



# Referral of proposed action

**Project title:** Caval Ridge 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 a new open cut coal mine producing up to 5.5 million tonnes per annum (Mtpa) at Caval Ridge (“the Project”) on the northern part of existing mining lease ML 1775 (Peak Downs) and directly to the west on a proposed mining lease application. An additional 2.5 Mtpa of coal produced from the existing Peak Downs Mine will also be processed through the Caval Ridge Coal Handling and Preparation Plant (CHPP).

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 Caval Ridge and Daunia, an expansion at the Goonyella Riverside mine and the potential for development of a larger capacity airport in the vicinity of the mines. The BMA 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.

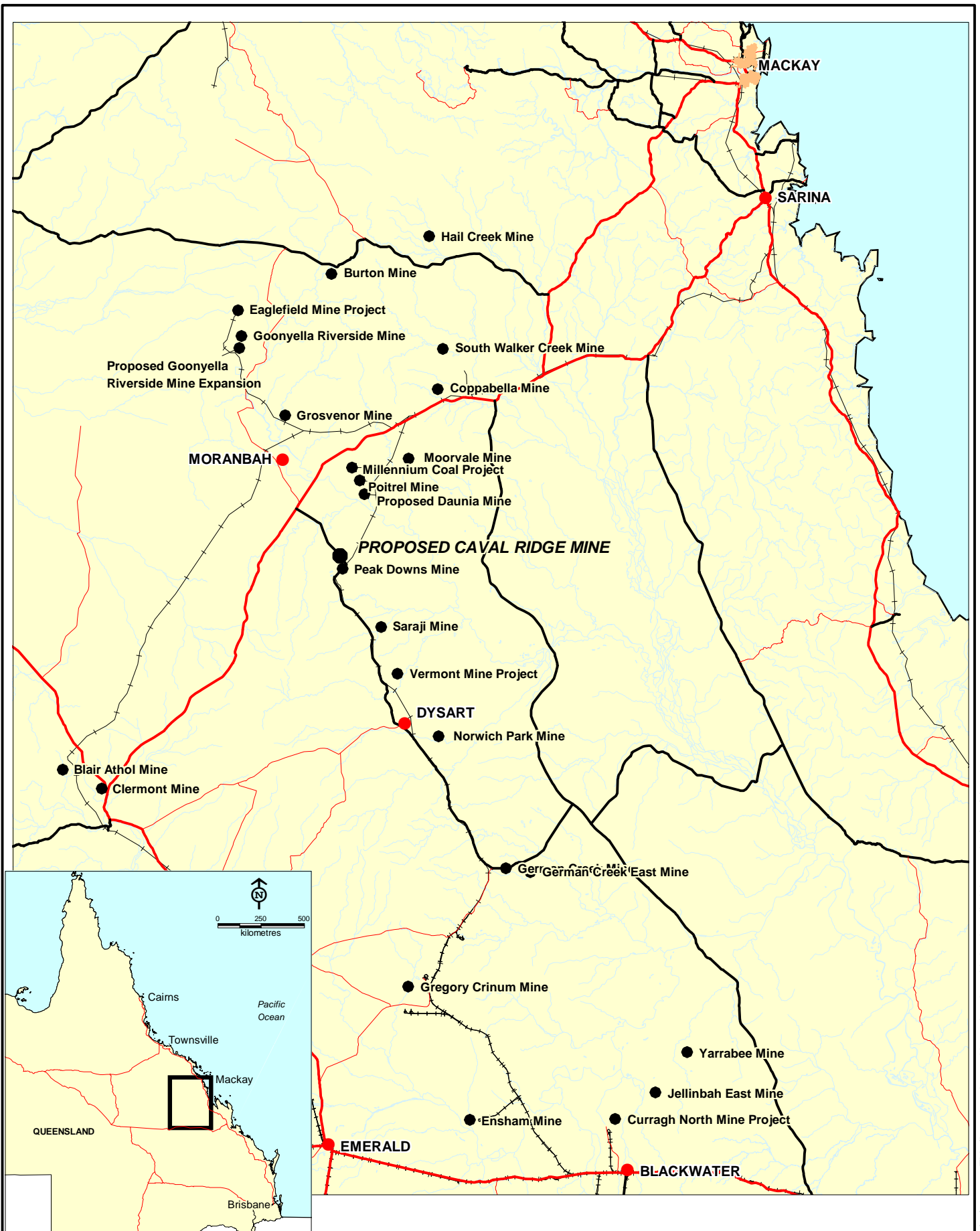
1.2	Latitude and longitude	Latitude			Longitude		
		location point	degrees	minutes	seconds	degrees	minutes
	1	-22	03	0.98	147	58	57.59
	2	-22	03	0.98	148	09	46.43
	3	-22	13	27.78	148	09	46.43
	4	-22	13	27.78	147	58	57.59

### 1.3 Locality

The northern most point of the Project is located approximately 6.2 km south of Moranbah and approximately 160 km south – west of Mackay, Queensland (**Figure 1**).

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

The Project (ML 1775 and proposed mining lease applications) covers an area of approximately 5183ha and 1316ha, respectively or a total Project site of approximately 6488ha. A total area of approximately 3400 ha will be disturbed over the life of the Project including the mine area out of pit waste dump footprints and associated infrastructure. These areas are shown in **Figure 2**.



**LEGEND**

- Mines
- +--- Railway
- Drainage
- Highway
- Major Road
- Minor Road

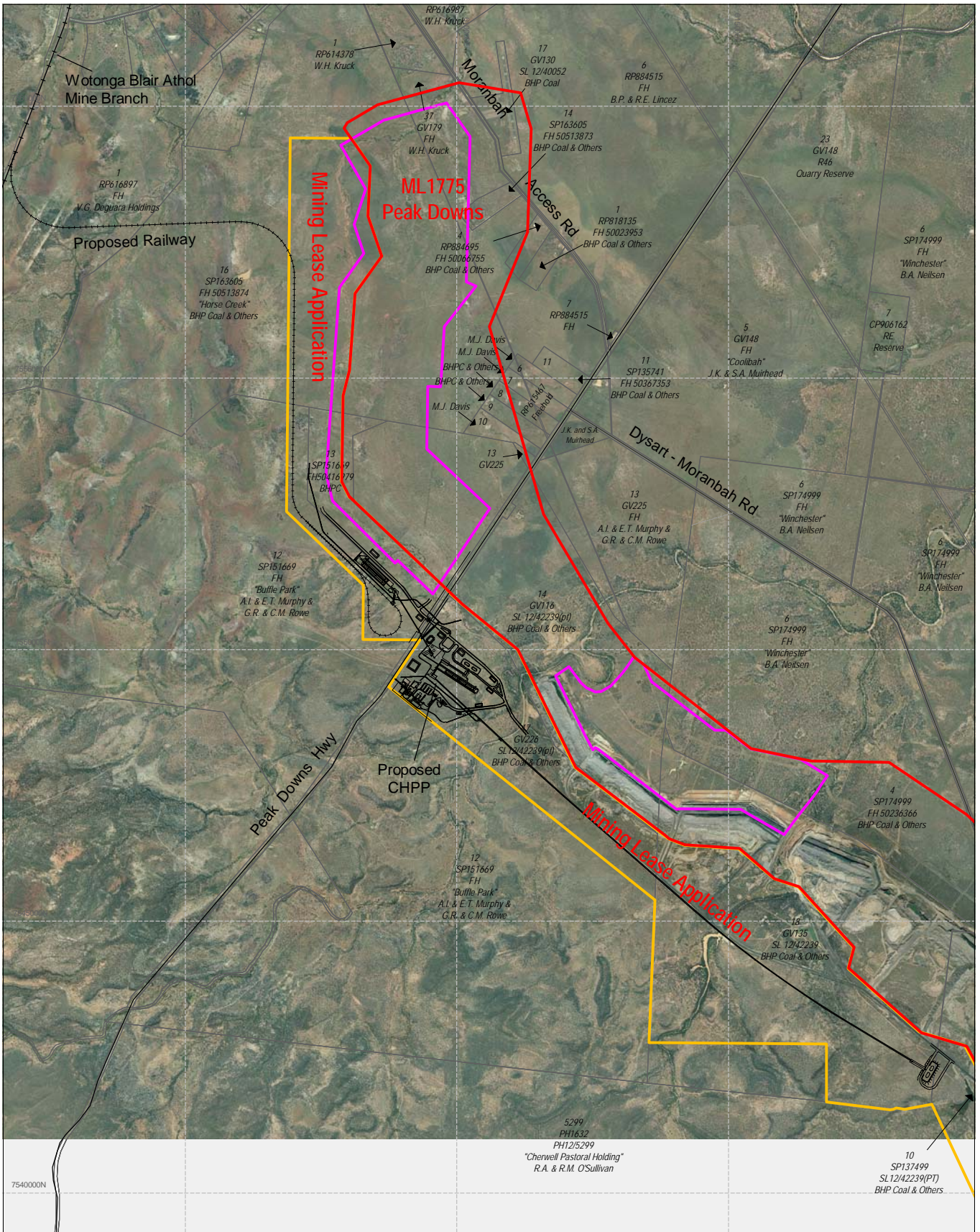


**Figure 1**  
**CAVAL RIDGE MINE**  
**EPBC REFERRAL**  
**LOCALITY PLAN**

0 12.5 25km  
 Scale 1:1,250,000 (A4)

Projection: Australian Map Grid - Zone 55 (AGD84)





**LEGEND**

- Mining Lease
- Mining Lease Application
- Pit Outlines



**Figure 2**  
**CAVALCADERIDGE MINE**  
**EPBC REFERRAL**  
**LAYOUT PLAN**

0 1.25 2.5km  
 Scale 1:100 000 (A4)

Projection: Australian Map Grid - Zone 55 (AGD84)



1.5 **Street address of the site** The southern portion of the Project is intersected by the Peak Downs Highway, and the Moranbah Access Road forms the north eastern boundary of the Project site. The Project is located immediately north of the existing Peak Downs Mine.

1.6 **Lot description**

The Project will be located over ML 1775 and future mining applications. Actual coal mining operations for the Project will be situated on ML 1775 (Peak Downs) held by CQCA. A new mining lease application to the west of ML 1175 will be required for Project infrastructure (haul roads, rail line, rail loop, train loadout), temporary landforms and to maximise resource recovery from ML 1775.

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

Tables detailing the land tenures and ownership and activities for the Project are shown below.

**Table 1 Land Tenure Summary**

Tenure	Lot No	Plan No	Land Type
ML1775	16	SP163605 (Horse Creek)	Freehold
	14	SP163605	Freehold
	4	884695	Freehold
	7	RP615467	Freehold
	8	RP615467	Freehold
	9	RP615467	Freehold
	10	RP615467	Freehold
	14	GV116 - SL12 on 42239	State Land
	13	SP151699	Freehold
	13	GV225	Freehold
	Easement A	GV80	State Land
Future Mining Application	47	GV226	State Land
	12	SP151669	Freehold
	16	SP163605 (Horse Creek)	Freehold
	13	SP151669	Freehold

**Table 2 Mining Tenures Associated with the Project**

Tenure	Name	Holder	Development Activities
1175	Peak Downs	BHP Coal Pty Ltd and Others (CQCA Joint Venture participants)	Mining and mining related infrastructure
Proposed Mining Application		BHP Coal Pty Ltd and Others (CQCA Joint Venture participants)	Mining related infrastructure

**1.7 Local Government Area and Council contact (if known)**

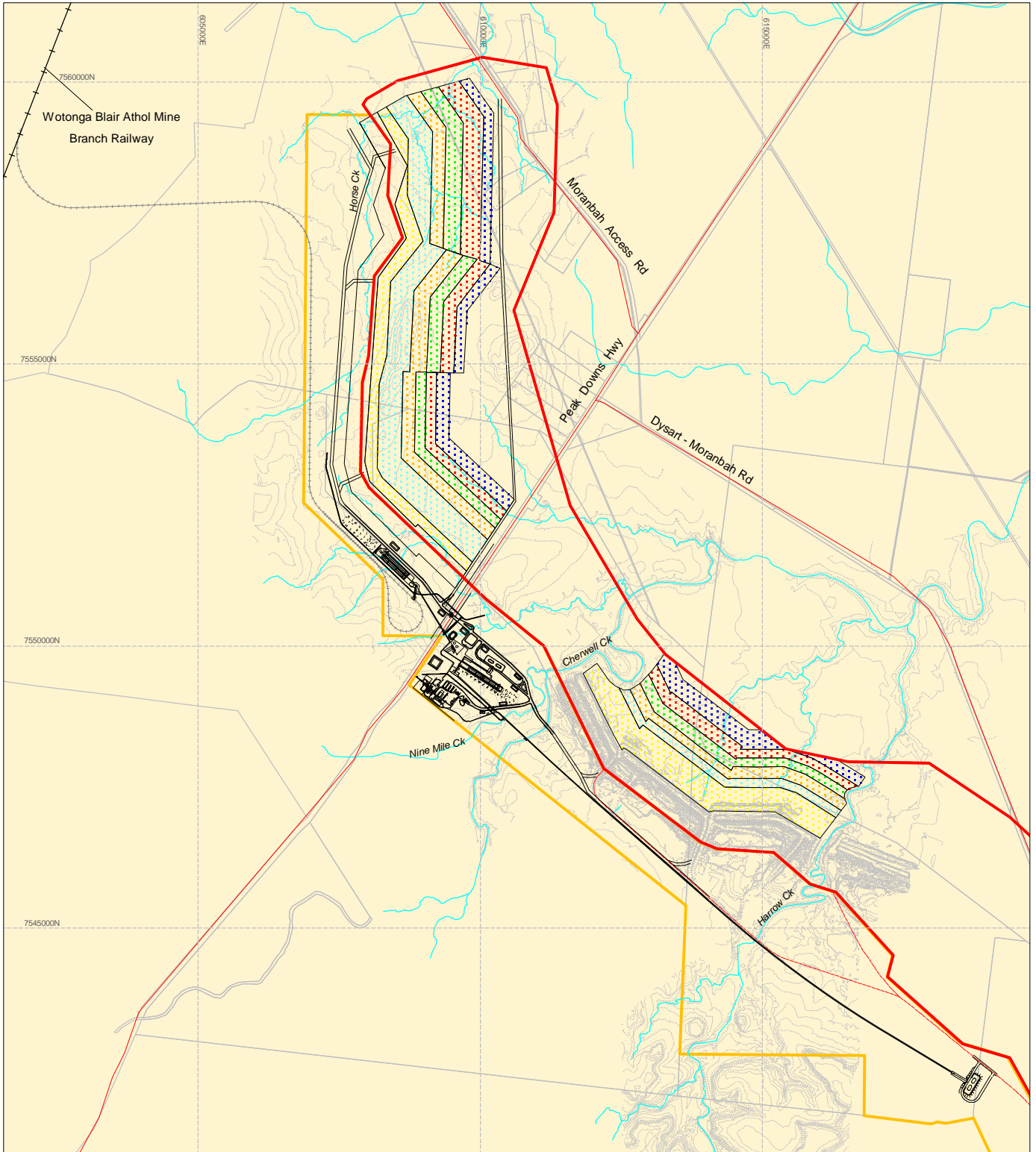
Isaac Regional Council. Following recent (15 March 2008) local authority amalgamations of Belyando Shire, Broadsound and Nebo Shire.

**1.8 Timeframe**

The Project involves open cut coal mining using conventional draglines and truck and shovel equipment. Mining activities will included clearing of vegetation, waste rock removal to waste rock dumps, coal mining and progressive rehabilitation over 30 year life of the Project. Mining is likely to extend beyond 30 years however will be subject to future applications and approvals if necessary. Construction is expected to commence in 2009 and will take approximately 24 months. First coal is expected in 2011.

**Figure 3** illustrates the development of the Project over the next 30 years.

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



**LEGEND**

- Mining Lease Application
- ML1775

**Pit**

- |  |   |
|--|---|
| <span style="background-color: #cccccc; border: 1px solid black; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> Boxcut Spoil Area | <span style="background-color: #90ee90; border: 1px solid black; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> 15-20yrs |
| <span style="background-color: #ffff00; border: 1px solid black; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> 0-5yrs            | <span style="background-color: #ff00ff; border: 1px solid black; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> 20-25yrs |
| <span style="background-color: #00ffff; border: 1px solid black; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> 5-10yrs           | <span style="background-color: #0000ff; border: 1px solid black; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> 25-30yrs |
| <span style="background-color: #ffa500; border: 1px solid black; display: inline-block; width: 15px; height: 10px; margin-right: 5px;"></span> 10-15yrs          |   |



**Figure 3**  
**CAVAL RIDGE MINE**  
**EPBC REFERRAL**  
**PROJECT 30 YEAR**  
**MINE PLAN**

0 1.25 2.5km  
 Scale 1:100,000 (A4)

Projection: Australian Map Grid - Zone 55 (AGD84)



## 2 Detailed description of proposed action

### 2.1 Description of proposed action

The Project involves the development of a new mining operation on the existing mining lease (ML 1775) and proposed mining lease applications for Project infrastructure, temporary landforms and to maximise resource recovery from ML 1775.

Mining and processing will produce approximately 5.5 Mtpa of hard coking coal product primarily for the export coking coal market. An additional 2.5 Mtpa of coal produced from Peak Downs Mine will also be processed through the Caval Ridge CHPP.

The Project will be an open cut coal mining operation using draglines for waste excavation and truck / shovel equipment for mining. Mining activities will include clearing of vegetation, waste rock removal to waste rock dumps, coal mining and progressive rehabilitation over the life of the mine. The footprint of the proposed mining and processing operations are shown in **Figure 3**. Construction is expected to commencing in 2009, with first mined coal in 2011.

### Mineral Resource

The Project is to be situated on the relatively undisturbed western limb of the northern Bowen Basin at the southern end of the Collinsville Shelf. Economic coal seams occur in the terrestrial Moranbah Coal Measures consisting of 300m of labile sandstone, siltstone, mudstone, tuffaceous-claystones and coal. These coal seams were deposited on the eastern margin of the Collinsville Shelf, which provided a predominantly fluvial flood plain environment and is one of the structural elements of the Clermont Stable Block.

At the end of coal deposition in the late Triassic, the Bowen Basin was subject to significant tectonic compression from the eastern side with major thrust faulting creating the present commercial coal deposits. The regional dip of coal in the area is 3 - 6 degrees though the northern extension of the Peak Downs Mine shows considerable deformation with strata dipping to 30 degrees and along strike flexures in excess of 10 degrees. Faulting and seam splitting is common, producing local steepening of the coal seam dips to over 10 degrees. The area has been influenced by several stages of structural deformation, including an extensional phase resulting in normal faulting and igneous intrusion in the form of sills and dykes, with a final late Cretaceous to early Tertiary compressional phase that resulted in thrusting and reversed re-activation of normal faults and a regional horizontal stress field. In the north, remains of Tertiary basalt flows overlay the Permian sequence, while in the south Quaternary sands and clayey sands up to 30 m thick have accumulated along the course of Boomerang Creek.

### Mining Operations

The Project will use draglines for waste excavation and truck / shovel equipment for mining, with emphasis on in-pit waste rock dumping.

The mining sequence will generally entail:

- progressively clearing of any vegetation occurring on areas required for the operation;
- stockpiling topsoil from disturbed areas for storage and use in future rehabilitation of the Project;
- prestripping / excavation of unconsolidated / soft overburden waste using excavators and trucks, and dumping over previously stripped dragline spoil;
- drill and blasting of upper competent overburden waste;



- removal of waste rock, using a combination of dozers, excavators and trucks; and dumping over previously stripped dragline spoil;
- coal mining of upper seams using a combination of dozers, excavators, loaders and trucks;
- drill and blasting of lower competent overburden waste;
- side casting of lower overburden into the previously mined strip using a dragline;
- coal mining of lower seams using a combination of dozers, excavators, loaders and trucks, and
- rehabilitation of the Project by re-shaping the waste rock dumps, topsoiling and revegetation using native vegetation.

