Orebody 32 East AWT

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Proposal – Orebody 32 East Above Water Table Mine Project

Environmental Referral Document
May 2015

Document tracking

Item	Detail
Project name	Revised Proposal – Orebody 32 East Above Water Table Mine Project
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Abbreviations, acronyms and definitions

Abbreviation/Acronym	Full Title
AER	Annual Environmental Report
AHA	*Aboriginal Heritage Act 1972*
AMD	Acid and Metalliferous Drainage
ANC	Acid Neutral Capacity
BIF	Banded Iron Formation
AWT	Above water table
DEC	Department of Environment and Conservation
DER	Department of Environment Regulation
Development Envelope	The boundary of the Proposal – as per the requirements of the Environmental Protection Authority's Environmental Assessment Guideline 1 – Defining the Key Characteristics of a Proposal (EPA, 2012).
DMP	Department of Mines and Petroleum
DoH	Department of Health
DoW	Department of Water
DPaW	Department of Parks and Wildlife
DRF	Declared Rare Flora
DSD	Department of State Development
EAG	Environmental Assessment Guideline
EIA	Environmental Impact Assessment
EP Act	*Environmental Protection Act 1986*
EPA	Environmental Protection Authority
ERD	Environmental Referral Document
ESD	Ecologically Sustainable Development
GDV	Groundwater dependent vegetation
GL/a	Gigalitres per annum
GWL	Groundwater well licence
ha	Hectares
IBRA	Interim Biogeographic Regionalisation for Australia
Indicative Disturbance Boundary or Maximum Disturbance Boundary	Historic reference to a disturbance area used by BHP Billiton Iron Ore in all Part IV projects prior to the release of EPA EAG 1 (EPA, 2012). It is also the terminology used to carry out environmental impact assessment studies prior to determining a final Proposal Development Envelope.
km	kilometre
km^2	square kilometre
m	metres
mbgl	metres below ground level
mg/L	milligrams per Litre
ML/d	Megalitres per day
Mt	Million tonnes

Abbreviation/Acronym	Full Title
Mtpa	Million tonnes per annum
Newman State Agreement	Iron Ore (Mount Newman) Agreement Act 1964
NJV	Mount Newman Joint Venture
NVCP	Native Vegetation Clearing Permit
OEPA	Office of the Environmental Protection Authority
OSA	Overburden Storage Area
PAF	Potentially acid forming
PEAHR	Project Environment and Aboriginal Heritage Review
PEC	Priority Ecological Community
RIWI Act	Rights in Water and Irrigation Act 1914
TEC	Threatened Ecological Community

1. Proponent and key proposal characteristics

1.1 Proposal overview

BHP Billiton Iron Ore Pty Ltd (BHP Billiton Iron Ore) is seeking approval to develop and mine a new deposit, referred to as Orebody 32 East (the Proposal). The Proposal will involve conventional open pit iron ore mining of the mineralised Marra Mamba Iron Formation. The orebody lies above the water table (AWT). Ore mined at the deposit will be transported to existing ore processing infrastructure at the adjacent mining operations for processing and transport via existing infrastructure.

The Proposal area is located approximately ten kilometres (km) north-east of Newman Township and immediately west of the existing Orebody 24 Mine and Orebody 25 Mine, which are part of what is known as the BHP Billiton Iron Ore Eastern Ridge Hub, in the Pilbara region of Western Australia (WA) (Figure 1).

A Referral Form has been prepared for the Proposal in accordance with Section 38(1) of the *Environmental Protection Act 1986* (EP Act) and the Western Australian Environmental Protection Authority's (EPA) *Environmental Assessment Guideline (EAG) 16 for Referral of a proposal under s38 of the EP Act* (EPA 2015a).

The purpose of this Environmental Referral Document (ERD) is to provide supporting information to the EPA in order to determine the Level of Assessment (LOA) and assist the EPA in assessing the potential impact associated with the development and operation of the Proposal. BHP Billiton Iron Ore has evaluated the characteristics of this Proposal and considers that this Proposal falls into the LOA category of 'Assessment on Proponent Information' (API-A). This document has been prepared in accordance with the EPA's *Environmental Assessment Guideline (EAG) 14 for Preparation of an API – Category A Environmental Review Document* (EPA 2015b) and provides information regarding the potential factors which have been determined through risk assessments and a range of technical studies, which have been carried out to address potential impacts for each of the relevant environmental factors.

1.2 The proponent

The proponent for the proposal is:

BHP Billiton Iron Ore Pty Ltd
ABN: 46 008 700 981
125 St Georges Terrace
Perth WA 6000

BHP Billiton Iron Ore is the authorised manager and agent of the project for the Newman Joint Venture (NJV), which is comprised of the companies listed below with their respective interests:

- BHP Billiton Minerals Pty Ltd (ABN 93 008 694 782) 85%;
- Mitsui – Itochu Iron Pty Ltd (ABN 84 008 702 761) 10%; and
- Itochu Minerals & Energy of Australia Pty (ABN 44 009 256 259) 5%.

BHP Billiton Iron Ore is authorised as the manager and agent of the proponents to submit this Proposal and execute the works as approved. All references to BHP Billiton Iron Ore are references to it acting in that capacity. Refer to the letter in Appendix A, which confirms BHP Billiton Iron Ore has the authority to act for the NJV.

The key contact for this proposal is:

Mark Garrahy
Manager Environment Approvals
Phone: 6321 2183
Email: Mark.Garrahy@bhpbilliton.com

768447 778447 788447 798447 808447

7429837

7419837

7409837

PORT HEDLAND

NEWMAN

OREBODY 32

OREBODY 24

OREBODY 23

OREBODY 25

Marble Bar Rd

MT WHALEBACK

NEWMAN

OREBODY 18

JIMBLEBAR/WHEELARA HILL

0 2 4 6 8

Kilometers

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PROPOSAL LOCATION

SCALE (A3): 1:125,000	DATUM: GDA94/MGA 50	FIGURE 1
Prepared: Env Approvals	Revision: 0	
Centre: Perth	Date: 12 May 2015	Dwg:STER_OB32_0001_RevA_0

1.3 Key proposal characteristics

This ERD supports a referral to access and mine a new iron ore deposit (the Proposal). The proposed key characteristics are provided in Table 1 and illustrated in Figure 2.

Table 1: Key proposal characteristics

Summary of proposal		
Proposal Title	Orebody 32 East Above Water Table Mine Project	
Proponent Name	BHP Billiton Iron Ore Pty Ltd	
Short Description	BHP Billiton Iron Ore is proposing to develop the Orebody 32 East above water table mine deposit located west of Orebody 24 Mine, and approximately 10 km north-east of the town of Newman in the Pilbara Region.	
Physical elements		
Element	**Location**	**Proposed Extent**
1.Orebody 32 East AWT Mine	Figure 2	Clearing of no more than 220 ha within a 414 ha development envelope
2.Orebody 32 East AWT OSAs, stockpiles and other associated infrastructure	Figure 2	Clearing of no more than 130 ha within a 414 ha development envelope
Operational elements		
Element	**Location**	**Proposed Extent**
3. Ore mining rate	Figure 2	5 Mtpa

781422 782422 783422 784422

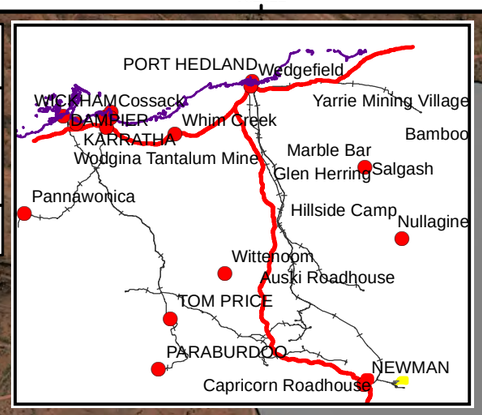
7421539 7420539 7419539 7418539

Description of clearing

OSA, infrastructure and ancilliary	130 ha
Pit area	220 ha
Total:	350 ha

Legend

- Orebody 32 Development Envelope
- Existing Haul Road and Trial Pit area
- Indicative future OSA area
- OB32 Indicative future pit



0 0.2 0.4 0.6 0.8
Kilometers

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Orebody 32
Iron Ore Mine Project
Proposal Development Envelope (in accordance with EAG 1)

SCALE (A3): 1:12,000	DATUM: GDA94/MGA 50	FIGURE 2
Prepared: Env Approvals	Revision:0	
Centre: Perth	Date: 26 May 2015	Dwg:OB32_002_RevA_0

Existing Haul Road and Trial Pit Area (cleared under NVCP 6234/1) This area will become part of the future pit area

Indicative future OSA area

Indicative future mine pit area

Orebody 24 Approved Part IV Boundary (MS 834)

Orebody 25 Approved Part IV Boundary (MS 712)

2. General description of proposal

2.1 Description

2.1.1 Proposal location and development envelope

The Proposal is located approximately 10 km north-east of Newman Township and immediately west of the existing Orebody 24 Mine in the Pilbara region of WA (Figure 1). The Proposal is to develop the Orebody 32 pit to provide ore for processing at the existing Ore Handling Plants at the Eastern Ridge Hub (Orebody 24 and Orebody 25). Figure 2 illustrates the Proposal Development Envelope boundary as well as the adjacent operations at Eastern Ridge, including:

- Orebody 24 Development Envelope (historically referred to within BHP Billiton Ore as a Maximum Disturbance Boundary). This Development Envelope encompasses the existing Orebody 24 operations as approved under Ministerial Statement (MS) 834; and
- Orebody 25 Development Envelope. This Development Envelope encompasses the existing Orebody 25 operations as approved under MS712.

2.1.2 Proposal components and disturbance

The key components of the Proposal are:

- campaign open pit mining at a base mining rate of 5 Mtpa; and
- associated infrastructure, stockpiles and access roads.

Figure 2 provides an indicative layout of the Proposal components.

Area of disturbance

Within the Proposal Development Envelope, up to 350 ha of land clearing will be required. Of this, up to 220 ha will be cleared for the open pit with the remaining 130 ha cleared for roads and other associated infrastructure (for example, laydown areas, overburden storage areas (OSAs) and other stockpiles).

No additional clearing is required within the adjacent Orebody 24 (MS834) and Orebody 25 (MS712) operations to support the Proposal.

Mining method

The Proposal involves campaign mining of iron ore and overburden through conventional open cut mining methods. Campaign mining involves drilling, blasting and categorisation of blasted material into iron ore or waste rock. Approximately 40 million tonnes (Mt) of iron ore in total is expected to be mined under the Proposal.

Ore processing and transport

The Proposal will be supported by infrastructure and facilities at the existing operations at Orebody 24 and Orebody 25. Ore mined from the Proposal will be transported via road to the existing ore handling facilities at either Orebody 24 or Orebody 25 and then either railed to the Mount Whaleback Mine where it will be blended with ore produced by the Newman Joint Venture or railed directly to Port Hedland. This is consistent with BHP Billiton Iron Ore's approach to minimise land clearing across all of its operations by exploring resources immediately adjacent to existing operations.

