

Referral of proposed action

Project title: Daunia Coal Mine Project

1 Summary of proposed action

1.1 Short description

The proponent associated with this EPBC Referral is BM Alliance Coal Operations Pty Ltd. This entity is manager and agent on behalf of the Central Queensland Coal Associates (CQCA) Joint Venture governed by an overarching strategic alliance between BHP Billiton and Mitsubishi Corporation known as BHP Billiton Mitsubishi Alliance (“BMA”). BMA proposes to develop an open cut coal mine producing up to 4 million tonnes per annum (Mtpa) at Daunia (“the Project”) on existing mining leases ML 1781, 70115, 70116, 70312 and 4749. The Project is an independent component of the BMA Bowen Basin Coal Growth Project which is a growth strategy to develop and grow BMA’s portfolio of coal assets in Queensland. BMA’s Bowen Basin Coal Growth Project includes mine developments at Daunia and Caval Ridge, an expansion at the Goonyella Riverside mine and the potential for development of a larger capacity airport in the vicinity of the mines. The Bowen Basin Coal Growth Project has been declared a “Significant Project” under the Queensland State Development and Public Works Organisation Act 1971 (SDPWO Act). Separate Environmental Impact Statements (EISs) and EPBC Referrals will be prepared, as necessary, for each component of the BMA Bowen Basin Coal Growth Project.

1.2 Latitude and longitude

location point	Latitude			Longitude		
	degrees	minutes	seconds	degrees	minutes	seconds
1	-22	2	2.39	148	15	32.39
2	-22	2	2.39	148	19	22.9
3	-22	7	55.2	148	15	35.99
4	-22	7	51.6	148	19	26.4

1.3 Locality

The Project is located approximately 40 km east south-east of Moranbah and approximately 170 km south-west of Mackay, Queensland (Figure 1).

1.4 Size of the development footprint or work area (hectares)

The Daunia (ML1781) and Daunia East (ML70115) mining leases cover an area of 2230 and 360 ha respectively. A total area of approximately 2000 ha will be disturbed over the life of the Project including the mine area and out of pit waste dump footprints. A further 10 ha will be disturbed on the Red Mountain Lease (ML70116) for mine infrastructure, including the Coal Handling Preparation Plant (CHPP). These areas are shown in Figure 2.

1.5 Street address of the site

The Project is south of the Peak Downs Highway and adjacent to the Peak Downs / Hay Point railway line. The Project is located immediately to the east of the existing Poitrel Mine.

1.6

Lot description

The Project will be located over a number of mining leases. Actual coal mining operations for the Project will be situated on ML 1781 (Daunia) held by CQCA and the adjoining ML 70115 to the east (Daunia East) also held by CQCA. The major coal processing infrastructure for the Project will be located ML 70116 (Red Mountain) which is jointly held by CQCA and BHP Mitsui Coal Pty Ltd. The conveyor for product coal, power line and certain haul portions of haul road will be located on ML 70312 which is jointly held by BHP Mitsui Coal Pty Ltd and Millennium Coal Pty Ltd. Car parking and some minor facilities will be located on ML 4749 (Poitrel) held by BHP Mitsui Coal Pty Ltd.

Figure 2 illustrates the tenures associated with the Project site and broader area.

Tables detailing the land tenures and ownership and activities for ML's 1781, 70115, 70116, 70312 and 4749 are shown below.

Table 1 Land Tenure Summary

Tenure	Lot No	Plan No	Land Type
ML 1781 Daunia	1	RP 866478	Freehold
	2	GV 83	State Land
	3	GV 90	GHFL 30/4083
	3	RP 866478	Freehold
	3	RP 894192	Freehold
	6	GV 318	SL 30/42980
	26	SP 130069	State Land
	Easement A	GV 99	State Land
	Easement B	GV 99	State Land
ML 70115 Daunia East	3	RP 894192	Freehold
ML 70116 Red Mountain	2	GV 165	GHPL 30/3951
	3	RP 894192	Freehold
	6	GV 318	SL 30/42980
	26	SP 130069	State Land
	40	SP 130132	State Land
	Easement A	GV 99	State Land
	Easement B	GV 100	State Land
ML 70312 Millennium East	4	SP190266 FH50635007	Freehold
ML 4749 Poitrel	2	GV165	GHPL 30/3951

Table 2 Mining Tenures Associated with the Project

	Name	Holder	Development Activities
1781	Daunia	BHP Coal Pty Ltd and Others (CQCA Joint Venture participants)	Mining and mining related infrastructure
70115	Daunia East	BHP Coal Pty Ltd and Others (CQCA Joint Venture participants)	Mining and Mining related infrastructure
70116	Red Mountain	BHP Coal Pty Ltd and Others (CQCA Joint Venture participants) – 50% and BHP Mitsui Coal Pty Ltd – 50%	CHPP, workshops, haul road, ROM and product coal stockpiles
70312	Millennium East	Millennium Coal Pty Ltd – 50% BHP Mitsui Coal Pty Ltd - 50%	Mining related infrastructure (product conveyor and train load out)
4749	Poitrel	BHP Mitsui Coal Pty Ltd	Mining related infrastructure

1.7 Local Government Area and Council contact (if known)

Isaac Regional Council. Following recent (15 March 2008) local amalgamations with Belyando Shire, Broadsound and Nebo Shire.

1.8 Timeframe

Construction is expected to commence in 2009, and will take approximately 18 months. The first coal is expected in 2010.

1.9	Alternatives	<input checked="" type="checkbox"/>	No
		<input type="checkbox"/>	Yes, you must also complete section 2.2
1.10	State assessment	<input type="checkbox"/>	No
		<input checked="" type="checkbox"/>	Yes, you must also complete Section 2.4
1.11	Component of larger action	<input checked="" type="checkbox"/>	No
		<input type="checkbox"/>	Yes, you must also complete Section 2.6
1.12	Related actions/proposals	<input checked="" type="checkbox"/>	No
		<input type="checkbox"/>	Yes, provide details:
1.13	Australian Government funding	<input checked="" type="checkbox"/>	No
		<input type="checkbox"/>	Yes, provide details:

2 Detailed description of proposed action

2.1 Description of proposed action

The Project involves the developing a new mining operation on the existing Daunia mining lease (ML1781) and Daunia East mining lease (ML70115), and a new Coal Handling Preparation Plant (CHPP) on the existing Red Mountain lease (ML70116). Additional mine infrastructure and vehicle parking areas are likely on the existing mining leases, Millennium East ML70312 and Poitrel ML4749.

