Hope Downs Iron Ore Project – Rail and Port Facility, Pilbara

Hope Downs Management Services Pty Ltd

Report and recommendations
of the Environmental Protection Authority

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Summary and Recommendations

Hope Downs Management Services Pty Ltd (hereafter referred to as HDMS) propose to construct a rail line and port facility to support the development of an iron-ore mine, based on the Hope 1 Deposit. This report provides the Environmental Protection Authority's (EPA's) advice and recommendations to the Minister for the Environment and Heritage on the environmental factors relevant to the proposal.

Section 44 of the *Environmental Protection Act 1986* requires the EPA to report to the Minister for the Environment and Heritage on the environmental factors relevant to the proposal and on the conditions and procedures to which the proposal should be subject, if implemented. In addition, the EPA may make recommendations as it sees fit.

Relevant environmental factors

The EPA decided that the following environmental factors relevant to the proposal required detailed evaluation in the report:

(a) biodiversity;

(b) surface water hydrology;

(c) noise;

(d) dust; and

(e) acid sulfate soils.

There were a number of other factors which were very relevant to the proposal, but the EPA is of the view that the information set out in Appendix 3 provides sufficient evaluation.

Conclusion

The EPA has considered the proposal by HDMS to construct a rail line and port facility to support the development of an iron-ore mine, based on the Hope 1 Deposit.

The EPA notes that a high standard of biological data collection was carried out, and that the flora and fauna surveys were commended by the Department of Conservation and Land Management (CALM) and the Department of Environmental Protection (DEP).

In relation to biodiversity and surface water hydrology the EPA has concluded that:

- none of the habitat types present in the project area appear to be unique to the study corridor or regionally significant;
- the range of management measures to be implemented as part of the design, construction and operation of the proposed rail line will effectively minimise or avoid any impacts on significant fauna habitats (including sand dune associations, cracking clay communities, mulga woodlands and rockpile associations) and fauna communities;
- the impact on mangroves has been reduced to a minimum practicable level; and

- the integrity and function of the existing hydrological system will be maintained.

The EPA considers that the proponent has demonstrated that it can achieve noise levels in Port Hedland that are well below existing noise levels and that although special noise conditions have been developed to allow HDMS to exceed the *Environmental Protection (Noise) Regulations 1997* (hereafter referred to as the Noise Regulations), it is considered that these conditions are consistent with the achievement of reasonable cumulative noise levels in the longer term.

With regard to noise emissions for the Port Hedland area, the EPA notes that this proposal has highlighted the fact that industrial noise emissions currently exceed the prescribed limits set by the Noise Regulations, for residential locations within the Port Hedland townsite.

As a consequence, the EPA recommends that cumulative noise emissions for the Port Hedland townsite need to be progressively reduced and that to achieve this, a whole of industry approach is needed, with encouragement and facilitation to be provided by Government.

In relation to dust, the EPA notes that dust levels at Port Hedland exceed the Ambient Air NEPM standard for particulates several times each year and that dust is a significant environmental health and amenity issue in the Town of Port Hedland. However, based on the modelling undertaken it is noted that the contribution of the proposed port operations is expected to be less than 1% of the existing levels and that HDMS has incorporated into its design philosophy the requirement to maintain moisture content for lump and fine ore at the optimum levels of 4% and 6% (HDMS, 2002a).

As such, the EPA has concluded that the dust arising from the proposed rail and port operations can be managed in accordance with the proponent's commitments and through the incorporation of best practicable management in the design, construction and operation of the ore handling facility.

In addition, although mangrove communities in the area may experience increased dust deposition levels, the EPA considers that based on studies undertaken by Paling (2002) and HDMS (2002a) there is a minimal risk of dust impacts on mangroves.

In relation to acid sulfate soils (ASS) the EPA has concluded that ASS are unlikely to present a problem in the Port Hedland marine environment. This is based on initial investigations undertaken by the proponent that indicate the disturbance, removal and placement of material from dredged areas, Borrow Area 'A' or the settling ponds will not cause an impact in terms of acid soils (Paling, 2002).

With regard to rail duplication, the EPA in its assessment of the Hope Downs mine (EPA, 2001a) noted that it would be preferable for HDMS to share existing railway infrastructure, rather than to duplicate an existing railway line. However, the EPA also acknowledged that the end result of negotiations between the proponent and existing railway owners may not allow shared use and that HDMS may have to develop its own railway and port infrastructure.

Notwithstanding this, the EPA believes that Government should give consideration to the rationalisation of future rail, road and other corridors in the Pilbara and to the means to ensure that the environmental impacts of future cumulative access proposals are acceptable. Accordingly the EPA recommends that Government should progress the development of the strategic infrastructure corridor concept, as outlined in the Central Pilbara Infrastructure Planning Study, and determine detailed corridor alignments for the movement of iron ore.