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 Project topsoil stripping plan. The topsoil stripping plan will be based upon the chemical and physical qualities of the soil in the Project area. Where possible, topsoil will be directly placed onto areas available of 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 mineral, enabling easier excavation of material, and uncovering the coal.

#### Overburden removal

The material covering the coal and referred to as spoil or overburden will be removed by a dragline. 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 mine-out areas, subsequent waste rock will be placed in-pit waste rock dump immediately following the progression of the mine front that will progress in an easterly direction.

#### Coal mining

Following the removal of overburden, front end loaders and 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 the 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 Project 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 occur seven days per week and excavated depths ranging from 20 to 180 m. The Project (ML 1775 and proposed mining lease applications) covers an area of approximately 5183ha and 1305ha, respectively or a total Project area of approximately 6488ha. A total area of approximately 3400ha will be disturbed over the life of the Project including the mine area, infrastructure, out of pit waste dump footprints and associated infrastructure.

#### Water management

Water management, including sediment dams to control runoff from disturbed areas will be constructed onsite to manage mine affected water and to provide a water source for mining and the CHPP operations. The release of surplus water will only occur if there is not storage capacity available and there are not further opportunities to reuse the water on site at the time. Releases will only occur in accordance with the conditions of the Environmental Authority conditions.

#### **Supporting Site Infrastructure**

In addition to the coal mining activities the Caval Ridge Mine will also include:

- a CHPP and associated loading facilities for ROM coal, including raw coal and product coal handling systems;
- a water supply, using a combination of dirty water reuse and raw water supply via a pipeline from existing pipelines;
- an all weather access road from Peak Downs highway;
- an overpass for the Peak Downs highway to allow for the transport of materials across the Peak Downs highway, using heavy and light vehicles;
- power supply to the Caval Ridge Mine from the existing network;
- a mine water management system, including clean water diversion, disturbed are runoff collection and treatment, pit water management, water reuse and water disposal if there is surplus water at any time;
- sewage and waste treatment by packaged sewage treatment (STP);
- site offices, ablution and bathhouse facilities, workshop and stores area, which would include diesel storage and storage for tyres and other consumable material; and
- a new rail line and spur with associated product coal loading facilities.

#### **Coal Handling and Processing Activities**

The CHPP will have a capacity of 2000 tonnes per hour (t/hr) feed, and will be capable of processing 14-16 Mtpa of raw coal producing approximately 8 Mtpa of hard coking coal, of which 5.5 Mtpa will be sourced from the Caval Ridge Mine. An additional 2.5 Mtpa will be produced by the Peak Downs Mine and will be processed through the Caval Ridge Mine CHPP. The incremental 2.5 Mtpa from Peak Downs Mine does not form part of the Project as it is within the currently approved capacity of the Peak Downs Mine.

ROM coal will be transported from north of the Peak Downs Highway via an underpass to the CHPP for processing.

The CHPP will consist of:

- ROM dump hopper for primary sizing;
- secondary and tertiary sizers with intermediate screening;
- raw coal stockpiles with mechanised stacking and reclaim facilities;
- two (2) module coal preparation plant, nominally 1000 tph, per module;
- product coal stockpiles with mechanised stacking and reclaim facilities;
- train loadout to the north of the Peak Downs highway, a conveyor will transport material crossing the highway;
- reject bin and handling system; and
- ultrafine tailings dewatering system, with dewatered tailings to be disposed of to the waste dumps.

Process plant water will be recycled to minimise raw water make-up requirements for the Project. The CHPP layout will be designed to contain local area run off and run-off from stockpile areas. These dirty water retention dams and environmental dams will be used as the primary source of water for the CHPP.

The CHPP will have sufficient capacity to process some coal mined from the Peak Downs Mine. Although the Peak Downs Mine currently produces 9Mtpa, it is actually authorised to produce 12.5Mtpa of product coal.

The product coal will be railed approximately 185 km to the Hay Point and/or Dalrymple Bay coal terminals for shipment to the international market. There is potential that coal may also be transported to the Abbot Point coal terminal following construction of the Northern Missing Link rail line.

### **Mine Waste Management**

Initially, the waste rock produced by mining at the Caval Ridge Mine will be placed in out of pit waste rock dumps, most likely located within and close to the perimeter of the mining lease to the west. When sufficient space is created within the mined-out areas, subsequent waste rock will be placed within in-pit waste rock dumps.

### **Workforce**

The Caval Ride Mine will employ about 1200 people during construction and approximately 340 during the peak of operation. The construction and operational workforce is expected to be housed in the district, within the vicinity of Moranbah and Dysart. 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 Project.

### **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 timeframes 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 *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

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. The existing environmental authorities relating to the Peak Downs ML may require amendment.

#### **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

The Project is unlikely to impact on a declared World Heritage Property.

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#### 3.1 (b) National Heritage Places

##### Description

The MNES search indicates that the Project is not located within or adjacent to any National Heritage places.

The Wilandspey Environmental Park (formerly the Wilandspey Environmental Park, place identification number 8894) is located approximately **200 km** west 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 **39 km** south-west of the Project. This Area was registered on the Register of National Estate in 21/10/1980.

##### Nature and extent of likely impact

The MNES search indicates that the Caval Ridge Mine is not located within or adjacent to any National Heritage places.

Due to the nature of the Project and the distance to Wilandspey Environmental Park and the Peak Range Areas, it is unlikely that the Project will have a significant impact on these areas.

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

##### Description

The nearest Ramsar Wetland is approximately 80 km north of Rockhampton (Shoalwater and Corio Bays) and approximately **200 km** away from the Project.

##### Nature and extent of likely impact

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

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### 3.1 (d) Listed threatened species and ecological communities

#### Description

The MNES database search described a total of 11 threatened species as potentially occurring within the Project search area, including 4 bird species, 1 mammal species 2 reptiles and 2 species of plants.

The MNES database also indicates 2 ecological communities as potentially occurring. Both communities have endangered conservation significance under Commonwealth legislation. These communities include:

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

A total of 8 investigations have been carried out in the area between 1998 and 2006. These investigations have been supplemented with additional field surveys in 2008. A total of 153 terrestrial flora species of which 137 (90%) were native and 16 (10%) were exotic. This includes species recorded during formal survey transects, as well as incidental records from across the study site (BAAM, 2008).

The 2 flora species of conservation significance identified on the MNES database search are:

- King Bluegrass (*Dichanthium queenslandicum*) – EPBC Status: Vulnerable; and
- Finger Panic Grass (*Digitaria porrecta*) – EPBC Status: Endangered.

Although neither species has been recorded during previous surveys, some surveys have concluded that there is a reasonable probability they may occur in vegetation communities identified on site.

Overall, 5 vegetation communities identified within the study site are of relevance to the EPBC, as detailed in **Table 3**.

**Table 3 Vegetation communities within the Caval Ridge Project site relevant to the EPBC**

Vegetation Community Description	Dominant Species	Relevance to the EPBC
Open Grassland/ Forbland with Isolated Trees (Height: 0.2 – 1.0m)	<u>Canopy / Mid-stratum: Absent.</u>  Ground Stratum: <i>Parthenium hysterophorus</i> , <i>Iseilema vaginiflorum</i> , <i>Salsola kali</i> , <i>Neptunia sp.</i> , <i>Hibiscus meraukensis</i> , <i>Panicum decompositum</i> , <i>Indigofera linifolia</i> , <i>Sida acuta</i> , <i>Enneapogon pallidus</i> .	Potential to contain King Bluegrass ( <i>Dichanthium queenslandicum</i> ) and/or Finger Panic Grass ( <i>Digitaria porrecta</i> ).
Open/Closed Grassland/ Forbland with Isolated Trees (Height: 0.5 -12m)	<u>Canopy / Mid-stratum: Eucalyptus orgadophila, Atalaya hemiglauca, Corymbia erythrophloia</u>  Ground Stratum: <i>Dactyloctenium radulans</i> , <i>Dichanthium sericeum</i> , <i>Iseilema vaginiflorum</i> , <i>Parthenium hysterophorus</i> .	Potential to contain King Bluegrass ( <i>Dichanthium queenslandicum</i> ) and/or Finger Panic Grass ( <i>Digitaria porrecta</i> ).
Open Woodland (Height 8-14 m)	<u>Canopy / Mid-stratum: Acacia harpophylla, Eucalyptus populneus, Canthium buxifolia, Eremophila mitchellii, Citriobatus spinescens.</u>  Ground Stratum: <i>Pennisetum ciliare</i> , <i>Melinis repens</i> , <i>Sida subspicata</i> , <i>Sida fibulifera</i> , <i>Sida rohlenae</i> .	Analogous to Endangered Brigalow ( <i>Acacia harpophylla</i> dominant and co-dominant) communities
<u>Open Forest/ Woodland</u> (Height: 15-18m)	<u>Canopy / Mid-stratum: Eucalyptus orgadophila, Atalaya hemiglauca, Corymbia erythrophloia</u>  Ground Stratum: <i>Dactyloctenium radulans</i> , <i>Dichanthium sericeum</i> , <i>Iseilema vaginiflorum</i> , <i>Parthenium hysterophorus</i> .	Analogous to Endangered Bluegrass ( <i>Dichanthium</i> spp.) dominant grasslands in the Brigalowbelt Bioregion. Potential to contain King Bluegrass ( <i>Dichanthium queenslandicum</i> ) and/or Finger Panic Grass ( <i>Digitaria porrecta</i> ).
<u>Open Forest/ Woodland</u> (Height: 4-6m)	<u>Canopy / Mid-stratum: Acacia harpophylla, Terminalia oblongata, Alectryon diversifolia, Owenia acidula, Sesbania cannabina, Diplocyclos palmatus</u>  Ground Stratum: <i>Pennisetum ciliare</i> , <i>Melinis repens</i> , <i>Parthenium hysterophorus</i> , <i>Eriocereus martinii</i> , <i>Sida spinosa</i> , <i>Desmodium sp.</i> , <i>Glycine sp.</i> , <i>Echinochloa colona</i> , <i>Dactyloctenium radulans</i>	Analogous to Endangered Brigalow ( <i>Acacia harpophylla</i> dominant and co-dominant) communities

**Nature and extent of likely impact**

Potential environmental impacts of the Project include vegetation clearing and resultant fragmentation of habitat and “edge effect” related disturbances. As a result, there will be the potential to impact upon listed threatened species and ecological communities. Impacts on these species will be assessed in more detail in the EIS. Both mining and infrastructure have been arranged to minimise the impacts on remnant vegetation.

**Terrestrial Flora**

No significant species were identified within the Project site. Alternatively, two threatened ecological communities (i.e. Bluegrass (*Dichanthium* spp.) Dominant grasslands of the Brigalow Belt Bioregion, and Brigalow (*Acacia*

*harpophylla*) dominant and co-dominant) will be impacted upon by the Project.

Impacts on the Threatened Ecological Communities (Brigalow and Blue Grass Communities)

The current EPA RE mapping of heterogeneous REs indicates that the Project will impact upon approximately 174ha of the Brigalow (*Acacia harpophylla*), 396ha of Bluegrass (*Dicanthium spp.*) communities and a further 217.13ha of mixed REs, within the local context.

Recent ground truthing (BAAM 2008) of the Project site indicated that the area corresponding to the heterogeneous RE 11.5.3/11.5.9c/11.4 does not contain RE 11.4.9 (Bluegrass). This reduces the total area current EPA mapped RE 11.4.9 by 360 ha. A map of the ground truthed areas will be provided with the EIS.

Both Brigalow and Blue Grass communities are currently infested with Parthenium Weed and Buffel Grass which has caused suppression and reduced recruitment of species characteristic to these vegetation associations. As part of the project, all areas currently mapped or analogous to REs under the provisions of the *Queensland Vegetation Management Act 1999* will be subjected to weed control, specifically targeting Buffel Grass and Parthenium Weed. This will facilitate natural recruitment processes and may eventually lead to expansion of Brigalow and Bluegrass communities in the future.

An assessment of significance criteria under the EPBC for these communities is currently being undertaken as part of the EIS. Ground truthing of the EPA's heterogeneous RE polygons will also be undertaken as part of the EIS, this will distinguish the area(s) of Brigalow dominant/co-dominant and Bluegrass within each polygon and allow for the determination of impacts on each of these communities.

The potential for impacts on the Brigalow EEC associated with groundwater drawdown has also 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; and
- the depth to the groundwater table across the Project site is typically between 14 - 67 m below natural surface level, 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.

**Terrestrial Fauna**

Two species listed as Vulnerable under the EPBC, Ornamental Snake (*Denisonia maculata*) and Squatter Pigeon (southern subspecies) (*Geophaps scripta scripta*), have been recorded on the Project site or nearby.

It is also possible that the Brigalow Scaly-foot (*Paradelma orientalis*), Australian Painted Snipe (*Rostratula australis*) and Greater Long-eared Bat (South-Eastern) (*Nyctophilus timoriensis*), all of which are listed as Vulnerable under the EPBC, are also present on the Project site or nearby.

An assessment of significance criteria under the EPBC for these species is currently being undertaken as part of



the EIS. A preliminary account is provided below.

Impacts on the Southern Squatter Pigeon

Squatter Pigeons are common on the Project and occur in areas of grassland and, presumably, open woodland. The areas where the species was recorded in the current survey are highly degraded and subject to ongoing disturbance by livestock. No habitat considered essential to the species is threatened by any proposed activities for the Project site.

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.

Impacts on the Ornamental Snake

Ornamental Snake has been recorded at only one location within the Project site and surrounds (i.e. outside of the Project site), despite targeted searches. Given the habitat specificity of this species and the lack of suitable habitat within the Project site, no significant impacts are expected.

Impacts on the Brigalow Scaly-foot

Although it is most likely that the Brigalow Scaly-foot will occur at the same location as the Ornamental Snake, the species is more flexible in its habitat preference and may also occur within the Project site. There may be a significant impact on any local population of this species due to habitat loss. At a regional scale, the amount of possibly suitable habitat lost will not be significant.

Impacts on the Australian Painted Snipe

The study site is not likely to provide breeding resources for this species and any occurrence is likely to be sporadic at best. As such, no significant impacts are expected.

Impacts on the Greater Long-eared Bat (south-eastern)

It is unlikely that the Greater Long-eared Bat is present on the Project site; however sporadic use of the site by any individuals possibly present in the local area cannot be discounted. Overall, no significant impacts are expected

---

### 3.1 (e) Listed migratory species

#### Description

A total of 12 migratory species are listed on the MNES as potential occurrences in the Project site and listed in **Table 4**.

**Table 4 Migratory birds of conservation significance identified on the MNES Search**

Species	Conservation Status		Survey Period	
	National <sup>1</sup>	State <sup>2</sup>	BAAM (2008)	Previous
White-bellied Sea-Eagle ( <i>Haliaeetus leucogaster</i> )	Migratory	Special Cultural Significance		✓
Marsh Sandpiper ( <i>Tringa stagnatilis</i> )	Migratory	Special Cultural Significance		✓
White-throated Needletail ( <i>Hirundapus caudacutus</i> )	Migratory	Special Cultural Significance		✓
Rainbow Bee-eater ( <i>Merops ornatus</i> )	Migratory	Special Cultural Significance	✓	✓
Black-faced Monarch ( <i>Monarcha melanopsis</i> )	Migratory	Special Cultural Significance		
Satin Flycatcher ( <i>Myiagra cyanoleuca</i> )	Migratory	Special Cultural Significance		✓
Great Egret, White Egret ( <i>Ardea alba</i> )	Migratory	Special Cultural Significance		
Cattle Egret ( <i>Ardea ibis</i> )	Migratory	Special Cultural Significance		
Latham's Snipe, Japanese Snipe ( <i>Gallinago hardwickii</i> )	Migratory	Special Cultural Significance		
Australian Cotton Pygmy Goose ( <i>Nettapus coromandelianus albipennis</i> )	Migratory	Rare		✓
Little Curlew, Little Whimbrel ( <i>Numenius minutus</i> )	Migratory	Special Cultural Significance		
Painted Snipe ( <i>Rostratula benghalensis. s. lat.</i> )	Migratory	Not Listed		
Fork-tailed Swift ( <i>Apus pacificus</i> )	Migratory	Special Cultural Significance		✓

1. Commonwealth Environment Protection and Biodiversity Conservation Act, 1999

2. Queensland Nature Conservation (Wildlife) Act, 1992

Migratory species and their status identified in the Project area and / or surrounds with conservation significance under the EPBC Act but not listed on the MNES search are listed in **Table 5**.

**Table 5 Migratory Species identified but not listed on the MNES Search**

Species	Conservation Status		Survey Period	
	National <sup>1</sup>	State <sup>2</sup>	BAAM (2008)	Previous
Common Sandpiper ( <i>Actitis hypoleucos</i> )	Migratory	Special Cultural Significance		✓
Red-necked Stint ( <i>Calidris ruficollis</i> )	Migratory	Special Cultural Significance		✓
Sharp-tailed Sandpiper ( <i>Calidris acuminata</i> )	Migratory	Special Cultural Significance		✓
Caspian Tern ( <i>Sterna caspia</i> )	Migratory	Special Cultural Significance		✓
Rufous Fantail ( <i>Rhipidura rufifrons</i> )	Migratory	Special Cultural Significance		✓
Australian Reed-Warbler ( <i>Acrocephalus australis</i> )	Migratory	Special Cultural Significance		✓

1. Commonwealth Environment Protection and Biodiversity Conservation Act, 1999
2. Queensland Nature Conservation (Wildlife) Act, 1992

Species of special conservation significance that were not recorded on the Project site or nearby during the current and previous surveys, however are predicted to occur or it is considered possible that they may occur were identified. Those with EPBC significance area listed below:

- Painted Snipe (*Rostratula benghalensis sp.*) EPBC Status: Vulnerable and Migratory. This is now known as Australian Painted Snipe *Rostratula australis* and *R. benghalensis* is not considered to occur.
- Cattle Egret (*Ardea ibis*) EPBC status Migratory
- Latham’s Snipe (*Gallinago hardwickii*) EPBC Status: Migratory
- Little Curlew (*Numenius minutus*) EPBC Status Migratory
- Black-faces Monarch (*Monarcha melanopsis*) EPBC Status Migratory

**Nature and extent of likely impact**

Twelve bird species listed as Migratory under the EPBC have been recorded. The species found include are listed in **Table 4** and **Table 5**. The ability of these species to traverse the landscape is unlikely be threatened by any proposed activities on the Project

There is no evidence to suggest that the Project 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. . However, an assessment of significance criteria under the EPBC for these species will be undertaken as part of the EIS.

**3.1 (f) Commonwealth marine area**

**Description**

Not applicable.

**Nature and extent of likely impact**

There will be no impacts on the Commonwealth Marine Area as a result of the proposed action.

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**3.1 (g) Commonwealth land**

**Description**

Not applicable.

**Nature and extent of likely impact**

The Project does not affect Commonwealth lands.

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**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?	<b>X</b>	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?	<b>X</b>	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?	<b>X</b>	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?	<b>X</b>	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

A soil survey and land resource assessment was carried out in 2008. The results of this assessment identified the following:

##### Soil units:

- Uniform Clays;
- Yellow Duplex Soils;
- Brigalow Clays;
- Skeletal Soils;
- Shallow Heavy Clays; and
- Dark Heavy Clays.

