

Drake Coal Project Initial Advice Statement



January 2010

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- A Ecological Assessment



1. Introduction

1.1 Background

Drake Coal Pty Ltd (Drake Coal) is proposing to develop the Drake Coal Project (the Project), which involves the development of a greenfield open-cut coal mine located approximately 17 kilometres (km) south of Collinsville, in north Queensland (Figure 1-1). The proposed mine will produce up to 10 million tonnes per annum (Mtpa) Run of Mine (ROM) coal which equates to 6 Mtpa of product coal. The mine will have a mine life of up to 30 years, inclusive of construction, operation and closure.

The extent of the mining lease area is shown in Figure 1-2.

The project is located entirely within Land Lease (Pastoral Lease) Lot 618 on PH2106. Drake Coal presently holds Exploration Permit for Coal (EPC) 586 over the Project area, which will form pre-requisite tenure for any future Mining Lease (ML) applications. Multiple MLAs will form the proposed Project site. The indicative mine plan identifies a Project site covering an area of approximately 9,125 hectares (ha).

This Initial Advice Statement (IAS) has been prepared for the purposes of identifying environmental, cultural or community issues and regulatory approvals required prior to the development of the Project. This IAS is intended to scope the potential impacts that will be investigated in detail in an Environmental Impact Statement (EIS) to be prepared under Chapter 5 of the *Environmental Protection Act 1994*. Terms of Reference (ToR) for the EIS will be developed based on the outcomes of this report and the requirements of relevant government agencies and submissions of stakeholders and the community.

This IAS is submitted as supporting documentation for an Application to Prepare a Voluntary EIS under Sections 70-71 of the *Environment Protection Act 1994* (EP Act).

1.2 The Proponent

The Proponent for the Drake Coal Project is Drake Coal, a subsidiary of QCoal Pty Ltd (QCoal). QCoal is a joint venture partner in the Sonoma Mine located approximately 6 km north of the Drake Coal Project Area.

QCoal is a privately owned Queensland company based in Brisbane. QCoal has been active in the Queensland coal exploration and mining industry for over 16 years.

Contact details for the Proponent:

PO Box 10630

Adelaide Street

Brisbane Qld 4000

Phone: 61 7 3002 2900

Fax: 07 3002 2999



1.3 Project Need

The Proponent proposes development of the Drake Coal Project, an open-cut coal mine located approximately 17 km south of the township of Collinsville in Queensland's Bowen Basin. The Project is expected to consist of several mining leases located primarily on a grazing property known as Birralelee Station. The area within the proposed lease boundaries covers approximately 9,125 hectares and incorporates buffer capacity to enable protection of significant environmental values.

Exploration within the project area has been conducted since 1995. Exploration activities have included regional drilling, geotechnical surveys, extensive regional geological mapping, environmental surveys and cultural heritage work.

Exploration activities have defined a resource of approximately 200 million tonnes (Mt) of economically recoverable coal. Mining operations will mine up to 10 Mtpa ROM coal to produce 6 Mtpa of product coal for export markets. The resource is mainly coking coal; however, economic quantities of thermal coal are also contained within the deposit which will be mined for sale.

Whilst the Australian coal sector has been impacted from the Global Financial Crisis it has performed solidly over the last 18 months. Future indicators suggest strong coal demand from China coupled with infrastructure constraints and technical issues in a number of Australian mines will result in supply shortages. It is envisaged that the supply shortage will gain some ground on the record high spot market prices seen in 2007. China remains the major strength in the global economy and coal demand from this region is expected to remain strong, underpinning coal prices and sector profitability. Production from the Drake Coal Project will comprise three products:

- ▶ High quality hard coking coal;
- ▶ Thermal coal; and
- ▶ Ultra low volatile (ULV) coal.

It is anticipated that the majority of the coking coal will be sold under long-term offtake agreements prior to production commencing. The most likely markets are anticipated to be Asian steel mills; however interest has been expressed from other consumers in Europe and Brazil.

Development concepts and parameters of the Project have assumed an approximate 20 -25 year production life. Ongoing exploration may extend the mine life. Accordingly, the proposed Mining Leases will seek a thirty (30) year duration to allow for exploitation of the known resources, plus additional resources likely to be identified during the operation, and an allowance of suitable timeframes to permit successful rehabilitation.

The likely economic impacts of the Drake Coal Project can be divided into two distinct categories. First is the primary, direct economic impact resulting from the Project's expenditure in the community, employment of personnel, direct payment of taxes, State royalty and infrastructure charges and use of resources within the community, surrounding region, and the State of Queensland. The second category is the indirect impacts that flow on from the increased spending and employment in service industries.

The Drake Coal Project will employ 350 personnel during construction, and approximately 250 personnel once operational. It is proposed that the Drake Coal Project will operate 24 hrs per day, 7 days per week.

The proposed economic and social benefits from the Drake Coal Project will complement QCoal's existing contribution to the Whitsunday Region and Queensland government from the Sonoma Mine. As



a joint venture partner in the Sonoma Mine located 6 km south of Collinsville, QCoal has improved employment opportunities in the local area as well as provided local community grants and paid \$27 million in coal royalties last financial year.

Construction will commence immediately upon grant of the Mining Leases. Accordingly, construction is intended for early 2012, with the Project expected to be commissioned and producing coal by late 2012. The Drake Coal Project is well located to take advantage of established infrastructure in the region. Collinsville is located 17 km north of the area, whilst the port of Abbot Point lies 115 km by rail to the northeast, and the coastal town of Bowen is 103 km away by sealed road.



- LEGEND**
- Major Town
 - Highway / Major Road
 - Railways
 - Project Area
 - ▬ Rivers
 - ▭ Local Government Boundary

1:1,000,000 (at A4)

0 5 10 20 30 40
Kilometers

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia 1994
Grid: Map Grid of Australia, Zone 55

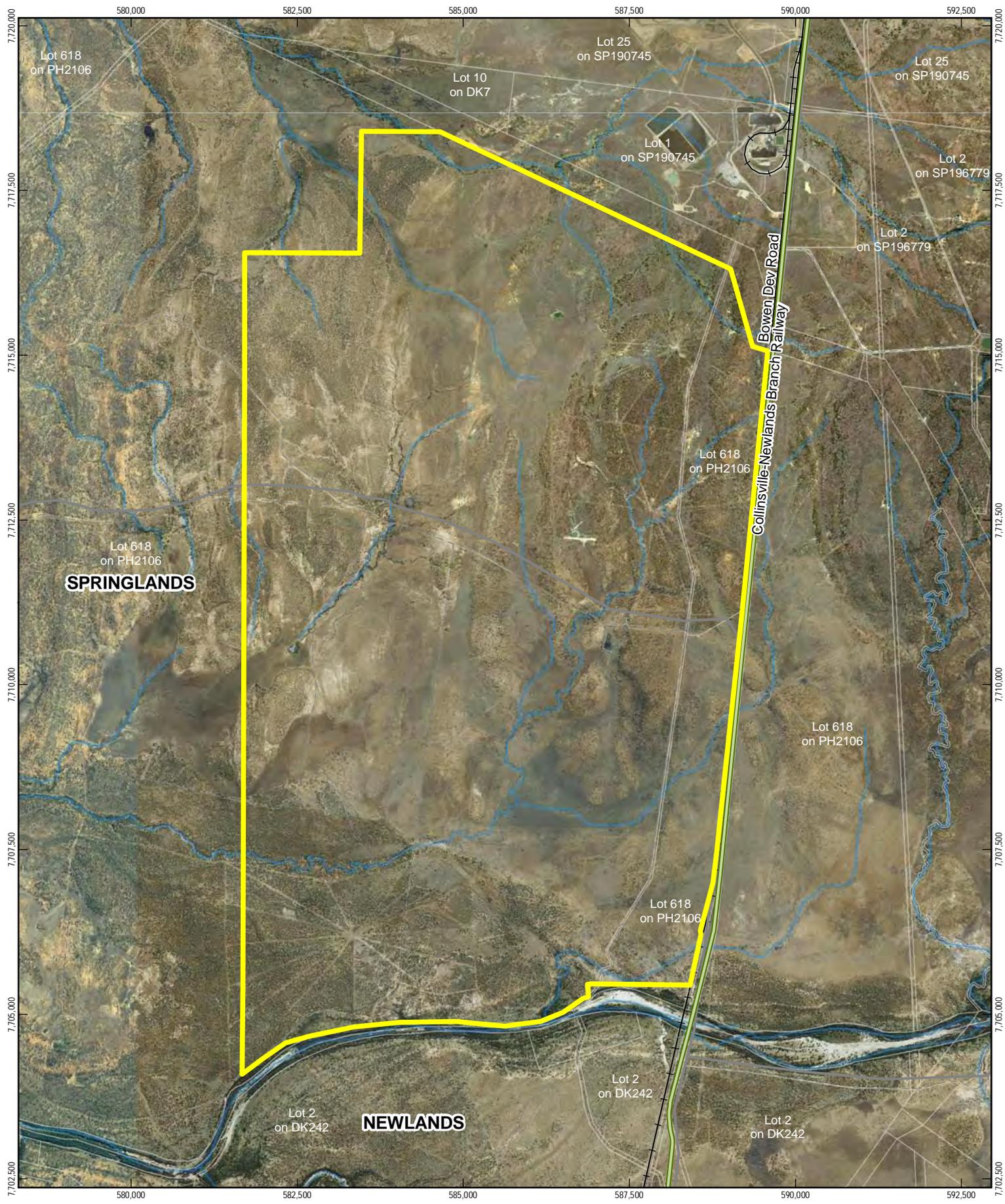


QCoal Pty Ltd
Drake Mine Initial Advice Statement

Job Number	41-21894
Revision	A
Date	17 Feb 2010

Drake Coal Regional Locality Map Figure 1-1

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 Data source: QCOAL: Study Easement/2009; GA: 250K V3 Topo/2009. Created by: AY



- LEGEND**
- Highway
 - Major Roads
 - Access Tracks
 - Railway
 - Creek
 - Cadastre
 - Project Easement

1:75,000 (at A4)

0 375 750 1,500 2,250 3,000

Meters

Map Projection: Transverse Mercator
 Horizontal Datum: Geocentric Datum of Australia 1994
 Grid: Map Grid of Australia, Zone 55



QCoal Pty Ltd
 Drake Mine Initial Advice Statement

Job Number 41-21894
 Revision A
 Date 12 Feb 2010

Mining Lease Boundary

Figure 1-2

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 Data source: QCOAL: Study Easement/2009; DERM: DCDB/2008; Google: Imagery/2009; GA: 250K Topo/2009. Created by: AY



2. Description of Proposed Development

2.1 Drake Mine

The Drake Coal Project proposes mining of the Moranbah Coal Measures in the far north Bowen Basin, Central Queensland. The Project is located entirely within Lot 618 on PH2106, which is a pastoral land lease. The Project will mine approximately 10 Mtpa of ROM coal producing 6 Mtpa of coking and thermal coal for export. In the initial years the mining activities will focus on two pits (West 1 and Central 1). Over the mine life several satellite pits will also be established. The concept plan for the mine layout is shown in Figure 2-1. Drake Mine will be a greenfield open-cut coal mine, mining activities will involve vegetation clearing, topsoil and overburden removal, coal mining and progressive rehabilitation over the expected 30 year life of mine.

2.2 Mineral Resource

Coal accumulation in the Bowen Basin has occurred in a wide variety of depositional environments. Economic coal measures within the Basin have been classified into four groups:

- ▶ Group I: the oldest coals were formed during the early Permian and are restricted to the southwest areas of the Bowen Basin (e.g. at Minerva, south of Emerald);
- ▶ Group II: these coal measures were formed during the early Permian and comprise several unconnected deposits around the northern western margins of the Bowen Basin, which have been mined by open-cut and underground methods. They include the Blair Athol Coal Measures near Clermont, the Rugby Coal Measure southwest of Moranbah and the Collinsville Coal Measures at Collinsville;
- ▶ **Group III (this Project):** coals were deposited, in the late Permian, on the Collinsville Shelf under conditions which fluctuated between marine-influenced deltaic environments to fluvial flood-plain environments (Moranbah Coal Measures). This Project, Belmore Mine (now closed) and Sonoma Mine occur within this group; and
- ▶ Group IV: coal measures are the most widely distributed in the Basin and were deposited under fluvial, lacustrine and paludal environments. They include the Rangal Coal Measures, Baralaba Coal Measures and equivalents which have been exclusively mined since the 1960s.

The regional stratigraphy of the Project area comprises basal Blenheim Formation overlain by the marine Exmoor Formation, non-marine Blackwater Group and the Tertiary sediments of the Suttor Formation and equivalents (Figure 2-2). The Blackwater Group within the Project site comprises the younger Moranbah Coal Measures and Fort Cooper Coal Measures.

The sequence contains eight major seams (Figure 2-3). The relatively thick, low-ash seams distinguish this unit from the overlying Fort Cooper Coal Measures. Interburden rocks consist of quartz-poor lithic sandstones, siltstones, shale and mudstone. Some tuffs or tuffaceous mudstone banks are present in the sequence, with the P Tuff (associated with the P seam) being the most prominent.

Results from exploration activities and resource modelling indicate that mining activities may be undertaken throughout the Project area. Economically viable seams (A, B, C, P and Q) associated with the Moranbah Coal Measures have been identified. A resource statement is currently being prepared and will be used to calculate the mineable reserves.

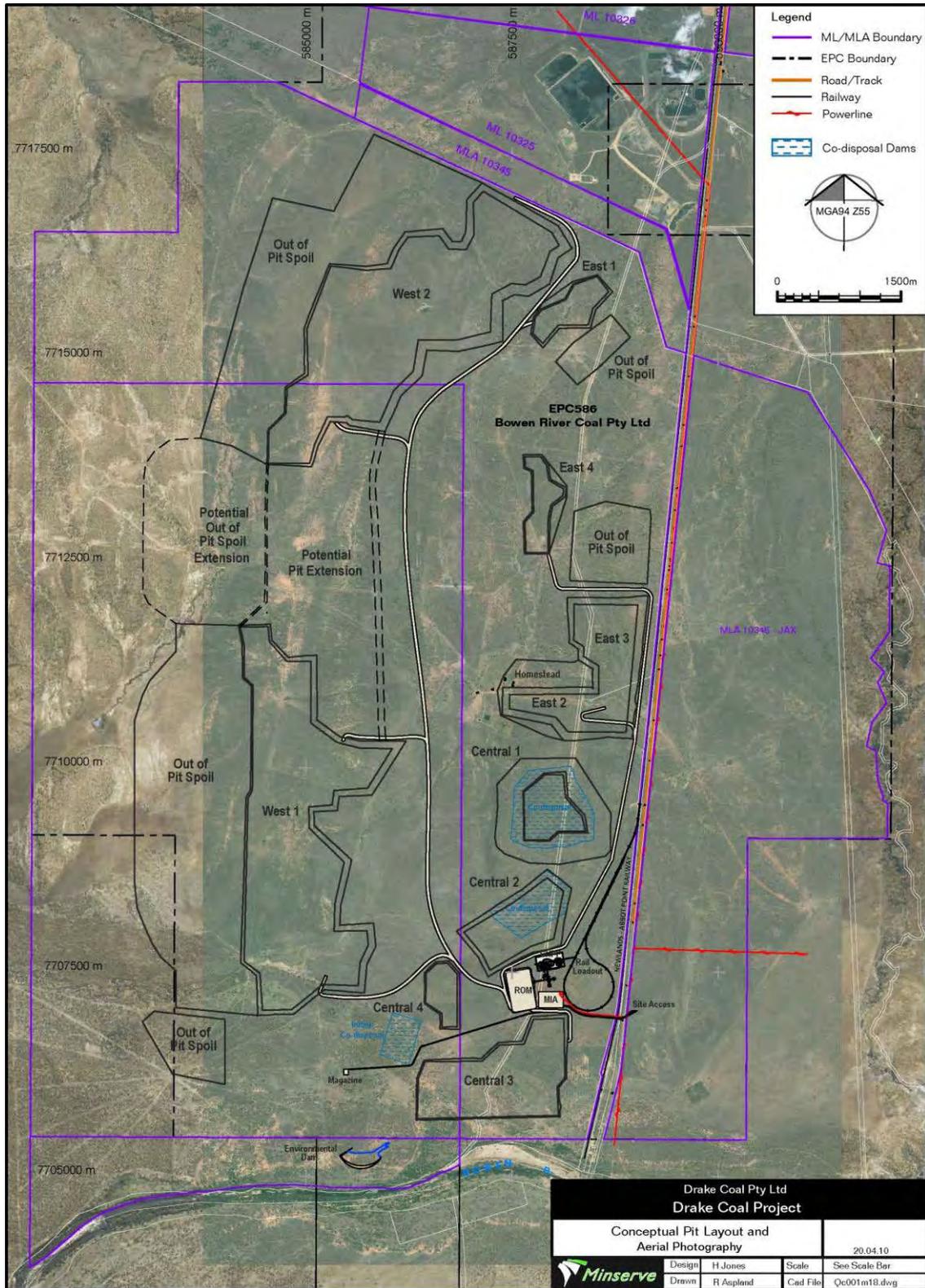


Figure 2-1 Indicative Concept Plan



Cainozoic		Sediments & volcanic rocks; and Suttor Formation
Triassic	Rewan Group	Arcadia Formation
		Sagittarius Formation
Late Permian	Blackwater Group	Rangal Coal Measures
		Fort Cooper Coal Measures (NAF) ¹
		Moranbah Coal Measures (NAF)
	Back Creek Group	Exmoor Formation
		Blenheim Formation
Early Permian		Collinsville Coal Measures (PAF)
		Gebbe Formation
		Tiverton Formation
		Lizzie Creek Volcanics
Late Carboniferous		Bulgunnuna Volcanics