Overburden management

Overburden will be managed in accordance with the mine plan. The preference will be to stockpile in previously approved OSAs at Orebody 24 in the first instance. The least preferred and last case option is to create OSAs within the Proposal Development Envelope. Topsoil, where recoverable, will be removed and placed into stockpile areas either within approved stockpile locations at Orebody 24 or within the Proposal area for later use in rehabilitation. The final locations of topsoil stockpiles will be determined when on-site clearing commences.

Water supply

It is anticipated that water will only be required for dust suppression purposes. Water trucks will be filled from the existing facilities at adjacent operations.

Transport

Access to the Proposal Development Envelope area will be via the existing Orebody 24 road network. A light vehicle road and haul road have been constructed under an existing Native Vegetation Clearing Permit (NVCP) (CPS6234/1) for a trial pit which ties into the existing Orebody 24 road network. This road will be used during mining of the Proposal to allow access to the deposit, haulage of ore to the Orebody 24 or Orebody 25 ore handling plants, and haulage of waste to previously approved OSAs at Orebody 24.

2.1.3 Existing operations

The Proposal lies immediately adjacent to existing operations at Orebody 24 and Orebody 25, referred to as the Eastern Ridge Hub (Figure 2).

Orebody 24

The original proposal to develop mining operations at Orebody 24 was submitted as an Environmental Protection Statement (EPS) in March 2010 with approval for the proposal granted on 8 July 2010 as MS834.

Since the original approval was granted, one modification has been assessed and approved under Section 45C of the EP Act in 2011. The approval history is described in Table 2 and is included in MS834.

Table 2: Approval History of Orebody 24

Date	Approval	Approval scope
March 2010	Referral under Part IV EP Act	BHP Billiton Iron Ore referred the proposal to mine ore at Orebody 24 to the EPA, with the level of assessment set as EPS.
July 2010	Ministerial Statement	Minister for Environment issued conditions and proponent environmental management commitments for the Orebody 24/25 Upgrade Project.
October 2011	Application under Section 45C of the EP Act	BHP Billiton Iron Ore submits an application under Section 45C for modifications to the Orebody 24/25 Upgrade Project.
November 2011	Approval granted under Section 45C	The EPA approved the change to the proposal which authorised the following activities: • Increased ore processing rate to up to 18 Mtpa • Increase to the Maximum Disturbance Boundary (now Development Envelope) and area (ha) to be cleared to enable a rail spur, train load-out facility and on-site ore handling plant. • Removal of Power from the Key Characteristics table as it is not environmentally relevant.

Current mining operations at Orebody 24 are conducted in accordance with the *Iron Ore (Mount Newman) Agreement Act 1964*, and current MS834 implementation.

Orebody 25

The initial proposal to mine at Orebody 25 was made in 1988, and approved by the EPA in the same year. Since the original approval there have been a number of revisions to the proposal that have been assessed and approved as described in Table 3.

Table 3: Approval History of Orebody 25

Date	Approval	Approval scope
1988	Referral under Part IV EP Act.	Mining of detrital ore at Orebody 25 to a rate of up to 1 Mtpa.
1993	Informal review with public advice.	Bedrock mining in Pit 2.
1995	Referral under Part IV EP Act.	Extend mining at Orebody 25 and to develop the Pit 1 and Pit 3 deposits.
2006	Referral and EPS (MS712).	Extend mining at Orebody 25. The proposal involved increasing the ore production rate from 7 Mtpa to 8 Mtpa; extension of Pit 1 outside the previously approved disturbance areas; extensions to existing approved OSAs and low grade ore stockpiles; progressive development of new OSAs and placement of overburden in existing and new mined-out pits, OSAs and mine infrastructure; and increasing ore transport from 11 trains per week to approximately 13 trains per week.
2007	Part V Licence Amendment.	Increase mining rate from 8 Mtpa to 10 Mtpa.
2008	S45C (Attachment 1 to MS712).	Mine ore and waste rock below the groundwater table in a portion of Pit 1.
2009	S45C (Attachment 2 to MS712).	Mine a portion of Pit 1 (Pit 1 East) below the groundwater table, extend the depth of approved Pit 3, and make minor extensions to the approved Pit 3 boundary to the north, south and west.
2012	S45C (Attachment 3 to MS712).	Increase disturbance area from 650 ha to 800 ha and extend the Development Envelope.

2.1.4 Part V approvals – Environmental Protection Act – Native Vegetation Clearing Permits

BHP Billiton Iron Ore currently holds two NVCPs over parts of the Development Envelope for mineral exploration, a trial pit and associated activities (Figure 3). The permits have been issued by the Department of Mines and Petroleum (DMP). The details of these two permits are summarised in Figure 3 and Table 4.

BHP Billiton Iron Ore intends to relinquish the total amount of clearing carried out to date under these two NVCPs within the Development Envelope and instead, include this clearing into the proposed clearing allocation under this Proposal. BHP Billiton Iron Ore has taken a conservative approach and carried out a review of the vegetation condition of the Proposal area based on flora and vegetation surveys which were carried out prior to clearing activities commencing in the Proposal area. Therefore, BHP Billiton Iron Ore proposes that the requirements to rehabilitate the disturbance associated with the two NVCPs will be addressed through mine closure planning for this Proposal and also through application of the *Offsets Guideline* (WA Government, 2014) which is further addressed in Table 9 and Table 11.

Table 4: BHP Billiton Iron Ore current NVCPs

Permit number	Purpose	Area of clearing approved (ha)	Total amount cleared within Development Envelope to end of FY14	Area remaining	Expiry date
CPS 6234/1	Orebody 32 Trial Pit Disturbance	30	12.76	17.24	30 November 2024
CPS 2779/2 superseded by CPS 4768/4	Exploration and Borrow Pit Disturbance	290	87.06*	202.94	30 November 2022
	Total	**310**	**99.82**	**220.18**	

*Approximately 20 hectares of this cleared amount is related to historic borrow pits within the Development Envelope and has been rehabilitated at the time of this Proposal. These are as labelled in Figure 3.

2.1.5 Future operations

BHP Billiton Iron Ore is seeking approval to access the Orebody 32 deposit under this Proposal as a short-term strategy to meet business requirements during 2015/2016. Given that this Proposal will eventuate in a third Ministerial Statement (in addition to Orebody 24 (MS834) and Orebody 25 (MS712)), at the time of writing, it is the business preference that a Revised Proposal be submitted within the year to consolidate and supersede all Ministerial Statements with one new Ministerial Statement issued for the Eastern Ridge Hub. The Revised Proposal will include future proposed expansions to current operations at the Eastern Ridge Hub, replace historic conditions with modernised conditions and be in line with BHP Billiton Iron Ore plans to simplify reporting requirements and improve the way it does business across all of its Pilbara operations.

Additional information on BHP Billiton Iron Ore's management system is provided at Appendix B.

781313 781813 782313 782813 783313 783813 784313 784813

7420927 7420427 7419927 7419427 7418927 7418427

Historic Borrow Pit since rehabilitated

Historic Borrow Pit since rehabilitated

0 0.25 0.5 0.75 1
Kilometers

Legend

- CPS 6234/1 OB32 Trial Pit Disturbance (12.76 hectares)
- CPS 2779/3 and CPS 4768/4 Exploration and Borrow Pit Disturbance (87.06 hectares)
- Orebody 32 Development Envelope

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Orebody 32
Iron Ore Mine Project
Existing Disturbance within the Proposal Development Envelope

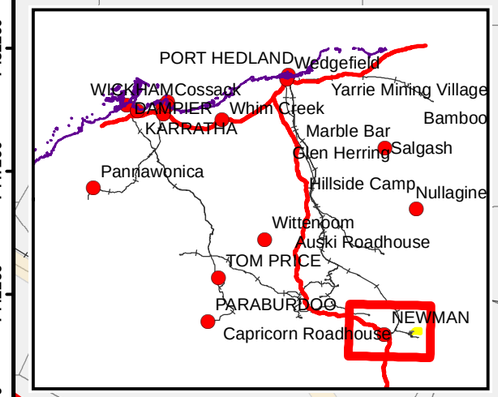
SCALE (A3): 1:10,000	DATUM: GDA94/MGA 50	**FIGURE 3**
Prepared: Env Approvals	Revision:0	
Centre: Perth	Date: 25 May 2015	Dwg:OB32_003_RevA_0

2.2 Proposal tenure

The Proposal is located on Mineral Lease ML244SA (ML244SA), granted pursuant to the *Iron Ore (Mount Newman) Agreement Act 1964* (Newman Agreement Act). The Proposal area is zoned "Rural" under the Shire of East Pilbara Town Planning Scheme No. 4 (Department of Planning, 2005). Figure 4 illustrates the tenure of the Proposal and surrounds.

740838 745838 750838 755838 760838 765838 770838 775838 780838 785838 790838 795838 800838 805838 810838 815838 820838 825838 830838 835838

7452260 7447260 7442260 7437260 7432260 7427260 7422260 7417260 7412260 7407260 7402260 7397260 7392260 7387260



Legend

- Orebody 32 Development Envelope
- BHP Billiton Iron Ore Tenure
- Non BHP Billiton Iron Ore Tenure

NEWMAN

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Orebody 32
Iron Ore Mine Project
Tenure of the Proposal and Surrounds

SCALE (A3): 1:250,000	DATUM: GDA94/MGA 50	**FIGURE 4**
Prepared: Env Approvals	Revision:0	
Centre: Perth	Date: 26 May 2015	Dwg:OB32_004_RevA_0

0 4.5 9 13.5 18
Kilometers

3. Stakeholder consultation

BHP Billiton Iron Ore's commitment to community engagement is articulated in the company's Code of Business Conduct, whereby:

> *Our aim is to be the company of choice, valued and respected by the communities in which we operate. We do this by engaging regularly, openly and honestly with people affected by our operations, and by taking their views and concerns into account in our decision-making.*

To support this commitment, BHP Billiton Iron Ore has comprehensive company standards and dedicated resources to ensure our activities are underpinned by continuous community engagement and feedback.

BHP Billiton Iron Ore has identified stakeholders with diverse interests in this Proposal. Based on an analysis of the Proposal location, effected land users and potential impacts and risks, BHP Billiton Iron Ore has commenced consultation with the stakeholders as outlined in Table 5.

