa</i>	Sh					A		
<i>Lantana camara</i> **	Sh					O		
<i>Acacia</i> sp.	Sh					R		
<i>Pycnanthus</i> sp.	Sh					R		
<i>Digitaria</i> sp.	G							A
<i>Paspalum</i> sp.	G							A
<i>Dianella</i> sp.	R							R
<i>Stachytarpheta jamaicensis</i> ** (snake weed **)	H							O
<i>Chloris virgata</i>	G							O
<i>Aristida</i> sp.	G							O
<i>Heteropogon contortus</i>	G							O
<i>Panicum</i> sp.	G							O
<i>Gomphocarpus</i> sp.								
Median Ht (m)			12			3		0.4
Ht Range (m)		-	-	-	-	-	-	-
Visual Cover (%)			60%			20%		70%
Recruitment (Yes/No/%)			5%	5%				

Species annotations: S = Specimen Collected; * = Exotic Species; ** = Declared Species; + = Outside but adjoining 50m x 10m plot
 Height categories: E = Emergent; T1 = Tree 1 stratum, T2 = Tree 2 stratum, T3 = Tree 3 stratum, S1 = Shrub 1 stratum, S2 = Shrub 2, G = Ground stratum
 Form: T = Tree; S = Shrub; G = Grass; R = Rush / Sedge; F = Forb (i.e. herb); V = Vine; E = Epiphyte; A = Aquatic; Seed = Seedling; Sap = Sapling
 Relative dominance (abundance within strata): D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare
 Abbreviations: N/A = Not Applicable; N/R = Not Recorded; N/O = None Observed

Site / Waypoint #: JWO1-S

Tertiary Flora Assessment (measured in 50m x 10m plot) - continued

	RE Code	EPBC Status	VM Act Status	DERM Status
RE Map	11.3.26 / 11.3.4	—	LC/OC	LC/OC
Survey result	11.3.26	—	LC	LC

Width of RE (if linear): n/a; <35m wide; 35-75m; 75-150m; 150-300m; >300m; not linear

Total RE Area: n/a; <1ha; 1-5ha; 5-20ha; 20-50ha; 50-250ha; >250ha

Dominant Stratum Form: Tree; Shrub; Forb; Grass; Aquatic

Epiphytes	<u>Absent</u> ; Scattered (1-5); Common (6-10); Abundant (>10)	
Vines	Absent; <u>Scattered (1-5)</u> ; Common (6-10); Abundant (>10)	Cryptogams <u>0%</u> ; 1-25%; 26-75%; >75%

General Notes and Recommendations

11.3.26 with 11.3.4 to east but not within ROW

Ecological Data Sheet (to accompany electronic data sheet)

Job Number: ...60188431...

Site Number: (F0065) KPAB4-60.6 Sheets completed:

Flora; Fauna; Wetland

Assessor: CF + AH Date: 15.1.2011

Time: 1600

Location: Achey property - 11/2 months - 5th of dam

Tertiary Flora Assessment (measured in 50m x 10m plot)

All woody species present within 50m x 10m plot (plus dominant, characteristic and threatened non-woody species)

<i>E. moluccana</i>	T		D					
<i>E. crebra</i>	T	O						
<i>Acacia</i> sp.	S						F	
<i>Acacia disarrima</i>	S						F	
<i>Pterocaulon spherulatum</i>								
<i>Panicum</i>								F
<i>Eragrostis</i> spp.								F
<i>Digitaria</i> sp.								F
<i>Chloris</i> sp.								F
<i>Sida amblyloba cordifolia</i>								
<i>Lantana camara</i>								O
<i>Stachytarpheta</i>								O
<i>Gomphocarpus physocarpus</i>								
Median Ht (m)		22	18				3.5	0.3
Ht Range (m)	-	-	-	-	-	-	-	-
Visual Cover (%)		25	5				25	70
Recruitment (Yes / No / %)		N	N				N	

Species annotations: S = Specimen Collected; * = Exotic Species; ** = Declared Species; + = Outside but adjoining 50m x 10m plot
 Height categories: E = Emergent; T1 = Tree 1 stratum, T2 = Tree 2 stratum, T3 = Tree 3 stratum, S1 = Shrub 1 stratum, S2 = Shrub 2, G = Ground stratum
 Form: T = Tree; S = Shrub; G = Grass; R = Rush / Sedge; F = Forb (i.e. herb); V = Vine; E = Epiphyte; A = Aquatic; Seed = Seedling; Sap = Sapling
 Relative dominance (abundance within strata): D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare
 Abbreviations: N/A = Not Applicable; NR = Not Recorded; N/O = None Observed

Site / Waypoint #:

Tertiary Flora Assessment (measured in 50m x 10m plot) - continued

RE Map	non-remnant			
Survey result	non-remnant			

Width of RE (if linear): n/a; <35m wide; 35-75m; 75-150m; 150-300m; >300m; not linear

Total RE Area: n/a; <1ha; 1-5ha; 5-20ha; 20-50ha; 50-250ha; >250ha

Dominant Stratum Form: tree; Shrub; Forb; Grass; Aquatic

Epiphytes	<u>Absent</u> ; Scattered (1-5); Common (6-10); Abundant (>10)		
Vines	<u>Absent</u> ; Scattered (1-5); Common (6-10); Abundant (>10)	Cryptogams	<u>0%</u> ; 1-25%; 26-75%; >75%

fox scat.

Ecological Data Sheet (to accompany electronic data sheet)

Job Number: ...60188431... 64

Site Number: CF003 A-J KP 114 162-7 Sheets completed: 6

Flora Fauna Wetland

Assessor: CF/JB Date: 15/6/2011 Time: 1425

Location: 462.5 - Mt. Laram

Tertiary Flora Assessment (measured in 50m x 10m plot)

All woody species present within 50m x 10m plot (plus dominant, characteristic and threatened non-woody species)

<i>Eucalyptus moluccana</i>	T	D				
<i>Eucalyptus urebra</i>	T	R				
<i>Cesera latifolia</i>	S				O	
<i>Acacia disparima</i>	S				O	
<i>Acacia</i> sp.						
<i>Lantana camara</i> **					+	
<i>Eragrostis</i> sp.	G					F
<i>Panicum</i> sp.	G					F
<i>Digitaria</i> sp.	G					F
<i>Eremochloa - bimaculata</i>						F
<i>Fimbristylis</i>	R					O
<i>Dianella</i>	R					O
<i>Comandra</i> sp.	R					O
<i>Cymbidium canaliculatum</i>	E	R				
<i>Praxelis dematidea</i> *	F					R
Median Ht (m)		16			2.5	0.3
Ht Range (m)						
Visual Cover (%)		30			<5	70
Recruitment (Yes / No / %)		Yes			Yes	

Species annotations: S = Specimen Collected; * = Exotic Species; ** = Declared Species; + = Outside but adjoining 50m x 10m plot
 Height categories: E = Emergent; T1 = Tree 1 stratum, T2 = Tree 2 stratum, T3 = Tree 3 stratum, S1 = Shrub 1 stratum, S2 = Shrub 2, G = Ground stratum
 Form: T = Tree; S = Shrub; G = Grass; R = Rush / Sedge; F = Forb (i.e. herb); V = Vine; E = Epiphyte; A = Aquatic; Seed = Seedling; Sap = Sapling
 Relative dominance (abundance within strata): D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare
 Abbreviations: N/A = Not Applicable; N/R = Not Recorded; N/O = None Observed

Site / Waypoint #:

Tertiary Flora Assessment (measured in 50m x 10m plot) - continued

RE Map	HVR - OC			
Survey result	11.3.26			

Width of RE (if linear): n/a; <35m wide; 35-75m; 75-150m; 150-300m; >300m; not linear

Total RE Area: n/a; <1ha; 1-5ha; 5-20ha; 20-50ha; 50-250ha; >250ha

Dominant Stratum Form: Tree; Shrub; Forb; Grass; Aquatic

Epiphytes	Absent; Scattered (1-5); Common (6-10); Abundant (>10)		
Vines	Absent; Scattered (1-5); Common (6-10); Abundant (>10)	Cryptogams	0%; 1-25%; 26-75%; >75%

Eastern Grey Kangaroo
Bandicoot diggings

WATERCOURSE CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 30/8/11 Assessor: CL/MR Job: 60188431 Datum:

Crossing: Original **Name:** Laicon Cr **KP:** AB4762

Mapped RE: HVR	Observed RE: HVR	RE Length: 30m	E ROW direction ↑
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 4 m	
Vegetation on ↑ side: Mel. viminalis (D) Euc. tereticornis (R) Cynodon dactylon (F) Spor. natalensis +* (F) Pseudorhaphis spinescens (O) Panicum decipiens? (O) Nymphaea violacea (R) Lepironia articulata (O) Bacopa monnieri (O)			S ROW direction ↓
Crossing description: channel ≈ 30m, above normal depth large permanent pool (Ross Lulbn, pers comm)			
← Direction N	Wpt: CL001-S	KP: AB4762	S
Photo: CL 591	Bed Width: 30m	Direction →	
Vegetation on ↓ side: A ₀ for E bank			W
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 5 m	
Mapped RE: HVR	Observed RE: HVR	RE Length: 30m	

Wetland Assessment

Type: River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other.....

Salinity: Saline; Brackish; Fresh **Seasonality:** Perennial; Seasonal; Intermittent

Water condition: Turbid; Clear; Stagnant; Polluted; Algae **Stream flow:** Dry; Pool; Run; Riffle; Cascade; Fall

Vegetation: Submerged; Floating; Emergent Non-woody; Emergent Woody

Instream habitat features: Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)

Move to north (upstream) to avoid large pool
Wpt, CL003 - just north of permanent waterhole - move crossing here or further north (eg to CL002)

Crossing: Proposed Change **Name:** Laicon Cr **KP:** UN411

Mapped RE: HVR	Observed RE: HVR	RE Length: 30m	E ROW direction ↑
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 4 m	
Vegetation on ↑ side: Mel. viminalis (D) Cryptostegia grandiflora +* (O) Cas. cummularia (O) Ficus opposita (O) Leonardra longifolia (O) Mallotus philippinensis (R) Ruena humilis (O) Sporobolus natalensis +* (O) canopy ≈ 4m, 50% Asclepias curassavica (O)			S ROW direction ↓
Crossing description: channel ≈ 4m wide, < 1m deep No aquatic spp.			
← Direction N	Wpt: CL002-S	KP: N of AB4762	S
Photo: CL 596, 601 (channel)	Width: 30m	Direction →	
Vegetation on ↓ side: Same as E bank			W
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 4 m	
Mapped RE: HVR	Observed RE: HVR	RE Length: 30m	

WATERCOURSE CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 8/9/11 Assessor: CL + DB Job: 60188431 Datum:

Crossing: Original Name: Carborough Crk

Mapped RE: 11.3.4/11.3.2	Observed RE: 11.3.25	RE Length: 15m	N ↑ ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 8 m		Photo: CL 796
Vegetation on ↑ side: Cas. cunninghamii (O) Mel. leucadendra (A) Euc. uebra (R) Cor dallachyana (R) Lycopodium hookeri (O) Jasminum simplicifolium (O) Cuponiopsis anacardioides (R) Euroschinus falcata (R) Drypetes deplanchei (O) Ambrosia sp (S) (O) Caussia ovata (F) Opuntia tomentosa ++ (R) Harussia montini ++ (R) Pouterium hysterophorus ++ (O)			E → ROW direction
Crossing description: Sandy bed ← Direction W small pool 2m wide x 0.1m deep Photo: CL 799		Wpt: CL 075-S KP: EL 28.3 Bed Width: 20m Direction → Photo: CL 797	
Vegetation on ↓ side: Very narrow band of Mel. leucadendra			S ↓ ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 5 m		Photo: CL 798
Mapped RE: 11.3.4/11.3.2	Observed RE: 11.3.25	RE Length: 5m	

Wetland Assessment

Type: River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other.....
 Salinity: Saline; Brackish; Fresh
 Seasonality: Perennial; Seasonal; Intermittent
 Water condition: Turbid; Clear; Stagnant; Polluted; Algae
 Stream flow: Dry; Pool; Run; Riffle; Cascade; Fall
 Vegetation: Submerged; Floating; Emergent Non-woody; Emergent Woody. Ranging
 Instream habitat features: Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)

Sandstone outcrops present. Sharp bend 50m to W. Large gullies to N.
 Move W to CL 075, straight section of creek with no sandstone outcrop visible.

Crossing: Proposed Change Name: This alternate crossing is *DB UNNOT ANTABLE DUE TO BRIGAN

Mapped RE: 11.3.25	Observed RE: 11.3.25	RE Length: 10m	N ↑ ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 4 m		Photo: CL 804
Vegetation on ↑ side: Mel. leucadendra (D) Euc. tereticornis (O) Ficus opposita (O)			E → ROW direction
Crossing description: Sandy bed ← Direction W Photo: CL 807		Wpt: CL 076-S KP: W of EL 28.3 Width: 20m Direction → Photo: CL 805	
Vegetation on ↓ side: A.o for N bank			S ↓ ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 6 m		Photo: CL 806
Mapped RE: 11.3.25	Observed RE: 11.3.25	RE Length: 10m	

Ecological Data Sheet (to accompany electronic data sheet)

Job Number: ...60188431...

Site Number: ..CF.50. JUN. 190... KP. EL. 6. 2.... Sheets completed:

Flora; Fauna; Wetland

Assessor: ...JW+CF..... Date: 26. / 06. / 2011

Time: ...1:05pm.....

Location:

Tertiary Flora Assessment (measured in 50m x 10m plot)

All woody species present within 50m x 10m plot (plus dominant, characteristic and threatened non-woody species)

<i>Euc. populnea</i>	T		D					
<i>Euc. crebra</i>	T		O					
<i>Atalya hemiglauca</i>	T					O		
<i>Cypaniopsis sp. ? (s)</i>	T					O		
<i>Carissa ovata</i>	H							O
<i>Pterocaulis shpatum</i>	H							O
<i>Stylastanthes scabra *</i>	H							O
<i>Sesbania sp. *</i>	H							O
<i>Cenchrus ciliare *</i>	G							O
<i>Harisia sp **</i>	H							O
<i>Chloris virgata</i>	G							A
<i>Heteropogon contortus</i>	G							A
<i>malvacea americana *</i>	H							F
<i>Opuntia sp **</i>	H							O
Median Ht (m)			12			3		0.4
Ht Range (m)	-	-	-	-	-	-	-	-
Visual Cover (%)			35%			25%		80%
Recruitment (Yes / No / %)								

Species annotations: S = Specimen Collected; * = Exotic Species; ** = Declared Species; + = Outside but adjoining 50m x 10m plot
 Height categories: E = Emergent; T1 = Tree 1 stratum, T2 = Tree 2 stratum, T3 = Tree 3 stratum, S1 = Shrub 1 stratum, S2 = Shrub 2, G = Ground stratum
 Form: T = Tree; S = Shrub; G = Grass; R = Rush / Sedge; F = Forb (i.e. herb); V = Vine; E = Epiphyte; A = Aquatic; Seed = Seedling; Sap = Sapling
 Relative dominance (abundance within strata): D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare
 Abbreviations: N/A = Not Applicable; N/R = Not Recorded; N/O = None Observed

Site / Waypoint #:

Tertiary Flora Assessment (measured in 50m x 10m plot) - continued

RE Map	11.3.2	—	OC	OC
Survey result	11.3.2	—	OC	OC

Width of RE (if linear): n/a; <35m wide; 35-75m; 75-150m; 150-300m; >300m; not linear

Total RE Area: n/a; <1ha; 1-5ha; 5-20ha; 20-50ha; 50-250ha; >250ha

Dominant Stratum Form: Tree; Shrub; Forb; Grass; Aquatic

Epiphytes	<u>Absent</u> ; Scattered (1-5); Common (6-10); Abundant (>10)		
Vines	<u>Absent</u> ; Scattered (1-5); Common (6-10); Abundant (>10)	Cryptogams	<u>0%</u> ; 1-25%; 26-75%; >75%

N - CF702
 E - CF703
 S - CF704
 W - CF705

Entered ML

WATERCOURSE CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 26/6/11 Assessor: DM JB Job: 60188431 Datum:

Crossing: Original Name: Walker Creek

downstream

Mapped RE: 11.3.25	Observed RE: 11.3.25	RE Length: 10m	↑ ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 4 m		Photo: JB 151
Vegetation on ↑ side:			
<i>E. terreticornis</i> (D)(T1)	bottle tree (R)(T2)	quinine tree (O)(T2)	Weeds
<i>Melaleuca</i> (collected) (A)(T2)	False sandalwood (F)(S1)	bat wing coral tree (O)(S1)	Red natal (A)(G)
<i>E. crebra</i> (A)(T1)	<i>Corymbia clarksoniana</i> (O)(T1)	<i>Bursaria spinosa</i> (O)(S1)	thatch grass (F)(G)
White cedar (R)(T2)	<i>E. populnea</i> (R)(T1)	Sandpaper fig (O)(S1)	blady grass (F)(G)
	<i>C. tessellaris</i> (O)(T1)	Cratleria vine (F)(V)	parthenium (O)(G)
	ghost gum (R)(T1)	Black spear grass (A)(G)	balton cotton bush (O)(G)
Crossing description:		stylo (O)(G)	Wpt: JW 038-J LW 143
← Direction: N	Notes: Steep south of current alignment to avoid large habitat <i>E. terreticornis</i> as well as gully of tributary stream at North-east.		KP: EL 8.3
Photo: JB 154			Bed Width: 8m
		Lomandra sp. (O)(G-S)	Direction → S
			Photo: JB 153
Vegetation on ↓ side:			
"			
Bank Type: Earth; Sandy; Rocky Slope: Gentle; Steep; Cliff Height: 4 m Photo: JB 152			
Mapped RE: 11.3.25		Observed RE: 11.3.25	RE Length: 10m

Wetland Assessment

River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other.....
 Saline; Brackish; Fresh Seasonality: Perennial; Seasonal; Intermittent
 Turbid; Clear; Stagnant; Polluted; Algae Stream flow: Dry Pool; Run; Riffle; Cascade; Fall
 Submerged; Floating; Emergent Non-woody; Emergent Woody.
 Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)

Crossing: Proposed Change Name:

Mapped RE:	Observed RE:	RE Length:	↑ ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m		Photo:
Vegetation on ↑ side:			
Crossing description:		Wpt:	↑ ROW direction
← Direction:	KP:		
Photo:	Width:		
		Direction →	
		Photo:	
Vegetation on ↓ side:			
Bank Type: Earth; Sandy; Rocky Slope: Gentle; Steep; Cliff Height: m Photo:			
Mapped RE:		Observed RE:	RE Length:

WATERCOURSE CROSSING VEGETATION RECORD

Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Entered MR

Date: 26/6/11 Assessor: DM JB Job: 60188431 Datum:

Crossing: Original Name: Walker Creek

Upstream

Mapped RE: 11.3.25	Observed RE: 11.3.25	RE Length: 10m	N ↑ ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 4 m	
Vegetation on ↑ side:		Photo: JB 155	↑ ROW direction
E. terreticornis (A)(Ti) C. tessellaris (A)(Ti) Casuarina cunninghamiana (A)(TR) Quinine tree (F)(SI) Acacia sp. (E)(SI)		tall Rhodes grass (O)(G) Sample/collected (R)(S) Blue billy weed (A)(W) Lantana camara (O)(S) Guinea grass (F)(G) Red natal (A)(G)	
Crossing description:		Wpt: JW039JUN144	↓ ROW direction
← Direction W		KP: EL 12.8	
Photo: JB 158		Bed Width: 10m	↓ ROW direction
Vegetation on ↓ side:		Direction → E	
Photo: JB 156			
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 4 m	
Mapped RE: 11.3.25	Observed RE: 11.3.25	RE Length: 15m	S Downstream

Wetland Assessment

Type: River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other.....

Salinity: Saline; Brackish; Fresh Seasonality: Perennial; Seasonal; Intermittent

Water condition: Turbid; Clear; Stagnant; Polluted; Algae Stream flow: Dry; Pool; Run; Riffle; Cascade; Fall

Vegetation: Submerged; Floating; Emergent Non-woody; Emergent Woody.

Instream habitat features: Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)

Crossing: Proposed Change Name:

Mapped RE:	Observed RE:	RE Length:	↑ ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m	
Vegetation on ↑ side:		Photo:	↑ ROW direction
Crossing description:		Wpt:	
← Direction		KP:	
Photo:		Width:	
Vegetation on ↓ side:		Direction →	
Photo:			
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m	
Mapped RE:	Observed RE:	RE Length:	↓ ROW direction

Tertiary Flora Assessment (measured in 50m x 10m plot) - continued

RE Map	11.3.27			
Survey result	11.5.8			

Width of RE (if linear): n/a; <35m wide; 35-75m; 75-150m; 150-300m; >300m; not linear
 Total RE Area: n/a; <1ha; 1-5ha; 5-20ha; 20-50ha; 50-250ha; >250ha
 Dominant Stratum Form: Tree; Shrub; Forb; Grass; Aquatic

Epiphytes	<u>Absent</u> ; Scattered (1-5); Common (6-10); Abundant (>10)		
Vines	<u>Absent</u> ; Scattered (1-5); Common (6-10); Abundant (>10)	Cryptogams	0%; <u>1-25%</u> ; 26-75%; >75%

- Some small depressions with water present < 0.1m deep
- Mostly dry (damp soil)
- some pig diggings
- not alluvial
- 11.5.8c (Euc. platyphylla woodland) nearby

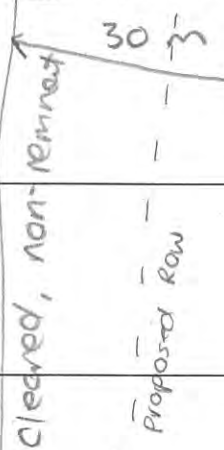
WATERCOURSE CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 25/06/2011 Assessor: JWA MR Job: 60188431 Datum:

Crossing: Original Name: Spring Creek

Downstream

Mapped RE: 11.5.3/11.7.2	Observed RE: 11.3.25	RE Length: 30 m	S ROW direction →
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 0.5 m		Photo: JW 661
Vegetation on ↑ side: E. tereticornis (D), Alph. excel. (O) Malvaceae* Stylosanthes (A)		Same as E side Acacia sp. (collected) (A) Petalostigma, (O) Canopy cover ~ 40%	
Crossing description: ← Direction E Photo: JW 664		Sandy substrate Dry. Dog tracks everywhere Cattle tracks. pig tracks.	Wpt: JN035JFJUN140 KP: EL 34.7 Bed Width: 10m Direction → W Photo: JW 662
Vegetation on ↓ side: E. tereticornis (F) C. clarksonia (F) Acacia sp. (A)		petalostigma pub (O) Canopy Melaleuca nervosa (R) (over 30%) Alph. excel (O) Populnea gum (R) Casuarina cunninghamiana (F)	
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 0.15m	Photo: JW 663
Mapped RE: 11.5.3/11.7.2	Observed RE: 11.3.25	RE Length: 20 m	N ROW direction ↓



Wetland Assessment

Type: River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other
 Salinity: Saline; Brackish; Fresh
 Seasonality: Perennial; Seasonal; Intermittent
 Water condition: Turbid; Clear; Stagnant; Polluted; Algae
 Stream flow: Dry; Pool; Run; Riffle; Cascade; Fall
 Vegetation: Submerged; Floating; Emergent Non-woody; Emergent Woody
 Instream habitat features: Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)

Ensure row goes through already cleared area. Avoid large trees.

Crossing: Proposed Change Name:

Mapped RE:	Observed RE:	RE Length:	ROW direction →
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m		Photo:
Vegetation on ↑ side:			
Crossing description: ← Direction Photo:		Wpt: KP: Width: Direction → Photo:	
Vegetation on ↓ side:			
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m	Photo:
Mapped RE:	Observed RE:	RE Length:	← ROW direction ↓

WATERCOURSE CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommend infrastructure location.