¹NAF: Non Acid Forming; PAF: Potential Acid Forming

Figure 2-2 Generalised stratigraphy of the Northern Bowen Basin

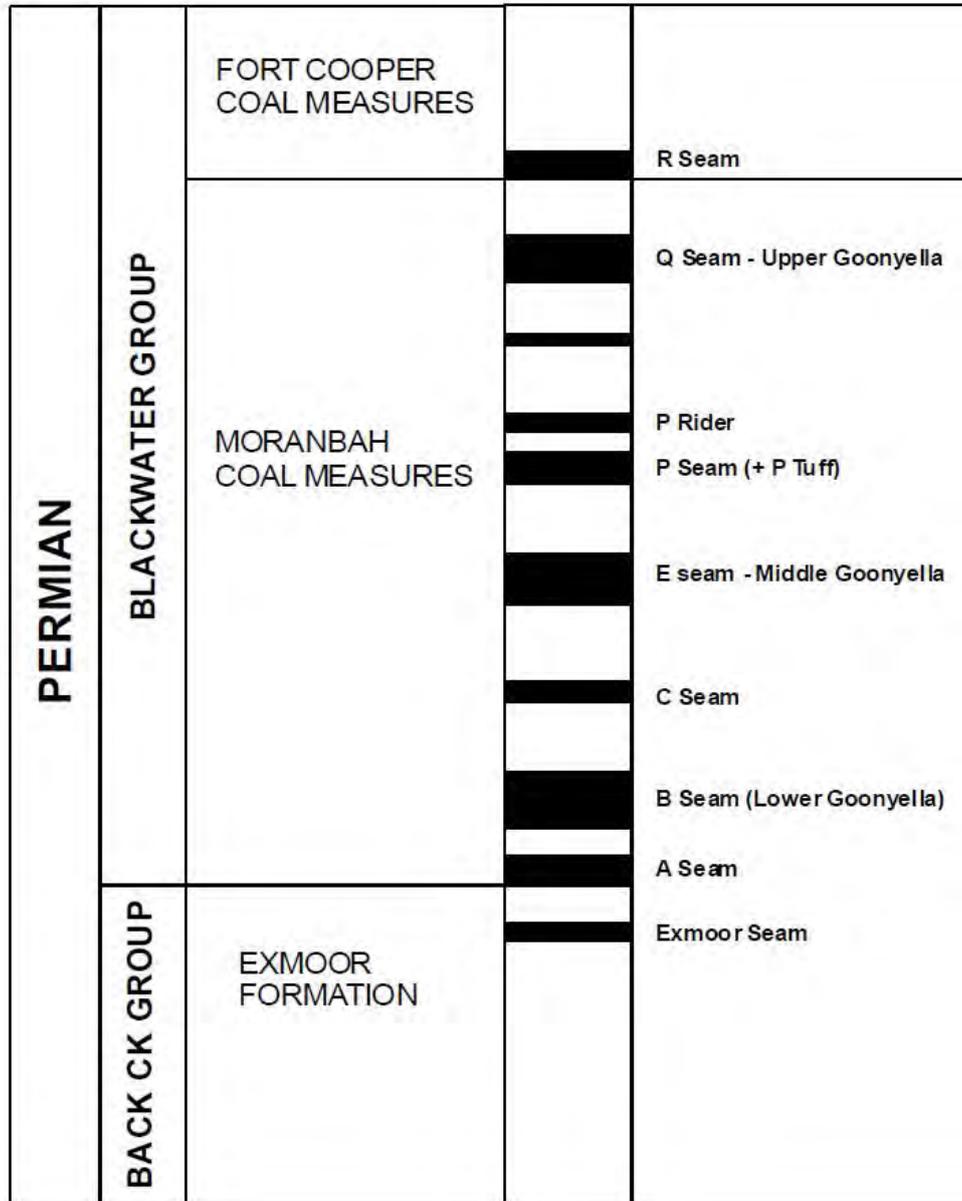


Figure 2-3 Coal-seam nomenclature – Northern Bowen Basin



2.3 Proposed Operations

As shown in the indicative concept plan (Figure 2-1), there are three distinct mining areas within the main Drake deposit, the Western, Eastern and Central pits.

A total area of 1,600 ha will be disturbed over the life of the mine, including the mine area, infrastructure and waste dumps.

The proposed mining operation will use traditional open-cut truck and excavator mining methods, with an emphasis on in-pit overburden dumping starting once void space becomes available.

The expected mining sequence will be as follows:

- ▶ Progressively remove any vegetation;
- ▶ Progressively remove topsoil and stockpile for future use in rehabilitation;
- ▶ Remove overburden using excavators and trucks to expose target coal seams. Overburden will be placed in an out of pit dump in initial years of mining. In-pit dumping will commence once void space is available;
- ▶ Removal of Run of Mine (ROM) coal using traditional truck and excavator operations; and
- ▶ Rehabilitation of the site by re-shaping, topsoiling and revegetating.

Overburden removal and mining activities will take place on a 24 hour, 7 days per week operation.

The nature of the geology in the north Bowen Basin means small deposits of coal are considered likely in the area surrounding the Drake Project. Over the Project life, it is considered likely that coal from other mines will be transported to Drake Mine for processing and export. Approximately 6 Mtpa (from all sources) of product coal will be produced annually.

2.3.1 Mine Infrastructure

The following mine infrastructure is proposed at the site:

- ▶ Site water management controls, including sediment control ponds;
- ▶ Coal handling civil works, including ROM pad;
- ▶ Construction and commissioning of Coal Handling and Preparation Plant (CHPP);
- ▶ Construction of the Drake Mine rail loop, load-out and connection to the existing Newlands Rail Line;
- ▶ Construction of Mine Infrastructure Area (MIA) including administration, ablution buildings, accommodation village (if required) and vehicle maintenance workshops;
- ▶ Site access and intersection works on the Bowen Developmental Road; and
- ▶ Construction of process water storage and distribution system.

2.3.2 Coal Handling and Preparation Plant (CHPP)

The CHPP facility is proposed to be a 1,400 tonnes per hour (tph) plant, which will be erected on site. The CHPP will be located adjacent to the rail loop. The precise design of the CHPP has not been finalised, however it is likely to be a dense medium cyclone/spiral and froth floatation operation with a co-disposal system for rejects management. This system is commonly adopted throughout the Bowen Basin. ROM coal will be transported to the CHPP by trucks on on-site haul roads.



The co-disposal dam will be located in close proximity to the CHPP to reduce pumping distances as shown on Figure 2-1.

Waste streams from the CHPP include:

- ▶ Coarse and fine rejects, and
- ▶ Process water.

2.4 Supporting Infrastructure

In addition to the coal mining requirements, the Project will also include:

- ▶ **Power Supply:** a new 33kV powerline will be constructed in conjunction with Ergon to service the Project. Separate approvals will be obtained for construction and operation of the proposed powerline in conjunction with Ergon Energy;
- ▶ **Water Supply:** up to 2200 ML/yr of water will be required for the Project. It will be sourced from SunWater and stored onsite in the process water storage facility. Water storage and distribution systems will be built on site;
- ▶ **Rail infrastructure:** transportation will be via the existing Newlands rail line to the Port of Abbot Point. The existing line runs along the eastern side of the Project area, parallel to the Bowen Developmental Road. A balloon loop will be constructed on the Drake ML to connect the Project to the Newlands mainline;
- ▶ **Road infrastructure:** access will be via the Bowen Developmental Road; and
- ▶ **Port:** the Project will access the existing facilities at Abbot Point to export coal from the Project.

These infrastructure requirements are not proposed to be assessed in the EIS because:

- ▶ The infrastructure already exists or is already under construction and the likely impacts from the Drake Coal Mine are well within the capacity of the infrastructure; or
- ▶ The infrastructure will be provided by other parties which will undertake independent environmental assessment processes.

2.5 Mine Waste Management

2.5.1 Overburden Characterisation

Previous studies of overburden characterisation of the Moranbah Coal Measures in the far north Bowen Basin have shown overburden in the region to have a negligible potential for acid mine drainage overburden (Bowen River Coal, 2009).

An extensive test program has been undertaken to assess the geochemical characteristics for a wide range of lithologies within the northern section of Exploration Permit for Coal (EPC) 586. The acid-base accounting (ABA) analyses indicate that overburden materials from mining operations within the study area will be non-acid forming.

Small volumes of coal and carbonaceous siltstone have minor potential for acid formation, however, the impacts of any potential acid generation will be negated by the neutralising capacity of all other rock types placed in the overburden or spoil heaps.



Small volumes of coal and carbonaceous siltstone have minor potential for acid formation, however, the impacts of any potential acid generation will be negated by the neutralising capacity of all other rock types placed in the overburden or spoil heaps.

The vast majority of samples tested were of low salinity with only 11% within the medium salinity range. Therefore specific requirements to manage salinity after closure are unlikely to be required.

The samples also identified that overburden materials were slightly alkaline ($\text{pH} > 7$), with low levels ($< 100 \text{ mg/kg}$) of total sulphate levels.

Overburden/soil materials are more likely to disperse if calcium/magnesium (Ca/Mg) ratios are less than 2 and exchangeable sodium percentages (ESP) are greater than 6%. The current analyses have confirmed the presence of high Ca/Mg ratios and low ESPs. Less than 2% of the total volume of samples dumps did not conform to the above characteristics. Dispersion of fine materials from overburden dumps is not expected to occur at a substantial rate and sediment control ponds are expected to be sufficient to capture the products of dispersion generated in these dumps.

2.5.2 Overburden Management

Overburden generated in the initial phases of the Project will be placed in out of pit overburden dumps. When sufficient void space is available within pits, subsequent overburden will be placed within in-pit overburden dumps.

2.5.3 Mine Waste Water and Effluent

Waste water generated through mining activities will include mine water, processing waste water, sediment-laden runoff and sewerage effluent.

Mine water will be contained in constructed storage facilities for reuse in mining and processing operations. Discharging to surrounding watercourses will only occur in extreme weather events with dilution occurring.

A primary sewerage treatment plan (STP) will be situated on site. Sludge and effluent from the plant will be removed by a licensed contractor to a licensed disposal facility.

2.6 Stormwater and Drainage

Development of the proposed Drake Coal Project may require diversion of some ephemeral creeks; creek diversions requirements will be further defined as design progresses.

Stormwater management will aim to divert clean stormwater from surface runoff around pits and other disturbed areas and into existing creeks and drainage lines. Scour protection works will be provided at discharge points, if required.

Stormwater from all disturbed areas including stockpiles will be collected in sediment control ponds to be established across the site. Final locations and capacity of these ponds will be determined in the detailed design stage. Water pumped from active pits will also be directed to sediment control ponds. Where possible, water collected in sediment control ponds will be reused for dust suppression or process water. Water quality criteria will be developed for releases from sediment control ponds to existing surface drainage systems.



Rehabilitation of disturbed areas will be progressive, with a goal of minimising disturbed areas across the site to minimise erosion.

2.7 Staffing and Accommodation

In excess of 250 people will be employed at Drake Mine once operational, working on a rotational shift basis. Workers may reside permanently in Collinsville or reside elsewhere when not on shift and arrive at site on a drive in/drive out basis.

The Proponents preferred option is to house workers in Collinsville and/or Scottsville. Provision will be made in the Drake Coal Project approvals for a workers village on site to house employees in the event that insufficient accommodation is available in Collinsville.

2.8 Rehabilitation

2.8.1 Final land use

It is intended to return the Project area to pastoral cattle grazing (pre-mining land-use). This objective will be achieved through:

- ▶ Effective mine closure planning;
- ▶ Establishing key performance indicators;
- ▶ Stabilising landforms; and
- ▶ Revegetation with suitable pasture species.

As a component of the EIS and Environmental Management Plan (EM Plan) for the Project, rehabilitation requirements and methodologies will be further developed.

2.8.2 Overburden Dumps

Overburden dumps will be shaped, capped with topsoil and revegetated in accordance with the EM Plan.

2.8.3 Final Voids

The mining void will be partially backfilled progressively throughout the mine life. There will be some voids remaining at the end of mining and these will be used for stock water storage.

The voids will become water bodies as rainfall, runoff and seepage accumulates. Final void sizes and mitigation measures for aspects such as impacts to surface and groundwater will be further detailed in the EIS. Likely water quality in the void will also be discussed.

2.8.4 CHPP and Infrastructure

The CHPP and mining infrastructure will be dismantled and removed upon completion of the mining operations. The plant footprint will be removed and the area ripped, reshaped and topsoiled before revegetation. Any improvements that are considered to be of beneficial use to the subsequent landholder will be retained, if requested.



3. Legislation and Approvals

3.1 Commonwealth Legislation

3.1.1 *Environment Protection and Biodiversity Conservation Act 1999*

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) requires an approval from the Commonwealth Department of the Environment, Water, Heritage and the Arts (DEWHA) for any action, which has, would have, or is likely to have, a significant impact (defined in the Act) on a Matter of National Environmental Significance (MNES). An action includes a project, development, or undertaking an activity or series of activities. The presence of MNES alone may not trigger the need for an approval, provided that the likely impact on MNES values is not significant, when assessed against guidelines published under the Act.

Desktop searches and dry season ecological surveys have identified the presence of the following MNES:

- ▶ Two threatened ecological communities (TECs);
 - Brigalow (*Acacia harpophylla* dominant and co-dominant); and
 - Natural grasslands of the Queensland Central Highlands and the northern Fitzroy Basin.
- ▶ 11 listed threatened species; and
- ▶ 16 migratory species.

The Project will require clearing of vegetation across the site. Further studies will be undertaken to confirm the species/communities present within the Project area and develop mitigation measures to ameliorate potential impacts.

The Project will be referred to DEWHA to determine whether or not it constitutes a “controlled action” under the EPBC Act. There are a number of pathways for assessment under the EPBC Act, however where an EIS is being prepared under State legislation, assessment under the EPBC Act typically proceeds concurrently under a bilateral agreement with the State of Queensland.

3.1.2 *Native Title Act 1993*

The *Native Title Act 1993* (NT Act) recognises the rights and interests over land and water possessed by Indigenous people in Australia under their traditional laws and customs. The objects of the Act are to:

- ▶ Provide for the recognition and protection of native title;
- ▶ Establish ways in which future dealings affecting native title may proceed and to set standards for these dealings;
- ▶ Establish a mechanism for determining claims to native title; and
- ▶ Provide for, or permit, the validation of past acts and intermediate acts, invalidated because of the existence of native title.

The Project area is covered by one registered native title determination application made by the Birri People (QUD 6244/98).



3.2 State Legislation

3.2.1 Mineral Resources Act 1989

The *Mineral Resources Act 1989* (MR Act) provides the legislative framework for exploration and mining development and mining tenure in Queensland, including Mining Leases (MLs).

While the Act is administered by Mines and Energy [part of the Department of Employment, Economic Development and Innovation (DEEDI)], authority for the management of environmental matters associated with mining activities is held by the Department of Environment and Resource Management (DERM). When an application for exploration or mining tenure is submitted to DEEDI, a copy is referred to DERM for assessment under the *EP Act*.

A number of MLs will be lodged for the Drake Project.

3.2.2 Sustainable Planning Act 2000

The *Sustainable Planning Act 2009* (SP Act) is Queensland's integral planning legislation for managing "development". Under the MR Act, activities within a mining lease or licence area are exempt from any approvals required under the SP Act, including planning scheme assessment. SP Act approvals would apply to any activities outside the mining lease.

3.2.3 Environmental Protection Act 1994

In relation to mining, the *Environmental Protection Act 1984* (EP Act) regulates:

- ▶ The granting of Environmental Authorities for mining activities;
- ▶ The regulation of dams containing high hazard wastes;
- ▶ The preparation of Environmental Impact Statements for large-scale mining activities resulting in significant environmental harm (if not prepared under the *State Development and Public Works Organisation Act 1971*);
- ▶ The setting of environmental quality and protection standards through regulations and the making of environmental protection policies; and
- ▶ Enforcement of compliance with conditions of approvals and general requirements of the EP Act and regulations.

The EP Act is administered by the DERM.

3.2.4 Nature Conservation Act 1992

The purpose of the *Nature Conservation Act 1992* (NC Act) is to provide a comprehensive strategy for the conservation and management of Queensland's native animals and plants. The NC Act seeks to achieve ecological sustainability by declaration and management of protected areas and the protection of wildlife and wildlife habitats.

The NC Act prohibits the taking or destruction, without authorisation, of native flora and fauna species. It also declares and protects protected areas. There are no declared protected areas in close proximity to the proposed Drake Coal Project.