The EPA also considers that HDMS' approach to supporting and promoting the free exchange of scientific information and its commitment to provide scientific data to government agencies relating to flora and fauna baseline studies and information from other studies, undertaken as part of environment reporting into regional data bases, to be commendable.

This action is seen to complement the conclusions reached in the Independent Review of the Project Development Approvals System (Keating et al, 2002) and the Central Pilbara Infrastructure Planning Study Report (DRD, 2000).

The EPA has therefore concluded that it is unlikely that the EPA's environmental objectives would be compromised provided there is satisfactory implementation by the proponent of the proponent's commitments and the recommended conditions set out in Appendix 5 and summarised in Section 4.

Recommendations

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

1. That the Minister notes that the proposal being assessed is for the construction of a rail line and port facility to support the development of an iron-ore mine, based on the Hope 1 Deposit;

2. That the Minister considers the report on the relevant environmental factors as set out in Section 3;

3. That the Minister notes that the EPA has concluded that it is unlikely that the EPA's objectives would be compromised, provided there is satisfactory implementation by the proponent of the recommended conditions set out in Appendix 5, and summarised in Section 4, including the proponent's commitments;

4. That the Minister imposes the conditions and procedures recommended in Appendix 5 of this report;

5. That Government, in conjunction with industry, develop a strategy to resolve the cumulative noise issue in Port Hedland with the aim of achieving real noise reductions in Port Hedland over time;

6. That in accordance with previous EPA advice where rail facilities in the Pilbara have been assessed, it would be preferable for HDMS to share existing railway infrastructure rather than to duplicate an existing railway line; and

7. That Government should progress the development of the strategic infrastructure corridor concept, as outlined in the Central Pilbara Infrastructure Planning Study, and determine detailed corridor alignments for the movement of iron ore.

Conditions

Having considered the proponent's commitments and information provided in this report, the EPA has developed a set of conditions that the EPA recommends be imposed if the proposal by HDMS to construct a rail line and port facility to support the development of an iron-ore mine, based on the Hope 1 Deposit is approved for implementation.

These conditions are presented in Appendix 5. Matters addressed in the conditions include the following:

(a) that the proponent shall fulfil the commitments in the Consolidated Commitments statement set out as an attachment to the recommended conditions in Appendix 5; and

(b) that the proponent shall reduce noise emissions as far as is reasonably practicable and:

(i) ensure that where it is not reasonably practicable for the noise emitted from the proposal to meet the *Environmental Protection (Noise) Regulations 1997*, when received in the Port Hedland townsite, that the noise emitted from the proposal, when received at any part of a noise sensitive premises that is within 15 metres of a building that is directly associated with a noise-sensitive use, does not exceed the following L_{A10} levels -

Noise Receiving Premises		**L_{A10} (dB)**
Noise Sensitive Premises in Port Hedland	West of Crowe Street	50
	East of Crowe Street	44

(ii) keep a register of abnormal events and other events which may result in an L_{ASlow} noise level greater than 60 dB(A) when received at any noise-sensitive premises in Port Hedland at any time;

(iii) make the register public available;

(iv) within 18 months following the date of commencement of operations, submit to the Minister for the Environment and Heritage an application under Regulation 17 of the *Environmental Protection (Noise Regulations 1997)* for approval to exceed or vary from the prescribed standard specified in the regulations;

(v) provide a Noise Management Report, in conjunction with the Regulation 17 application, to demonstrate that noise emissions from the proposal have been reduced as far as is reasonably practicable; and

(vi) meet the requirements of (i), (ii) and (iii) for a period of 18 months from the date of commencement of operations, after which time the requirements of (i), (ii) and (iii) shall cease to have effect, unless a Regulation 17 application has been submitted to the Minister for the Environment and Heritage, in which case the noise levels shall remain in force until the Minister for the Environment and Heritage, acting on advice of the EPA, grants that application.

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1. Introduction and background

This report provides the advice and recommendations of the Environmental Protection Authority (EPA) to the Minister for the Environment and Heritage on the environmental factors relevant to the proposal by Hope Downs Management Services Pty Ltd (hereafter referred to as HDMS) to construct a rail line and port facilities to support the development of an iron-ore mine, based on the Hope 1 Deposit.

The rail and port facility proposal is being assessed as a Public Environmental Review (PER). The PER (HDMS, 2002a) was released for an eight week public review period between 18 February and 15 April 2002.

The Hope Downs Iron Ore Mine was assessed by the EPA in August 2001 (Bulletin 1024) and environmental approval was published on 1 February 2002. The Hope Downs mine proposal included:

- open pit mining of both Hope North and Hope South ore bodies in the East Pilbara;
- ore processing, stockpiling and reclaiming facilities at the mine site; and
- a rail connection from the mine site to one of the existing railways used for the transport of iron ore to the coast for export.