Date: 24/06/2011 Assessor: JW & MR Job: 60188431 Datum:

Crossing: Original Name: THIRTY MILE CK

Mapped RE: 11.5.3/11.7.2	Observed RE: 11.3.25b	RE Length: 5m	S ↑ ROW direction
Bank Type: Earth; <u>Sandy</u> Rocky	Slope: <u>Gentle</u> Steep; Cliff	Height: 0.3 m		Photo: JW0673
Vegetation on ↑ side: cleared grazing paddock			
Melaleuca leucadendron (D)		Alp. excelsa (O)	Cover 30%
Euc. tere (A)		Aca. sp. (S KP25.7) (F)	
Pet. pub (F)		Lomandra longifolia (O)	
Euc. platyphylla (O)		Melinis repens (O)*	
Crossing description: ← Direction E		sandy substrate	Wpt: JW036 Jun 11/11
Photo: JW0676		Dry Animal tracks - pig, dog, cattle, macropod	KP: EL36.9
		Euc. tere & M. leuc growing within bed	Bed Width: 15m
			Direction → W
			Photo: JW0674
Vegetation on ↓ side: As per south bank. Cover 30%			
cleared grazing paddock.			
Bank Type: Earth; <u>Sandy</u> Rocky	Slope: <u>Gentle</u> Steep; Cliff	Height: 0.3 m	Photo: JW0675
Mapped RE: 11.5.3/11.7.2	Observed RE: 11.3.25b	RE Length: 5m	N ↓ ROW direction

Wetland Assessment

River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other.....
 Saline; Brackish; Fresh Seasonality Perennial; Seasonal; Intermittent
 Turbid; Clear; Stagnant; Polluted; Algae Stream flow: Dry; Pool; Run; Riffle; Cascade; Fall
 Submerged; Floating; Emergent Non-woody; Emergent Woody.
 Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)

move ROW to existing clearing west of proposed ROW @ JW037 (as below)

Crossing: Proposed Change Name: Unnamed

Mapped RE: <u>11.5.3/11.7.2</u>	Observed RE: Non-rem	RE Length: —	S ↑ ROW direction
Bank Type: Earth; <u>Sandy</u> Rocky	Slope: <u>Gentle</u> Steep; Cliff	Height: 0.3 m		Photo: JW0681
Vegetation on ↑ side:			
AS per WYPT JW036	← 30m cleared →	Scattered juv. * Euc. tere * Mel. leucadendron	ROW direction
Crossing description: ← Direction		sandy substrate	Wpt: JW037 Jun 11/11
Photo:			KP: EL36.6 west
			Width: 15m
			Direction → W
			Photo: —
Vegetation on ↓ side:			
AS per WYPT JW036	← 30m cleared →	As per S bank	ROW direction
Bank Type: Earth; <u>Sandy</u> Rocky	Slope: <u>Gentle</u> Steep; Cliff	Height: 0.3 m	Photo: JW0680
Mapped RE: <u>11.5.3/11.7.2</u>	Observed RE: Non-rem	RE Length: —	N ↓ ROW direction

LINEAR VEGETATION RECORD For each side, record waypoint / KP at each boundary, direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location. Enter data from bottom of form upwards.

Date 25/6/11 Location Strathfield - Header Assessor CF/DM Job # 60188431

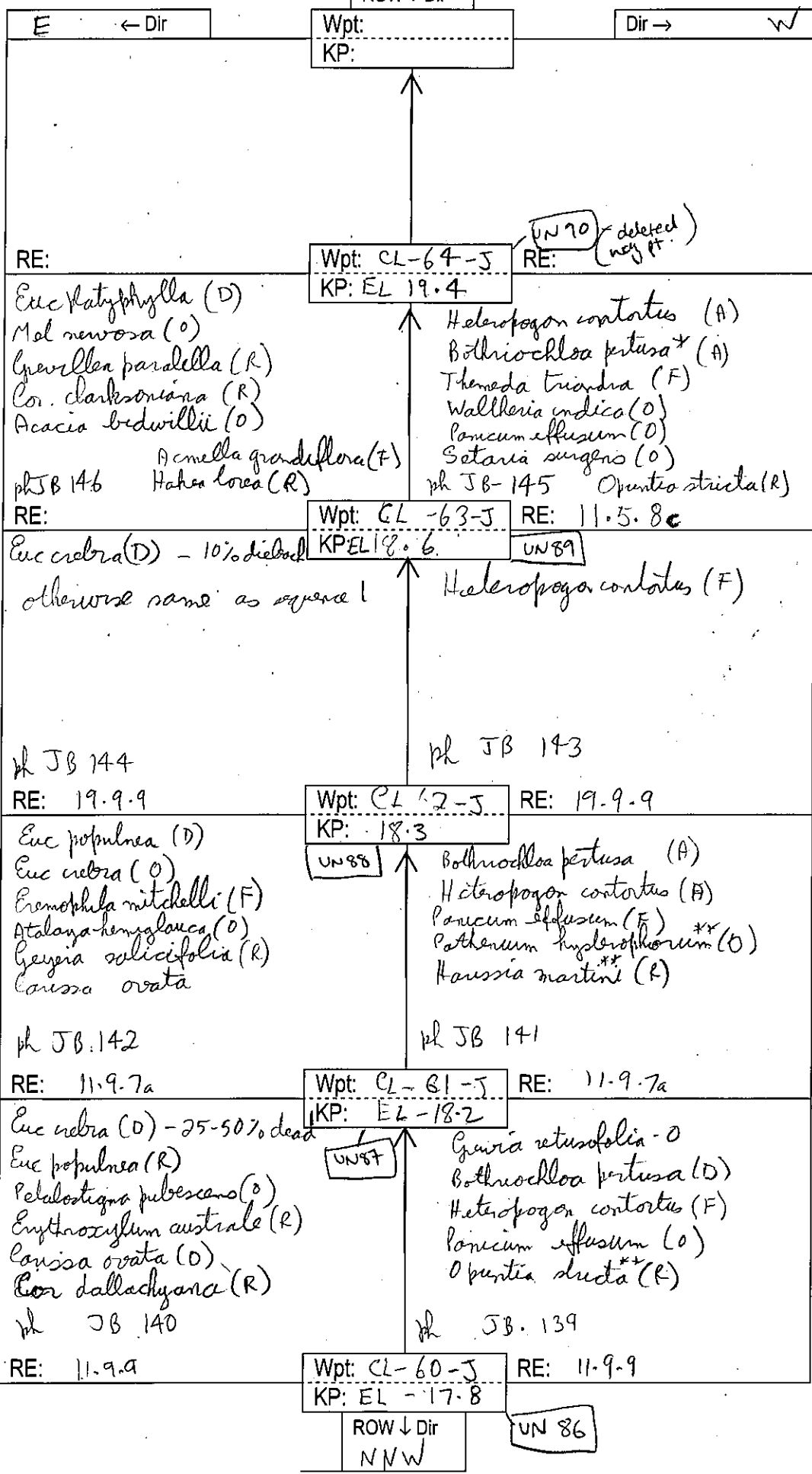
	SSW ROW ↑ Dir			
ENE ← Dir	Wpt: KP:	Dir → WSW	Recommendation	
	RE:	Wpt: KP:	RE:	Sequence #:
	<i>Euc crebra</i>	RE:	Wpt: KP:	Sequence #:
		PR DM 996 ↑		Sequence #:
RE:	UN23	Wpt: CF 049C-J KP: EL20-5	RE: 11.9.9	Sequence #:
	<i>Euc populnea</i>	PR DM 999 ↓		Sequence #:
RE:	UN22	Wpt: CF 049B-J KP: EL20-3	RE: 11.9.7	Sequence #:
	<i>Euc crebra</i>	PR CF 700 ↑		Sequence #:
		PR CF 701 ↓		Sequence #:
RE:	UN21	Wpt: CF 049A-J KP: EL20	RE: 11.9.9	Sequence #:
	<i>Euc tetricornis</i> <i>Cos tessellaris</i> <i>A. Clivialis</i>	PR ^{CF} 696 ↑		Sequence #:
		PR ^{CF} 698 ↓		Sequence #:
RE:	UN20	Wpt: CF 049-J KP: EL19-8	RE: 11.9.7	Sequence #:
		PR ^{CF} 694 ↑		Sequence #:
		PR ^{CF} 695 ↓		Sequence #:
	ROW ↓ Dir NNE			

LINEAR VEGETATION RECORD For each side, record waypoint / KP at each boundary, direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location. Enter data from bottom of form upwards.

Date 25/6/11 Location Strathfield - Elmhurst Assessor CL/JB Job # 60188431

SSE
ROW ↑ Dir

header



Recommendation
Sequence #: <u>end</u>
Sequence #: <u>4</u>
Sequence #: <u>3</u>
Sequence #: <u>2</u>
Sequence #: <u>1</u>

WATERCOURSE CROSSING VEGETATION RECORD

Entered MK

Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 26/6/11 Assessor: CL/MR Job: 60188431 Datum:

Crossing: Original Name: RIPSTONE CK (11.3.4 also?)

Mapped RE: 11.3.2/11.3.25/11.3.1	Observed RE: 11.3.25	RE Length: 80m	W ↑ ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m	
Vegetation on ↑ side: Mel. fluviatilis (D) Cas. cunninghamii (O) Euc. tereticornis (O) Lycopodium hookeri (O) Xanthium occidentale (F) Ricinus communis (O) Pennisetum ciliare* (D) Megathyrsus maximus* (O) Cymbopogon filipes (O) Bothriochloa pertusa* (F)			↓ ROW direction
Crossing description: Sandy bed water ≈ 2m wide, < 0.5m deep some streambank erosion			
← Direction: S	Wpt: CL-68-J	WN 93	N ← ROW direction
Photo: CL 94	KP: SL 6.5	Bed Width: 7m	
Vegetation on ↓ side: A. for W side			E ← ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m	
Mapped RE: 11.3.2/11.3.25/11.3.1	Observed RE: 11.3.25	RE Length: 20m	

Wetland Assessment

River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other.....
 Saline; Brackish; Fresh Seasonality: Perennial; Seasonal; Intermittent
 Turbid; Clear; Stagnant; Polluted; Algae Stream flow: Dry; Pool; Run; Riffle; Cascade; Fall
 Submerged; Floating; Emergent Non-woody; Emergent Woody.
 Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)

Avoid large trees with hollows

Crossing: Proposed Change Name:

Mapped RE:	Observed RE:	RE Length:	↑ ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m	
Vegetation on ↑ side:			↓ ROW direction
Crossing description:			
← Direction:	Wpt:	KP:	N ← ROW direction
Photo:	Width:	Direction →	
Vegetation on ↓ side:			E ← ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m	
Mapped RE:	Observed RE:	RE Length:	

WATERCOURSE CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 26/6/11 Assessor: Job: 60188431 Datum:

Crossing: Original Name: 11-3-25 Downstream

Mapped RE: 11-3-27	Observed RE: 11-3-27	RE Length:	F ↑ ROW direction
Bank Type: Earth, Sandy, Rocky	Slope: Gentle, Steep, Cliff	Height: 1 m	
Vegetation on ↑ side: Euc tereticornis (D), Ac harpophylla (O) Euc populnea (R) Cor tessellaris (O)		Photo: CL 97	

Crossing description: 100m wide pool permanent (landholder, pers. comm)	Wpt: CL-70-J JUN 2013
← Direction N	KP: SL 7.8
Photo: CL 96	Bed Width:
Pseudorhaphis spinoseps (F) Eleocharis dulcis (O) Cotton Pygmy geese (6)	Direction → S
	Photo: CL 98

Vegetation on ↓ side: A o for W side.	W ↓ ROW direction
Bank Type: Earth, Sandy, Rocky	
Slope: Gentle, Steep, Cliff	
Height: 1 m	
Photo: CL 99	
Mapped RE: 11-3-27	Observed RE: 11-3-27/11-3-25
RE Length:	

or boundary 11.32/11.3.25 and 11.3.27b

Wetland Assessment Upstream

Type: River, Creek, Lake (>8ha), Pool (<8ha), Dam, Marsh, Other.....

Salinity: Saline, Brackish, Fresh

Seasonality: Perennial, Seasonal, Intermittent

Water condition: Turbid, Clear, Stagnant, Polluted, Algae

Stream flow: Dry, Pool, Run, Riffle, Cascade, Fall

Vegetation: Submerged, Floating, Emergent Non-woody, Emergent Woody

Instream habitat features: Island, Mud flat, Shallows, Deep open water, Snags, Rocks, Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)
Move North to above waterhole -
pygmy geese.

Crossing: Proposed Change Name:

Mapped RE: Non-rem	Observed RE: Non rem	RE Length:	E ↑ ROW direction
Bank Type: Earth, Sandy, Rocky	Slope: Gentle, Steep, Cliff	Height: m	
Vegetation on ↑ side: cleared Euc tereticornis (R) Terminalia oblongata (O) Pennisetum ciliare (D) Bothriochloa pertusa (F) Parthenium ** (R)		Photo: CL 101	

Crossing description: dry, upstream of waterhole	Wpt: CL 71-JUN 95
← Direction N	KP: 500m N of SL 7.8
Photo: CL 100	Width: 5m
Cyperus sp (O) Stylosanthes scabra (O) Bothriochloa pertusa (F) Heteropogon contortus (F) Junco usulatus (O) Pennisetum ciliare (F) Ludwigia octovalvis (F) Fimbristylis sp (F)	Direction → S
	Photo: CL 102

Vegetation on ↓ side: cleared	W ↓ ROW direction
Bank Type: Earth, Sandy, Rocky	
Slope: Gentle, Steep, Cliff	
Height: m	
Photo: CL 104	
Mapped RE: Non-rem	Observed RE: Non rem
RE Length:	

Ecological Data Sheet – Fauna Habitat

Entered - MK

Job Number:60188431

Site Number: ...CL-35-J (UN 237)..... Sheets completed: Flora; Fauna; Wetland

Assessor: Date: 22 / 6 / 2011 Bioregion: 11

Location: KP: SL 11-2

GPS Projection: Lat-Long; UTM Datum: GDA94; WGS84; AGD84 Zone:

Latitude / Northing: Longitude / Easting: Waypoint #:

Altitude:m Slope: Aspect: N; NE; E; SE; S; SW; W; NW

Notes:

Table with 5 columns: Down, Slope or hill not specified, Fossil coastal dune, Permanent lake, river, stream, water course, Freshwater lake, lagoon, spring. Rows include Alluvial plain, Inland clay pan, Coastal tidal flat, Unspecified, undulating terrain.

Table with 8 columns: Class, Level, Very gentle, Gentle incline, Moderate, steep, Very steep, Precipitous. Rows include Percentage, Degree.

Table with 8 columns: Very High (>300 m), High (90-300 m), Low (30-90 m), Very Low (9-30 m), Extremely low (<9 m). Rows include Level plain, Gently undulating plain, Undulating plain, Rolling plain, badlands.

Geology: Alluvial; Clay; Sand; Coarse sedimentary; Fine sedimentary; Igneous(coarse); Volcanic(fine); Metamorphic; Limestone; Laterite
Soil Colour: Whitish; Yellow; Orange; Brown; Red; Black; Grey; Pale; Dark; Mottled
Soil Secondary Texture: Clayey; Silty; Loamy; Sandy; Gravelly; Stony
Soil Primary Texture: Clay; Silt; Loam; Sand; Gravel; Saline Mud
Soil Notes:

Notes

Health: Pristine Very Good Good Average Poor Degraded Completely Degraded (almost without natives)

Vegetation: Remnant (>70% height, >50% canopy density); Regrowth; Exotic; Cleared

Dominant stratum: Tree; Shrubland; Grassland; Forbland; Wetland % Coverage: >70%; 30-70%; 10-30%; <10%

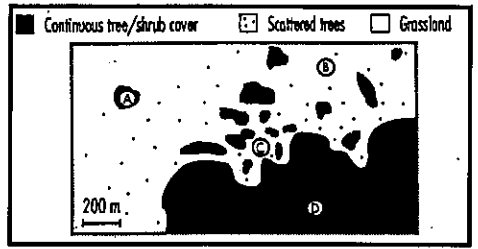
Overall patch size: <1ha; 1-5ha; 5-20ha; 20-50ha; 50-250ha; >250ha

Patch shape: Square/Circular; Semi-irregular; Very irregular; Linear

Linear type: None; Watercourse; Road; Rail; Windbreak; Fence; Stockroute

Width (if linear): <35m wide; 35-75m; 75-150m; 150-300m; >300m

Connectivity: A (Isolated); B (Semi-isolated); C (Not isolated); D (Continuous)



Notes

Erosion: Absent; Scattered; Frequent // Sheet; Rill (<30cm); Gully (>30cm); Mass Failure; Stream-bank

Dieback: 0%; 1-25%; 26-75%; >75% Notes:

Weeds: Absent; Scattered; Frequent; Dominant. // tree shrub ground vine Notes:

Fire scars: Absent; Scattered; Frequent. // Recent; Old // Av height:m

Agriculture: None; Grazing; Feedlot; Crop; Orchard; Plantation Type:

Other: Timber-cutting; Ring-barking; Mining; Quarry; Other:

Notes

Conservation; Cultural; Recreational; Gov Reserve; Details:

Facing N
E
S
W

Fauna Habitat

(Measured / extrapolated in 1 ha plot - e.g. 100m X 100m; 20m X 500m)

Circle koala food trees

Large Hollows (> 20 cm)	Absent; Scattered (1-5);	Common (6-10);	Abundant (>10)
Small Hollows (< 20 cm)	Absent; Scattered (1-5);	Common (6-10);	Abundant (>10)
Hollow status	Mostly Dead; Mostly Alive;	Mixture	
Large logs (> 50cm)	Absent; Scattered (1-5);	Common (6-10);	Abundant (>10)
Small logs (10-50cm)	Absent; Scattered (1-10);	Common (11-20);	Abundant (>20)
Cliffs / outcrops	Absent; Scattered (1-10%);	Common (11-50%);	Abundant (>50%)
Large rocks (> 30cm)	Absent; Scattered (1-10%);	Common (11-50%);	Abundant (>50%)
Small rocks (10-30cm)	Absent; Scattered (1-10%);	Common (11-50%);	Abundant (>50%)
Leaf litter	Absent; Scattered (1-25%);	Common (26-75%);	Abundant (>75%)
Dense shrub / grass shelter	Absent; Scattered (1-10%);	Common (11-50%);	Abundant (>50%)
Termite mounds (> 50cm high)	Absent; Scattered (1-10);	Frequent (>10)	
Seeding grass cover	Absent; Scattered (1-10%);	Common (11-50%);	Abundant (>50%)
Fleshy fruiting plants	Absent; Scattered (1-10%);	Common (11-50%);	Abundant (>50%)
Nectar/pollen producing plant	Absent; Scattered (1-10%);	Common (11-50%);	Abundant (>50%)
Koala trees	Absent; Scattered (1-10%);	Common (11-50%);	Abundant (>50%)
Mistletoe	Absent; Scattered (1-10);	Common (11-20);	Abundant (>20)
Macropod scats	Absent; Scattered; Frequent		
Scats, pellets; food remains:	.....	
Animal tracks:	.....	
Animal trails:	.....	
Bones, feathers:	.....	
Diggings, burrows:	.....	
Shelters, nests:	.....	
Tree scratches; feeding scars:	.....	

- E. grandis*
- E. microcorys*
- E. pilularis*
- E. propinqua*
- E. resinifera*
- E. tereticornis*
- C. citriodora / maculata*
- C. intermedia*,
- E. bancrofti*
- E. camaldulensis*
- E. camea*
- E. crebra*,
- E. dunnii*
- E. fibrosa*
- E. major*
- E. moluccana*
- E. platyphyla*
- E. punctata*
- E. robusta*
- E. saligna*
- E. seeana*
- E. siderophloia*
- E. signata / racemosa*
- E. tindaliae*
- E. viminalis*
- Lophostemon confertus*

250m wide x < 1m deep

River; Creek; Lake (>8ha); Pool (<8ha); <u>Wooded Swamp</u> ; Treeless Marsh; Gilgai; Claypan; Floodplain; Spring
Large Dam (>8 ha); Small Dam (<8ha); Irrigation Channel; Drainage Channel; Sewage Pond; Salt Field
Coral reef; Rocky Shore; Beach; Estuary; Mud Flat; Saltmarsh; Mangrove; Lagoon (<8ha); Lake (>8ha)
~ 10 ha. Saline; Brackish; <u>Fresh</u> Perennial; <u>Seasonal</u> ; Intermittent
Turbid; <u>Clear</u> ; Stagnant, Polluted; Algae Dry; <u>Pool</u> ; Run; Riffle; Cascade; Fall
Submerged; Floating; <u>Emergent Non-woody</u> ; <u>Emergent Woody</u> ; Fringing Non-woody; Fringing Woody
Island; Mud flat; <u>Shallows</u> ; Deep open water; <u>Snags</u> ; Rocks; Standing dead timber
Exclusion fence; Earth banks; Rocky banks <u>Green couch</u> , <u>bare ground</u> ,

Numerous birds - wood ducks, lapwings, egrets, whistler ducks, pied cormorant, hookbill, black swan, forest kingfisher

- *Caldesia oligococca* (F) } aquatic cover 25%
Pseudorhaphis spinescens (F)
Lynodon dactylon (F)
 sedges (F)

Site / Waypoint #:

WATERCOURSE CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 3/09/11 Assessor: JWO43-S Job: 60188431 Datum:

Crossing: Original Name: MR/AM SL 14 - North Isaac River.

Mapped RE: 11.3.25	Observed RE: 11.3.25/	RE Length: 30m	SW ↑ ROW direction
Bank Type: (Earth) Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 10 m	
Vegetation on ↑ side:		Photo: JW 6542 (S)	↑ ROW direction
<i>E. verticillaris</i> <i>Casuarina cunninghamii</i> <i>A. harpophylla</i> <i>C. ciliaris</i> <i>Meibomia linearifolia</i> <i>Corymbia kesseleriana</i> <i>Ricinus communis</i> <i>Bidens pylosa</i> <i>Ageratum hoostonianum</i> <i>P. ciliaris</i> (NE side)			
NB/ 11.3.25 Airway river, 11.3.1 behind (v. thin band)			
Crossing description:		Wpt: JWO43-S	↓ ROW direction
← Direction SE		KP: N of SL14	
Photo: JW 6541 (E)		Bed Width: 60	↓ ROW direction
Marsdenia ? (E) (R) Fleeggia virosa		Direction → NW	
Vegetation on ↓ side:		Photo: JW 6543 (W)	↓ ROW direction
<i>E. populnea</i> (O) <i>Capparis lasiantha</i> (R) <i>Carissa ovata</i> (R) <i>Lantana</i> <i>A. salicina</i> (F) <i>Corymbia clarksonii</i> (O) <i>Cassia brewsteri</i> (O) <i>F. opposita</i> (O) <i>Xanthium (Nageera burri)</i> *, * <i>E. latifolius</i> (R) <i>E. verticillaris</i> <i>Panicum maximum</i> *, * <i>E. melanophloea</i> (O) (O) <i>Sida cordifolia</i> (R)			
Bank Type: (Earth) Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: 10 m	Photo: JW 6540 (N)
Mapped RE: 11.3.25	Observed RE: 11.3.25/	RE Length: 50m	NE

Wetland Assessment

River Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other
 Saline; Brackish; Fresh Seasonality: Perennial; Seasonal; Intermittent
 Turbid; Clear; Stagnant; Polluted; Algae Streamflow: Dry; Pool; Run; Riffle; Cascade; Fall
 Submerged; Floating; Emergent Non-woody; Emergent Woody
 Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)
 Avoid large trees, & snags where possible, especially very large *E. vert* on NE bank 11.3.25/11.3.4 SW bank 11.3.25/11.3.1

Crossing: Proposed Change		Name:	
Mapped RE:	Observed RE:	RE Length:	↑ ROW direction
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m	
Vegetation on ↑ side:		Photo:	↑ ROW direction
Crossing description:		Wpt:	
← Direction		KP:	↓ ROW direction
Photo:		Width:	
Vegetation on ↓ side:		Direction →	↓ ROW direction
Bank Type: Earth; Sandy; Rocky		Photo:	
Mapped RE:	Observed RE:	RE Length:	

Sivatro

WATERCOURSE CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: Assessor: CL Job:60188431..... Datum:

Crossing: Original Name: Isaac R downstream

Mapped RE: <u>11.3.25</u>	Observed RE: <u>11.3.25</u>	RE Length:	NE
Bank Type: <u>Earth; Sandy; Rocky</u>	Slope: <u>Gentle; Steep; Cliff</u>	Height: <u>8 m</u>	Photo: <u>JB-78</u>
Vegetation on ↑ side: <u>Euc tereticornis (D) Cas. cunninghamii (F) Cort. tessellaris (O)</u> <u>Ficus opposita (O) Lysiphellum hookeri (O) Melaleuca linariifolia (F)</u> <u>Peniscomplanis (F) Xanthum occidentale (F) Lomisetum albae (F) Opuntia stricta (R)</u> <u>Lantana camara (O) Ac. salicina (O) Euc populnea (O)</u>			↑ ROW direction
Crossing description: <u>Sandy bed ≈ 70m wide</u> <u>pool ≈ 10m wide, <1m deep</u> <u>on NE side (due to scouring associated with outer edge of bend ≈ 200m upstream)</u>		Wpt: <u>CL-28 JUN 56</u>	↓ ROW direction
← Direction <u>NW</u>		KP: <u>SL 19.0</u>	
Photo: <u>JB-81</u>		Bed Width: Direction → <u>SE</u> Photo: <u>JB-79</u>	
Vegetation on ↓ side: <u>Same as NE side</u>			
Bank Type: <u>Earth; Sandy; Rocky</u>	Slope: <u>Gentle; Steep; Cliff</u>	Height: <u>6 m</u>	Photo: <u>JB-80</u>
Mapped RE:	Observed RE:	RE Length:	SW

River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other.....
 Saline; Brackish; Fresh; Perennial; Seasonal; Intermittent
 Turbid; Clear; Stagnant; Polluted; Algae; Dry; Pool; Run; Riffle; Cascade; Fall
 Submerged; Floating; Emergent Non-woody; Emergent Woody.
 Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)
 Avoid large Euc tereticornis trees
 Avoid large stick nest (white bellied sea eagle >) in large Euc tereticornis
 * further → NE - Poplar box on alluvials - 11.3.2 * ph JB 87

Crossing: Proposed Change Name: Isaac R downstream of original crossing

Mapped RE: <u>11.3.25</u>	Observed RE:	RE Length:	NE
Bank Type: <u>Earth; Sandy; Rocky</u>	Slope: <u>Gentle; Steep; Cliff</u>	Height: <u>m</u>	Photo: <u>JB 83</u>
Vegetation on ↑ side:			↑ ROW direction
Crossing description: <u>same as original crossing except:</u> <u>- end of waterfall 5m x <0.5m</u> <u>- fewer large trees</u> <u>- more dense weeds</u>		Wpt: <u>SL 19.0</u>	↓ ROW direction
← Direction <u>NW</u>		KP: <u>CL-29 JUN 57</u>	
Photo: <u>JB 82</u>		Width: Direction → <u>SE</u> Photo: <u>JB 84</u>	
Vegetation on ↓ side:			
Bank Type: <u>Earth; Sandy; Rocky</u>	Slope: <u>Gentle; Steep; Cliff</u>	Height: <u>m</u>	Photo: <u>JB 85</u>
Mapped RE:	Observed RE:	RE Length:	SW

WATERCOURSE CROSSING VEGETATION RECORD Record waypoint / KP at crossing (and either side if relevant), direction, cleared width, vegetation beyond clearing (e.g. structure, dominant species), landform, landzone, RE, recommended infrastructure location.

