



Orebody 24/25 Upgrade Project



BHP Billiton Iron Ore Pty Ltd



**Report and recommendations
of the Environmental Protection Authority**

**Environmental Protection Authority
Perth, Western Australia**

**Report 1356
April 2010**

Environmental Impact Assessment Process Timelines

Date	Progress stages	Time (weeks)
24 September 2004	Referral received	
4 October 2004	Intention to set EPS Level of Assessment advertised (no appeals)	2
25 March 2010	Proponent's Final EPS document received by EPA	264
19 April 2010	EPA report to the Minister for Environment	4
3 May 2010	Close of appeals period	2

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1. Introduction and background

This report provides the Environmental Protection Authority's (EPA's) advice and recommendations to the Minister for Environment on the proposal by BHP Iron Ore Pty Ltd to develop the Orebody 24 (OB24) deposit to provide crushed ore feed for existing Orebody 25 (OB25) processing facilities.

Section 44 of the *Environmental Protection Act 1986* (EP Act) requires the EPA to report to the Minister for Environment on the outcome of its assessment of a proposal. The report must set out:

- the key environmental factors identified in the course of the assessment; and
- the EPA's recommendations as to whether or not the proposal may be implemented, and, if the EPA recommends that implementation be allowed, the conditions and procedures to which implementation should be subject.

The EPA may include in the report any other advice and recommendations as it sees fit.

The EPA was advised of the proposal *Iron Ore (Mount Newman) development of Orebody 24, approximately 8 Kilometres north-east of Newman* in September 2004. The proposal included a number of pits, processing facilities and rail loop. Based on the information provided, the EPA considered that while the proposal had the potential to have an effect on the environment, the proposal, as described, could be managed to meet the EPA's environmental objectives. Consequently it was advertised in *The West Australian* newspaper on 4 October 2004 that, subject to preparation of a suitable Environmental Protection Statement (EPS) document, the EPA intended to set the level of assessment at EPS.

After additional pre-feasibility studies, the proponent provided a draft EPS document in April 2008 for consultation review. The draft EPS document was a revised proposal now known as the "OB24/25 Upgrade Project". The revised proposal now involves the integration between the existing OB25 mine (approved under Ministerial Statement 712) and the OB24 deposit. Although, the 2008 revised proposal is substantially the same as the 2004 proposal, the proposed operation no longer includes construction and use of a new stand-alone ore processing plant and associated infrastructure, rail spur and train loading facilities at the OB24 deposit. Instead, the existing facilities and infrastructure at the OB25 mine would be used, with some upgrades to allow for an increase in the ore processing rate.

The proponent has prepared and submitted a final EPS document which accompanies this report (*BHP Billiton, 2010*). The EPS document sets out the details of the proposal, potential environmental impacts and specific management measures (i.e. Environmental Management Plans) to manage and minimise those impacts.

It is worth noting that the proposed management measures are based from the existing OB25 mine Ministerial Conditions (i.e. Statement 712). The OB25 mine is being implemented under approved Environmental Management Plans (EMPs) as the OB25 mine was approved) prior to the introduction of outcome based conditions. Since the OB25 mine relies on already approved EMPs, the proponent has adopted the approach in its EPS document of updating the relevant EMPs of the OB25 mine to manage the impacts for the proposed development of the OB24 deposit. Thus, as part of the EPS document for the development of the OB24 deposit, the proponent has reviewed and updated the existing OB25 mine Environmental Management Plan (EMP), Significant

Species Management Plan (SSMP), Weed Management Plan (WMP) and Decommissioning and Rehabilitation Plan (DRP) required under Ministerial Conditions of Statement 712.

Although, the EPA now has a preference for outcome based conditions instead of the use EMPs, the EPA has taken a pragmatic approach for the use and modification of pre-existing plans given the integrated nature of the proposed development of the OB24 deposit and existing Ministerial Statement 712 applying to the OB25 mine.

The reviewed and updated EMPs provided with the EPS document are considered to address the environmental issues raised by the proposal. However, given the long term nature of the OB24 proposal the OEPA has advised the proponent that there is value in consolidating the Ministerial Statements if the OB 24 proposal is approved.

The EPA notes that the proponent has consulted with relevant stakeholders.

The EPA considers that the proposal can be managed to meet the EPA's environmental objectives, subject to the EPA's recommended conditions being made legally binding. The EPA has therefore determined under Section 40 of the EP Act that the level of assessment for the proposal is EPS, and this report provides the EPA advice and recommendations in accordance with Section 44 of the EP Act.

2. The proposal

The proposal is described in detail in the proponent's EPS document (*BHP Billiton, 2010*). BHP Billiton Iron Ore currently mines the OB25 deposit under Ministerial approval (Statement 712, January 2006). The OB25 Mine is located approximately 8 kilometres (km) north-east of Newman in the Pilbara Region. The proponent has identified additional ore reserves at a nearby satellite orebody north of the OB25 mine (i.e. the OB24 deposit).

The proposal involves the development of the OB24 deposit to provide crushed ore feed for the existing ore processing facilities at the OB25 mine until 2028. The development of the OB24 deposit would require a land disturbance area of 750 hectares (ha) within a maximum proposal footprint of 1310 ha. The regional location and maximum proposal footprint area for the development of the OB24 deposit in relation to the OB25 mine is illustrated in Figures 1 and 2, respectively. The proposed land disturbance area of 750 ha for the development of the OB24 deposit is required for open pit areas, Overburden Storage Areas (OSAs), haul roads, transport of ore, infrastructure for the supply of water and electricity and the construction of a new primary and secondary ore crushing facility.

The ore from the OB24 deposit pits would be transported to the existing OB25 processing facilities either by conveyor or haul trucks. The location of the new primary and secondary ore crushing facility would be either at the OB24 deposit (if ore transport conveyor corridor is used) or at the OB25 mine (if haul road ore transport option is used). Overburden and ore would be selectively mined from hard rock pits using conventional open pit mining methods and would be hauled to mined-out voids for use as infill, or placed in out-of-pit OSAs. An indicative general arrangement for the development of the OB24 deposit and related infrastructure at the OB25 mine is demonstrated in Figure 3.

The proposal to develop the OB24 deposit involves:

- a land disturbance of 750 ha within a maximum proposal footprint of 1,310 ha;
- using conventional open pit hard rock selective mining methods;
- hauling mined overburden to mined-out voids for use as infill, or placed in out-of-pit OSAs;
- the transport of ore from the OB24 deposit pits to the existing OB25 processing facilities either conveyor or haul trucks;
- the construction and operation of a new primary and secondary ore crushing facility either at the OB24 deposit if conveyor ore transport options is used, or the OB25 mine if haul road ore transport option is used;
- Construction and use of Run-of-Mine ore stockpiles and low-grade ore stockpiles.
- Construction and use of water supply pipelines and pumps to connect the OB24 mine operations with existing water supply and reticulation network used in the OB25 mine;
- Construction and use of approximately 1.6 kilometres (km) of 66 kilovolt (kV) overhead spur line;
- Use of existing rail facilities and loading of up to five trains per day (trains to consist of two or three rakes, with each rake consisting of approximately 106 ore cars); and
- Construction and use of new administration and crib room facilities.
- Construction and use of new refuelling and hydrocarbon storage facilities. Installation and operation of new sewage treatment unit.

The key components of the proposal are summarised in Table 1 below:

Table 1: Summary of key proposal characteristics

Element	Description
Life of mine	Mining and processing from 2010 to 2028
Ore Processing Rate	Up to 15 million tonnes per annum.
Total Overburden	Up to 210 million tonnes.
Land Disturbance Area	No more than 750 hectares within a maximum disturbance of 1310 hectares.
Area of Pits	No more than 320 hectares.
On-site Ore Transport	Ore transport options from the OB24 mine by haul road or conveyor to ore crushing and screening facilities at the OB25 mine.
Ore Crushing and Screening	Construction and use of a new primary and secondary crusher either at the OB24 mine (if conveyor ore transport option is used) or at the OB25 mine (if haul road ore transport option is used).
Overburden Storage Areas (OSAs)	Placement of overburden in out-of-pits OSAs on the northern and southern side of the OB24 mine pits. Some infill dumping in mined-out pits.
Water Supply Source	From existing approved OB25 sources and abstraction from OB23 pit lake from 2018 until 2028.
Water Demand	Up to 8.1 mega litres per day.
Power Supply Source	Newman gas-fired power station.
Power Supply Network	Construction and use of approximately 1.6 kilometres of 66

Element	Description
	kilovolt overhead spur line.
Off-site Transport of Ore	Use of existing rail facilities and loading of up to five trains per day (trains to consist of two or three rakes, with each rake consisting of approximately 106 ore cars).