Table 5: Details of stakeholder consultation

Stakeholder	Date	Topic/Issue Raised	Proponent Response/outcome
Office of the Environmental Protection Authority (OEPA)	Meeting on 5 March 2014. Sally Bowman and Peter Tapsell (OEPA). Sally Pickard and Sonya Brunt (BHP Billiton Iron Ore).	BHP Billiton Iron Ore provided an overview of the business requirement to access Orebody 32 in 2015 and increase ore production at Orebody 24. Discussions focused on scope, studies underway, anticipated key environmental factors and approvals pathways, i.e. a new Referral application for a stand-alone deposit or a Revised Proposal incorporating adjacent Orebody 24.	It was agreed that BHP Billiton Iron Ore submit a Revised Proposal to the Orebody 24/25 Upgrade Project (MS834).
	Meeting on 4 May 2015. Sally Bowman, Vanessa Angus and John Guld (OEPA). Renelle Thorpe and Sonya Brunt (BHP Billiton Iron Ore).	BHP Billiton Iron Ore provided an update on the proposed Orebody 32 Referral, the preliminary results of baseline surveys and environmental impact assessment studies and recent opportunities to reduce the scope of the Proposal. There was also discussion of the potential for ore to be processed at either of the adjacent Orebody 24 or Orebody 25 operations.	It was agreed that this Proposal be submitted as a new Proposal and not a revised Proposal. It was also noted that a Revised Proposal for the Eastern Ridge Hub would be submitted within 12 months with the intention to simplify approvals within this region through superseding historic Ministerial Statements and creating one new Ministerial Statement with modernised conditions for the entire Eastern Ridge Hub.
DoW	BHP Billiton Iron Ore coordinated a site visit on 7-9 July 2014 to visit a number of its Pilbara operations. Gary Humphreys, Penny Wallace-Bell, Tasnim Poligadu and Hermes Medina (DoW). Blair Douglas, Peta Barnes and Sally Pickard (BHP Billiton Iron Ore).	BHP Billiton Iron Ore's proposed Eastern Pilbara Water Resource Management Plan, operation and management of Ophthalmia Dam and general discussions regarding future plans for potable water management across the region.	The DoW was supportive of BHP Billiton Iron Ore's approach towards water management.

Stakeholder	Date	Topic/Issue Raised	Proponent Response/outcome
	Phone call on 12 May 2014 followed up by formal submission to the DoW via email on 15 May 2015. Email addressed to Gary Humphreys and Penny Wallace-Bell (DoW). Email sent from Blair Douglas (BHP Billiton Iron Ore).	Documents provided included a technical environmental impact assessment study addressing hydrological aspects of the Orebody 32 Proposal as well as an updated version of the Newman Potable Water Protection Plan (BHP Billiton Iron Ore, 2015) and a Surface Water Environmental Impact Assessment (RPS Aquaterra, 2015).	No written comments have been received to date, however, BHP Billiton Iron Ore will liaise with the DoW throughout this assessment process and answer any questions or provide further clarification if requested by the DoW.
DMP	Discussion on 3 December 2014 with the DMP. Danielle Risbey (DMP). Tara Read and Stephen White (BHP Billiton Iron Ore).	This meeting focused on rehabilitation across all current and future BHP Billiton Iron Ore hubs. There was discussion of progress to date on achievements and challenges in the development of Ecological Completion Criteria and alignment on a new target date for defining agreed draft criteria, possibly 2020.	BHP Billiton Iron Ore committed to reporting progress in the BHP Billiton Iron Ore Annual Environmental Review documents on an annual basis.
	Written correspondence to the DMP. Letter signed by Chris Dark – BHP Billiton Iron Ore General Manager of Eastern Ridge Mine Hub. Letter addressed to: Mr Anthony Sutton – Director of Assessment and Compliance of the OEPA on 5 January 2015 (Refer to Appendix C).	The correspondence outlined BHP Billiton Iron Ore's intent to develop a new consolidated Mine Closure Plan for the Eastern Ridge Hub (including Orebody 32) during 2015.	This approach was discussed further with the DMP during the meeting of 29 January 2015 (refer to next line item).

Stakeholder	Date	Topic/Issue Raised	Proponent Response/outcome
	Presentation meeting on 29 January 2015 at DMP East Perth offices. Rebecca Wright, Brad Smith, Tara Read and Sally Pickard (BHP Billiton Iron Ore). Danielle Risbey and Mariana De-Moraes (DMP).	This meeting provided the DMP with a general update on closure planning across the business, including Eastern Ridge. BHP Billiton Iron Ore noted that the current Decommissioning and Rehabilitation Plan applicable to Orebodies 24 and 25 is scheduled to be updated in 2015, however, a new consolidated Mine Closure Plan for the wider Eastern Ridge Hub (including the Orebody 32 deposit) was the preferred way forwarding for managing closure.	The DMP was supportive of BHP Billiton Iron Ore's approach towards creating a new consolidated Mine Closure Plan to supersede the current plan (and include Orebody 32).
	Email correspondence to the DMP dated 22 May 2015. Email from: Sonya Brunt (BHP Billiton Iron Ore) Email addressed to: Danielle Risbey and Matt Boardman (DMP)	The purpose of this consultation was to advise that BHP Billiton Ore intend to refer a Proposal to the EPA. An overview of the mine closure strategy was presented.	No specific written comments have been received to date, however, BHP Billiton Iron Ore will assist DMP throughout this assessment process and answer any questions or provide further clarification if requested by DMP.
Department of Parks and Wildlife (DPaW)	Phone call, followed up with email correspondence on 12 May 2015 to DPaW. Email from George Watson (BHP Billiton Iron Ore). Email addressed to Murray Baker and Sandra Thomas (DPaW).	The purpose of this consultation was to advise that BHP Billiton Ore intend to refer a Proposal to the EPA. An overview of biological survey results and environmental impact assessments were also provided.	The DPaW responded via email on 20 May 2015 advising that: *"No comment is provided on Parks and Wildlife's Conservation and Land Management Act 1984 responsibilities as the proposal is not located on existing or proposed Parks and Wildlife-managed lands."* Furthermore, based on the information provided to DPaW, *"…it appears unlikely that the proposal will impact on conservation significant flora, vegetation and fauna values".* The DPaW also advised that it would welcome further involvement, *"if through the assessment/investigations for this proposal, BHP Billiton identifies significant issues with conservation significant values that warrant specific*

Stakeholder	Date	Topic/Issue Raised	Proponent Response/outcome
			consultation."
Department of State Development (DSD)	Regular discussions have occurred regarding this Proposal since 2014. Greg Dellar (BHP Billiton Iron Ore). Paul Platt (DSD).	This Proposal has been the subject of discussions with DSD at regular monthly meetings since August 2014. A formal Notice of Proposal under the *Iron Ore (Mount Newman) Agreement Act 1964* was submitted to the Premier on 19 December 2014.	The DSD is currently providing assistance and support to BHP Billiton Iron Ore with regard to the Notice of Proposal process and the State Agreement.

Table 6: Details of other relevant stakeholder consultation, subject to other regulatory processes

Stakeholder	Date	Topic/Issue Raised	Proponent Response/outcome
Context regarding ongoing discussions on drinking water across the wider region: BHP Billiton has developed a revised Drinking Water Source Protection Plan for the Priority 1 Newman Public Drinking Water Source Area (PDWSA). The plan covers both the Ophthalmia Borefield and also the new Homestead borefield, which is located north-west of this Proposal area. Both borefields are designated drinking water borefields and managed in accordance with the Source Plan and the Australian Drinking Water Guidelines (ADWG, 2011). A number of smaller borefields in the Newman area have been decommissioned over the past three years following implementation of a risk based approach and identified potential land use conflicts. In addition, BHP Billiton is constructing a new water treatment plant in Newman to mitigate any residual risks and deliver water within ADWG. The implementation of a risk based approach for drinking water and the development of the water treatment plant and Homestead borefield has been discussed with the Department of Water Drinking Water Branch and the Pilbara Region management and hydrogeological technical teams. The discussions have also extended to the Water Corporation and Department of Health (DoH) over the past two years. The following outlines the specific consultation details concerning future developments in the PDWSA:			
DoW	Meeting on 11 November 2014 with DoW representatives. Nigel Mantle, Steven Watson and Penny Wallace-Bell (DoW). Blair Douglas (BHP Billiton Iron Ore).	A discussion regarding potable water management in the Newman area.	This meeting was part of ongoing consultation with stakeholders regarding BHP Billiton Iron Ore's approach towards integrated water management in the Newman area.
DoH	Meeting on 8 May 2015 with DoH representatives. Brian Labza and Richard Theobolt (DoH). Clarrie Hall, Ronnie McLean, Christien Ehrhardt and Sean McGrath (BHP Billiton Iron Ore).	A discussion regarding BHP Billiton Iron Ore's approach to water source protection in Newman and the updated version of the Newman Potable Water Source Protection Plan (BHP Billiton Iron Ore, 2015).	The DoH has provided in-principal support towards BHP Billiton Iron Ore's approach to water source protection in Newman, subject to final review of the latest updated version of the Newman Potable Water Source Protection Plan (BHP Billiton Iron Ore, 2015 (Revision 3)).
Water Corporation	Meeting on 27 November 2014 with Water Corporation representatives. David Juers, Paul Vanderval and Andrew Bath (Water Corporation). Blair Douglas (BHP Billiton Iron Ore).	A discussion regarding future works including this Proposal, which are proposed with the PDWSA. This discussion also outlined BHP Billiton Iron Ore's risk-based approach to managing the potential threats to land use conflicts.	This meeting was part of ongoing consultation with stakeholders regarding BHP Billiton Iron Ore's approach towards integrated water management in the Newman area.

4. Environmental studies and survey effort

BHP Billiton Iron Ore undertakes a program of regular baseline surveys across our deposits so that current environmental data is available for impact assessment and approval applications as the need arises. Table 7 details the studies, investigations and surveys undertaken to date across the Development Envelope, the study area covered, the guidelines referred to and any limitations of the study.

To support environmental approval applications, an EIA report is prepared for each environmental factor, which consolidates the current survey data (surveys undertaken within 5 years) and assesses the impacts of the Proposal. These are the only documents which are provided as an Appendix to this Referral (Appendices D-I).

Table 7: Environmental studies and surveys

Factor	Consultant	Survey/Investigation Name	Study area, type and timing	Study standard/guidance and limitations	Appendix
Flora and Vegetation	Onshore Environmental Consultants	Orebody 32 East Flora and Vegetation Impact Assessment (2015)	Orebody 32 development envelope and surrounds. Desktop review and impact assessment.	EPA Position Statement No 2. EPA Position Statement No 3. EPA Guidance Statement No 51.	Appendix D A figure illustrating all previous flora and vegetation surveys within and/or surrounding the Development Envelope is at Figure 5.
	ENV. Australia	Eastern Ridge (OB23/24/25) Flora and Vegetation Assessment (2012)	Orebodies 23, 24, 25, 28 and 32 and surrounds (88.31 km^2). Desktop review and field survey (April and July 2011). Included a review of all previous survey data. Refer to Figure 5 for survey boundaries.	EPA Position Statement No 2. EPA Position Statement No 3. EPA Guidance Statement No 51. Single season Level 2 survey. Limitations: restricted/no access to some areas.	
	Onshore Environmental Consultants	Biological Survey. Myopic Exploration Leases (2009)	Orebodies 26, 28, 32 and 33 (3,815.5 ha). Desktop review and field survey (June 2009). Refer to Figure 5 for survey boundaries.	EPA Position Statement No 2. EPA Position Statement No 3. EPA Guidance Statement No 51. Single season Level 2 survey.	
	GHD	Report for Myopic Project area, Newman. Flora and Fauna Assessment (2008)	Orebodies 26, 28, 32 and 33 and surrounds (3,600 ha). Desktop review and field survey (May and June 2008). Refer to Figure 5 for survey boundaries.	EPA Guidance Statement No 51. Single season Level 2 survey. Limitations: single season survey, lower than average rainfall over the wet season.	