Date: 24/6/11 Assessor: DM CF Job: 60188431 Datum:

Crossing: Original Name: CF 46 ~~Blackburn Creek~~ ~~Stephens Creek?~~ DL 18.3

Mapped RE: 11.3.25	Observed RE: 11.3.25	RE Length:	W ↑ ROW direction
Bank Type: Earth, Sandy, Rocky	Slope: Gentle, Steep, Cliff	Height: 10 m		Photo: CF 679
Vegetation on ↑ side:		Mexican poppy (O) (A) Castor oil plant (A) Naagooora bur (F) Red Notal (O) Guinea grass (A) Passiflora sp. (R) Parthenium (O) Parkinasonia (O)	
One large <i>E. terreticornis</i> habitat tree likely to require clearing (photo CF 685)			
Crossing description:		Wpt: CF 46-J	
← Direction S		KP: DL 18.4	
Photo: CF 680		Bed Width:	
		Direction → N	
		Photo: CF 681	
Vegetation on ↓ side:		Weeds - same as other side	
E. terreticornis (O), Casuarina cunninghamiana (O), E. populnea (R)		↓ ROW direction	
Bank Type: Earth, Sandy, Rocky	Slope: Gentle, Steep, Cliff	Height: 10 m	Photo: CF 682
Mapped RE: 11.3.25	Observed RE: 11.3.25	RE Length:	

River; Creek; Lake (>8ha); Pool (<8ha); Dam; Marsh; Other.....
 Saline; Brackish; Fresh Perennial; Seasonal; Intermittent
 Turbid; Clear; Stagnant; Polluted; Algae Dry; Pool; Run; Riffle; Cascade; Fall
 Submerged; Floating; Emergent Non-woody; Emergent Woody.
 Island; Mud flat; Shallows; Deep open water; Snags; Rocks; Standing dead timber

Notes / Recommendations (if clearance exists, estimate length)

Crossing: Proposed Change Name:

Mapped RE:	Observed RE:	RE Length:	ROW direction ↑
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m		Photo:
Vegetation on ↑ side:			
Crossing description:		Wpt:	
← Direction		KP:	
Photo:		Width:	
		Direction →	
		Photo:	
Vegetation on ↓ side:		↓ ROW direction	
Bank Type: Earth; Sandy; Rocky	Slope: Gentle; Steep; Cliff	Height: m	Photo:
Mapped RE:	Observed RE:	RE Length:	

Observational Data Sheets

Not ordered

OBSERVATIONAL VEGETATION RECORD

Assessor: CF Job: 60188431

Date: 15/1/2011 Time: 11am Waypoint #: CF002-J KP: AB 469.3 Photo: CL12
 Location: CL-2, JW-2, CF-2
 Mapped RE: Non-remnant Observed RE 11-11.4 Cleared width:
 Canopy spp (DAFOR): L. sumatrensis (0), Cory. clarksonia (0), E. crebra (0), E. terebinthifolia (R)
 Mid spp. (DAFOR): Lantana
 Notes / Recommendations: Hct. contortus, Thunbergia triandra, Dianella sp., Panicum sp.
 Thistlesp.
 - Remnant

UN31

Date: 15/1/2011 Time: 12:05 Waypoint #: CF003-J KP: AB 465.3 Photo: DM 0851, 0854 (N.W.)
 Location: CF-003
 Mapped RE: HVR - OC Observed RE HVR Cleared width:
 Canopy spp (DAFOR): Euc. populnea (A), Euc. moluccana (A), Euc. tere (0)
 Mid spp. (DAFOR): Lantana camara x; Rubber vine x; mother of millions.
 Notes / Recommendations: Hyperia rufus x, Melinis repens x; Opuntia sp x; snake weed
 To N = creek with ↑ abundance of weeds (Lantana, mother of millions) and M. linarifolia
 Further north E. tere
 S = Lrg extent of regrowth (Euc. mol, Cory. less, Euc crebra, Euc pop)

UN32

UN34

Date: 15/1/2011 Time: Waypoint #: CF005 KP: AB 462.3 Photo:
 Location:
 Mapped RE: 11.3.4/11.3.26 Observed RE 11.3.26 Cleared width:
 Canopy spp (DAFOR):
 Mid spp. (DAFOR):
 Notes / Recommendations: Boundary between regrowth and 11.3.26

Date: / / 2011 Time: Waypoint #: KP: Photo:
 Location:
 Mapped RE: Observed RE Cleared width:
 Canopy spp (DAFOR):
 Mid spp. (DAFOR):
 Notes / Recommendations:

OBSERVATIONAL VEGETATION RECORD

Assessor: JW & DM Job: 60188431

Date: 16.1.06.2011 Waypoint #: JW004-S KP: AB 446:6 Photo: DM0857-860 (N-W)

Location: Raglan Creek crossing

Geology: Alluvial; Clay; Sand; Coarse sedimentary; Fine sedimentary; Igneous(coarse); Volcanic(fine); Metamorphic; Limestone; Laterite

Health: Pristine; Very Good; Good; Average; Poor; Degraded; Completely Degraded (almost without natives)

Vegetation: Remnant (>70% height, >50% canopy density); Regrowth; Exotic; Cleared

Dominant Stratum: Tree; Shrub; Forb; Grass; Aquatic % Coverage: 70-100%; 30-70%; 10-30%; <10%

Mapped RE: HVR - OC Observed RE non-rem Cleared width:

Dominant spp. *Corymbia tessellaris* (D-C), *Carissa ovata* (D), Rubber Vine (A)

Notes / Recommendations:

Alt. location: JW005 E of creek = mangroves
VN 154 W of creek = some vegetation (see above)

Snake weed *
Rubber vine **
Blue billy goat weed *

UN 155

Date: 16.1.06.2011 Waypoint #: JW006-S KP: AB 446:4 Photo: DM0867(E), 868(S), 869(N), 870(W)

Location: Mangrove/woodland interface at Raglan - HVR OC

Geology: Alluvial; Clay; Sand; Coarse sedimentary; Fine sedimentary; Igneous(coarse); Volcanic(fine); Metamorphic; Limestone; Laterite

Health: Pristine; Very Good; Good; Average; Poor; Degraded; Completely Degraded (almost without natives)

Vegetation: Remnant (>70% height, >50% canopy density); Regrowth; Exotic; Cleared

Dominant Stratum: Tree; Shrub; Forb; Grass; Aquatic % Coverage: 70-100%; 30-70%; 10-30%; <10%

Mapped RE: HVR-OC Observed RE HVR-OC/Rem Cleared width: -

Dominant spp. see below

Notes / Recommendations: (11.1.4)

East - mangrove remnant on drainage line (grey mangrove) } tree sp dom
South - freshwater palustrine wetland / drainage (11.3.27) } 80% cover

North/West - EUC crebra (D), *Ptilosporum angustifolium* (D), *Acacia fasciculifera* (D)
prickly acacia * *Opuntia* sp ** snake weed **
Lantana ** *Harrisia recusa* ** (Regrowth / 20% canopy)
of 11.11.15

UN 156

Date: 16.1.06.2011 Waypoint #: JW005-S KP: AB 446:6 north Photo:

Location: Raglan Creek Crossing

Geology: Alluvial; Clay; Sand; Coarse sedimentary; Fine sedimentary; Igneous(coarse); Volcanic(fine); Metamorphic; Limestone; Laterite

Health: Pristine; Very Good; Good; Average; Poor; Degraded; Completely Degraded (almost without natives)

Vegetation: Remnant (>70% height, >50% canopy density); Regrowth; Exotic; Cleared

Dominant Stratum: Tree; Shrub; Forb; Grass; Aquatic % Coverage: 70-100%; 30-70%; 10-30%; <10%

Mapped RE: Observed RE Cleared width:

Dominant spp.

Notes / Recommendations:

Alternative crossing to JW004

154

OBSERVATIONAL VEGETATION RECORD

Assessor:..... Job: 60188431

(RevL, not on D)

Date: 19.../06/2011 Waypoint #: C118-5 KP: 235.5^{North} Photo:
Location:
Geology: Alluvial; Clay; Sand; Coarse sedimentary; Fine sedimentary; Igneous(coarse); Volcanic(fine); Metamorphic; Limestone; Laterite
Health: Pristine; Very Good; Good; Average; Poor; Degraded; Completely Degraded (almost without natives)
Vegetation: Remnant (>70% height, >50% canopy density); Regrowth; Exotic; Cleared
Dominant Stratum: Tree; Shrub; Forb; Grass; Aquatic % Coverage: 70-100%; 30-70%; 10-30%; <10%
Mapped RE: Observed RE Cleared width:
Dominant spp.
.....
Notes / Recommendations: Southern end of area branch
Keep line to south ph 940-942

Date:/...../2011 Waypoint #: KP: Photo:
Location:
Geology: Alluvial; Clay; Sand; Coarse sedimentary; Fine sedimentary; Igneous(coarse); Volcanic(fine); Metamorphic; Limestone; Laterite
Health: Pristine; Very Good; Good; Average; Poor; Degraded; Completely Degraded (almost without natives)
Vegetation: Remnant (>70% height, >50% canopy density); Regrowth; Exotic; Cleared
Dominant Stratum: Tree; Shrub; Forb; Grass; Aquatic % Coverage: 70-100%; 30-70%; 10-30%; <10%
Mapped RE: Observed RE Cleared width:
Dominant spp.
.....
Notes / Recommendations:

Date:/...../2011 Waypoint #: KP: Photo:
Location:
Geology: Alluvial; Clay; Sand; Coarse sedimentary; Fine sedimentary; Igneous(coarse); Volcanic(fine); Metamorphic; Limestone; Laterite
Health: Pristine; Very Good; Good; Average; Poor; Degraded; Completely Degraded (almost without natives)
Vegetation: Remnant (>70% height, >50% canopy density); Regrowth; Exotic; Cleared
Dominant Stratum: Tree; Shrub; Forb; Grass; Aquatic % Coverage: 70-100%; 30-70%; 10-30%; <10%
Mapped RE: Observed RE Cleared width:
Dominant spp.
.....
Notes / Recommendations:

OBSERVATIONAL VEGETATION RECORD

Assessor: CF, AH Job: 60188431

UN225

Date: 16.1.2011 Time: 11.00 Waypoint #: 445.5 KP: CF007.5 Photo:
 Location: Raajan
 Mapped RE: HVR-OC Observed RE HRV Cleared width:
 Canopy spp (DAFOR): *Melaleuca bracteata* (S), *Excoecaria daltynii* (S), *Melaleuca papaya* (S), *F. crebra*
 on banks, *E. tessellans* on banks, *Senna cassia*, *Ap. exulsa*, *Acacia Jasur*, *Lantana*
 Mid spp. (DAFOR): ~~weeds~~ - *Green Panic*, *Aegiratum hastatum*, *Snake cactus*, *Lomandra*
 Notes / Recommendations: Planting vegetation, fringing vege-woody non-woody, algae growth on
 bottom, lots of roots + macrophytes
 Banks on NW banks - 2m, SE - 15m, small amount of crossing less steep
 width of water - 20-25, bank width 45m, Photos 438-441 (N-W), 442 (SE bank) 443 (NW)
 444 (stream) 445 (U+bank)
 Signs of significant flooding.

Date: 16.1.2011 Time: Waypoint #: KP: Photo:
 Location:
 Mapped RE: Observed RE Cleared width:
 Canopy spp (DAFOR):
 Mid spp. (DAFOR):
 Notes / Recommendations:
 crossing on NW side - 0449-0447 0449-0452 (N-W)

Date: 16.1.2011 Time: ~1100 Waypoint #: 442.4 KP: CF008.5 Photo: 453-456 (N-W)
 Location: Nth of Raajan
 Mapped RE: *Reynoldia* OC Observed RE HVR-OC Cleared width:
 Canopy spp (DAFOR): *F. teretifloris* (P), *F. populnea* (P), *E. tessellans* (R), *F. moluccana* on S side
 of track, *F. crebra* (R) (upgrowth of 11.3.4 / 11.3.2)
 Mid spp. (DAFOR): *Heterodendron* ?? (S) (O), *Crissal crata*
 Notes / Recommendations:
 Grazed, over fence, dense *Paragrass* (both sides of track (not inside fence),
 drainage depression (no water) running south crosses track, edges of track
 weedy / milky goats P457 - F along road, P458 - Watang Rd, 459 - Prickly Pear
 UN 35

Date: 16.1.2011 Time: 1200 Waypoint #: CF009.5 KP: AB446.5 Photo: 460-463 (N-W)
 Location: Nth of Raajan
 Mapped RE: HVR-OC Observed RE HVR-LC Cleared width:
 Canopy spp (DAFOR): *Allocasuarina leucomera*
 Mid spp. (DAFOR): *Melaleuca* sp, juvenile *Allocasuarina*, *Harrisia* sp, *Crissal crata*, *Bursaria*
 Notes / Recommendations:
Chlois, *Digitaria* sp, *Sporobolus* sp, *Heterodendron* sp ?? (same as CF008)
 PCF-464 (cleaning with poisoned trees to NE of line, pipeline will go through
 this patch. Cleared to SE.
 UN36 3

OBSERVATIONAL VEGETATION RECORD

UN226

Assessor: CF, AH Job: 60188431

Date: 16.1.6.2011 Time: ~1300 Waypoint #: CF 010-KP AB 438.8 Photo: 0466 - 0469 (N-W)
 Location: Nth. Bank - 12 MILE CK
 Mapped RE: HUR-OC Observed RE HUR-OC (11-3-2/11.25) Cleared width:
 Canopy spp (DAFOR): Left bank (W) F. populnea (O), Allo. Lehmanni, Chlois sp.
 Right bank (E) Allocasuarina, Pittosporum sp, Baccharis sp (S), Chlois sp.
 Mid spp. (DAFOR): Panicum sp. (both sides), Sporobolus virginicus (both sides)
 Notes / Recommendations: floating, emergent non-woody, fringing non-woody, submerged
 macrophytes, no standing dead timber, shallows + deep, earthenbanks + exclusion
 fences, floating native lilies, sedges, typha sp. (P).
 Water width - 15m, banks gentle 8m (E), 5m (W) PCF470 - 0471 - creek.

Date: 16.1.6.2011 Time: ~1600 Waypoint #: CF 011-J KP: AB 466.6 Photo: CF 472 - 475
 Location: Mt Larcom
 Mapped RE: Regrowth - OC Observed RE HUR Cleared width:
 Canopy spp (DAFOR): E. moluccana (P), Fuc. sp. (S)(O), E. alberta (O)
 Mid spp. (DAFOR): Acacia fasciculosa, Heteropogon contortus (D), juvenile trees
 Notes / Recommendations: Praxelis, Melinis repens, Lantana camara, Congea, Bidens pilosa,
 Cover 5-10%, Hyperbania rufa, Panicum sp, Apple bush.
 Grass cover - 100%

UN37

Date: 17.1.6.2011 Time: Waypoint #: CF 014 A-J KP: AB 398.6 Photo: CF 493 - 495
 Location: Small intermittent watercourse
 Mapped RE: Observed RE Cleared width:
 Canopy spp (DAFOR):
 Mid spp. (DAFOR):
 Notes / Recommendations: pools with fish.

UN38

Date:/...../2011 Time: Waypoint #: KP: Photo:
 Location:
 Mapped RE: Observed RE Cleared width:
 Canopy spp (DAFOR):
 Mid spp. (DAFOR):
 Notes / Recommendations:

OBSERVATIONAL VEGETATION RECORD

Assessor:..... Job: 60188431

Date: 17.1.6.2011 Time: 4.15 Waypoint #: CL-13-J KP: B303 Photo: CL-44
 Location: near Davelin Cr.
 Mapped RE: 11.3.4 / 11.3.26 / 11.3.28 Observed RE: 11.11.1 Cleared width:
 Canopy spp (DAFOR): Euc. crebra (D)
 Mid spp. (DAFOR): *Cryptocarya grandiflora* (R) *Atalaya hemiglauca* (O)
Alphitonia excelsa (O) *Croton striata* (R)
 Notes / Recommendations: *Alectryon diversifolius* (R) *Digitaria* sp (D)
 Metamorphic soil

UN 122

(Rev. C, not on D)

Date: 20.1.6.2011 Time: 11:30am Waypoint #: CL-25-J KP: B229.8 Photo:
 Location:
 Mapped RE: HVR (E) Observed RE: HVR (LC) Cleared width:
 Canopy spp (DAFOR): Euc. crebra (F) *Cor. dallachyana* (O)
 Mid spp. (DAFOR): *Alphitonia excelsa* (O) *Erythroxylum australe* (O) *Petalostigma pubescens* (O)
Bursaria incana (F)
 Notes / Recommendations: Numerous dead trees
 Granite rocks abundant, some outcrops
 Ground story weed dominated (*Pennisetum ciliare**, *Malinisrepas**, *Bathrochloa pertusa**)
Opuntia stricta (R), *Haussia* (R)

UN 131

N-DM 963
 E- " 964
 S- " 965
 W- " 966

Date: 20.1.6.2011 Time: 1:50pm Waypoint #: CL-26-J KP: AB 232.5 Photo:
 Location: near Isaac River
 Mapped RE: 11.3.1 Observed RE: regrowth 11.9.3 Cleared width:
 Canopy spp (DAFOR): *A.c. harpophylla* (D) ht 2m 20%
 Mid spp. (DAFOR): *Sesbania cannabina* (O)
 Notes / Recommendations: Gilgais present - waterplants including *Marsilea drummondii*, *Caldesia*?
 Mostly native groundstory - *Digitaria* spp, *Eradicis nitens*,
 Similar to mapped HVR → west.
*Chloris virgata** (O)
*Haussia montini*** (O) *Parthenium hysterophorus* (O) *Sonchus oleraceus** (R)

UN 132

N-DM 966
 E- " 967
 S- " 968
 W- " 969

Date: 20.1.6.2011 Time: 4pm Waypoint #: CL-27-J KP: DL 19.5 Photo:
 Location: Dympart lateral, Golden Mile Rd. - sma creek with small pools
 Mapped RE: 11.3.1 Observed RE: 11.3.3 Cleared width:
 Canopy spp (DAFOR): Euc. coolabah (D) Euc. tereticornis (O)
 Mid spp. (DAFOR): *Lophyllum hookeri* (F) *A.c. salicina* (O)
 Notes / Recommendations: Mapped RE on southern side of road, less vegetation on N side
 Keep line on N side of road

UN 55

N-DM 972
 E- " 973
 S- " 974
 W- " 975

OBSERVATIONAL VEGETATION RECORD

Assessor: CL/JB Job: 60188431

Date: 15.1.6.2011 Time: Waypoint #: CF004-J KP: AB 462.5 Photo:
 Location: CF 004
 Mapped RE: 11.3.26/11.3.4 Observed RE 11.3.26 Cleared width:
 Canopy spp (DAFOR): *E. moluccana* (D) *E. crebra* (A)
 Mid spp. (DAFOR): *Petalostigma pubescens* (F) *Acacia disparvema* (O) *Acacia* sp. (O)
 Notes / Recommendations: *E. Alp excelsa* (R) *Cymbonopogon* (D)
Le. lanara *Digitaria* sp. (F)
Rubber vine *Cryptostegia grandiflora* *Panicum* sp. UN33

Date: 16.1.6.2011 Time: 10.30am Waypoint #: CL-5-3 KP: AB 433.1 Photo: CL-19
 Location: (RE 11-11-16)
 Mapped RE: Non-rem Observed RE 15 m strip of bugala Cleared width:
 Canopy spp (DAFOR): *Ac. karriophylla* (D) *Cas. cristata* (O)
 Mid spp. (DAFOR): *Cryptostegia grandiflora* * (R)
 Notes / Recommendations: ~~15 m~~ 15 m strip along gazetted road reserve
 -waypoint marks 20 m gap in vegetation strip
Bryophyllum tubiflorum ** (F) *Harrisia* ** (R) UN118

Date: 16.1.6.2011 Time: 1pm Waypoint #: CL07-J KP: AB 430.5 Photo:
 Location: CL-7
 Mapped RE: Non-rem Observed RE AVR Cleared width:
 Canopy spp (DAFOR): *Ac. karriophylla* (D) Ht 3m
 Mid spp. (DAFOR): *Cryptostegia grandiflora* ** (F)
 Notes / Recommendations: *Harrisia* ** (O) UN119

Date: 17.1.6.2011 Time: 11:10am Waypoint #: CL-10-J KP: AB 222 (nest) Photo: E-CL-31 / W-CL-32
 Location: small wetland near Fitzroy River
 Mapped RE: Non-remnant Observed RE 11.3.27 Cleared width:
 Canopy spp (DAFOR): *Euc. coolabah* (O)
 Mid spp. (DAFOR): - *Aquatic - Eleocharis dulcis* (D) *Pseudorhaphis spinescens* (O)
 Notes / Recommendations: *Eleista prostrata* (O) *Marsilea nutica* (F)
Nymphaea violacea (O) *Sarcocolla leucandra* (F)
Caldesia oligococca (O) $\hat{=}$ 250m x 30 m running E-W UN121

OBSERVATIONAL VEGETATION RECORD

Assessor: JW+DM Job: 60188431

Date: 17.10.2011 Time: 9:50am Waypoint #: JW009-J KPA 406.6 (BVC) Photo: DM884-887 (N to W)
 Location:
 Mapped RE: 11.11.15/11.3.4 Observed RE 11.11.15 Cleared width: n/a
 Canopy spp (DAFOR): Euc. crebra (D); Euc. tere (O)
 Mid spp. (DAFOR): Beetwood (R); Santalum lanceolatum (O)
 Notes / Recommendations:
 Veg = dieback due to drought a 'tornado'
 = some large remnant trees
 = some sm1 regrowth trees
 Vargaroo grass;
 Pterocaulin sphacelatum
 Stylostanthes villosa *
 Melinis repens *
 Ononis sp
 Sida rhombifolia
 Prickly acacia (Hornesiana) *
 Conyza sp * UN 158

Date: 18.10.2011 Time: 10:40 Waypoint #: JW015-J KPA 370.9 Photo: DM919-922 (N-S)
 Location:
 Mapped RE: 11.11.15 Observed RE HVR-LC Cleared width: -
 Canopy spp (DAFOR): Euc. populnea (P); Euc. crebra (F) Ang. leiocarpa (O)
 Mid spp. (DAFOR): Acacia sp (O) Bursaria spinosa (O)
 Notes / Recommendations:
 * Extensive die back of Euc crebra
 * Mapped as ess. hab for Euc rarefaction
 -> none surveyed
 Weeds
 Rubber vine * *
 Mal. americana
 Stylostanthes villosus
 Lantana camara * * UN 164

Date: 18.10.2011 Time: 11:05 Waypoint #: JW016 KPA 370.7 Photo: JW481-485 (NW-SE)
 Location: Drainage line -> sm1 creek
 Mapped RE: LVR-LC Observed RE HVR Cleared width: -
 Canopy spp (DAFOR): Euc. tere (D); Euc. crebra (O); Cony. fl. ss (O)
 Mid spp. (DAFOR): Cyperus sp. (D)
 Notes / Recommendations:
 Runs NE to dam.
 UN 165

Date: 19.10.2011 Time: 1:05 Waypoint #: JW022-J East of - Photo: JB10813 to 16 (N-W)
 Location: Not on alignment - no access due to Lantana
 Mapped RE: Non-rem Observed RE Non-rem Cleared width: -
 Canopy spp (DAFOR): Stangler fig (O); Mel. linearifolia
 Mid spp. (DAFOR): Lantana (D) 90% N & S of bank
 Notes / Recommendations:
 creek crossing - pebbly substrate.
 No access to survey site due to Lantana thickets.
 UN 172

OBSERVATIONAL VEGETATION RECORD

Assessor: JW/MR Job: 60188431

(REVC)

Date: 22.10.2011 Time: 2:00 Waypoint #: JW027-JKP 139.4 Photo: JW 575-78 (N-W)
 Location: JW028-5 11.5.3 to west JW 579-582 (N-W)
 Mapped RE: non remnant (11.4.9 to west) Observed RE: Non-rem to East. Cleared width: 200m to NE
 Canopy spp (DAFOR): *Euc. populnea* (D); *Bauhinia caronii* (O); *Electryan direxifolia* (O);
 (RE 11.5.3)
 Mid spp. (DAFOR): *Carissa ovata* (O); *Terminalia oblongata* (Walded) (S) (O)
 Notes / Recommendations: Needs: *Parthenium* sp. **; *Cenchrus ciliaris*; thick weed;
 Most eastern extent of vegetation.
 ROW transects cleared ag. land @ JW027
 ROW transects approx 40m of veg @ southern mapped tip @ JW028.
 more ROW to NW of veg

UN134

UN133

Date: 22.10.2011 Time: 4:05 Waypoint #: JW029-JKP 111.9 Photo: JW583-86 (N-W)
 Location: Adjacent to track
 Mapped RE: 11.5.3/11.4.9/11.3.35/11.5.9 Observed RE: 11.5.3 Cleared width:
 Canopy spp (DAFOR): *Euc. populnea* (D);
 Mid spp. (DAFOR): *Terminalia oblongata* (A); *Psychrax* sp. (O); A sample (O)
 Notes / Recommendations:
 * more to existing cleared land to NW.