##### Erosion Potential

Some of the Uniform Clay sites have indicated a moderate erosion potential with Emerson Aggregate Test ratings of 2 to 3, which indicates a moderate potential for dispersion and surface hardsetting.

##### Land Capability

The majority of the Project is considered Class VI – not suitable cultivation and is moderately susceptible to degradation requiring proper management to sustain the land use. Some Class V land occurs in the vicinity of the north end of the existing Heyford Pit. This land has suitable soil and topography for crops but economically not viable. It is high quality grazing land.

The rocky hills and ridgelines, along with the highly eroded and Skeletal Soils, are considered to be Class VII - land that is highly susceptible to degradation requiring severe restrictions for use. Grazing may be conducted with rigorous management inputs required to prevent degradation.

##### Land Suitability

The majority of land within the Project is Class 5 with respect to cropping. The land is unsuitable for cropping. Some Duplex Soils in the vicinity of the north end of the existing Heyford Pit are Class 4 lands that are considered extremely marginal for cropping. This includes the well drained areas of flat to gently sloping Duplex Soils. The lands are Class 2 land with respect to grazing which is suitable for low intensity grazing, with minor limitations that lower production or require management practices. The remainder of the Project is Class 2 & 4 land with respect to grazing potential i.e. land that has either moderate limitations or is marginal grazing land.

##### Good Quality Agricultural Land (GQAL)

No GQAL was identified.

##### Regional Ecosystems

**Table 6** lists the Regional Ecosystems (REs) currently mapped for the Project site by the Queensland Environmental Protection Agency (EPA) and their status under the *Vegetation Management Act 1999* (VMA) and the status of analogous Ecological Communities listed under the EPBC (see **Figure 4**).

Eight Regional Ecosystems were identified by BAAM (2008) from ground truthing (see **Table 6**). Of these REs, 7 have been previously mapped and one (e.g. Vegetation community 14 – RE11.9.5) is not currently mapped. A map of the ground truthed areas will be provided with the EIS.

**Table 6 Regional ecosystems equivalents**

RE Polygon Code	Description of Polygon	Conservation significance	
		National <sup>1</sup>	State <sup>2</sup>
<b>11.3.2/11.3.25</b>	<i>Eucalyptus populnea</i> woodland on alluvial plains/ <i>E. tereticornis</i> or <i>E. camaldulensis</i> woodland fringing drainage lines	N/A	Dominant of concern
11.3.2/ <b>11.3.25</b> /11.5.9	As above, with <i>E. crebra</i> and other <i>Eucalyptus spp.</i> and <i>Corymbia spp.</i> woodland on Cainozoic sand plains/remnant surfaces	N/A	Not of concern
11.3.25	<i>E. tereticornis</i> or <i>E. camaldulensis</i> woodland fringing drainage lines	N/A	Not of concern
11.4.9	<i>Acacia harpophylla</i> shrubby open forest to woodland with <i>Terminalia oblongata</i> on Cainozoic clay plains	Endangered	Endangered
11.5.3	<i>Eucalyptus populnea</i> and/or <i>E. melanophloia</i> and/or <i>Corymbia clarksoniana</i> on Cainozoic sand plains/remnant surfaces	N/A	Not of concern
11.5.3/11.3.2	<i>Eucalyptus populnea</i> and/or <i>E. melanophloia</i> and/or <i>Corymbia clarksoniana</i> on Cainozoic sand plains/remnant surfaces/ <i>Eucalyptus populnea</i> woodland on alluvial plains	N/A	Subdominant of concern
11.5.3/11.5.9	<i>Eucalyptus populnea</i> and/or <i>E. melanophloia</i> and/or <i>Corymbia clarksoniana</i> on Cainozoic sand plains/remnant surfaces / <i>E. crebra</i> and other <i>Eucalyptus spp.</i> and <i>Corymbia spp.</i> woodland on Cainozoic sand plains/remnant surfaces	N/A	Not of concern
11.5.9	<i>Eucalyptus crebra</i> and other <i>Eucalyptus spp.</i> and <i>Corymbia spp.</i> woodland on Cainozoic sand plains/remnant surfaces	N/A	Not of concern
11.8.11	<i>Dichanthium sericeum</i> grassland on Cainozoic igneous rocks	Endangered	Of concern
<b>11.8.11/11.8.5</b>	<i>Dichanthium sericeum</i> grassland on Cainozoic igneous rocks/ <i>Eucalyptus orgadophila</i> open woodland on Cainozoic igneous rocks	Endangered	Dominant of concern
11.8.5	<i>Eucalyptus orgadophila</i> open woodland on Cainozoic igneous rocks	N/A	Not of concern
11.9.5	<i>Acacia harpophylla</i> and/or <i>Casuarina cristata</i> open forest on fine-grained sedimentary rock	Endangered	Endangered

1. Commonwealth Environment Protection and Biodiversity Conservation Act, 1999

2. Queensland Nature Conservation Wildlife Regulation, 1994

**BOLD** – REs identified by BAAM (2008) but not indicated on the EPA Certified RE Mapping

The 1:100 000 NRW certified RE mapping for the Project site obtained from the EPA indicates that the Project site supports no areas designated as Essential Habitat for species listed as threatened under the Nature Conservation Act.

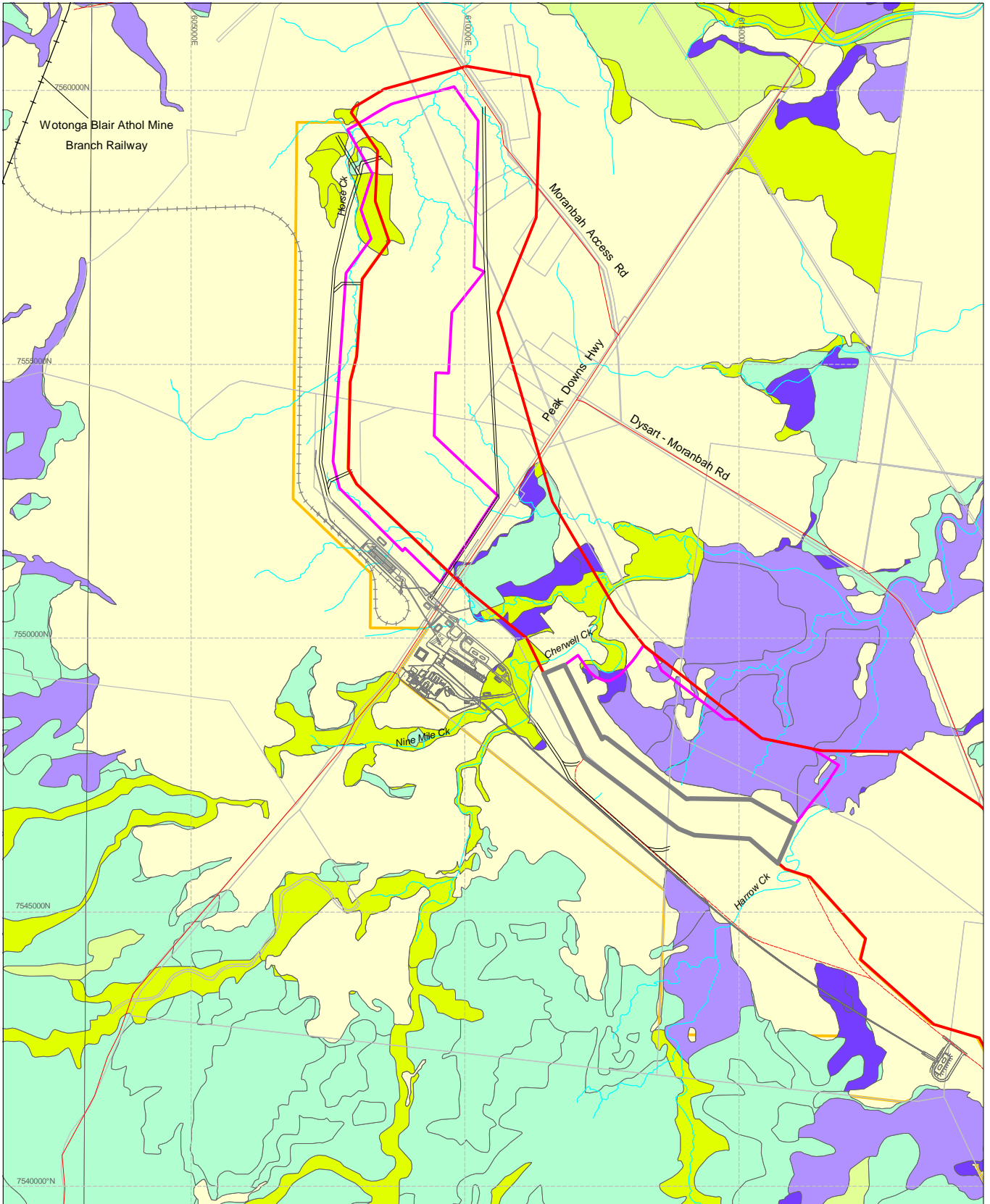
### 3.3 (b) Water flows, including rivers, creeks and impoundments

All watercourses within 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, it is a highly disturbed creek system.

**3.3 (c) Outstanding natural features, including caves**

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





**LEGEND**

- Mining Lease
- Mining Lease Application
- Pit Footprint
- Heyford Pit Footprint

**Biodiversity Status**

- Endangered - Dominant Biodiversity
- Endangered - Sub-Dominant Biodiversity
- Of Concern - Dominant Biodiversity
- Of Concern - Sub-Dominant Biodiversity
- Of Concern



**Figure 4**  
**CAVALCADE RIDGE MINE**  
**EPBC REFERRAL**  
**IMPACT ON**  
**REGIONAL ECOSYSTEMS**

0 1.25 2.5km  
 Scale 1:100,000 (A4)

Projection: Australian Map Grid - Zone 55 (AGD84)



### 3.3 (d) Gradient

Elevation across the Isaac River Valley in the vicinity of the Project varies from approximately 200m along the Isaac River east of the Project to approximately 450m along portions of the Denham Range, which defines the western edge of the Isaac River Valley. This variation in elevation is over a distance of approximately 25km and represents an average gradient of approximately 1:100. Given the relatively steep slopes associated with the Denham Range, there are extensive flat areas along the base of the valley that have gradients significantly less than 1:100.

Elevation across the Project site varies from approximately 225m at the northern boundary to approximately 275m on the central hill. At the southern boundary of the Project the elevation along Cherwell Creek is approximately 230m.

### 3.3 (e) Buildings or other infrastructure

Existing buildings and infrastructure on the Project site includes:

- 66 kV powerline;
- light industrial trucking workshop (Kalari Workshop and Yard);
- Heritage Boarding Kennels and Cattery;
- farm shed;
- stockyards;
- fencing;
- dams;
- a quarry;
- vehicle access tracks;
- There are two homesteads and one cottage located within the Project site. There are 2 homesteads located within 1.5 km of the west of the Project site, six homesteads are located to the east of the Project site, and their distance from the Project site varies between 100 m to 2.9 km. There are several homesteads to the north of the Project site, the closest is 600 m from the Project boundary; and
- The town of Moranbah is more than 6km north of the northern extent of the Project.

### 3.3 (f) Marine areas

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

### 3.3 (g) Kinds of fauna & flora

A total of 8 investigations have been carried out in the area between 1998 and 2006. These investigations have been supplemented with additional field surveys in 2008 (BAAM, 2008). Results of these investigations are presented below.

#### Terrestrial Fauna

During the 2008 survey a total of 119 terrestrial vertebrate species either on the Project site or nearby. This includes 11 mammals, 90 birds, 8 reptiles and 10 frogs. Analysis of Anabat recordings indicates 9 bat species. The results from previous surveys on the Peak Downs mining lease indicate an additional 167 terrestrial species that also occur, resulting in a total of up to 286 terrestrial vertebrate species of the Project site.

Two species listed as vulnerable under the EPBC Act were identified

- Ornamental Snake (*Denisonia maculata*); and,
- Squatter Pigeon, southern species (*Geophaps scripta scripta*).

Three species of special conservation significance that were not recorded on the Project site or nearby during the current and previous surveys but that are predicted to occur, or it is considered possible that they may occur, were identified. Those with EPBC significance are listed below:

- Brigalow Scaly-foot (*Paradelma orientalis*) - EPBC Status: Vulnerable;
- Australian Painted Snipe (*Rostratula australis*) - EPBC Status: Vulnerable; and
- Greater Long-eared Bat (South-Eastern) (*Nyctophilus timoriensis*) - EPBC Status: Vulnerable.

Fauna species identified on the MNES search, their conservation significance and if they have been recorded at the Project are provided in **Table 7**. Fauna species recorded but not listed on the MNES search are provide in **Table 8**.

No movement corridors have been mapped for the Project site.

**Table 7 Fauna species of conservation significance identified on the MNES Search**

Species	Conservation Status		Survey Period	
	National <sup>1</sup>	State <sup>2</sup>	BAAM (2008)	Previous
Birds				
Red Goshawk ( <i>Erythrotriorchis radiatus</i> )	Vulnerable	Endangered		
Squatter Pigeon (southern) ( <i>Geophaps scripta scripta</i> )	Vulnerable	Vulnerable	✓	✓
Star Finch (eastern), Star Finch (southern) ( <i>Neochmia ruficauda ruficauda</i> )	Endangered	Endangered		
Australian Painted Snipe ( <i>Rostratula australis</i> )	Vulnerable	Vulnerable		
Mammals				
Eastern Long-eared Bat ( <i>Nyctophilus timoriensis</i> (south-eastern form))	Vulnerable			
Reptiles				
Yakka Skink ( <i>Egernia rugosa</i> )	Vulnerable	Vulnerable		
Allan's Lerista, Retro Slider ( <i>Lerista allanae</i> )	Endangered			
Brigalow Scaly-foot ( <i>Paradelma orientalis</i> )	Vulnerable	Vulnerable		
Fitzroy Tortoise ( <i>Rheodytes leukops</i> )	Vulnerable			

1. Commonwealth Environment Protection and Biodiversity Conservation Act, 1999
2. Queensland Nature Conservation Wildlife Regulation, 1994

**Table 8 Fauna species identified but not listed on the MNES Search**

Species	Conservation Status		Survey Period	
	National <sup>1</sup>	State <sup>2</sup>	BAAM (2008)	Previous
Reptiles				
Ornamental Snake ( <i>Denisonia maculata</i> )	Vulnerable	Vulnerable		✓

1. Commonwealth Environment Protection and Biodiversity Conservation Act, 1999
2. Queensland Nature Conservation (Wildlife) Act, 1992

Three fauna species identified as class 2 pests under the Land Protection (*Pest and Stock Route Management*) Act 2002 are present within the Project site including:

- Cat (*Felis catus*),
- European Rabbit (*Oryctolagus cuniculus*), and
- Pig (*Sus scrofa*).

The following pests were also identified within the Project site:

- Cane Toad (*Bufo marinus*),
- House Sparrow (*Passer domesticus*),
- Goat (*Capra hircus*),
- Donkey (*Equus asinus*),
- Brown Hare (*Lepus capensis*),
- House Mouse (*Mus musculus*), and
- Black Rat (*Rattus rattus*).

### Aquatic Fauna

The results of previous surveys of the aquatic fauna within water bodies on the adjacent Peak Downs mining lease indicate that at least 6 fish species occur within the local catchment, all of which are native, but none of which are listed under Commonwealth or State legislation, and all of which are considered to be common within the Fitzroy drainage system (WBM 1998, Ecoserve 2006c) (BAAM 2008).

Four species were collected during the BAAM 2008 survey. All species are native to the area and no exotic species was observed.

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

The area including Caval Ridge is mainly cleared or disturbed. Cattle grazing is the predominant land use within the Project site. Subsequently the area has suffered significantly from weed infestation although some remnant vegetation remains. The Project site has been degraded by exotic pasture species (i.e. Buffel Grass (*Cenchrus ciliaris*)).

Four weed species identified as class 2 pests under the Land Protection (*Pest and Stock Route Management*) Act 2002 are present within the Project site including:

- Harrisia Cactus (*Eriocereus martinii*),
- Parthenium (*Parthenium hysterophorus*),
- Giant Rat's Tail Grass (*Sporobolus pyramidalis*), and
- Velvety Tree Pear (*Opuntia tomentosa*).

Harrisia Cactus, Mother of Millions and Velvet Tree-pear were distributed throughout the entire site, particularly within vegetation communities 1 and 7. Parthenium was generally restricted to areas containing basalt and therefore was generally restricted to Vegetation communities 2 and 3. Infestation of Parthenium within these areas was very high, resulting in suppression and exclusion of native species.

**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)**

Tenure underlying the Caval Ridge Coal Mine is detailed in Section 1.6. The tenure is primarily freehold with some State Land.

A number of other mineral development licences are located in the area surrounding the Project. Coal exploration permits cover much of the surrounding area.

The Peak Downs Highway passes through the Project site, an overpass for the Peak Downs Highway is so that traffic regimes are not disturbed during operation of the Project, during operations.

Aside from the Moranbah Airport east of the Project, there is no other known land designated for special purposes within or surrounding the Project.

**3.3 (k) Existing land/marine uses of area**

There are a number of land uses on the Project including pastoral activities, occupied residences, a light industrial trucking workshop (the Kalari Workshop and Yard), a cattery/kennel (Heritage Boarding Kennels and Cattery) and coal exploration. Cattle grazing is the predominant land use within the Project site.

The Project site is adjacent the Moranbah Airport and a 66kv power line runs through the Project site a north-south direction along Easement A on GV80. The Peak Downs Highway also passes through the Project site.

No stock routes have been identified or located within the area of the Project.

**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 and Bluegrass ecological communities;
- implementation of a range of environmental management measures through the Project Environmental Management Plan (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 cat, European rabbit and pig; and
- reducing populations of declared plants, namely Harissia Cactus, Pathenium, Giants Rats Tail and Velvety Tree Pear.

The Project EIS will include developing an 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.

The Project is a controlled action for reasons listed below.

### 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 two ecological communities listed as endangered and two threatened fauna species listed as vulnerable. 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 **Table 9**.

**Table 9 Summary of Project impacts**

Matter of National Environmental Significance	Impact of Project
World Heritage Properties	There are no World Heritage Properties within the Project site.
National Heritage Places	<p>The Wilandspey Environmental is located approximately 200 km west of Project site and the Peak Range Area is located approximately 39 km south-west of the Project.</p> <p>Due to the nature of the proposed Project and the distance from these heritage places, it is unlikely that the proposed Project will have a significant impact on these areas.</p>
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	Two endangered ecological communities have been identified within the Project site - Brigalow and Bluegrass dominant communities. These communities will be impacted upon by the proposed activities, although facilitation of natural recruitment processes through the control of existing weed infestations may eventually lead to their expansion in the future.
Listed Threatened Species	<p>No significant flora species were identified, however there is potential for two species <i>Dichanthium queenslandicum</i> (King Blue Grass) and <i>D. setosum</i> (Finger Panic Grass) to occur on the Project site.</p> <p>Two fauna species listed as vulnerable under the EPBC Act were identified within the Project site or nearby - Ornamental Snake (<i>Denisonia maculata</i>) and southern subspecies of Squatter Pigeon (<i>Geophaps scripta scripta</i>). It is also possible that Brigalow Scaly-foot (<i>Paradelma orientalis</i>), Australian Painted Snipe (<i>Rostratula australis</i>) and Greater Long-eared Bat (South-Eastern) (<i>Nyctophilus timoriensis</i>) (all vulnerable under the EPBC) are present on the Project site or nearby.</p> <p>An assessment of significance criteria under the EPBC for these species is currently being undertaken as part of the EIS. Opportunities may exist for the Project to potentially enhance the viability of local populations of certain species via decreasing the dominance of Buffel over the site. Such opportunities will be investigated during the EIS process.</p>
Migratory Species	<p>Twelve migratory species have been identified on the Project site.</p> <p>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.</p>
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 bi Commonwealth lands or heritage places locater 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 likely to have a significant impact on matters of national environmental significance (listed threatened species and communities). Furthermore the EIS process will ensure that environmental issues are fully assessed and conditioned through the Environmental Authority process.