Mining and processing will yield a mix of Semi Hard Coking Coal and Pulverised Coal Injection coal products for the export market.

The new mine will be an open cut coal mining operation and will use a conventional excavator and truck fleet. Mining activities will include the clearing of vegetation, waste rock removal to waste rock dumps, coal mining and progressive rehabilitation over the 21-year life of the mine. The footprint of the proposed mining and processing operations are shown in Figure 2. Construction is expected to commence in early 2009, with first coal mined in 2010. The proposed sequence of mining is shown in Figure 3 to Figure 5.

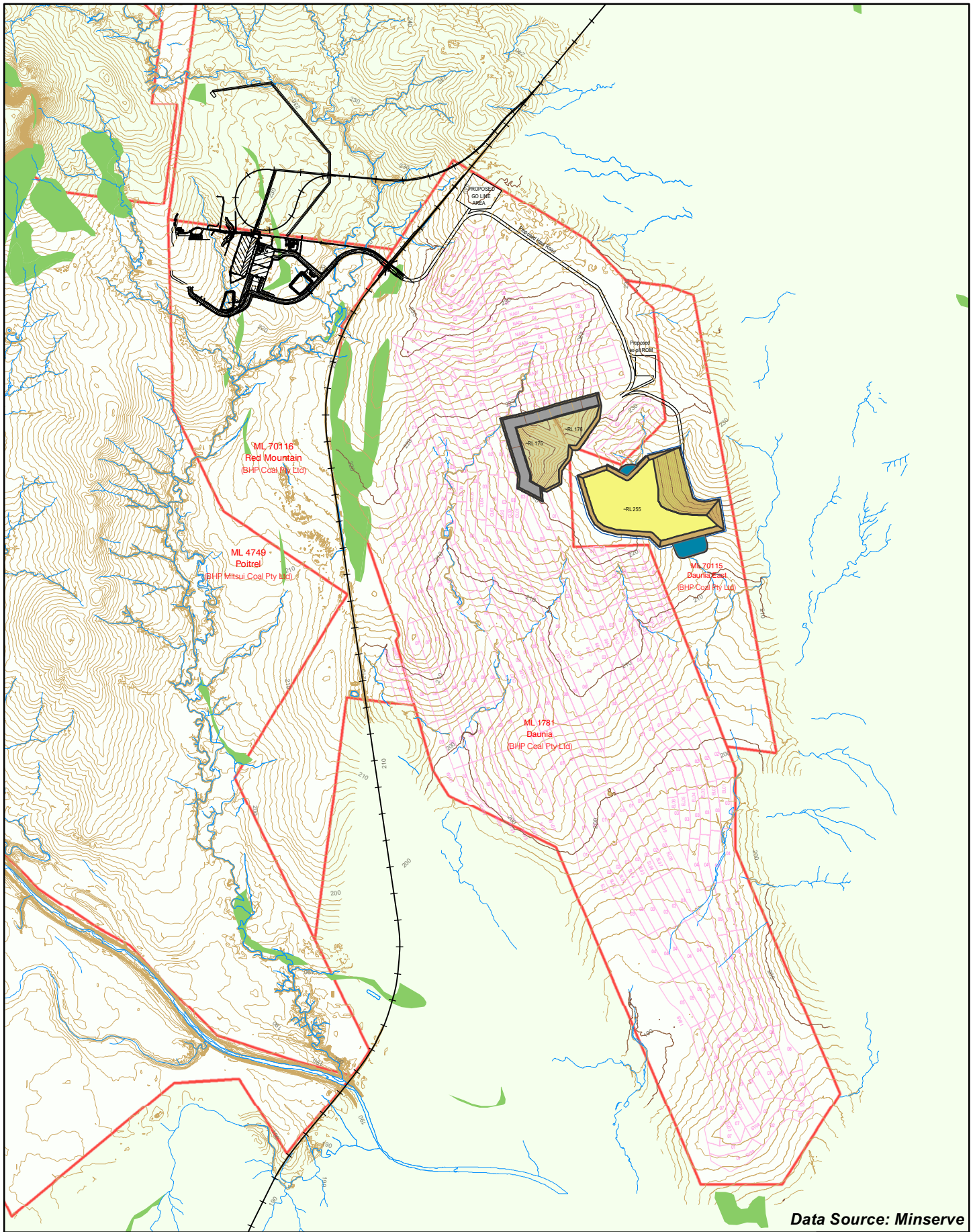
Mineral Resource

The Daunia deposit is located in the northern part of the Permo-Triassic Bowen Basin containing principally fluvial and some marine sediments. The Bowen Basin is part of a connected group of Permo-Triassic basins in eastern Australia, which includes the Sydney and Gunnedah Basins. The basins are oriented north-northwest to south-southeast, roughly parallel to the Paleozoic continental margin. Tectonically, the basin can be divided into north-northwest to south-southeast trending platforms or shelves separated by sedimentary troughs.

Structurally, the Daunia deposit lies near the western boundary of one of these sedimentary troughs, the Taroom Trough, which was filled by a thick accumulation of mainly terrestrial sediments during the Permo-Triassic. Daunia occurs within a shallow basinal structure immediately east of the New Chum Fault, which separates Daunia from the Poitrel deposit to the west.

The economic seams are contained in the Late Permian, Rangal Coal Measures, which are approximately 100 m thick. The Rangal Coal Measures are underlain by the Fort Cooper Coal Measures and overlain by the Late Permian to Early Triassic Rewan Group. The Daunia coal deposit is defined along its western and eastern margins by the seam LOX or fault defined limits of mining. The northern limit is defined by steeply dipping coal and the mining lease boundary. To the south, the deposit is confined by intrusions and the mining lease boundary.