UN135

Date: 23.10.2011 Time: 12:40 Waypoint #: JW034-KP: AB 80.5 (north) Photo: JW0599-600 (N-W)
 Location: looking east towards KP 81.6
 Mapped RE: HVR-E Observed RE: HVR-E Cleared width: 40m
 Canopy spp (DAFOR): *Brigalow*, *Eucalyptus populnea*
 6m - HQ!
 Mid spp. (DAFOR): Looking East
 Notes / Recommendations: * Small clearing for powerline easement
 * 20m S of easement, vegetation thinner than N&S.
 * observation from neighboring property

UN136

Date: 24.10.2011 Time: 3:20pm Waypoint #: JW032-JKP: AB 20.1 Photo: JW640-JW644 (N-W)
 Location: Glenden Station
 Mapped RE: 11.9.9/11.9.2/11.9.5 Observed RE: Non-rem Cleared width:
 Canopy spp (DAFOR): *Euc. crebra* (A); *Euc. populnea* (O); *Acacia horpophylla* (O)
Alp. excelsa (O); Canopy cover < 5%
 Mid spp. (DAFOR): *Carissa ovata* (O);
 Notes / Recommendations:

UN137

OBSERVATIONAL VEGETATION RECORD

Assessor: CF/AT Job: ...60188431.

Date: 8/16/2011 Waypoint #: CF017-J KP: 365.5 Photo: CF0523-526 (N-W)
 Location: Dalma Rd Crossing
 Geology: Alluvial; Clay; Sand; Coarse sedimentary; Fine sedimentary; Igneous(coarse); Volcanic(fine); Metamorphic; Limestone; Laterite
 Health: Pristine; Very Good; Good; Average; Poor; Degraded; Completely Degraded (almost without natives)
 Vegetation: Remnant (>70% height, >50% canopy density); Regrowth; Exotic; Cleared roadside
 Dominant Stratum: Tree; Shrub; Forb; Grass; Aquatic % Coverage: 70-100%; 30-70%; 10-30%; <10%
 Mapped RE: non-rem Observed RE: non-rem Cleared width:
 Dominant spp. Lantana camara, Buffed grass, Snake weed, Stylo
Bougainvillea, Melinis repens, Alphitonia, Acacia sp
 Notes / Recommendations: P CF527 (SW down road)
CF528 (NE up road)
CF529 (SE side of road)
CF530 (NW side of road)

UN39

Date:/...../2011 Waypoint #: KP: Photo:
 Location:
 Geology: Alluvial; Clay; Sand; Coarse sedimentary; Fine sedimentary; Igneous(coarse); Volcanic(fine); Metamorphic; Limestone; Laterite
 Health: Pristine; Very Good; Good; Average; Poor; Degraded; Completely Degraded (almost without natives)
 Vegetation: Remnant (>70% height, >50% canopy density); Regrowth; Exotic; Cleared
 Dominant Stratum: Tree; Shrub; Forb; Grass; Aquatic % Coverage: 70-100%; 30-70%; 10-30%; <10%
 Mapped RE: Observed RE Cleared width:
 Dominant spp.
 Notes / Recommendations:

Date:/...../2011 Waypoint #: KP: Photo:
 Location:
 Geology: Alluvial; Clay; Sand; Coarse sedimentary; Fine sedimentary; Igneous(coarse); Volcanic(fine); Metamorphic; Limestone; Laterite
 Health: Pristine; Very Good; Good; Average; Poor; Degraded; Completely Degraded (almost without natives)
 Vegetation: Remnant (>70% height, >50% canopy density); Regrowth; Exotic; Cleared
 Dominant Stratum: Tree; Shrub; Forb; Grass; Aquatic % Coverage: 70-100%; 30-70%; 10-30%; <10%
 Mapped RE: Observed RE Cleared width:
 Dominant spp.
 Notes / Recommendations:

OBSERVATIONAL VEGETATION RECORD

Assessor:..... Job:....60188431.

(Revc)

4 D

Date: 19/06/2011 Waypoint #: CL 22 JKP: AB 236.1 Photo:

Location:

Geology: Alluvial; Clay; Sand; Coarse sedimentary; Fine sedimentary; Igneous(coarse); Volcanic(fine); Metamorphic; Limestone; Laterite

Health: Pristine; Very Good; Good; Average; Poor; Degraded; Completely Degraded (almost without natives)

Vegetation: Remnant (>70% height, >50% canopy density); Regrowth; Exotic; Cleared

Dominant Stratum: Tree; Shrub; Forb; Grass; Aquatic % Coverage: 70-100%; 30-70%; 10-30%; <10%

Mapped RE: Observed RE Cleared width:

Dominant spp.

Notes / Recommendations: *Parthenium weed*

UN 128

Date: 26/06/2011 Waypoint #: CL 50a - J KP: EL 6.2 east Photo: 4 D

Location:

Geology: Alluvial; Clay; Sand; Coarse sedimentary; Fine sedimentary; Igneous(coarse); Volcanic(fine); Metamorphic; Limestone; Laterite

Health: Pristine; Very Good; Good; Average; Poor; Degraded; Completely Degraded (almost without natives)

Vegetation: Remnant (>70% height, >50% canopy density); Regrowth; Exotic; Cleared

Dominant Stratum: Tree; Shrub; Forb; Grass; Aquatic % Coverage: 70-100%; 30-70%; 10-30%; <10%

Mapped RE: Observed RE Cleared width:

Dominant spp.

Notes / Recommendations: *large erosion gully*

UN 24

Date: 18/06/2011 Waypoint #: CL 14 JKP: AB 328.2 Photo: CL 45

Location:

Geology: Alluvial; Clay; Sand; Coarse sedimentary; Fine sedimentary; Igneous(coarse); Volcanic(fine); Metamorphic; Limestone; Laterite

Health: Pristine; Very Good; Good; Average; Poor; Degraded; Completely Degraded (almost without natives)

Vegetation: Remnant (>70% height, >50% canopy density); Regrowth; Exotic; Cleared

Dominant Stratum: Tree; Shrub; Forb; Grass; Aquatic % Coverage: 70-100%; 30-70%; 10-30%; <10%

Mapped RE: Observed RE Cleared width:

Dominant spp.

Notes / Recommendations: *Eroded gully*

UN 123

OBSERVATIONAL VEGETATION RECORD

Assessor: CF&AH Job: ...60188431.

Date: 19/6/2011 Waypoint #: CF022 KP: AB 277.7 Photo:

Location: near Pluto ck, Broadsound Range

Geology: Alluvial; Clay; Sand; Coarse sedimentary; Fine sedimentary; Igneous(coarse); Volcanic(fine); Metamorphic; Limestone; Laterite

Health: Pristine; Very Good; Good; Average; Poor; Degraded; Completely Degraded (almost without natives)

Vegetation: Remnant (>70% height, >50% canopy density); Regrowth; Exotic; Cleared see Cetae

Dominant Stratum: Tree; Shrub; Forb; Grass; Aquatic % Coverage: 70-100%; 30-70%; 10-30%; <10%

Mapped RE: HUR Observed RE HUR Cleared width:

Dominant spp. Hibiscus sp. (O), Canisa Ovale (O), Breynia sp. ?, Dauhinia sp. ??
Mallotus sp. (O), Melaleuca bracteata (R), Cissus sp. (S), Houlea sp., Acacia sp. (S)

Notes / Recommendations: Baccharis sp. ?? (S), Pennisetum ciliare (O), Chloris gayana (F), Rubber vine
 Photos CF556-561
HUR growth

UN42

Date: 1/2011 Waypoint #: CF023 KP: AB 276.7 Photo: CF563-565

Location: near Pluto ck, Broadsound Range

Geology: Alluvial; Clay; Sand; Coarse sedimentary; Fine sedimentary; Igneous(coarse); Volcanic(fine); Metamorphic; Limestone; Laterite

Health: Pristine; Very Good; Good; Average; Poor; Degraded; Completely Degraded (almost without natives)

Vegetation: Remnant (>70% height, >50% canopy density); Regrowth; Exotic; Cleared see Cetae

Dominant Stratum: Tree; Shrub; Forb; Grass; Aquatic % Coverage: 70-100%; 30-70%; 10-30%; <10%

Mapped RE: HUR Observed RE HUR Cleared width:

Dominant spp. Melaleuca bracteata (O), Eucalyptus tectonnis (O)
Ficus opposita (R), Hibiscus heterophylla (O), Pennisetum ciliare (O), Mallotus

Notes / Recommendations: Amixanum (R), Heteropogon contortus (R), Rubber vine (R),
Acacia same as CF022 (S)
 height of trees - 22m, cover <5%
 mostly cleared, occasionally luc, SEAT species in un disturbed, distributed

UN43

Date: 1/2011 Waypoint #: KP: Photo:

Location:

Geology: Alluvial; Clay; Sand; Coarse sedimentary; Fine sedimentary; Igneous(coarse); Volcanic(fine); Metamorphic; Limestone; Laterite

Health: Pristine; Very Good; Good; Average; Poor; Degraded; Completely Degraded (almost without natives)

Vegetation: Remnant (>70% height, >50% canopy density); Regrowth; Exotic; Cleared

Dominant Stratum: Tree; Shrub; Forb; Grass; Aquatic % Coverage: 70-100%; 30-70%; 10-30%; <10%

Mapped RE: Observed RE Cleared width:

Dominant spp.

Notes / Recommendations:

OBSERVATIONAL VEGETATION RECORD

Assessor: CF Job: 60188431

Date: 22/1/2011 Time: 10:20 Waypoint #: CF030-5 KP: AB 96.5 Photo: CF616-619

Location:

Mapped RE: 11.3.2/11.3.1 Observed RE 11.3.2 Cleared width:

Canopy spp (DAFOR): *Euc. populnea* (D), *E. crebra* (O), *E. teretecornis* (R)

Mid spp. (DAFOR): *Acacia fasciculifera* (D), *Carissa ovata* (F), *Citrus glauca* (caustic looking shrub) (O)

Notes / Recommendations:

<i>Digitaria</i> sp. (O)	red natal grass (F)
<i>Themeda triandra</i> (A)	hamissia cactus (O)
<i>Eragrostis</i> sp. (F)	grey crotalaria (rattle pod) (O)
feather-top rhodol (F)	buffel grass (A)

UN3

Date: 22/1/2011 Time: 10:50 Waypoint #: CF031 KP: EL 51.6 Photo: CF620-623

Location: (11.3.25 to east)

Mapped RE: 11.3.2/11.3.1 Observed RE 11.3.25 Cleared width:

Canopy spp (DAFOR): *Euc. teretecornis* (A), *E. crebra* (A), *E. populnea* (F)

Mid spp. (DAFOR): *Cassia brewsteri* (A), *Carissa ovata* (A), *Stylo* (A)

Notes / Recommendations:

On edge of RE 11.3.2 (actual) (west)	<i>Opuntia stricta</i> (R)	Fauna
<i>Themeda triandra</i> (A)	red natal grass (F)	Grey-crowned babbler
black spear grass (D)		Grey fantail
fruit salad (apple bush) (F)		red-winged parrot.

UN4

Date: 22/1/2011 Time: 11:20 Waypoint #: CF032 KP: EL 51.5 Photo: CF624-627

Location:

Mapped RE: 11.3.2/11.3.1 Observed RE 11.3.25 Cleared width:

Canopy spp (DAFOR): *Euc. teretecornis* (D), *Z. tessellaris* (F), *Corymbia* (R), *E. crebra* (O), *E. populnea* (O)

Mid spp. (DAFOR): *Acacia solacena* (O) (photos DM976-977)

Notes / Recommendations:

rattlepod (F)	Mexican poppy (R)	eroding, slumping banks
	<i>Paspalum</i> (F)	geomorphology very variable
	thatch grass (A)	(changing creek line)
	<i>Bothriochloa</i> (sample) (A)	pig & cattle prints in creek.
	buffel grass (A)	

UN5

Date: 22/1/2011 Time: 11:45 Waypoint #: CF033 KP: EL 51.4 Photo: CF630-633

Location:

Mapped RE: 11.5.3 (E), 11.3.2/11.3.1 (W) Observed RE 11.5.3 (E), 11.3.25 (W) Cleared width:

Canopy spp (DAFOR): East - *Euc. populnea* (D), *E. crebra* (O)
West - *Euc. teretecornis* (D), *Corymbia tessellaris* (C)

Mid spp. (DAFOR): East - *Carissa ovata* (A), *Terminalia oblongata* (A)

Notes / Recommendations:

East - black spear grass (F), buffel grass (D), *Bothriochloa* sp (F), red natal grass (O), sample (A)

West - " " " " " "

UN6

OBSERVATIONAL VEGETATION RECORD

Assessor: CL Job: 60188431

Date: 22.1.6.2011 Time: 1:45 Waypoint #: CL-30-J KP: SL 17.3 Photo: CL-61

Location:

Mapped RE: 11.3.2/11.3.7/11.3.1 Observed RE 11.3.7 Cleared width:

Canopy spp (DAFOR): *Ca. tessellata* (F) *Euc. crebra* (F) *Ac. salicina* (F)
Ca. clarksonia (O) Am, 10%

Mid spp. (DAFOR): *Cassia brewsteri* (O)

Notes / Recommendations: *Pennisetum ciliare* * (D) *Parthenium hysterophorus* ** (R)
Subdominant RE

UN58

Date: 22.1.6.2011 Time: 1:55 Waypoint #: CL-31-J KP: SL 17.0 Photo: CL-62

Location:

Mapped RE: 11.3.2/11.3.7/11.3.1 Observed RE 11.3.2 Cleared width:

Canopy spp (DAFOR): *Euc. populnea* (D) *Acacia salicina* (O) *Ca. clarksonia* (O)

Mid spp. (DAFOR): *Cassia brewsteri* (O) *Lantana camara* ** (R) *Psychopogon* sp. (R)

Notes / Recommendations: *Pennisetum ciliare* * (D) *Stylosanthes scabra* * (D) *Bidens pilosa* * (R)
This RE dominates in remnant patch

UN59

Date: 22.1.6.2011 Time: 3:20 Waypoint #: CL-32-J KP: SL 13.0 Photo: CL-63

Location:

Mapped RE: 11.4.9 Observed RE non-rem Cleared width:

Canopy spp (DAFOR): *Ac. harpophylla* (O)

Mid spp. (DAFOR): *Alectryon diversifolius* (O) *Citrus glauca* (O)

Notes / Recommendations: Single line of scattered bugalow along fringe
of Poplar box woodland (RE 11.5.3)
Remainder of mapped RE 11.4.9 cleared.
Haussia ** (R) *Pennisetum ciliare* * (D)

UN60

Date: 22.1.6.2011 Time: Waypoint #: CL-33-J KP: SL 12.9 Photo: CL-64

Location:

Mapped RE: 11.5.3/11.4.9 Observed RE 11.5.3 Cleared width:

Canopy spp (DAFOR): *Euc. populnea* (D)

Mid spp. (DAFOR): *Cassia brewsteri* (O) *Pyriphyllum hookeri* (O)

Notes / Recommendations: *Pennisetum ciliare* (D) *Haussia martini* ** (R) *Opuntia stricta* ** (R)
Stylosanthes scabra (R)

UN61

OBSERVATIONAL VEGETATION RECORD

Assessor: CL Job: 60188431
400 m south of

Date: 20.1.6.2011 Time: 4 pm Waypoint #: CL-34-J KP: SL 11.5 Photo: JB-90
 Location:
 Mapped RE: 11.5-3/11.4-9 Observed RE Non-rem Cleared width:
 Canopy spp (DAFOR): *Cor dallachyana* (0) *Cor darksoniana* (0)
 Mid spp. (DAFOR): *Casua brewsteri* (0)
 Notes / Recommendations: Grave with fence
Panicum albas (0)
 UN 62

Date: 22.1.6.2011 Time: 4:15 pm Waypoint #: CL-35-J KP: SL 11.2 Photo: JB-91
 Location: Wooded swamp on Vermont Park
 Mapped RE: 11.3.27a Observed RE 11.3.27b Cleared width:
 Canopy spp (DAFOR): *Euc laedicornis/camaldulensis* (D) 15% 15m
Euc platyphylla (0)
 Mid spp. (DAFOR): -
 Notes / Recommendations: See fauna/wetland sheet for wetland description
 Move pipeline to N or S of wetland
 Consult Gordon Howard (landholder) for preferred option.
 (NOTE - wetland data sheet also completed) (rev L, not on D)
 UN 237

Date: 23.1.6.2011 Time: 10:30 am Waypoint #: CL-36-J KP: AB 105.8 Photo: CL-71
 Location: Wetland next to Dananga Road off Peak Downs Hwy (Wooded swamps)
 Mapped RE: 11.3.2/11.3.1 Observed RE 11.3.27, 11.3.4? Cleared width:
 Canopy spp (DAFOR): *E. laedicornis* (D) *E. platyphylla* (0) *E. populnea* (0)
 Mid spp. (DAFOR): *A. horridilla* (R) *Sesbania cannabina* (0)
 Notes / Recommendations: See fauna/wetland sheet 30m between road and wetland
 (rev L, not on D)
 UN 238

Date: 23.1.6.2011 Time: Waypoint #: CL-48-J KP: AB 160-1 Photo:
 Location: Mario Downs
 Mapped RE: 11.3.2/11.3.1 Observed RE cleared Cleared width:
 Canopy spp (DAFOR):
 Mid spp. (DAFOR):
 Notes / Recommendations: beside fence
 could realign pipeline past here to avoid house.
 UN 74

OBSERVATIONAL VEGETATION RECORD

Assessor: CF Job: 60188431

Date: 22/6/2011 Time: 13:15 Waypoint #: CF034-J KP: 85.5 Photo: DM978-981
 Location: Peak Downs Highway
 Mapped RE: 11.5.3 Observed RE 11.5.3 Cleared width:
 Canopy spp (DAFOR): Euc. populnea (D)
 Mid spp. (DAFOR): wilga (R), karriya ovata (F), Dead finish (Archidendropsis basaltica) (R)
 Notes / Recommendations: Melaleuca bracteata (O) Squatter pigeon observed nearby (<1km).
 buffel grass (D) Apple bush (R) Opuntia stricta (R)
 stylo (F) Dogs balls (O) harissia cactus (R)
 black spear grass (O)
 bothriochloa sp. (F)

UN7

Date: 22/6/2011 Time: 14:20 Waypoint #: CF035-J KP: EL 48 Photo: DM982-985
 Location:
 Mapped RE: 11.5.3 / 11.7.2 Observed RE 11.5.3 Cleared width:
 Canopy spp (DAFOR): Euc. populnea (D), E. crebra (O), Corymbia tessularis (R), Corymbia clarksoniana (R)
 Mid spp. (DAFOR): Grevillea ^(silver oak) parallelas (F), alphitonia excelsa (O)
 Notes / Recommendations: Acacia farnesiana (O)
 stylo (A) ruby saltbush (O) red natal grass (A)
 black spear grass (D) forest bluegrass (Bothriochloa bladhi) (O) buffel grass (A)
 themeda trianda (A) stinking passionfruit vine (O)

UN8

Date: 23/6/2011 Time: 12:00 Waypoint #: CF038-J KP: AB 92.5 Photo: CF 645-648
 Location: "Annandale", Peak Downs Highway
 Mapped RE: 11.3.36 Observed RE 11.3.36 Cleared width:
 Canopy spp (DAFOR): E. populnea (A) E. platyphylla (A) Corymbia clarksoniana (A) E. melanophloea (R)
 Corymbia tessularis (F)
 Mid spp. (DAFOR): C. tessularis (F) E. populnea (F), C. clarksoniana (F)
 Notes / Recommendations:
 Sporobolus natalensis (between site and access track near railway) (R) (sample)
 Red natal grass (A) grass collected (A) Setaria surgens (annual setaria)? (A)
 black spear grass (D)

UN9

Date: 23/6/2011 Time: 12:20 Waypoint #: CF039-J KP: AB 90.2 Photo: 998-991
 Location: "Annandale", Peak Downs Highway
 Mapped RE: 11.3.2 / 11.31 / 11.3.25 Observed RE cleared Cleared width:
 Canopy spp (DAFOR): None Euc. populnea (D) and Acacia harpophylla (A) woodland
 Mid spp. (DAFOR): None Carissa ovata (F) nearby adjoining woodland
 Notes / Recommendations:
 Although mapped as RE, pipeline route is cleared. RE >10m away.
 Buffel grass (D), red natal grass (A), stylo (F), feathertop rhodes (F), harissia cactus (R)

UN10

cassia breweri
 brewsteri

OBSERVATIONAL VEGETATION RECORD

Assessor: Job: 60188431

Date: 23/06/2011 Time: 4:10 Waypoint #: CL-54-5 KP: AB 109.9 Photo: JB101(N), JB102(S)
 Location:
 Mapped RE: 11.4.9/11.5.3 Observed RE Non-rem Cleared width:
 Canopy spp (DAFOR):
 Mid spp. (DAFOR):
 Notes / Recommendations: Extreme dieback and clearing
 Lichens villiae dominant ground cover species
 UN80