## 6 Environmental history of the responsible party

		Yes	No
6.1	<p><b>Does the party taking the action have a satisfactory record of responsible environmental management?</b></p> <p><b>Provide details</b>                      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 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 contained in <b>Appendix 1</b>.</p>	✓	
6.2	<p><b>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?</b></p> <p><b>If yes, provide details</b></p>		✓
6.3	<p><b>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?</b></p> <p><b>If yes, provide details of environmental policy and planning framework</b>                      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.                      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.                      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.'                      Copies of the BMA's Charter, the BHP Billiton Sustainable Development Policy and BHP Billiton's HSEC Management Standards are provided in <b>Appendix 2, Appendix 3, and Appendix 4</b> (respectively).</p>	✓	
6.4	<p><b>Has the person proposing to take the action previously referred an action under the EPBC Act?</b></p> <p><b>Provide name of proposal and EPBC reference number (if known)</b>                      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>	✓	

## 7 Information sources and attachments

(For the information provided above)

### 7.1 References

- Highlighted documents are available to the public.

Biodiversity Assessment and Management (BAAM) (2008). Background Flora and Fauna Assessment (Caval Ridge Mine).

DEH (2008). EPBC Protected Matters Search Tool. <http://www.environment.gov.au/erin/ert/epbc/index.html> Updated 08 January 2007 (Report generated July 2008).

GSS Environmental (2008). Caval Ridge Project Soil Survey and Land Resource Assessment Report.

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.

Tunstall, B.R. and Connor, D.J. (1981). A Hydrological Study of a Subtropical Semiarid Forest of *Acacia harpophylla* F. Muell. Ex Benth. (Brigalow)

URS Australia (2008). Caval Ridge Coal Mine Land Use Assessment.

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)
<b>You must attach</b>	figures, maps or aerial photographs showing the project locality (section 1)	✓	Figure 1 - Locality Plan Figure 2 - Layout Plan Figure 3 – Project 30 Year Mine Plan
	figures, maps or aerial photographs showing the location of the project in respect to any matters of national environmental significance or important features of the environments (section 3)	✓	Figure 4 – Impact on Regional Ecosystems
<b>If relevant, attach</b>	copies of any state or local government approvals and consent conditions (section 2.3)		
	copies of any completed assessments to meet state or local government approvals and outcomes of public consultations, if available (section 2.4)		
	copies of any flora and fauna investigations and surveys (section 3)		
	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)		
	report(s) on any public consultations undertaken, including with Indigenous stakeholders (section 3)		

## 8 Contacts, signatures and declarations

**Project title:** Caval Ridge Coal Mine Project

---

### 8.1 Person proposing to take action

Name Mr Grant McLaren  
Title Manager Projects, Project Development

Organisation BM Alliance Coal Operations Pty Limited as manager and agent on behalf of the Central Queensland Coal Associates Joint Venture (CQCA).

ACN / ABN (if applicable) 67 096 412 752

Postal address Level 23, Riparian Plaza  
71 Eagle St Brisbane Qld 4000

Telephone Phone: (07) 3226 0600

Email Grant.J.McLaren@bmacoal.com

Declaration I declare that the information contained in this form is, to my knowledge, true and not misleading. I agree to be nominated as the proponent for this action.

Signature  Date 20/AUG/2008

---

### 8.2 Person preparing the referral information (if different from 8.1)

Name Mr Peter Andrew Roe  
Title Manager Environment

Organisation BM Alliance Coal Operations Pty Limited as manager and agent on behalf of the Central Queensland Coal Associates Joint Venture (CQCA).

Postal address Level 23, Riparian Plaza

Telephone (07) 3226 0600

Email Peter.A.Roe@bmacoal.com

Declaration I declare that the information contained in this form is, to my knowledge, true and not misleading.

Signature  Date 20/8/08

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If the referring party is a small business (fewer than 20 employees), estimate the time, in hours and minutes, to complete this form (include your time reading the instructions, working on the questions and obtaining the information and time spent by all employees in collecting and providing this information).

Hours	Minutes

# **Appendices**

**Appendix 1**

**BHP Billiton Mitsubishi Alliance Sustainable Development Report**



BHP Billiton Mitsubishi Alliance



**Covering Health  
and Safety, the  
Environment  
and Community  
Performance**

**For the year ended  
30 June 2007**

**Sustainable  
Development**





## FROM THE CEO



I am pleased to present BMA's Sustainable Development Report, which provides information on our safety, health, community and environmental performance and economic contribution for the year ended 30 June 2007. This report offers a perspective on the past year, and outlines how we are managing our business to ensure success in future years.

Our approach is centred on long term sustainability to provide a platform for growth. This means that while we grow in economic importance, we simultaneously progress our sustainability performance.

Socially, we continue to focus on our stakeholders, our employees, communities and business partners who are central to ensuring we remain a sustainable business. We strive to do this through our health and safety programs, employee assistance and community partnerships. We are pleased to be improving our safety trend, but disappointed that we fell short of the target again.

Our environmental performance is an area that requires continual improvement. We recognise that our mining does place physical demands on the environment, however we aim to carefully and fully manage our impacts on the local environment and the use of natural resources. This report details our performance in the management of water, land, energy, and greenhouse gas emissions.

As the largest employer in Central Queensland, we make a substantial economic contribution to the region, the State and the nation. We commit more than \$20 million each year to township support and growth and community initiatives, in addition to a record \$1.4 billion paid to over 1,300 Central Queensland businesses for equipment, materials and services. We are conscious that our current and future plans impact on the region's economy and ensure that all planning considers sustainable options for the environment and the community.

In the coming year, you will see us moving to become more centrally integrated and aligned to meet our goals. This approach will help us tackle both business and sustainability challenges.

I invite you to give us feedback on this report, and I trust that you find it of interest.

**John Smith**  
Chief Executive Officer

### CONTENTS

Message from the CEO

**Social** ..... 1

Community Partnerships Program ..... 1

Building our Program ..... 2

Health and Safety ..... 3

Indigenous Relations ..... 4

**Environmental** ..... 7

Land Management ..... 7

Water Management ..... 7

Energy Management ..... 8

Greenhouse Gas Management ..... 10

**Economic Contribution** ..... 12

*Front Cover: Andrea Bull from South Walker Mine; Dysart Primary School.*

*Back Cover: Rehabilitation at Saraji Mine.*



## Social: Safety, health & community

**The most critical factor to a safe workplace is human behaviour, so together we need to have a uniform approach to safety across all of our sites and personally demonstrate sound and consistent safety behaviours.**

**O**ur employees are our greatest asset, and our goal is to support their needs at work and at home. With over 8,900 people (including contractors) directly employed by BMA, we are the largest employer in the Central Queensland region, and with this we assume responsibility within the townships near our operations to develop and support sustainable options.

BMA operates in the Bowen Basin coal region of Queensland, with employees and their families living primarily in the towns of Emerald, Blackwater, Dysart, Moranbah and Mackay. Maintaining the appeal to live and work in these communities is fundamental to our ability to attract and retain good people.

In addition to supporting our employees, an estimated 26,000 flow-on jobs stem from our business. Last financial year we paid a record \$1.4 billion to more than 1,300 Central Queensland businesses for equipment, materials and services. BMA also spent \$830 million with other Queensland companies and over \$20 million on our townships and communities.

### Community Partnerships Program

*We work with our communities to develop partnerships that create sustainable value for all.*

In addition to the traditional economic benefits that flow from our activities, BMA works with communities to address social needs by developing partnerships that focus on building local capacity and creating sustainable value.

In 2002, BMA created the Community Partnerships Program (CPP) to address these needs in our Central Queensland towns. The program extends across most of the Bowen Basin as well as the port of Hay Point in Mackay.

The basis of the CPP is to support initiatives and activities which

Moranbah community



Coalfields Engineering Skills Centre



## Coalfields Engineering Skills Centre

Moranbah is the centre of the northern Bowen Basin coal region, which is seen as having particularly strong growth prospects among Australia's coal producing areas. This growth will critically depend on key engineering skills being available in the region.

To ensure this risk is minimised, the Coalfields Engineering Skills Centre has been developed with the assistance of BMA's Community Partnerships program, in addition to funding from the Federal Government, Queensland Government, Belyando Shire Council, community groups and other mining companies.

Once operational, the Coalfields Engineering Skills Centre will become an important training hub for employees of BMA, other companies in the region and students from Moranbah State High School.

With over 40 local students joining BMA's workforce each year as apprentices and trainees, the Skills Centre will become a significant part of the program to enable students to be appropriately job-ready, with industry standard skills and knowledge.

The Skills Centre is also hoping to deliver off-the-job training at a level that will benefit BMA and other companies. Specifically this will be through delivery of metals trades, engineering skills and importantly, the delivery of black coal competencies.

Skills Centre manager, Dean Russell, said that a number of students are already engaged with the Centre's activities, although it is yet to be fully launched.

"We hope to see students across the region and local community and industry getting the benefits from the Centre as soon as possible," Dean said.

"It's important that everyone understands that the new centre will be much more than a state of the art trades training facility, it will also be the community hub for a full range of training and development opportunities," Dean said.

BMA has provided \$90,000 through the CPP and offered in-kind support estimated at a further \$20,000 for BMA Goonyella Riverside mine training materials and resources.

promote partnerships with State and local government, training and welfare organisations and most importantly, the communities themselves.

Now in its sixth year of operation, the CPP has made significant contributions to Central Queensland. More than \$5 million was contributed to programs and projects during FY2007.

The CPP initiatives are categorised into six areas:

- Youth Development
- Economic Development/  
Business and Skills Training
- Community Development  
and Welfare
- Community Safety, Sport,  
Wellbeing and Recreation
- Arts, Entertainment and  
Cultural Development
- Environment and Sustainable  
Development

To ensure BMA's CPP continues to meet local community needs, evaluation and community feedback is facilitated to monitor the program's effectiveness and opportunities for improvement.

### Building our Program

*We recognise the needs of our communities, and we are investing in landmark projects to further improve the towns in which our people live and work.*

BMA is committed to addressing issues and township needs by developing major infrastructure projects or 'landmark' projects. Stemming from survey outcomes, a number of 'landmark' projects were identified, with the aim of further improving the towns as places to live and work.

BMA is the principal coordinator of two 'landmark' projects already underway – the \$9 million Blackwater International Coal Centre, of which \$1.25 million is contributed by BMA, and the \$6 million Dysart Multi Purpose Sports Centre, where we are contributing \$2 million. Four other potential 'landmark' projects have been identified: Moranbah Community Service Hub, Moranbah Aquatic Park, Blackwater Aquatic Park and a Dysart Aquatic Recreation Park.

BMA established Community Reference Groups to help identify projects and guide their implementation. The groups meet several times a year and are made up of representatives from local community organisations, employees' partners and BMA senior mine management. This year nine group meetings have taken place in the townships of Dysart, Moranbah and Blackwater.

BMA is also working to ensure clear engagement with state and local government to meet local needs across the region.

### Health and Safety

*Improving our safety performance is our number one priority.*

The health and safety of our employees is fundamental to our business. BMA has an overriding commitment to the safety and health of our people and creating a culture where we all have a genuine desire to achieve Zero Harm.

The most critical factor to a safe workplace is human behaviour, so together we need to have a uniform approach to safety across all of our sites and personally demonstrate

sound and consistent safety behaviours.

Our rate of injury, which is measured as the Recordable Injury Frequency Rate, showed overall improvement last year, decreasing 15 per cent from 16.6 to 14.1 throughout the year. Despite this improvement, we still had 272 people who required medical attention and missed our overall target of 13.9, emphasising the need to refocus our effort and commitment this year.

Part of our aim for Zero Harm is encapsulated in our Fatal Risk Control Protocols, which identify the areas of critical safety risk to our employees. Each Protocol establishes expectations for managing these risk areas at leading practice levels. Each year BMA is graded on its compliance with these protocols, and over the past year, key initiatives were taken in underground mobile equipment and lifting. Nonetheless, BMA's overall compliance score was still only 91 per cent, little changed from the previous year, and still leaving significant room for improvement.

To support these Protocols and related measures, BHP Billiton conducts an annual audit of each site to track how it is progressing against

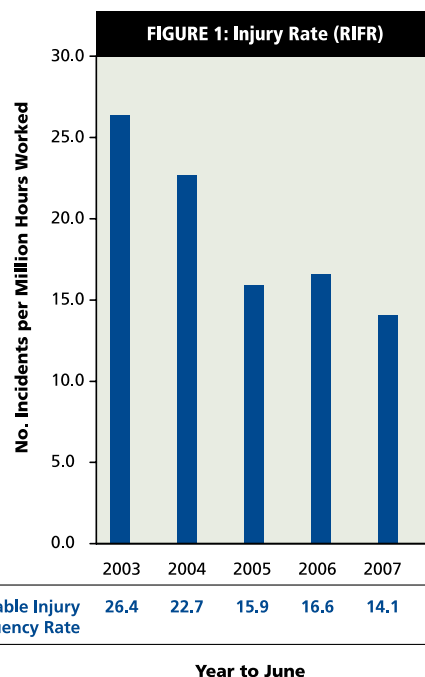
company Health, Safety, Environment and Community Management Standards. BMA was ahead of its target of 3.9 with a score of 4 out of 5 achieved.

We conduct comprehensive safety inductions for all new employees and contractors before they are permitted to work at our mines. Employees are also required to meet competency standards and undergo rigorous drug and alcohol testing before they are able to operate equipment.

Fatigue management has been a key focus for the mining industry over the past year, with BMA adopting a comprehensive, proactive approach based on the opportunity for adequate hours of rest, as opposed to the traditional "hours of work" approach. This is detailed in the case study overleaf.

We are actively involved in industry and support groups that promote safe practices, such as the Road Accident Action Group and the Mining Industry Road Safety Alliance.

All BMA sites engage with employees and community members to raise awareness of healthy lifestyle options. Services available include access to nutritionists, skin checks, window blackouts for shift workers,



health assessments and management programs. During 2007 two successful strategies were carried out: Be More Active – Moranbah, in its second year of a three year program, funded by BMA and Queensland Health, and the Dysart Body Mind and Attitude Community Health Festival developed by Saraji Mine.



## Fatigue Management

Providing safe and realistic working time arrangements is at the core of BMA's commitment to ensure people are fit and healthy for the tasks they need to perform.

During the year, BMA introduced a proactive fatigue management program incorporating an overriding policy, management plans and standards to ensure fatigue is appropriately managed at all of our mine and port operations.

We realise people sometimes travel long distances to get to work, however safe and effective working time arrangements are a shared responsibility between BMA and the workforce. Our program was developed in consultation with employees as well as external fatigue management specialists.

A critical aspect of managing fatigue is to ensure that rosters are designed so that employees have sufficient opportunities for rest and sleep before and after work.

The program provides recommendations on maximum working hours, minimum rest periods during work, and minimum rest times between periods of work - but it goes well beyond the traditional policy of prescribing hours and shifts while at work, to also consider the time spent getting to and from work.

In spite of this, there may be occasions when employees become fatigued on the job, so BMA has implemented additional control strategies, such as 'fatigue breaks' to address fatigue related risks within each workplace.

A revised Contractor Management procedure and training program has been rolled out throughout our business. Training programs have been conducted for mine, port and support employees and supervisors, major contractors and contractor supervisors.

This program provides tools to contractors and contract managers to allow them to effectively manage the critical issue of contractor safety performance.

## Indigenous Relations

BMA continues to build relationships and understanding with the Traditional Owners of the land on which we operate. Cultural Heritage Management Plans have been completed for all sites, including most recently Blackwater Mine in June.

These plans include an agreement between the site and the Traditional Owners to undertake cultural heritage surveys ahead of mine disturbance, arrangements for salvage and safe keeping of cultural heritage material and training in cultural heritage awareness for our workforce.

During 2007, Traditional Owner group Barada Barna Kabalbara & Yetimarla (BBKY) partnered with BMA's South Walker Creek Mine to develop the Bidgerley Cultural Learning Centre, enabling the showcase of artefacts from the region and option to hold education sessions. The Centre, which will be managed by BBKY, is detailed in the accompanying case study.

At several mines the Traditional Owners have been asked to manage areas set aside for conservation of biodiversity. These areas generally border the mining operations, and at South Walker Creek, Poitrel and Norwich Park are required as offsets for ongoing disturbance. Formal management plans will be developed in consultation with the Traditional Owners of these areas.

BMA actively procures the services of Indigenous contractor groups for certain land management and agistment. Each site also coordinates separate Indigenous employment strategies, often as part of their Cultural Heritage Management Plan.



## Cultural Heritage Embraced


BMA strengthened its ties with Traditional Owner group Barada Barna Kabalbara & Yetimarla (BBKY) during the year with the opening of the Bidgerley Learning Centre, designed to promote and display the region's Indigenous cultural heritage.

The Bidgerley Learning Centre was developed as part of the cultural heritage management agreement between BHP Mitsui's South Walker Creek Mine and the BBKY people, with collaboration continuing to build the Centre, create displays and construct an interpretative walk.

The Centre is lined with displays of artefacts collected by BBKY people during cultural heritage surveys on the mine lease.

BBKY elder and spokesperson Frank Budby shared his vision for the Centre at the opening of the Centre.

"I hope it will encourage our people to come back to country and get involved in something positive by helping educate school groups, mining employees and tourists about our culture and traditions," Frank said.



“ There are still a number of areas to improve in our management of water, and we will continue to address local fresh water use and discharge issues.

# Environmental

**M**anagement of the environment remains a critical aspect of our licence to operate. We aim to carefully and fully manage all our impacts on the local environment and our use of natural resources.

Annual performance reviews are undertaken by the Environmental Protection Agency (EPA). The ratings for each mine were essentially unchanged from FY2006.

However our overall rating worsened due to the registration of Poitrel, our newest mine. EPA policy states that new mines, such as Poitrel, must stay at a rating of 5 (the lowest level in a scale of 1 to 5) for two years before its performance can be regraded.

## Land Management

Our area disturbed by mining increased over the past year, continuing the uphill trend over the past five years.

The area under rehabilitation remained constant at 10,000 hectares, while the percentage of affected land under rehabilitation decreased, due mainly to operational issues that included placing pre-strip over areas that would otherwise be available for rehabilitation.

Furthermore, as the areas of rehabilitation are on such a large scale, it is more cost effective and time efficient to undertake a large rehabilitation campaign than do smaller portions each year (refer Figure 2 top right).