The Daunia deposit contains two coal seams of economic interest, the Leichhardt Seam and Upper Vermont Seams of the Rangal Coal Measures. The coal seam nomenclature is illustrated in Figure 6. The Leichhardt Seam (DL1) is typically 5 m thick and has a lower split (DL0) about 0.5 m thick located approximately 1 m below DL1. The Upper Vermont Seam (DV4), located 10 m to 35 m below the Leichhardt Seam, is typically 3.5 m thick and splits to the north into upper and lower plies (DV2 and DV1 respectively) with up to 30 m of interburden. DV1 is high in ash, typically greater than 25%.



Data Source: Minserve

LEGEND

- Railway
- Drainage
- Topography Contours
- Revised Mining Blocks
- ERE Areas
- Pit Floor
- Spoil Dumps
- Mining Lease

FIGURE 3
EPBC Referral
PROPOSED MINING SEQUENCE
YEAR 1

Kilometres

Scale 1:50,000 on A4

Projections: Australian Map Grid - Zone 55 (AGD84)

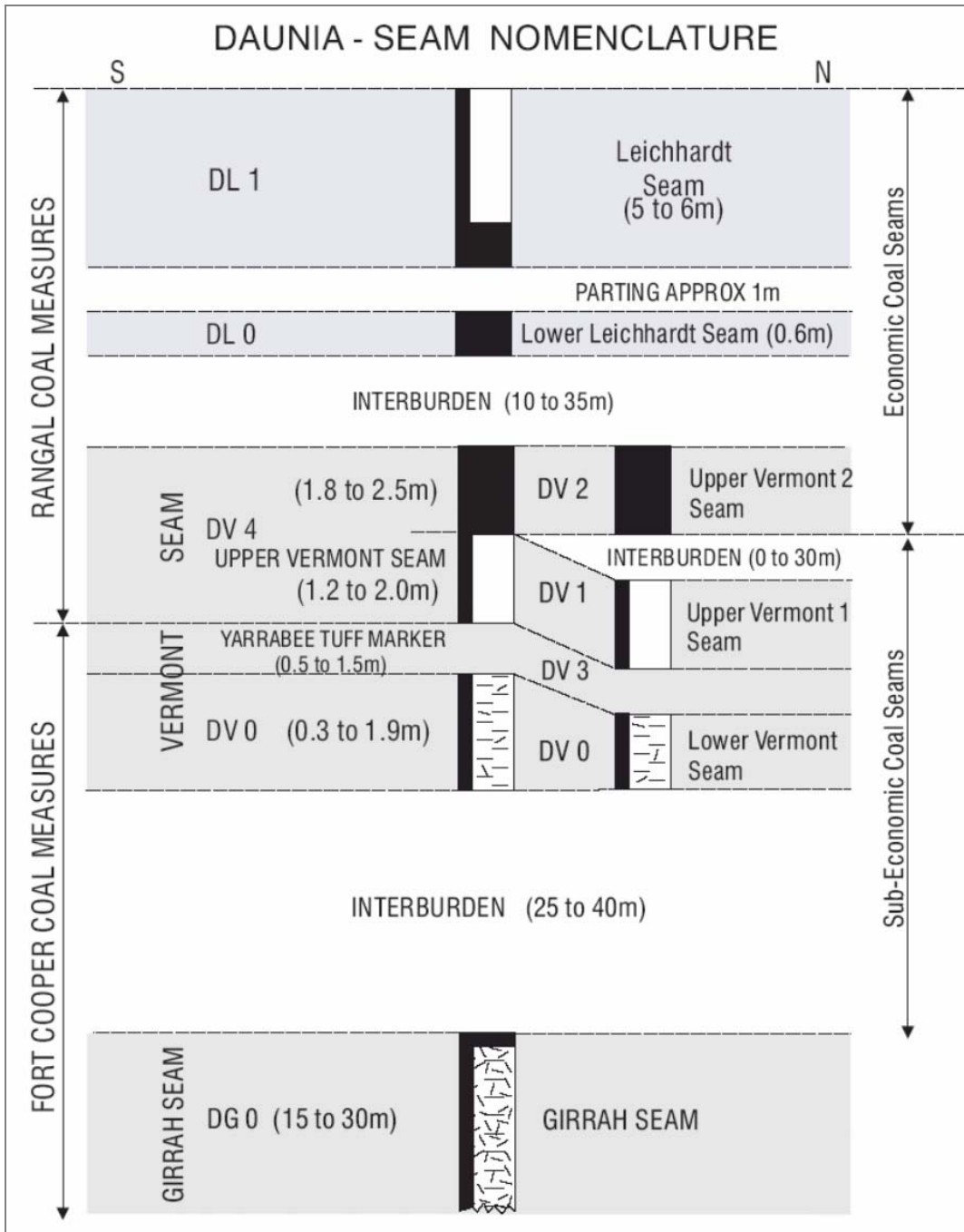


Figure 6 Daunia Coal Seam Nomenclature

Mining Operations

The proposed mining operation will use traditional open cut excavator and truck strip mining methods, with the emphasis on in-pit waste rock dumping. There is the potential to introduce a dragline later in the life of the Daunia Mine.

The mining sequence will generally entail:

- progressive clearing of vegetation occurring on areas required for the operation;
- stockpiling topsoil from disturbed areas for storage and use in future rehabilitation of the Project;
- blasting for fragmentation of waste rock;
- removal of waste rock, using a combination of dozers, excavators and trucks;

- production of approximately 4 Mtpa of coal, using a combination of dozers, excavators, loaders and trucks; and
- rehabilitation of the site by re-shaping the waste rock dumps, topsoiling and revegetation.

Further details on this sequence are provided below.

Clearing

Clearing will be completed progressively ahead of construction and mining, and will be subject to cultural heritage surveys and clearances. Typically, clearing will involve the use of small track dozers such as D7 or D8 dozers. Cleared timber may be salvaged for use on rehabilitated land.

Topsoil stripping

Following clearing, topsoil will be strategically stripped to depths in accordance with the site topsoil management plan. The topsoil stripping plan will be based upon the chemical and physical qualities of the soils on the site. Where possible, topsoil will be directly placed onto areas available for rehabilitation. Where this is not logistically an option, topsoil will be stockpiled strategically for future use in the rehabilitation of mined land.

Drill and Blast

Drilling and blasting of the consolidated overburden is completed after topsoil has been salvaged for future use in rehabilitation of mined land. Large overburden drills are used to drill the ground to be excavated, and explosives are then used to fragment and loosen the material, enabling easier excavation of material, and uncovering of the coal.