3.2.5 Vegetation Management Act 1999

Under the *Vegetation Management Act 1999* (VM Act) all remnant vegetation (including Endangered, Of Concern and Not of Concern Regional Ecosystems) and all native vegetation on State land (regardless of conservation status) is protected. Clearing of such vegetation requires a development permit under the SP Act and, if clearing Endangered or Of Concern RE, the provision of vegetation offsets (in which case DERM's Policy for Vegetation Management Offsets, 2007 will apply) may also be required in line with Department and State policies.

The VM Act is included in the IDAS process established under the SP Act. As such, approvals under this Act are not required for vegetation clearing on a mining tenement.

3.2.6 Aboriginal Cultural Heritage Act 2003

The *Aboriginal Cultural Heritage Act 2003* (ACH Act) established a 'cultural heritage duty of care', which requires that a person who carries out an activity must take all reasonable and practicable measures to ensure the activity does not harm Aboriginal cultural heritage. The duty of care is considered to have been met where activities occur under the auspices of a registered Cultural Heritage Management Plan (CHMP).

The ACH Act establishes a framework for the conduct of assessment of cultural heritage impact and processes to be undertaken in preparing a CHMP. A CHMP must be prepared for any project for which an EIS is required. The Proponent is preparing a CHMP for the Drake Project.

3.2.7 Water Act 2000

The *Water Act 2000* plans for the allocation and sustainable management of water resources in Queensland. This is done by the preparation of a Water Resources Plan, which:

- ▶ Defines the availability of water for any purpose;
- ▶ Provides a framework for sustainable management of water and the taking of water;
- ▶ Identifies priorities and mechanisms for dealing with future water requirements;
- ▶ Provides a framework for establishing water allocations; and
- ▶ Provides a framework for reversing degradation that has occurred in the natural ecosystem.

Under the provisions of the *Water Act 2000*, a permit is required for taking or interfering with water in a watercourse, lake or spring for purposes such as:-

- ▶ Stock or domestic water on lands that do not adjoin a watercourse, lake or spring;
- ▶ Irrigation;
- ▶ Industrial use;
- ▶ The storage of water behind a weir; and
- ▶ The storage of water in excavations that are within or connected to a watercourse.

A water licence may also be required for taking or interfering with overland flow, for example through a creek diversion. Similarly, a water licence may also be required for taking or interfering with artesian and sub-artesian water.



3.2.8 Water Supply Safety and Reliability Act 2008

The purpose of this Act is to provide for the safety and reliability of water supply. The purpose is achieved primarily by providing a regulatory framework for, among other things, the regulation of referable dams. A dam is *referable* if it requires a failure impact assessment triggered if the dam will be more than 8 m in height and has a storage capacity of more than 500 ML. A dam may also trigger a requirement for a failure impact assessment if it has a storage capacity of more than 250 ML and a catchment area that is more than three times its maximum surface area at full supply level.

Further assessment of dams on site will be undertaken to determine whether they are deemed referable.

The Act is administered by the DERM through the Office of the Water Supply Regulator.



4. Existing Environment and Potential Impacts

4.1 Introduction

Environmental impacts associated with the Project are those that may result from the development and operation of an open-cut coal mine and its associated on-site facilities as well as longer-term impacts that may persist after closure.

The following overview of the existing environment and initial assessment of potential impacts are based on information drawn from desktop studies of the Project area and surrounds. Further studies will be undertaken within the EIS to define environmental values of the site and identify potential impacts and mitigation measures.

4.2 Regional Climate and Natural Hazards

The climate of the proposed Project site is sub-tropical and experiences distinct seasonality. Information from the Bureau of Meteorology (www.bom.gov.au) indicates that the average annual rainfall for the region (based on the Collinsville weather station) is approximately 712 mm. Rainfall is typically seasonal, with the highest average rainfall occurring in February and the lowest level in September. Figure 4-1 depicts the average annual rainfall of the region. Temperature ranges from a mean maximum temperature of 30.2 °C and a mean minimum temperature of 16.4 °C (Figure 4-2).

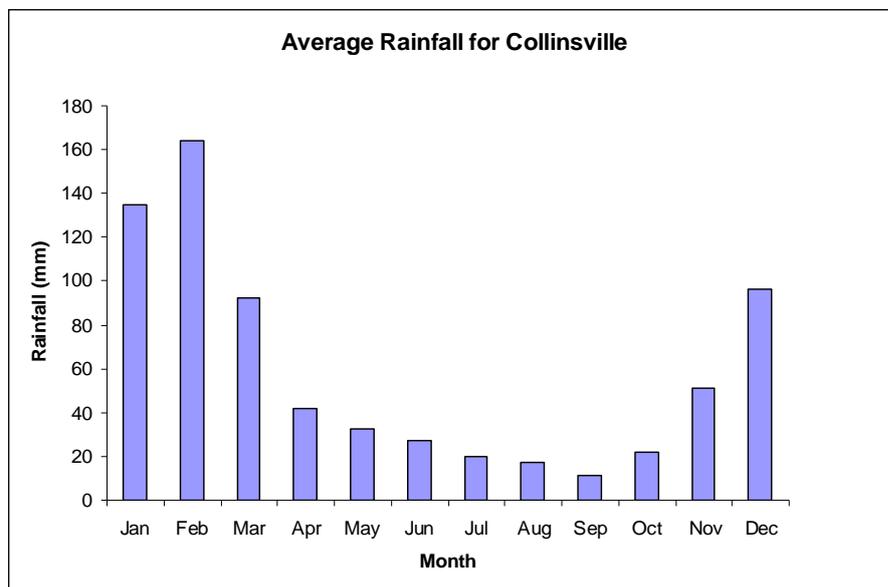


Figure 4-1 Annual Monthly Rainfall for Collinsville Region

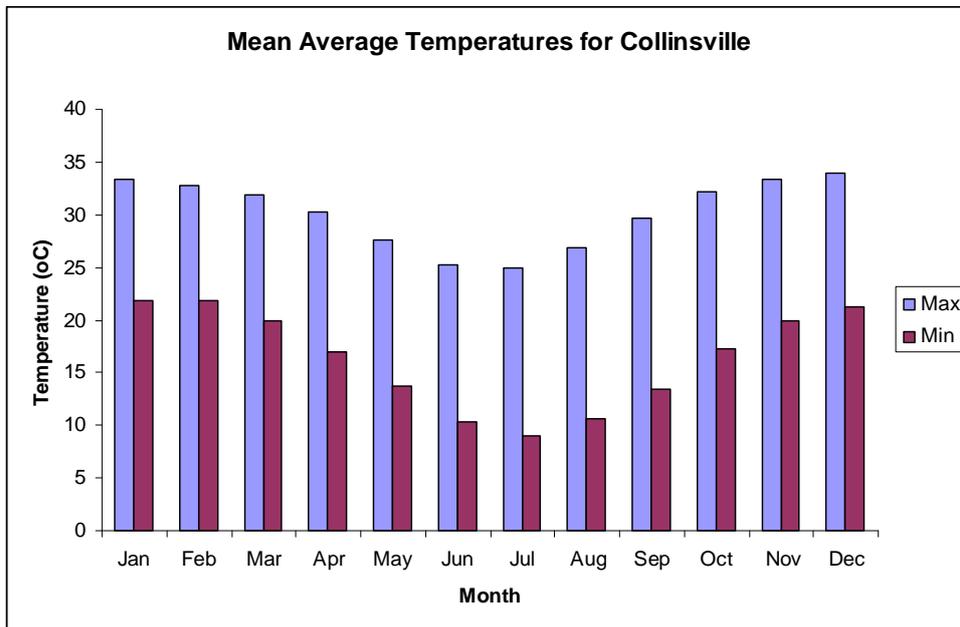


Figure 4-2 Annual Monthly Temperature (°C) for Collinsville

These weather conditions do not pose any particular challenges for the proposed activity. The detailed design phase will investigate intense rain events to allow sizing of drainage structures, creek diversions and sediment control ponds.

The potential for wildfires is greatest at the end of winter and throughout spring where the environment is typically dry and flammable material is in abundance (eg grass). The Collinsville area (inclusive of the Drake Coal Project site) falls within the service area of the Northern Region of the Queensland Fire and Rescue Service. A permanent fire station is located in Bowen with an auxiliary unit in Collinsville.

A search of the Emergency Management Australia website (<http://www.ema.gov.au/>) did not identify any record of damage to farms or houses in the Collinsville area from bushfire.

Any on-site works will be managed to ensure that the risk of wildfire is understood and minimised by all workers on the Drake Coal Project.

4.3 Land and Infrastructure

4.3.1 Existing Land Use

The existing land use in the Drake area is cattle grazing, as shown in Plate 1 and Plate 2. Grazing activity has been ongoing at the property since the 1950s. Between the 1950s and 1960s as a condition of the background Land Lease, large areas of brigalow vegetation were cleared to promote pasture grass species.

Grazing will cease in the mining area for the duration of the mine life. In the longer term, rehabilitation is intended to largely restore grazing land use.

The major coal mines of Sonoma and Collinsville occur in the local area. Sonoma Mine is located 6 km north of the proposed Drake Coal Mine.



The nearest sensitive land use to the proposed Drake Coal Mine is the town of Collinsville, 17 km to the north. The Sonoma Coal Mine lies between the proposed Drake Coal Mine and Collinsville. The nearest residential location is the homestead of Belmore Station, which is located 3 km north east of the Drake Project area at its nearest point to the lease boundary. A quarry operated by Belmore Minerals Pty Ltd and the proposed Jax Coal Project lie between the Project and the homestead of Belmore Station.

Final rehabilitation will address long-term land use, establishing an ongoing stable and viable land use consistent with pre-mining land use and surrounding land uses. It is unlikely that alternative land uses will be sought in future that are precluded by the proposed mining activity.



Plate 1 Photograph of the site showing the cleared landscape for grazing



Plate 2 Photograph of the site showing the cleared landscape for grazing



4.3.2 Topography and Landscape

The Project site is gently undulating with low ridges sloping from the east of the site with drainage lines converging into Twelve Mile Gully (west) which extends approximately 10 km to the west after leaving the proposed lease area before its confluence with the Bowen River. The landscape is rural and characterised by pasture grasslands and some remnant woodlands and scattered trees.

The likely impacts on landscape and topography will include:

- ▶ Landform changes, with addition of permanent and temporary overburden stockpiles and final voids; and
- ▶ Drainage changes in relation to diversion of creeks and permanent landform changes.

The EIS will assess visual amenity including overburden stockpiles and infrastructure, rehabilitation and land suitability.

While these impacts are an unavoidable consequence of the mining activity, the EIS will investigate the extent to which these impacts may cause adverse impacts on adjacent land uses and downstream systems. Mitigation measures will be identified to manage both short and long-term impacts.

4.3.3 Geology and Soils

A soil assessment will be undertaken as part of the EIS. This assessment will include identification of dispersivity, sodicity and other properties of soils that might:

- ▶ Contribute to significant erosion risk; and
- ▶ Potentially compromise success of rehabilitation.

Outcomes of the soil assessment will support assessment of short and long-term impacts associated with the proposed mining activity. Mitigation measures will be described in the EM Plan.

4.3.4 Contaminated Land

A search of the Environmental Management Register/Contaminated Land Register (EMR/CLR) held by the Department of Environment and Resource Management (DERM) has confirmed that Lot 618 on Plan PH2106 has not been used for any historical or current notifiable activities nor has it been identified as being contaminated.

Mining activities have the potential to cause contamination, for example through spills and leaks of fuel and oil, overburden and processing waste. The EIS will investigate potential sources of contamination arising from the proposed mining activity and will develop mitigation measures to minimise the risk of contamination occurring, and to rectify any contamination that does occur.

4.4 Water Resources

4.4.1 Surface Hydrology

The Drake Coal Project area falls within the Bowen/Broken River subcatchment area of the Burdekin River catchment. Twelve Mile Gully, the predominant surface drainage feature of the site, is a second



order ephemeral creek and is a tributary of the larger Bowen River which flows at the southern most extent of the Drake Coal Project area.

A number of un-named ephemeral drainage lines exist within the Drake Coal Project area (as shown in Plate 3 and Plate 4). Flows in these ephemeral waterways within and surrounding the Project are restricted to heavy rainfall events that occur during the wet season (November to February).

Potential impacts on the existing natural hydrological processes of the study area may include:

- ▶ Creek diversions;
- ▶ Clearing of vegetation and exposure of soils and sub soils to erosive forces;
- ▶ Construction of access roads, stockpiles, mine infrastructure, ponds, plant and accommodation (construction phase);
- ▶ Coal extraction and processing; and
- ▶ Placement of overburden dumps outside pits.

During the life of the Project, several creek diversions, both permanent and temporary, may be required. These will be designed and managed to minimise the impact on the environment and will be further described in the Project EIS.

Existing surface water quality data in the vicinity of the study is available from several sources. Table 1 summarises the location, type and source of available existing water quality data.

Table 1 Existing Water Quality Data

Location ¹	Data Type	Data Source
Burdekin Catchment	Regional Trends	Prosser et. al 2002
Burdekin Catchment	Regional Trends	Brizga et. al 2006
Burdenkin Catchment	Regional Trends	Mitchell et. Al 2007
Myuna, Bowen River	Median Value Water Quality Data	DERM Monitoring Station (120205A)
Jacks Creek, Bowen River	Median Value Water Quality Data	DERM Monitoring Station (120209A)
Pelican Creek (BG1)	Median Value Water Quality Data	Water Quality Sampling for Sonoma Mine (GHD 2009)
Coral Crk (SW2)	Median Value Water Quality Data	Water Quality Sampling for Sonoma Mine (GHD 2009)
Two Mile Creek (SW6)	Median Value Water Quality Data	Water Quality Sampling for Sonoma Mine (GHD 2009)

The Sonoma Mine (approximately 6 km north of the proposed Drake Coal Project) has collected water quality data at several sampling locations within the Sonoma Mine. Given Sonoma's proximity, similar land-use history and watercourse characteristics, it is expected that water quality results for the Drake Coal Project will show similar trends.



The water quality characteristics within the site will be compared with those available within the local area, including those undertaken for Sonoma, to make comment on likely background conditions and variability.

Other hydrology and water quality impacts may arise from the release of sediment and contaminants to surface waters and drainage lines. Design features will include erosion and sediment control devices, such as scour protection works at overflow outlets and other high water velocity or steep gradient situations. Sedimentation dams to capture run-off water from the mining areas will be constructed with retention times that enable coarse suspended sediment to settle. While there are no planned releases to surface waters, in adverse conditions the ponds may overflow and rainfall may also mobilise sediments.

Accidental releases of hydrocarbons may also occur directly to drainage lines in the event of a major spill. The EIS will identify appropriate design, storage and handling measures to minimise this risk to acceptable levels.

The DERM has released Guidelines for Preparation of Draft Water Management Plans for Mining Activities. The EIS will address requirements of this guideline, including:

- ▶ A review of the environmental values and water quality objectives applicable to the locality where the mining activity is to take place;
- ▶ Identification of the origin and potential chemical composition of different types of water on the mine site;
- ▶ Site-water management practices that prevent the discharge of contaminants to both surface and groundwaters; and
- ▶ Details of water management infrastructure including containment structures, channels, diversions, pipes, pumps and monitoring facilities.



Plate 3 Ephemeral Creek along the northern boundary of the Project Area (8 October 2009)



Plate 4 Ephemeral Creeks present within the Drake Project area (8 October 2009)



4.4.2 Groundwater

Groundwater is water which exists in the pore spaces and fractures of rocks and sediments. Groundwater in the Project area is typically associated with coal seams or alluvial sediments. The EIS undertaken for the nearby Sonoma Mine found that the Sonoma deposit and surrounding area consisted of an unconfined shallow aquifer within alluvial sediments associated with Coral and Two-mile Creek (Cainozoic) and deeper confined aquifers within the Permian Coal seams. Groundwater on the Drake Coal Mine site is likely to exhibit similar patterns, although surface water/alluvial systems are less well developed.

Groundwater levels noted during exploration drilling suggest that standing water levels are between 145 and 125 m AHD and indicate flow towards the northeast. Further investigation of groundwater conditions will be undertaken in the EIS, based on review of geological records for the site and installation of groundwater investigation and monitoring wells.

The potential impacts on groundwater from the Project include:

- ▶ Groundwater drawdown and changes in the coal seam and alluvial aquifers; and
- ▶ Groundwater contamination.

Groundwater analysis will be used to assess the current groundwater environment and to assist in prediction of regional impacts on groundwater users and the environment resulting from mine related groundwater extraction and any final voids left after mining ceases.

4.5 Ecology

4.5.1 Previous Studies

Searches were undertaken of the following databases:

- ▶ *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) Protected Matters database;
- ▶ Regional Ecosystem Description Database (REDD); and
- ▶ Wildlife Online Database.

A dry season ecological study has also been undertaken within EPC 586 by ERM (2007). The results of the desktop and dry season survey are summarised below.

Following the 2010 wet season, further ecological studies may be undertaken, including targeted searches for conservation significant flora and fauna, aquatic assessments and habitat mapping.