Factor	Consultant	Survey/Investigation Name	Study area, type and timing	Study standard/guidance and limitations	Appendix
	ENV. Australia	OB24 Flora and Fauna Assessment Phase II (2006)	Orebody 24 area and surrounds (52 km^2). Desktop review and field survey (March and April 2006). Refer to Figure 5 for survey boundaries.	EPA Position Statement No 2. EPA Position Statement No 3. EPA Guidance Statement No 51. Consultation with EPA and CALM (now DPAW). Single season Level 2 survey.	
	ecologia Environment	Orebody 24 Expansion Biological Survey (2004)	Orebody 24 area and surrounds (52 km^2). Desktop review and field survey (May 2004), DRF and priority flora survey (August 2004). Refer to Figure 5 for survey boundaries.	EPA Guidance Statement No 51. Single season Level 2 survey and targeted survey.	
	Biota Environmental Sciences	Baseline Biological & Soil Surveys and Mapping for ML244SA West of the Fortescue River (2001)	ML244SA west of the Fortescue River (includes Orebodies 23, 24, 25, 32 and Mount Whaleback). Desktop review and field survey (September and October 2000). Refer to Figure 5 for survey boundaries.	No specific guidance available at time of survey. Limitation: no significant rainfall in 5 months preceding survey resulting in limited ephemeral flora collected, recent fire, lack of aerial photography coverage.	
Terrestrial Fauna	Astron Environmental Services	Orebody 32 East Vertebrate Fauna Environmental Impact Assessment (2015)	Orebody 32 development envelope and surrounds.	EPA Position Statement No 3. EPA Guidance Statement No 56.	Appendix E
	Biologic Environmental Survey	Orebody 32 Short Range Endemic Invertebrate Fauna Environmental Impact Assessment (2015)	Orebody 32 development envelope and surrounds.	EPA Position Statement No 3. EPA Guidance Statement No 56.	Appendix F

Factor	Consultant	Survey/Investigation Name	Study area, type and timing	Study standard/guidance and limitations	Appendix
	ENV. Australia	Eastern Ridge (OB23/24/25) Fauna Assessment (2011)	Orebodies 23, 24, 25, 28 and 32 and surrounds (88.31 km^2). Desktop review and field survey (May 2011).	EPA Position Statement No 3. EPA Guidance Statement No 56. Level 1 survey. Limitations: restricted/no access to some areas.	
	Onshore Environmental Consultants and Biological Consultants	Biological Survey. Myopic Exploration Leases (2009)	Orebodies 26, 28, 32 and 33 (3,815.5 ha). Desktop review and field survey (June 2009).	EPA Position Statement No 3. EPA Guidance Statement No 56. Level 1 survey. Limitations: only opportunistic records (no trapping), cool temperatures.	
	GHD	Report for Myopic Project area, Newman. Flora and Fauna Assessment (2008)	Orebodies 26, 28, 32 and 33 and surrounds (3,600 ha). Desktop review and field survey (May and June 2008).	EPA Guidance Statement No 56. Level 1 survey. Limitations: only opportunistic records (no trapping), lower than average rainfall over the wet season.	
	ENV. Australia	OB24 Flora and Fauna Assessment Phase II (2006)	Orebody 24 area and surrounds (52 km^2). Desktop review and field survey (March and April 2006).	EPA Position Statement No 3. EPA Guidance Statement No 56. Consultation with EPA and CALM (now Parks and Wildlife). Single season Level 1 Fauna survey. Limitations: cool temperatures.	

Factor	Consultant	Survey/Investigation Name	Study area, type and timing	Study standard/guidance and limitations	Appendix
	ecologia Environment	Orebody 24 Expansion Biological Survey (2004)	Orebody 24 area and surrounds (52 km^2). Desktop review and field survey (May 2004).	EPA Guidance Statement No 56. Single season Level 2 survey and targeted survey. Limitation: cool temperatures.	
	Biota Environmental Sciences	Baseline Biological & Soil Surveys and Mapping for ML244SA West of the Fortescue River (2001)	ML244SA west of the Fortescue River (includes Orebodies 23, 24, 25, 32 and Mount Whaleback). Desktop review and field survey (September and October 2000).	No specific guidance available at time of survey. Limitation: only opportunistic records (no trapping).	
	Biologic Environmental Survey	Orebody 24/25 Short-range Endemic Invertebrate Survey (2014)	Eastern Ridge Mine Hub area (Orebodies 23, 24, 25, 32 and surrounds). Desktop review, habitat assessment and field survey (April and August 2013).	EPA Position Statement No 3. EPA Guidance Statement No 56. EPA Guidance Statement No 20. Two season targeted survey. Limitations: fire and limited access to some northern areas.	
	Outback Ecology	Orebody 24/25 Upgrade Terrestrial Invertebrate Short-range Endemic Assessment (2008)	Orebody 24 area and surrounds. Desktop review and field survey (April and June 2008).	EPA Position Statement No 3. EPA Guidance Statement No 56. Consultants with DEC (now DPaW), UWA and the Western Australian Museum. Two-season trapping survey and targeted searches. Limitation: some limited access.	

Factor	Consultant	Survey/Investigation Name	Study area, type and timing	Study standard/guidance and limitations	Appendix
	ENV. Australia	Short-range Endemic Study Pseudoscorpions (Chelicerata: Arachnida) (2008)	Orebody 24 and Orebody 25. Targeted field survey (March 2008).	No specific standard/guideline mentioned. Targeted searches. Limitations: searches only conducted for Pseudoscorpions.	
Subterranean Fauna	Bennelongia Environmental Consultants	Orebody 32 Troglofauna Environmental Impact Assessment (2015)	Orebody 32 development envelope and surrounds.	EPA Environmental Assessment Guideline 12. EPA Guidance Statement No. 54a.	Appendix G Supplementary information on potential habitat and surrogacy is provided at Appendix H
	Bennelongia Environmental Consultants	Orebody 32 Baseline Subterranean Survey (2015)	Orebody 32 Development Envelope and surrounds. One sample round (November 2014).	EPA Environmental Assessment Guideline 12. EPA Guidance Statement No. 54a.	
	Bennelongia Environmental Consultants	Subterranean Fauna Survey at Orebody 24 (2013)	Orebody 24 area and surrounds. Two rounds of sampling (April and July 2013).	EPA Environmental Assessment Guideline 12. EPA Guidance Statement No. 54a.	

Factor	Consultant	Survey/Investigation Name	Study area, type and timing	Study standard/guidance and limitations	Appendix
Surface Water and Hydrological Processes	RPS Aquaterra	Orebody 32 Surface Water Impact Assessment (2015)	Orebody 32 and surrounds.	Water Quality Protection Guidelines – Mining and Mineral processing. *Environmental and water assessments relating to mining and mining-related activities in the Fortescue Marsh management area* – Section 16e advice (EPA, 2013d). Limitation: This report was carried out based on the mine plan at the time the report was commissioned. As the mine plan evolves, surface water infrastructure will be revised and updated as required.	Appendix I

Factor	Consultant	Survey/Investigation Name	Study area, type and timing	Study standard/guidance and limitations	Appendix
Decommissioning and Rehabilitation	ERK Consultants	Orebody 32 Preliminary Acid Mine Drainage Risk Assessment (2015)	Orebody 32 and surrounds.	Commonwealth Department of Industry, Tourism and Resources [DITR] (2007) *Leading Practice Sustainable Development Program for the Mining Industry - Managing Acid and Metalliferous Drainage* International Network for Acid Prevention (2012) *Global Acid Rock Drainage Guide* (GARD Guide) Australian and New Zealand Environment Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand (2000), Australian Water Guidelines for Fresh and Marine Waters and its updates	Appendix J

Legend

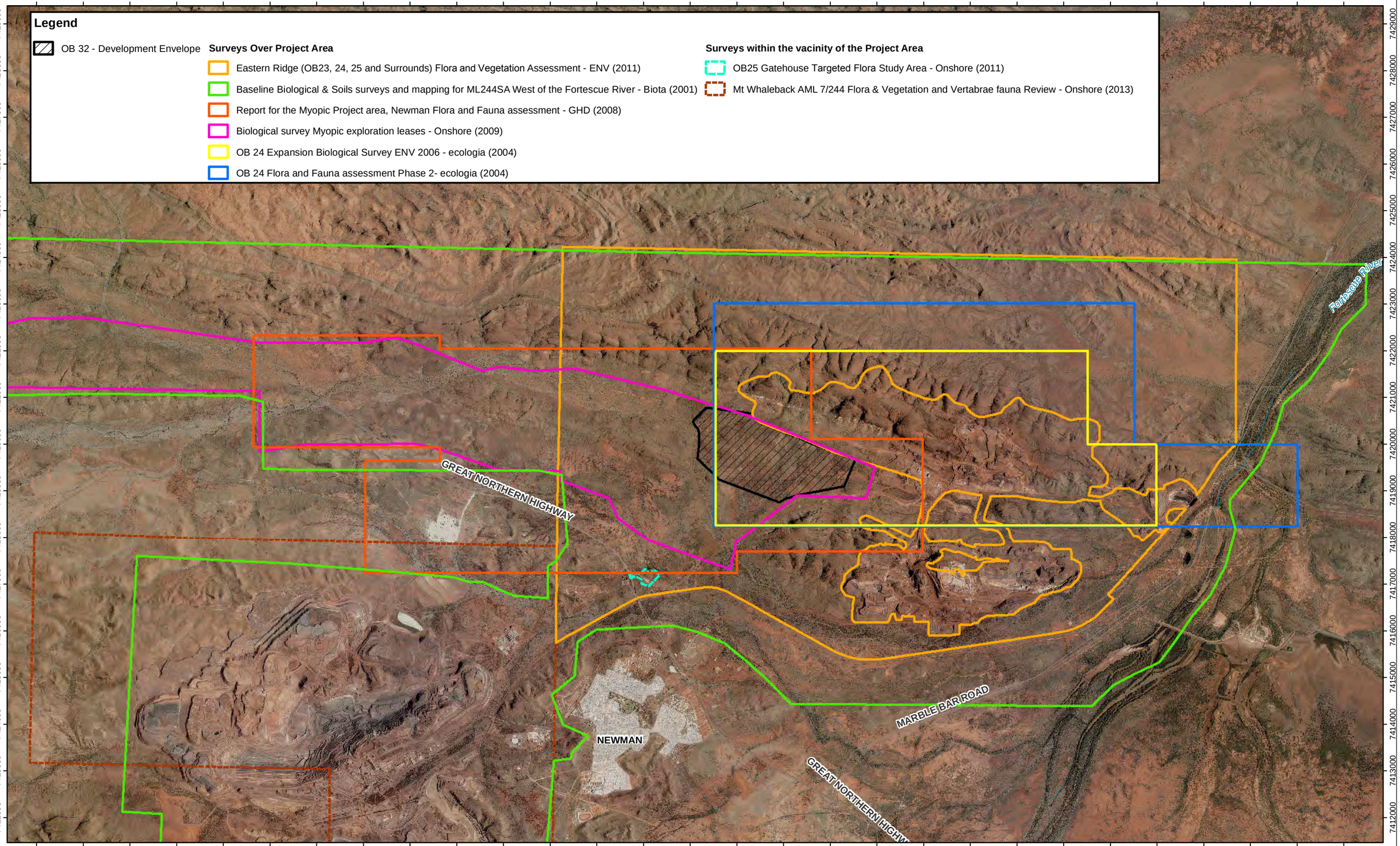
OB 32 - Development Envelope

Surveys Over Project Area

- Eastern Ridge (OB23, 24, 25 and Surrounds) Flora and Vegetation Assessment - ENV (2011)
- Baseline Biological & Soils surveys and mapping for ML244SA West of the Fortescue River - Biota (2001)
- Report for the Myopic Project area, Newman Flora and Fauna assessment - GHD (2008)
- Biological survey Myopic exploration leases - Onshore (2009)
- OB 24 Expansion Biological Survey ENV 2006 - ecologia (2004)
- OB 24 Flora and Fauna assessment Phase 2- ecologia (2004)