Overburden removal

The material covering the coal and referred to as spoil or overburden will be removed by excavator and trucks. Initially, the overburden or waste rock produced by mining will be placed in out of pit waste rock dumps, most likely located around the perimeter of the mining lease to contribute to bunding for environmental management.

When sufficient space is created within the mined-out areas, subsequent waste rock will be placed within in-pit waste rock dumps immediately following the progression of the mine.

Water management, including sediment capture will be constructed onsite to manage mine affected water and to provide a water source for mining and CHPP operations. The release of surplus water may be necessary from the site, in line with Environmental Authority conditions.

Coal mining

Following the removal of overburden, front end loaders, excavators, and rear dump trucks will be used to load and transport coal to the Run of Mine dump station (ROM) for processing in the CHPP. Any mine affected water collected in coal mining pits will be contained within the site water management system.

Rehabilitation of mined land

Spoil in back filled pits and out of pit spoil dumps will in most cases be constructed to final landform designs, however at times final batters may require reshaping. Drainage lines and controls may also be required. Rehabilitation of mined land will be completed in accordance with the site Mine Life Plan. The Mine Life Plan will stipulate criteria including final grades, drainage requirements, cover requirements including topsoil depths and vegetation to be planted or sown. These criteria will meet the overriding objectives of returning a stable, beneficial landform and preserving downstream water quality.

Mining will excavate to depths ranging from 20 m to 120 m. Daunia (ML1781) and Daunia East (ML70115) cover an area of 2230 and 360 ha respectively. A total area of approximately 2000 ha will be disturbed over the life of the mine including the mine area and out of pit waste dump footprints. These disturbed areas will be progressively rehabilitated. A further 10 ha will be disturbed on Red Mountain (ML70116) for mine infrastructure, including the CHPP.

Supporting Site Infrastructure

In addition to coal mining activities, the Daunia Mine will also include:

- a CHPP and associated loading facilities for Run-Of-Mine (ROM) coal;
- a water supply, using a combination of site water reuse and a raw water supply via a pipeline from the existing Braeside pipeline;
- an all weather access road from the Peak Downs Highway,
- power supply from the existing power network;
- a mine water management system, including clean water diversion, disturbed area runoff collection and treatment, pit water management, water reuse and water disposal if there is surplus water at any time;
- sewage and wastewater treatment by a package sewage treatment plant (STP);
- site offices, workshop and stores area, which would include diesel storage, portable/temporary power generator, and storage for tyres and other material; and
- additional trackwork to the Red Mountain rail loop with associated product coal loading facilities.

Coal Handling and Processing Activities

The CHPP will have a capacity of up to 1,000 tonnes per hour (t/hr) feed, and will be capable of processing up to 7 Mtpa of raw coal producing approximately 5 Mtpa of product coal, though the nominated production based on mining will be 3.5 to 4 Mtpa. The plant will operate seven days per week.

ROM coal will be transported to the CHPP by trucks via on-site haul roads. Handling and processing of ROM coal at the CHPP will most likely include:

- a truck dump hopper, crushing by feeder breaker and sizers and stockpiling prior to transfer to the CHPP;
- a modular wet coal processing design with a capacity of about 800-1000 t/hr of ROM Coal giving a total ROM capacity up to 7 Mtpa;
- stockpiles for ROM and product coal;
- reclaiming systems using dozer fed stockpile activators and conveyor, with coal transferred into the train loading bin; and
- fine and coarse rejects from the CHPP will be dewatered and disposed of to the waste dumps, with supernatant wastewater reused in the CHPP as makeup water.

The product coal will be railed approximately 160 km to the Hay Point and/or Dalrymple Bay coal terminals for shipment to the international market. Potential also exists for coal to be railed to Abbot Point coal terminal following construction of the northern missing link rail line.

Mine Waste Management

Initially, the waste rock produced by mining will be placed in box-cut waste rock dumps, most likely located immediately to the east of the mining area.

When sufficient space is created within the mined-out areas, subsequent waste rock will be placed within in-pit waste rock dumps.

Water management, including sediment dams to control runoff from disturbed areas, will be integrated with the mining operation and CHPP operation. The release of surplus water will only occur if there is no storage capacity available and there are no further opportunities to reuse the water on site at the time. Releases will only occur in accordance with the conditions of the environmental authority.

Workforce

The Project will employ about 250 people during construction and approximately 280 during the peak of operation. The construction and operational workforce is expected to be housed in the district, in the vicinity of Coppabella. It is anticipated that a small number of houses will be constructed in Moranbah. The EIS will include a Social Impact Assessment that examines the issue of housing in detail. It will also review options for workforce transportation to and from the site.

2.2 Alternative locations, time frames or activities that form part of the referred action

The Project has economic importance to the State of Queensland and will make best use of the coal resource, as part of an open-cut mining operation. The Project timeframe maximises the value of the resource by capitalising on the high value of coal in the market place.

2.3 Context, planning framework and state/local government requirements

BMA has sought and received a declaration under section 26(1) of the Act of the *Queensland State Development and Public Works Organisation Act 1971* (SDPWO Act) that the Project will be assessed as part of a "Significant Project". This will enable an Environmental Impact Statement (EIS) to be completed for the Project. The EIS will contain a comprehensive assessment of the existing environment and proposed mitigation measures. A comprehensive community engagement process will also be undertaken.

The Queensland Coordinator-General will be responsible for managing the Project's environmental impact assessment process.

An environmental authority under the *Environmental Protection Act 1994* will be issued to BMA once the EIS process is complete.

2.4 Environmental impact assessments under Commonwealth, state or territory legislation

The Project EIS will be completed pursuant to the Section 27 of the SDPWO Act, and as such will be required to undertake public consultation activities. An Initial Advice Statement (IAS) has been prepared, submitted to the Queensland Coordinator General and publicly advertised to commence the EIS process. The IAS identifies potential impacts that will be investigated as part of the EIS and associated Environmental Management Plan (EM Plan) under the SDPWO Act.

The Terms of Reference (TOR) for the EIS has been developed by the Coordinator General taking into account the potential environmental impacts identified in the IAS and the specific requirements of regulators and other stakeholders, as identified through the IAS public consultation process. The TOR is currently being advertised by the Queensland Coordinator General.