4.5.2 Vegetation and Fauna

Although vegetation clearing has occurred for pastoral uses, some remnant vegetation occurs within the Project site (Figure 4-3). During the dry season survey, it was noted that several discrepancies occurred between the certified regional ecosystem (RE) mapping and vegetation communities identified on site. Vegetation community mapping undertaken by ERM (2007) identified 11 vegetation communities present within the proposed Drake Coal Project, of these communities six were considered to be remnant vegetation. These communities, their corresponding RE type and status are detailed in



Table 2. An extract of the vegetation community mapping for the site is provided in Figure 4-4.

During flora surveys a total of 105 species were identified. Of the species recorded over 13% (14 taxa) were non-native, of which five are declared as pests under the *Land Protection (Pest and Stock Route Management) Act 2002*. A list of flora identified within the Project site is provided at Appendix A.

An assessment of the known and potential presence of native fauna species within the Project sites was undertaken as part of the dry season survey. This assessment was based on database records, previous reports, vegetation mapping and habitat requirements of conservation significant species.

Fauna observations during the dry season survey identified:

- ▶ 41 birds;
- ▶ Four mammals; and
- ▶ Three reptiles.


Table 2 Vegetation Communities Identified within the Project Area (ERM, 2007)

Vegetation Community	Corresponding RE	VMA Status	Biodiveristy Status
<p>1. <i>Dichanthium sericeum</i> (Queensland bluegrass) Grassland</p> <p>Grassland dominated by <i>Dichanthium sericeum</i> and <i>Astrebala squarrosa</i> on cracking clay soils. It is likely that large areas of this RE are now dominated by Parthenium (<i>Parthenium hysterophorus</i>), a declared pest species of central Queensland.</p>	11.3.21	E	E
<p>2. <i>Eucalyptus brownii</i> grassy woodland</p> <p><i>Eucalyptus brownii</i> grassy woodland on alluvial plains. The sparse shrub layer is dominated by regrowth canopy species, <i>Lysiphyllum</i> spp., <i>Acacia salicina</i> and <i>Acacia bidwillii</i>. Groundcover is generally dominated by buffel grass (<i>Cenchrus ciliaris</i>).</p>	11.3.10	LC	LC
<p>3. Mixed eucalypt species open forest/woodland</p> <p><i>Eucalyptus platyphylla</i>, <i>Corymbia clarksoniana</i>, <i>C. intermedia</i>, <i>E. tereticornis</i> and <i>Lophostemon suaveolens</i> dominated open forest to woodland. This association has a grassy groundlayer, with species including <i>Heteropogon contortus</i>, <i>Sorghum nitidum</i>, <i>Chrysopogon fallax</i>, <i>Alloteropsis semialata</i> and <i>Aristida holathera</i>. In areas more frequently grazed, buffel grass dominated the groundcover stratum.</p>	11.3.9	LC	LC
<p>4. <i>Eucalyptus crebra</i> woodland</p> <p><i>Eucalyptus crebra</i> dominated woodland with <i>Corymbia erythrophloia</i> and <i>C. dallachiana</i>. Generally occurring as open trees or small clumps of regrowth canopy species. Groundcover consisting of a mix of native grasses and introduced pasture species.</p>	11.9.9	LC	LC
<p>5. <i>Acacia harpophylla</i> open forest to woodland</p> <p><i>Acacia harpophylla</i> dominated shrubby open forest to woodland with <i>Lysiphyllum</i> spp., <i>Terminalis oblongata</i> and <i>Atalaya hemiglauca</i> mid storey. This vegetation community exists as small patches of regrowth where dense forests of brigalow were once cleared.</p>	Non remnant	N/A	N/A



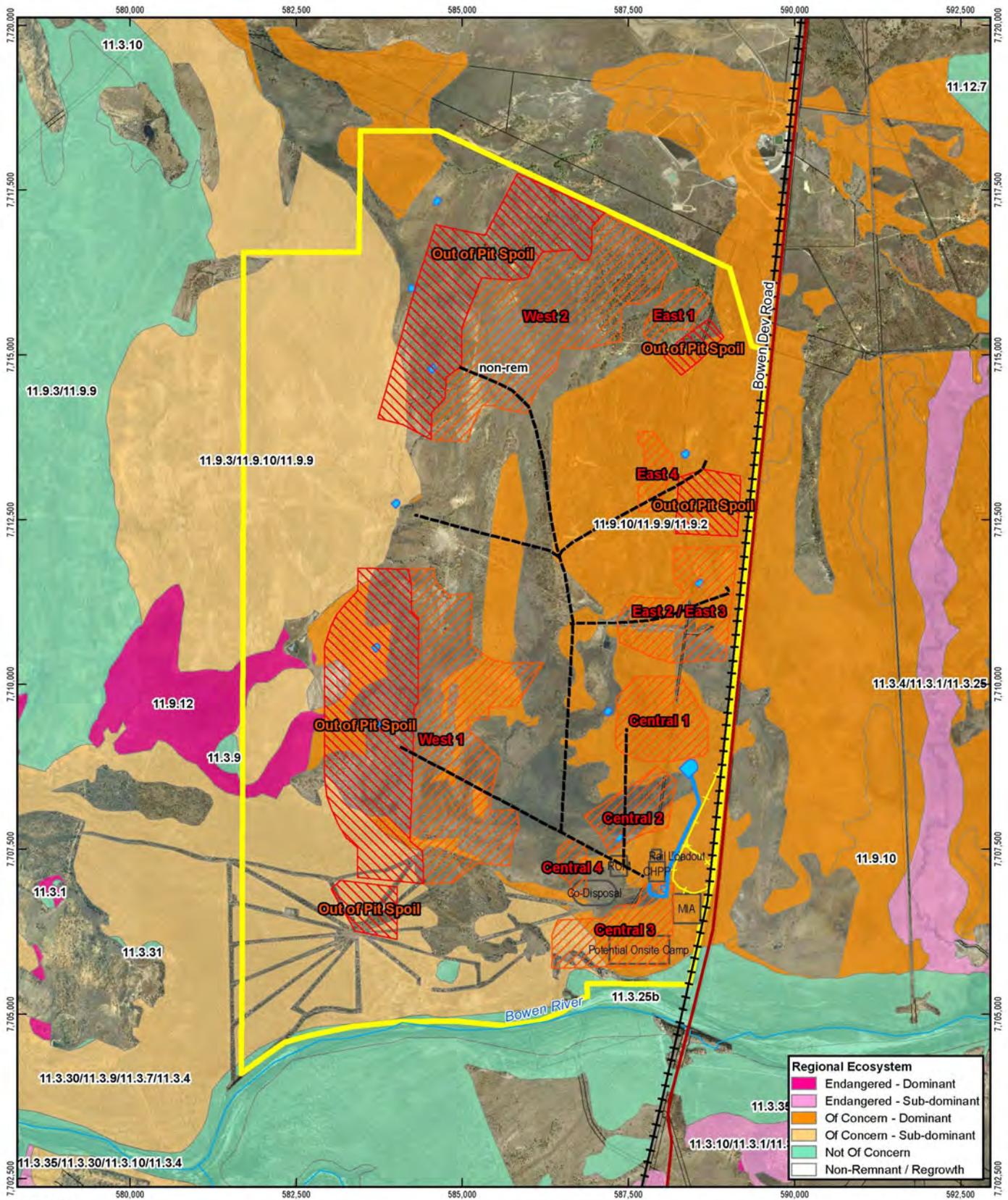
Vegetation Community	Corresponding RE	VMA Status	Biodiversity Status
6. Regrowth: <i>Lysiphyllum hookeri</i>, <i>Atalaya hemiglauca</i> and <i>Acacia</i> spp. shrubland Sparse shrubland dominated by <i>Lysiphyllum hookeri</i> , <i>Atalaya hemiglauca</i> , <i>Acacia salicina</i> and <i>Acacia harpophylla</i> on tertiary clay soils. The vegetation in this community is regrowth vegetation.	Non-remnant	N/A	N/A
7. <i>Acacia harpophylla</i> (brigalow) and <i>Lysiphyllum</i> spp. shrubby open forest to woodland <i>Acacia harpophylla</i> and <i>Lysiphyllum</i> spp. dominated shrubby open forest to woodland regrowth along disturbed drainage line.	11.4.9	E	E
8. <i>Eucalyptus orgadophila</i> woodland <i>Eucalyptus orgadophila</i> dominated woodland with <i>Corymbia dallachiana</i> with very sparse mid-storey of canopy species. The height of the tree canopy ranged from 10 to 25 m. Groundcover is generally dominated by buffel grass. However, some other grasses can be found.	11.9.2	LC	LC
9. <i>Eucalyptus tereticornis</i> and <i>Melaleuca</i> spp. woodland fringing drainage lines <i>Eucalyptus tereticornis</i> and <i>Melaleuca bracteata</i> with mid-storey of canopy species and <i>Acacia</i> spp. and dense grass cover on alluvial plains and drainage lines.	11.3.4	OC	OC
10. Pasture Grasslands <i>Cenchrus ciliaris</i> dominated open pasture grasslands with very isolated emergent <i>Eucalyptus crebra</i> , <i>Corymbia dallachiana</i> and <i>Corymbia erythrophloia</i> on alluvial soils. The isolated emergents ranged in density depending on the localised grazing pressures. Shrub species sometimes present include <i>Acacia salicina</i> and <i>Lysiphyllum</i> spp.	Non-remnant	N/A	N/A
11. <i>Eucalyptus tereticornis</i> woodland to open forest <i>Eucalyptus tereticornis</i> and <i>Melaleuca bracteata</i> dominated woodland to open-forest occurring in conjunction with rainforest species on fringing alluvial soils associated with Jack Creek.	11.3.25	LC	OC

Note: Under the VM Act and Biodiversity Status:

E = Endangered, OC= Of Concern, LC = Least Concern



Vegetation within the proposed mining and infrastructure footprint will be progressively cleared to allow mining to progress. Vegetation outside the mining footprint will be retained and enhanced through weed control and other measures. The potential impacts of this clearing includes the loss of habitat for fauna, weed invasion and secondary impacts associated with dust and changes to surface hydrology and groundwater. Mitigation measures will be developed to assist in ameliorating the impacts of the proposed mine, particularly to sensitive areas.



Regional Ecosystem	
	Endangered - Dominant
	Endangered - Sub-dominant
	Of Concern - Dominant
	Of Concern - Sub-dominant
	Not Of Concern
	Non-Remnant / Regrowth

LEGEND

- | | | | |
|------------------|-----------------|------------------|--------------|
| Existing Railway | Water Pipelines | Mining Pits | Cadastre |
| State Road | Railways | Out of Pit Spoil | Project Area |
| Watercourse | Roads / Tracks | Infrastructure | |

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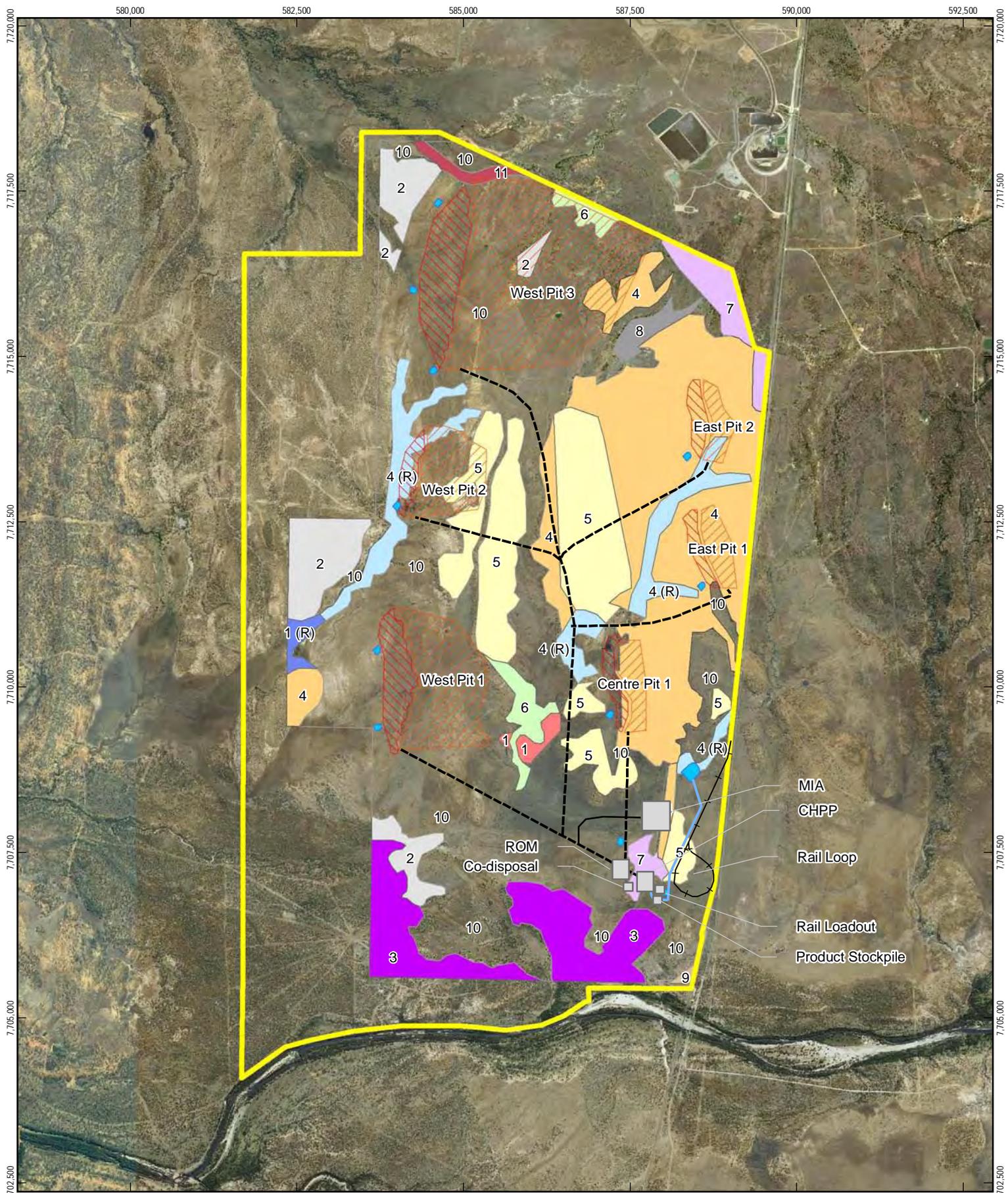
QCoal Pty Ltd
Drake Mine Initial Advice Statement

Job Number: 41-21894
Revision: A
Date: 04 AUG 2010

**Certified Regional Ecosystem
Version 6**

Figure 4-3

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LEGEND		Vegetation Community	
Water Pipelines	Mining Pits	Vegetation Community 1	Vegetation Community 3
Railways	Out of Pit Dump	Vegetation Community 4	Vegetation Community 6
Roads / Tracks	Dams	Vegetation Community 1 (Regrowth)	Vegetation Community 4 (Regrowth)
Project Area	Vegetation Community 2	Vegetation Community 5	Vegetation Community 8
			Vegetation Community 9
			Vegetation Community 10
			Vegetation Community 11

1:75,000 (at A4)
 0 375 750 1,500 2,250 3,000
 Meters
 Map Projection: Transverse Mercator
 Horizontal Datum: Geocentric Datum of Australia 1994
 Grid: Map Grid of Australia, Zone 55



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 Drake Mine Initial Advice Statement

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Vegetation Communities

Figure 4-4



4.5.3 Conservation Significant Communities and Species

Database searches, literature reviews and the dry season survey (ERM, 2007) show that conservation significant species protected under the EPBC Act or NC Act have been identified or are predicted to occur in the Project area. These assessments have identified the potential presence of two threatened ecological communities (TECs), 19 conservation significant species, including seven birds, two mammals, five reptiles and five plants. Copies of the desktop searches are provided in Appendix A. The likelihood of these species occurring on the Project site will be further assessed as part of future ecological surveys.

Based on the results of dry-season surveys, those species that are present or considered likely to be present at the site or immediate surrounds include:

- ▶ Brigalow (*Acacia harpophylla* dominant and co-dominant): TEC under the *EPBC Act* (present);
- ▶ Natural grasslands of the Queensland Central Highlands and the northern Fitzroy Basin: TEC under the *EPBC Act* (present);
- ▶ Squatter Pigeon (southern) (*Geophaps scripta scripta*): Vulnerable *EPBC Act* and *NC Act* (present);
- ▶ Black chinned honeyeater (*Melithreptus gularis*): Rare *NC Act* (suitable habitat);
- ▶ Brigalow scaly-foot (*Paradelma orientalis*): Vulnerable *EPBC Act* and *NC Act* (suitable habitat);
- ▶ Ornamental snake (*Denisonia maculata*): Vulnerable *EPBC Act* and *NC Act* (suitable habitat);
- ▶ Red goshawk (*Erythrotriorchis radiatus*): Vulnerable *EPBC Act* and Endangered *NC Act* (suitable habitat);
- ▶ Worm skink (*Anomalopus brevicollis*): Rare *NC Act* (suitable habitat); and
- ▶ Black iron-box (*Eucalyptus raveretiana*): Vulnerable *EPBC Act* and *NC Act* (suitable habitat).

The potential occurrence, impacts and mitigation measures will be further refined as part of the EIS.