Surveys within the vacinity of the Project Area

- OB25 Gatehouse Targeted Flora Study Area - Onshore (2011)
- Mt Whaleback AML 7/244 Flora & Vegetation and Vertabrae fauna Review - Onshore (2013)



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ONSHORE ENVIRONMENTAL

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Drawn by: GSM	Requested by: GSM	GSM Reference: OB32_Survey_areas	

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Datum: GDA94
Projection: MGA Zone 50

BHPBIO

OREBODY 32 EAST AWT
Previous flora and vegetation surveys within the vicinity of the OB32 East AWT project area

GRIFFIN SPATIAL & MAPPING
PO Box 7215
Eaton WA 6232
admin@griffinspatial.com.au
+61 8 9725 3213

5. Assessment of preliminary key environmental factors

5.1 Preliminary key environmental factors

To identify the likely preliminary key environmental factors, BHP Billiton Iron Ore undertook a preliminary risk assessment. Following this, environmental impact studies were commenced to quantify the potential environmental impacts and determine the significance of the environmental factors identified in the preliminary risk assessment against the EPA Significance Framework (EPA, 2013b). Following the completion of these studies the results of the preliminary risk assessment were reviewed and the potential key environmental factors, as defined in EAG 8 (EPA, 2013a), determined on the basis of the environmental impact studies. A summary of the preliminary key environmental factors applicable to this proposal is provided in Table 8.

Table 8: Preliminary key environmental factors

Environmental Factor	Environmental Aspect	Impact
Flora and Vegetation	Clearing of 350 hectares of vegetation in 'Good-to-Excellent' condition.	Reduction in flora and vegetation species density and diversity in the Hamersley IBRA sub-region. Spread/introduction of weeds.
Subterranean Fauna (Troglofauna)	Mine pit excavation.	Reduction in habitat for Troglofauna.
Offsets	Clearing of 350 hectares of vegetation in 'Good-to-Excellent' condition (as per Flora and Vegetation preliminary key factor).	Reduction in flora and vegetation species density and diversity in the Hamersley IBRA sub-region (as per Flora and Vegetation preliminary key factor).
Rehabilitation and Decommissioning	Creation of a mine pit post-closure.	Potential pit void post closure.

Other environmental factors include:

- landforms;
- terrestrial environmental quality;
- terrestrial fauna (terrestrial vertebrate fauna and invertebrate short-range endemic fauna);
- inland waters environmental quality;
- hydrological processes;
- air quality and atmospheric gases;
- amenity;
- heritage; and
- human health.

These are addressed in Section 6, Table 13.

5.2 Assessment of preliminary key environmental factors

The preliminary key environmental factors identified in Table 8 are discussed in detail in Table 9. For each preliminary key environmental factor the following information is provided:

- context, including a concise description of the relevant environmental values and policy context;
- the inherent significant impacts resulting from implementation of the proposal;
- environmental aspects that may cause significant impacts;
- a description of ongoing mitigation for each significant impact;

- the regulation process required to make sure adequate mitigation occurs; and
- a statement of the outcome and justification to demonstrate that the EPA's objective would be achieved.

Table 9: Assessment of preliminary key environmental factors – Flora and Vegetation

Inherent Impact	Environmental Aspect	Mitigation actions to address residual impacts	Proposed regulatory mechanisms for ensuring mitigation	Outcome to demonstrate the Proposal meets EPA objective
Vegetation and Flora – To maintain representation, diversity, viability and ecological function at the species, population and community level.				
Context • The Proposal is seeking a total of 350 ha of native vegetation clearing within a defined Development Envelope. • No Threatened Flora, Priority flora, TECs or PECs within the Development Envelope. • Five Priority flora taxa within a 2 km radius of the development envelope. • One minor range extension (less than 50 km) within the development envelope (outside the indicative pit area) (Figure 6). • Six introduced weed species within the development envelope (Figure 7). • Seven vegetation associations within the development envelope. • Vegetation has been rated 'Good to Excellent' condition based on pre-exploration baseline surveys (Figure 8). *Relevant policies, standards and guidelines* • Position Statement No. 2, Environmental Protection of Native Vegetation in Western Australia: Clearing of native vegetation with particular reference to agricultural areas (EPA, 2000a). • Position Statement No. 3, Terrestrial Biological Surveys as an element of Biodiversity Protection (EPA, 2002a). • Guidance Statement No. 51, Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in WA (EPA, 2004a). • Checklist for Documents Submitted for EIA on Marine and Terrestrial Biodiversity (EPA, 2010b). **Impacts** *(details provided in Appendix D – Onshore Environmental Consultants, 2015)* • Direct impact from clearing up to 350 ha of native vegetation. • Spread or introduction of weed species. • Minor increases to dust levels.	• Clearing of vegetation in 'Good to Excellent' condition. • Introduction or spread of weeds through machinery, vehicles and land clearing. • Increased levels of dust.	Avoid/Minimise The use of existing ore processing infrastructure and facilities at adjacent Orebody 24 and Orebody 25 is consistent with BHP Billiton Iron Ore's approach to minimise land clearing across all of its operations by exploring resources immediately adjacent to existing operations. This has enabled BHP Billiton Iron Ore to minimise the amount of native vegetation required under this Proposal. The use of existing approved OSAs in the first instance at adjacent Orebody 24 will also contribute towards a small footprint overall for the Proposal. The Proposal will implement standard BHP Billiton Iron Ore operational dust controls such as use of water carts along roads and other high-traffic areas. In addition, the area of native vegetation that is cleared, and the duration for which cleared areas are left open before being rehabilitated or otherwise stabilised will be minimised. Vehicles and machinery mobilising to site are also required to be clean on entry. This requirement assists in reducing the introduction or spread of weeds. Rehabilitate • Rehabilitation of areas disturbed when no longer required or at closure. Offset • Financial contribution to offset 350 ha of clearing required for clearing 'Good to Excellent' vegetation (based on pre-exploration baseline surveys and inclusion of clearing allocations under approved NVCPs).	Implement the BHP Billiton Iron Ore Regional Land and Biodiversity Management Plan (BHP Billiton Iron Ore, 2015 – Refer Appendix K). This management plan has recently been appended to Orebody 31 Iron Ore Project Proposal, which was formally referred to the OEPA in April 2015 as part of the business approach towards managing operations at the Regional level. This Proposal further supports this approach in rolling out the management plan across operational areas. BHP Billiton Iron Ore is also committing to financial offsets to address residual impacts for each hectare of 'Good-to-Excellent' vegetation cleared as part of this Proposal (Refer to Offsets Factor).	**This factor is considered a preliminary key environmental factor.** Native vegetation clearing is estimated at 350 ha within a Development Envelope of 414 ha. BHP Billiton Iron Ore is confident that with the implementation of the Regional Land and Biodiversity Management Plan, including dust and weed controls and application of an offset for the 'Good to Excellent' vegetation, the EPA objective can be met. None of the vegetation associations proposed to be impacted are considered conservation significant at the Commonwealth or State level. The Development Envelope contains no Threatened Flora, Priority Flora, TECs or PECs and all taxa have been recorded in adjacent tenements or throughout the Pilbara.

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Homestead Creek

Legend

- Orebody 32 Development Envelope
- Orebody 32 Indicative Mine Pit Area
- Orebody 24
- Orebody 25
- Watercourse

Species

- Aristida jerichoensis var subspinulifera
- Eremophila magnifica var. velutina
- Brunosia sp. Long hairs (D.E. Symon 2440)
- Goodenia nuda
- Isotropis parviflora
- Range Extension - Diplatia grandibractea

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ENVIRONMENTAL APPROVALS
BHPBILLITON IRON ORE

N

Orebody 32
Iron Ore Mine Project
Significant Flora

SCALE (A3): 1:14,783	DATUM: GDA94/MGA 50	**FIGURE 6**
Prepared: Env Approvals	Revision: 0	
Centre: Perth	Date: 12 May 2015	Dwg:STER_OB32_006_RevA_0

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Kilometers

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Homestead Creek

Legend

- Orebody 32 Development Envelope
- Orebody 32 Indicative Mine Pit Area
- Orebody 24
- Orebody 25
- Watercourse

Weed Species

- Bidens bipinnata
- Cenchrus ciliaris
- Cenchrus setaceus
- Flaveria trinervia
- Malvastrum americanum
- Setaria verticillata

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Kilometers

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ENVIRONMENTAL APPROVALS
BHPBILLITON IRON ORE

N

Orebody 32
Iron Ore Mine Project
Weed Records

SCALE (A3): 1:14,783	DATUM: GDA94/MGA 50	**FIGURE 7**
Prepared: Env Approvals	Revision: 0	
Centre: Perth	Date: 12 May 2015	Dwg:OB32_007_RevA_0

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Homestead Creek

Legend

- Orebody 32 Indicative Mine Pit Area
- Orebody 32 Development Envelope
- Orebody 24
- Orebody 25
- Watercourse

Vegetation Condition

- Very Good
- Excellent to Very Good
- Excellent

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ENVIRONMENTAL APPROVALS
BHPBILLITON IRON ORE

N

Orebody 32
Iron Ore Mine Project
Vegetation Condition

SCALE (A3): 1:14,783	DATUM: GDA94/MGA 50	**FIGURE 8**
Prepared: Env Approvals	Revision: 0	
Centre: Perth	Date: 12 May 2015	Dwg:OB32_008_RevA_0

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Kilometers

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Table 10: Assessment of preliminary key environmental factors – Subterranean Fauna (Troglofauna)