2.5 Consultation with Indigenous stakeholders

The Traditional Owners of the region are the Barada Barna Kabalbara & Yetimarla (BBKY) people. Investigations of the Aboriginal cultural heritage values will be undertaken in consultation with BBKY. A cultural heritage management plan will be prepared as required by Queensland legislation..

2.6 A staged development or component of a larger project

The Project will be assessed through the environmental impact assessment process under the SDPWO Act. The Project is independent of other components of the BMA Bowen Basin Coal Growth Project for coal in the region.

3 Description of environment & likely impacts

3.1 Matters of national environmental significance

3.1 (a) World Heritage Properties

Description

The Project is not located within or near any World Heritage properties.

Nature and extent of likely impact

It is therefore unlikely that the proposed project will have a significant impact on a World Heritage Property.

3.1 (b) National Heritage Places

Description

The MNES search indicates that the Project is not located within or near any National Heritage Places.

The Wilandspey Conservation Park (formely the Wilandspey Environmental Park, place identification number 8894) is located approximately 170 km west-northwest of Project site. The Park was registered on the Register of the National Estate on 21/10/1980.

The Peak Range Area (place identification number 8886) is located approximately 60 km south-west of the Project site. This Area was registered on the Register of National Estate in 21/10/1980.

Nature and extent of likely impact

The register of National Estate identified the Wilandspey Conservation Park (approximately 170 km west-northwest of the Project site) and the Peak Range Areas (approximately 60 km south-west of the Project site). Due to the nature of the Project and the distance to Wilandspey Conservation Park and the Peak Range Areas, it is unlikely that the Project will have a significant impact on these areas.

3.1 (c) Wetlands of International Importance (declared Ramsar wetlands)

Description

The nearest Ramsar wetland is approximately 80 north of Rockhampton (Shoalwater and Corio Bays) and approximately 200 km away from the Daunia mine.

Nature and extent of likely impact

Due to the nature of the proposed project and the distance to Shoalwater and Corio Bays, it is unlikely that the proposed project will have a significant impact on Ramsar wetlands.

3.1 (d) Listed threatened species and ecological communities

Description

The MNES database search described a total of 9 threatened species as potentially occurring within the Project search area, including 9 bird species, 2 mammal species and 3 reptile species.

Also potentially occurring are two threatened vegetation communities with endangered conservation significance under Commonwealth legislation. These communities include:

- Bluegrass (*Dichanthium* spp.) dominant grasslands of the Brigalow Belt Bioregion;
- Brigalow (*Acacia harpophylla*) dominant and co-dominant.

Nature and extent of likely impact

There is one Threatened Ecological Community known from the Project site (Brigalow Endangered Ecological Community (EEC)) and one Threatened Species (Southern Squatter Pigeon).

Impacts on the Brigalow Ecological Community

The Project will result in the clearing or isolation of 6 ha of Brigalow (Regional Ecosystem 11.4.9) and a further 14 ha of mixed regional ecosystems that contains Brigalow (Regional Ecosystems 11.3.2 / 11.3.1 / 11.3.25). These areas are described below.

- A monospecific 5 ha stand of Brigalow (Regional Ecosystem 11.4.9) occurs along the north-western boundary of the Daunia lease (ML1781). This area is in poor condition, with evidence of dieback and a high level of invasion by Buffel Grass. Native species have virtually been eliminated from the mid and lower strata of this remnant. Due to engineering constraints, a small patch of this Brigalow community (less than 2 ha) will be cleared for the Haul Road (see Figure 4). This patch is of poor quality and will not impact on the quality or connectivity of the remaining community.
- A 4 ha patch of Brigalow (Regional Ecosystem 11.4.9) extends through the mine infrastructure area on the Red Mountain lease (ML70116). Less than half of this 4 ha will be directly cleared to construct the CHPP. The remaining part of this 4 ha will become isolated in an area surrounded by infrastructure next to the process water dam.
- The Brigalow Ecological Community also occurs within a 14 ha area of mixed regional ecosystem polygon containing Poplar Box, Red Gum and Dawson Gum woodlands on the Red Mountain lease (ML70116). Within this area, the Brigalow EEC is sparsely distributed as discrete clumps of vegetation associated with depressions. Infrastructure including the rail link and the CHPP is planned through this area.

The potential for impacts on the Brigalow EEC associated with groundwater drawdown has been investigated given the proximity of the proposed pit to the edge of the remnant vegetation. There are key mitigating factors which suggest that the Brigalow EEC is unlikely to be significantly adversely impacted by alterations to groundwater hydrology, namely:

- Groundwater systems in the Brigalow Belt are generally too far below the surface for even tree roots to access (Isbell 1962), the ecosystem type is therefore unlikely to depend on groundwater;
- Brigalow vegetation has a recognised tendency to develop an extensive horizontal root system (West *et al* 1999), which is typical of trees in environments where there is no access to a groundwater table. Johnson (1964) observed lateral roots to occur in the upper 90 cm of the soil profile, being particularly well developed in the top 30 cm. Tunstall and Connor (1981) studied hydrological interactions in a mature Brigalow community and found that most of the soil water interactions occurred in the top 1 m section of the soil;
- The depth to the groundwater table across the Project site is typically between 20-25 m below natural surface level (SKM 2005), well outside the effective root depth of Brigalow, which is typically less than 1 m. As such, limited interaction between the Brigalow EEC and groundwater is anticipated.

Impacts on the Southern Squatter Pigeon

The Southern Squatter Pigeon has not been observed within the Daunia Mining Lease Area, but has been recorded widely in the vicinity of the Project site. Earlier surveys across the study area found the species to be strongly associated with remnant vegetation close to the Isaac River. This association is likely to be driven by two factors, the presence of permanent water and the occurrence of native grass species in the lower vegetation strata. All vegetation within the Daunia Project site has been completely penetrated by Buffel grass, which provides limited (if any) forage value for the Squatter Pigeon. The majority of

the Project site is therefore unsuitable for this species.

Opportunities may exist for the Project to potentially enhance the viability of local populations of this species via decreasing the dominance of Buffel over the site. Such opportunities will be investigated during the EIS process.