The potential impacts of the proposal are discussed by the proponent in the EPS document (*BHP Billiton, 2010*).

The location of the various project components is shown in Figures 1, 2 and 3.

3. Consultation

During the preparation of the EPS, the proponent has undertaken consultation with government agencies and key stakeholders. The agencies, groups and organisations consulted, the comments received and the proponent's response are detailed in Table 1-1 of the EPS (*BHP Billiton, 2010*).

A number of environmental issues were raised by the stakeholders during the consultation. The main issues raised in consultation relate to:

- conservation of significant species; subterranean fauna and weed management;
- water supply and overburden management;
- contamination and monitoring of groundwater sources from hydrocarbon spills, Acid Rock Drainage (ARD) and Potentially Acid Forming (PAF) material; and
- mine closure and rehabilitation

The EPA considers that the consultation process has been appropriate and that reasonable steps have been taken to inform the community and stakeholders on the proposed development.

4. Key environmental factors

It is the EPA's opinion that the following key environmental factors relevant to the proposal require evaluation in this report:

- (a) flora and vegetation;
- (b) fauna;
- (c) subterranean fauna and short-range endemics; and
- (d) mine decommissioning and rehabilitation.

The key environmental factors are discussed in Sections 4.1 – 4.4. The description of each factor shows why it is relevant to the proposal and how it would be affected by the proposal. The assessment of each factor is where the EPA decides whether or not a proposal meets the environmental objective set for that factor.