4.5.4 Wetlands

There are no wetlands within the Drake Coal Project area, or immediately downstream. There are some temporary and permanent wetland areas associated with the Bowen River downstream of the site. Two wetlands listed on the National Directory of Wetlands are:

- ▶ *Bowen River: Birralelee - Pelican Creek Aggregation*: located downstream 27 km to the west of the Project; and
- ▶ *Burdekin-Bowen Junction and Blue Valley Weir Aggregation*: located downstream 40 km west of the Project.

Both of these sites are distant enough from the Project that impacts are not expected.

4.6 Noise and Vibration

Noise levels within the Collinsville region are mainly influenced by pastoral activities, rail, road and mining activities. The towns of Collinsville and Scottsville are sensitive receptors to noise impacts, these are located approximately 17 km north of the site. The closest residence to the site is Belmore Station, which is approximately 10 km to the northeast of the CHPP and rail loop.

Noise and vibration sources from Drake Mine will include mining (equipment, machinery and vehicles) and processing activities. A baseline noise survey will be undertaken and information from this and surveys at Sonoma Mine will be used to define the existing noise environment, assess impacts and develop mitigation measures.

4.7 Air Quality

Air quality values within the vicinity of the Project area are consistent with pastoral activities. Belmore Station is the nearest sensitive place, which is approximately 10 km to the northeast of the CHPP and rail loop,

The principal source of dust will be from exposed surfaces and mining. During mining activities, dust generation will be mitigated through dust suppression techniques. Existing monitoring data from Sonoma Mine will be used to assess existing dust levels and to develop mitigation strategies.

4.8 Greenhouse Gas

Mining activities will result in the emissions of greenhouse gases to the atmosphere, both through coal seam gas releases and from combustion of hydrocarbons used for mining plant and equipment. Monitoring from Sonoma Mine has indicated that there is little coal seam methane present. It is anticipated that similar conditions will be present at Drake.

The EIS will estimate greenhouse gas emissions and propose mitigation strategies. A final greenhouse gas inventory will not be prepared until the detailed design stage as quantities of equipment, type of plant and final mine planning will not be completed until this stage.



4.9 Indigenous Cultural Heritage

The Drake Coal Project is located within the Birri People native title claim area. A Cultural Heritage Management Plan will be negotiated with the Birri People in accordance with the requirements of the *Aboriginal Cultural Heritage Act 2003*.

All activities undertaken on site will be in accordance with the approved CHMP.

4.10 Non-indigenous Cultural Heritage

A search was undertaken of the Queensland Heritage Register and National Heritage Register. Sites of cultural significance were not recorded in the registers for the proposed Drake Project area. Based on current and former land uses on the site, it does not appear that there are any sites or items of particular non-indigenous cultural heritage significance and further survey is not proposed.

4.11 Social Impacts

The Drake Coal Project is located in the Whitsunday Regional Council area. The closest towns to the Project are Collinsville and Scottsville that are located adjacent to each other and approximately 17 km north of the Project. Collinsville and Scottsville have a combined population of approximately 2200 people and provide a base for employees of surrounding coal mines (including Collinsville Mine and Sonoma Mine). The Collinsville Power Station is also a major contributor to the local socio-economic setting.

Social and socio-economic impacts will be investigated following the requirements of Department of Infrastructure and Planning (DIP) *Sustainable Resource Communities Policy: Social impact assessment in the mining and petroleum industries*.

Social and socio-economic impacts associated with the construction and operation of the proposed Drake Coal Project are likely to include:

- ▶ Increased employment opportunities for skilled and unskilled workers, particularly in engineering and technical trade areas. This will include workers already resident in the Collinsville-Bowen-Townsville/Mackay area;
- ▶ An increase in local population where workers and families may relocate to Collinsville or Scottsville;
- ▶ An increase in the temporary population of Collinsville and Scottsville where workers choose to work on a drive in/drive out basis;
- ▶ Relocation of workers and families from outside the region to centres such as Bowen or Townsville/Mackay;
- ▶ Increased demand for local community services and facilities. This impact can be positive where the increased demand stimulates provision of new services and facilities, or negative where it leads to increased demand for existing services and facilities that do not have sufficient available capacity to meet such an increase;
- ▶ Flow on effects in relation to accommodation in Collinsville and Scottsville;
- ▶ Increased business opportunities for local and regional suppliers; and
- ▶ Increased revenue to the government sector from infrastructure charges, taxes and royalties.



An assessment of socio-economic impacts will be undertaken and linked within information gathered through community engagement activities.

Mitigation and monitoring measures will be developed as follows:

- ▶ To mitigate any significant adverse impacts identified;
- ▶ To maximise benefits, particularly at the local and regional scale; and
- ▶ To monitor changes as a means to validate impact predictions.



5. Consultation

The overall purpose of the consultation process will be to enable opportunities for the Collinsville community and other interested and affected parties to identify issues, impacts (potential or perceived) and mitigation measures, and for these to be documented for consideration as part of the EIS study phase. To achieve this, the following consultation approach will be adopted:

- ▶ Identify relevant interested and affected parties and inform them of the EIS process and consultation activities;
- ▶ Build awareness, understanding and support for the EIS objectives, impacts and benefits;
- ▶ Develop two-way communication channels through which the community members can participate in a meaningful way and contribute to the EIS;
- ▶ Manage issues and expectations about the EIS through early identification, monitoring and initiating responses;
- ▶ Identify community concerns and perceptions and accurately reflect these in reporting;
- ▶ Provide timely information to interested and affected parties who are involved in the EIS process;
- ▶ Meet the consultation requirements of the ToR for an EIS document through effective stakeholder consultation, community involvement and issues management; and
- ▶ Contribute to the achievement of the overall objectives of the EIS through effective stakeholder consultation, community engagement and issues management.



6. Environmental Management

The EIS will identify measures that will prevent or mitigate potential adverse environmental impacts resulting from the Drake Coal Project on each environmental value. This includes land resources, water resources (surface and groundwater), air quality and greenhouse gasses, noise, flora and fauna, cultural and non-indigenous heritage and social and community impacts.

An EM Plan for the Drake Coal Project is required under Section 201 of the EP Act for any non-standard environmental authority (EA) for a mining lease. This EM Plan will be developed in accordance with the Terms of Reference for the Project and the Guideline *Preparing an Environmental Management Overview Strategy for Non-Standard Mining Projects* (DERM, 2003).

Section 202 of the EP Act identifies that the purpose of an EM Plan is to propose environmental commitments to protect the environmental values affected by the Project, and to assist the administering authority (DERM) to prepare the EA and conditions..

An EA is an authority issued by the DERM under then *Environmental Protection Act 1994* that allows the holder to undertake and conduct mining activities that, without such authority, would be deemed illegal.

The EM Plan for the Drake Coal Project will include the following components:

- ▶ Description of mining tenure(s);
- ▶ Description of mining activities which form the mining project and may include:
 - the type and scale of operation including proposed hours of operation, mining methodology, annual mining rate and annual processing rate;
 - the planned mine life (in years) identifying construction, operation and rehabilitation phases;
 - processing or recovery of material from the ore body, production of concentrates and similar activities;
 - activities associated with mining or processing, which may cause environmental harm, for example removal of vegetation and preparation of land for mining, roads, waste disposal, workshops, loading facilities and other infrastructure; and
 - rehabilitation and remediation of environmental harm caused by mining activities.
- ▶ Description of environmental values and potential impacts to the values from the Project. Assessment of the beneficial or adverse effects may include an assessment of the following aspects:
 - magnitude or relative size of impact in relation to the environmental value being affected;
 - severity of any adverse effect or scale of beneficial outcome;
 - duration of the effect, for example the impact may range from a seasonal change, or it may end with the mining activity or extend beyond mine closure; and
 - an indication of the level of uncertainty and any assumptions used to address the uncertainty in any of the data or proposed commitments to protect the environmental values.
- ▶ Environmental objectives, targets and indicators will be developed to reflect acceptable standards of management for environmental values potentially impacted by the proposed coal mine;
- ▶ Environmental controls and management measures proposed for the project, based on recommendations made in the EIS and accepted standards of environmental management for mining



projects in Queensland and Australia and proposed conditions for the Environmental Authority. Environmental controls and proposed conditions will cover:

- air emissions;
 - noise and vibration;
 - surface water and groundwater;
 - waste management;
 - land management and rehabilitation;
 - ecosystems; and
 - community amenity.
- Monitoring indicators and methods will be developed to monitor compliance and achievement of environmental objectives and targets.



drake coal project



7. Contact Details

Drake Coal Pty Ltd
PO Box 10630,
Adelaide St, Brisbane,
QLD 4000

PH. (07) 3002 2900
Fax: (07) 3002 2999
Email: drake@qcoal.com.au



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Appendix A

Ecological Assessment

- Desktop Results
- ERM 2007 Flora Lists



drake coal project

ERM (2007) Flora List

Family	Species	Common Name
Amaranthaceae	<i>Alternanthera nodiflora</i>	
Amaranthaceae	* <i>Gomphrena celosioides</i>	Gomphrena Weed
Anacardiaceae	<i>Pleiogynium timorense</i>	Burdekin Plum
Apocynaceae	<i>Carissa ovata</i>	Currant Bush
Apocynaceae	<i>Parsonia lanceolata</i>	
Asteraceae	<i>Glossogyne tenuifolia</i>	Cobbler's Pegs
Asteraceae	<i>Parthenium hysterophorus</i>	Parthenium
Asteraceae	<i>Pterocaulon redolens</i>	
Asteraceae	<i>Tridax procumbens</i>	
Asteraceae	* <i>Xanthium pungens</i>	Noogoora Burr
Cactaceae	* <i>Eriocereus</i> spp.	Harrisia Cactus
Cactaceae	* <i>Opuntia stricta</i>	Prickly Pear
Caesalpiniaceae	<i>Lysiphyllum</i> spp	
Caesalpiniaceae	<i>Senna barclayana</i>	Pepper-Leaf Senna
Capparaceae	<i>Capparis lasiantha</i>	Split Jack
Capparaceae	<i>Cleome viscosa</i>	
Casuarinaceae	<i>Casuarina cunninghamiana</i>	River Oak
Celastraceae	<i>Denhamia oleaster</i>	
Celastraceae	<i>Maytenus cunninghamii</i>	
Chenopodiaceae	<i>Salsola kali</i>	Roly-poly Bush
Combretaceae	<i>Terminalia oblongata</i>	Yellowwood
Cyperaceae	<i>Cyperus</i> sp.	
Erythroxylaceae	<i>Erythroxylum australe</i>	
Euphorbiaceae	<i>Petalostigma pubescens</i>	
Fabaceae	<i>Crotalaria</i> sp.	
Fabaceae	<i>Indigofera australis</i>	
Fabaceae	<i>Sesbania cannabina</i>	
Lamiaceae	<i>Clerodendrum floribundum</i>	Lolly Bush
Lecythidaceae	<i>Planchonia careya</i>	Cocky Apple
Loranthaceae	<i>Dendrophthoe glabrescens</i>	Orange Mistletoe
Malvaceae	<i>Abutilon auriton</i>	
Malvaceae	<i>Lagunaria patersonii</i>	
Malvaceae	<i>Sida cordifolia</i>	Flannel Weed
Malvaceae	* <i>Sida spinosa</i>	
Meliaceae	<i>Owenia acidula</i>	Emu Apple
Mimosaceae	<i>Acacia bidwillii</i>	Corkwood Wattle
Mimosaceae	<i>Acacia excelsa</i>	
Mimosaceae	<i>Acacia farnesiana</i>	Prickly Mimosa
Mimosaceae	<i>Acacia harpophylla</i>	Brigalow
Mimosaceae	<i>Acacia nilotica</i>	Prickly Acacia
Mimosaceae	<i>Acacia oswaldi</i>	Nelia
Mimosaceae	<i>Acacia salicina</i>	Sally Wattle
Mimosaceae	<i>Albizia canescens</i>	
Mimosaceae	<i>Alectryon oleifolius</i>	
Myoporaceae	<i>Eremophila mitchellii</i>	False Sandalwood
Myrtaceae	<i>Callistemon viminalis</i>	Weeping Bottlebrush
Myrtaceae	<i>Corymbia dallachiana</i>	
Myrtaceae	<i>Corymbia erythrophloia</i>	Red-barked

		Bloodwood
Myrtaceae	<i>Corymbia tessellaris</i>	Morten Bay Ash
Myrtaceae	<i>Eucalyptus brownii</i>	Reid River Box
Myrtaceae	<i>Eucalyptus crebra</i>	Narrow-leaved Red Ironbark
Myrtaceae	<i>Eucalyptus melanophloia</i>	Silver-leaved Ironbark
Myrtaceae	<i>Eucalyptus orgadophila</i>	Mountain Coolabah
Myrtaceae	<i>Eucalyptus platyphylla</i>	Poplar Gum
Myrtaceae	<i>Eucalyptus tereticornis</i>	Forest Red Gum
Myrtaceae	<i>lophostemon suaveolens</i>	Swamp Box
Myrtaceae	<i>Melaleuca bracteata</i>	Black Teatree
Myrtaceae	<i>Melaleuca leucadendra</i>	Weeping Teatree
Nyctaginaceae	<i>Boerhavia dominii</i>	Tah-vine
Oleaceae	<i>Jasminum didymum</i> subsp. <i>racemosum</i>	
Orchidaceae	<i>Cymbidium canaliculatum</i>	Black Orchid
Papaveraceae	* <i>Argemone ochroleuca</i>	Prickly Poppy (in dry dams)
Poaceae	<i>Aristida personata</i>	
Poaceae	<i>Astrebula squarrosa</i>	
Poaceae	<i>Bothriochloa decipiens</i> var. <i>cloncurrans</i>	
Poaceae	<i>Brachyachne convergens</i>	
Poaceae	<i>Cenchrus ciliaris</i>	Buffel Grass
Poaceae	<i>Chrysopogon fall=</i>	
Poaceae	<i>Cynodon dactylon</i>	
Poaceae	* <i>Dichanthium annulatum</i>	
Poaceae	* <i>Dichanthium aristatum</i>	
Poaceae	<i>Dichanthium sericum</i>	
Poaceae	* <i>Echinochloa colona</i>	
Poaceae	<i>Heteropogon contortus</i>	Black Speargrass
Poaceae	<i>Macroptilium lathyroides</i>	
Poaceae	<i>Sorghum halepense</i>	
Poaceae	<i>Sporobolus scabridus</i>	
Poaceae	<i>Thellungia advena</i>	
Poaceae	* <i>Urochloa mosambicensis</i>	
Poaceae	<i>Paspalum plicatulum</i>	
Poaceae	<i>Panicum elfusum</i>	
Poaceae	<i>Paspalidium aversum</i>	
Poaceae	<i>Elymus multifloris</i>	
Poaceae	<i>Lepturis spp.</i>	
Poaceae	<i>Unidentified Grass 1</i>	
Poaceae	<i>Unidentified Grass 2</i>	
Poaceae	<i>Unidentified Grass 3</i>	
Proteaceae	<i>Grevillea striata</i>	Beefwood
Rhamnaceae	<i>Ventilago viminalis</i>	
Rhamnaceae	<i>Ziziphus mauritiana</i>	Chinese Apple
Rubiaceae	<i>Canthium oleifolium</i>	Wild Lemon

Rutaceae	<i>Geijera salicifolia</i>	Scrub Wilga
Rutaceae	<i>Murraya ovatifoliolata</i>	
Santalaceae	<i>Santalum lanceolatum</i>	Sandalwood
Sapindaceae	<i>Alectryon diversifolius</i>	Scrub Boonaree
Sapindaceae	<i>Alectryon oleifolius</i>	
Sapindaceae	<i>Atalaya hemiglauca</i>	Western Whitewood
Sapindaceae	<i>Atalaya salicifolia</i>	Brush Whitewood
Sterculiaceae	<i>Brachychiton australis</i>	Broad-Leaved Bottle tree
Tiliaceae	<i>Corchorus trilocularis</i>	
Tiliaceae	<i>Grewia latifolia</i>	Dog's Balls
Vitaceae	<i>Cissus opaca</i>	
Total species		105



Weed and Pest Species

Invasive species	Status	Comments
Mammals		
<i>Felis catus</i> Cat, House Cat, Domestic Cat	Feral	Species or species habitat likely to occur within area
<i>Oryctolagus cuniculus</i> Rabbit, European Rabbit	Feral	Species or species habitat may occur within area
<i>Vulpes vulpes</i> Red Fox, Fox	Feral	Species or species habitat may occur within area
Plants		
<i>Acacia nilotica</i> subsp. <i>indica</i> Prickly Acacia	WoNS C2	Species or species habitat may occur within area
<i>Cryptostegia grandiflora</i> Rubber Vine, Rubbervine, India Rubber Vine, India Rubbervine, Palay Rubbervine, Purple Allamanda	WoNS C2	Species or species habitat likely to occur within area
<i>Hymenachne amplexicaulis</i> Hymenachne, Olive Hymenachne, Water Stargrass, West Indian Grass, West Indian Marsh Grass	WoNS C2	Species or species habitat may occur within area
<i>Lantana camara</i> Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage	WoNS C3	Species or species habitat may occur within area
<i>Parkinsonia aculeata</i> Parkinsonia, Jerusalem Thorn, Jelly Bean Tree, Horse Bean	WoNS C2	Species or species habitat may occur within area
<i>Parthenium hysterophorus</i> Parthenium Weed, Bitter Weed, Carrot Grass, False Ragweed	WoNS C2	Species or species habitat likely to occur within area