## Water Management

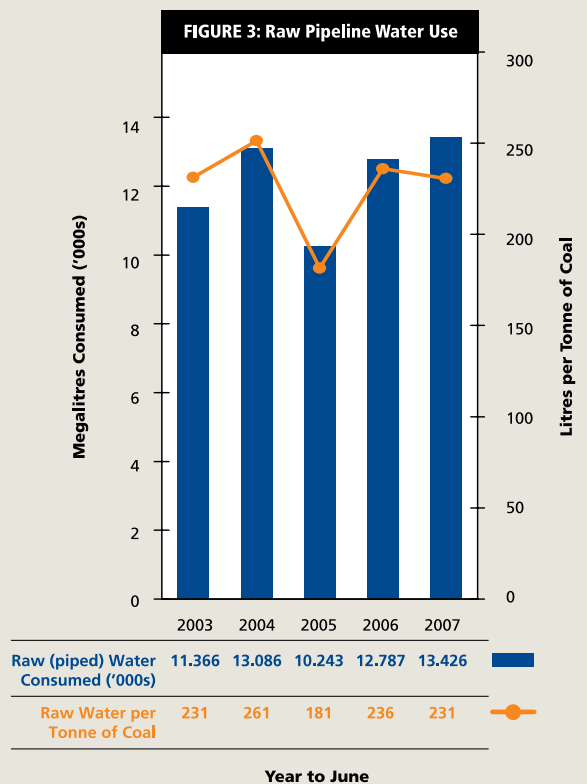
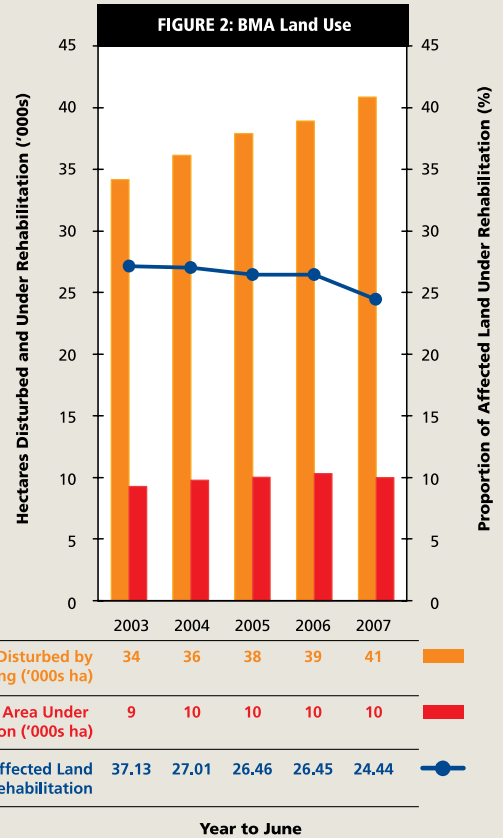
Total raw water consumption by our mines is greatly affected by tonnes of coal produced. Although we consumed almost 640,000Ml more raw pipeline water than in FY06, water used per tonne of coal used has decreased (refer Figure 3 bottom right).

While this is primarily due to the impact of the drought on our recycled water supply, all of our sites have implemented initiatives to reduce water use.

Our water management goals focus on reducing the use of raw pipeline water, maximising the recycling and reuse of water, and minimising the possibilities for discharge of mine affected water.

Key activities during the last year included:

- 19,000Ml of water pumped to 12 BHP Billiton and BMA sites, three towns, two non-BMA sites (German Creek and Kestrel mines), and 350 stock and domestic consumers through 600km of pipelines and 36 pumping stations.
- Water balance studies at most BMA sites to improve our efficiency.







## Protection Planned for Vulnerable Species

BMA recognises that the area in which we operate is a unique part of Australia that supports the habitat conditions of threatened flora and fauna species. The study and preservation of these species is ongoing, and over the past year focus has included the vulnerable Ornamental snake.

BMA has been instrumental in developing a program to understand the behaviour of the Ornamental snake, in an effort to secure the reptile's survival.

The nocturnal Ornamental snake, listed as a vulnerable species, lives exclusively in the Central Queensland Brigalow region.

Found in the undulated Gilgai habitat in the low lying areas of a number of BMA's mine sites, the Ornamental snake is currently the subject of a study by BMA and the Australian Coal Association Research Program (ACARP) to understand the reptile's habitat and behaviour on mining lease areas.

The benefits of this study will dictate conservation outcomes and long-term planning, by ensuring mining companies take an informed approach when disturbing and rehabilitating known habitat areas, as well as complying with legislative requirements.

A key element of the study is reviewing the snake's activities and food sources during the dry season and wet season through a radio-tracking program. This investigation is currently planned to follow rain at a suitable Brigalow area on one of BMA's leases.

- Development of the final stages of a new pipeline from the Burdekin Dam, to provide additional water security for the local industry and to townships (BMA is funding \$170M of the \$275M cost of the pipeline).
- BMA increased its supply commitment to the township of Moranbah from 5Ml per day to 5.8Ml per day from a total supply to the township of 7Ml per day.
- Several projects completed to allow bi-directional pumping of water through the system.

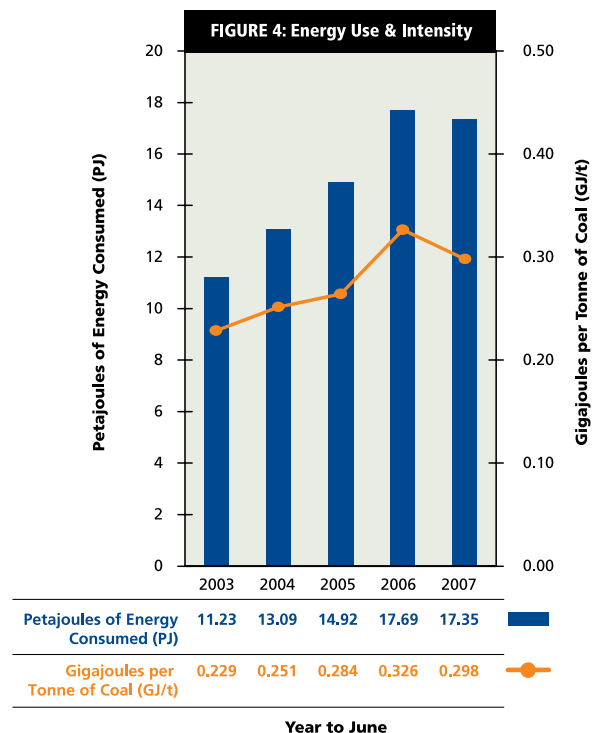
There are still a number of areas to improve in our management of water, and we will continue to work with local government and agencies, partners and communities to address local fresh water use and discharge issues.

## Energy Management

BMA sites reduced consumption of energy, placing us on the right path to meet our energy efficiency targets.

However, as with the conditions in previous years, the reduction resulted from a change in the pattern of activity rather than in the efficiency with which activities were carried out.

In this particular case, the reduction followed the completion (during FY06) of concentrated pre-strip and rehabilitation work at Goonyella Riverside Mine leading up to potential expansion work during FY06. With those projects on hold during FY07, energy consumed dipped to just over 17 petajoules, down two per cent (refer Figure 4 below).





## Achieving Energy Excellence

BMA has adopted a leading role in the plan by BHP Billiton to identify ways to improve energy efficiency and reduce energy consumption in response to the Federal Government's Energy Efficiency Opportunities legislation.

In conjunction with BHP Billiton, an 'Energy Excellence' (EEx) Implementation Framework has been adopted by BMA with the aim of reducing the energy and greenhouse intensity of our operations.

In meeting the legislative requirements, BMA is reviewing existing diesel and electricity usage at sites and will implement a range of activities and initiatives that underline our commitment to be a leader in energy and greenhouse gas management.

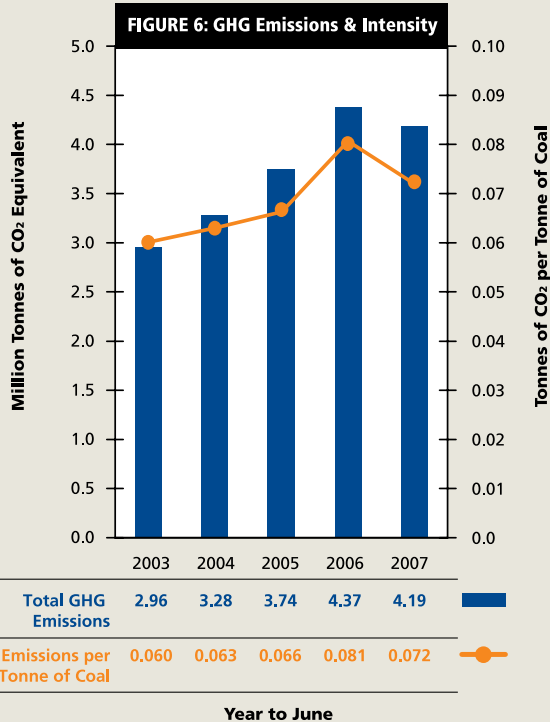
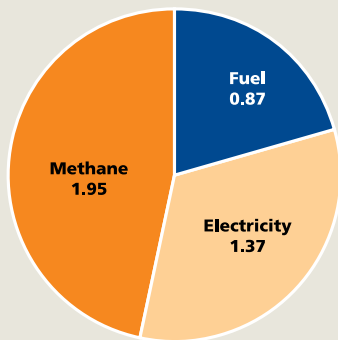
A steering group of management and site representatives has been set up and the sites have appointed 'energy champions' to identify opportunities and share best practice.

The project will involve metering to understand current energy use and identify improvements, and a combination of incremental improvements and step changes through major capital projects.

Projects are being investigated in the areas of improved bucket efficiency, drill and blasting, diesel equipment and upgrading earth moving equipment.

**FIGURE 5: GHG Emissions by Source**

Million Tonnes of CO<sub>2</sub> Equivalent for 2007



Our diesel consumption fell by four per cent over the period, while our electricity consumption increased by almost four per cent to 4.48 petajoules due to deepening coal seams at most of our mines, with more electric shovels and draglines required for longer periods.

### Greenhouse Gas Management

*While our levels of energy and greenhouse intensity are not surprising, we are focused on finding alternative ways to reduce energy use.*

BMA's energy use and emissions of greenhouse gases are closely related. Carbon dioxide generated from our consumption of electricity and diesel makes up more than half our greenhouse gas emissions from mining operations. These declined in FY07 in line with our reduction in energy use (refer Figure 5 top left).

The balance of our emissions are from methane released from the coal seams during mining. Considerable uncertainty surrounds the bulk of these emissions given the broad estimation techniques used for the open cut mines that make up most of our operations.


In FY07, we also followed international practice in basing our calculations on Global Warming Potential value for methane of 21 (rather than 23 as in previous years), partly amounting for the observed 11 per cent decline in our overall greenhouse intensity in FY07 (refer Figure 6 bottom left). BMA plans to improve the precision of our estimation of methane emissions from our open cut mining.

In total, BMA's Greenhouse Gas emissions dropped by four per cent to 4.2 million tonnes (of CO<sub>2</sub> equivalent), and our emissions per tonne of coal dropped by 12 per cent, despite our increased production from 54mt to 58mt and the increased overburden removal.

We will endeavour to further improve our performance in the coming years, mainly through our Energy Excellence Program. This will be challenging, given our plans to expand production from mature open cut mines that are increasing in scale and depth every year. The Energy Excellence Program is outlined in the case study on page 9.

BMA is a national and world leader in contributing to efforts to develop new technologies for the low emissions use of coal. We were a founding member and major driver of Australia's COAL21 Fund that will raise an estimated \$1 billion over the next ten years for research, development and commercialisations of these technologies.

BMA's contribution, via a voluntary 20 cent per tonne levy on Australian coal producers, will be at least \$130 million over that period based on current production, and higher with increased production. We are also taking a prominent role in the management of the Fund and assessment of candidate projects.



Lexie Frankham at Goonyella Riverside Mine

## Coal Bed Methane

The capture and utilisation of coal bed methane gas (CBM), a by-product of the coal formation process, is receiving increasing attention in the industry as a greenhouse-friendly energy alternative.

When CBM is used for electricity generation, the greenhouse savings arise from avoiding the venting of methane and the use of lower-carbon power displaces the need for coal-fired electricity.

A number of our sites include the hydrocarbon rights to the coal bed methane, and it is a lease condition that we develop the methane resource if commercially viable.

BMA will develop a CBM program to assist our greenhouse gas management and address issues such as safety, coal quality, access to markets and potential development partners.

There are five areas where commercially viable gas may be extracted, with South Walker Creek to be a particular focus as the site for a pilot plant. Discussions with CBM developers are underway for potential gas extraction in future years.

# Economic Contribution

**Sustainable economic performance ensures our ongoing commitment to employment, production and community benefit.**

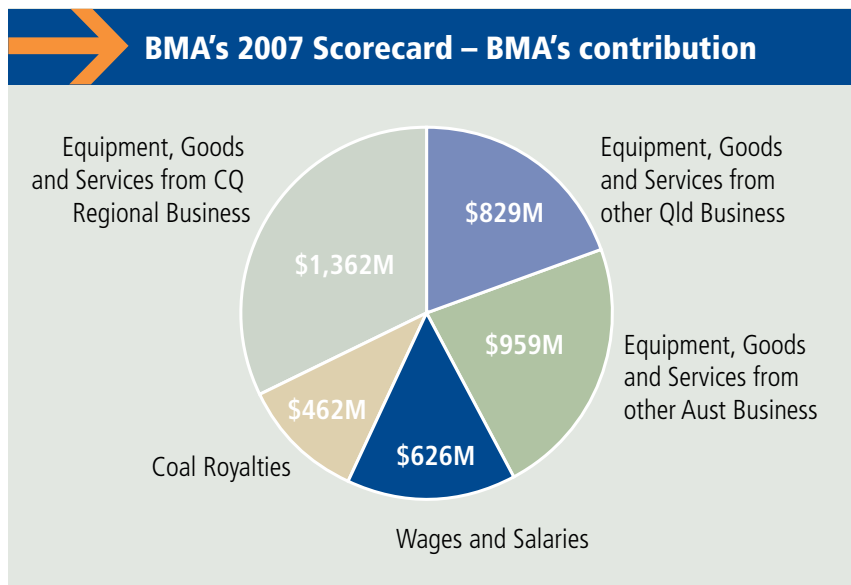
**We continue to grow in economic importance and make a substantial contribution to Central Queensland, the state and the nation.**

As a leader in the Queensland coal industry, there are expectations of transparency in how we generate economic value for our customers, employees and the communities in which we operate. This value is impacted by our investments, purchase of goods and services, taxes and royalties and salaries.

The following table charts our FY2007 commitment to the region and the broader economy:

- 8,900 people directly employed (including contractors)
- Estimated 26,000 flow on jobs
- 237 apprentices and trainees

- \$630 million in wages and salaries paid to BMA employees
- Record \$1.4 billion paid to more than 1,300 Central Queensland regional businesses for equipment, materials and services
- \$830 million spent with other Queensland businesses
- \$960 million spent with other Australian businesses
- \$460 million paid to the State Government in coal royalties
- \$295 million paid to Queensland Rail in rail freight charges
- Over \$20 million spent on local townships and communities
- Work commenced on the \$9 million landmark project, the Blackwater International Coal Centre.





**“ As a leader in the Queensland coal industry, there are expectations of transparency in how we generate economic value for our customers, employees and the communities in which we operate.**





BHP Billiton Mitsubishi Alliance



Printed on environmentally-accredited paper



**Appendix 2**

**BHP Billiton Mitsubishi Alliance Charter**





BHP Billiton Mitsubishi Alliance

BHP BILLITON MITSUBISHI ALLIANCE

# Charter

**Our purpose is to create value through the mining, production and marketing of high quality coal resources, and the provision of innovative customer and market-focused solutions.**

**To prosper and grow, we must:**

- Actively manage and build our portfolio of high quality assets and services.
- Continue the drive towards a high performance organisation in which every individual accepts responsibility and is rewarded for results.
- Earn the trust of employees, customers, suppliers, communities and shareholders by consistently delivering on commitments and being forthright in our communications.

**We value:**

- *Safety and the Environment* – An overriding commitment to health, safety, environmental responsibility and sustainable development.
- *Integrity* – Doing what we say we will do.
- *High Performance* – The excitement and fulfilment of achieving superior business results and stretching capabilities.
- *Win-Win Relationships* – Having relationships which focus on the creation of value for all parties.
- *The Courage to Lead Change* – Accepting the responsibility to inspire and deliver positive change in the face of adversity.
- *Respect for Each Other* – Embracing diversity and honesty, enriched by openness, sharing, trust, teamwork and involvement.

**We are successful in creating value when:**

- Each employee ends each day safely.
- Our employees value their own contribution and respect the contributions of others.
- Our shareholders are realising a superior return on their investment.
- Our customers and suppliers are benefiting from our business relationships.
- The communities in which we operate value our citizenship.

John Smith  
Chief Executive Officer  
BHP Billiton Mitsubishi Alliance

**Appendix 3**

**BHP Billiton's Sustainable Development Policy**

# BHP BILLITON'S SUSTAINABLE DEVELOPMENT POLICY

**At BHP Billiton our objective is to be the company of choice – creating sustainable value for our shareholders, employees, contractors, suppliers, customers, business partners and host communities.**

**We aspire to Zero Harm to people, our host communities and the environment and strive to achieve leading industry practice. Sound principles to govern safety, business conduct, social, environmental and economic activities are integral to the way we do business.**

**Wherever we operate we will develop, implement and maintain management systems for sustainable development that drive continual improvement and ensure we:**

- do not compromise our safety values, and seek ways to promote and improve the health of our workforce and the community
- identify, assess and manage risks to employees, contractors, the environment and our host communities
- uphold ethical business practices and meet or, where less stringent than our standards, exceed applicable legal and other requirements
- understand, promote and uphold fundamental human rights within our sphere of influence, respecting the traditional rights of Indigenous peoples and valuing cultural heritage
- encourage a diverse workforce and provide a work environment in which everyone is treated fairly, with respect and can realise their full potential
- set and achieve targets that promote efficient use of resources and include reducing and preventing pollution
- enhance biodiversity protection by assessing and considering ecological values and land-use aspects in investment, operational and closure activities
- engage regularly, openly and honestly with people affected by our operations, and take their views and concerns into account in our decision-making
- develop partnerships that foster the sustainable development of our host communities, enhance economic benefits from our operations and contribute to poverty alleviation
- work with those involved through the lifecycles of our products and by-products to promote their responsible use and management
- regularly review our performance and publicly report our progress.

**In implementing this Policy, we will engage with and support our employees, contractors, suppliers, customers, business partners and host communities in sharing responsibility for meeting our requirements.**

**We will be successful when we achieve our targets towards Zero Harm, are valued by our host communities, and provide lasting social, environmental and economic benefits to society.**



Marius Kloppers  
Chief Executive Officer



**Appendix 4**

**BHP Billiton Health, Safety, Environmental and  
Community Management Standards, Contributing to Sustainable Development**

# HEALTH, SAFETY, ENVIRONMENT AND COMMUNITY MANAGEMENT STANDARDS

CONTRIBUTING TO SUSTAINABLE DEVELOPMENT

SEPTEMBER 2005 ISSUE No 3

Electronic copy updated October 2007



## BHP Billiton Charter and Sustainable Development Policy

# BHP BILLITON CHARTER

WE ARE BHP BILLITON, A LEADING GLOBAL RESOURCES COMPANY.

**Our purpose is to create long-term value through the discovery, development and conversion of natural resources, and the provision of innovative customer and market-focused solutions.**

**To prosper and achieve real growth, we must:**

- actively manage and build our portfolio of high quality assets and services,
- continue the drive towards a high performance organisation in which every individual accepts responsibility and is rewarded for results,
- earn the trust of employees, customers, suppliers, communities and shareholders by being forthright in our communications and consistently delivering on commitments.