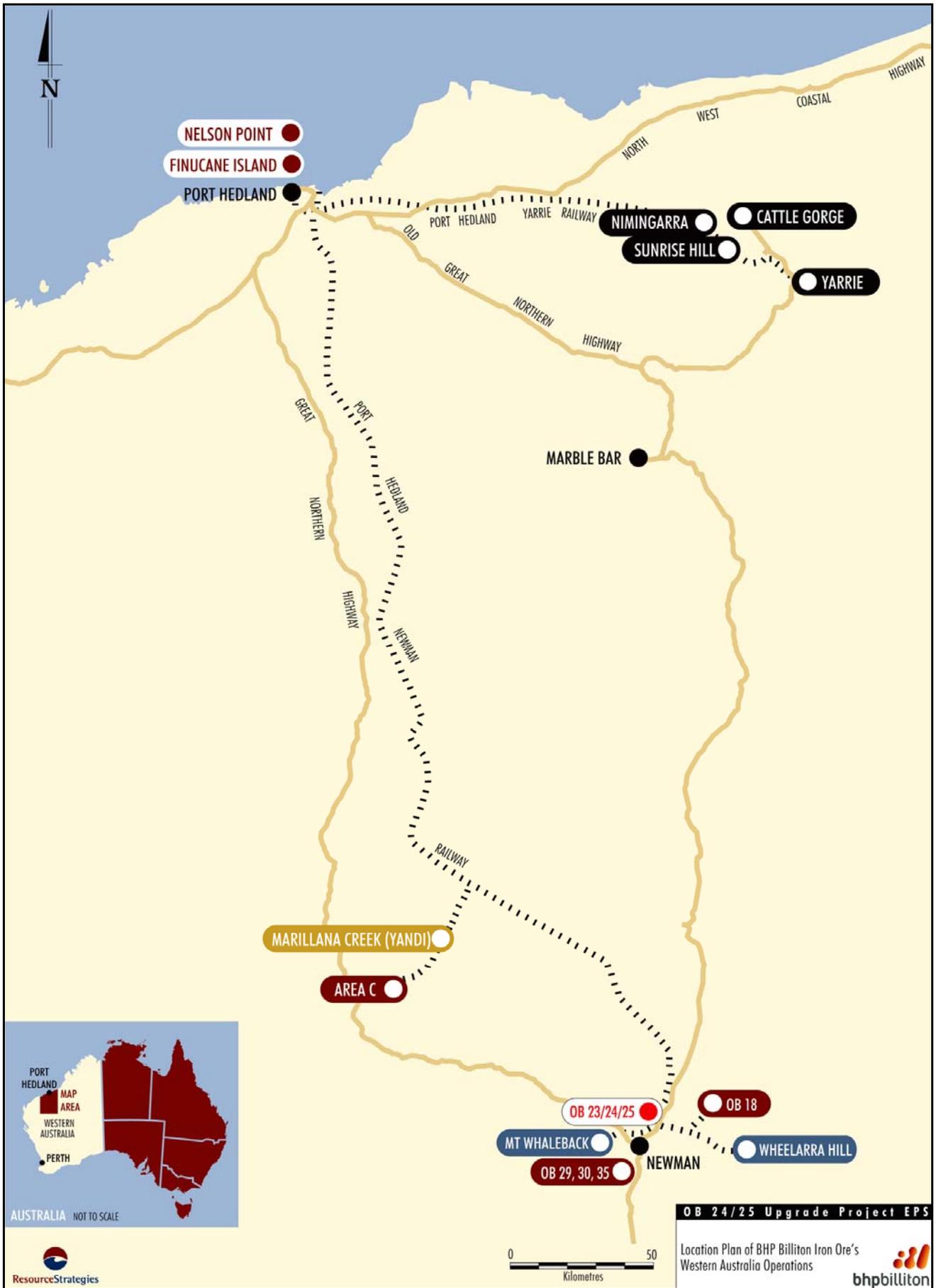


Figure 1: Regional Location of the OB24 deposit

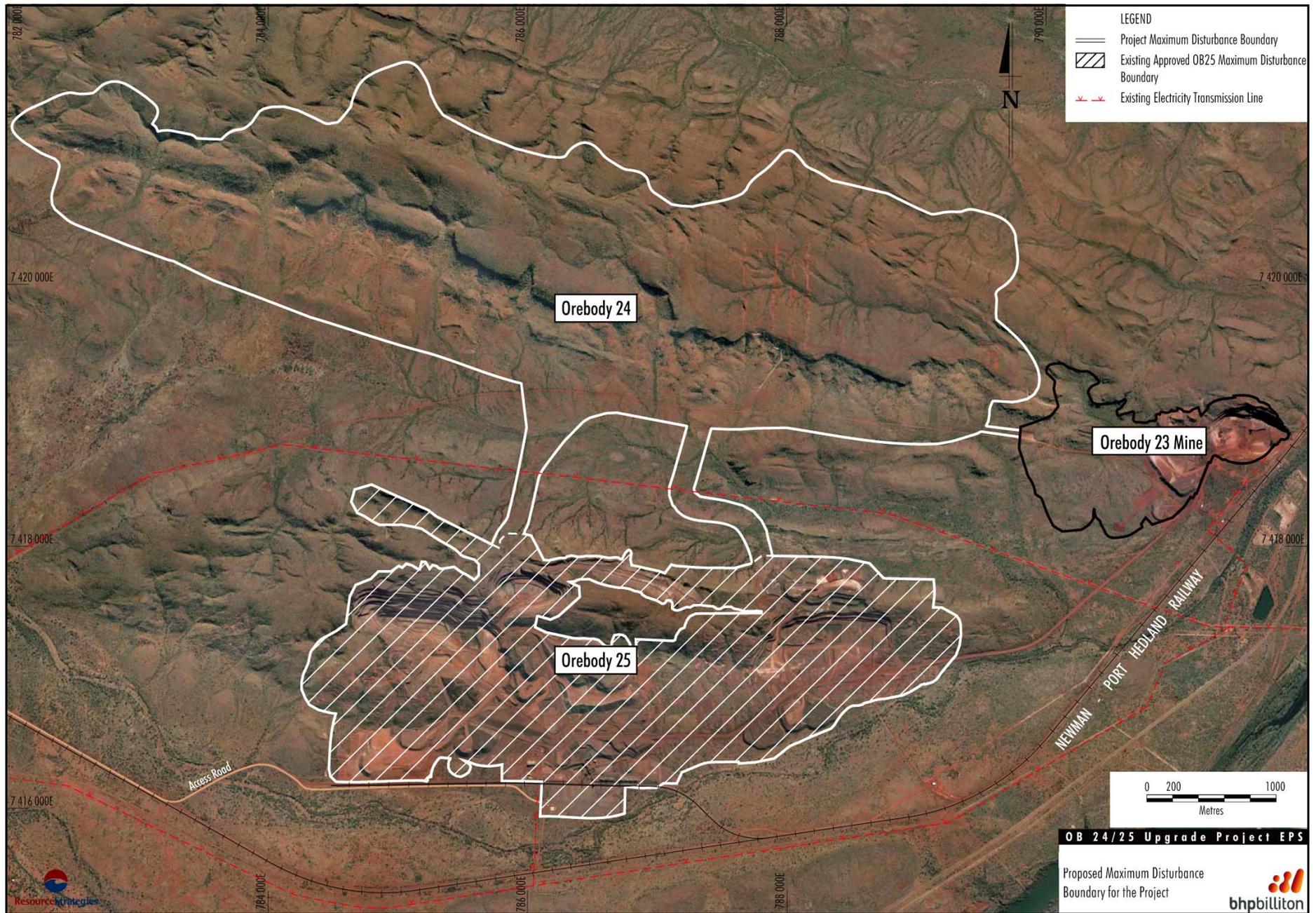


Figure 2 Location of the OB24 deposit in relation to the OB25 mine

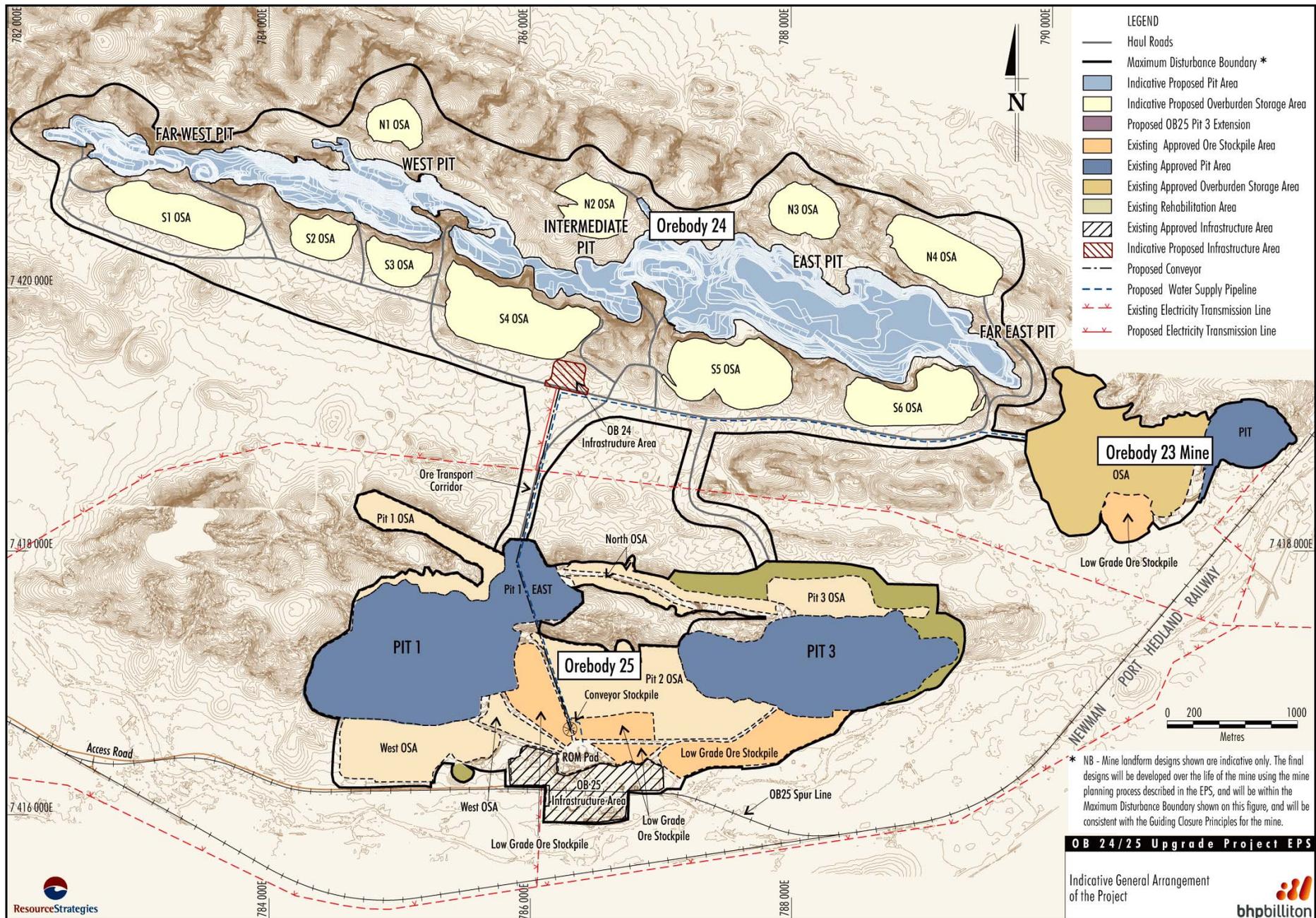


Figure 3 Indicative General Arrangement for the development of the OB24 deposit

4.1 Flora and vegetation

Description

The proposed disturbance area for the development of the OB24 deposit involves clearing an additional 750 ha of native vegetation within a maximum disturbance footprint of 1310 ha. The following potential impacts on flora and vegetation are associated with the proposal:

- direct loss of native vegetation and habitat due to land clearing required for the development of the OB24 deposit;
- dust deposition on undisturbed vegetation adjacent to the proposal;
- spread of weed species along areas of disturbance; and
- changes to local vegetation structure/composition from possible changes to the frequency and/or intensity of bushfires.

Several flora and fauna surveys have been undertaken by the proponent within and around the area of the proposal. The most recent flora and fauna surveys carried out for the proposed development of the OB24 deposit were conducted by Ecologia Environment in 2004 and ENV Australia in 2006. ENV Australia categorised and identified six new major habitats (i.e. hill crests and slopes; drainage lines; riverine; lower slopes and plain; flood plain; and gorges) based on landform. Using this classification, ENV Australia identified nine vegetation associations representative of the major habitat types that occur within the area of the proposal. These vegetation associations resulted from grouping specific vegetation units that occur within localised habitats across the area in broad vegetation associations for each major habitat.

The flora surveys undertaken in 2004 and 2006 recorded 211 and 413 flora taxa, respectively. No threatened flora listed under the *Environmental Protection and Biodiversity Conservation Act, 1999* (EPBC Act) or Declared Rare Flora (DRF) listed under the *Wildlife Conservation (Rare Flora) Notice 2008 of the Wildlife Conservation Act, 1950* (WC Act) were recorded in the project area or surrounds. Although, no 'declared plants' under the *Agriculture and Related Resources Protection Act, 1979* were recorded during the vegetation surveys, nine weed species were recorded within the area of the proposal.

No Priority Ecological Communities listed by the Department of Environment and Conservation (DEC) or Threatened Ecological Communities have been identified, or are considered likely to occur, within the proposed disturbance areas. All of the identified vegetation communities within the OB24 deposit are widely distributed within the Pilbara region and habitats are well represented within Karijini National Park and Chichester National Park.