Date: 24/06/2011 Time: 12:50 Waypoint #: CL-56-5 KP: AB 23.3 Photo:
 Location: Glendon Station
 Mapped RE: Non-rem Observed RE Non-rem Cleared width: 50m
 Canopy spp (DAFOR): Ac. kyleyi (F) Terminalia oblongata (O) Cassia brewsteri (O)
 Alphitonia excelsa (O) Eucalypta (O)
 Mid spp. (DAFOR): Euthrocyllum australe (O)
 Notes / Recommendations: cleared strip along fence line N - JB 112
 Veg adjacent is lancewood forest (RE 11-10-4? 11-7-1?) E - " 113
 Latecete sump - In sedimentary? S - " 114
 Urochloa mosambicensis* (F) - no brigalow nearby W - " 115
 UN82

Date: 24/06/2011 Time: Waypoint #: CL-57-5 KP: AB 21.5 Photo:
 Location: Glendon Station
 Mapped RE: 11.9.5/11.8.13 Observed RE Non-rem Cleared width:
 Canopy spp (DAFOR): Euc organophila - most dead, occasional tree with epicormic growth
 12m, << 5%
 Mid spp. (DAFOR): Cassia brewsteri (O) Carissa ovata (O)
 Notes / Recommendations: >90% dieback during last drought. N JB 119
 Avoid long trees where possible. E JB 120
 UN83 S JB 121
 W JB 122
 Pennisetum ciliare* (O) Bothriochloa pertusa* (F) Urochloa mosambicensis* (O)

Date: 24/06/2011 Time: 3:30 pm Waypoint #: CL-58-5 KP: AB 19.8 Photo:
 Location: non-remnant ← borders to east
 Mapped RE: 11.9.5/11.8.13 Observed RE Non-rem Cleared width:
 Canopy spp (DAFOR): Nil
 Mid spp. (DAFOR): Anethidandropis basaltica (O) Carissa ovata (O)
 Notes / Recommendations: erosion present - small gullies - N JB 123
 E " 124
 S " 125
 W " 126
 UN84

25/6/11, 3-15, CL-59, KP 20.0 N JB 127
 Mapped RE 11.9.9/11.9.2/11.9.5 E " 128
 Canopy Euc populnea/brownii (A) Euc melanophloea (F) 5%, 10m S " 129
 Owenia acudula (R) Cassia brewsteri (O) Carissa ovata (O) W " 130
 12

OBSERVATIONAL VEGETATION RECORD

Assessor: CL/JB Job: 60188431

(rev C, not on D)

Date: 23.1.6.2011 Time: Waypoint #: CL-49-JKP: AB 106 west Photo: JB-93
 Location: NE corner of stockyards
 Mapped RE: 11.3.2/11.3.1 Observed RE: cleared Cleared width:
 Canopy spp (DAFOR):
 Mid spp. (DAFOR):
 Notes / Recommendations: heap E of yards
(North Ek ≈ 150m to W)

UN75

(rev C, not on D)

Date: 23.1.6.2011 Time: 2:10pm Waypoint #: CL-50-J KP: SW of 106.5 Photo: JB-94
 Location: Moss Downs
 Mapped RE: (11.3.2/11.3.1) to north Observed RE: 11.3.2? 11.3.3? Cleared width:
 Canopy spp (DAFOR): Euc. populnea (D) Ac. harpophylla (R) 5%, 12m
Synphyllum hookeri (O) Ac. salicina (O)
 Mid spp. (DAFOR): Eythrocylum australe (O) Casia Brewsteri (O) Carissa ovata (O) <5%, 2m
 Notes / Recommendations: Numerous dead trees
Harissa** (R) Pennisetum cilare* (D)
No riparian veg within 200m.
Undulating, dissected by eroding gullies. Keep line to east.

UN76

(rev C, not on D)

Date: 23.1.6.2011 Time: Waypoint #: CL-51-J KP: AB 106.4 (SW of) Photo: JB-95
 Location: Moss Downs
 Mapped RE: 11.3.2/11.3.1 Observed RE: 11.3.1? Cleared width:
 Canopy spp (DAFOR): Ac. harpophylla (D)
 Mid spp. (DAFOR): Synphyllum hookeri (O) Eremophila mitchelli (O)
 Notes / Recommendations: small stand of brigalow, 1-2 ha
Pennisetum cilare* (D) Opuntia tomentosa (R)
Numerous dead trees

UN77

(rev C, not on D)

Date: 23.1.6.2011 Time: 2:50 Waypoint #: CL-52-J KP: W of 108.3 Photo:
 Location: Moss Downs - Non-rem
 Mapped RE: Non-remnant - 11.3.2/11.3.1 to east+west Observed RE: Cleared width:
 Canopy spp (DAFOR): Euc. populnea - mostly dead trees, some with epicormic growth
 Mid spp. (DAFOR):
 Notes / Recommendations: Non-remnants → west
Euc. populnea woodland → east
(also with some dieback, but still remnant)
couldn't survey further west, as different lot, no access.

UN78

OBSERVATIONAL VEGETATION RECORD

Assessor: CF Job: 60188431

Urosia umbellata

Date: 23.1.6.2011 Time: 14:00 Waypoint #: CF40-S KP: 87.1 Photo: CF651-654
 Location:
 Mapped RE: 11.3.2 / 11.3.25 Observed RE 11.3.2 Cleared width:
 Canopy spp (DAFOR): Euc. populnea (D) Dieback prevalent
 Mid spp. (DAFOR): Acacia harpophylla (R), Carissa ovata (O), Cassia brewsteri (R)
 Notes / Recommendations: Parthenium (R)
 buffel grass (D) cotton bush (Maireana microphylla) (R) Harissia cactus (R)
 thatch grass (F) desert bluegrass (Bothriochloa ewartiana) Opuntia stricta (R)
 chloris virgata (feather top rhodes) (F) Chloris truncata (windmill grass)
 (previously CF40 on GIS) UN11

Date: 24.1.6.2011 Time: 9:20 Waypoint #: CF41-S KP: DL5.7 Photo: CF656-659
 Location: Golden Mile Road
 Mapped RE: non-remnant Observed RE cleared Cleared width:
 Canopy spp (DAFOR): -
 Mid spp. (DAFOR): Rosewood (A), Bauhinia (O), Acacia sp. (A), E. coolibah sapling (R)
 Notes / Recommendations: Grasses: sorghum nitidum (A), buffel grass (A), feathertop rhodes (F)
 Alignment is inside road corridor, within drainage depression. Photo CF660 -
 Likely unsuitable. Could move to either side of road. Regrowth veg. to
 Would be in E. coolibah regrowth. north (outside road corridor) UN12

Date: 24.1.6.2011 Time: 9:40 Waypoint #: CF42-S KP: DL5.7N Photo: CF661-664
 Location: Golden Mile Road (north of road)
 Mapped RE: HVR Observed RE HVR Cleared width:
 Canopy spp (DAFOR): E. coolibah (D)
 Mid spp. (DAFOR): A. harpophylla (F), Rosewood (A), Alectryon olivifolius (O), bauhinia (A)
 Notes / Recommendations: Northern side of road, Red natal grass (F)
 buffel grass (D), thatch grass (A), black spear grass. Parthenium (R)
 Minor drainage line (1.5m wide) transecting site. UN13

Date: 24.1.6.2011 Time: 10:00 Waypoint #: CF43-S KP: DL5.6 north Photo: CF665-668
 Location: Golden Mile Road (south of road)
 Mapped RE: HVR (LC-east)(OC-west) Observed RE HVR (LC-east)(OC-west) Cleared width:
 Canopy spp (DAFOR): East: Euc. coolibah (D)
 West: Acacia harpophylla (D)
 Mid spp. (DAFOR): East: Rosewood (A)
 Notes / Recommendations: West: Bursaria spinosa (F), buffel grass (D), chat flower (A), rosewood (F)
 On edge of HVR-LC (to east), HVR-OC (to west) and cleared land (north).
 * Giant rats tail grass (O) UN14

Lophostemon grandiflorus subsp. riparius
 northern swamp box / freshwater mangrove

OBSERVATIONAL VEGETATION RECORD

Assessor: CF Job: 60188431

Date: 24.1.6./2011 Time: 10:30 Waypoint #: CF44-J KP: D46.8 Photo: CF671-674
 Location: Golden Mile Road
 Mapped RE: HVR Observed RE HVR (brigalow) Cleared width:
 Canopy spp (DAFOR):
 Mid spp. (DAFOR): Acacia harpophylla (A), A. sp. (A), baubinia (F), rosewood (O)
 Notes / Recommendations: grass (O) - collected buffel grass (O)-G
 thameda sp. (F) - collected nardoo (hairy) (A)-G
 cressbaria pea (A)-S
 parthenium (O)-G UN15

Date: 24.1.6./2011 Time: 10:50 Waypoint #: CF45-J KP: D48.2 Photo: CF675-678
 Location: Golden Mile Road, very close to mapped remnant veg.
 Mapped RE: Non-remnant Observed RE 11.3.2 Cleared width:
 Canopy spp (DAFOR): E. populnea (P), Corymbia clarksoniana (O)
 Mid spp. (DAFOR): Cassia sp.? (collected) (O), et. Carissa ovata (O), exocarpos sp.? (R)
 Notes / Recommendations: * need to check. Mapping shows non-RE. Carissat list table shows 11.3.2. Is in fact 11.3.2.
 wedge-tailed eagles hunting stylo (O)
 red natal grass (O) spear grass (O)
 guinea grass (P) pigeon grass (O) dicranthum? (collected at previous site) UN16

Date:/...../2011 Time:..... Waypoint #: KP: Photo:
 Location:
 Mapped RE: Observed RE Cleared width:
 Canopy spp (DAFOR):
 Mid spp. (DAFOR):
 Notes / Recommendations:

Date:/...../2011 Time:..... Waypoint #: KP: Photo:
 Location:
 Mapped RE: Observed RE Cleared width:
 Canopy spp (DAFOR):
 Mid spp. (DAFOR):
 Notes / Recommendations:

OBSERVATIONAL VEGETATION RECORD

Assessor:..... Job:..60188431

Date: 24/06/2011 Time: 3:15 pm Waypoint #: CL 59J KP: AB 19.9 Photo:

Location:

Mapped RE: 11.9.1/11.9.2/11.9.5 Observed RE 11.9.2 Cleared width:

Canopy spp (DAFOR): *Euc. populnea / brownii* (A) *Euc melanophloia* (A) 5%, 10m

Mid spp. (DAFOR): *Owenia acidula* (R) *Cassia brewsteri* (O) *Carissa ovata* (O)

Notes / Recommendations:

N - JB 127
E - JB 128
S - JB 129
W - JB 130

UN85

Date: 24/06/2011 Time: Waypoint #: CL 55 KP: west of 25.6 Photo:

Location: Glandon Station

Mapped RE: 11.5.3 Observed RE 11.5.3 Cleared width:

Canopy spp (DAFOR):

Mid spp. (DAFOR):

Notes / Recommendations: Population of very large grasses (upto 6m tall)
- Avoid this area

UN81

Date:/...../2011 Time: Waypoint #: KP: Photo:

Location:

Mapped RE: Observed RE Cleared width:

Canopy spp (DAFOR):

Mid spp. (DAFOR):

Notes / Recommendations:

Date:/...../2011 Time: Waypoint #: KP: Photo:

Location:

Mapped RE: Observed RE Cleared width:

Canopy spp (DAFOR):

Mid spp. (DAFOR):

Notes / Recommendations:

OBSERVATIONAL VEGETATION RECORD

Assessor: JW Job: 60188431

Date: 24.1.06.2011 Time: 4:05 Waypoint #: JW033-5 KP: AB 17.7 Photo: JW6044-7 (N-W)
 Location: Glendon station
 Mapped RE: 11.8.5 Observed RE: 11.8.5 Cleared width: —
 Canopy spp (DAFOR): *Euc. cambagiana* (D); *Cory. erythrophloia* (O); *Ang. leiocarpa* (R)
 Mid spp. (DAFOR): *Bothriochloa* sp. (A)(S); *Cenchrus ciliare* (A)
 Notes / Recommendations:

To south = buffel grass dom
 = non-rem

UN138

Date: 24.1.06.2011 Time: 5:50 Waypoint #: JW034-5 KP: AB 17.9 Photo: JW 6048-6051 (N-N)
 Location: Glendon station
 Mapped RE: 11.9.5 Observed RE: HVR Cleared width: —
 Canopy spp (DAFOR): *Aca. harpophylla* (D); *Euc. populnea* — 3m tall
 Mid spp. (DAFOR): *Carissa ovata*; *Citrus glauca* (O); *Bauhinia coronii* (O);
 Notes / Recommendations: *Terminalia oblongata* (O); *Hainista cactus* *

Bothriochloa pertusa (Indian blue couch) (A)
Cenchrus ciliare (A)

UN139

Date: 27.1.06.2011 Time: 10:55 Waypoint #: JW040-5 KP: AB 50.8 Photo: JB162-JB165 (N→W)
 Location: Burton Downs station - N of Isaac River
 Mapped RE: 11.3.2 Observed RE: 11.3.7 Cleared width: —
 Canopy spp (DAFOR): *Cory. darksoniana* (A); *Cory. tessalariis* (A); *Bauhinia coronii* (O);
Aca. salicina (R); *Euc. populnea* (F)
 Mid spp. (DAFOR): *Cenchrus ciliare* (D); *Malvaceae americanum* * (O); *Opuntia* sp *† (O)
 Notes / Recommendations: *Heteropogon contortus* (O); *Erethroxym australe* (native cocain) (O); *Citrus glauca* (O)
Terminalia oblongata (R); *Emilia sonchifolia* (O); *Aristida* sp (O)

UN145

Date: 27.1.06.2011 Time: 2:10pm Waypoint #: JW042-5 KP: AB 44.5 Photo: JB170-173 (N→S)
 Location: South of Skull Creek, Burton Downs station
 Mapped RE: 11.4.2/11.4.9 Observed RE: 11.4.2/11.4.9 Cleared width: —
 Canopy spp (DAFOR): *Euc. populnea* (D); *Aca. harpophylla* (F); *Aloua* sp (O);
 Mid spp. (DAFOR): *Terminalia oblongata* (O); *Mel. bracteata* (O);
 Notes / Recommendations: *Cenchrus ciliare* (D); *Pterocaulin sphaerolatum* (O); *Heteropogon*
contortus (F); *Melinis repens* (O); *Carissa ovata* (O); *Themeda triandra* (O)
Sida sp (O); *Dead finish* (O);

*Move alignment East to avoid clearance of trees - wypt JW043 UN148
 * ↑ dieback, esp. *Aca. harpophylla* to E → JB174

UN147

OBSERVATIONAL VEGETATION RECORD

Assessor:..... Job:..60188431

Date: 29/10/2011 Time: 1.30pm Waypoint #: JW045-KP: AS26.7(E) Photo: NW = JW722
 Location: East of KP35, N of Sutar Development Rd NE = JW723
 Mapped RE: 11.8.1 / 11.8.5 Observed RE 11.4.9 to N Cleared width:
 Canopy spp (DAFOR): Aca. harpophylla (D) to North (RE 11.4.9)
 south = Regrowth (Aca. excelsa)
 Mid spp. (DAFOR):
 Notes / Recommendations:
 * 500m wide along roadside to N
 *
 UNISO

Date: 30/10/2011 Time: 9.50am Waypoint #: JW046-J KP: EL 41.9 Photo: JW724 → 727 (N→W)
 Location:
 Mapped RE: 11.5.3 / 11.7.2 Observed RE 11.5.3 Cleared width: -
 Canopy spp (DAFOR): Coy. clarksoniana (F); Eur. platyphylla (a) 30% 3m
 Mid spp. (DAFOR): Pet. pubescens (a); Mel. viridiflora (D); Aca. leiocalyx (F)
 Notes / Recommendations: Stylostanthus scabra (a); Melinis repens * (D); Helicopogon
 cantorus (a);
 UNISO

Date:/...../2011 Time:..... Waypoint #: KP: Photo:
 Location:
 Mapped RE: Observed RE Cleared width:
 Canopy spp (DAFOR):
 Mid spp. (DAFOR):
 Notes / Recommendations:

Date:/...../2011 Time:..... Waypoint #: KP: Photo:
 Location:
 Mapped RE: Observed RE Cleared width:
 Canopy spp (DAFOR):
 Mid spp. (DAFOR):
 Notes / Recommendations:

OBSERVATIONAL VEGETATION RECORD

(previously CF46 on GPS)

Assessor: CF Job: 60188431

Date: 25/6/2011 Time: 13:15 Waypoint #: CF47-J KP: EL19.3 Photo: CF686-689
 Location: Baucher's
 Mapped RE: 11.5.8 Observed RE 11.5.8 (c) Cleared width:
 Canopy spp (DAFOR): E. platyphylla (D), E. populnea (o)
 Mid spp. (DAFOR): Grevillea parallela (o), Corkwood wattle (F)
 Notes / Recommendations:
 black spear grass (A) aristida sp. (o)
 red natal grass (F) cynnopogon sp. (o)
 digitaria sp (A) themeda australis (o)

UN 17

(previously CF47) on GPS

Date: 25/6/2011 Time: 13:20 Waypoint #: CF48-J KP: EL 19.3 Photo: CF690-693
 Location: Baucher's
 Mapped RE: 11.9.7/11.9.9 Observed RE 11.9.7 Cleared width:
 Canopy spp (DAFOR): E. populnea (D)
 Mid spp. (DAFOR): Carissa avata (A), corkwood wattle (o)
 Notes / Recommendations:
 black spear grass (A) red natal grass (o) chaf flower (o) thatch grass* (o)
 digitaria sp. (A) aristida sp. (o) themeda australis (o)
 forest blue grass (o) cymbopogon sp. (o) apple bush (o)

UN 18

(previously CF050) on GPS

Date: 26/06/2011 Time: 2:00pm Waypoint #: CF051-J KP: EL 0.5 Photo: CF707-710 (N→S)
 Location:
 Mapped RE: 11.9.9/11.10.12 Observed RE 11.9.9 (fine grain) Cleared width:
 Canopy spp (DAFOR): Euc. crebra (A), Euc. populnea (A)
 Mid spp. (DAFOR): Themeda trianara (D), Cenchrus ciliare (F), Heteropogon
 Notes / Recommendations: contortus (o), Stylosetanthes scabra (o), sida sp (o);

UN 25

Date: 26/06/2011 Time: 3:45pm Waypoint #: CF052-J KP: AB 11.7 Photo: CF711-14 (N→S)
 Location: Glendon station - south of Newlands Access Rd.
 Mapped RE: 11.9.9/11.9.2/11.9.5 Observed RE HVR - 11.9.9 Cleared width:
 Canopy spp (DAFOR): Euc. populnea (A), Euc. crebra (A), Ang. leiocarpa (E)
 * some individual scattered remnant trees 20/ 5m
 Mid spp. (DAFOR): Cenchrus ciliare (A), Aristida sp (O), Heteropogon contortus (o);
 Notes / Recommendations:
 Avoid large scattered rem trees where possible.

UN 26

OBSERVATIONAL VEGETATION RECORD

Assessor:..... Job:..60188431

(presumably cross on GPS)

Date: 26/06/2011 Time: 4:05 Waypoint #: CF053-J KP: AB 12.1 Photo: J.W 698-701
 Location: Glenden Property - south of Newlands Rd
 Mapped RE: HVR-E Observed RE HVR-E (11.9.5) Cleared width: —
 Canopy spp (DAFOR): *Aca. haemaphysylla* 3m 80%
 Mid spp. (DAFOR): *Cenchrus ciliaris* (A), *Bothriochloa* sp. (A)
 Notes / Recommendations:

UN 27

Date:/...../2011 Time:..... Waypoint #: KP: Photo:
 Location:
 Mapped RE: Observed RE Cleared width:
 Canopy spp (DAFOR):
 Mid spp. (DAFOR):
 Notes / Recommendations:

Date:/...../2011 Time:..... Waypoint #: KP: Photo:
 Location:
 Mapped RE: Observed RE Cleared width:
 Canopy spp (DAFOR):
 Mid spp. (DAFOR):
 Notes / Recommendations:

Date:/...../2011 Time:..... Waypoint #: KP: Photo:
 Location:
 Mapped RE: Observed RE Cleared width:
 Canopy spp (DAFOR):
 Mid spp. (DAFOR):
 Notes / Recommendations:

OBSERVATIONAL VEGETATION RECORD

Assessor: CL Job: 60188431

CL65 SL - NO GPS point for this location

Date: 26.1.2011 Time: 11:30am Waypoint #: ~~3.3~~ KP: 3.3 Photo: GPS error.

Location: Vermont Park

Mapped RE: 11.4.9/11.4.8/11.5.3 Observed RE 11.5.3 Cleared width:

Canopy spp (DAFOR): Poplar box (D), E. tessellaris (O), E. teretecornis (R)

Mid spp. (DAFOR): A. harpophylla (R)

Notes / Recommendations: Brigalow mite so point taken from road to west of site.

Date: 26.1.6./2011 Time: 1-10pm Waypoint #: CL 66-J KP: SL-0.5 Photo:

Location: Vermont Park

Mapped RE: 11.4.9/11.4.8/11.5.3 Observed RE 11.5.3 Cleared width:

Canopy spp (DAFOR): Euc. populnea (D), Cas. dallachyana (O), Euc. crebra (O), Ac. excelsa (F)

Mid spp. (DAFOR): Erythroxylum australe (F), Casua ovata (F), Petalostigma pubescens (O)

Notes / Recommendations: Terminalia oblongata (R) N: CL 84
 Pennisetum cleare* (D), Panicum sp (F), Digitaria (R) Aristida sp (F) E: CL 85
 Heteropogon contatus (F) Opuntia tomentosa + (R) Hanzasia + (R) S: CL 86
 W: CL 87

No brigalow present in area UN 91

Date: 26.1.6./2011 Time: Waypoint #: CL 67-J KP: SL 5.8 Photo:

Location: Vermont Park

Mapped RE: 11.5.3 Observed RE 11.5.3 Cleared width:

Canopy spp (DAFOR): Euc. populnea (D), Ac. excelsa (O)

Mid spp. (DAFOR): Cassia brewsteri (F), Drypetes deplanchei (R)

Notes / Recommendations: Pennisetum cleare* (A) Panicum effusum (F) Aristida (F)
 Stylosanthes scabra (O) Bothriochloa pertusa* (F) Heteropogon contatus N CL 88
 Digitaria (O) Melinis repens (O) Opuntia stricta (R) E " 89
 S " 90
 W " 91

UN 92

Date: 26.1.6./2011 Time: 3:40 Waypoint #: CL 69-J KP: SL 6.9 north Photo:

Location: southern end of stockyard

Mapped RE: 11.3.2/11.3.25/11.3.1 Observed RE Cleared width:

Canopy spp (DAFOR):

Mid spp. (DAFOR):

Notes / Recommendations: Keep pipeline to south of stockyard and dam
 (Dam to north of stockyard)

UN 94

n

Entered M R

OBSERVATIONAL VEGETATION RECORD

Assessor:..... Job:..60188431

Date: 26.1.6.2011 Time:..... Waypoint #:..... KP:..... Photo:.....
 Location: between wetlands on Vermont Park
 Mapped RE:..... Observed RE 11.5.3..... Cleared width:.....
 Canopy spp (DAFOR):.....
 Mid spp. (DAFOR):.....
 Notes / Recommendations: Euc populnea (D)
occasional A.c. harpophylla - no areas large enough to form RE

Date: 26.1.6.2011 Time: 5:20 Waypoint #: CL72-5 KP: SL 11.1 north Photo:.....
 Location: 700m N of SL 11.1, north of wetland
 Mapped RE: 11.5.3/11.4.9 Observed RE 11.5.3 Cleared width:.....
 Canopy spp (DAFOR): C. clarksoniana (D) C. tessellans (0) 20%, 15m
Euc populnea (0)
 Mid spp. (DAFOR): Bursaria meana (0) Stylisanthes scabra (0) <<5%, 3m
 Notes / Recommendations: Move line to this or further north to avoid wetland
No wetland species present

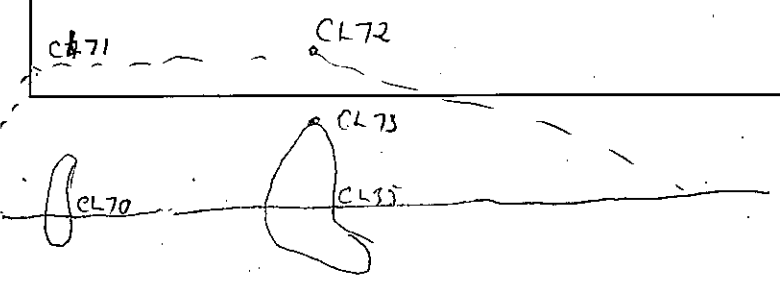
N CL 105
E CL 106
S CL 107
W CL 108

UN 96

Date: 26.1.6.2011 Time:..... Waypoint #: CL 73-5 KP: North of SL 10.6 Photo:.....
 Location:.....
 Mapped RE: 11.5.3/11.4.9 Observed RE 11.3.2 to S, 11.3.3 to N Cleared width:.....
 Canopy spp (DAFOR): Euc coolabah (D) C. tessellans (0) Euc populnea (0)
 Mid spp. (DAFOR):.....
 Notes / Recommendations: north end of wetland

UN 97

Date:/...../2011 Time:..... Waypoint #:..... KP:..... Photo:.....
 Location:.....
 Mapped RE:..... Observed RE..... Cleared width:.....
 Canopy spp (DAFOR):.....
 Mid spp. (DAFOR):.....
 Notes / Recommendations:.....