**We value:**

- **Safety and the Environment** – An overriding commitment to health, safety, environmental responsibility and sustainable development.
- **Integrity** – Including doing what we say we will do.
- **High Performance** – The excitement and fulfilment of achieving superior business results and stretching our capabilities.
- **Win-Win Relationships** – Having relationships which focus on the creation of value for all parties.
- **The Courage to Lead Change** – Accepting the responsibility to inspire and deliver positive change in the face of adversity.
- **Respect for Each Other** – The embracing of diversity, enriched by openness, sharing, trust, teamwork and involvement.

**We are successful in creating value when:**

- our shareholders are realising a superior return on their investment.
- our customers and suppliers are benefiting from our business relationships.
- the communities in which we operate value our citizenship.
- every employee starts each day with a sense of purpose and ends each day with a sense of accomplishment.



Marius Kloppers  
Chief Executive Officer

October 2007



OUR APPROACH TO HEALTH, SAFETY, ENVIRONMENT AND THE COMMUNITY

# BHP BILLITON'S SUSTAINABLE DEVELOPMENT POLICY

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- uphold ethical business practices and meet or, where less stringent than our standards, exceed applicable legal and other requirements
- understand, promote and uphold fundamental human rights within our sphere of influence, respecting the traditional rights of Indigenous peoples and valuing cultural heritage
- encourage a diverse workforce and provide a work environment in which everyone is treated fairly, with respect and can realise their full potential
- set and achieve targets that promote efficient use of resources and include reducing and preventing pollution
- enhance biodiversity protection by assessing and considering ecological values and land-use aspects in investment, operational and closure activities
- engage regularly, openly and honestly with people affected by our operations, and take their views and concerns into account in our decision-making
- develop partnerships that foster the sustainable development of our host communities, enhance economic benefits from our operations and contribute to poverty alleviation
- work with those involved through the lifecycles of our products and by-products to promote their responsible use and management
- regularly review our performance and publicly report our progress.

**In implementing this Policy, we will engage with and support our employees, contractors, suppliers, customers, business partners and host communities in sharing responsibility for meeting our requirements.**

**We will be successful when we achieve our targets towards Zero Harm, are valued by our host communities, and provide lasting social, environmental and economic benefits to society.**



Marius Kloppers  
Chief Executive Officer

1 October 2007



## CONTENTS

Introduction	2
Hierarchy of HSEC Documents	4
HSEC Management Standards	5
Standard 1 Leadership and Accountability	6
Standard 2 Legal Requirements, Commitments and Document Control	7
Standard 3 Risk and Change Management	8
Standard 4 Planning, Goals and Targets	9
Standard 5 Awareness, Competence and Behaviour	10
Standard 6 Health and Hygiene	11
Standard 7 Communication, Consultation and Participation	12
Standard 8 Business Conduct, Human Rights and Community Development	13
Standard 9 Design, Construction and Commissioning	14
Standard 10 Operations and Maintenance	15
Standard 11 Suppliers, Contractors and Partners	16
Standard 12 Stewardship	17
Standard 13 Incident Reporting and Investigation	18
Standard 14 Crisis and Emergency Management	19
Standard 15 Monitoring, Audit and Review	20
Definitions	21
Relevant Documentation	25

# INTRODUCTION

This section describes the background, application and scope of the BHP Billiton Health, Safety, Environment and Community (HSEC) Management Standards (hereinafter referred to as 'these Standards').

## Background

*BHP Billiton owns and operates a diverse range of businesses in different countries and cultures around the world that, by their nature, may affect the health and safety of people, the environment or communities. As stated in the BHP Billiton Charter, we have an overriding commitment to sustainable development and we pursue this through the effective management of HSEC. We aspire to Zero Harm and seek to ensure our business contributes lasting benefits to society through the consideration of health, safety, social, environmental, ethical and economic aspects in all Company decisions and activities.*

*These Standards form the basis for the development and application of HSEC management systems at all levels in BHP Billiton. Although HSEC matters are interrelated and co-dependent, it is recognised that the skills and processes required to manage issues may vary according to the context.*



## Application

These publicly available Standards interpret and support the Sustainable Development Policy and apply to BHP Billiton sites and operations throughout the world. These include:

- Majority owned and/or operated and controlled facilities and activities (from exploration and planning through to closure and rehabilitation)
- Development projects, mergers, acquisitions and divestments
- Activities by contractors on BHP Billiton sites or under BHP Billiton management (including construction activities prior to hand-over).

Where BHP Billiton does not have operational responsibility but

has an equity stake, or where significant BHP Billiton assets are involved, these Standards are made available to the operator, so that comparable HSEC Management Standards may be applied.

It is important to note, although the HSEC requirements have been integrated in these Standards, the decision whether to comply with these Standards by means of a single integrated system or separate systems is at the discretion of individual businesses.

The resolution of conflicts presented by the implementation of these Standards must be consistent with the principles of the BHP Billiton Charter.

## Scope

The scope of these Standards covers all operational aspects and activities that have the potential to affect HSEC either positively or negatively. The terminology 'Health, Safety, Environment and Community' (HSEC) has been utilised throughout these Standards to highlight four key components of sustainable development. These are:

1. *Health* – promoting and improving the health of the Company's workforce and host communities
2. *Safety* – ensuring safety values are not compromised, and providing a workplace where people are able to work without being injured
3. *Environment* – promoting the efficient use of resources, reducing and preventing pollution and enhancing biodiversity protection
4. *Community*
  - Internal community – upholding ethical business practices and encouraging a diverse workforce, where employees and contractors are treated fairly, with respect and can realise their full potential
  - External community – engaging regularly with those affected by BHP Billiton operations to enhance economic benefits and contribute to sustainable community development
  - Human rights – understanding, promoting and upholding fundamental human rights within BHP Billiton's sphere of influence.

These Standards cover the entire lifecycle of operations, from exploration and planning through to operation and closure (decommissioning, remediation and rehabilitation).

The related areas of personal and asset security are not specifically addressed by the Performance Requirements of these Standards. However, guidelines equivalent to HSEC guidelines, are available for site use. Please refer to the BHP Billiton Asset Protection intranet <http://assetprotection.bhpbilliton.net/main/home.asp> for more detail.

The objectives of these Standards are to:

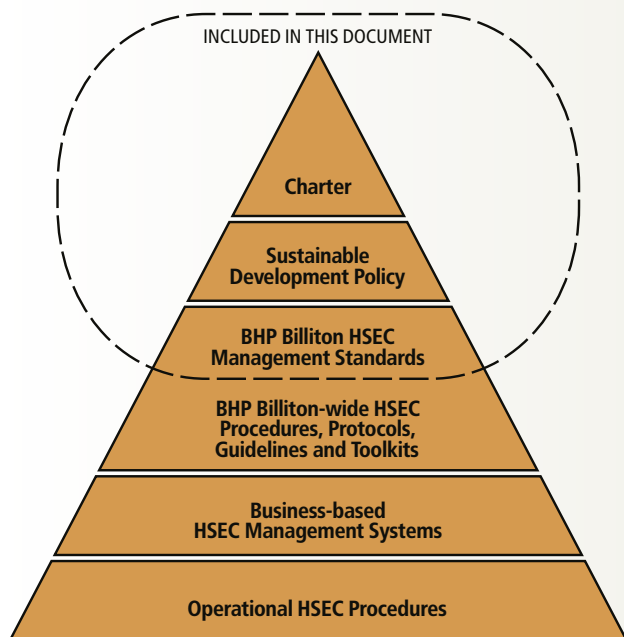
- Support the implementation of the Charter, the Sustainable Development Policy and the Guide to Business Conduct across BHP Billiton
- Provide a risk-based HSEC management system framework, consistent with:
  - BHP Billiton Enterprise-Wide Risk Management Policy
  - ISO 14001
  - OHSAS 18001
  - SA 8000
  - International policies, standards and management practices to which BHP Billiton has committed, including the:
    - United Nations Global Compact
    - United Nations Universal Declaration of Human Rights
    - International Council on Mining and Metals (ICMM) Sustainable Development Framework
    - World Bank Operational Directive on Involuntary Resettlement
    - US-UK Voluntary Principles on Security and Human Rights
    - other regional commitments
- Set out and formalise the expectations for progressive development and implementation of more specific and detailed HSEC management systems at all levels of BHP Billiton
- Provide auditable criteria, against which HSEC management systems across BHP Billiton can be measured
- Drive continual improvement towards leading industry practice.

## Review and Document Control

These Standards are reviewed at least every three years or as required by Standard 3 – Risk and Change Management. If required, they are revised and reissued in accordance with the document control requirements of Standard 2 – Legal Requirements, Commitments and Document Control.

# HIERARCHY OF HSEC DOCUMENTS

*The BHP Billiton HSEC management system is hierarchical, where documents and systems must meet and support the requirements of those of higher levels.*



## Status of HSEC Documents

The BHP Billiton Charter, Sustainable Development Policy, Guide to Business Conduct and HSEC Management Standards are mandatory to all BHP Billiton sites and operations.

BHP Billiton-wide Procedures and Protocols are mandatory to all BHP Billiton sites, operations and controlled activities. These documents address specific areas (e.g. corporate performance reporting, fatal risk controls, incident investigation, etc) where it is important that activities are carried out consistently across BHP Billiton.

BHP Billiton-wide Guidelines are advisory and provide BHP Billiton businesses with guidance on the effective implementation of these Standards.

BHP Billiton-wide Toolkits are not mandatory but provide preferred methods for meeting the requirements of these Standards and BHP Billiton-wide Procedures, Protocols and Guidelines.

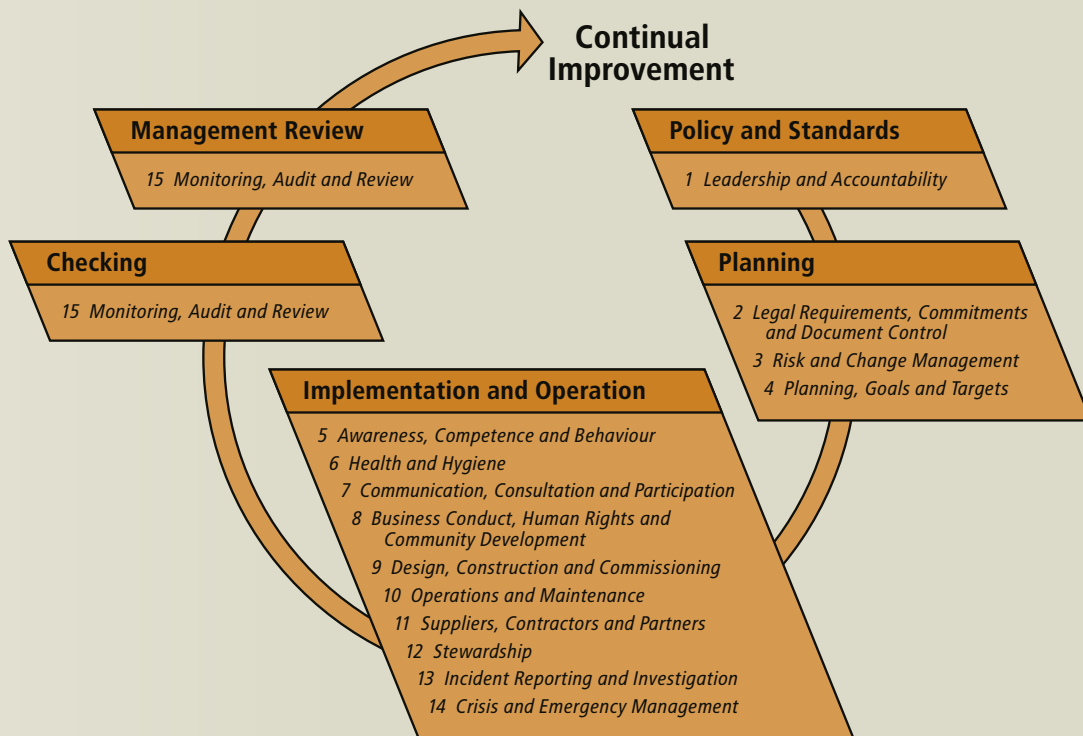
Business-based HSEC Management Systems may consist of both mandatory and advisory documents. These apply only to the sites, operations and activities controlled by the relevant business.

Operational HSEC Procedures apply within the sites and operations where they are issued, and are intended to support the BHP Billiton Charter, Sustainable Development Policy and these Standards.

Copies of BHP Billiton-wide HSEC procedures, protocols, guidelines and toolkits can be found on the BHP Billiton intranet at <http://hsec.bhpbilliton.net/Bb/standards/standards.asp>.

# HSEC MANAGEMENT STANDARDS

The framework for the HSEC Management Standards is based on the Plan-Do-Check-Act (PDCA) methodology. The figure below illustrates how these Standards fit into the PDCA model.



The remainder of this section specifies the Performance Requirements for each of the 15 HSEC Management Standards.

- |  |  |
|--|--|
| Standard 1 <i>Leadership and Accountability</i>                        | Standard 8 <i>Business Conduct, Human Rights and Community Development</i> |
| Standard 2 <i>Legal Requirements, Commitments and Document Control</i> | Standard 9 <i>Design, Construction and Commissioning</i>                   |
| Standard 3 <i>Risk and Change Management</i>                           | Standard 10 <i>Operations and Maintenance</i>                              |
| Standard 4 <i>Planning, Goals and Targets</i>                          | Standard 11 <i>Suppliers, Contractors and Partners</i>                     |
| Standard 5 <i>Awareness, Competence and Behaviour</i>                  | Standard 12 <i>Stewardship</i>   |
| Standard 6 <i>Health and Hygiene</i>                                   | Standard 13 <i>Incident Reporting and Investigation</i>                    |
| Standard 7 <i>Communication, Consultation and Participation</i>        | Standard 14 <i>Crisis and Emergency Management</i>                         |
|  | Standard 15 <i>Monitoring, Audit and Review</i>                            |

Performance Requirements aligned with the Company Business Excellence criteria are identified for each Standard.

# LEADERSHIP AND ACCOUNTABILITY

## Intent

*Directors, managers, employees and contractors understand their accountabilities and demonstrate leadership and commitment to sustainable development and Zero Harm through effective HSEC management.*

## Performance Requirements

- 1.1 BHP Billiton maintains a Sustainable Development Policy that is appropriate to the nature, scale and HSEC impacts of the Company's activities, products, services and commitments. The Policy is available to stakeholders.
- 1.2 The Sustainable Development Policy is approved by the BHP Billiton Office of the Chief Executive and these Standards are approved by the Operating Committee.
- 1.3 The BHP Billiton Board of Directors seeks assurance of conformance with these Standards and regularly reviews HSEC performance, risks and strategic issues.
- 1.4 Site management defines and documents the scope of the HSEC management system for their operations.
- 1.5 Managers are accountable for the HSEC performance of their business, the implementation of the Sustainable Development Policy and meeting the Performance Requirements of these Standards through management systems designed to measure and drive continual improvement in HSEC performance.
- 1.6 Managers provide sufficient resources to support effective HSEC management, the implementation and maintenance of HSEC management systems, and the provision of specialist HSEC advice.
- 1.7 Managers demonstrate visible leadership and proactive commitment to HSEC excellence through personal example, by promoting initiatives and encouraging strong teamwork at all levels, and by conducting frequent site inspections, reviews and behavioural observations.
- 1.8 The HSEC roles and accountabilities of employees and contractors are defined, documented, communicated, kept up-to-date, understood and applied.
- 1.9 Effective HSEC leadership is a prerequisite for promotion. Specific and measurable HSEC activities, goals and targets are included in performance plans and appraisal systems for all employees.
- 1.10 Systems are in place to ensure that employees and contractors are aware of expected HSEC behaviours and have a clear understanding of the consequences of inappropriate conduct.
- 1.11 Systems are in place that recognise, reinforce and reward HSEC innovation, initiatives and desired behaviours and outcomes.
- 1.12 Employees and contractors understand that they have the right and responsibility to stop work or refuse to work in situations that may cause HSEC harm, and to immediately bring these situations to the attention of those at imminent risk and to management.

1.1, 1.2, 1.3, 1.5, 1.6, 1.7, 1.8, 1.10, 1.11 aligned with Business Excellence criteria.

# LEGAL REQUIREMENTS, COMMITMENTS AND DOCUMENT CONTROL

## Intent

*Relevant legal, regulatory and other HSEC requirements are identified, accessible, understood and complied with and an effective HSEC document control system is in place.*

## Performance Requirements

- 2.1 Systems are in place to identify and access all applicable HSEC laws, regulations, approvals, licences, permits, and other requirements (e.g. codes, charters, policies, standards, protocols, commitments), and document them in a compliance register that is reviewed and kept up-to-date.
- 2.2 Compliance with legal and other requirements is demonstrated through the implementation of documented procedures that ensure communication of specific requirements, periodic evaluation, record keeping and reporting.
- 2.3 Where local legislation does not require an adequate level of HSEC performance, activities are conducted in a manner that is consistent with these Standards, relevant international standards and practices, taking due account of social and cultural sensitivities.
- 2.4 Systems are in place to ensure that HSEC documents are controlled. Current versions of relevant documents are available and understandable to the user as required. Documents from external sources necessary for the planning and operation of the HSEC management system are registered and current.
- 2.5 Systems are in place to ensure that HSEC records are established and maintained, accurate, legible and identifiable. Medical records are kept confidential by appropriate health professionals.
- 2.6 HSEC documents and records are identified, securely stored, readily retrievable, have established retention times based on legal requirements and/or knowledge preservation, and responsible custodians are assigned. Disposal is in accordance with the BHP Billiton Records Disposal Manual.
- 2.7 The core elements of the HSEC management system and their interaction, including indexes or maps that provide direction to related documents, are described and maintained in paper or electronic form.

2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7 aligned with Business Excellence criteria.

# RISK AND CHANGE MANAGEMENT

## Intent

*HSEC hazards are identified and associated risks assessed and managed. Planned and unplanned changes are identified and managed.*

## Performance Requirements

- 3.1 HSEC risk management processes are applied to all activities that BHP Billiton controls or can influence.
- 3.2 HSEC risks and opportunities are assessed, prioritised and managed as appropriate to the nature, scale and HSEC impacts of the operations and activities. This process takes into account health and safety, human rights, the surrounding physical, ecological, social and cultural environment, biodiversity, applicable legal and other requirements and financial implications. Low probability, high consequence events are specifically identified and assessed. The hierarchy of control is used in the development of risk mitigation activities.
- 3.3 The HSEC risk assessment and management process involves people with relevant knowledge and experience, including employees, contractors and other stakeholders as appropriate.
- 3.4 HSEC risks are recorded and maintained in a risk register. The risks are reviewed and updated at least annually, and following a significant incident, learnings and changes, or more often if the nature of the risk requires.
- 3.5 HSEC risks are evaluated by the appropriate level of management, consistent with the significance of the risk. Risk management decisions are documented and the implementation of resulting actions tracked.
- 3.6 Where BHP Billiton retains an HSEC risk, liability or obligation following closure or divestment, management plans are documented, responsibilities assigned and actions tracked.
- 3.7 Change management systems are in place to manage HSEC risks associated with planned changes, or when unplanned changes occur, whether permanent, temporary or as the result of incremental change. These systems address change events including changes in personnel, organisations, activities, processes, facilities, physical environment, equipment, technology, procedures, laws, regulations, standards, materials, products, systems and services.
- 3.8 Change management systems ensure that authorised employees or contractors approve changes, either permanently or for a defined period, once the level of HSEC risk has been demonstrated to be acceptable. The duration of a temporary change is not exceeded without review and approval.
- 3.9 Change management systems ensure that changes are communicated to and understood by all those who may be affected, including external stakeholders.
- 3.10 Change management systems ensure that change management actions have been completed, their intended outcomes validated and any unintended or additional risks are identified and managed. Documentation is updated to appropriately reflect the change, including the preparation of 'as built' plans, procedures and organisational requirements.