Inherent Impact	Environmental Aspect	Mitigation actions to address residual impacts	Proposed regulatory mechanisms for ensuring mitigation	Outcome to demonstrate the Proposal meets EPA objective
Subterranean Fauna (Troglofauna) – To maintain representation, diversity, viability and ecological function at the species, population and assemblage level.				
Context • Troglofauna survey within the Development Envelope area was carried out according to EPA guidelines. • Fifteen species of troglofauna have been collected within the Development Envelope area. • Of the 15 species, three are known only from the indicative mine pit area. These are *Palpigradi* sp. B17, nr *Andricophiloscia* sp. B17 and Pauropodidae sp. B32 (Figure 9). • *Palpigradi* sp. B17 consisted of seven individuals collected from two drill holes on the northern side of the indicative pit area. • Of the two remaining species recorded only within the indicative pit area, two specimens of nr *Andricophiloscia* sp. B17 and a singleton record of Pauropodidae sp. B32, were recorded from the same drill hole in the south-eastern part of the indicative pit area. • Investigations indicate good habitat connectivity between the indicative pit area and surrounding areas, and no geological barriers to cause a localised species to be considered restricted to the indicative mine pit area. • Ranges and known habitat of surrogate species suggests that the three species known only from the indicative pit area are considered likely to have ranges that extend outside into surrounding areas. • The Development Envelope suggests similar troglofauna community to those previously identified in the Ophthalmia Range. • Overall, there appears to be little risk to the persistence of troglofauna in the region. *Relevant policies, standards and guidelines* • Position Statement No. 3, Terrestrial Biological Surveys as an element of Biodiversity Protection (EPA, 2002a); • Environmental Assessment Guideline 12 for Consideration of subterranean fauna in environmental impact assessment in Western Australia (EPA, 2013c); • Checklist for Documents Submitted for EIA on Marine and Terrestrial Biodiversity (EPA, 2010b); and • Draft Guidance No. 54a, Sampling Methods and Survey Considerations for Subterranean Fauna in Western Australia (EPA, 2007a). **Impacts** *(details provided in Appendix G and H – Bennelongia, 2015)* • Potential impacts to the three species recorded only within the indicative pit area from the removal of habitat through pit excavation.	• Pit excavation.	The seven individuals of *Palpigradi* sp. B17 were recorded from two drill holes on the northern side of the indicative pit shell. Two individuals of nr *Andricophiloscia* sp. B17 and a single record of Pauropodidae sp. B32 were recorded from a single bore hole. BHP Billiton Iron Ore is of the view that the potential impacts to troglofauna from the implementation of the Proposal are not significant for the following reasons. • Ranges and known habitat of surrogate species recorded from the same drill hole suggests that the three species known only from the indicative pit area are considered likely to have ranges that extend outside into surrounding areas. • Based on geological information, the preferred habitat for these species is considered to be Tertiary detritals. Given that Tertiary detritals is widespread in the surrounding area, it is likely that these three species have moderately widespread local occurrence. • Investigations indicate good habitat connectivity between the indicative mine pit and surrounding areas and no geological barriers to cause a localised species to be restricted to the indicative mine pit. • All three species are considered likely to have ranges extending outside the mine pit because a high proportion of the other localised species have ranges that extend into surrounding areas. When biological (surrogate) and geological (habitat) information is considered, the likely conclusion is that the three species occur beyond the indicative mine pit area Additional information illustrating the potential extent of Tertiary Detritals (likely Troglofauna Habitat) and additional information and figures indicating the known range of surrogate species is available at Appendix H.	Based on this assessment, BHP Billiton Iron Ore is of the view that potential impacts to troglofauna species will not be significant and not warrant conditioning.	**This factor was considered a preliminary key environmental factor in relation to troglofauna based on data collected during baseline surveys.** **Following further assessment and a review of biological (surrogate) and geological (habitat) information, is considered likely that the three species occur beyond the indicative mine pit. Based on this, BHP Billiton Iron Ore considers the Proposal meets the EPA's objective for this factor and no longer considers this to be a key environmental factor.** All troglofauna species, which have been recorded in the Development Envelope, either have been recorded elsewhere or are likely to have ranges which extend beyond the area of impact (the pit).

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7417787

Legend

- Orebody 32 Development Envelope
- Orebody 32 Indicative Mine Pit Area
- Orebody 24
- Orebody 25

Species

- Palpigradi sp. B17
- Pauropodidae sp. B32
- nr Andricophiloscia sp. B17

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ENVIRONMENTAL APPROVALS
BHPBILLITON IRON ORE

N

Orebody 32
Iron Ore Mine Project
Troglofauna restricted to the indicative mine pit area

SCALE (A3): 1:14,783	DATUM: GDA94/MGA 50	**FIGURE 9**
Prepared: Env Approvals	Revision: 0	
Centre: Perth	Date: 12 May 2015	Dwg:OB32_009_RevA_0

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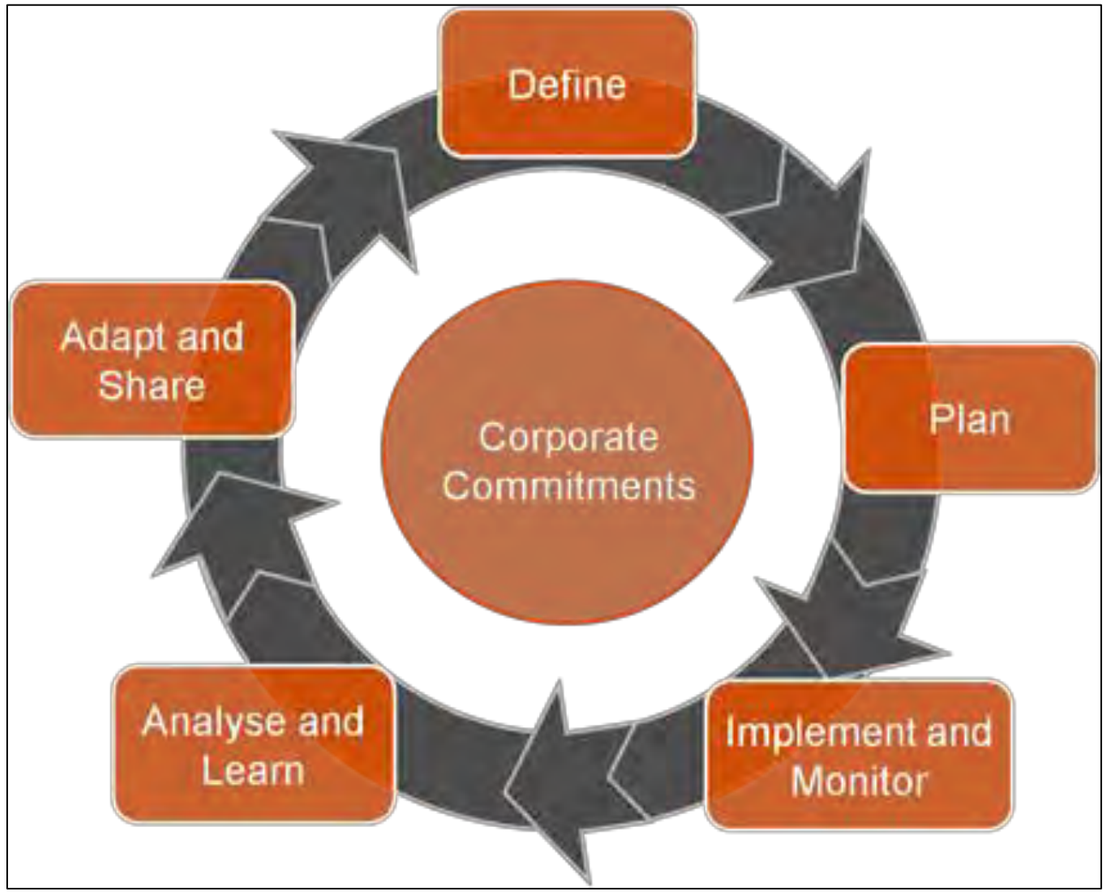
Kilometers

Table 11: Assessment of preliminary key environmental factors – Offsets

Inherent Impact	Environmental Aspect	Mitigation actions to address residual impacts	Proposed regulatory mechanisms for ensuring mitigation	Outcome to demonstrate the Proposal meets EPA objective
Offsets – To counterbalance any significant residual environmental impacts or uncertainty through the application of offsets				
Context • The Proposal is seeking a total of 350 ha of native vegetation clearing within a defined Development Envelope. • The vegetation condition is considered 'Good-to-Excellent', based on pre-exploration baseline surveys. *Relevant policies, standards and guidelines* • WA Environmental Offsets Policy 2011 • WA Environmental Offsets Guidelines • Environmental Protection Bulletin No. 1 - Environmental Offsets – Biodiversity • WA environmental offsets template **Impacts** • Direct impact to 350 ha of 'Good-to-Excellent' vegetation within the Pilbara's Hamersley IBRA sub-region.	• Clearing of vegetation in 'Good-to-Excellent' condition.	Offsets are proposed to address all outstanding residual impacts remaining after all other mitigation actions listed in this ERD have been implemented.	BHP Billiton Iron Ore is committing to financial offsets for in accordance with the *Offsets Guideline* (WA Government, 2014). A completed Offsets Form and supporting documentation is at Appendix L.	**This factor is considered a key environmental factor.**

Table 12: Assessment of preliminary key environmental factors – Rehabilitation and Decommissioning