* WONS: Weeds of National Significance

C1,2 or 3: Declared Weed on the Qld *Land Protection (Pest and Stock Route Management) Act 2002*



Queensland Government

Environmental Protection Agency Queensland Parks and Wildlife Service

Wildlife Online Extract

Search Criteria: Species List for a Specified Point
Species: All
Type: All
Status: All
Records: All
Date: All
Latitude: 20.6754
Longitude: 147.8453
Distance: 15
Email: mtoner@ghd.com
Date submitted: Thursday 18 Feb 2010 14:55:27
Date extracted: Thursday 18 Feb 2010 15:03:55

The number of records retrieved = 384

Disclaimer

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

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

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

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	amphibians	Bufo	<i>Rhinella marina</i>	cane toad	Y			17
animals	amphibians	Hylidae	<i>Litoria bicolor</i>	northern sedgefrog		C		1
animals	amphibians	Hylidae	<i>Litoria rubella</i>	ruddy treefrog		C		1
animals	amphibians	Hylidae	<i>Litoria caerulea</i>	common green treefrog		C		2
animals	birds	Acanthizidae	<i>Gerygone palpebrosa</i>	fairy gerygone		C		1
animals	birds	Acanthizidae	<i>Gerygone albogularis</i>	white-throated gerygone		C		2
animals	birds	Accipitridae	<i>Aquila audax</i>	wedge-tailed eagle		C		4
animals	birds	Accipitridae	<i>Aviceda subcristata</i>	Pacific baza		C		1
animals	birds	Accipitridae	<i>Haliaeetus leucogaster</i>	white-bellied sea-eagle		C		2
animals	birds	Accipitridae	<i>Haliastur sphenurus</i>	whistling kite		C		7
animals	birds	Accipitridae	<i>Elanus axillaris</i>	black-shouldered kite		C		1
animals	birds	Accipitridae	<i>Milvus migrans</i>	black kite		C		1
animals	birds	Aegothelidae	<i>Aegotheles cristatus</i>	Australian owl-nightjar		C		1
animals	birds	Alaudidae	<i>Mirafra javanica</i>	Horsfield's bushlark		C		1
animals	birds	Anatidae	<i>Cygnus atratus</i>	black swan		C		1
animals	birds	Anatidae	<i>Nettapus coromandelianus</i>	cotton pygmy-goose		R		1
animals	birds	Anatidae	<i>Anas superciliosa</i>	Pacific black duck		C		1
animals	birds	Anatidae	<i>Chenonetta jubata</i>	Australian wood duck		C		1
animals	birds	Ardeidae	<i>Ardea pacifica</i>	white-necked heron		C		1
animals	birds	Artamidae	<i>Artamus cinereus</i>	black-faced woodswallow		C		1
animals	birds	Artamidae	<i>Strepera graculina</i>	pieb currawong		C		2
animals	birds	Artamidae	<i>Artamus superciliosus</i>	white-browed woodswallow		C		1
animals	birds	Artamidae	<i>Cracticus nigrogularis</i>	pieb butcherbird		C		15
animals	birds	Artamidae	<i>Cracticus torquatus</i>	grey butcherbird		C		1
animals	birds	Artamidae	<i>Cracticus tibicen</i>	Australian magpie		C		7
animals	birds	Cacatuidae	<i>Cacatua galerita</i>	sulphur-crested cockatoo		C		3
animals	birds	Cacatuidae	<i>Eolophus roseicapillus</i>	galah		C		3
animals	birds	Cacatuidae	<i>Calyptorhynchus banksii</i>	red-tailed black-cockatoo		C		1
animals	birds	Cacatuidae	<i>Nymphicus hollandicus</i>	cockatiel		C		4
animals	birds	Campephagidae	<i>Coracina maxima</i>	ground cuckoo-shrike		C		2
animals	birds	Campephagidae	<i>Coracina novaehollandiae</i>	black-faced cuckoo-shrike		C		10
animals	birds	Columbidae	<i>Geopelia cuneata</i>	diamond dove		C		1
animals	birds	Columbidae	<i>Geopelia striata</i>	peaceful dove		C		2
animals	birds	Columbidae	<i>Phaps chalcoptera</i>	common bronzewing		C		2
animals	birds	Columbidae	<i>Ocyphaps lophotes</i>	crested pigeon		C		6
animals	birds	Corcoracidae	<i>Struthidea cinerea</i>	apostlebird		C		7
animals	birds	Corvidae	<i>Corvus sp.</i>					1
animals	birds	Corvidae	<i>Corvus orru</i>	Torresian crow		C		27
animals	birds	Cuculidae	<i>Cacomantis pallidus</i>	pallid cuckoo		C		1
animals	birds	Cuculidae	<i>Centropus phasianinus</i>	pheasant coucal		C		1
animals	birds	Cuculidae	<i>Cacomantis variolosus</i>	brush cuckoo		C		1
animals	birds	Dicruridae	<i>Dicrurus bracteatus</i>	spangled drongo		C		1
animals	birds	Estrildidae	<i>Neochmia modesta</i>	plum-headed finch		C		1
animals	birds	Estrildidae	<i>Taeniopygia bichenovii</i>	double-barred finch		C		3
animals	birds	Falconidae	<i>Falco cenchroides</i>	nankeen kestrel		C		4
animals	birds	Halcyonidae	<i>Dacelo leachii</i>	blue-winged kookaburra		C		2

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Halcyonidae	<i>Dacelo novaeguineae</i>	laughing kookaburra		C		4
animals	birds	Hirundinidae	<i>Petrochelidon ariel</i>	fairy martin		C		7
animals	birds	Hirundinidae	<i>Petrochelidon nigricans</i>	tree martin		C		2
animals	birds	Maluridae	<i>Malurus melanocephalus</i>	red-backed fairy-wren		C		16
animals	birds	Megaluridae	<i>Cincloramphus mathewsi</i>	rufous songlark		C		1
animals	birds	Meliphagidae	<i>Philemon buceroides</i>	helmeted friarbird		C		3
animals	birds	Meliphagidae	<i>Lichenostomus flavus</i>	yellow honeyeater		C		3
animals	birds	Meliphagidae	<i>Lichmera indistincta</i>	brown honeyeater		C		5
animals	birds	Meliphagidae	<i>Melithreptus gularis</i>	black-chinned honeyeater		R		1
animals	birds	Meliphagidae	<i>Philemon corniculatus</i>	noisy friarbird		C		3
animals	birds	Meliphagidae	<i>Myzomela sanguinolenta</i>	scarlet honeyeater		C		2
animals	birds	Meliphagidae	<i>Philemon citreogularis</i>	little friarbird		C		3
animals	birds	Meliphagidae	<i>Lichenostomus virescens</i>	singing honeyeater		C		1
animals	birds	Meliphagidae	<i>Manorina flavigula</i>	yellow-throated miner		C		22
animals	birds	Meliphagidae	<i>Entomyzon cyanotis</i>	blue-faced honeyeater		C		11
animals	birds	Meliphagidae	<i>Melithreptus albogularis</i>	white-throated honeyeater		C		3
animals	birds	Meropidae	<i>Merops ornatus</i>	rainbow bee-eater		C		1
animals	birds	Monarchidae	<i>Grallina cyanoleuca</i>	magpie-lark		C		8
animals	birds	Motacillidae	<i>Anthus novaeseelandiae</i>	Australasian pipit		C		2
animals	birds	Nectariniidae	<i>Dicaeum hirundinaceum</i>	mistletoebird		C		3
animals	birds	Oriolidae	<i>Sphecotheres vieilloti</i>	Australasian figbird		C		2
animals	birds	Pachycephalidae	<i>Colluricincla harmonica</i>	grey shrike-thrush		C		2
animals	birds	Pachycephalidae	<i>Pachycephala rufiventris</i>	rufous whistler		C		2
animals	birds	Pachycephalidae	<i>Colluricincla megarhyncha</i>	little shrike-thrush		C		1
animals	birds	Pardalotidae	<i>Pardalotus striatus</i>	striated pardalote		C		18
animals	birds	Pardalotidae	<i>Pardalotus punctatus</i>	spotted pardalote		C		1
animals	birds	Pardalotidae	<i>Pardalotus rubricatus</i>	red-browed pardalote		C		1
animals	birds	Pelecanidae	<i>Pelecanus conspicillatus</i>	Australian pelican		C		1
animals	birds	Phalacrocoracidae	<i>Phalacrocorax carbo</i>	great cormorant		C		1
animals	birds	Phalacrocoracidae	<i>Microcarbo melanoleucos</i>	little pied cormorant		C		1
animals	birds	Phasianidae	<i>Coturnix ypsilophora</i>	brown quail		C		3
animals	birds	Podargidae	<i>Podargus strigoides</i>	tawny frogmouth		C		1
animals	birds	Pomatostomidae	<i>Pomatostomus temporalis</i>	grey-crowned babbler		C		3
animals	birds	Psittacidae	<i>Platycercus adscitus</i>	pale-headed rosella		C		8
animals	birds	Psittacidae	<i>Trichoglossus haematodus moluccanus</i>	rainbow lorikeet		C		7
animals	birds	Psittacidae	<i>Aprosmictus erythropterus</i>	red-winged parrot		C		10
animals	birds	Psittacidae	<i>Trichoglossus chlorolepidotus</i>	scaly-breasted lorikeet		C		1
animals	birds	Ptilonorhynchidae	<i>Ptilonorhynchus nuchalis</i>	great bowerbird		C		6
animals	birds	Ptilonorhynchidae	<i>Ptilonorhynchus maculatus</i>	spotted bowerbird		C		1
animals	birds	Rallidae	<i>Gallinula tenebrosa</i>	dusky moorhen		C		1
animals	birds	Rallidae	<i>Amaurornis moluccana</i>	pale-vented bush-hen		C		1
animals	birds	Rhipiduridae	<i>Rhipidura albiscapa</i>	grey fantail		C		2
animals	birds	Rhipiduridae	<i>Rhipidura leucophrys</i>	willie wagtail		C		8
animals	birds	Strigidae	<i>Ninox boobook</i>	southern boobook		C		1
animals	bony fish	Plotosidae	<i>Neosilurus hyrtlII</i>	Hyrtl's catfish				2/2
animals	mammals	Dasyuridae	<i>Planigale maculata</i>	common planigale		C		1/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	mammals	Dasyuridae	<i>Sminthopsis macroura</i>	stripe-faced dunnart		C		5/1
animals	mammals	Macropodidae	<i>Macropus agilis</i>	agile wallaby		C		2
animals	mammals	Macropodidae	<i>Macropus giganteus</i>	eastern grey kangaroo		C		1
animals	mammals	Muridae	<i>Rattus tunneyi</i>	pale field-rat		C		1
animals	mammals	Muridae	<i>Pseudomys delicatulus</i>	delicate mouse		C		2/2
animals	mammals	Muridae	<i>Pseudomys gracilicaudatus</i>	eastern chestnut mouse		C		1/1
animals	mammals	Phascolarctidae	<i>Phascolarctos cinereus</i>	koala		C		1
animals	reptiles	Agamidae	<i>Pogona barbata</i>	bearded dragon		C		9
animals	reptiles	Elapidae	<i>Suta suta</i>	myall snake		C		2
animals	reptiles	Elapidae	<i>Demansia psammophis</i>	yellow-faced whip snake		C		1
animals	reptiles	Gekkonidae	<i>Gehyra dubia</i>			C		4
animals	reptiles	Gekkonidae	<i>Strophurus williamsi</i>	soft-spined gecko		C		1
animals	reptiles	Gekkonidae	<i>Lucasium steindachneri</i>	Steindachner's gecko		C		1
animals	reptiles	Gekkonidae	<i>Heteronotia binoei</i>	Bynoe's gecko		C		1
animals	reptiles	Gekkonidae	<i>Oedura castelnaui</i>	northern velvet gecko		C		2
animals	reptiles	Scincidae	<i>Carlia pectoralis</i>			C		1
animals	reptiles	Scincidae	<i>Cryptoblepharus pannosus</i>	ragged snake-eyed skink		C		2
plants	ferns	Adiantaceae	<i>Cheilanthes</i>			C		1
plants	higher dicots	Acanthaceae	<i>Rostellularia adscendens</i>			C		3/1
plants	higher dicots	Acanthaceae	<i>Pseuderanthemum variabile</i>	pastel flower		C		1/1
plants	higher dicots	Acanthaceae	<i>Ruellia tweediana</i>		Y			2/2
plants	higher dicots	Acanthaceae	<i>Rostellularia adscendens var. adscendens</i>			C		1/1
plants	higher dicots	Amaranthaceae	<i>Amaranthus viridis</i>	green amaranth	Y			1/1
plants	higher dicots	Amaranthaceae	<i>Amaranthus cochleitepalus</i>			C		1/1
plants	higher dicots	Amaranthaceae	<i>Alternanthera ficoidea</i>		Y			2/2
plants	higher dicots	Amaranthaceae	<i>Ptilotus fusiformis</i>			C		1/1
plants	higher dicots	Amaranthaceae	<i>Alternanthera pungens</i>	khaki weed	Y			1/1
plants	higher dicots	Amaranthaceae	<i>Gomphrena celosioides</i>	gomphrena weed	Y			3/3
plants	higher dicots	Anacardiaceae	<i>Pleiogynium timorensis</i>	Burdekin plum		C		1/1
plants	higher dicots	Anacardiaceae	<i>Schinus terebinthifolius</i>		Y			3/3
plants	higher dicots	Apocynaceae	<i>Carissa ovata</i>	currantbush		C		1
plants	higher dicots	Apocynaceae	<i>Catharanthus roseus</i>	pink periwinkle	Y			2/2
plants	higher dicots	Apocynaceae	<i>Marsdenia viridiflora subsp. tropica</i>			C		1/1
plants	higher dicots	Apocynaceae	<i>Asclepias curassavica</i>	red-head cottonbush	Y			1/1
plants	higher dicots	Apocynaceae	<i>Cascabela thevetia</i>	yellow oleander	Y			1/1
plants	higher dicots	Araliaceae	<i>Schefflera actinophylla</i>	umbrella tree		C		1/1
plants	higher dicots	Asteraceae	<i>Calotis</i>			C		1
plants	higher dicots	Asteraceae	<i>Wedelia</i>			C		1
plants	higher dicots	Asteraceae	<i>Bidens pilosa</i>		Y			1/1
plants	higher dicots	Asteraceae	<i>Epaltes australis</i>	spreading nutheads		C		2/2
plants	higher dicots	Asteraceae	<i>Flaveria trinervia</i>		Y			1/1
plants	higher dicots	Asteraceae	<i>Euchiton sp. (Hughenden C.E.Hubbard+ 7639)</i>			C		1/1
plants	higher dicots	Asteraceae	<i>Ageratum conyzoides subsp. conyzoides</i>		Y			2/2
plants	higher dicots	Asteraceae	<i>Streptoglossa adscendens</i>	desert daisy		C		1/1
plants	higher dicots	Asteraceae	<i>Parthenium hysterophorus</i>	parthenium weed	Y			4/4
plants	higher dicots	Asteraceae	<i>Acanthospermum hispidum</i>	star burr	Y			2/2