A number of rail corridor options for the railway connection were put forward in the Hope Downs Iron Ore Mine assessment, however, since this aspect of the proposal was subject to continuing negotiations with the owners of the existing railways, no specific alignment for the rail connection was given in the proposal.

With regard to transport of iron ore to the coast, the EPA in its assessment on the mine (EPA, 2001a) noted that it would be preferable for HDMS to share existing infrastructure. However, the EPA also acknowledged that the end result of negotiations between the proponent and existing railway owners may not allow shared use and that HDMS may have to develop its own railway and port infrastructure. In this instance, the EPA concluded that a new proposal would need to be put forward and its environmental impacts considered separately. The EPA also indicated that in such a case, no major construction of the mine would occur until the rail access is finalised.

In September 2001, following unsuccessful negotiations with existing railway owners, HDMS referred a proposal to the EPA to build its own railway, running roughly parallel to BHP Billiton Iron Ore's (BHPIO's) existing railway, and port facilities at Port Hedland.

Further details of the proposal are presented in Section 2 of this report. Section 3 discusses the environmental factors relevant to the proposal. The conditions and commitments to which the proposal should be subject, if the Minister determines that it may be implemented, are set out in Section 4. Section 5 provides Other Advice by the EPA, Section 6 presents the EPA's conclusions and Section 7, the EPA's Recommendations.

References are cited in Appendix 1 and a list of submitters appears in Appendix 2. Appendices 3 and 4 identify the relevant environmental factors and summarise their management. Appendix 5 contains the recommended environmental conditions and commitments and Appendix 6 contains the summary of submissions and the proponent's response to submissions. Appendix 6 is included as a matter of information only and does not form part of the EPA's report and recommendations. Issues arising from this process and which have been taken into account by the EPA appear in the report itself.

2. The proposal

HDMS proposes to construct a rail line and port facilities to support the development of the Hope Downs Iron Ore Mine, based on the Hope Downs 1 Deposit, located approximately 75km north-west of Newman. Figure 1 shows the location of the mine and the proposed railway corridor.

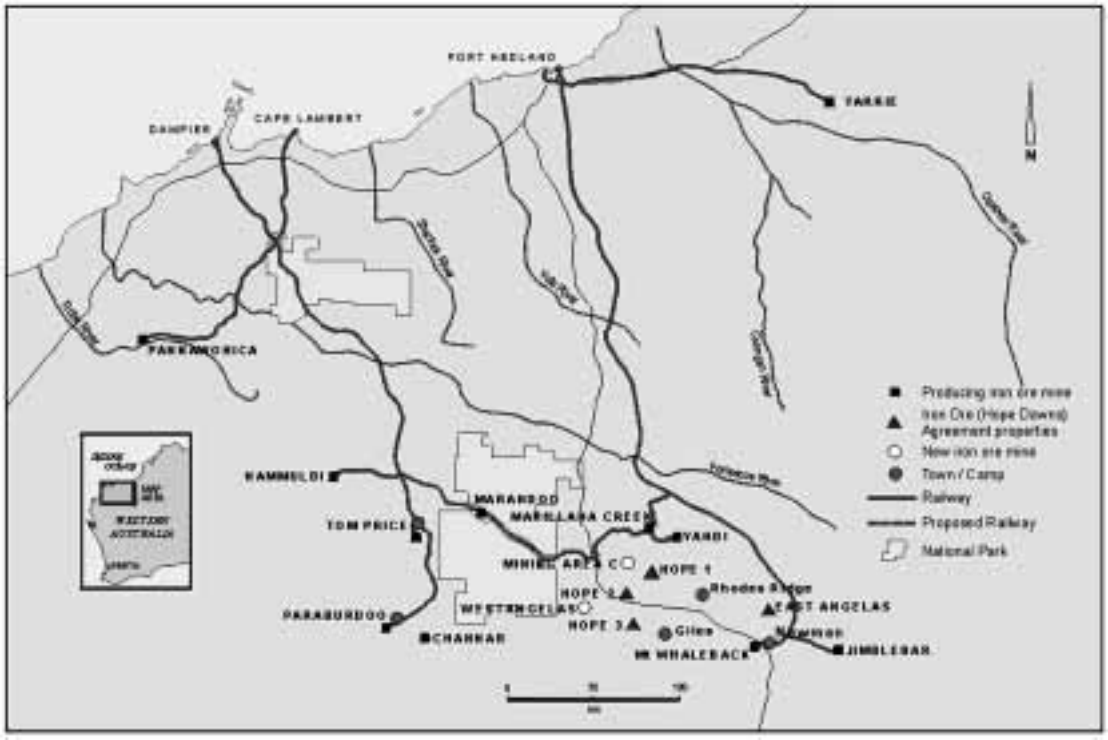

Figure 1: Proposal Location (HDMS, 2002a)