Inherent Impact	Environmental Aspect	Mitigation actions to address residual impacts	Proposed regulatory mechanisms for ensuring mitigation	Outcome to demonstrate the Proposal meets EPA objective
Rehabilitation and Decommissioning – To ensure that premises are decommissioned and rehabilitated in an ecologically sustainable manner.				
Context • Adjacent orebodies 24 and 25 are currently subject to a Decommissioning and Rehabilitation Plan which is scheduled to be updated this calendar year (2015). • Ongoing discussions with the DMP over the past 12 months have focused on BHP Billiton Iron Ore's preferred hub-based approach towards managing closure, of which the Orebody 32 deposit will be included. • In January 2015, the DMP and BHP Billiton Iron Ore concurred that instead of updating the historic existing Decommissioning and Rehabilitation Management Plan applicable to orebodies 24 and 25, a new Mine Closure Plan would be developed and implemented for the greater Eastern Ridge Hub. • A number of scenarios are currently being considered as part of a proposed Mine Closure Plan for the Eastern Ridge Hub. **Impacts** • This Proposal is considered low-risk for closure and rehabilitation. Final land use, land management, safety landform and sustainability aspects can be managed through standard BHP Billiton Iron Ore management practices for closure. • Based on the Preliminary Acid and Metalliferous Drainage (AMD) Risk Assessment (SRK, 2015) carried out, the majority of material to be encountered during mining AWT has a low to negligible potential to generate acidity during operations. No instances of sulphur exposures on the pit wall, which exceeded a 0.1% threshold, were identified. • Given that the Proposal is AWT mine, no impact on groundwater quantity/level is anticipated and no permanent standing water is expected. • Based upon the local topography and previous assessments for Eastern Ridge, the Homestead Creek flood regime is unlikely to be impacted by the Closure landforms (including mine void). • Flora and vegetation are addressed in Table 9.	• Alteration of landforms to create a pit.	The Proposal will be integrated into the proposed Mine Closure Plan for Eastern Ridge, incorporating adjacent Orebody 24 and Orebody 25. The WAIO Closure and Rehabilitation Principles will be applied to the Proposal through the following specific strategies: • Final land-use: Base case of low intensity grazing will be adopted for planning purposes, final use will be determined through stakeholder consultation for the Eastern Ridge Hub. • Land management: Integrated across the Eastern Ridge hub. • Safety: Access to unsafe areas will be impeded through construction of safety bunds in accordance with industry standards. • Landforms: Mine waste (overburden) will be transported to OB24 and integrated into OB24 closure landforms (including pit backfill to achieve closure objectives). Some minor OSA's may be required at OB32 as a last case scenario. Pit walls will be left as run of mine where geo-technically stable. Pit walls and OSAs will be re-profiled as necessary to achieve closure objectives. • Mine Planning: Integrated waste strategy across eastern ridge hub to optimise closure landform outcomes, minimise footprint and facilitate progressive rehabilitation. • Sustainability: Rehabilitation to be undertaken in accordance with BHP Billiton Iron Ore's Rehabilitation Standard (informed by the Land and Biodiversity Management Plan). Flora and vegetation mitigation through rehabilitation is addressed in Table 9. • Water: Closure floodplain engineering assessment for Homestead Creek with design and implementation of engineering controls if required to meet closure objectives. AMD risk management will be carried out in accordance with the WAIO AMD Management Standard including; waste characterisation, modelling and management of PAF in specifically design PAF OSAs (if required). • Decommissioning: Utilisation of existing infrastructure at Orebody 24 and Orebody 25, avoiding Proposal-specific decommissioning requirements. • Contaminated sites: All chemicals, hydrocarbons, explosives and other hazardous substances and dangerous goods will be stored at existing facilities at adjacent Orebody 24 or Orebody 25. Any spills occurring within the Proposal Development Envelope to be managed during the life of mine in accordance with BHP Billiton Iron Ore. BHP Billiton Iron Ore has adopted an Adaptive Management Approach (AMA) to closure management across all of its operations, including Eastern Ridge (Figure 10). The AMA aims to reduce impact by embedding a cycle of monitoring, reporting and implementing change where required. It allows an evaluation of the mitigation controls so that they are progressively improved and refined, or alternative solutions adopted, to achieve the desired environmental outcomes. BHP Billiton Iron Ore's AMA is underpinned by its corporate commitments, which collectively articulate and mandate the Company's core values and minimum performance standards for environmental management and sustainability. For example, as part of the AMA ongoing waste rock characterisation and modelling will further inform waste management and closure landform designs for OB32. This may lead (although unlikely) to identification of PAF materials, if this occurs examples of some of the control activities which could be implemented include: • Construction of PAF OSAs in accordance with leading practice to minimise AMD generation and discharge. Verification of OSA compliance to 'as dumped' design. • Blending PAF material with neutralising material prior to disposal, in order to neutralise the stored acidity upon re-wetting. • Optimise mine pit design including opportunities to minimise residual PAF material in pit walls. • Collect and treat AMD run-off or seepage, if required (e.g. lime addition). AMA will be incorporated into the proposed Eastern Ridge Mine Closure Plan to be developed over the next 12 months.	BHP Billiton Iron Ore proposes to develop and implement a Mine Closure Plan for the Eastern Ridge Mine Hub during 2015.	**This factor is considered a key environmental factor.** BHP Billiton Iron Ore is obliged under its the tenure requirements of the Mining Lease, issued under the *Iron Ore (Mount Newman) Agreement Act 1964* ensure that premises are closed, decommissioned and rehabilitated in an manner consistent with current government standards and without unacceptable liability to the State. To support this, a Mine Closure Plan is being developed to consolidate existing management plans applicable to adjacent mines and to also incorporate this Proposal.



The five key steps of BHP Billiton Iron Ore's adaptive management approach are as follows:

1 Define: Conduct baseline and impact assessments (including cumulative impact assessments where required) to understand how the proposed operation or expansion may impact sensitive receptors. Define management outcomes consistent with regulatory and internal requirements and set performance criteria to ensure these outcomes are met.

2 Plan: Develop management plans (site specific or air shed) that describe how the performance criteria will be met through the application of the management hierarchy, monitoring and reporting measures.

3 Implement and Monitor: Implement management measures and monitor against performance criteria during construction and operations. Conduct internal audits to verify management measures are being implemented in line with regulatory and internal standards.

4 Analyse and Learn: Use monitoring data to verify models and validate assumptions and identify relevant internal and external changes (e.g., change in regulatory requirements or advancements in technology) and address where applicable. Assess data and information acquired to ensure that management measures and performance criteria remain appropriate over the life of the operation.

5 Adapt and Share: Report management performance and relevant metrics according to external and internal reporting requirements (e.g., Annual Environmental Reporting, BHP Billiton's Annual Sustainability Report). Where shortcomings and/or improvement opportunities in the management approach are identified, adapt the management approach. Implement and communicate the changes with a view to share learnings externally and contribute to improvements across industry.

Figure 10: BHP Billiton Iron Ore's Adaptive Management Approach

6. Other environmental factors

An assessment of those environmental factors not considered to be key environmental factors is provided in Table 13. This summary table provides the following information:

- environmental factor / EPA objective;
- a description of the activity and potential impact;
- relevant aspect of the proposal;
- mitigation actions to address residual impacts; and
- proposed mechanism for mitigation.

Table 13: Assessment of other environmental factors

Potential Impact	Aspect	Mitigation actions to address residual impacts	Proponent's proposed mechanism for ensuring mitigation
Landforms *To maintain the variety, integrity, ecological functions and environmental values of landforms.*			
Modification of landforms. The Proposal area is located within one soil type: • *"Fa13 – Ranges of banded jaspilite (BIF) and chert along with shales. Soils with predominantly physical limitations (shallow skeletal soils), Low A1 horizon organic content"* The following land systems are located within the Development Envelope: • Newman Land System; • Boolgeeda Land System; and • River Land System.	Alteration of landform through the creation of pits.	Rehabilitating mine landforms when they are no longer required. Conserving topsoil resources where practicable Various options are being further explored to reduce the impact of the Proposal existing landforms, including using overburden to backfill depleted pits within the wider hub as they become available. Where this is not possible, waste will be hauled to existing approved OSAs at Orebody 24, prior to creating new OSAs within the Development Envelope. Any required new OSAs will be designed to physically interface appropriately with adjacent features, considering visual impact, waste characterisation, natural hydrological linkages and ensuring surface landform stability.	As previously mentioned, BHP Billiton Iron Ore is currently developing a hub-based consolidated Mine Closure Plan for the Eastern Ridge Hub, including the Orebody 32 deposit.

Potential Impact	Aspect	Mitigation actions to address residual impacts	Proponent's proposed mechanism for ensuring mitigation
Terrestrial Environmental Quality *To maintain the quality of land and soils so that the environmental values, both ecological and social, are protected.*			
Potential to contaminate land and soils with waste materials and dangerous goods, if not managed appropriately.	Mobile plant and equipment.	Servicing of mobile plant and machinery will be undertaken at existing facilities at Orebody 24 and 25.	Condition 5 of MS 834 (Environmental Management Plan) will apply to mobile plant and equipment at Orebody 24 and 25.
	Waste disposal.	No wastes will be disposed of at Orebody 32. All waste will be taken to waste management facilities at Orebody 24 or 25.	
A Preliminary AMD Risk Assessment (SRK, 2015) has been carried out and the majority of material to be encountered during mining above the water table has a low to negligible potential to generate acidity during operations. The AMD Risk Assessment has shown no instances of sulphur exposures on the pit wall which exceeded a 0.1% threshold.	Mine pit excavation (operational activity)	Ongoing waste rock characterisation modelling and inclusion in mine planning designs and schedules will occur to validate the Preliminary AMD Risk Assessment (SRK, 2015) and enable identification of PAF material in mined waste and pit walls and segregation of PAF overburden.	Implement existing PAF management strategies if new or unknown materials are encountered during operations.

Potential Impact	Aspect	Mitigation actions to address residual impacts	Proponent's proposed mechanism for ensuring mitigation
Terrestrial Fauna (terrestrial vertebrate fauna and invertebrate short-range endemic fauna) *To maintain representation, diversity, viability and ecological function at the species, population and assemblage level.*			
Potential impact to fauna habitat, which may lead to a decline in species representation. Possible direct mortality, fauna entrapment and vehicle strikes during clearing and operations. Indirect impacts may include habitat fragmentation and barriers to movement, habitat degradation, behavioural impacts Introduction of new (feral) species. For further information, please refer to Appendix E – Astron Environmental Services, 2015 and Appendix F – Biologic Environmental Survey, 2015.	Clearing of up to 350 ha of potential fauna habitat. Creation of conditions attractive to feral animals.	Utilisation of existing OSAs and ore handling plants at adjacent Orebody 24 and Orebody 25 has considerably reduced the amount of potential habitat to be cleared for the Proposal.	BHP Billiton Iron Ore will manage this factor as part of standard Pilbara-wide Health, Safety and Environment Management System. Given that the four vertebrate fauna habitat types recorded within the Development Envelope are typical and well represented in the region, the impact of clearing within the Development Envelope is unlikely to have any impact on an ecosystem of high functional value or that is regionally significant. All potential Short-range Endemic invertebrate fauna species are known to occur beyond the Development Envelope, and are known from a range of habitat zones which have been shown to extend beyond the Development Envelope.

Potential Impact	Aspect	Mitigation actions to address residual impacts	Proponent's proposed mechanism for ensuring mitigation
Inland Waters Environmental Quality *To maintain the quality of groundwater and surface water, sediment and biota so that the environmental values, both ecological and social, are protected.*			
The Proposal will potentially mobilise sediment to natural drainage systems. Potential impacts on natural surface water quality. For further information, please refer to Appendix I (RPS Aquaterra, 2015).	Mobile plant and equipment. Ground disturbance and clearing.	Sediment basins will be used to control surface water sediment and will be constructed downslope of all disturbed ground within the Development Envelope	No significant changes to surface water drainage or quality are anticipated as a result of the Proposal.
Two potable water bores to the north-east of the Proposal area have recently been decommissioned. This Proposal is AWT; therefore, no surplus water discharge is proposed.	Mining activities within the vicinity of a potable drinking water borefield.	In consultation with the DoW over the past 12 months, BHP Billiton Iron Ore has decommissioned the two eastern-most potable water bores and updated the Newman Potable Water Resource Protection Plan (BHP Billiton Iron Ore, 2015). This updated plan has been submitted to the DoW in May 2015.	Changes to drinking water protection measures can be dealt with via alternative regulatory processes in consultation with the Department of Water, the Water Corporation and the Newman Water Catchment Working Group.

Potential Impact	Aspect	Mitigation actions to address residual impacts	Proponent's proposed mechanism for ensuring mitigation
Hydrological Processes *To maintain the hydrological regimes of groundwater and surface water so that existing and potential uses, including ecosystem maintenance, are protected.*			
Interruptions in natural surface water flow patterns have potential to increase or decrease surface water run-off in the local environment if not appropriately managed. Given that the Proposal is AWT, potential impacts to groundwater regimes and regional aquifers are anticipated to be negligible.	Ground disturbance and clearing.	The Development Envelope has been designed 50m back at its closest point to avoid impacting the flow of Homestead Creek. Surface water structures will be built within the Development Envelope to appropriate levels to ensure Homestead Creek and significant tributaries are not impacted by the mine. To ensure structural integrity, appropriate side slopes and construction methods will be adopted to minimise erosion. Local sediment ponds will be built downstream of OSA's to capture sediment before runoff is discharged into Homestead Creek. Bunds will be constructed taking into consideration hydraulic modelling undertaken for the project (RPS, 2014). The hydraulic model is informed by topographical data obtained from available LIDAR surveys to produce water surface profiles to estimate pre-development and post-development ARI flood extents. This modelling information is used to inform bund construction and sediment basin requirements. As the pit design is refined the hydraulic model will be updated accordingly and therefore bund construction and sediment basin requirements will also be updated.	No diversions to nearby Homestead Creek are proposed under this Proposal. It is not considered that additional approvals such as Beds and Banks under the *Rights in Water and Irrigation Act 1914* are required given that the Proposal is not anticipated to significantly impact the natural flow of Homestead Creek and the Creek is outside of the Proposal Development Envelope boundary. Following construction and implementation of suitable bunding informed by site-specific hydraulic modelling, it is not anticipated that the hydrological regimes of surface water and the nearby Homestead Creek will be significantly impacted.