3.1 (e) Listed migratory species

Description

A total of 14 migratory species are listed as potential occurrences in the study area.

Nature and extent of likely impact

Fauna surveys have recorded a total of 6 species listed as Migratory under the EPBC Act. The species found include the Black-faced Monarch (*Monarcha melanopsis*), Satin Flycatcher (*Myiagra cyanoleuca*), Rufous Fantail (*Rhipidura rufifrons*), Rainbow Bee-eater (*Merops ornatus*), Great Egret (*Egretta alba*) and the Cattle Egret (*Ardea ibis*). There is no evidence to suggest that the study area supports an 'ecologically significant' proportion of a population of these migratory species. Given their migratory habits, the ephemeral nature of important food and habitat resources and the extent of similar and comparable habitat throughout the range of these species, it is likely that the habitats on the Project site would be utilised infrequently and on a transitory basis only.

3.1 (f) Commonwealth marine area

Description

Not applicable.

Nature and extent of likely impact

Not applicable.

3.1 (g) Commonwealth land

Description

The Project is not located on or near Commonwealth land.

Nature and extent of likely impact

The proposed project will not impact on Commonwealth owned land.

3.2 Nuclear actions, actions taken by the Commonwealth (or Commonwealth agency), actions taken in a Commonwealth marine area, or actions taken on Commonwealth land

3.2 (a)	Is the proposed action a nuclear action?	X	No
			Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment

3.2 (b)	Is the proposed action to be taken by the Commonwealth or a Commonwealth agency?	X	No
			Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment

3.2 (c)	Is the proposed action to be taken in a Commonwealth marine area?	X	No
			Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(f))

3.2 (d)	Is the proposed action to be taken on Commonwealth land?	X	No
			Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(g))

3.3 Other important features of the environment

3.3 (a) Soil and vegetation characteristics

Current Regional Ecosystem Mapping indicates the presence of three land zones in the Project site, Land Zone 3, Land Zone 4 and Land Zone 9.

Land Zone 3:

- Comprises Quaternary alluvial systems, including floodplains, alluvial plains, alluvial fans, terraces, levees, swamps, channels, closed depressions and fine textured palaeo-estuarine deposits.
- Includes estuarine plains currently under fresh water influence, inland lakes and associated dune systems (lunettes).
- Excludes talus slopes, colluvial deposits and pediments.
- Characterised by a diverse range of soils, predominantly Vertosols and Sodosols, also with Hydrosols in higher rainfall areas.

Land Zone 4:

- Comprises Cainozoic clay deposits, usually forming level to gently undulating plains above current alluvial systems.
- Excludes clay plains and downs formed in-situ on bedrock.
- Soils are mainly Vertosols with gilgai microrelief, but includes small areas of thin sandy or loamy surfaced Sodosols and Chromosols.

Land Zone 9:

- Comprises Fine-grained sedimentary rocks, generally with little or no deformation, forming undulating landscapes with a broad range of fine textured soils of moderate to high fertility.
- Siltstones, mudstones, shales, calcareous sediments, and lithic and labile sandstones are typical rock types although minor interbedded volcanics may occur.
- Excludes areas of duricrust (land zone 7).
- Includes a diverse range of soils of moderate to high fertility, predominantly Vertosols, Sodosols, and Chromosols.

Eight remnant regional ecosystems are mapped within the Daunia Project site, as summarised in **Table 3**.

Table 3 Remnant Regional Ecosystems

Vegetation Community	Regional Ecosystem Equivalents	Status ¹
1	RE 11.3.3 – <i>Eucalyptus coolabah</i> woodland on alluvial plains	Of Concern
2	RE 11.4.9 – <i>Acacia harpophylla</i> shrubby open forest to woodland with <i>Terminalia oblongata</i> on Cainozoic clay plains	Endangered
3	RE 11.9.2 – <i>Eucalyptus melanophloia</i> ± <i>E. orgadophila</i> woodland on fine-grained sedimentary rocks	Not of Concern
4	RE 11.9.5 - <i>Acacia harpophylla</i> and/or <i>Casuarina cristata</i> open forest on fine-grained sedimentary rocks	Endangered
5	RE 11.3.1 – <i>Acacia harpophylla</i> and/or <i>Casuarina cristata</i> open forest on alluvial plains	Endangered
6	RE 11.3.2 – <i>Eucalyptus populnea</i> woodland on alluvial plains	Of Concern
7	RE 11.3.25 – <i>Eucalyptus tereticornis</i> or <i>E. camaldulensis</i> woodland fringing drainage lines	Not of Concern
8	RE 11.5.3 - <i>Eucalyptus populnea</i> and/or <i>E. melanophloia</i> and/or <i>Corymbia clarksoniana</i> on Cainozoic sand plains/remnant surface	Not of Concern

¹ Status under the Queensland *Vegetation Management Act 1999*

No flora species of conservation significance at State or Federal levels have been recorded for the Project site.

3.3 (b) Water flows, including rivers, creeks and impoundments

All watercourses in the vicinity of the Project are ephemeral. The Project site drains into the Isaac River, which flows in a south easterly direction. The catchment possesses a long history of agricultural use in the form of grazing and as a result, is a highly disturbed creek system.

3.3 (c) Outstanding natural features, including caves

The Project site is representative of the broader region which is generally highly modified for grazing and agriculture. No outstanding natural features exist within the study area or likely to be impacted by the proposed action.

3.3 (d) Gradient

The mining lease is of generally low relief and is dominated by gently sloping topography comprising of grazing lands. Average slope on the site is 1.5%, towards the creeks and generally toward the south along the ridgeline. Average elevation is 230 m Australian Height Datum (AHD).

3.3 (e) Buildings or other infrastructure

There are several existing buildings and infrastructure within the impact areas are the Poitrel Administration area in the north east of ML 70116 (Red Mountain). In addition to this, there is a railway line, several homesteads and associated fencing in the area surrounding the impact area. The Millennium and Poitrel mines also adjoin the Project site.

3.3 (f) Marine areas

No marine areas are located within the vicinity of the Project.