Flora Species of Significant Conservation - Priority Flora Species

The following five flora species recorded within and around the proposal area were identified to be listed by DEC as 'Priority Flora Species':

- *Tephrosia* sp. Cathedral Gorge (Priority 3);
- *Tephrosia* sp. Pilbara Ranges (Priority 3);
- *Isotropis winneckeii* (Priority 1);
- *Gymnanathera cunninghamii* (Priority 3);
- *Eremophila magnifica* ms:

- subsp. *velutina* (Priority 3); and
- subsp. *magnifica* (Priority 4).

Only *Tephrosia* sp. Cathedral Gorge and *Tephrosia* sp. Pilbara Ranges species were recorded within the proposed disturbance footprint area of the OB24 deposit.

The proposal is unlikely to have a significant impact on flora species of conservation given:

- the occurrence of *Tephrosia* sp. Cathedral Gorge; *Isotropis winneckeii*; *Gymnanthera cunninghamii*; and *Erempholia* sp. Species from known locations outside the proposal area;
- the distribution of *Eremophila magnifica* ms is considered locally common in the wider proposal area; and
- potential habitat for *Eremophila magnifica* ms occurs in the wider area and along the Ophthalmia Range.

Site specific characteristics from the proposal have been incorporated into management measures (i.e. environmental management plans) that have already been prepared to address environmental impacts from the implementation of the OB25 mine (Statement 712). The proponent has updated the following three management plans to address and mitigate related environmental impacts on flora and fauna from the implementation of the proposal:

- OB24/25 Environmental Management Plan (EPS document, Appendix A);
- OB24/25 Significant Species Management Plan (EPS document Appendix C); and
- OB24/25 Weed Management Plan (EPS document Appendix D).

The proponent is proposing to implement the proposal in accordance with these updated plans. The updated Environmental Management Plan (EMP) describes the overall program to be used to manage potential impacts from the implementation of the OB24 and OB25 proposal on all environmental values relevant to the proposal. The EMP describes the general flora and fauna management operational/closure objectives and activities to be implemented. These activities relate to the management of species of conservation significance, weed species, bushfire and phreatophytic vegetation, general performance indicators, and monitoring. More detailed management measures to minimise the impact from the proposal on flora species of conservation significance (Priority Flora Species) are documented in the updated Significant Species Management Plan (SSMP).

The updated SSMP aims to guide the management of flora and fauna of conservation significance at the OB24 and the OB25 mines. It describes the general management measures to minimise the potential impacts of the proposal on flora and fauna and specific management measures for species of conservation significance. The updated SSMP includes the five flora species recorded within and surrounding the area of the proposal described above. The SSMP would be reviewed and updated as required during the life of the mine (at least every 5 years) to include changes to conservation status of species identified on-site, new species and changes to management measures.

The Weed Management Plan (WMP) lists the nine weed species identified within the proposal area and their respective general and species specific weed management, hygiene, monitoring measures, performance indicators and reporting procedures to be

implemented. In addition, the WMP also lists eighteen other weed species that have not been recorded within the proposal area but are considered to have the potential to occur, and the respective general and species specific weed management measures to be implemented.

Assessment

The relevant area for consideration of this factor is the Ophthalmia Range and surrounding areas. The EPA's environmental objective for this factor is to maintain the abundance, diversity, geographic distribution and productivity of fauna at species and ecosystem levels through the avoidance or management of adverse impacts and improvement in knowledge.

The proposal has the potential to impact on flora and vegetation in the project area through loss and/or modification of habitat.

The EPA notes that all of the identified vegetation communities within the OB24 deposit are widely distributed within the Pilbara region and well represented within Karijini National Park and Chichester National Parks. The EPA considers the impacts from the proposal on these vegetation communities are considered minimal, however, the EPA notes the lack of conservation reserves in this part of the Pilbara, and the reliance on Karijini National Park and Chichester National Park.

Flora Species of Significant Conservation - Priority Flora Species

The EPA notes the five flora species listed as Priority Flora, with special regard to the *Tephrosia* sp. Cathedral Gorge and *Tephrosia* sp. Pilbara Ranges species, which were recorded within the proposed disturbance footprint area of the OB24 deposit.

The proponent has outlined general and specific management actions to be implemented by the proponent to minimise potential impacts from the proposal as described in the EMP, WMP and SSMP.

The EPA considers that these management actions are acceptable to minimise potential impact on flora species of conservation significance (i.e. Priority Flora Species). Given the current knowledge of the extent of the identified priority flora species and their occurrence outside the proposal area, their distribution is considered locally common in the wider area. However, the EPA considers that the proponent should include in the WMP objectives and management measures for the eradication of weeds in the proposal areas.

Summary

Having particular regard to the:

- absence of priority ecological communities and the wider distribution in the Pilbara of identified vegetation communities within the proposal area;
- absence of threatened flora species and DRF; and
- proponent's proposed management of identified flora of conservation significance within the proposal area;

it is the EPA's opinion that the proposal can be managed to meet the EPA's environmental objective for this factor provided that the proposal is implemented in accordance with OB24/25 EMP, WMP and SSMP. The EPA has recommended Conditions 5, 6 and 7 to ensure that the proposal is implemented in accordance with the EMP, SSMP, and WMP, respectively.

4.2 Fauna

Description

The proposal has the potential to adversely affect local fauna through direct impact during land disturbance and loss of fauna habitat. Although, more mobile fauna species such as birds, macropods and larger lizards are considered likely to move away from disturbed areas into adjoining areas of similar habitats, the proposal has the potential to result in the temporary loss of local populations of less mobile species.

As mentioned before, several flora and fauna surveys have been commissioned by the proponent to be conducted in the region. The proponent commissioned Ecologia Environment to conduct a site specific Fauna survey (in 2004) and ENV Australia to conduct a targeted fauna survey (in March 2006) to document the occurrence of species of conservation significance in the area for the proposed development of the OB24 deposit. ENV Australia defined six broad habitat types within the OB24 deposit (i.e. range crests, range slopes, breakaways, gorges and gullies, minor drainage lines, and valley plains) for fauna assemblages based from general and major landform units present within the vicinity of the proposal.

Fauna Species of Conservation Significance

The following six fauna species of conservation significance were recorded during the surveys and identified to be closely related to the proposal:

- The Pilbara Olive Python is listed under the Wildlife Conservation (Specially Protected) Notice, 2008 of the WC Act and the EPBC Act.
- The Peregrine falcon is only listed under the Wildlife Conservation (Specially Protected) Notice, 2008 of the WC Act.
- The Rainbow Bee-eater was identified to be listed under migratory species of the EPBC Act. The Rainbow Bee-eater was recorded several times in the vicinity of Homestead creek in 2001 and the OB24 deposit in 2004; however, the species is a common and widespread species throughout the Pilbara.
- Three fauna species recorded within and around the area of the proposal have been identified to be listed under Priority 4 of DEC Priority fauna taxa (i.e. Star Finch (Western), Ghost Bat and Western Pebble-mound Mouse).

The Ghost Bat (*Macroderma gigas*) was the only fauna species of conservation significance recorded (i.e. echo location calls) within the proposed boundary of the OB24 deposit. The Ghost Bat occurs within a range of habitats and it is distributed throughout the Pilbara IBRA region. Potential habitat for this species (e.g. caves) occurs along the Ophthalmia Range.

Similarly, the proposal is not expected to have a significant impact on the other fauna species of conservation significance for the following reasons:

- Pilbara Olive Python – there is suitable gorge and gully habitat present outside the disturbance area and through the Ophthalmia Range;
- Peregrine Falcon is a mobile and wide ranging species;
- Star Finch habitat occurs throughout the wider area;
- Western Pebble-mound Mouse's potential habitat occurs along the Ophthalmia Range;
- Rainbow Bee-eater is a mobile species and its habitat occurs along the Ophthalmia Range and throughout the Pilbara.

The proponent has incorporated site specific characteristics from the proposal into management measures (i.e. environmental management plans) that have already been prepared to address environmental impact from the implementation of the OB25 mine (Statement 712).

The following two management plans have been revised and updated to incorporate site specific flora and fauna characteristics from the OB24 proposal:

- OB24/25 Environmental Management Plan (EPS document Appendix A); and
- OB24/25 Significant Species Management Plan (EPS document Appendix C)

The EMP describes general management measures such as pest management practices to be implemented during the proposal. The SSMP was revised to include the six fauna species of conservation significance described above. The SSMP describes general and specific management measures to minimise the impacts of the proposal on flora and fauna species of conservation significance and introduced species.