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plants	higher dicots	Asteraceae	<i>Pterocaulon redolens</i>			C		1/1
plants	higher dicots	Asteraceae	<i>Calyptocarpus vialis</i>	creeping cinderella weed	Y			2/2
plants	higher dicots	Asteraceae	<i>Calotis cuneifolia</i>	burr daisy		C		1/1
plants	higher dicots	Asteraceae	<i>Bidens bipinnata</i>	bipinnate beggar's ticks	Y			1/1
plants	higher dicots	Bignoniaceae	<i>Tecoma stans</i>	tecoma	Y			1/1
plants	higher dicots	Bignoniaceae	<i>Pandorea pandorana</i>	wonga vine		C		1/1
plants	higher dicots	Boraginaceae	<i>Heliotropium pauciflorum</i>			C		1/1
plants	higher dicots	Brassicaceae	<i>Lepidium didymum</i>		Y			1/1
plants	higher dicots	Brassicaceae	<i>Lepidium bonariense</i>	Argentine peppergrass	Y			1/1
plants	higher dicots	Brassicaceae	<i>Lepidium africanum</i>	common peppergrass	Y			1/1
plants	higher dicots	Byttneriaceae	<i>Melochia pyramidata</i>		Y			2/2
plants	higher dicots	Byttneriaceae	<i>Keraudrenia hookeriana</i>			C		2/2
plants	higher dicots	Caesalpiniaceae	<i>Cassia brewsteri</i>			C		1
plants	higher dicots	Caesalpiniaceae	<i>Tamarindus indica</i>		Y			1/1
plants	higher dicots	Caesalpiniaceae	<i>Senna planitiicola</i>			C		1/1
plants	higher dicots	Caesalpiniaceae	<i>Senna coronilloides</i>			C		1/1
plants	higher dicots	Caesalpiniaceae	<i>Chamaecrista concinna</i>			C		1/1
plants	higher dicots	Caesalpiniaceae	<i>Peltophorum pterocarpum</i>	yellow poinciana	Y			1/1
plants	higher dicots	Caesalpiniaceae	<i>Cassia fistula</i>	Indian laburnum	Y			1/1
plants	higher dicots	Caesalpiniaceae	<i>Senna alata</i>		Y			2/2
plants	higher dicots	Caesalpiniaceae	<i>Cassia</i>			C		2
plants	higher dicots	Caesalpiniaceae	<i>Senna pendula var. glabrata</i>	Easter cassia	Y			1/1
plants	higher dicots	Caesalpiniaceae	<i>Chamaecrista absus var. absus</i>			C		4/3
plants	higher dicots	Capparaceae	<i>Capparis lasiantha</i>	nipan		C		1/1
plants	higher dicots	Caryophyllaceae	<i>Polycarpaea corymbosa var. minor</i>			C		1/1
plants	higher dicots	Caryophyllaceae	<i>Polycarpaea corymbosa var. corymbosa</i>			C		1/1
plants	higher dicots	Caryophyllaceae	<i>Polycarpaea spirostylis subsp. spirostylis</i>			C		1/1
plants	higher dicots	Celastraceae	<i>Denhamia oleaster</i>			C		1/1
plants	higher dicots	Celastraceae	<i>Maytenus cunninghamii</i>	yellow berry bush		C		1/1
plants	higher dicots	Chenopodiaceae	<i>Salsola kali</i>			C		2/1
plants	higher dicots	Chenopodiaceae	<i>Salsola tragus</i>		Y			1/1
plants	higher dicots	Cleomaceae	<i>Cleome gynandra</i>		Y			1/1
plants	higher dicots	Clusiaceae	<i>Hypericum gramineum</i>			C		1/1
plants	higher dicots	Combretaceae	<i>Terminalia</i>			C		1
plants	higher dicots	Convolvulaceae	<i>Ipomoea</i>			C		1
plants	higher dicots	Convolvulaceae	<i>Bonamia media</i>			C		1
plants	higher dicots	Convolvulaceae	<i>Ipomoea plebeia</i>	bellvine		C		3/3
plants	higher dicots	Convolvulaceae	<i>Ipomoea gracilis</i>			C		1/1
plants	higher dicots	Convolvulaceae	<i>Ipomoea polymorpha</i>			C		3/1
plants	higher dicots	Convolvulaceae	<i>Bonamia media var. media</i>			C		3/3
plants	higher dicots	Convolvulaceae	<i>Jacquemontia paniculata</i>			C		1/1
plants	higher dicots	Convolvulaceae	<i>Xenostegia tridentata</i>			C		1/1
plants	higher dicots	Convolvulaceae	<i>Evolvulus alsinoides</i>			C		4/3
plants	higher dicots	Convolvulaceae	<i>Merremia hederacea</i>			C		1/1
plants	higher dicots	Convolvulaceae	<i>Merremia dissecta</i>		Y			1/1
plants	higher dicots	Convolvulaceae	<i>Ipomoea triloba</i>		Y			2/2

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plants	higher dicots	Convolvulaceae	<i>Ipomoea brownii</i>			C		2/2
plants	higher dicots	Convolvulaceae	<i>Jacquemontia</i>			C		1
plants	higher dicots	Cucurbitaceae	<i>Momordica charantia</i>	balsam pear	Y			1/1
plants	higher dicots	Cucurbitaceae	<i>Cucumis anguria</i> var. <i>anguria</i>	West Indian gherkin	Y			2/2
plants	higher dicots	Cucurbitaceae	<i>Diplocyclos palmatus</i> subsp. <i>palmatus</i>				C	1/1
plants	higher dicots	Erythroxylaceae	<i>Erythroxylum australe</i>	cocaine tree			C	1/1
plants	higher dicots	Erythroxylaceae	<i>Erythroxylum ellipticum</i>				C	1
plants	higher dicots	Euphorbiaceae	<i>Euphorbia</i>				C	1
plants	higher dicots	Euphorbiaceae	<i>Euphorbia cyathophora</i>	dwarf poinsettia	Y			1/1
plants	higher dicots	Euphorbiaceae	<i>Chamaesyce hyssopifolia</i>		Y			1/1
plants	higher dicots	Euphorbiaceae	<i>Euphorbia heterophylla</i>		Y			1/1
plants	higher dicots	Euphorbiaceae	<i>Ricinus communis</i>	castor oil bush	Y			2/2
plants	higher dicots	Fabaceae	<i>Macroptilium atropurpureum</i>	siratro	Y			2/2
plants	higher dicots	Fabaceae	<i>Tephrosia filipes</i> var. (Mt Blackjack A.R.Bean+ 7332)				C	1/1
plants	higher dicots	Fabaceae	<i>Canavalia papuana</i>	wild jack bean			C	1/1
plants	higher dicots	Fabaceae	<i>Tephrosia juncea</i>				C	1/1
plants	higher dicots	Fabaceae	<i>Zornia</i>				C	1
plants	higher dicots	Fabaceae	<i>Vigna</i>				C	1
plants	higher dicots	Fabaceae	<i>Vigna</i> sp. (Greta Creek R.J.Lawn+ AQ532201)				C	1/1
plants	higher dicots	Fabaceae	<i>Crotalaria incana</i> subsp. <i>incana</i>		Y			1/1
plants	higher dicots	Fabaceae	<i>Vigna lanceolata</i> var. <i>lanceolata</i>				C	1/1
plants	higher dicots	Fabaceae	<i>Sesbania cannabina</i> var. <i>cannabina</i>				C	1/1
plants	higher dicots	Fabaceae	<i>Zornia muelleriana</i> subsp. <i>muelleriana</i>				C	1/1
plants	higher dicots	Fabaceae	<i>Erythrina vespertilio</i>				C	1
plants	higher dicots	Fabaceae	<i>Crotalaria gorensis</i>	gambia pea	Y			1/1
plants	higher dicots	Fabaceae	<i>Stylosanthes hamata</i>		Y			1/1
plants	higher dicots	Fabaceae	<i>Desmodium filiforme</i>				C	1/1
plants	higher dicots	Fabaceae	<i>Indigofera hirsuta</i>	hairy indigo			C	2/2
plants	higher dicots	Fabaceae	<i>Indigofera colutea</i>	sticky indigo			C	1/1
plants	higher dicots	Fabaceae	<i>Crotalaria juncea</i>	sunhemp	Y			1/1
plants	higher dicots	Fabaceae	<i>Clitoria ternatea</i>	butterfly pea	Y			2/2
plants	higher dicots	Fabaceae	<i>Crotalaria pallida</i> var. <i>obovata</i>		Y			2/2
plants	higher dicots	Goodeniaceae	<i>Goodenia hirsuta</i>				C	1/1
plants	higher dicots	Lamiaceae	<i>Clerodendrum</i>				C	1
plants	higher dicots	Lamiaceae	<i>Leucas lavandulifolia</i>		Y			3/3
plants	higher dicots	Lamiaceae	<i>Ocimum americanum</i> var. <i>americanum</i>		Y			1/1
plants	higher dicots	Lamiaceae	<i>Ocimum tenuiflorum</i>				C	1/1
plants	higher dicots	Lamiaceae	<i>Hyptis suaveolens</i>	hyptis	Y			1/1
plants	higher dicots	Lecythidaceae	<i>Planchonia careya</i>	cockatoo apple			C	1/1
plants	higher dicots	Malvaceae	<i>Hibiscus</i>				C	2/2
plants	higher dicots	Malvaceae	<i>Sida cordifolia</i>		Y			3/3
plants	higher dicots	Malvaceae	<i>Hibiscus sturtii</i>				C	1
plants	higher dicots	Malvaceae	<i>Sida brachypoda</i>				C	2/2
plants	higher dicots	Malvaceae	<i>Sida atherophora</i>				C	1/1
plants	higher dicots	Malvaceae	<i>Abutilon guineense</i>				C	1/1

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plants	higher dicots	Malvaceae	<i>Abutilon cunninghamii</i>			C		1/1
plants	higher dicots	Malvaceae	<i>Hibiscus sturtii</i> var. <i>sturtii</i>			C		1/1
plants	higher dicots	Malvaceae	<i>Malvastrum coromandelianum</i> subsp. <i>coromandelianum</i>		Y			1/1
plants	higher dicots	Malvaceae	<i>Hibiscus krichauffianus</i>			C		1
plants	higher dicots	Malvaceae	<i>Hibiscus meraukensis</i>	Merauke hibiscus		C		1/1
plants	higher dicots	Malvaceae	<i>Sida rhombifolia</i>		Y			1/1
plants	higher dicots	Meliaceae	<i>Owenia</i>			C		1
plants	higher dicots	Mimosaceae	<i>Acacia hemsleyi</i>			C		1/1
plants	higher dicots	Mimosaceae	<i>Acacia bidwillii</i>			C		1
plants	higher dicots	Mimosaceae	<i>Acacia crassa</i> subsp. <i>crassa</i>			C		1/1
plants	higher dicots	Mimosaceae	<i>Leucaena leucocephala</i> subsp. <i>glabrata</i>		Y			1/1
plants	higher dicots	Mimosaceae	<i>Neptunia gracilis</i> forma <i>gracilis</i>			C		1/1
plants	higher dicots	Mimosaceae	<i>Acacia rhodoxylon</i>	ringy rosewood		C		3/2
plants	higher dicots	Mimosaceae	<i>Albizia lebbek</i>	Indian siris		C		1/1
plants	higher dicots	Mimosaceae	<i>Acacia nilotica</i>		Y			1
plants	higher dicots	Mimosaceae	<i>Acacia salicina</i>	doolan		C		2/2
plants	higher dicots	Mimosaceae	<i>Acacia triptera</i>			C		1/1
plants	higher dicots	Myrtaceae	<i>Eucalyptus crebra</i>	narrow-leaved red ironbark		C		1
plants	higher dicots	Myrtaceae	<i>Melaleuca bracteata</i>			C		1/1
plants	higher dicots	Myrtaceae	<i>Eucalyptus orgadophila</i>	mountain coolibah		C		1/1
plants	higher dicots	Myrtaceae	<i>Eucalyptus tereticornis</i> subsp. <i>tereticornis</i>			C		1/1
plants	higher dicots	Myrtaceae	<i>Eucalyptus camaldulensis</i> subsp. <i>acuta</i>			C		1/1
plants	higher dicots	Myrtaceae	<i>Eucalyptus raveretiana</i>	black ironbox		V	V	1/1
plants	higher dicots	Myrtaceae	<i>Corymbia erythrophloia</i>	variable-barked bloodwood		C		2/1
plants	higher dicots	Myrtaceae	<i>Corymbia torelliana</i>	cadaghi		C		1/1
plants	higher dicots	Myrtaceae	<i>Eucalyptus brownii</i>	Reid River box		C		4/1
plants	higher dicots	Nyctaginaceae	<i>Boerhavia</i>			C		3
plants	higher dicots	Nyctaginaceae	<i>Boerhavia dominii</i>			C		1/1
plants	higher dicots	Nyctaginaceae	<i>Bougainvillea glabra</i>		Y			1/1
plants	higher dicots	Oxalidaceae	<i>Oxalis corniculata</i>		Y			1/1
plants	higher dicots	Passifloraceae	<i>Passiflora foetida</i>		Y			1/1
plants	higher dicots	Passifloraceae	<i>Passiflora suberosa</i>	corky passion flower	Y			1/1
plants	higher dicots	Pentapetaceae	<i>Melhania oblongifolia</i>			C		1/1
plants	higher dicots	Phyllanthaceae	<i>Breynia oblongifolia</i>			C		1
plants	higher dicots	Phyllanthaceae	<i>Bridelia leichhardtii</i>			C		1/1
plants	higher dicots	Phyllanthaceae	<i>Phyllanthus fuernrohrii</i>			C		1
plants	higher dicots	Phyllanthaceae	<i>Phyllanthus virgatus</i>			C		2
plants	higher dicots	Phyllanthaceae	<i>Phyllanthus tenellus</i>		Y			1/1
plants	higher dicots	Portulacaceae	<i>Portulaca pilosa</i>		Y			1/1
plants	higher dicots	Portulacaceae	<i>Portulaca pilosa</i> subsp. <i>pilosa</i>		Y			2/2
plants	higher dicots	Portulacaceae	<i>Portulaca filifolia</i>			C		1/1
plants	higher dicots	Proteaceae	<i>Grevillea striata</i>	beefwood		C		1/1
plants	higher dicots	Proteaceae	<i>Grevillea parallela</i>			C		1/1
plants	higher dicots	Rhamnaceae	<i>Alphitonia excelsa</i>	soap tree		C		3/2
plants	higher dicots	Rhamnaceae	<i>Ziziphus mauritiana</i>	Indian jujube	Y			4/4
plants	higher dicots	Rubiaceae	<i>Richardia brasiliensis</i>	white eye	Y			1/1