3.3 (g) Kinds of fauna & flora

Three surveys have occurred over the broader study area. This broader study area includes land outside the Project site, extending across the Poitrel mine and further west. A total of 183 native fauna species have been recorded from this broader study area, determined by the results of field surveys in 1996 (Housten *et al* 1996), 2004 and 2008). The spring surveys in 2004 revealed an additional 11 mammal species, 1 reptile, and 13 bird species not recorded during surveys in 1996 (Housten *et al* 1999). The 2008 surveys recorded a further 3 mammals, 3 reptiles and 14 bird species not recorded in either 1996 or 2004 surveys.

A total of seven introduced fauna species have been recorded from the three surveys in the study area, including one amphibian and six mammals. These include cane toad; European rabbit; cattle; house mouse; feral cat; fox; and feral pig.

Fauna species of conservation significance recorded from the Project site include 2 bird species, 1 reptile and 1 mammal.

Table 4 Fauna of conservation significance recorded from the Broader Study Area

Species	Conservation Status		Survey Period		
	National ¹	State ²	1996	2004	2008
Squatter Pigeon (<i>Geophaps scripta</i>)	Vulnerable	Vulnerable	√	√	√
Collet's Snake (<i>Pseudechis colletti</i>)	Not listed	Rare	√		
Little Pied Bat (<i>Chalinolobus picatus</i>)	Not listed	Rare		√	
Black-chinned Honeyeater (<i>Melithreptis gularis</i>)	Not listed	Rare		√	

1. Commonwealth Environment Protection and Biodiversity Conservation Act, 1999

2. Queensland Nature Conservation Wildlife Regulation, 1994

3.3 (h) Current state of the environment in the area

The Project site has largely been cleared of remnant vegetation and improved for grazing uses. The site is heavily infested with an exotic perennial grass species, Buffel Grass (*Cenchrus ciliaris*).

Other commonly occurring weed species on the Project site include Parthenium Weed (*Parthenium hysterophorus*), Harrisia cactus (*Eriocereus martini*), Prickly pear (*Opuntia stricta*) and Spear thistle (*Cirsium vulgare*).

Feral animals are also present on the Project site including the Feral cat (*Felis catus*) and European red fox (*Vulpes vulpes*).

3.3 (i) Other important or unique values of the environment

There are no additional important or unique values of the environment in the proximity of the Project site.

3.3 (j) Tenure of the action area (eg freehold, leasehold)

Primarily Freehold with some State Land (see Section 1.6).

3.3 (k) Existing land/marine uses of area

The current land use of the Project site is low intensity cattle and horse grazing, and coal exploration.

3.3 (l) Any proposed land/marine uses of area

During the term of the Project life, the land will be used for mining, coal processing, transport of coal product and associated infrastructure.

During the life of the mine and on completion of mining operations, the Project site will be rehabilitated in accordance with the Mine Life Plan. The Mine Life Plan will stipulate criteria including final grades, drainage requirements, cover requirements including topsoil depths and vegetation to be planted or sown. These criteria will meet the overriding objectives of returning a stable, beneficial landform and preserving downstream water quality.

4 Measures to avoid or reduce impacts

The following measures to reduce the environmental impacts of the project are currently under consideration and are relevant to the reduction of impacts on Matters of National Environmental Significance (MNES). However, as the project is still in preliminary planning stages, commitments will need to be refined based on results of ongoing environmental studies and development of detailed Project plans.

- Avoidance of remnant vegetation wherever practical, particularly the endangered Brigalow ecological community.
- Implementation of a range of environmental management measures through the project EM Plan, which will be attached to the Environmental Authority for the Project.
- Progressive removal of the invasive perennial grass species (namely Buffel grass) from remnant vegetation, thereby increasing long term viability of that remnant and improving habitat quality for the Squatter Pigeon.
- Rehabilitation of mined land to agreed criteria – stable, beneficial landforms and preservation of downstream water quality.
- Reducing populations of the exotic fauna species present in the Project site, namely the fox, dog and cat.
- Reducing populations of declared plants, namely Harissia Cactus and Pathenium.

The Project EIS will include developing an Environmental Management Plan (EM Plan). The EM Plan will contain mitigation strategies and proposed Environmental Authority conditions based on the findings of the EIS.

5 Conclusion on the likelihood of significant impacts

5.1 Do you THINK your proposed action is a controlled action?

- | | |
|-------------------------------------|---------------------------|
| <input type="checkbox"/> | No, complete section 5.2 |
| <input checked="" type="checkbox"/> | Yes, complete section 5.3 |

5.2 Proposed action IS NOT a controlled action.

5.3 Proposed action IS a controlled action

Matters likely to be impacted

- | | |
|-------------------------------------|--|
| <input type="checkbox"/> | sections 12 and 15A (World Heritage) |
| <input type="checkbox"/> | sections 15B and 15C (National Heritage places) |
| <input type="checkbox"/> | sections 16 and 17B (Wetlands of international importance) |
| <input checked="" type="checkbox"/> | sections 18 and 18A (Listed threatened species and communities) |
| <input type="checkbox"/> | sections 20 and 20A (Listed migratory species) |
| <input type="checkbox"/> | sections 21 and 22A (Protection of the environment from nuclear actions) |
| <input type="checkbox"/> | sections 23 and 24A (Marine environment) |
| <input type="checkbox"/> | sections 26 and 27A (Protection of the environment from actions involving Commonwealth land) |
| <input type="checkbox"/> | section 28 (Protection of the environment from Commonwealth actions) |
| <input type="checkbox"/> | Sections 27B and 27C (Commonwealth Heritage places outside the Australian Jurisdiction) |

The Project site is known to support one threatened ecological community and one threatened species (Brigalow EEC and Southern Squatter Pigeon respectively). The Mine Plan has been developed with due consideration to the conservation of these features. Opportunities exist to enhance these features in the long term through the gradual removal of Buffel grass and control of exotic fauna species, lowering the level of threat to these matters of national environmental significance in the long term.

The proposed mitigation and rehabilitation strategies, to be outlined in the Project EIS, will aim to minimise long term impacts of the Project and return stable beneficial landforms suitable for future use and in line with surrounding land uses.

An assessment of the Project's impacts on MNES is presented in the table below.