Assessment

The relevant area for consideration of this factor is the Ophthalmia Range and surrounding areas. The EPA's environmental objective for this factor is to maintain the abundance, diversity, geographic distribution and productivity of fauna at species and ecosystem levels through the avoidance or management of adverse impacts and improvement in knowledge.

The proposal has the potential to impact fauna in the project area through loss or modification of habitat.

Fauna Species of Conservation Significance

The EPA notes that terrestrial fauna habitats which would be directly impacted by the proposal are widely represented in the region. The EPA considers that the loss of habitat areas is unlikely to impact fauna populations of conservation significance in the area of the proposal, although some displacement of individuals may occur. Identified fauna species of conservation significance which may occur in the disturbance area are generally mobile and likely to move away from disturbed areas to areas of habitat adjacent to the proposal.

The EPA notes that the only fauna species of conservation significance recorded within the proposed boundary of the OB24 deposit was the Ghost Bat. The EPA considers the proposal is unlikely to have a significant impact on this species given that potential habitat (e.g. caves) occurs along the Ophthalmia Range and the species is distributed widely throughout the Pilbara.

The proposal would be implemented in accordance with the revised and updated OB24/25 EMP and SSMP. The EPA considers that the proposed management strategies for the implementation of the proposal which includes minimising clearing and avoidance of significant fauna habitat, are considered to be acceptable.

Summary

Having particular regard to the:

- presence of potentially suitable habitat of fauna species of conservation significance outside the footprint area of the proposal;
- presence of similar habitat outside the disturbance area and throughout the Ophthalmia Range;
- mobility and wide ranging characteristics of identified fauna species of conservation significance within the area of the proposal;

it is the EPA's opinion that the proposal can be managed to meet the EPA's environmental objective for this factor provided that the proposal is implemented in accordance with OB24/25 EMP and SSMP. The EPA has recommended Conditions 5 and 6 to ensure that the proposal is implemented in accordance with the EMP and SSMP, respectively.

4.3 Troglifauna and Short-Range Endemics

Description

Troglifauna

The proponent commissioned Bennelgia to undertake baseline troglifauna surveys at the OB24 deposit to assess the potential impacts from the proposal on troglifauna community. The survey was part of a broad scale troglifauna survey program by the proponent that began in November 2007 and involves more than 20 survey areas across the Pilbara. The troglifauna survey program follows the EPA troglifauna sampling guidelines and was endorsed by the Department of Environment and Conservation.

Bennelgia conducted three sampling rounds within the area of the proposal. The first round of sampling at the OB24 deposit occurred between 9 December 2007 and 6 February 2008; while the second round occurred between 19 March 2008 and 21 May 2008. An additional sampling round occurred between 23 July and 12 September 2008.

A total of 132 troglomorphic specimens were collected during the survey from a possible 18 taxa representing 11 orders of invertebrates, comprising species of slaters, harvestmen, schizomids, pseudoscorpions, millipedes, centipedes, symphylans, silverfish, bristletails, cockroaches, bugs and fungus gnats. Seven of the eighteen troglifauna species were collected as singletons (i.e. one animal, one bore). Two of the seven singleton species were recorded only from in-pit bores, namely, *Hemiptera sp. B1* and the slater *Stenoscidae n. gen. sp. B1*.

Hemiptera sp. B1 has been recorded previously at Area C (approximately 90 km east of the OB24 deposit); however the *Stenoscidae n. gen. sp. B1* is the only specimen known from an in-pit bore (located on the edge of a proposed pit at the OB24 deposit) and not previously recorded elsewhere in the Pilbara.

The slater *Stenoscidae n. gen. sp. B1* is likely to occur more widely because:

- there is considerable evidence of similar troglifauna habitat extending beyond the proposed mine pits;
- the pattern of occurrence of species in the troglifauna community was mostly wide-ranging, indicating that species is using the habitat connectivity to extend their ranges and *Stenoscidae n. gen. sp. B1* is expected to conform with this pattern;

- the singleton record of *Stenoscidae n. gen. sp. B1* is more likely evidence of low abundance than very highly restricted occurrence; and
- *Hemiptera sp. B1*, the one other species apparently 'restricted' to the OB24 pit is known to occur much more widely (EPS document, page 5-81).

It appears likely that *Stenoscidae n. gen. sp. B1* is a low-abundance species with a range that would be defined only after extensive sampling in the Pilbara. The pattern of distribution of other species found at the OB24 deposit suggests that it is unlikely the planned mining at the OB24 deposit would significantly impact any troglofauna species, including *Stenoscidae n. gen. sp. B1*. The other species recorded within the proposal area have been found in out-of-pit bores or have been found previously at other locations in the eastern Pilbara.

The distribution of troglofauna species depends largely on the availability of habitat. Based on morphological identifications, it appears, that at least 10 of the 18 taxa (56% of the species recorded) had ranges that extend beyond the proposed OB24 mining area. Given the continuity of similar geology within the landscape around the proposed OB24 development, and that there is little evidence of troglofauna species being tightly restricted or confined to the study site (OB24 deposit), the troglofauna habitat survey reveals that habitats, similar to that in the area of the proposal, extend along the ranges of the OB24 deposit.

Short-Range Endemics

The proponent commissioned Outback Ecology to undertake two targeted terrestrial short-range endemic invertebrate surveys were undertaken in April 2008 and June 2008 in eight sampling sites around south facing ridge/slopes and gullies/gorges along the Ophthalmia Range.

As a result of the terrestrial short-range endemic invertebrate surveys, only two taxa of millipede were identified, within and outside of the area of the proposal, as being potential representatives of terrestrial short-range endemic invertebrate species. No mygalomorph spiders, pseudoscorpions, scorpions or terrestrial molluscs were identified to represent short-range endemic species.

The two taxa of millipede represent a species from the Paradoxosomatidae family and the *Austrostrophus stictopygus*. The *Austrostrophus stictopygus* species is known to occur throughout the Pilbara, and suitable habitat for both species extends to the west of the study area along the Ophthalmia Range.

The potential impacts from the proposal on these species are considered likely to be minimal.

No specific management measures or monitoring programmes are proposed for terrestrial SRE invertebrates as surveys and assessment indicates that there is continuity of habitat for these species.

Assessment

The relevant area for consideration of this factor is the Ophthalmia Range and surrounding areas. The EPA's environmental objective for this factor is to maintain the abundance, diversity, geographic distribution and productivity of fauna at species and ecosystem levels through the avoidance or management of adverse impacts and improvement in knowledge.

Troglofauna and Short-Range Endemics

The distribution of troglofauna species depends largely on the availability of habitat. Similar troglofauna habitats found in the area of the proposal extend along the ranges of the OB24 deposit and beyond the area of the proposal. Troglofauna species recorded within the proposal area have been found in out-of-pit bores or have been found previously at other locations in the eastern Pilbara.

The EPA notes that troglofauna community found in the area of the proposal displays a typical species abundance pattern, with few relatively abundant species and a number of species that are likely to occur at very low density. The EPA considers that the seven troglofauna species that were collected as singletons, with particular regard *Hemiptera sp. B1* and *Stenoscidae n. gen. sp. B1* which were recorded only from in-pit bores, are unlikely to be significantly impacted by the proposal given the evidence suggesting that a pattern of distribution of troglofauna species and similar habitats found at the OB24 deposit extend beyond the area of the proposal.

Similarly, the EPA notes the two taxa of millipede identified within and outside of the area of the proposal as being potential representatives of terrestrial short-range endemic invertebrate species. The potential impacts from the proposal on these species are considered likely to be minimal since suitable habitats for both species extend to the west of the study area along the Ophthalmia Range, and *Austrostrophus stictopygus* species is also known to occur throughout the Pilbara.

Summary

Having particular regard to the:

- evidence of troglofauna and short-range endemics species outside the proposal area and the region; and
 - wider distribution of troglofauna and short-range endemics habitat in the region;
- it is the EPA's opinion that the proposal can be managed to meet the EPA's environmental objective for this factor.