OBSERVATIONAL VEGETATION RECORD

Assessor:..... Job: 60188431

YD

Date: 27/06/2011 Waypoint #: C180-5 KP: AB 63.7^{east} Photo:

Location:

Geology: Alluvial; Clay; Sand; Coarse sedimentary; Fine sedimentary; Igneous(coarse); Volcanic(fine); Metamorphic; Limestone; Laterite

Health: Pristine; Very Good; Good; Average; Poor; Degraded; Completely Degraded (almost without natives)

Vegetation: Remnant (>70% height, >50% canopy density); Regrowth; Exotic; Cleared

Dominant Stratum: Tree; Shrub; Forb; Grass; Aquatic % Coverage: 70-100%; 30-70%; 10-30%; <10%

Mapped RE: Observed RE Cleared width:

Dominant spp.

Notes / Recommendations: east end of Ceibera population

see notes course
datasheet C178(CUN203)

UN124

YD

Date: 18/06/2011 Waypoint #: C179 KP: Photo:

Location:

Geology: Alluvial; Clay; Sand; Coarse sedimentary; Fine sedimentary; Igneous(coarse); Volcanic(fine); Metamorphic; Limestone; Laterite

Health: Pristine; Very Good; Good; Average; Poor; Degraded; Completely Degraded (almost without natives)

Vegetation: Remnant (>70% height, >50% canopy density); Regrowth; Exotic; Cleared

Dominant Stratum: Tree; Shrub; Forb; Grass; Aquatic % Coverage: 70-100%; 30-70%; 10-30%; <10%

Mapped RE: Observed RE Cleared width:

Dominant spp.

Notes / Recommendations: Parthenium weed

UN124

YD

Date: 19/06/2011 Waypoint #: C119-5 KP: AB 332.3^{South} Photo:

Location:

Geology: Alluvial; Clay; Sand; Coarse sedimentary; Fine sedimentary; Igneous(coarse); Volcanic(fine); Metamorphic; Limestone; Laterite

Health: Pristine; Very Good; Good; Average; Poor; Degraded; Completely Degraded (almost without natives)

Vegetation: Remnant (>70% height, >50% canopy density); Regrowth; Exotic; Cleared

Dominant Stratum: Tree; Shrub; Forb; Grass; Aquatic % Coverage: 70-100%; 30-70%; 10-30%; <10%

Mapped RE: Observed RE Cleared width:

Dominant spp.

Notes / Recommendations: Stay South - ~~at~~ Recommend.

UN124

W

OBSERVATIONAL VEGETATION RECORD

Assessor:..... Job:....60188431.

2:10pm

UN 148

*D

Date: 27.10.2011 Waypoint #: JW 043-JKP: AB 44.7 east Photo:

Location: near small creek, Burton Downs station

Geology: Alluvial; Clay; Sand; Coarse sedimentary; Fine sedimentary; Igneous(coarse); Volcanic(fine); Metamorphic; Limestone; Laterite

Health: Pristine; Very Good; Good; Average; Poor; Degraded; Completely Degraded (almost without natives)

Vegetation: Remnant (>70% height, >50% canopy density); Regrowth; Exotic; Cleared

Dominant Stratum: Tree; Shrub; Forb; Grass; Aquatic % Coverage: 70-100%; 30-70%; 10-30%; <10%

Mapped RE: Observed RE Cleared width:

Dominant spp.

Notes / Recommendations:

alternate route to see JW042 (UN 147)

UN 148

UN 149

*D

Date: 27.10.2011 Waypoint #: JW044-JKP: AB 50.2 Photo:

Location:

Geology: Alluvial; Clay; Sand; Coarse sedimentary; Fine sedimentary; Igneous(coarse); Volcanic(fine); Metamorphic; Limestone; Laterite

Health: Pristine; Very Good; Good; Average; Poor; Degraded; Completely Degraded (almost without natives)

Vegetation: Remnant (>70% height, >50% canopy density); Regrowth; Exotic; Cleared

Dominant Stratum: Tree; Shrub; Forb; Grass; Aquatic % Coverage: 70-100%; 30-70%; 10-30%; <10%

Mapped RE: Observed RE Cleared width:

Dominant spp.

Notes / Recommendations:

Alternate crossing route for JW041 [UN 146]
see watercourse crossing sheet JW041.

UN 103

*D

Date: 27.10.2011 Waypoint #: CL 79 KP: AB 63.7 east Photo:

Location:

Geology: Alluvial; Clay; Sand; Coarse sedimentary; Fine sedimentary; Igneous(coarse); Volcanic(fine); Metamorphic; Limestone; Laterite

Health: Pristine; Very Good; Good; Average; Poor; Degraded; Completely Degraded (almost without natives)

Vegetation: Remnant (>70% height, >50% canopy density); Regrowth; Exotic; Cleared

Dominant Stratum: Tree; Shrub; Forb; Grass; Aquatic % Coverage: 70-100%; 30-70%; 10-30%; <10%

Mapped RE: Observed RE Cleared width:

Dominant spp.

Notes / Recommendations:

Cerbera population - more
west end of population
see watercourse
datasheet CL 78

OBSERVATIONAL VEGETATION RECORD

Assessor: CF & DM Job: 60188431

Date: 29.1.6/2011 Time: 13.30 Waypoint #: CF056-J KP: AB 5.8 Photo: CF715-718

Location:

Mapped RE: 11.8.5 Observed RE 11.8.5 Cleared width:

Canopy spp (DAFOR): ~~sa + cred~~ E. argenteophylla (O), C. cokeriana (O), C. eragrostophylla (O)

Mid spp. (DAFOR): Grasses (100% cover)

Notes / Recommendations: Bothriochloa sp (F), Melinis repens (O), Heteropogon contortus (O)
~~Red leg grass ??~~, Opuntia stricta (R), Dicanthum fecundum (D), Iseilema vaginiflorum

UN 28

Date: 29.1.6/2011 Time: Waypoint #: CF057-J KP: AB 10.5 Photo: CF719-722

Location: 11.9.9 / 11.9.2 / 11.9.5 ↓

Mapped RE: Observed RE 11.9.9 / 11.9.2 / 11.9.5 Cleared width: photo E70

Canopy spp (DAFOR): Acacia harpophylla (A), E. melanophylla (A), Euc. albens ?? (D),
 Eucalyptus to east

Mid spp. (DAFOR): Canassa ovata (O), Dead Finish (O), Acacia exulsa (O), Melaleuca bracteata (R)

Notes / Recommendations: Pennistum ciliare (D), Megathyrsus maximus (F), Opuntia stricta (R)
 Harrisia (R) 40% brigalow cover

50% 11.9.9 | 10% 11.9.2 | 40% 11.9.5

UN 29

Date:/...../2011 Time: Waypoint #: KP: Photo:

Location:

Mapped RE: Observed RE Cleared width:

Canopy spp (DAFOR):

Mid spp. (DAFOR):

Notes / Recommendations:

Date:/...../2011 Time: Waypoint #: KP: Photo:

Location:

Mapped RE: Observed RE Cleared width:

Canopy spp (DAFOR):

Mid spp. (DAFOR):

Notes / Recommendations:

OBSERVATIONAL VEGETATION RECORD

Assessor: CL Job: 60188431

Date: 29.1.6.2011 Time: 2.45 pm Waypoint #: CL82-J KP: AB 37.6 Photo: JB 181
 Location: small eroded creek
 Mapped RE: non-rem Observed RE non-rem Cleared width:
 Canopy spp (DAFOR): *Ac salicina* (O), *Euc uelra* (R), *Ac topophylla* (R),
Lycophyllum carroni (O)
 Mid spp. (DAFOR):
 Notes / Recommendations: erosion along gully 3-4 m cliffs
Harussia martini (R) *Pennisetum ciliare* (D)

UN105

Date: 29.1.6.2011 Time: 3 pm Waypoint #: CL83-J KP: AB 37.2 Photo: JB 182
 Location: small creek 11.8.11 → N
 Mapped RE: 11.8.11 / 11.8.5 Observed RE non-rem → S Cleared width:
 Canopy spp (DAFOR): *Euc. organophila* (O) *Ac salicina* (O)
 Mid spp. (DAFOR):
 Notes / Recommendations: *Pennisetum ciliare* * (F) *Bothriochloa pertusa* * (D)
Parthenium hysterophus ** (R) → S
Dichanthum sericeum (D) *Iseleima* (F) *Heteropogon* (O) *Bothriochloa pertusa* * (O)
Euc organophila (R) *Cor. erythrophloia* (R) *Cassia brewsteri* (R)

UN106

Date: 29.1.6.2011 Time: Waypoint #: CL84-J KP: AB 37.0 Photo:
 Location:
 Mapped RE: 11.8.11 / 11.8.5 Observed RE 11.8.11 Cleared width:
 Canopy spp (DAFOR): *Euc. organophila* (R) *Cor. erythrophloia* (R)
 some tree dieback
 Mid spp. (DAFOR): —
 Notes / Recommendations: *Dichanthum sericeum* (D) *Heteropogon contortus* (O) N-JB 183
Bothriochloa pertusa * (O) *Parthenium* ** (R) *Pennisetum ciliare* * (R) E- " 184
Iseleima (F) *Brachiaria* ? (S) (F) *Panicum* (O) *Glycine (hairy)* (O) S- " 185
 Avoid a offset. W- " 186

UN107

Date: 29.1.6.2011 Time: 3:35 Waypoint #: CL85-J KP: AB 36.5 Photo:
 Location: small drainage on black soil
 Mapped RE: 11.8.11 / 11.8.5 Observed RE 11.8.11 Cleared width:
 Canopy spp (DAFOR): *Euc. organophila* (O) *Cor. erythrophloia* (R) D- , <5%
 ↳ borders 11.3.2 / 11.3.25
 Mid spp. (DAFOR):
 Notes / Recommendations: Not riparian community N- JB 187
 Very small drainage, no defined banks. E- JB 198
 Occasional dead tree S- JB 189
 W- JB 190

UN108

OBSERVATIONAL VEGETATION RECORD

Assessor: Job: 60188431

Date: 27/1/2011 Time: 12 pm Waypoint #: CL74-JP: AB 54.2 Photo:
 Location: Riverside
 Mapped RE: 11.3.2 Observed RE 11.5.3 Cleared width:
 Canopy spp (DAFOR): *Euc. populnea* (D) *Euc. crebra* (O) *Cot. tessellaris* (O)
 Mid spp. (DAFOR): *Ac. excelsa* (O) *Erythroxylum australe* (O)
 Notes / Recommendations: *Pennisetum ciliare** (D) *Heteropogon contortus* (F)
 Remnant → W. Cleared corridor 100m → E, then remnant 11.5.3.
 Place line in cleared corridor. UN98

Date: 27/1/2011 Time: 1 pm Waypoint #: CL75-JP: AB 58.3 Photo:
 Location: Riverside (11.5.9 & 11.7.2 to east)
 Mapped RE: Non-remnant Observed RE Non-remnant west, 11.7.3 to E Cleared width:
 Canopy spp (DAFOR): *Euc. persistens* (D) *Conarium*? (S) (R)
 Mid spp. (DAFOR): *Puzosia spinosa* (F) *Carissa ovata* (F)
 Notes / Recommendations: Remnant to NE (laterite knoll) cleared → SW
*Pennisetum ciliare** (A) *Themeda triandra* (A) *Parthenium*** (R)
 Put line in cleared flat black soil → SW UN99
 N - CL 109
 E - CL 110
 S - CL 111
 W - CL 112

≈ 1.5 km W of 62-8

Date: 27/1/2011 Time: Waypoint #: CL77-JP: KP: wt. of 63 Photo:
 Location:
 Mapped RE: Non-remnant Observed RE 11.7.2 Cleared width:
 Canopy spp (DAFOR): *Ac. shurleyi* (D) *Euc. crebra* (R)
 Mid spp. (DAFOR): *Cerbera dunicola* (F) ≈ 100 plants in several ha
 Notes / Recommendations: Cd - recruiting seedlings to adults 3m tall
Distida caput-medusae (F) *Anacardium*? (S) (D) *Heteropogon contortus* (O) UN101

Date: 29/1/2011 Time: 2 pm Waypoint #: CL81-JP: KP: AB 38.6 Photo:
 Location:
 Mapped RE: 11.3.2/11.3.25 Observed RE 11.5.3 Cleared width:
 Canopy spp (DAFOR): *Euc. populnea* (D)
Albizia diversifolium (R) *Terminalia oblongata* (R) *Flueggea viosna* (R)
 Mid spp. (DAFOR): *Cassia brewsteri* (O) *Erythroxylum australe* (F) *Carissa ovata* (O)
 Notes / Recommendations: *Lycopodium carroni* (O) *Ac. karpophylla* (R)
*Pennisetum ciliare** (D) *Bothriochloa pertusa* (F) *Heteropogon contortus* (F)
 Canopy trees all young (DBH ≤ 30cm) ht 12m, 20% UN104
 N - JB 177
 E - JB 178
 S - JB 179
 W - JB 180

OBSERVATIONAL VEGETATION RECORD

Assessor: CL Job: 60188431

Date: 29.1.6.2011 Time: 4:15 Waypoint #: CL 86-J KP: AB 348 Photo:

Location:

Mapped RE: 11.3.3 Observed RE 11.5.3 Cleared width:

Canopy spp (DAFOR): Euc. crebra (0) Acacia excelsa (0) Cor. dallachiana (0)

Mid spp. (DAFOR): Cassia brewsteri (0) Archidendropsis basaltica (0) Mel. nervosa (R)

Notes / Recommendations: Bothriochloa pertusa (A) Heteropogon contortus (A) Themeda triandra (0)
Waltheria indica (0) Melinis repens (0) Grewia retusifolia

N-JB 196
E-JB 197
S-JB 198
W-JB 199

UN109

Date: 30.1.6.2011 Time: 11am Waypoint #: CL 88-J KP: AB 01.4 Photo: JB 205-206 (Rev C - not on D)

Location:

Mapped RE: 11.3.2/11.3.1 Observed RE 11.5.3 Cleared width:

Canopy spp (DAFOR):

Mid spp. (DAFOR):

Notes / Recommendations: Desmodium macrocarpum population (see Des-mac shapefile)

UN110

Date: 30.1.6.2011 Time: 1pm Waypoint #: CL 89-J KP: AB 02.3 Photo:

Location:

Mapped RE: 11.3.2/11.3.1 Observed RE 11.3.2 Cleared width:

Canopy spp (DAFOR):

Mid spp. (DAFOR):

Notes / Recommendations: High bank of North Ch

UN111

Date: 30.1.6.2011 Time: 1:15 Waypoint #: CL 90-J KP: AB 02.6 Photo:

Location:

Mapped RE:

Observed RE cleared → E Cleared width:

Canopy spp (DAFOR): 11.3.2 → W

Mid spp. (DAFOR):

Notes / Recommendations: High bank of North Ch

UN112

OBSERVATIONAL VEGETATION RECORD

Assessor: CL Job: 60188431

(rev C, not on D)

Date: 30.1.6/2011 Time: Waypoint #: CL 935 KP: AB 02.9 Photo:
 Location: Between railline and North Ch
 Mapped RE: 11.3.2/11.3.1 Observed RE 11.3.1 Cleared width:
 Canopy spp (DAFOR): Ac. harpophylla (D) Euc. cambageana (O) 40%, 12 m
 Mid spp. (DAFOR): Carissa ovata (F) Eremophila mitchelli (O) Terminalia oblongata (O) <5%
 Notes / Recommendations: Opuntia stricta⁺⁺ (R) Pennisetum ciliare (A) Harussia⁺⁺ (R) N-JB 220
 Aristida sp (F) Sida rhombifolia (O) Parthenium hysterophes⁺⁺ (O) E-JB 221
 Urochloa mosambicensis (F) S-JB 222
 W-JB 223

UN115

(rev C, not on D)

Date: 30.1.6/2011 Time: 2.30pm Waypoint #: CL 945 KP: AB 02.2 Photo:
 Location:
 Mapped RE: 11.3.2/11.3.1 Observed RE 11.3.2 Cleared width:
 Canopy spp (DAFOR):
 Mid spp. (DAFOR):
 Notes / Recommendations: Sporobolus natalensis (GRT)

UN116

Date:/...../2011 Time: Waypoint #: KP: Photo:
 Location:
 Mapped RE: Observed RE Cleared width:
 Canopy spp (DAFOR):
 Mid spp. (DAFOR):
 Notes / Recommendations:

east of

Date: 3.1.7/2011 Time: Waypoint #: CE-068a-J KP: AB 3.12 Photo:
 Location: Davelin Ch - access road
 Mapped RE: Observed RE Cleared width:
 Canopy spp (DAFOR):
 Mid spp. (DAFOR):
 Notes / Recommendations: Possible GRT

UN 52

OBSERVATIONAL VEGETATION RECORD

Assessor: J.W. + A.H. Job: 60188431

Date: 31/08/2011 Time: 9:40 Waypoint#: JW11-S KP: S of AB4462 Photo: As per device
 Location: S. of Rubbish Refuge - b/w transfer station & railway
 Mapped RE: Non-rem/HVR Observed RE Non-rem/HVR Cleared width: —
 Canopy spp (DAFOR): Euc. tere (0); Euc. crebra (0); 10%
 Mid spp. (DAFOR): Harissa cactus **; Opuntia sp **; Snake weed **
 Notes / Recommendations:
 * Utilise area to avoid transfer station (option)
 * < 1kg heels closest to rubbish transfer area
 * best ROW for alt of Raglan creek

UN259

Date: 31/08/2011 Time: 9:50 Waypoint#: JW12-S KP: S of AB4462 Photo: As per device
 Location: N. of Rubbish Refuge / transfer
 Mapped RE: Non-rem Observed RE Non-remnant Cleared width: —
 Canopy spp (DAFOR): Euc crebra 25%
 Mid spp. (DAFOR): Carissa lanceolata; A. farnesiana; Aracia saligna
 Notes / Recommendations: Snake weed **
 * utilise area to avoid transfer station (option)
 * best ROW for original Raglan Creek crossing

UN260

Date: 31/08/2011 Time: 11:50am Waypoint#: JW13-S KP: W of AB410.5 Photo: JW6461 - 6464
 Location: Magilino Road - Alt ROW south KP410
 Mapped RE: 11.3.4/11.3.25 (W) Observed RE 11.3.4/11.3.25 Cleared width: 60m to E
 Canopy spp (DAFOR): To W = Euc tere (A); Cory. tess (A); Cory. trachyphloia (0);
 To E = cleared 60m
 Mid spp. (DAFOR): To W = Lantana camara ** (A); Snake weed **;
 Notes / Recommendations:
 * No access allowed off road, survey done from roadside
 * survey required to assess creek crossing if alt route chosen
 * appears to follow existing cleared ROW to W of creek (aerial)

UN262

Date: 31/08/2011 Time: 12:15 Waypoint#: JW14-S KP: W of AB410.5 Photo: JW6465
 Location: Creek, W of Magilino Road
 Mapped RE: Non-rem Observed RE Non-rem Cleared width: —
 Canopy spp (DAFOR): Ficus sp. (2 indiv)
 Mid spp. (DAFOR):
 Notes / Recommendations: * mostly cleared to W of creek
 * no E. here @ survey point
 * E. here (11.3.25) com to S of point
 * surveyed from vehicle only.

UN263

OBSERVATIONAL VEGETATION RECORD

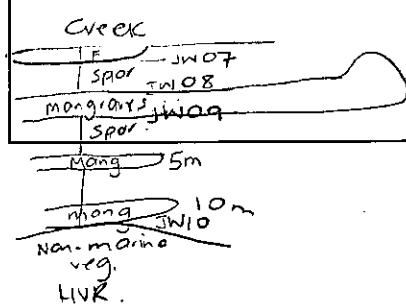
Assessor: JN + AH Job: 60188431

Date: 30/08/2011 Time: 2:15pm Waypoint#: JW03-S KP: S of AB4466 Photo: AS per getac
 Location: Raglan creek - Alt
 Mapped RE: HVR-oc 11.1.1/11.3.4 Observed RE 11.1.1/11.1.4 Cleared width: —
 Canopy spp (DAFOR): *Aegiceras corniculatum* (river mangrove), *Avicennia marina* (grey mangrove) along creek.
 Mid spp (DAFOR): Salt pan - sida, snake weed, *Senna; *Sporobolus virginicus*;
 Notes / Recommendations: *Anisida*, rubber vine, **Gomphocarpus*; *Parthenium* **;
 * mangroves 5m W side of Raglan creek, appears more extensive on E.
 * salt pan - quite degraded, through grazing, some woody mangroves in centre preferred route mapped - see JW04 to JW05 UN251

Date: 30/08/2011 Time: 2:30 Waypoint#: JW04-S KP: S of AB4466 Photo: JW05 - JW6440 - 6443
 Location: 20m S of JW03 - Alt to JW05 *SUGGESTED ROW*
 Mapped RE: AS JW03 11.1.1/11.3.4 Observed RE 11.1.1/11.1.4 Cleared width: —
 Canopy spp (DAFOR): * only way to avoid main plants is further sth par. railway. Avoid dissection of salt pan by moving to
 Mid spp (DAFOR): sth extent Avoid waterhole & rim trees
 Notes / Recommendations: Eastern Point
 * mangroves to E along Raglan creek
 * sml dam to S
 * salt pan to W
 JW05 (UN252) - Non remnant mapped western point
 * salt pan & mangroves to N
 * salt pan to E
 * salt pan to S (50m)
 * West - non-rem

Date: 31/08/2011 Time: 8:40 Waypoint#: JW06-S KP: S of AB4466 Photo: JW6449 - 6451
 Location: Raglan creek - Alt crossing
 Mapped RE: HVR-oc Observed RE 11.1.1 Cleared width: —
 Canopy spp (DAFOR):
 Mid spp (DAFOR):
 Notes / Recommendations: To W = pasture (95%) *Sporobolus* (5%) until mangroves (30m)
 E = 100% *Sporobolus*
 JW05 - end of W extent of *Sporobolus* (83m JW05 - 06 at 100% *Sporobolus*)
 100% marine 83m
 50m 30m
 creek
 JW6448 - 6451 (JW09)

Date: 31/08/2011 Time: 9:00 Waypoint#: JW07-S KP: AB4466 Photo: JW = 6444 - 6447 (JW07)
 Location: Raglan creek - orig crossing
 Mapped RE: HVR-oc Observed RE 11.1.1/HVR(oc) Cleared width: —
 Canopy spp (DAFOR):
 Mid spp (DAFOR):
 Notes / Recommendations: JW07 - W = *Sporobolus* *Aegiceras corniculatum*
 JW08 = start of mangroves (River mangrove) to W
 JW09 = end of mangroves (E), *Sporobolus* (W)
 5m of *Dyospora* sp; Rubber vine; *Bursaria spinosa*.