3.1, 3.2, 3.3, 3.4, 3.5, 3.7, 3.8, 3.9, 3.10 aligned with Business Excellence criteria.

# PLANNING, GOALS AND TARGETS

## Intent

*Sustainable development is an integral part of business planning with HSEC goals and targets established to drive continual improvement in performance.*

## Performance Requirements

- 4.1 Systems are in place to ensure that HSEC is an integral part of business planning based on identified significant HSEC issues, risks and opportunities.
- 4.2 BHP Billiton sets Company-wide HSEC goals, targets and leading and lagging performance indicators that are measurable, documented, communicated, monitored and reviewed. They are consistent with the Sustainable Development Policy and consider the interests of stakeholders.
- 4.3 Businesses and operations annually set measurable HSEC goals, targets and leading and lagging performance indicators that are documented, communicated, monitored and reviewed. They are consistent with the BHP Billiton-wide HSEC targets, take into account the significant HSEC risks, legal and other requirements, and consider technological options, business requirements and the interests of stakeholders.
- 4.4 Plans and programmes that include designated responsibilities, resources and time frames to achieve HSEC goals and targets are in place, with systems to monitor and regularly report on progress. They are updated and communicated as changes, modifications or new developments occur.
- 4.5 HSEC performance information is used to refine plans, goals and targets to improve risk management and performance.

4.1, 4.2, 4.3, 4.4, 4.5 aligned with Business Excellence criteria.

# AWARENESS, COMPETENCE AND BEHAVIOUR

## Intent

*Employees, contractors and visitors are aware of relevant HSEC requirements, hazards, risks and controls, are competent to conduct their activities and behave in a responsible manner.*

## Performance Requirements

- 5.1 Inductions that address relevant HSEC objectives, hazards, risks, controls, and behaviours are conducted and documented for employees, contractors and visitors at the commencement of their employment or visit. Inductions also cover the Charter, the Sustainable Development Policy, the Guide to Business Conduct and these Standards, to a level appropriate to the nature of the proposed activities.
- 5.2 As part of the broader competencies required for employees and contractors, HSEC competencies are identified, documented and periodically reviewed.
- 5.3 Recruitment criteria for employees and contractors include an assessment of HSEC awareness, competencies, behaviours and performance, and encourage diversity.
- 5.4 Systems are in place to identify, prioritise, plan, document and monitor the fulfilment of training needs so that employees and contractors are competent to meet their HSEC responsibilities. HSEC leadership training is undertaken by all managers.
- 5.5 Employees and contractors receive training and development in the recognition, assessment, control and elimination of hazards, at-risk behaviours and situations, including the HSEC consequences of departure from specified operating procedures.
- 5.6 An on-the-job behavioural observation process that engages all personnel and covers all activities is in place that reinforces desired HSEC behaviours and corrects at-risk behaviours.
- 5.7 Data from behavioural observation processes are analysed and used to identify, plan, implement and track initiatives and appropriate corrective actions.
- 5.8 Appropriate cross-cultural training is undertaken for employees and contractors who interact with people from different cultures, including Indigenous peoples.

5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 5.8 aligned with Business Excellence criteria.



# HEALTH AND HYGIENE

## Intent

*Employees and contractors are assessed for their fitness for work and, along with visitors, are protected from health hazards associated with Company operations. Community health issues relevant to Company operations are identified and effectively managed.*

## Performance Requirements

- 6.1 Occupational health and hygiene assessments and ongoing monitoring and medical surveillance programs, are conducted by competent people for all occupations, tasks and work environments, consistent with exposure risks.
- 6.2 Prevalence and incidence of work-related illness is recorded, assessed and reviewed, using data available from all sources including medical surveillance programs and incident related medical treatments.
- 6.3 Arrangements, in accordance with the hierarchy of control, are established and maintained to protect employees and contractors from health hazards associated with their employment.
- 6.4 Where the application of the hierarchy of control has not adequately reduced exposure, personal protective equipment requirements are identified and communicated, appropriate training provided, and properly maintained equipment made available to all employees and contractors. Compliance with and effectiveness of personal protective equipment requirements are regularly assessed.
- 6.5 Employees, contractors and visitors have access to adequate medical and first aid services as appropriate to the location and nature of operations.
- 6.6 Where appropriate, employees and contractors undergo assessment to ensure their fitness for work, including drug and alcohol and fatigue management programs.
- 6.7 Systems are in place for the rehabilitation of employees and contractors following work-related injury or illness. Employees suffering non work-related injuries or illness are assisted in their return to work, as appropriate.
- 6.8 Initiatives are in place to promote and encourage a safe and healthy lifestyle. Employee assistance programs are accessible.
- 6.9 Community health hazards relevant to BHP Billiton operations are identified, assessed and communicated. Control measures are implemented to manage the risks. Public health and other relevant authorities are engaged, as appropriate.
- 6.10 The risks to personnel and accompanying dependents from work-related travel or assignment in other locations or countries are effectively identified and managed.

6.1, 6.2, 6.3, 6.5, 6.8, 6.9, 6.10 aligned with Business Excellence criteria.

# COMMUNICATION, CONSULTATION AND PARTICIPATION

## Intent

*Effective, transparent and open communication and consultation is maintained with stakeholders associated with Company activities. Stakeholders are encouraged to participate in and contribute to sustainable development through HSEC performance improvement initiatives.*

## Performance Requirements

- 7.1 Systems are in place to identify stakeholders and to ensure proactive development of strategies, including consultation, to identify and address their concerns and expectations. Consideration is given to the local context and social and cultural factors, in order to facilitate understanding and informed discussion.
- 7.2 The Sustainable Development Policy, these Standards, and relevant information on HSEC matters, risks, plans and performance are communicated throughout the organisation to all persons working for or on behalf of BHP Billiton, and to external stakeholders on a regular basis. Systems provide for consultation, feedback, and tracking of follow-up actions.
- 7.3 Employees and contractors participate (or have representation) in the development, implementation, review and improvement of HSEC initiatives and programmes, the establishment of HSEC goals and targets, and the review and verification of HSEC performance. External stakeholders are encouraged to participate in relevant activities. Participation of employees, contractors and external stakeholders is recorded.
- 7.4 Proactive and open consultation and communication with governments, authorities and other organisations is maintained in order to contribute to the development of public policy, relevant legislation and educational initiatives in relation to sustainable development.
- 7.5 HSEC information and learnings are shared across BHP Billiton sites and operations and, as appropriate, with external stakeholders.
- 7.6 Concerns, complaints and relevant external communications related to the HSEC aspects of BHP Billiton operations are recorded in a register, acknowledged, investigated as incidents and outcomes reported back to relevant stakeholders. Mechanisms are in place to resolve conflicts where they arise, through consultation and participation directly with stakeholders or their intermediaries.
- 7.7 Sustainability reports addressing HSEC performance, initiatives, risks and stakeholder concerns, are produced on an annual basis. Consideration is given to the local context and social and cultural factors, in preparing and distributing the reports to stakeholders.
- 7.8 Community relations plans are in place and the effectiveness of communication, consultation and participation processes is regularly reviewed in collaboration with stakeholders.

7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 7.7, 7.8 aligned with Business Excellence criteria.

# BUSINESS CONDUCT, HUMAN RIGHTS AND COMMUNITY DEVELOPMENT

## Intent

*Activities and operations are conducted in an ethical manner that supports fundamental human rights and respects traditional rights, values and cultural heritage. Opportunities are sought for contributing to sustainable community development.*

## Performance Requirements

- 8.1 Systems are in place to ensure that employees and contractors are familiar with the BHP Billiton Guide to Business Conduct and abide by the requirements.
- 8.2 Systems are in place to ensure that the Articles of the United Nations Universal Declaration of Human Rights are assessed, prioritised and implemented as they apply to the organisation's sphere of influence. Employees and contractors receive training to ensure they are familiar with and abide by the Articles relevant to their activities.
- 8.3 Where security personnel are required, systems are in place to ensure they are familiar with and operate in accordance with the US-UK Voluntary Principles on Security and Human Rights.
- 8.4 Where involuntary resettlement cannot be avoided, plans consistent with the World Bank Operational Directive on Involuntary Resettlement are developed and implemented.
- 8.5 Local and indigenous communities, and their traditional and cultural heritage values potentially affected by BHP Billiton operations, are identified, and strategies developed to address their concerns.
- 8.6 Systems are in place to work with local communities to identify needs and aspirations, and prioritise support for sustainable community development and poverty alleviation initiatives where relevant.
- 8.7 Where plant and equipment is installed as part of community development programs, consideration is given to the provision of appropriate technology and training in its use, and the local capacity for ongoing care and maintenance.
- 8.8 Consideration is given to the particular training needs of local communities that facilitate employment or enhance skills, taking into account cultural traditions and sensitivities.

*8.1, 8.2, 8.3, 8.5, 8.6, 8.8 aligned with Business Excellence criteria.*

# DESIGN, CONSTRUCTION AND COMMISSIONING

## Intent

*Management of HSEC risks and opportunities is an integral part of all projects through design, approval, procurement, construction and commissioning.*

## Performance Requirements

- 9.1 Toll-gate and associated due diligence processes assess the quality of HSEC risk assessment and management strategies as part of project approval.
- 9.2 Learnings from previous projects, current operations and other relevant sources are taken into account in project development to improve HSEC performance. Consideration is given to innovative design and practices.
- 9.3 Technical standards for design, construction and commissioning are compliant with legislation, relevant industry codes and standards, and utilise sound engineering practice and risk management principles.
- 9.4 The design and selection of new plant, equipment and processes, that BHP Billiton can control or influence, takes into account known and projected HSEC and life of asset requirements, provision for decommissioning, disposal and closure.
- 9.5 Design reviews for constructability, operability and maintainability of new plant, equipment and systems ensure that HSEC risks and other considerations are effectively identified, addressed and documented.
- 9.6 Development projects have a documented project management system that ensures that design and procurement specifications are met, and construction, commissioning and handover are in accordance with approved standards and procedures.
- 9.7 Critical equipment, systems, procedures and activities are identified and documented prior to commissioning.
- 9.8 A commissioning plan is documented and approved that incorporates HSEC risk management, defines responsibilities and competencies and ensures that the facility conforms to the required standards for operability.
- 9.9 Pre- and post-start up reviews are carried out and documented for newly installed and modified plant and equipment to confirm that construction is in accordance with design codes and standards and all required verification is complete.

9.1, 9.2, 9.3, 9.4, 9.5, 9.6, 9.7, 9.8, 9.9 aligned with Business Excellence criteria.

# OPERATIONS AND MAINTENANCE

## Intent

*All plant and equipment is operated, maintained, inspected and tested using systems and procedures that manage HSEC risks.*

## Performance Requirements

- 10.1** Systems and procedures are established, implemented and maintained to ensure that operations and maintenance activities are managed to minimise HSEC risks and impacts. The systems and procedures are documented to control situations where their absence could lead to deviation from the Sustainable Development Policy, these Standards, plans, goals and/or targets.
- 10.2** Systems, procedures and work practices are reviewed regularly to ensure that they continue to be applicable, relevant, and effective in controlling the risks for which they were developed or intended.
- 10.3** Design data and operating limits are documented, understood and available for all facilities and are regularly reviewed throughout the life of the plant and equipment.
- 10.4** Key operating parameters are measured, monitored, analysed and reviewed.
- 10.5** Proposals to modify operating or design limits are subject to change management processes.
- 10.6** Critical equipment, systems, procedures and activities are identified and documented.
- 10.7** Risks introduced by simultaneous operations are assessed and managed.
- 10.8** Systems are established, documented and maintained to ensure the ongoing integrity of plant and equipment. These include procedures for maintenance, inspection, testing, calibration and certification of equipment at frequencies appropriate for the level of risk associated with the equipment, legal and manufacturers' requirements. Associated records are kept.
- 10.9** Critical equipment that is newly installed, or is out of service for maintenance or modification, is subject to documented inspection and testing prior to use to ensure operational integrity is maintained.
- 10.10** Systems are in place to test and maintain the availability and effectiveness of protective systems.
- 10.11** Systems are in place to manage and formally document the application of the isolation and temporary deactivation of safety and protective systems through the use of overrides and inhibits.

*10.1, 10.2, 10.3, 10.4, 10.5, 10.6, 10.7, 10.8, 10.9, 10.10, 10.11 aligned with Business Excellence criteria.*

## 11

# SUPPLIERS, CONTRACTORS AND PARTNERS

## Intent

*The contracting of services, the purchase, hire or lease of equipment and materials, and activities with partners, are carried out so as to minimise any adverse HSEC consequences and, where possible, to enhance community development opportunities.*

## Performance Requirements

- 11.1** Suppliers, contractors and partners are subject to risk-based HSEC evaluation prior to contractual arrangements being established, taking into account the nature of their products, activities or services and previous HSEC performance.
- 11.2** Contracts include appropriate HSEC obligations specifically requiring contractors to implement systems that address these Standards, the management of HSEC risks and compliance with relevant HSEC legislation. The consequences of non-compliance are stipulated.
- 11.3** Business partners, suppliers of goods and services, and customers are encouraged to establish and maintain systems consistent with these Standards.
- 11.4** Reporting relationships, lines of communication, responsibilities, accountabilities and system interfaces for HSEC are established and documented between suppliers, contractors or partners and BHP Billiton.
- 11.5** As part of the broader contractor management system, processes are in place that ensure the HSEC performance of suppliers, contractors and partners, and their compliance with the HSEC obligations specified in their contracts, are monitored and reported.
- 11.6** Prior to purchase, hire or lease, the HSEC specifications of equipment or materials that have potential HSEC impacts, are reviewed and documented to verify suitability for the intended use and to prevent the introduction of significant HSEC risks.
- 11.7** Suppliers and contractors provide information on the hazards associated with their equipment, products and services, prior to delivery or commencement of works, and whenever changes occur.
- 11.8** Consideration is given to creating business opportunities for local suppliers and contractors, and supporting their ability to fulfil the requirements of these Standards.

11.2, 11.3, 11.4, 11.5, 11.7, 11.8 aligned with Business Excellence criteria.

# STEWARDSHIP

## Intent

*The lifecycle HSEC impacts associated with resources, materials, processes and products are minimised and managed.*

## Performance Requirements

- 12.1 Initiatives are identified and implemented to use raw materials and natural resources efficiently.
- 12.2 Initiatives are identified and implemented to reduce the environmental impact of operations. Programs are implemented to protect, manage and, where appropriate, enhance biodiversity values.
- 12.3 Sites develop, implement and maintain land management plans, water management plans, energy conservation plans and greenhouse gas management programs, as required.
- 12.4 Existing and new products and services are assessed for their potential to provide HSEC benefits or cause adverse HSEC impacts over their lifecycle.
- 12.5 Opportunities are sought to conduct or support research and innovation that promotes the use of products and technologies that are safe and efficient in their use of energy, natural resources and other materials.
- 12.6 Programs are in place to ensure that wastes are eliminated, reduced, reused, recycled, treated, or properly disposed. Records are kept to ensure that all wastes can be tracked from source to disposal, and waste receiving facilities are audited to ensure conformance to appropriate waste standards.
- 12.7 Advice is made available to employees, contractors, distributors, customers and the community regarding the possible HSEC impacts associated with the production, transport, storage, use, recycling and disposal of BHP Billiton products.
- 12.8 Systems are in place to identify, evaluate and respond to HSEC-related external influences (e.g. customer needs and expectations, regulations, voluntary standards and competitor initiatives) that could impact on BHP Billiton products and business activities.
- 12.9 Closure plans are established, costed, documented and annually reviewed in accordance with the requirements of the Closure Standard. Consideration is given to how these plans translate into current operational decisions.

12.1, 12.2, 12.3, 12.4, 12.5 12.6, 12.7, 12.8, 12.9 aligned with Business Excellence criteria.

# 13

## INCIDENT REPORTING AND INVESTIGATION

### Intent

*HSEC incidents, including near misses, are reported, investigated and analysed. Corrective and preventive actions are taken and learnings shared.*

### Performance Requirements

- 13.1** Systems are in place for the timely reporting, investigation, mitigation and appropriate communication of all HSEC incidents and near misses.
- 13.2** The reporting of near misses is promoted as a desired HSEC behaviour.
- 13.3** Incident investigation processes include the identification and documentation of all the factors and underlying causes that contributed to the incident, the controls that were intended to prevent it and analysis of any failures in the controls.
- 13.4** Incident investigations identify and prioritise corrective and preventive actions, aimed at eliminating or reducing the risk and recurrence of incidents and near misses. Systems are in place to ensure that these actions, including changes in procedures, are documented, communicated, followed up and completed.
- 13.5** In the event of a significant incident, systems ensure that associated work does not resume until actions have been taken to reduce the risk of recurrence, and authorisation is given at the appropriate level.
- 13.6** Information gathered from incident investigations is analysed to identify lessons and monitor trends, and reported to management to improve standards, systems and practices. Learnings are shared across the organisation and with stakeholders and others as appropriate.

*13.1, 13.2, 13.3, 13.4, 13.5, 13.6 aligned with Business Excellence criteria.*



# 14

## CRISIS AND EMERGENCY MANAGEMENT

### Intent

*Procedures and resources are in place to effectively respond to crisis and emergency situations.*

### Performance Requirements

- 14.1** Systems are in place to identify potential emergency situations and their impacts, including those associated with neighbouring activities.
- 14.2** Plans that define responses (including the mitigation of HSEC impacts) to foreseeable emergency scenarios are documented, accessible, communicated and reviewed. The plans define roles and responsibilities for employees and contractors.
- 14.3** Emergency response plans are aligned with the BHP Billiton Crisis and Emergency Management system, the Company business continuity requirements, and external response organisations, taking into account their response capabilities.
- 14.4** Resources, including equipment and warning devices, required for emergency response and ongoing recovery activities, are identified, maintained, tested and available.
- 14.5** Employees, contractors, visitors and external stakeholders as appropriate, are trained in and understand the emergency response plans, their roles and responsibilities, and the use of emergency response resources.
- 14.6** Emergency response drills and exercises are scheduled and conducted regularly, including liaison with and involvement of external response organisations and other stakeholders as appropriate.
- 14.7** Learnings from emergency response drills, exercises and incidents are documented, incorporated into revisions of plans and resources, and shared with stakeholders and others as appropriate.

14.1, 14.3, 14.6, 14.7 aligned with Business Excellence criteria.

# MONITORING, AUDIT AND REVIEW

## Intent

*HSEC performance and systems are monitored, audited and reviewed to identify trends, measure progress, assess conformance and drive continual improvement.*

## Performance Requirements

- 15.1 HSEC performance is regularly measured, monitored, recorded and analysed with results reported to stakeholders and others as appropriate.
- 15.2 Sites conduct HSEC inspections and audits at frequencies appropriate to the level of HSEC risk, and report results to stakeholders as appropriate. Audits are conducted that ensure appropriate objectivity and impartiality.
- 15.3 Annual self assessments are conducted at each site to establish the extent of conformance with the Fatal Risk Control Protocols. Improvement plans are prepared and executed to address non-conformities.
- 15.4 Annual self assessments are conducted at each site to establish the extent of conformance with these Standards (unless a Corporate audit is conducted within the same reporting year). Performance improvement plans are prepared and executed to address non-conformities.
- 15.5 Systems are in place to identify, report, respond to and manage non-conformities and improvement opportunities. Non-conformities are investigated, and corrective and preventive actions implemented and their effectiveness reviewed to avoid recurrence.
- 15.6 Annual management reviews are conducted to determine the continuing suitability, adequacy and effectiveness of HSEC management systems. Information reviewed includes audit results, incident reports, performance reports and relevant views from stakeholders. Reviews are documented, including observations, conclusions, recommendations and follow-up.
- 15.7 Corporate audits are conducted every three years at all sites and organisational levels to establish the extent of conformance with these Standards. Audits may be more frequent depending on the organisation's HSEC risk profile and performance history. Audit teams comprise auditors who are independent of the part of the organisation being audited. Performance improvement plans are prepared and executed to address non-conformities.
- 15.8 The Sustainable Development Policy and these Standards are reviewed at least every three years and revised as required.