4.4 Mine Decommissioning and Rehabilitation

Description

The expected life of the proposal is up to nineteen years (i.e. 2028) and this has been used as the basis for establishing the potential sequence of rehabilitation and decommissioning activities. Closure planning for the proposal is still at a conceptual level, with further planning to be undertaken progressively throughout the life of the project. Although the post-mine land use would be determined through ongoing consultation with the administering authority and relevant stakeholders during the implementation of the proposal, the most likely options would be either low intensity cattle grazing or inclusion in some form of natural conservation area. Since the proposal is located within the Newman Water Reserve, the mine landform would be rehabilitated such that drainage paths are maintained and sediment load minimised.

The proponent has consulted with stakeholders in developing Guiding Closure Principles for the OB25 mining operations. The area of the proposal would be progressively rehabilitated in accordance with these principles which would be used to guide the design and revegetation of final mine landforms throughout the life of the proposal and in particular during the decommissioning and closure phase. The

proponent has prepared an OB24/25 Decommissioning and Rehabilitation Plan (DRP) (EPS document, Appendix B) that include these Guiding Closure Principles.

Decommissioning and Rehabilitation Plan

The revised and updated OB24/25 DRP covers mine landform and infrastructure at the existing OB25 mine as well as the incorporation of additional mining areas, OSAs and low grade ore stockpiles associated with the development of the OB24 deposit. The proponent consulted with stakeholders during the preparation of the DRP, and similar consultation programmes would be conducted for future revisions of the DRP. The DRP is designed to be periodically reviewed and revised at intervals of not more than five years during the life of the operations and following closure.

The DRP describes the Guiding Closure Principles that would be applied to the proposal and how this would be achieved, including:

- life of mine planning and post-mining land use;
- standard rehabilitation procedures for disturbed landforms from the proposal;
 - land surface re-profiling and slope re-shaping;
 - top soil material application;
 - revegetation strategies (seeding with native species and flora species of conservation significance);
- overburden characteristics and management;
- rehabilitation monitoring for weed, fauna, and Ecosystem Function Analysis (EFA);
- soil characteristics and management;
- surface drainage and runoff management;
- rehabilitation monitoring;
 - at ecosystem and landscape levels;
 - of fauna on rehabilitated areas;
 - surface water monitoring;
 - weed monitoring

Potentially Acid Forming Material

Geological information available for the area indicates that some Potentially Acid Forming (PAF) overburden material occurs in close proximity to the proposed pit limits of the OB24 deposit. The misplacement of overburden can result in the creation of unstable landforms, areas incapable of sustaining vegetation cover, or the contamination of surface water or groundwater resources.

Overburden management methods to minimise potential impacts from PAF material would include selective mining and placement of PAF material in a designated encapsulation cell(s) within a mined-out portion of the open pit, and/or an encapsulation cell within an out-of-pit OSA.

In accordance with Proponent Commitment 6 of the EPS document, the proponent would develop and implement a PAF material management programme (if PAF material is identified) in consultation with and to the satisfaction of Department of Mines and Petroleum (DMP). The management programme would include specific details of the operational procedures that would be used to identify PAF material, how it would be selectively mined and transferred to the nominated encapsulation areas, how the material would be encapsulated and rehabilitated, and the monitoring and reporting measures that would be used to monitor implementation of the plan.

Assessment

The relevant area for consideration of this factor is the Ophthalmia Range and surrounding areas. The EPA's environmental objective for this factor is to ensure that rehabilitation achieves a stable and functioning landform which is consistent with the surrounding landscape and other environmental values.

The EPA considers that the proponent has developed a comprehensive framework for rehabilitation and mine closure to address the issue of returning disturbed vegetation and landforms to pre-mining conditions, however, in line with current practices the EPA has recommended conditions 8 and 9 to ensure that its environmental objectives are met. Condition 8 addresses the identification and long-term prevention, monitoring, contingency and remediation strategies for potential Acid Metalliferous Drainage (AMD) from the implementation of the proposal. Condition 9 addresses the implementation of the proposal in accordance with the updated DRP but also the development and incorporation of completion criteria to be implemented by the proponent during the implementation, rehabilitation and closure of the proposal

The EPA considers that mine closure and rehabilitation can be managed in an environmentally acceptable manner subject to implementation of the proposed conditions.

Summary

Having particular regard to the:

- the proponent's management procedures; and
- the EPA's recommended conditions 8 and 9;

it is the EPA's opinion that the proposal can be managed to meet the EPA's environmental objective for this factor.

5. Recommended Conditions

Having considered the information provided in this report, the EPA has developed a set of conditions that the EPA recommends be imposed if the proposal by BHP Billiton Iron Ore Pty Ltd for the development of the OB24 deposit is approved for implementation. These conditions are presented in Appendix 2.

6. Conclusions

The EPA has considered the proposal by BHP Billiton Iron Ore Pty Ltd to develop Orebody 24 (OB24) deposit to provide crushed ore feed for the existing Orebody 25 (OB25) processing facilities.

The EPA notes that the proposal involves clearing an additional 750 ha of native vegetation within a maximum disturbance footprint of 1310 ha. The proposal has the potential to impact on native vegetation and native fauna (including subterranean fauna) by loss and modification of habitat and the direct loss of individuals. All of the identified vegetation communities and priority flora species that occur within the OB24 deposit are known to be in other locations outside the proposal area and considered locally common in the wider area. The EPA therefore considers that the cumulative potential impacts from the proposal on vegetation communities and flora species of conservation significance is unlikely to have a significant impact.

The EPA notes that while the proposal is not expected or considered likely to have a significant impact on fauna species of conservation significance, some displacement of individuals may occur. Fauna habitats which would be directly impacted by the proposal are widely represented in the region. In addition, the identified fauna species of conservation significance which may occur in the disturbance area are generally mobile and likely to move away from disturbed areas to areas of habitat adjacent to the proposal. The proposed management strategies for the implementation of the proposal, including minimising clearing and avoidance of significant fauna habitat where possible are considered to be acceptable. The EPA notes that the distribution of troglofauna species depends largely on the availability of habitat. Similar troglofauna habitats found in the area of the proposal extend along the ranges of the OB24 deposit and beyond the area of the proposal. Troglofauna species recorded within the proposal area have been found in out-of-pit bores or have been found previously at other locations in the eastern Pilbara. The EPA considers that the potential impacts from the proposal on troglofauna species are considered likely to be minimal since suitable habitats for the identified species extend beyond the OB24 deposit.

The EPA notes that although all of the identified vegetation communities within the OB24 deposit are widely distributed within the Pilbara region and well represented within Karijini National Park and Chichester National Parks, the lack of conservation reserves in this part of the Pilbara place substantial reliance on these national parks.

The proponent prepared a number of environmental management plans to address environmental impacts from the implementation of the OB25 mine under Ministerial Statement 712. The proponent has reviewed and updated these EMPs (i.e. EMP, SSMP, WMP and DRP) to incorporate and address site specific characteristics and environmental impacts related from the implementation of the proposal (i.e. development of the OB24 deposit) and the OB25 mine. The EPA has recommended conditions to ensure that the proposal is implemented in accordance with the revised and updated EMPs.

The EPA has recommended Condition 8 to ensure that potential AMD is properly assessed and long-term prevention, monitoring, contingency and remediation strategies are developed and implemented by the proponent during development, operation, closure and rehabilitation stages of the proposal.

The EPA considers that the proponent has developed a comprehensive framework for decommissioning and rehabilitation to address the issue of returning vegetation and landforms to pre-mining conditions, however, in line with current practices the EPA has recommended Condition 9 to ensure that its environmental objectives are met and decommissioning and rehabilitation completion criteria would developed and improved before and during the implementation of the proposal.

The EPA has concluded that the proposal can be managed to meet the EPA's environmental objectives, provided there is satisfactory implementation by the proponent of the recommended conditions set out in Appendix 2.