JW10 = W extent of marine veg UN255

OBSERVATIONAL VEGETATION RECORD

Assessor: JW + AH Job: 60188431

Date: 31/08/2011 Time: 4:40pm Waypoint#: JW015-SKP: AB/10.1 Photo: As per device
 Location: Parallel to existing gas pipeline as mapped
 Mapped RE: ~~11.3.4/11.3.25(W)~~ Observed RE 11.11.5(E)/11.3.4(W) Cleared width: —
 Canopy spp (DAFOR): E = Euc crebra (D); Euc tere (R);
 W = Euc tere (D); Cory tess (O); Euc crebra (O);
 Mid spp. (DAFOR): Lantana camara **, Alp excelsa; Rubber vine **;
 Notes / Recommendations:
 * change in vegetation community
 * adjacent to existing gas pipeline (to S)
 * ensure ROW butts onto existing clearing

UN UN264

Date: 02/09/2011 Time: 10:10am Waypoint#: JW030-S KP: E of AB/63 Photo: JW6503 - 6506
 Location: Alt location E of Fitzroy Develop Rd
 Mapped RE: ^{To NW non-rem} ~~To SE: 11.3.25 (non-rem)~~ Observed RE As mapped Cleared width: —
 Canopy spp (DAFOR): NW = Euc tere (D); Cory tess (O); A salicina (O); Lycopodium hookeri (R)
 Filus opposita; Allo cunning (O); Buffel grass * Lantana ** (A) 70%
 Mid spp. (DAFOR): NE = Lantana **, buffel grass *, juv Euc tere; juv Cory coolibah < 10%
 Notes / Recommendations:
 * Lrg habitat trees to NW - avoid if possible (esp. Euc tere's)
 * Move further NE

UN UN279

Date: 02/09/2011 Time: 10:35 Waypoint#: JW031-S KP: E of AB/63 Photo: JW6501 - 6514
 Location: Alt location for JW30 - E of Fitzroy devel Rd
 Mapped RE: ^{To NW non-rem} ~~To SE: 11.3.25~~ Observed RE As mapped Cleared width: —
 Canopy spp (DAFOR): NW = Euc tere (D); Cory tess (O); A salicina (O); compans leaf (O),
 Lantana ** (A); Filus opposita (O) 30%
 Mid spp. (DAFOR): ^{SE} Lantana ** (A); Filus opposita (R); juv Elteri; juv E coolibah < 10%
 Notes / Recommendations:
 * < lrg rem Euc tere.

UN UN280

Date: 02/09/2011 Time: 10:50 Waypoint#: JW032-SKP: E of AB/62.8 Photo: JW6515 - 6518
 Location: Alt location - E of Fitzroy Development Rd (change non-rem → 11.3.25)
 Mapped RE: ^{To NW = 11.3.1/11.3.7} ~~To SE = non-rem~~ Observed RE ^{To NW = 11.3.25} ~~To SE = non-rem~~ Cleared width: —
 Canopy spp (DAFOR): NW = Euc tere (A); Cory tess (A); Euc coolibah (A);
 Filus opposita (R); A cunninghamii (O); bat tree coral tree (R); Nagpaabur **
 Mid spp. (DAFOR): SE = same as SE for JW30 parthenium **
 Notes / Recommendations:
 * Boundary of non-rem to east, 11.3.25 to west (was mapped as 11.3.1/11.3.7)
 * creek located 40m W (avoid)

UN UN281

OBSERVATIONAL VEGETATION RECORD

Assessor: JW Job: 60188431

Date: 02.10.2011 Time: 11.45 Waypoint#: JW34-S KP: E of AB1625 Photo: JW6523-6526
 Location: Alt. location E of Fitzroy Development Rd
 Mapped RE: ^{SE = 11.3.25} NW = 11.3.1 / 11.3.7 Observed RE ^{SE = 11.3.25} NW = 11.3.7 Cleared width: —
 Canopy spp (DAFOR): To SE = see JW033
 To NW = *Cory. trachyphloia* (D); *lysophyllum hookeri* (A) 20%
 Mid spp. (DAFOR): *Agertium* *; *buffel* *; *Melinis repens* *; *Lantana* **
 Notes / Recommendations:
 11.3.7 extends further NW than mapped RE - use aerial imagery to see NW extent of 11.3.7
 To SE = wooded swamp / flood plain → more crossing E (JW35) UN283

Date: 02.10.2011 Time: 12.15 Waypoint#: JW35-S KP: E of AB1625 Photo: JW6527-6530
 Location: Alt. location E of Fitzroy Devel. Rd
 Mapped RE: 11.3.25 (SE) / 11.3.7 (NW) Observed RE ^{SW = 11.3.25} NW = 11.3.7 Cleared width: —
 Canopy spp (DAFOR): SE = 30m of 11.3.25 until creek (*Euc. tere.*, *Euc. coolibah.*)
 NW = *Cory. trachy.* (A); *lysophyllum hookeri* (R); *Pet. pub.* (F);
 Mid spp. (DAFOR):
 Notes / Recommendations:
 * Avoids wooded wetland (with M fluv) to W.
 * preferable crossing. UN284

Date: 02.10.2011 Time: 2.10 Waypoint#: JW36-S KP: E of AB163 Photo: JW6536-39
 Location: Alt. location E of Fitzroy Devel. Rd
 Mapped RE: ^{NW = 11.3.25} SE = 11.3.7 / 11.3.1 Observed RE ^{NW = 11.3.25} SE = 11.3.7 Cleared width: —
 Canopy spp (DAFOR): NW = *Euc. tere.* (A); *Cory. less.* (A); *Alloc. cunningg.* (O); *Lys. hookeri* (D);
 ... *Mel. fluviatilis* (F); *Buffel* (D) 40%
 Mid spp. (DAFOR): *Euc. tere.* (O); *C. less.* (F); *C. trachyphloia* (A);
Lantana **
 Notes / Recommendations:
 NW = Isaac River
 Although SE LC RE (11.3.7), NE of Isaac River would dissect E RE (11.3.1) & wetland 11.3.7 UN286
 → move to suggested ROW to JW35 & JW37

Date: 02.10.2011 Time: 2.10 Waypoint#: JW38-S KP: E of AB163 Photo: JW1376a-1379a
 Location: E of Fitzroy Development Rd
 Mapped RE: ^{NW = 11.3.7} 11.3.7 / 11.3.1 Observed RE ^{NW = 11.3.7} SE = 11.3.3 Cleared width: —
 Canopy spp (DAFOR): NW = same as crossing (JW3.7)
 SE = *Euc. coolibah* (D); *lysophyllum hookeri* (O); *compsonia* (R)
 Mid spp. (DAFOR): *A. salicina* (O); *Cory. less.* (R) 60%
 Notes / Recommendations:
Lantana **
Parksonia ** UN288

OBSERVATIONAL VEGETATION RECORD

Assessor:..... Job:..60188431

Date: 02/09/2011 Time: 3:15pm Waypoint#: JW39-S KP: E of AB163-3 Photo: JW1380-83 (N-W)
 Location: E of Fitzroy Development Rd - creek MR+AH
 Mapped RE: 11.3.3/11.3.1 Observed RE 11.3.3b Cleared width: —
 Canopy spp (DAFOR): NW = Euc. coolibah (D)
 SE = A. harpophylla (F); Euc. coolibah (A); Diospyros sp. (o);
 Mid spp. (DAFOR): Lys. hookeri (o)
 Notes / Recommendations:
 * sml strip of 11.3.3a along creek, dom. by Mel. bracteata (D); Euc. tere (R)
 Allo. cunninghamiana (R)
 * 5m each side of 5m wide creek
 Nagaoora burr **
 Parksonia **
 UN289

Date: 02/09/2011 Time: 3:55pm Waypoint#: JW40-S KP: E of AB163 Photo: JW1384-1387 (N-W)
 Location: E of Fitzroy Development Rd
 Mapped RE: SE = Non-rem NW = 11.3.3/11.3.1 Observed RE SE = Non-rem NW = 11.3.3b Cleared width: —
 Canopy spp (DAFOR): SE = cleared ag. w some scattered Euc. coolibah
 NW = same as Wyp. 39 40'
 Mid spp. (DAFOR):
 Notes / Recommendations:
 * narrowest strip of vegetation extending south from Isaac River.
 * utilise if possible to avoid additional clearing of vegetation
 UN290

Date: 08/09/2011 Time: ? Waypoint#: JW045-S KP: AB132-5 Photo: JW6548-6551 (N-W)
 Location: MR+AH
 Mapped RE: 11.5.9 b/c Observed RE 11.5.9 Cleared width: —
 Canopy spp (DAFOR): E. crebra, C. darksoniana / tachyphloia (?), Ap. excelsa,
 Entolaria stricta (S); Eremophila sp., Rubiaceae (?) (S)
 Mid spp. (DAFOR):
 Notes / Recommendations:
 UN295

Date: 04/09/2011 Time: ? Waypoint#: JW47-S KP: E of AB105-2 Photo: JW6564-6567 (N-W)
 Location: MR+AH
 Mapped RE: HVR Observed RE HVR Cleared width: —
 Canopy spp (DAFOR): P. ciliaris, A. harpophylla, Carissa ovata, Citris glauca,
 Capparis laterifolia, stylostanthes scabra *; Terminalia oblongata;
 Mid spp. (DAFOR): Sesbania sp *; Harissia **
 Notes / Recommendations:
 sparse, low brigalow regrowth with buffel understorey.

OBSERVATIONAL VEGETATION RECORD

Assessor:..... Job:..60188431

Date: 04/09/2011 Time: ? Waypoint#: JW48-S KP: AB 83.6 Photo: JW6571 - 6574 (NW)

Location:

Mapped RE: HVR -E Observed RE HVR: -E Cleared width: -

Canopy spp (DAFOR): *Aca. harpophylla*, *Carissa orata*; *P. ciliaris* *; *Atalaya glauca*; *Terminalia oblongata*; *Stylosanthes scabra*; *Enchylaena tomentosa*.

Mid spp. (DAFOR):

Notes / Recommendations: same as JW48, but brigalow smaller

UN299

Date: 06/09/2011 Time: Waypoint#: JW49-S KP: W of AB 63.8 Photo: JW6586 - 6589

Location: Lane way - search for *Cerbera dumicola* Coia → to N

Mapped RE: 11.5.9/11.5.3 Observed RE 11.5.9 - to North Cleared width: n/a

Canopy spp (DAFOR): *Euc. crebra* (D); *Cory. cit* (D); *Cory. clark/traen* (a)

Mid spp. (DAFOR): *C. dumicola* (NR) (R); *Pet. pub.* (O); *Alp. exc.* (O); *Erethroxylum australe* (F)

Notes / Recommendations: *Acalopha* (F)

* start of search to N for *C. dumicola*.

* alt ROW pref. to west of orig. ROW

UN300

Date: 06/09/2011 Time: Waypoint#: JW50-SKP W of AB 63.7 Photo: JW6590 - 6592

Location: 11.7.2/11.7.3 - NE 11.5.9 - S } as per mapping

Mapped RE: 11.5.9/11.5.3-5 Observed RE 11.7.2 NE } Cleared width:

Canopy spp (DAFOR): NE - *Aca. shirleyi* (D); *Euc. crebra* (R) *A. cal.* (O) ^{esp on rocks} _{roll}

Mid spp. (DAFOR): *C. dumicola* (NR) (O); *Alp. exc.* (O); *sida sub* (O) *Pet pub* (O)

Notes / Recommendations: AS mapped.

UN301

JW6593 - 6596

Date: 06/09/2011 Time: Waypoint#: JW52-S KP: W of AB 63.7 Photo: As device

Location: W = 11.5.9/11.5.3 E = 11.7.2

Mapped RE: E = 11.7.2/11.7.3 Observed RE E = 11.7.2 Cleared width: -

Canopy spp (DAFOR): W - same as JW50 E - same as JW49

Mid spp. (DAFOR):

Notes / Recommendations: to E = *C. dumicola* (most western extent)

RE veg mapping correct for 11.7.2 extent (mapped as 11.7.2/11.7.3)

UN303

Note - *Abutilon* sp. collected close to KP 81.6 & 84.

OBSERVATIONAL VEGETATION RECORD

Assessor: CL Job: 60188431

Date: 2.1.9.2011 Time: Waypoint#: CL 20-S KP: E of AB 104.5 Photo:
 Location:
 Mapped RE: Observed RE Cleared width:
 Canopy spp (DAFOR):
 Mid spp. (DAFOR):
 Notes / Recommendations: fence line beside Isaac R (continues to wpt CL 019)
 UN341

Date: 3.1.9.2011 Time: Waypoint#: CL 24-S KP: E of AB 101.9 Photo: CL 711 (to west)
 Location:
 Mapped RE: 11.3.2 / 11.3.1 Observed RE Non-veg Cleared width:
 Canopy spp (DAFOR): Euc. populnea (0) Cassia brewsteri (0) 6m << 5%
 Mid spp. (DAFOR): Pennisetum ciliare* (D) Aristida sp. (F) Stylo scabra (0)
 Notes / Recommendations: Cleared grazing paddock
 No Demodium observed
 Landholder advised Demodium not observed in property.
 Property now owned by Powerlink - substation to be constructed at southern end. U
 UN345

Date: 3.1.9.2011 Time: Waypoint#: CL 26-S KP: S of AB 108.9 Photo:
 Location: Dasmara property
 Mapped RE: (11.3.1) 11.9.5 / 11.9.1 / 11.9.2 Observed RE 11.3.2 to S, cleared to N Cleared width:
 Canopy spp (DAFOR): Euc. populnea (D) Cor. texellana (0)
 Mid spp. (DAFOR): Pennisetum ciliare* (D) Opuntia tomentosa** (R)
 Notes / Recommendations: Keep line to N of veg
 N - CL 716
 E - CL 717
 S - CL 718
 W - CL 719 UN346

Date: 3.1.9.2011 Time: Waypoint#: CL 027-S KP: S of AB 109.1 Photo: CL 720-CL 723
 Location:
 Mapped RE: 11.5.3 / 11.4.9 Observed RE 11.3.2 / HVR (oc) Cleared width:
 Canopy spp (DAFOR): → W - Euc. populnea (D) canopy 12m 20%
 → E - Euc. teneticornis (0) Cor. texellana (0) canopy 14m << 5%
 Mid spp. (DAFOR): Pennisetum ciliare (D)
 Notes / Recommendations: 11.3.2 to west, HVR of 11.3.4 to east
 cleared fence line ~ 30m wide
 N CL 720
 E CL 721
 S CL 722
 W CL 723 UN347

OBSERVATIONAL VEGETATION RECORD

Assessor:..... Job:..60188431

Date: 30.1.8./2011 Time:..... Waypoint#: CL004-SKP: AB4759 Photo:.....
 Location: Near Karom Ch.
 Mapped RE: HVR-0C Observed RE HVR of 11.3.26 ? Cleared width:
 Canopy spp (DAFOR): Euc. moluccana (D) 10m, 3-0%
 Mid spp. (DAFOR): Acacia distans (0)
 Psychrae oleifolia (R), Alphitonia excelsa (0) 3m, <5%
 Notes / Recommendations: Sporobolus natalensis ++ (D) N - CL 602
 Avoid remnant 11.3.26 to west E - CL 603
 S - CL 604
 W - CL 605

UN413

Date: 30.1.8./2011 Time:..... Waypoint#: CL005-SKP: AB4773 Photo:.....
 Location: end of line
 Mapped RE: HVR-0C Observed RE cleared Cleared width:
 Canopy spp (DAFOR): Euc. tetragonaria (R) 15m, << 5%
 Mid spp. (DAFOR): Cor. tessellaris (R) Cor. clarksoniana (R)
 Notes / Recommendations: Avoid large remnant blue gums where possible. N - CL 606
 Avoid vegetated gully to east E - CL 607
 1 Spr. natalensis ++ (0) S - CL 608
 W - CL 609

UN414

Date: 1.1.9./2011 Time:..... Waypoint#: CL017-SKP: 500m east Photo: CL 662
 Location: Tartus Station of AB262.2
 Mapped RE:..... Observed RE..... Cleared width:
 Canopy spp (DAFOR): Parkinsonia aculeata ++ around small dam
 Mid spp. (DAFOR):.....
 Notes / Recommendations:

UN425

Date: 2.1.9./2011 Time:..... Waypoint#: CL19-5 KP: E of AB1635 Photo: CL 694
 Location:.....
 Mapped RE:..... Observed RE..... Cleared width:
 Canopy spp (DAFOR):.....
 Mid spp. (DAFOR):.....
 Notes / Recommendations: Use existing fence line to reduce clearing
 and avoid small drainage

UN340

OBSERVATIONAL VEGETATION RECORD

Assessor:..... Job:..60188431

Date: 3/19/2011 Time:..... Waypoint#: CL28-S KP: E of AB1055 Photo:.....
 Location: boundaries
 Mapped RE: 11.3.25 → W, 11.3.2/11.3.1 → E Observed RE clear → W, 11.3.2 → E Cleared width:
 Canopy spp (DAFOR): → E - *Euc. populnea* (D) *Gomphila mitchellii* (O) Canopy 10m, 20%
 → W - *Euc. populnea* (R) *A. harpophylla* (R) - numerous dead trees
 Mid spp. (DAFOR): *Pennisetum ciliare* (D) *Opuntia stricta* (R) *Harrisia martinii* (R)
 Notes / Recommendations: Numerous gullies and dead trees in terrace → W
 11.3.2 → E
 Some small patches of brigalow (11.3.1) to S and N
 N - CL 724
 E - CL 725
 S - CL 726
 W - CL 727
 UN349

Date: 3/19/2011 Time:..... Waypoint#: CL029-S KP: E of AB1055 Photo:.....
 Location:
 Mapped RE: 11.3.25 Observed RE 11.3.25 → W, clear → E Cleared width:
 Canopy spp (DAFOR): → E - *Euc. tereticornis* (D) *Cas. cunninghamii* (F) *A. harpophylla* (R) - Canopy 16m, 10%
 → W - as for CL028 (→ E)
 Mid spp. (DAFOR): *Pennisetum ciliare* (D) *Eurythryum australe* (O) *Terminalia oblongata* (O)
 Notes / Recommendations: N - CL 728
 E - CL 729
 S - CL 730
 W - CL 731
 UN350

Date: 4/19/2011 Time:..... Waypoint#: CL030-S KP: AB75.1 Photo:.....
 Location: Vale Mine
 Mapped RE: 11.8.5 Observed RE 11.8.5 Cleared width: -
 Canopy spp (DAFOR): *Euc. orcadophylla* (A) *Cor. erythrophloia* (F) *Bursaria insana* (O)
Archidendropsis basaltica (F) *Santalum lanceolatum* (R) *Eurychorda latilobus* (O) Canopy 8m, 10%
 Mid spp. (DAFOR): *Pennisetum ciliare* (D) *Themeda triandra* (O) *Heteropogon contortus* (O)
 Notes / Recommendations: *Cyanthillium cinereum* (O) *Indigofera linifolia* (O)
 Exotic spp form > 75% of ground storey
 N - CL 732
 E - CL 733
 S - CL 734
 W - CL 735
 ✓ *Parthenium hysterophus* (O)
 UN351

Date: 4/19/2011 Time:..... Waypoint#: CL031-S KP: AB74.9 Photo:.....
 Location: Vale Mine
 Mapped RE: 11.8.11/11.8.5 Observed RE Non-rem Cleared width:
 Canopy spp (DAFOR): Nil
 Ground - *Pennisetum ciliare* (D) *Heteropogon contortus* (R) *Gonypium sturtianum* (O) (S)
 Mid spp. (DAFOR): *Dactyloctenium aegyptium* (S) (R)
 Notes / Recommendations: *Cyperus concinnus* (0.5m, 95%)
 Exotic spp form > 95% of ground storey *Phacelia dentex*
 N - CL 736
 E - CL 737
 S - CL 738
 W - CL 739
 ✓ *Parthenium hysterophus* (R)
 UN352

OBSERVATIONAL VEGETATION RECORD

Assessor:..... Job:..60188431

Date: 6.1.9./2011 Time:..... Waypoint#: CL 32-S KP: AB64-5 Photo:

Location:

Mapped RE: 11.7.2/11.7.3 Observed RE 11.7.2 Cleared width:

Canopy spp (DAFOR): *Ac. catenulata* (D) *Ac. shirleyi* (O)
Everistia vacinifolia (F) *Eythroyxylum australe* (O) *Micromyrtus* ? (S)(O)

Mid spp. (DAFOR): *Philotheca* ? (S)(O) *Anolis caput-medusae* (F) *Entolasia* (S)(D)

Notes / Recommendations: latule ridge \approx 5 m high \rightarrow W
 Rejoin to line here?

N - CL 740
 E - CL 741
 S - CL 742
 W - CL 743

UN 353

Date: 6.1.9./2011 Time:..... Waypoint#: CL 33-S KP: AB64-6 Photo:

Location:

Mapped RE: 11.5.9.c./11.5.3 Observed RE Cleared width:

Canopy spp (DAFOR):

Mid spp. (DAFOR):

Notes / Recommendations: 11.5.9 (*E. cebra*) \rightarrow S
 11.7.2 (*A. shirleyi* / *catenulata*) \rightarrow N

UN 354

Date: 6.1.9./2011 Time:..... Waypoint#: CL 34-S KP: AB64-8 Photo:

Location: 1

Mapped RE: 11.7.2/11.7.3 Observed RE 11.7.2 Cleared width:

Canopy spp (DAFOR):

Mid spp. (DAFOR):

Notes / Recommendations: 11.7.2 (*A. shirleyi*) \rightarrow S
 11.5.9 (*E. cebra*) \rightarrow N

UN 355

Date: 6.1.9./2011 Time:..... Waypoint#: CL 35-S KP: AB65 Photo:

Location:

Mapped RE: 11.7.2/11.7.3 Observed RE 11.7.2 Cleared width:

Canopy spp (DAFOR): *Ac. catenulata* (D) *Ac. shirleyi* (F)

Mid spp. (DAFOR): *Cerbera demicola* (F)

Notes / Recommendations:

UN 356

OBSERVATIONAL VEGETATION RECORD

Assessor:..... Job:..60188431

Date: 6.1.9/2011 Time:..... Waypoint#: CL036-S KP: W of AB65 Photo:.....
 Location:
 Mapped RE: 11.7.2/11.7.3 Observed RE Cleared width:
 Canopy spp (DAFOR):.....
 Mid spp. (DAFOR):.....
 Notes / Recommendations: W extent of Cd?
 UN357

Date: 6.1.9/2011 Time:..... Waypoint#: CL037-S KP: AB64.8 Photo:.....
 Location:
 Mapped RE: 11.7.2/11.7.3 Observed RE 11.7.2 Cleared width:
 Canopy spp (DAFOR):.....
 Mid spp. (DAFOR):.....
 Notes / Recommendations: line between CL039 - CL037 - no Cd.
 UN358

Date: 6.9/2011 Time:..... Waypoint#: CL038-S KP: W of AB64.9 Photo:.....
 Location:
 Mapped RE: 11.7.2/11.7.3 Observed RE 11.7.2 Cleared width:
 Canopy spp (DAFOR):.....
 Mid spp. (DAFOR):.....
 Notes / Recommendations: W extent of Cd?
 UN359

Date: 6.1.9/2011 Time:..... Waypoint#: CL039-S KP: W of AB65 Photo:.....
 Location:
 Mapped RE: 11.7.2/11.7.3 Observed RE Cleared width:
 Canopy spp (DAFOR):.....
 Mid spp. (DAFOR):.....
 Notes / Recommendations: no Cd from CL037 - CL039
 UN360

6 4.5
36m

OBSERVATIONAL VEGETATION RECORD

Assessor:..... Job:..60188431

Date: 6.1.9./2011 Time:..... Waypoint#: CL40-S KP: AB65.5 Photo:

Location:

Mapped RE: 11.7.2/11.7.3 Observed RE Cleared width:

Canopy spp (DAFOR):.....

Mid spp. (DAFOR):.....

Notes / Recommendations: No Cd from CL039 - CL040

UN361

Date: 6.1.9./2011 Time:..... Waypoint#: CL41-S KP: AB65.6 Photo: 744

Location:

Mapped RE: 11.7.2/11.7.3 Observed RE 11.7.2 Cleared width:

Canopy spp (DAFOR):.....

Mid spp. (DAFOR):.....

Notes / Recommendations: dense Cd population to south in
dense Ac. shirleyi woodland
No Cd in more open woodland to N.
Most Cd without leaves.