15.1, 15.2, 15.3, 15.4, 15.5, 15.6, 15.7 aligned with Business Excellence criteria.

# DEFINITIONS

The following are definitions of terms used in the BHP Billiton HSEC Management Standards:

**Accountability:** Responsibility assigned to a person or group for some obligation or the performance of an activity, for which the accountable person (or group) is answerable for its implementation.

**'As built' process:** A process for identifying, and carrying out, updates of design documentation and data (including, but not limited to, specifications, calculations, drawings, sketches, operating and maintenance manuals, etc) to reflect the final as-installed and operating configuration.

**Assessment:** A systematic and documented review of the effectiveness of implementation of HSEC processes, programs and procedures, based on general process criteria and the professional judgment of experienced assessors.

**At-risk behaviour:** Conduct (whether witnessed or not) that unnecessarily increases the likelihood of injury.

**At-risk situation:** A physical situation in the workplace that may lead to an incident or injury if not corrected.

**Audit:** A systematic, independent and documented process for obtaining audit evidence and evaluating it objectively to determine the extent to which the management systems audit criteria set by the organisation are fulfilled.

**Audit criteria:** Set of policies, procedures or requirements against which collected audit evidence is compared to evaluate the effectiveness of the management system.

**Audit evidence:** Records, statements of fact or other information, which are relevant to the audit criteria and verifiable.

**Biodiversity:** The variability among living organisms from all sources including, amongst other things, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.

**Change:** A deviation, either permanent, temporary, or incremental, from a currently established baseline, or anything that is or may be substituted for something else. This includes changes to personnel, processes, systems, plant and equipment, technology, documents, risks, legislation, commitments, obligations, other requirements, and external environmental, physical and social factors affecting or affected by the organisation.

**Change management:** The systematic process for dealing with change to manage HSEC risk.

**Closure:** The process and activities related to the cessation of the operating life of an operation following a decision to close the operation which ends following decommissioning, rehabilitation and, if required, remediation.

**Community:** The BHP Billiton internal community including employees and contractors, and the external community including host communities, Indigenous communities, non-government organisations, governments, business partners, suppliers and other key stakeholders. Under the terminology used in these Standards, 'community' also includes consideration of human rights related issues.

**Competency:** A combination of attributes such as knowledge, skills, abilities and attitudes providing adequate assurance of successful performance.

**Compliance register:** An up-to-date documented record of the regulatory and other requirements applicable to an operation.

**Consequence:** Outcome or impact of an event.

**Constructability review:** The process undertaken during the design, development and erection of an installation that optimises the required plant assembly, erection, erection skill levels, duration and logistic costs within predetermined HSEC and quality requirements during the construction of the plant. This is conducted concurrently as the design progresses and is supplemented by facilitated formal review.

**Continual improvement:** A process of enhancing performance and management systems, not necessarily in all areas simultaneously.

**Contractor:** An individual, company or other legal entity that carries out work or performs services pursuant to a contract for service. This includes sub-contractors.

**Controlled documents:** Controlled documents are those that are pertinent to the HSEC management system, effective planning, operation and control of risks, and in existence to ensure continual improvement. These documents, can be internal or external, and must be current, uniquely identifiable, revised (with changes and revision status recorded) and can only be changed through a formalised change process, assuring that only the current versions are available to users. Document control includes the prompt removal of obsolete documents to avoid their unintended use.

## DEFINITIONS CONTINUED

**Core elements:** Examples of management system core elements include the Sustainable Development Policy, the defined scope, continual improvement goals, audit programs, risk registers and controlled documents.

**Corrective action:** An action implemented to eliminate the cause of a non-conformity or incident in order to prevent recurrence. The corrective action is commensurate with the severity of the non-conformity or incident.

**Crisis:** An actual or potential threat to BHP Billiton's long-term ability to do business due to the impact on safety of employees and contractors or the public, the environment, operability and assets, image and reputation, or liability.

**Critical activity:** An activity or activities where conduct outside expected performance has the potential to result in a Major Accident Event.

**Critical equipment:** A piece of equipment or a structure whose failure, or not performing to design specification, has the potential to result in a Major Accident Event.

**Critical equipment register:** A concise summary of all critical equipment that includes its design function (including operating limits), a unique identification, required performance standards (e.g. minimum reliability) and maintenance requirements.

**Critical procedure:** A procedure (or step in a procedure), divergence from which has the potential to result in a Major Accident Event.

**Critical system:** A system (hardware or software, including human behaviour) whose operation outside expected performance has the potential to result in a Major Accident Event.

**Culture:** The whole complex of distinctive spiritual, material, intellectual and emotional features that characterise a society or social group.

**Design data:** Any information used during, or as a record of, the development of a facility that defines the resource, process, product, equipment, operation, layout or control of the facility. This may include, but not be limited to: basis of design, process flow diagrams, piping and instrumentation drawings, models, plans, single line diagrams, isometrics, construction drawings, operations and control philosophies, layout drawings, design calculations, site data, design standards, specifications (including for feed/feedstock and product), design data sheets, process media, materials, cause and effect diagrams, fire and safety studies, manufacturers' data, manufacturers' operating and maintenance manuals, emergency shutdown sequences and critical equipment registers.

**Diversity:** BHP Billiton's approach to workplace diversity involves ensuring that employment practices do not discriminate on the basis of race, colour, sex, national origin, age, disability, personal associations, religion, political beliefs, union membership, marital status, sexual orientation, pregnancy, family responsibilities, and other factors unrelated to the ability of the applicant to undertake the work. In some instances, affirmative action strategies may be required to redress legacies from practices that may have disadvantaged some sectors of society (e.g. establishment of targets and employment strategies to boost indigenous employment).

**Documents:** Structured units of recorded information, published or unpublished, in physical or electronic form, managed as discreet units in the HSEC management system. Most records are documents; but not all documents are records. A document becomes a record when it is part of a business transaction, is kept as evidence of that transaction and is managed within a record keeping system.

**Due diligence:** A systematic, comprehensive and verifiable approach to the management of HSEC issues, which is based on an assessment of their likely risks, potential legal liabilities and costs arising from the issues, and is reasonably designed and operated to control and reduce those risks and prevent those liabilities from being incurred.

**Emergency:** An abnormal occurrence that can pose a threat to the safety or health of employees, customers, or local communities, or which can cause damage to assets or the environment.

**Employee:** An individual who works for BHP Billiton under a contract of employment.

**Employee Assistance Program:** A program to provide access to confidential, objective and skilled assistance with solving work and non-work related problems that may impact on work performance or the work situation.

**Environment:** Surroundings in which BHP Billiton operates, including air, water, land, natural resources, flora, fauna, habitats, ecosystems, biodiversity, humans (including human artefacts, culturally significant sites and social aspects) and their interaction. The environment in this context extends from within an operation to the global system.

**Event:** Occurrence of a particular set of circumstances.

**Fatal Risk Control Protocol:** Mandatory to all BHP Billiton sites and operations, these documents address specific areas (e.g. hazardous materials management, molten materials management, surface mobile equipment, etc) where it is important that activities are carried out consistently across BHP Billiton.

**Goal:** A long-term strategic position that has been established that must be attained to satisfactorily manage an HSEC issue.

**Guideline:** Advisory documents to provide BHP Billiton businesses with guidance on the effective implementation of these Standards.

**Harm:** A significant and/or long-lasting adverse impact on people, the environment or the community.

**Hazard:** A source of potential harm, injury or detriment.

**Hazardous materials:** Substances that have the potential to pose a significant risk to the health and safety of people or the environment.

**Hierarchy of control:** A series of controls, which should be applied in the following order (a number of these options may be considered and applied individually, or in combination):

Eliminate – the complete elimination of the hazard

Substitute – replacing the material or process with a less hazardous one

Redesign – redesigning the equipment or work processes

Separate – isolating the hazard by guarding or enclosing it

Administrative – providing controls such as training, procedures, etc

Personal Protective Equipment/Pollution Control Device – using properly fitted PPE and/or appropriate pollution control equipment where other controls are not practicable; PPE and pollution control devices includes impact minimisation equipment such as spill clean up material or dust suppression measures.

**Human rights:** The basic standards of treatment to which all people are entitled, regardless of nationality, gender, race, economic status or religion. While human rights principles were originally intended to limit government action towards individuals or groups, many relate directly or indirectly to private sector actions.

**Imminent risk:** An event or scenario that may occur at any moment that could lead to a significant incident.

**Impact:** Any change to the health and safety of people, the environment, the community or property, whether adverse or beneficial, wholly or partially resulting from an organisation's activities, products or services.

**Incident:** Any occurrence that has resulted in, or has the potential to result in (i.e. a near miss), adverse consequences to people, the environment, property, reputation or a combination of these. Significant deviations from standard operating procedures are also classed as an 'incident'. Ongoing conditions that have the potential to result in adverse consequences are considered to be incidents.

**Indigenous peoples:** Those people who are the descendants of the original inhabitants of a country or region, with a distinct social or cultural identity that may be vulnerable or disadvantaged in the current social and economic context.

**Influence:** Where BHP Billiton management can exert pressure to improve HSEC performance through involvement in the activity but may not be the operator or have the contractual ability to enforce the HSEC Management Standards.

**Likelihood:** A description of probability or frequency, in relation to the chance that something will occur.

**Maintainability review:** The process undertaken during the design, development and manufacture of an installation that reduces the required maintenance effort and time, repair skill levels, logistic costs and support facilities to ensure that the installation meets the requirements for its intended use within predetermined HSEC requirements over the life of the plant. This is conducted concurrently as the design progresses and is supplemented by facilitated formal review.

**Major Accident Event:** Any incident with the potential to lead to any of the following:

- A fatality
- Serious environmental effects, including impairment of ecosystem function
- Ongoing significant social issues
- Significant adverse attention from national media or non-government organisations (NGO), or loss of licence to operate.

**Management system:** Management processes and documentation that collectively provide a systematic framework for ensuring that tasks are performed correctly, consistently and effectively to achieve a specified outcome and to drive continual improvement in HSEC performance. A systems approach to management requires: an assessment of what needs to be done; planning to achieve the objective; implementation of the plan; and review of performance in meeting the set objectives. A management system also considers employees and contractors, and resource and documentation requirements.

**Manager:** Any BHP Billiton employee or contractor who has other persons reporting to him or her, or who has the authority to allocate resources.

**Near miss:** A near miss is any occurrence or a situation which potentially could have caused adverse consequences to people, the environment, property, or reputation, or a combination of these but which did not.

**Non-conformity:** A non-fulfilment of a requirement of policies, standards, procedures, systems, or regulation(s).

**Operability review:** The process undertaken during the design, development and manufacture of an installation that reduces the required operational skills levels and logistic costs whilst increasing process reliability, profitability and availability within predetermined HSEC requirements over the life of the plant. This is conducted concurrently as the design progresses and is supplemented by facilitated formal review.

**Partners:** Includes joint venture partners and Government agencies, and other stakeholders executing projects or programs of work with BHP Billiton, excluding contractors.

**Participation:** A process through which stakeholders influence and share control over initiatives, decisions and resources which affect them. Participation can take different forms, from a base level of information sharing and consultation, to advanced mechanisms of collaboration and empowerment that gives stakeholders more influence and control.

**Personnel:** People engaged in work for, and on behalf of, BHP Billiton, including employees, people on temporary contracts and contractors.

**Practicable:** The extent to which actions are technically feasible, in view of cost, current knowledge and known best practices.

**Preventive action:** An action implemented to prevent the occurrence of a non-conformity or incident. The preventive action is commensurate with the severity of the potential non-conformity or incident.

**Procedure:** A specified way to carry out an activity or a process. Procedures can be documented or not. Note that a BHP Billiton Procedure is mandatory to all BHP Billiton sites and operations; these documents address specific areas (e.g. corporate performance reporting, risk management, incident investigation, etc) where it is important that activities are carried out consistently across BHP Billiton.

**Product:** Articles, materials and wastes arising from the processes and activities of the site.

**Records:** Recorded information, in any form, created or received and maintained by an organisation or person in the transaction of business or the conduct of HSEC affairs, and kept as evidence of such activity. An electronic record occurs where the above is represented in a form suitable for retrieval, processing and communication by a computer. Records are distinguished from other documentary forms such as information by their intrinsic relationship to the business or HSEC activity they represent. This relationship is essential to defining a record and is only possible when the links between content, structure and context exist. A record is created; a record cannot be rendered. Records can include but are not limited to HSEC monitoring results, evidence of training, audit/self assessment/inspection findings and calibration reports.

## DEFINITIONS CONTINUED

**Resources:** Resources may include human resources and specialised skills, organisational infrastructure, plant, equipment, technology and financial resources.

**Risk assessment:** The systematic evaluation of the degree of risk posed by an activity or operation. The process of using the results of risk analysis to rank and/or compare them with acceptable risk criteria or goals.

**Risk management:** The systematic approach to establishing the context of a situation, hazard identification, risk analysis, risk evaluation, determining whether the risks are acceptable, and the ongoing treatment of risks through the application of management policies, processes and procedures.

**Risk:** Exposure to the consequences of uncertainty. It has two dimensions: the likelihood of something happening and the consequences if it were to happen.

**Scope:** Defines the boundaries within which the HSEC management system applies. It covers the extent and opportunity to manage a controlled operation or activity in accordance with the Sustainable Development Policy and the associated nature, scale and HSEC impacts. It includes the area covered by the operation or activity, and/or in which the operation or activity has influence or control.

**Self assessment:** An internal review of systems, procedures, information, practices or facilities carried out by an operation to confirm compliance with regulated or other requirements, to ensure that operating procedures are being followed or to provide assurance to BHP Billiton that corporate standards are being implemented and are effective.

**Significant incident:** A significant (HSEC) incident is any occurrence that has resulted in or had the potential to result in the descriptions outlined in the shaded areas of the Consequence Severity Table contained in the BHP Billiton HSEC Reporting Manual.

**Significant risk:** A risk that causes or has the potential to cause impact or harm that could result in a significant incident.

**Simultaneous operations (SIMOPS):** Any instance where work activity at a particular location has the potential to impact on, or be impacted by, other activities at the location at the same time, including existing operations at the location. Examples include construction or demolition activities within or adjacent to operating plant, more than one maintenance activity being scheduled for the same time and the use of a drilling or workover rig on an existing installation.

**Site management:** The person or persons with overall control for the management and direction of an operation, activity, project or venture.

**Sphere of influence:** The term used to describe the degree of influence BHP Billiton has with regards to human rights across its various stakeholder relationships (e.g. Company-wide, business, site, and project). In broad terms there are two levels of influence as they apply to BHP Billiton:

1. Direct control and responsibility for human rights, such as for employees and contractors
2. Influencing and contributing to the realisation of human rights in conjunction with others, such as with suppliers.

However, it is recognised in certain circumstances it also may be appropriate to contribute to the promotion of human rights, with, for example, host governments.

**Stakeholder:** Any person, organisation or interested party that has an impact on, or is impacted by, the Company. Stakeholders also include those people who have an interest, not necessarily financial, in the Company. Stakeholders typically include people within the following categories: employees, shareholders, communities (local, regional national, and international), neighbours, customers, suppliers, contractors, media, government and regulatory authorities, non-government organisations, special interest groups, and other businesses and associations.

**Standard:** Mandatory at all BHP Billiton sites and operations and forms the basis for the development and application of HSEC management systems at all levels of BHP Billiton.

**Stewardship:** A holistic approach to identify, manage and reduce the lifecycle HSEC impacts relating to BHP Billiton resources, processes, materials and products, including the involvement and sharing of responsibility with suppliers and customers, where appropriate.

**Supplier:** A business entity that provides goods and/or services integral to, and utilised in/for the production of BHP Billiton products and services.

**Sustainable development:** Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

**System:** A set of arrangements, responsibilities and authorities aimed at ensuring the achievement of defined outcomes.

**Target:** Detailed performance requirements, quantified whenever practicable, that arise from objectives and are set in order to achieve the objectives.

**Toll-gate:** A review system or procedure that must be satisfied before proceeding to the next stage of a project or process.

**Toolkits:** Provide practical assistance in meeting the requirements of these Standards, Procedures and Guidelines.

**Underlying cause:** The cause of the incident (not the direct cause) that, if rectified, will prevent the recurrence of not just incidents with those exact circumstances, but others with similar causes. When applied to successes, it can elicit the actions required to emulate and repeat the success. (Underlying cause is sometimes referred to as root cause.)

**Visitor:** A person visiting a BHP Billiton site who is not a BHP Billiton employee or contractor at that site.

**Work-related (occupational) illness:** Any abnormal condition or disorder, other than one resulting from a work-related (occupational) injury, caused by exposures to factors associated with employment.

It includes acute or chronic illnesses or diseases, which may be caused by inhalation, absorption, ingestion or direct contact.

# RELEVANT DOCUMENTATION

## External Documents

- Relevant and applicable local legislation
- ISO 14001
- OHSAS 18001
- SA 8000
- ISO 9000
- International Council on Mining and Metals (ICMM) Sustainable Development Framework
- Minerals Council of Australia '*Enduring Value – The Australian Minerals Industry Framework for Sustainable Development*'
- United Nations Universal Declaration of Human Rights
- US-UK Voluntary Principles on Security and Human Rights
- World Bank Operational Directive on Involuntary Resettlement
- United Nations Global Compact

## BHP Billiton Documents

Copies of BHP Billiton-wide documents, including HSEC procedures, protocols, guidelines and toolkits, that are related directly or indirectly, to these HSEC Management Standards, can be found on the BHP Billiton intranet at <http://bhpbilliton.net/default.asp>. A summary of pertinent references is provided below.

### BHP Billiton Website:

- Charter <http://bhpbilliton.com/bb/aboutUs/charter.jsp>
- Sustainable Development Policy <http://bhpbilliton.com/bb/sustainableDevelopment/home.jsp>
- Guide to Business Conduct <http://bhpbilliton.com/bb/peopleAndEmployment/globalBusinessConductGuide.jsp>

### BHP Billiton Intranet:

- Charter <http://bhpbilliton.net/default.asp?content=/repository/companyInfo/commonStandards/charter/charter.asp>
- Sustainable Development Policy
- HSEC Procedures, Protocols, Guidelines and Toolkits
- Fatal Risk Control Protocols
- Closure Standard

The above references can be located from the Zero Harm website <http://hsec.bhpbilliton.net/bb/home/homeContent.asp>

- Guide to Business Conduct <http://bhpbilliton.net/default.asp>
- Anti-Trust Protocols <http://legal.bhpbilliton.net/bb/home/home.asp>
- Business Continuity Contingency <http://raa.bhpbilliton.net/bb/home/home.asp>
- Enterprise-Wide Risk Management Policy and Standards <http://raa.bhpbilliton.net/bb/home/home.asp>
- Crisis and Emergency Management Organisation <http://assetprotection.bhpbilliton.net/main/home.asp>
- Investment Process Manual <http://im.bhpbilliton.net/index.asp>
- Records Disposal Manual <http://bhpbilliton.net/default.asp?content=/repository/ourBusiness/services/archives/archives.asp>

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