7. Recommendations

The EPA submits the following recommendations to the Minister for Environment:

1. that the Minister notes that the proposal being assessed is for the development of Orebody 24 (OB24) deposit to provide crushed ore feed for the existing Orebody 25 (OB25) processing facilities;
2. that the Minister considers the report on the key environmental factors as set out in Section 4;
3. that the Minister notes that the EPA has concluded that the proposal can be managed to meet the EPA's environmental objectives, provided there is satisfactory implementation by the proponent of the recommended conditions set out in Appendix 2; and
4. that the Minister imposes the conditions and procedures recommended in Appendix 2 of this report.

Appendix 1

References

BHP Billiton (2010) Orebody 24/25 Upgrade Project - Environmental Protection Statement, March 2010, Perth, WA.

BHP Billiton (2010a) Orebody 24/25 Upgrade Project - Environmental Protection Statement, Appendix A, Environmental Management Plan, Revision 4, January 2010, Perth, WA.

BHP Billiton (2010b) Orebody 24/25 Upgrade Project - Environmental Protection Statement, Appendix B, Decommissioning and Rehabilitation Plan, Revision 2, January 2010, Perth, WA.

BHP Billiton (2010c) Orebody 24/25 Upgrade Project - Environmental Protection Statement, Appendix C, Significant Species Management Plan, Revision 2, January 2010, Perth, WA.

BHP Billiton (2010d) Orebody 24/25 Upgrade Project - Environmental Protection Statement, Appendix D, Weed Management Plan, Revision 2, January 2010, Perth, WA.

Appendix 2

Identified Decision-Making Authorities and Recommended Environmental Conditions

Identified Decision-Making Authorities

Section 44(2) of the *Environmental Protection Act 1986* (EP Act) specifies that the EPA's report must set out (if it recommends that implementation be allowed) the conditions and procedures, if any, to which implementation should be subject. This Appendix contains the EPA's recommended conditions and procedures.

Section 45(1) requires the Minister for Environment to consult with decision-making authorities, and if possible, agree on whether or not the proposal may be implemented, and if so, to what conditions and procedures, if any, that implementation should be subject.

The following decision-making authorities have been identified for this consultation:

Decision-making Authority	Approval
1. Minister for Water	Water extraction licences
2. Department of Environment and Conservation	Works Approval and Licence
3. Director General	Mining Proposal
4. Minister for Indigenous Affairs	s18 clearance under Aboriginal Heritage Act
5. Minister for State Development	State agreements

Note: In this instance, agreement is only required with DMA #1 since this DMA is a Minister.

Recommended Environmental Conditions

STATEMENT THAT A PROPOSAL MAY BE IMPLEMENTED (PURSUANT TO THE PROVISIONS OF THE ENVIRONMENTAL PROTECTION ACT 1986)

OREBODY 24/25 UPGRADE PROJECT

Proposal: BHP Billiton Iron Ore is proposing to develop the Orebody 24 (OB24) deposit located north of Orebody 25 (OB25) Mine, and approximately 10 km north-east of the town of Newman in the Pilbara Region. New and existing OB25 infrastructure would be utilised.

Proponent: BHP Billiton Iron Ore Pty Ltd

Proponent Address: St Georges Square, 225 St Georges Tce, Perth WA 6000

Assessment Number: 1833

Previous Assessment Numbers: Nil

Previous Statement Numbers: Nil

Report of the Environmental Protection Authority: 1356

Previous Reports of the Environmental Protection Authority: Nil

The proposal referred to in report 1356 of the Environmental Protection Authority may be implemented. The implementation of that proposal is subject to the following conditions and procedures:

1 Proposal Implementation

1-1 The proponent shall implement the proposal as documented and described in schedule 1 of this statement subject to the conditions and procedures of this statement.

2 Proponent Nomination and Contact Details

2-1 The proponent for the time being nominated by the Minister for Environment under sections 38(6) or 38(7) of the *Environmental Protection Act 1986* is responsible for the implementation of the proposal.

2-2 The proponent shall notify the Chief Executive Officer of the Office of the Environmental Protection Authority of any change of the name and address of the proponent for the serving of notices or other correspondence within 30 days of such change.

3 Time Limit of Authorisation

- 3-1 The authorisation to implement the proposal provided for in this statement shall lapse and be void five years after the date of this statement if the proposal to which this statement relates is not substantially commenced.
- 3-2 The proponent shall provide the Chief Executive Officer of the Office of the Environmental Protection Authority with written evidence which demonstrates that the proposal has substantially commenced on or before the expiration of five years from the date of this statement.

4 Compliance Reporting

- 4-1 The proponent shall prepare and maintain a compliance assessment plan to the satisfaction of the Chief Executive Officer of the Office of the Environmental Protection Authority.
- 4-2 The proponent shall submit to the Chief Executive Officer of the Office of the Environmental Protection Authority the compliance assessment plan required by condition 4-1 at least six months prior to the first compliance report required by condition 4-6, or prior to implementation, whichever is sooner.

The compliance assessment plan shall indicate:

- 1 the frequency of compliance reporting;
 - 2 the approach and timing of compliance assessments;
 - 3 the retention of compliance assessments;
 - 4 the method of reporting of potential non-compliances and corrective actions taken;
 - 5 the table of contents of compliance assessment reports; and
 - 6 public availability of compliance assessment reports.
- 4-3 The proponent shall assess compliance with conditions in accordance with the compliance assessment plan required by condition 4-1.
- 4-4 The proponent shall retain reports of all compliance assessments described in the compliance assessment plan required by condition 4-1 and shall make those reports available when requested by the Chief Executive Officer of the Office of the Environmental Protection Authority.
- 4-5 The proponent shall advise the Chief Executive Officer of the Office of the Environmental Protection Authority of any potential non-compliance within seven days of that non-compliance being known.
- 4-6 The proponent shall submit to the Chief Executive Officer of the Office of the Environmental Protection Authority the first compliance assessment report fifteen

months from the date of issue of this Statement addressing the twelve month period from the date of issue of this Statement and then annually from the date of submission of the first compliance assessment report.

The compliance assessment report shall:

- 1 be endorsed by the proponent's Managing Director or a person delegated to sign on the Managing Director's behalf;
- 2 include a statement as to whether the proponent has complied with the conditions;
- 3 identify all potential non-compliances and describe corrective and preventative actions taken;
- 4 be made publicly available in accordance with the approved compliance assessment plan; and
- 5 indicate any proposed changes to the compliance assessment plan required by condition 4-1.

5 Environmental Management Plan

- 5-1 The proponent shall implement the proposal in accordance with the Environmental Management Plan provided as Appendix A of *Orebody 24/25 Upgrade Project, Environmental Protection Statement (March 2010)* or subsequent revisions.
- 5-2 The proponent shall review and revise the Environmental Management Plan required by condition 5-1 at intervals not exceeding five years.
- 5-3 The proponent shall make the Environmental Management Plan required by condition 5-1 publicly available.

6 Conservation of Significant Flora and Fauna

- 6-1 The proponent shall implement the proposal in accordance with the Significant Species Management Plan provided as Appendix C of *Orebody 24/25 Upgrade Project, Environmental Protection Statement (March 2010)* or subsequent revisions.
- 6-2 The proponent shall review and revise the Significant Species Management Plan required by condition 6-1 at intervals not exceeding five years.
- 6-3 The proponent shall make the Significant Species Management Plan required by condition 6-1 publicly available.

7 Weeds

- 7-1 The proponent shall implement the proposal in accordance with the Weed Management Plan provided as Appendix D of *Orebody 24/25 Upgrade Project, Environmental Protection Statement (March 2010)* or subsequent revisions.

7-2 The proponent shall review and revise the Weed Management Plan required by condition 7-1 at intervals not exceeding five years.

8 Acid and Metalliferous Drainage

8-1 Prior to ground-disturbing activities the proponent shall provide a report with a detailed risk assessment, using national and international standards, for any potential Acid Metalliferous Drainage (as defined in Section 2.1 of the *Managing Acid and Metalliferous Drainage*, February 2007 developed by the Australian Government) within the area of the Proposal as defined in Figure 2 to identify:

1. the extent of the acidity and metal contamination hazard associated from related mining activities in the area of the proposal; and
2. the potential environmental receptors that could be impacted on exposure to this hazard.