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plants	higher dicots	Rubiaceae	<i>Psydrax saligna forma saligna</i>			C		1/1
plants	higher dicots	Rubiaceae	<i>Oldenlandia mitrasacmoides subsp. trachymenoides</i>			C		1/1
plants	higher dicots	Rutaceae	<i>Murraya paniculata cv. Exotica</i>		Y			1/1
plants	higher dicots	Sapindaceae	<i>Atalaya hemiglauca</i>			C		2/1
plants	higher dicots	Sapindaceae	<i>Dodonaea viscosa subsp. burmanniana</i>			C		1/1
plants	higher dicots	Sapindaceae	<i>Cardiospermum halicacabum var. halicacabum</i>		Y			1/1
plants	higher dicots	Sapindaceae	<i>Atalaya variifolia</i>			C		1
plants	higher dicots	Sapindaceae	<i>Alectryon diversifolius</i>	scrub boonaree		C		1/1
plants	higher dicots	Scrophulariaceae	<i>Scoparia dulcis</i>	Scoparia	Y			2/2
plants	higher dicots	Scrophulariaceae	<i>Lindernia crustacea</i>			C		1/1
plants	higher dicots	Scrophulariaceae	<i>Striga parviflora</i>			C		1/1
plants	higher dicots	Solanaceae	<i>Solanum</i>			C		2
plants	higher dicots	Solanaceae	<i>Datura innoxia</i>		Y			1/1
plants	higher dicots	Solanaceae	<i>Solanum torvum</i>	devil's fig	Y			2/2
plants	higher dicots	Solanaceae	<i>Physalis angulata</i>		Y			1/1
plants	higher dicots	Solanaceae	<i>Capsicum frutescens</i>		Y			2/2
plants	higher dicots	Solanaceae	<i>Solanum nigrum subsp. nigrum</i>		Y			1/1
plants	higher dicots	Solanaceae	<i>Solanum seaforthianum</i>	Brazilian nightshade	Y			1/1
plants	higher dicots	Solanaceae	<i>Solanum ellipticum</i>	potato bush		C		1/1
plants	higher dicots	Sparrmanniaceae	<i>Grewia asiatica</i>		Y			4/4
plants	higher dicots	Sparrmanniaceae	<i>Grewia scabrella</i>			C		1/1
plants	higher dicots	Sparrmanniaceae	<i>Grewia retusifolia</i>			C		4/1
plants	higher dicots	Sparrmanniaceae	<i>Corchorus olitorius</i>	jute		C		1/1
plants	higher dicots	Sparrmanniaceae	<i>Triumfetta pentandra</i>		Y			2/2
plants	higher dicots	Sparrmanniaceae	<i>Triumfetta rhomboidea</i>	chinese burr	Y			1/1
plants	higher dicots	Thymelaeaceae	<i>Pimelea haematostachya</i>			C		1/1
plants	higher dicots	Verbenaceae	<i>Lantana camara</i>		Y			3/3
plants	higher dicots	Verbenaceae	<i>Stachytarpheta jamaicensis</i>	Jamaica snakeweed	Y			1/1
plants	higher dicots	Verbenaceae	<i>Verbena litoralis var. litoralis</i>		Y			1/1
plants	higher dicots	Violaceae	<i>Hybanthus enneaspermus</i>			C		1/1
plants	higher dicots	Violaceae	<i>Hybanthus stellarioides</i>			C		2/2
plants	higher dicots	Vitaceae	<i>Clematicissus opaca</i>			C		1/1
plants	higher dicots	Zygophyllaceae	<i>Tribulus micrococcus</i>	yellow vine		C		1/1
plants	lower dicots	Ceratophyllaceae	<i>Ceratophyllum demersum</i>	hornwort		C		1/1
plants	lower dicots	Lauraceae	<i>Cassytha filiformis</i>	dodder laurel		C		1/1
plants	lower dicots	Papaveraceae	<i>Argemone ochroleuca subsp. ochroleuca</i>	mexican poppy	Y			2/2
plants	monocots	Asparagaceae	<i>Asparagus racemosus</i>	native asparagus		C		1/1
plants	monocots	Commelinaceae	<i>Murdannia graminea</i>	murdannia		C		2
plants	monocots	Cyperaceae	<i>Fimbristylis</i>			C		1
plants	monocots	Cyperaceae	<i>Cyperus difformis</i>	rice sedge		C		2/2
plants	monocots	Cyperaceae	<i>Bulbostylis barbata</i>			C		1
plants	monocots	Cyperaceae	<i>Cyperus alopecuroides</i>			C		1/1
plants	monocots	Cyperaceae	<i>Fimbristylis macrantha</i>			C		1
plants	monocots	Cyperaceae	<i>Fimbristylis dichotoma</i>	common fringe-rush		C		1
plants	monocots	Cyperaceae	<i>Cyperus involucratus</i>		Y			2/2
plants	monocots	Cyperaceae	<i>Cyperus rotundus</i>	nutgrass	Y			1/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	monocots	Poaceae	<i>Aristida queenslandica</i> var. <i>dissimilis</i>			C		1/1
plants	monocots	Poaceae	<i>Melinis repens</i>	red natal grass	Y			1/1
plants	monocots	Poaceae	<i>Chloris inflata</i>	purpletop chloris	Y			1/1
plants	monocots	Poaceae	<i>Eragrostis cilianensis</i>		Y			1/1
plants	monocots	Poaceae	<i>Enteropogon unispiceus</i>			C		1/1
plants	monocots	Poaceae	<i>Enneapogon polyphyllus</i>	leafy nineawn		C		2/2
plants	monocots	Poaceae	<i>Cleistochloa subjuncea</i>			C		1/1
plants	monocots	Poaceae	<i>Bothriochloa ewartiana</i>	desert bluegrass		C		3/2
plants	monocots	Poaceae	<i>Setaria australiensis</i>	scrub pigeon grass		C		1/1
plants	monocots	Poaceae	<i>Iseilema vaginiflorum</i>	red flinders grass		C		1/1
plants	monocots	Poaceae	<i>Heteropogon contortus</i>	black speargrass		C		1/1
plants	monocots	Poaceae	<i>Dichanthium aristatum</i>	angleton grass	Y			1/1
plants	monocots	Poaceae	<i>Dichanthium sericeum</i> subsp. <i>sericeum</i>			C		1/1
plants	monocots	Poaceae	<i>Urochloa panicoides</i> var. <i>panicoides</i>		Y			1/1
plants	monocots	Poaceae	<i>Aristida holathera</i> var. <i>holathera</i>			C		2/2
plants	monocots	Poaceae	<i>Megathyrsus maximus</i> var. <i>maximus</i>		Y			1/1
plants	monocots	Poaceae	<i>Aristida calycina</i> var. <i>calycina</i>			C		2/1
plants	monocots	Poaceae	<i>Cynodon dactylon</i> var. <i>dactylon</i>		Y			1/1
plants	monocots	Poaceae	<i>Sporobolus coromandelianus</i>		Y			1/1
plants	monocots	Poaceae	<i>Eriochloa pseudoacrotricha</i>			C		1/1
plants	monocots	Poaceae	<i>Sporobolus jacquemontii</i>		Y			1/1
plants	monocots	Poaceae	<i>Paspalidium caespitosum</i>	brigalow grass		C		1/1
plants	monocots	Poaceae	<i>Urochloa mosambicensis</i>	sabi grass	Y			2/2
plants	monocots	Poaceae	<i>Dichanthium annulatum</i>	sheda grass	Y			2/2
plants	monocots	Poaceae	<i>Aristida hygrometrica</i>			C		1/1
plants	monocots	Poaceae	<i>Alloteropsis cimicina</i>			C		2/2
plants	monocots	Poaceae	<i>Themeda quadrivalvis</i>	grader grass	Y			1/1
plants	monocots	Poaceae	<i>Digitaria milanjiana</i>		Y			1/1
plants	monocots	Poaceae	<i>Digitaria longiflora</i>			C		1/1
plants	monocots	Poaceae	<i>Bothriochloa pertusa</i>		Y			2/2
plants	monocots	Poaceae	<i>Themeda avenacea</i>			C		2/2
plants	monocots	Poaceae	<i>Digitaria orbata</i>			C		2/2
plants	monocots	Poaceae	<i>Aristida ingrata</i>			C		1/1
plants	monocots	Poaceae	<i>Urochloa mutica</i>		Y			2/2
plants	monocots	Poaceae	<i>Sorghum x almum</i>		Y			1/1
plants	monocots	Poaceae	<i>Setaria surgens</i>			C		2/2
plants	monocots	Poaceae	<i>Panicum effusum</i>			C		2/2
plants	monocots	Poaceae	<i>Eleusine indica</i>	crowsfoot grass	Y			1/1
plants	monocots	Poaceae	<i>Chloris virgata</i>	feathertop rhodes grass	Y			2/2
plants	monocots	Poaceae	<i>Tragus australianus</i>	small burr grass		C		1/1
plants	monocots	Poaceae	<i>Enteropogon ramosus</i>			C		1
plants	monocots	Poaceae	<i>Digitaria ammophila</i>	silky umbrella grass		C		2/2
plants	monocots	Poaceae	<i>Aristida gracilipes</i>			C		1/1
plants	monocots	Poaceae	<i>Pennisetum ciliare</i>		Y			2/1
plants	monocots	Poaceae	<i>Eragrostis sororia</i>			C		3/3
plants	monocots	Poaceae	<i>Echinochloa colona</i>	awnless barnyard grass	Y			1/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	monocots	Poaceae	<i>Chloris ventricosa</i>	tall chloris		C		1/1
plants	monocots	Poaceae	<i>Urochloa piligera</i>			C		1/1
plants	monocots	Poaceae	<i>Triodia bitextura</i>			C		1/1
plants	monocots	Poaceae	<i>Sporobolus creber</i>			C		1/1
plants	monocots	Poaceae	<i>Sorghum halepense</i>	Johnson grass	Y			1/1
plants	monocots	Poaceae	<i>Paspalidium rarum</i>			C		3/3
plants	monocots	Poaceae	<i>Panicum laevinode</i>	pepper grass		C		1/1
plants	monocots	Poaceae	<i>Astrebula lappacea</i>	curly mitchell grass		C		1/1
plants	monocots	Poaceae	<i>Aristida calycina</i>			C		1
plants	monocots	Poaceae	<i>Themeda triandra</i>	kangaroo grass		C		1/1
plants	monocots	Poaceae	<i>Sarga plumosum</i>			C		1
plants	monocots	Poaceae	<i>Chloris gayana</i>	rhodes grass	Y			1/1
plants	monocots	Poaceae	<i>Aristida</i>			C		1
plants	monocots	Poaceae	<i>Dichanthium</i>			C		1
plants	monocots	Poaceae	<i>Eriachne rara</i>			C		1/1
plants	monocots	Poaceae	<i>Perotis rara</i>	comet grass		C		1/1
plants	monocots	Potamogetonaceae	<i>Potamogeton tricarinatus</i>	floating pondweed		C		2/2

CODES

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

Q - Indicates the Queensland conservation status of each taxon under the *Nature Conservation Act 1992*. The codes are Presumed Extinct (PE), Endangered (E), Vulnerable (V), Rare (R), Common (C) or Not Protected ().

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

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

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

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



Protected Matters Search Tool

You are here: [Environment Home](#) > [EPBC Act](#) > [Search](#)

18 February 2010 16:17

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Information on the coverage of this report and qualifications on data supporting this report are contained in the [caveat](#) at the end of the report.

You may wish to print this report for reference before moving to other pages or websites.

The Australian Natural Resources Atlas at <http://www.environment.gov.au/atlas> may provide further environmental information relevant to your selected area. Information about the EPBC Act including significance guidelines, forms and application process details can be found at <http://www.environment.gov.au/epbc/assessmentsapprovals/index.html>

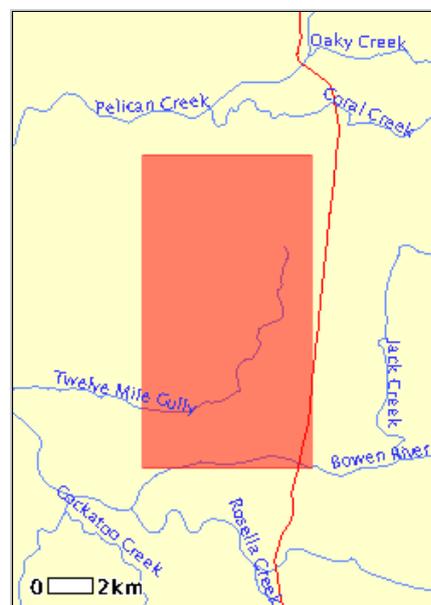
Search Type: Area
Buffer: 5 km
Coordinates: -20.62399,147.78332, -20.75676,147.78332, -20.75676,147.85431, -20.62399,147.85431



Report Contents: [Summary](#)
[Details](#)

- [Matters of NES](#)
- [Other matters protected by the EPBC Act](#)
- [Extra Information](#)

[Caveat](#)
[Acknowledgments](#)



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Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance - see <http://www.environment.gov.au/epbc/assessmentsapprovals/guidelines/index.html>.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Significance: (Ramsar Sites)	None
Commonwealth Marine Areas:	None
Threatened Ecological Communities:	2

Threatened Species:	11
Migratory Species:	16

Other Matters Protected by the EPBC Act

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

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

Please note that the current dataset on Commonwealth land is not complete. Further information on Commonwealth land would need to be obtained from relevant sources including Commonwealth agencies, local agencies, and land tenure maps.

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species. Information on EPBC Act permit requirements and application forms can be found at <http://www.environment.gov.au/epbc/permits/index.html>.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Places on the RNE:	None
Listed Marine Species:	15
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves:	None

Extra Information

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

State and Territory Reserves:	None
Other Commonwealth Reserves:	None
Regional Forest Agreements:	None

Details

Matters of National Environmental Significance

Threatened Ecological Communities [Dataset Information]	Status	Type of Presence
Brigalow (<i>Acacia harpophylla</i> dominant and co-dominant)	Endangered	Community known to occur within area
Natural Grasslands of the Queensland Central Highlands and the northern Fitzroy Basin	Endangered	Community likely to occur within area
Threatened Species [Dataset Information]	Status	Type of Presence
Birds		
Erythrotriorchis radiatus Red Goshawk	Vulnerable	Species or species habitat likely to occur within area
Geophaps scripta scripta	Vulnerable	Species or species habitat likely to occur

Squatter Pigeon (southern)		within area
Neochmia ruficauda ruficauda	Endangered	Species or species habitat likely to occur within area
Star Finch (eastern), Star Finch (southern)		
Poephila cincta cincta	Endangered	Species or species habitat likely to occur within area
Black-throated Finch (southern)		
Rostratula australis	Vulnerable	Species or species habitat may occur within area
Australian Painted Snipe		
Mammals		
Dasyurus hallucatus	Endangered	Species or species habitat may occur within area
Northern Quoll		
Pteropus conspicillatus	Vulnerable	Species or species habitat may occur within area
Spectacled Flying-fox		
Reptiles		
Egernia rugosa	Vulnerable	Species or species habitat likely to occur within area
Yakka Skink		
Plants		
Croton magneticus	Vulnerable	Species or species habitat likely to occur within area
Cycas ophiolitica	Endangered	Species or species habitat likely to occur within area
Eucalyptus raveretiana	Vulnerable	Species or species habitat likely to occur within area
Black Ironbox		
Migratory Species [Dataset Information]	Status	Type of Presence
Migratory Terrestrial Species		
Birds		
Haliaeetus leucogaster	Migratory	Species or species habitat likely to occur within area
White-bellied Sea-Eagle		
Hirundapus caudacutus	Migratory	Species or species habitat may occur within area
White-throated Needletail		
Hirundo rustica	Migratory	Species or species habitat may occur within area
Barn Swallow		
Merops ornatus	Migratory	Species or species habitat may occur within area
Rainbow Bee-eater		
Monarcha melanopsis	Migratory	Species or species habitat may occur within area
Black-faced Monarch		
Monarcha trivirgatus	Migratory	Breeding likely to occur within area
Spectacled Monarch		
Myiagra cyanoleuca	Migratory	Species or species habitat likely to occur within area
Satin Flycatcher		
Migratory Wetland Species		
Birds		
Ardea alba	Migratory	Species or species habitat may occur within area
Great Egret, White Egret		
Ardea ibis	Migratory	Species or species habitat may occur within area
Cattle Egret		
Gallinago hardwickii	Migratory	Species or species habitat may occur within area
Latham's Snipe, Japanese Snipe		
Nettapus coromandelianus albigennis	Migratory	Species or species habitat may occur within area
Australian Cotton Pygmy-goose		
Rostratula benghalensis s. lat.	Migratory	Species or species habitat may occur within area
Painted Snipe		
Migratory Marine Birds		
Apus pacificus	Migratory	Species or species habitat may occur within area
Fork-tailed Swift		

Ardea alba Great Egret, White Egret	Migratory	Species or species habitat may occur within area
Ardea ibis Cattle Egret	Migratory	Species or species habitat may occur within area

Migratory Marine Species**Reptiles**

Crocodylus porosus Estuarine Crocodile, Salt-water Crocodile	Migratory	Species or species habitat likely to occur within area
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Other Matters Protected by the EPBC ActListed Marine Species [[Dataset Information](#)]**Birds**

	Status	Type of Presence
Anseranas semipalmata Magpie Goose	Listed - overfly marine area	Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift	Listed - overfly marine area	Species or species habitat may occur within area
Ardea alba Great Egret, White Egret	Listed - overfly marine area	Species or species habitat may occur within area
Ardea ibis Cattle Egret	Listed - overfly marine area	Species or species habitat may occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe	Listed - overfly marine area	Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle	Listed	Species or species habitat likely to occur within area
Hirundapus caudacutus White-throated Needletail	Listed - overfly marine area	Species or species habitat may occur within area
Hirundo rustica Barn Swallow	Listed - overfly marine area	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater	Listed - overfly marine area	Species or species habitat may occur within area
Monarcha melanopsis Black-faced Monarch	Listed - overfly marine area	Species or species habitat may occur within area
Monarcha trivirgatus Spectacled Monarch	Listed - overfly marine area	Breeding likely to occur within area
Myiagra cyanoleuca Satin Flycatcher	Listed - overfly marine area	Species or species habitat likely to occur within area
Nettapus coromandelianus albipennis Australian Cotton Pygmy-goose	Listed - overfly marine	Species or species habitat may occur within area

Rostratula benghalensis s. lat. Painted Snipe	area Listed - overfly marine area	Species or species habitat may occur within area
Reptiles Crocodylus porosus Estuarine Crocodile, Salt-water Crocodile	Listed	Species or species habitat likely to occur within area

Caveat

The information presented in this report has been provided by a range of data sources as [acknowledged](#) at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the *Environment Protection and Biodiversity Conservation Act 1999*. It holds mapped locations of World Heritage and Register of National Estate properties, Wetlands of International Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

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

For species where the distributions are well known, maps are digitised from sources such as recovery plans and detailed habitat studies. Where appropriate, core breeding, foraging and roosting areas are indicated under "type of presence". For species whose distributions are less well known, point locations are collated from government wildlife authorities, museums, and non-government organisations; bioclimatic distribution models are generated and these validated by experts. In some cases, the distribution maps are based solely on expert knowledge.

Only selected species covered by the [migratory](#) and [marine](#) provisions of the Act have been mapped.

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as [extinct or considered as vagrants](#)
- some species and ecological communities that have only recently been listed
- [some terrestrial species](#) that overfly the Commonwealth marine area
- migratory species that are very [widespread, vagrant, or only occur in small numbers](#).

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

- non-threatened seabirds which have only been mapped for recorded breeding sites;
- seals which have only been mapped for breeding sites near the Australian continent.

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

Acknowledgments

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

- [New South Wales National Parks and Wildlife Service](#)

- [Department of Sustainability and Environment, Victoria](#)
- [Department of Primary Industries, Water and Environment, Tasmania](#)
- [Department of Environment and Heritage, South Australia Planning SA](#)
- [Parks and Wildlife Commission of the Northern Territory](#)
- [Environmental Protection Agency, Queensland](#)
- [Birds Australia](#)
- [Australian Bird and Bat Banding Scheme](#)
- [Australian National Wildlife Collection](#)
- Natural history museums of Australia
- [Queensland Herbarium](#)
- [National Herbarium of NSW](#)
- [Royal Botanic Gardens and National Herbarium of Victoria](#)
- [Tasmanian Herbarium](#)
- [State Herbarium of South Australia](#)
- [Northern Territory Herbarium](#)
- [Western Australian Herbarium](#)
- [Australian National Herbarium, Atherton and Canberra](#)
- [University of New England](#)
- Other groups and individuals

[ANUCLiM Version 1.8, Centre for Resource and Environmental Studies, Australian National University](#) was used extensively for the production of draft maps of species distribution. Environment Australia is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

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[Department of the Environment, Water, Heritage and the Arts](#)

GPO Box 787 Canberra ACT 2601 Australia
Telephone: +61 (0)2 6274 1111

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GHD

201 Charlotte Street Brisbane QLD 4000

GPO Box 668 Brisbane QLD 4001

T: (07) 3316 3000 F: (07) 3316 3333 E: bnemail@ghd.com.au

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2	M. Toner	J. Keane		J. Keane		24 02 10