Potential Impact	Aspect	Mitigation actions to address residual impacts	Proponent's proposed mechanism for ensuring mitigation
Air Quality and Atmospheric Gases *To maintain air quality for the protection of the environment and human health and amenity, and to minimise the emission of greenhouse and other atmospheric gases through the application of best practice.*			
Based on in-isolation modelling, there is minimal increase in dust emissions and no exceedances are anticipated*. *Based on a campaign mining approach, air quality and atmospheric gases have already been assessed as part of adjacent approved orebodies 24 and 25. Therefore, the in-isolation modelling for this Proposal only involves land clearing, blasting and haulage of the ore to adjacent operations, which result in negligible impacts.	Land clearing. Excavation and blasting of open pit and hauling ore to processing plants at adjacent operations.	The area of native vegetation that is cleared, and the duration for which cleared areas are left open before being rehabilitated or otherwise stabilised will be minimised. Roads and active work areas will be watered or alternative dust control measures applied to minimise dust generation.	DER Licence L6942/1997/12 which is applicable to the ore processing infrastructure at adjacent orebodies 24 and 25. National Environmental Protection (Ambient Air Quality) Measure.
Amenity *To ensure that impacts to amenity are reduced as low as reasonably practicable.*			
Potential for minor reduction in visual amenity*. * Note that the Proposal indicative pit is relatively small (only 220 ha) and that based on a campaign mining approach, the waste will be hauled to approved existing OSA locations at adjacent Orebody 24 in the first instance. No processing or other large infrastructure is proposed under this Proposal.	Mine pit excavation. Mine pit blasting.	Proposal components located to minimise visibility from Newman or Great Northern Highway as far as practicable. Cleared areas rehabilitated when they are not required. Dust control measures above implemented.	This Proposal will haul waste in the first instance to existing approved OSA locations within the MS834 which have previously been approved under MS834.
Heritage *To ensure that historical and cultural associations, and natural heritage, are not adversely affected.*			
The Proposal will require the clearing of native vegetation clearing and will involve land disturbance.	Mine pit excavation. Access and haul roads.	Identified heritage sites are avoided where practicable through design, planning and engineering solutions.	Heritage sites to be managed in compliance with section 18 of the *Aboriginal Heritage Act 1972*.

Potential Impact	Aspect	Mitigation actions to address residual impacts	Proponent's proposed mechanism for ensuring mitigation
Human Health *To ensure that human health is not adversely affected.*			
Based on in-isolation modelling, there is minimal increase in noise emissions and no exceedances are anticipated*. *Based on a campaign mining approach, noise impacts have already been modelled as part of adjacent orebodies 24 and 25. Therefore, the in-isolation modelling for this Proposal only involves land clearing, blasting and haulage of the ore to adjacent operations, which result in negligible impacts.	Ore and waste rock haulage. Mine pit excavation and blasting.	Dust control measures identified above.	DER Licence L6942/1997/12. Environmental Protection (Noise) Regulations 1997. National Environmental Protection (Ambient Air Quality) Measure.

7. Principles of the Environmental Protection Act

The concept of sustainable development came to prominence at the World Commission on Environment and Development (1987), in the report entitled Our Common Future, which defined sustainable development as:

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

In recognition of the importance of sustainable development, the Commonwealth Government developed a National Strategy for Ecologically Sustainable Development (Commonwealth of Australia, 1992) that defines Ecologically Sustainable Development (ESD) as:

> *…using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased.*

The principles of ESD are incorporated into the *Environmental Protection Act 1986* and the EPA's Position Statement No. 7 - Principles of Environmental Protection (EPA, 2004d). These principles are:

- the precautionary principle;
- the principle of intergenerational equity;
- the principle of the conservation of biological diversity and ecological integrity;
- principles in relation to improved valuation, pricing and incentive mechanisms; and
- the principle of waste minimisation.

Table 14 provides a summary of how BHP Billiton Iron Ore has considered the principles of ESD for the Proposal.

Table 14: Consideration of principles of the Environmental Protection Act

Principle	Description in Environmental Protection Act 1986	Relevant Yes/No	If Yes, Consideration
Precautionary Principle	Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, decisions should be guided by: • careful evaluation to avoid, where practicable, serious or irreversible damage to the environment; and • an assessment of the risk-weighted consequences of various options.	Yes	Biological surveys have been carried out. Specialist technical impact assessments have been carried out to assess potential impacts and propose potential management strategies.
Intergenerational Equity	The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.	Yes	BHP Billiton Iron Ore has prepared a credible environmental impact assessment to inform the public debate about whether and how the Proposal should proceed. Technical studies and modelling have been carried out to inform this impact assessment.
Conservation of Biological Diversity and Ecological Integrity	Conservation of biological diversity and ecological integrity should be a fundamental consideration.	Yes	Baseline biological surveys have been completed. Technical impact assessments have been completed. Standard industry management measures can be used or adapted to mitigate biodiversity and ecological impacts associated with implementation of the Proposal.
Improved Valuation, Pricing and Incentive Mechanisms	Environmental factors should be included in the valuation of assets and services. The polluter pays principle - those who generate pollution and waste should bear the cost of containment, avoidance or abatement. The users of goods and services should pay prices based on the full life cycle costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any wastes. Environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, which enable those best placed to maximise benefits and/or minimise costs to develop their own solutions and responses to environmental problems.	Yes	Environmental factors have been considered throughout the development of this Referral. Specialist technical studies have been carried out to inform detailed impact evaluations and management measures which aim to minimise pollution and waste.

Principle	Description in Environmental Protection Act 1986	Relevant Yes/No	If Yes, Consideration
Waste Minimisation	All reasonable and practicable measures should be taken to minimise the generation of waste and its discharge into the environment.	Yes	Standard waste management measures are a key element for the implementation of this Proposal. It is standard practice for BHP Billiton Iron Ore to apply the waste management hierarchy to all sites and this will be the case in relation to this Proposal (i.e. avoidance, reuse, recycling, recovery of energy, treatment, containment and disposal).

8. Conclusion

8.1 Proponent's conclusion

This ERD has provided supporting information to the EPA in order to determine the Level of Assessment. This document has provided information about the existing environment and potential impacts of implementation of the Proposal. This ERD has also explained BHP Billiton Iron Ore's new regional management approach of potential impacts for each of the EPA's environmental factors. BHP Billiton Iron Ore has suggested implementation conditions to address those factors which may be considered potential key factors at Appendix M.

The Proposal has been designed to utilise existing infrastructure at adjacent orebodies 24 and 25 as part of BHP Billiton Iron Ore's approach towards exploring deposits adjacent to existing operations and minimising environmental footprints. This Proposal is considered relatively small with only 350 ha of native vegetation proposed, AWT mining only and no creek diversions.

The identified preliminary key environmental factors can be adequately managed to meet the EPA's objective, provided the proposed management plans are implemented and an offset is applied to counterbalance the potentially significant residual environmental impact resulting from clearing of good-to-excellent vegetation in the Pilbara.

BHP Billiton Iron Ore considers that the information and assessment presented in this ERD has adequately identified and addressed environmental aspects and issues relevant to the Proposal, and is adequate to enable the EPA to set the LOA category at 'Assessment on Proponent Information'.

8.2 Application of the significance framework

BHP Billiton Iron Ore has applied the significance framework detailed in EPA Environmental Assessment Guideline 9 during the assessment of this proposal. Figure 11 provides a conceptual illustration of how the significance framework has been applied by BHP Billiton Iron, indicating the level of uncertainty remaining and the mitigation measures to be adopted. This conceptual illustration is intended to provide the EPA with confidence that the objective for each preliminary key environmental factor will be met.

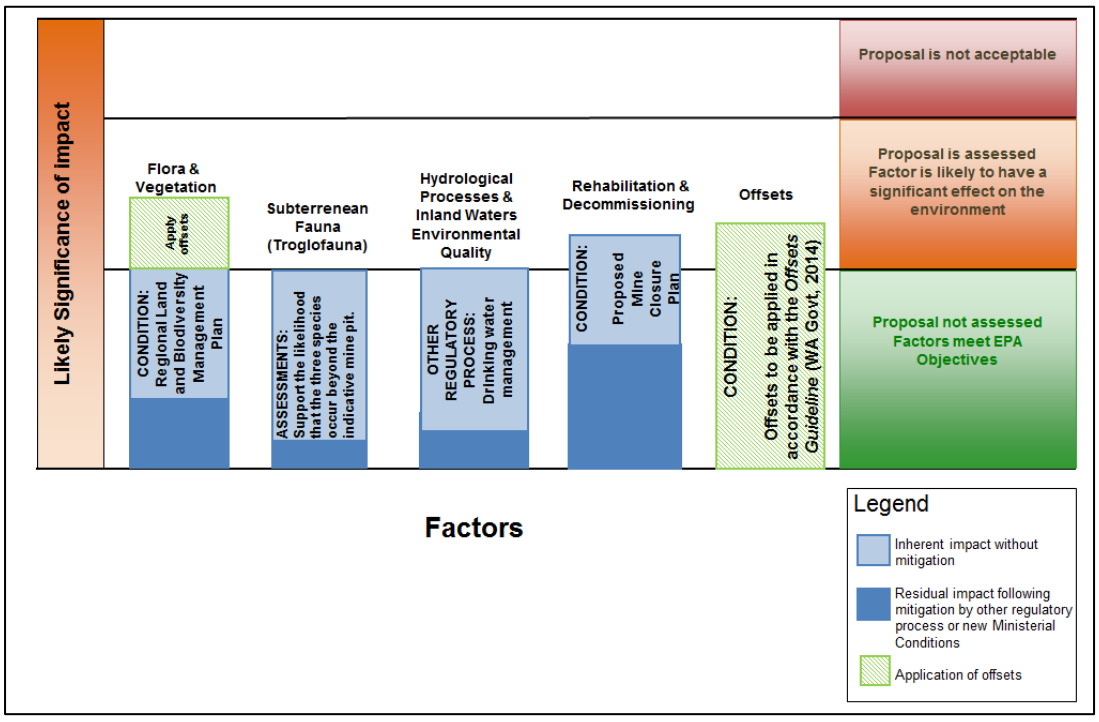


Figure 11: Conceptual application of the EPA's significance framework

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