8-2 Prior to the mining of any material with the potential to generate Acid Metalliferous Drainage, the proponent shall have in place long-term prevention, monitoring, contingency and remediation strategies for the management of any potential Acid and Metalliferous Drainage to the satisfaction of the Chief Executive Officer of the Office of the Environmental Protection Authority on advice of the Department of Environment and Conservation and the Department of Mines and Petroleum.

8-3 The proponent shall undertake static and kinetic geochemical testing for potential Acid and Metalliferous Drainage as part of the long-term monitoring strategies required by condition 8-2 using national and international standards to the satisfaction of the Chief Executive Officer of the Office of the Environmental Protection Authority.

8-4 The proponent shall report the results and assessment of efficacy of the long-term prevention, monitoring, contingency and remediation strategies required by condition 8-2 as part of the compliance assessment report required by condition 4-6 to the satisfaction of the Chief Executive Officer of the Office of the Environmental Protection Authority.

Note: the national and international standards are the *Managing Acid and Metalliferous Drainage*, February 2007 developed by the Australian Government, Department of Industry Tourism and Resources, and the *Global Acid and Metalliferous Drainage (GARD) Guide*, December 2008, developed by the International Network for Acid Prevention (INAP).

9 Decommissioning and Rehabilitation

9-1 The proponent shall implement the proposal in accordance with the Decommissioning and Rehabilitation Plan provided as Appendix B of *Orebody 24/25 Upgrade Project, Environmental Protection Statement (March 2010)* or subsequent revisions.

9-2 The proponent shall review and revise the Decommissioning and Rehabilitation Plan required by condition 9-1 at intervals not exceeding 5 years until condition 9-5 is

have been met to the requirements of the Chief Executive Officer of the Office of the Environmental Protection Authority on advice of the Department of Environment and Conservation and the Department of Mines and Petroleum.

- 9-3 The proponent shall ensure that decommissioning and rehabilitation completion criteria are developed during implementation of the proposal, included in the Decommissioning and Rehabilitation Plan required by condition 9-1 and updated as required by condition 9-2.
- 9-4 The proponent shall ensure that rehabilitation required by condition 9-1 achieves the following outcomes within 5 years following the cessation of productive mining in the area of the proposal:
1. the project area shall be non-polluting and shall be constructed so that its final shape, stability, surface drainage, resistance to erosion and ability to support local native vegetation are comparable to non-disturbed natural landforms within 100 km of the proposal.
 2. native vegetation areas disturbed through implementation of the proposal, shall be progressively rehabilitated with vegetation composed of native plant species of local provenance (defined as seed or plant material collected within 100 kilometres of the proposal).
 3. areas not currently supporting native vegetation shall be revegetated to the original land use or a use approved by the Chief Executive Officer of the Office of the Environmental Protection Authority.
 4. The percentage cover of living vegetation in all rehabilitation areas shall be comparable to non-disturbed natural vegetation within 100 km of the proposal.
 5. no new species of weeds (including both declared weeds and environmental weeds) shall be introduced into the area as a result of the implementation of the proposal.
 6. the coverage of weeds (including both declared weeds and environmental weeds) within the rehabilitation areas shall not exceed that identified in baseline monitoring undertaken prior to the commencement of operations, or exceed that existent on comparable, nearby land which has not been disturbed during implementation of the proposal, whichever is less.
- 9-5 Rehabilitation activities shall continue until such time as the requirements of conditions 9-1 and 9-2 are demonstrated by inspections and reports to have been met for a minimum of five years, to the satisfaction of the Chief Executive Officer of the Office of the Environmental Protection Authority on advice of the Department of Environment and Conservation and of the Department of Mines and Petroleum.

Procedures

1. Where a condition states “on advice of the Office of the Environmental Protection Authority”, the Office of the Environmental Protection Authority will provide that advice to the proponent.

2. The Minister for Environment will determine any dispute between the proponent and the Office of the Environmental Protection Authority over the fulfilment of the requirements of the conditions.
3. The proponent is required to apply for a Works Approval and Licence for this project under the provisions of Part V of the *Environmental Protection Act 1986*

Schedule 1

The Proposal (Assessment No. 1833)

The proposal to develop the OB24 deposit to provide crushed ore feed for the existing ore processing facilities at the OB25 mine until 2028 involves:

- a land disturbance of 750 ha within a maximum proposal footprint of 1,310 ha;
- using conventional open pit hard rock selective mining methods;
- hauling mined overburden to mined-out voids for use as infill, or placed in out-of-pit OSAs;
- the transport of ore from the OB24 deposit pits to the existing OB25 processing facilities either conveyor or haul trucks;
- the construction and operation of a new primary and secondary ore crushing facility either at the OB24 deposit if conveyor ore transport options is used, or the OB25 mine if haul road ore transport option is used;
- Construction and use of Run-of-Mine ore stockpiles and low-grade ore stockpiles.
- Construction and use of water supply pipelines and pumps to connect the OB24 mine operations with existing water supply and reticulation network used in the OB25 mine;
- Construction and use of approximately 1.6 kilometres (km) of 66 kilovolt (kV) overhead spur line;
- Use of existing rail facilities and loading of up to five trains per day (trains to consist of two or three rakes, with each rake consisting of approximately 106 ore cars); and
- Construction and use of new administration and crib room facilities.
- Construction and use of new refuelling and hydrocarbon storage facilities.
- Installation and operation of new sewage treatment unit.

The location of the various project components is shown in Figures 1, 2 and 3. The main characteristics of the proposal are summarised in Table 1 below. A detailed description of the proposal is provided in the project referral document, *Orebody 24/25 Upgrade Project Referral*, prepared by BHP Iron Ore Pty Ltd, Perth, Western Australia (March 2010).

Table 1: Summary of Key Proposal Characteristics

Element	Description
Life of mine	Mining and processing from 2010 to 2028
Ore Processing Rate	Up to 15 million tonnes per annum.
Total Overburden	Up to 210 million tonnes.
Land Disturbance Area	No more than 750 hectares within a maximum disturbance boundary of 1310 hectares.
Area of Pits	No more than 320 hectares.
On-site Ore Transport	Ore transport options from the OB24 mine by haul road or conveyor to ore crushing and screening facilities at the OB25 mine.
Ore Crushing and Screening	Construction and use of a new primary and secondary crusher either at the OB24 mine (if conveyor ore transport option is used) or at the OB25 mine (if haul road ore transport option is used).
Overburden Storage	Placement of overburden in out-of-pits OSAs on the northern and

Element	Description
Areas (OSAs)	southern side of the OB24 mine pits. Some infill dumping in mined-out pits.
Water Supply Source	From existing approved OB25 sources and abstraction from OB23 pit lake from 2018 until 2028.
Water Demand	Up to 8.1 mega litres per day.
Power Supply Source	Newman gas-fired power station.
Power Supply Network	Construction and use of approximately 1.6 kilometres of 66 kilovolt (kV) overhead spur line.
Off-site Transport of Ore	Use of existing rail facilities and loading of up to five trains per day (trains to consist of two or three rakes, with each rake consisting of approximately 106 ore cars).

Abbreviations

CO ₂ -e	carbon dioxide equivalent	m	metres
dB(A)	decibels (A-weighted)	m ²	square metres
GW/yr	gigawatt hours per year	ML	megalitres (10 ⁶ litres)
kg	Kilograms	m/s	metres per second
kg/yr	kilograms per year	MW	megawatts (10 ⁶ watts)
ha	Hectares	MWh	megawatt hours
HHV	higher heating value	O ₂	oxygen
km	Kilometres	PJ	petajoules (10 ¹⁵ joules)
kV	kilovolts (10 ³ volts)	PM ₁₀	particulate matter with an aerodynamic diameter of less than 10 micrometres
		ppmv	parts per million by volume

Figures

- Figure 1 Regional Location of the OB24 deposit. (See page 5 above).
- Figure 2 Location of the OB24 deposit in relation to the OB25 mine. (See page 6 above).
- Figure 3 Indicative General Arrangement for the development of the OB24 deposit. (See page 7 above).