UN362

Date: 6.1.9./2011 Time:..... Waypoint#: CL042-S KP: W of AB65.6 Photo:

Location:

Mapped RE: 11.7.2/11.7.3 Observed RE 11.7.2 Cleared width:

Canopy spp (DAFOR):.....

Mid spp. (DAFOR):.....

Notes / Recommendations: W edge of Cd population
36 m gap between CL042 and CL043

UN363

Date: 6.1.9./2011 Time:..... Waypoint#: CL043-S KP: W of AB65.6 Photo: 745-750

Location:

Mapped RE: 11.7.2/11.7.3 Observed RE 11.7.2 Cleared width:

Canopy spp (DAFOR):.....

Mid spp. (DAFOR):.....

Notes / Recommendations: E edge of dense Cd population
In open woodland (diff to other popⁿs seen in area)

UN364

OBSERVATIONAL VEGETATION RECORD

Assessor:..... Job:..60188431

Date: 6.1.9.2011 Time:..... Waypoint#: CL44-S KP: W of AB65.6 Photo:.....
 Location:
 Mapped RE: 11.7.2/11.7.3 Observed RE Cleared width:
 Canopy spp (DAFOR):.....
 Mid spp. (DAFOR):.....
 Notes / Recommendations: E edge of dense popⁿ in open woodland
 (same popⁿ as CL043)
 UN365

Date: 6.1.9.2011 Time:..... Waypoint#: CL45-S KP: AB65.8 Photo: CL751
 Location:
 Mapped RE: 11.7.2/11.7.3 Observed RE 11.7.2 Cleared width:
 Canopy spp (DAFOR):.....
 Mid spp. (DAFOR):.....
 Notes / Recommendations: Rejoin line. No Cd from gap between CL044 + CL042
 to CL045
 - open *Ac catenulata* woodland to N
 mostly bare latente to S (occ. *Ac catenulata* + *A. ustida*) UN366

Date: 6.1.9.2011 Time:..... Waypoint#: CL46-S KP: AB66.1 Photo:.....
 Location: boundary
 Mapped RE: 11.5.9c/11.5.3 Observed RE 11.5.9 Cleared width:
 Canopy spp (DAFOR):.....
 Mid spp. (DAFOR):.....
 Notes / Recommendations: 11.7.2 (*Ac shirleyi* / *catenulata*) → N
 11.5.9 (*Euc uibra* " ") → S
 UN367

Date: 6.1.9.2011 Time:..... Waypoint#: CL47-S KP: AB66.3 Photo:.....
 Location:
 Mapped RE: 11.5.9c/11.5.3 Observed RE 11.5.9c/11.5.3 Cleared width:
 Canopy spp (DAFOR):.....
 Mid spp. (DAFOR):.....
 Notes / Recommendations: 11.5.9 → N
 11.5.3 → S (*Euc populnea*)
 UN368

OBSERVATIONAL VEGETATION RECORD

Assessor:..... Job:..60188431

Date: 6.1.9/2011 Time:..... Waypoint#: CL48-S KP: AB665 Photo:

Location:

Mapped RE: 11.5.9c/11.5.3 Observed RE 11.5.3 Cleared width:

Canopy spp (DAFOR):.....

Mid spp. (DAFOR):.....

Notes / Recommendations: Parthenium* (F)

UN369

Date: 7.1.9/2011 Time:..... Waypoint#: CL52-S KP: AB70.1 Photo:

Location:

Mapped RE: Non-remnant Observed RE non-remnant Cleared width:

Canopy spp (DAFOR):.....

Mid spp. (DAFOR):.....

Notes / Recommendations: cleared powerline → N
11.7.2 (Ac shirleyi) → S

UN373

Date: 7.1.9/2011 Time:..... Waypoint#: CL53-S KP: AB70.5 Photo:

Location:

Mapped RE: 11.7.2/11.7.3 Observed RE 11.7.2 Cleared width:

Canopy spp (DAFOR): Eu dallachyana (F) Ac catenulata (A) Ac shirleyi (O)

Mid spp. (DAFOR): Micromyrtus (O) Lealbera dumicola (F) Digitaria sp. (A)

Notes / Recommendations: Cd popⁿ on line Euphobia sacrostemoides **UN374**
- relatively bare area Phreatium glandulosum (O)

Cd present CL054, CL055, CL056, CL057, CL058, 59, 60, 61, 62, 63, 64

Date:/...../2011 Time:..... Waypoint#: CL56-S KP: W of AB70.5 Photo:

Location:

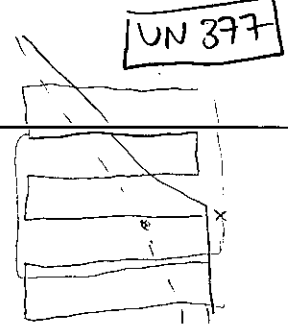
Mapped RE: Observed RE Cleared width:

Canopy spp (DAFOR):.....

Mid spp. (DAFOR):.....

Notes / Recommendations: Cd present
Steep escarpment → W

UN377



OBSERVATIONAL VEGETATION RECORD

Assessor:..... Job:..60188431

Date: 7/1/9/2011 Time:..... Waypoint#: CL 60-S KP: E of AB70.5 Photo:.....
 Location:
 Mapped RE: Observed RE Cleared width:
 Canopy spp (DAFOR):.....
 Mid spp. (DAFOR):.....
 Notes / Recommendations: Cd present
 - escarpment to E ≈ 6m tall

UN381

Date: 7/1/9/2011 Time:..... Waypoint#: CL064-S KP: AB71.1 Photo:.....
 Location:
 Mapped RE: 11.5.9c Observed RE 11.5.9c Cleared width:
 Canopy spp (DAFOR): Euc. ulbra (D) Acacia leucocalyx? (S)(A) Petalostigma pubescens (F)
 Alphitonia excelsa (O) canopy 12m 5-10%
 Mid spp. (DAFOR): Erbera dimnicola (F) → N Hahea lorea (O)
 Notes / Recommendations: dense Cd pop → N from CL 064 → CL 062
 Eragrostus sp (A) Themeda australis (O) Aristida sp (F) Waltheria indica (O)

UN385

Date: 7/1/9/2011 Time:..... Waypoint#: CL065-S KP: AB71.4 Photo: CL783-CL786
 Location:
 Mapped RE: 11.5.9c Observed RE 11.5.9c Cleared width:
 Canopy spp (DAFOR): Euc. ulbra (D) Brachychiton populneus (R) Co. trachyphloia (O)
 Alphitonia excelsa (O)
 Mid spp. (DAFOR): Petalostigma pubescens (A) Erythroxylum australe (O) Ac. leucocalyx? (F)
 Notes / Recommendations: No Cd - D west line to west from this point
 Themeda triandra (F) Heteropogon contortus (A) Eragrostus sp (F) N - CL 783
 Waltheria indica (O) Wahlenbergia gracilis (O) E - CL 784
 Pterocaulon sphaecelatum (O) S - CL 785
 W - CL 786

UN386

Date: 7/1/9/2011 Time:..... Waypoint#: CL066-S KP: W of AB71.3 Photo:.....
 Location: small gentle escarpment - uphill → E
 Mapped RE: 11.7.2/11.7.3 Observed RE 11.7.2 Cleared width:
 Canopy spp (DAFOR):.....
 Mid spp. (DAFOR):.....
 Notes / Recommendations: 11.5.9 (Euc. ulbra) → E
 11.7.2 (Ac. shurleyi, scald area → W)
 No Cd.

UN387

OBSERVATIONAL VEGETATION RECORD

Assessor:..... Job:..60188431

Date: 7.1.9./2011 Time:..... Waypoint#: CL67-S KP: Wof AB1:3 Photo:

Location:

Mapped RE: 11.7.2 / 11.7.3 Observed RE 11.7.2 / scald Cleared width:

Canopy spp (DAFOR): *Ac. shirleyi* (D)

Mid spp. (DAFOR):

Notes / Recommendations: Cd pop^a → N - Keep line to south of point

UN388

Date: 7.1.9./2011 Time:..... Waypoint#: CL068-S KP: Wof AB1:3 Photo:

Location:

Mapped RE: 11.7.2 / 11.7.3 Observed RE 11.7.2 Cleared width:

Canopy spp (DAFOR): *Ac. shirleyi* (D) *Ac. catenulata* (O)

Mid spp. (DAFOR):

Notes / Recommendations: Escarpment ≈ 5 m tall - uphill → E
No Cd.

UN389

Date: 7.1.9./2011 Time:..... Waypoint#: CL069-S KP: Wof AB1:3 Photo:

Location:

Mapped RE: 11.7.2 / 11.7.3 Observed RE 11.7.2 Cleared width:

Canopy spp (DAFOR): *Ac. shirleyi* (D) canopy 70% 15m

Mid spp. (DAFOR):

Notes / Recommendations: small creek - currently dry
channel 2m wide x 1m deep.
keep line to E of creek.
No Cd.

UN390

Date:/...../2011 Time:..... Waypoint#: CL070-S KP: Wof AB1:3 Photo:

Location:

Mapped RE: 11.7.2 / 11.7.3 Observed RE Cleared width:

Canopy spp (DAFOR):

Mid spp. (DAFOR):

Notes / Recommendations: Possible turn point
from south east to east.
No Cd

UN391

OBSERVATIONAL VEGETATION RECORD

Assessor: JN Job: 60188431

Date: 07/09/2011 Time: 10:10 Waypoint#: JN 73-S KP: AB62 Photo: As per device
 Location:
 Mapped RE: 11.5.3 (11.72/11.73N) Observed RE: 11.5.9-S Cleared width: — 70%
 Canopy spp (DAFOR): N - Aca. strict (D); NFJV' (S) (O); Pet pub (O) Erethroxylon australe (O)
S - Euc. crebra (D); Cory. clarksonia (O); Euc. australe (O); Alp. exselsa (O); Flindersia (australe) (O)
 Mid spp. (DAFOR): Ground - sida subspicata (A); Pennecilem ciliare (A); Melias repen (O)
 Notes / Recommendations: Stylostanthes scabra (O); Entolabia sp. (S) (O); Eragrostis sp (O);
Aristida capat-medusa (O); Capparis spinosa var. nummalata.
 * No. CD surveyed on line.
 * ^{To North} Sml pockets of vegetation dominated by A catenulata, mostly on rocky knolls. UN324

Date: 07/09/2011 Time: Waypoint#: JN 83-S KP: AB60.6 Photo: JN6649-52
 Location:
 Mapped RE: 11.5.3 Observed RE: N=11.5.3 S=cleared Cleared width:
 Canopy spp (DAFOR): N = Euc. populnea (D); Cory. Clark (P); 30% 8m
 Mid spp. (DAFOR): Pennecilem ciliare (A); Sida subspicata (O);
 Notes / Recommendations:
 * alt row to avoid CD rejoins orig row. UN334

Date: 08/09/2011 Time: Waypoint#: JN 85-S KP: E of AB28.2 Photo:
 Location: Lrg header of Reedy Creek
 Mapped RE: 11.9.9 / 11.9.2 Observed RE: 11.9.9 Cleared width:
 Canopy spp (DAFOR): In creek - Euc. leie (D); Pet pub (O);
Banks - Euc. crebra (D); Euc. dallach (O); Cory. Clark (O); Het. contortus (D)
 Mid spp. (DAFOR):
 Notes / Recommendations:
 To N = gullies / braids.
 Not suitable crossing point - none to E of orig. UN335

Date: 08/09/2011 Time: 2:45 Waypoint#: JN 88-S KP: AB2 Photo: JN6669-6672
 Location:
 Mapped RE: 11.8.5 Observed RE: 11.8.5 Cleared width:
 Canopy spp (DAFOR): Cory. erythrophloia (A); Euc. argadochyta (A) 12m 5-10'
Cymbopogon canaliculatum
 Mid spp. (DAFOR): P ciliare (D); Heteropogon contortus (O); stylostanthes scabra (R)
 Notes / Recommendations: Themeda triandra (O); Anaropidensis (dead fern) (O) 0.5m 90%.
 * Landowner advised similar veg for 20km
 * groundstorey dominated by buffel grass UN338

OBSERVATIONAL VEGETATION RECORD

Assessor: JW Job: 60188431

Date: 09/09/2011 Time: 2:15 Waypoint#: JW89-SKP: AB73.5 Photo: JW6673-76(N-N)

Location: West of Burton coal Haul Road KP73 → JW77 (up slope)

Mapped RE: 11.7.2 Observed RE 11.7.1 x1 to east Cleared width: —

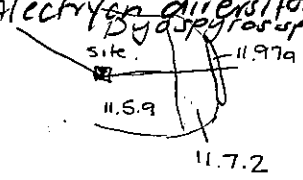
Canopy spp (DAFOR): Flindersia camp (0); Croton phebaloides (0); Croton insularis (0); Horia longipes (A);
 Erethroxylum australe (F); Alcalypha eximialum (F); Marsdenia sp; L. caroni (0)

Mid spp. (DAFOR): Owenia sp (R); Eucristia sp (0); Pittosporum
 Notes / Recommendations: Wild Wilga (R); Carissa, orata (0); Alp. ex (0); Alectryon diversifolius (0);
 Byadorys sp

Ground storey: Anisida capat-medusa (0); Eragrostis sp (0); P. celliarc (0)
 Entolasia sp (A);

* Rocky slope, very good condition, ↓ weeds
 * approx 12-15m steep
 * NO 11.7.2 (11.7.1 x1 to 11.7.2)

UN339



Date: 09/09/2011 Time: 2:15 Waypoint#: JW89-SKP: AB73.5 Photo: JW6673-76(N-W)

Location: West of Burton coal Haul mine

Mapped RE: 11.7.2 Observed RE 11.5.3 to west Cleared width: —

Canopy spp (DAFOR): Euc. crebra (F); Euc. dallachyana (A); Alaya sp (0); 10-12m
 Horia sp (0); Erethroxylum australe (0); Lys. caroni (0); Alstonia stricta (0) 40'

Mid spp. (DAFOR): Themeda triandra (D); P. celliarc (0)

Notes / Recommendations:
 * cattle farming.

UN339

Date:/...../2011 Time:..... Waypoint#: KP: Photo:

Location:

Mapped RE: Observed RE Cleared width:

Canopy spp (DAFOR):.....

Mid spp. (DAFOR):.....

Notes / Recommendations:

Date:/...../2011 Time:..... Waypoint#: KP: Photo:

Location:

Mapped RE: Observed RE Cleared width:

Canopy spp (DAFOR):.....

Mid spp. (DAFOR):.....

Notes / Recommendations:

OBSERVATIONAL VEGETATION RECORD

Assessor:..... Job:..60188431

Date: 7/19/2011 Time:..... Waypoint#: CL071-5 KP: W of AB71 Photo:.....
 Location:
 Mapped RE: 11.7.2/11.7.3 Observed RE 11.7.2 Cleared width:
 Canopy spp (DAFOR):.....
 Mid spp. (DAFOR):.....
 Notes / Recommendations: 11.7.2 (*Ac. shirleyi*) → SE
 HVR of 11.5.3 (*Euc. populnea*) to NW
 No Cd UN 392

Date: 7/19/2011 Time:..... Waypoint#: CL072-5KP: W of AB71 Photo:.....
 Location:
 Mapped RE: Non-remnant Observed RE HVR of 11.5.3 (HVR = 1.0) Cleared width:
 Canopy spp (DAFOR):.....
 Mid spp. (DAFOR):.....
 Notes / Recommendations: turn point
 turn from south to south east
 No Cd UN 393

Date: 7/19/2011 Time:..... Waypoint#: CL73-5 KP: SW of AB70-1 Photo:.....
 Location:
 Mapped RE: Non-remnant Observed RE cleared Cleared width:
 Canopy spp (DAFOR):.....
 Mid spp. (DAFOR):.....
 Notes / Recommendations: Powerline crossing of new proposed line
UN 394

Date: 7/19/2011 Time:..... Waypoint#: CL074-5KP: AB70 Photo:.....
 Location:
 Mapped RE: non-rem Observed RE HVR of 11.5.3 Cleared width:
 Canopy spp (DAFOR): *Euc. populnea* (D) canopy 5% 8m
Ac. excelsa (0) *Petalostigma pubescens* (0)
 Mid spp. (DAFOR): *Erythroxylum australe* (F) *Cassia brewsteri* (0) *Albertyon diversifolius* (0)
 Notes / Recommendations: Rejoin original line @ KP 70
 N - CL 787
 E - CL 788
 S - CL 789
 W - CL 790
UN 395

OBSERVATIONAL VEGETATION RECORD

Assessor:..... Job:..60188431

Date: 8.19.2011 Time:..... Waypoint#: CL 77-S KP: EL 25.5 Photo:

Location: .. Bouch property

Mapped RE: 11.5.8c Observed RE 11.5.8c Cleared width:

Canopy spp (DAFOR): Euc platyphylla (D) Grevillea striata (O) Larissa ovata (R)
Cassia brewsteri (R)

Mid spp. (DAFOR): Sida sp (S) Mel nervosa (O) Pterocaulon sphacelatum (O)

Notes / Recommendations: Eragrostis sp (D) Heteropogon contortus (O) N - CL 808
Austida sp (O) E - CL 809
S - CL 810
W - CL 811

UN400

Date: 9.19.2011 Time:..... Waypoint#: CL 078-S KP: E of EL 30.9 Photo:

Location:

Mapped RE: 11.5.8c Observed RE 11.5.8c Cleared width:

Canopy spp (DAFOR): Euc platyphylla (D) Allocasuarina luehmannii (O)
Archidendrops basaltica (O)

Mid spp. (DAFOR): 1X Demodium macrocarpum

Notes / Recommendations: 20m east of line N - CL 814
E - CL 815
S - CL 816
W - CL 817

CL 818-20 UN401

Date: 9.19.2011 Time:..... Waypoint#: CL 80-S KP: E of EL 31.4 Photo:

Location:

Mapped RE: 11.5.3/11.7.2 Observed RE 11.5.8 Cleared width:

Canopy spp (DAFOR):

Mid spp. (DAFOR): Veg boundary

Notes / Recommendations: Move line to east of this point to avoid wetland
11.5.8 → W (Mel viridiflora)
11.5.8c → E (Euc platyphylla)

UN402

Date: 9.19.2011 Time:..... Waypoint#: CL 081-S KP: EL 32.1 Photo:

Location:

Mapped RE: 11.5.3/11.7.2 Observed RE 11.5.8 → N Cleared width:

Canopy spp (DAFOR):

Mid spp. (DAFOR):

Notes / Recommendations: Mel nervosa (D) Euc platyphylla (F) → N (11.5.8) N - CL 844
Euc darwiniana (D) Mel nervosa (F) → S (11.5.8) E - CL 845
S - CL 846
W - CL 847

UN403

OBSERVATIONAL VEGETATION RECORD

Assessor:..... Job: 60188431

Date: 9/9/2011 Time:..... Waypoint #: CLO 82-S KP: EL 31.2 Photo:.....
 Location:.....
 Mapped RE: 11.53/11.7.2 Observed RE 11.5-8b Cleared width:.....
 Canopy spp (DAFOR): *Corymbia clarksoniana* (D) *Euc. platyphylla* (O) (10%_a, 14m)
 Mid spp. (DAFOR): *Mel. nervosa* (D) *Eythrocyculum australe* (R) *Petalotegma pubescens* (R) (20%_a, 5m)
 Notes / Recommendations: *Heteropogon contortus* (D) *Epiltes australis* (F) *Arctida* (O) N-CL 848
Panicum effusum (O) E-CL 849
 S-CL 850
 W-CL 851

UN404

Date: 9/9/2011 Time:..... Waypoint #: CLO 83-S KP: EL 31 Photo:.....
 Location:.....
 Mapped RE: 11.5.3/11.7.2 Observed RE 11.5-8 Cleared width:.....
 Canopy spp (DAFOR): *Cor. clarksoniana* (O) (15m, <5%)
 Mid spp. (DAFOR): *Mel. nervosa* (A) *Acacia* (A) (S) (6m, 40%)
 Notes / Recommendations: *Eythrocyculum australe* (O) N-CL 852
Sida cordifolia (F) E-CL 853
 S-CL 854
 W-CL 855

UN406

Date: 9/9/2011 Time:..... Waypoint #: CL 84.4S KP: EL 30 Photo:.....
 Location:.....
 Mapped RE: 11.5.8c Observed RE 11.5-8c Cleared width:.....
 Canopy spp (DAFOR): *Euc. platyphylla* (D)
 Mid spp. (DAFOR): *Mel. nervosa* (D)
 Notes / Recommendations: *Sporobolus natalensis*? (S) (O)

UN407

Date: 9/9/2011 Time:..... Waypoint #: CL 85-S KP: Wd EL 29.4 Photo:.....
 Location: Tributary of Carborough Crk
 Mapped RE: 11.5.3/11.7.2 Observed RE 11.3.25 Cleared width:.....
 Canopy spp (DAFOR): *Euc. tereticornis* (D) *Cor. tenellana* (O)
 Mid spp. (DAFOR):.....
 Notes / Recommendations: Keep line to west of this point to avoid
 running along sandy creek (bed = 10m wide)
 creek is perpendicular and straight at CLO 85 and → W

UN408

OBSERVATIONAL VEGETATION RECORD

Assessor:..... Job:..60188431

Date: 9/9/2011 Time:..... Waypoint #: CLO86-S KP: W of EL29 Photo:

Location:

Mapped RE: 11-95 Observed RE 11-95 Cleared width:

Canopy spp (DAFOR): *Ac. laeophylla* (D), *Euc. populnea* (O)

Mid spp. (DAFOR): *Carissa ovata* (A), *Eremophila mitchelli* (F)

Notes / Recommendations: Eastern edge of RE.
Avoid. extensive gully to E and SE

UN409

Date: 9/9/2011 Time:..... Waypoint #: KP: Photo:

Location:

Mapped RE: Observed RE Cleared width:

Canopy spp (DAFOR):

Mid spp. (DAFOR): Original CLO75-S
Proposed alt CLO76-S

Notes / Recommendations: Carborough crossing
/passes - bank erosion sandstone outcrops extensive gully erosion extending
>500m on both sides, very winding, tight bends, bogalow (11-9-5)
- Recommend further investigations (geotech)

Date: 10/1/2011 Time:..... Waypoint #: CLO88-S KP: S of AB2392 Photo: N - CL 874

Location: Possible crossing point of Clarke Cr. E - CL 875

Mapped RE: 11-3-25 Observed RE 11-3-25 / 11-3-3 Cleared width: S - CL 876-7

Canopy spp (DAFOR): *Eucalyptus* (A), *Euc. coolabah* (A) W - CL 878

Mid spp. (DAFOR):

Notes / Recommendations: Not suitable as large waterhole on SW side of cr.
waterhole has aquatic vegetation (*Azolla pinnata*, *Potamogeton* (large water floating
Ottelia ovalifolia) leaf)
Ducks + goslings present. Fish present.

UN427

Date:/...../2011 Time:..... Waypoint #: KP: Photo:

Location:

Mapped RE: Observed RE Cleared width:

Canopy spp (DAFOR):

Mid spp. (DAFOR):

Notes / Recommendations:

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Appendix D

Plates

Appendix D Plates



Plate 1 Brigalow woodland (RE 11.4.9) at AB 93.4 (EEC under EPBC Act, Endangered biodiversity status).



Plate 2 Bluegrass grassland (RE 11.8.11) at AB 35.5 (EEC under EPBC Act, Of Concern biodiversity status).



Plate 3 *Cerbera dumicola* in lancewood woodland at AB 64 (Near Threatened under NC Act).



Plate 4 Dense *Cerbera dumicola* population without leaves during September survey at AB 71.



Plate 5 *Desmodium macrocarpum* near AB 100.5 (Near Threatened under NC Act).



Plate 6 *Eucalyptus raveretiana* (black ironbox) on Two Mile Creek at AB 349.2 (Vulnerable under EPBC Act and NC Act).



Plate 7 *Euphorbia sarcostemmoides* in lancewood woodland at AB 70.5 (Vulnerable under NC Act).



Plate 8 Riverine wetland on Isaac River at AB 164.7 (referable wetland and Of Concern RE 11.3.25).



Plate 9 Non-riverine freshwater wetland at SL 11.1 (referable wetland and Of Concern RE 11.3.27).



Plate 10 Marine wetland on Inkerman Creek at AB 430.1 (contains marine plants protected under *Fisheries Act 1994*).



Plate 11 Dense parthenium infestation beside Isaac River near AB 174 (Class 2 weed under LP Act).