Matter of National Environmental Significance	Impact of Project
World Heritage Properties	There are no World Heritage Properties within the Project site.
National Heritage Places	There are no National heritage places within the Project site.
Wetlands of International Importance (Ramsar wetlands)	There are no listed Ramsar wetlands located within close proximity to the Project site. The Project is located within the Shoalwater and Corio Bays area which is in the same catchment as a RAMSAR wetland. This Project will not have a significant impact on the RAMSAR wetland.
Threatened Ecological Communities	One listed Threatened Ecological Community is found within the Project site – Brigalow (<i>Acacia harpophylla</i>) dominated and co-dominated community. Whilst up to 14ha of Brigalow communities will be cleared, this Project is unlikely to have a significant impact on this community.
Listed Threatened Species	No Commonwealth-listed threatened flora species have been identified in the Project site. One Commonwealth-listed threatened fauna species (Squatter Pigeon (<i>Geophaps scripta</i>)) has been identified within the vicinity of the Project site. The Project is unlikely to have a significant impact on listed threatened species.
Migratory Species	Several listed migratory species have been identified on the Project Site including (but not restricted to) the Great Egret (<i>Ardea alba</i>), Cattle Egret (<i>Ardea ibis</i>), Whistling Kite (<i>Haliastur sphenurus</i>) and the Straw-necked Ibis (<i>Threskiornis spinicollis</i>). These species are relatively common and widespread across the regional landscape, and the Project is not considered to have a significant impact on these species, their habitat or breeding/feeding resources.
Commonwealth Marine Areas	There are no Commonwealth marine areas located in the vicinity of the Project site.
Commonwealth Lands and Heritage Places	There are no Commonwealth lands or heritage places located within the Project site.
Places on the Register of the National Estate (RNE)	There are no places listed on the RNE located within the Project site.
State and Territory Reserves	There are no State or Territory Reserves within the Project site.
Nuclear Action	The Project does not involve any nuclear actions.

Based on the above assessment, the proposed project is unlikely to have a significant impact on matters of national environmental significance. Furthermore the EIS process will ensure that environmental issues are fully assessed and conditioned through the Environmental Authority process. However, consistent with a conservative approach to the environment, the Project is referred as a controlled action to ensure that issues arising are appropriately assessed.

6 Environmental history of the responsible party

	Yes	No
<p>6.1 Does the party taking the action have a satisfactory record of responsible environmental management?</p> <p>Provide details BMA produces an annual Sustainable Development Report which outlines our health, safety, environmental management and community activities for the previous financial year. Our first report was released in 2003/4, our the third year of operations as BMA, and provides the beginnings of a meaningful data set on key sustainability factors. We also continue to contribute to BHP Billiton's consolidated annual Sustainability Report. A copy of the 2007 Sustainable Development report is provided as Attachment 1.</p>	X	
<p>6.2 Has the party taking the action ever been subject to any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources?</p> <p>If yes, provide details</p>		X
<p>6.3 If the party taking the action is a corporation, will the action be taken in accordance with the corporation's environmental policy and planning framework?</p> <p>If yes, provide details of environmental policy and planning framework</p> <p>BMA is dedicated to the principles of sustainable development, which includes the wellbeing of our people and communities, and a fundamental respect for the environment. BMA is committed to developing, implementing and maintaining management systems for health, safety, environment and the community that are consistent with best practice.</p> <p>This is embodied in BMA's Charter which states that BMA has 'an overriding commitment to health, safety, environmental responsibility and sustainable development. The BHP Billiton Sustainable Development Policy develops this commitment further by setting out our approach to managing health, safety, the environment and the community.</p> <p>The commitment is given practical effect by BHP Billiton's Health, Safety, Environment and Community (HSEC) Management Standards, and the systems, procedures and operational protocols through which these standards are applied at a site level. Through them, we seek to achieve across all our sites, the company's goal of 'zero harm to people and the environment.'</p> <p>Copies of the BMA's Charter, the BHP Billiton Sustainable Development Policy and BHP Billiton's HSEC Management Standards are provided in Appendix 2 to Appendix 4.</p>	X	
<p>6.4 Has the person proposing to take the action previously referred an action under the EPBC Act?</p> <p>Provide name of proposal and EPBC reference number (if known)</p> <p>2004/1733 - Expansion of the Hay Point Coal Terminal 2004/1447 - Norwich Park Coal Mine - Development of East Pit 2005/2211 - Hay Point Services Coal Terminal Offshore Expansion 2005/2248 - Goonyella Riverside Coal Mine Expansion</p>	X	

7 Information sources and attachments

(For the information provided above)

7.1 References

Butler, D.W. & Fairfax, R.J. (2003). Buffel grass and fire in a Gidgee and Brigalow woodland; a case study from central Queensland. *Ecol. Manage. Restor.* 4: 120-125.

Isbell, R.F. (1962). *Soils and Vegetation of the Brigalow Lands, Eastern Australia*. Melbourne, CSIRO.

Johnson, R.W. (1964). *Ecology and Control of Brigalow in Queensland*. Brisbane, Qld Department of Primary Industries.

Sinclair Knight Merz (2005). *Poitrel Coal Mine Project. Environmental Impact Statement*.

West, B.G., Cook, J.D.M and House, A.P.N. (1999). *Ecological survey of brigalow (Acacia harpophylla) remnants in the Condamine floodplain area*. Gympie, Queensland, Queensland Forestry Research Institute.

7.2 Reliability and date of information

Information used in the preparation of this referral has a high level of reliability and includes referred scientific journal publications, technical reports prepared by qualified consulting ecologists, environmental scientists and planners. Much of the information has been published in the past 10 years and should be considered both current and relevant. The reliability of the information was tested by thorough examination and cross-referencing. There are few uncertainties in the information.

7.3 Attachments

	✓ attached	Title of attachment(s)
You must attach	✓	Figure 1 – Locality Plan; Figure 2 – Layout Plan; Figure 3 – Life of Mine Year 1; Figure 4 – Life of Mine Year 10 Figure 5 – Final Land Form Figure 6 – Daunia Coal Seam Nomenclature
	✓	Figure 7 – Impact on Regional Ecosystem
If relevant, attach		

<p>technical reports relevant to the assessment of impacts on protected matters and that support the arguments and conclusions in the referral (section 3 and 4)</p>		
<p>report(s) on any public consultations undertaken, including with Indigenous stakeholders (section 3)</p>		