The proposal has the following main components:

- a 324km rail line from Weeli Wolli Creek as it enters the Fortescue Valley near Marillana Station to Port Hedland. The proposed alignment parallels the BHPIO railway wherever possible (see Figures 2a and 2b) and passes through a series of topographical features; and

- ore handling and export facilities adjacent to Owen and Stanley Point at Port Hedland, including the construction of new shiploading facilities at Harriet Point (see Figure 3).

Railway

The railway alignment commences at the junction of Weeli Wolli Creek and the Fortescue River, and heads in a general north to north-westerly direction. The alignment under consideration has been subdivided into six sections and is described in Table 1. A more comprehensive description is provided in the PER (HDMS, 2002a).

Table 1: Proposed Railway Alignment description (from HDMS, 2002a)

Section	Location	Distance (km)	Proposed Alignment Description
C	Fortescue River basin	69.4	• The rail alignment commences by crossing a well defined section of Weeli Wolli Creek and then follows the foothills of the Hamersley Ranges remaining above the broad flat Weeli Wolli delta and Fortescue River flood plains. • Approx 30km north of Weeli Wolli crossing the alignment passes over the BHPIO Yandi railway and tapers towards the BHPIO railway, following this line to the Fortescue River crossing. • At the approach to the Fortescue River crossing, the alignment follows the BHPIO track along on the western edge of the Goodiadarrie Hills.
D	Chichester Ranges	48.5	• On crossing the Fortescue River, the railway climbs to ~500m AHD in the Chichester Range. As the ranges are rugged and heavily fractured, the railway alignment diverges up to 7km west of the BHPIO railway on the southern side of the Chichester Ranges through a narrow valley system. This alignment achieves the maximum desirable grade (0.33%) and is similar to the Chichester Regrade BHPIO has considered constructing since the mid 1970's. • The narrow valley widens and the alignment continues along the eastern side of a significant tributary of Coonarie Creek for about 8km.
E	Yule River	92.6	• After crossing a tributary of Coonarie Creek, the alignment follows a long open ridge toward the main crossing of the creek, over 30km to the north. • Coonarie Creek is approached from the south to allow a bridge site with a near 90 degree crossing angle (approximately 2km to the east of the BHPIO railway). After crossing Coonarie Creek, the alignment converges back towards the BHPIO railway. • The Yule River is crossed approximately 10km further to the north, less than 1km downstream of the BHPIO bridge. • North of the Yule River, the alignment rejoins the BHPIO railway and runs parallel to it for the next 35km diverging to the west to bypass low hills. • The alignment then diverges 2km to the west of the BHPIO railway and 7-8km downstream of the BHPIO bridge to cross the Turner River, clear of the Turner River floodplain.

Section	Location	Distance (km)	Proposed Alignment Description
F	Turner River	45	• From the Turner River crossing, the alignment follows the BHPIO railway across a gently undulating landscape, diverging for bridge crossings at Gillan and Chinnamon Creeks approx 2km downstream of the respective BHPIO bridges.
G	Coastal Plain	52.4	• The East Turner River is crossed approx 2km downstream of the BHPIO railway, where the water course is well defined. • The alignment then traverses an approximate watershed between South and South West Creeks and passes around the western side of South Hedland between South and South west creeks.
H	Boodarie and Port Hedland Yards	12.3	• The alignment crosses the North West Coastal Highway and enters the proposed Boodarie Yard at an at-grade crossing. • From the Boodarie Yard, the track joins the existing BHPIO (Goldsworthy) Finucane Island track and crosses South West Creek before leaving the BHPIO track and entering the Port Hedland Yard.

Port and related infrastructure

The development of a port facility at Owen Point within Port Hedland will involve a rail spur and ore handling facilities on the eastern side of the existing Finucane Island access road. A product conveyor (1.4km in length) will link the facilities on Owen Point to export berths located at Harriet Point. Rail support infrastructure, including maintenance facilities, is planned to be located at the nearby Boodarie Industrial Estate (see Figure 3).

The shiploading conveyor will be carried on a causeway between the stockyard and the jetty, with an elevated truss to allow full tidal movement within West Creek. A wharf of approximately 750 metres (m) in length, is proposed with mooring dolphins beyond each end of the wharf. The wharf will be capable of handling ships from 50,000 to 250,000 dead weight tonnes (DWT).

The development of the port will be staged. Stage 1 will allow for a production rate of up to 15 million tonnes per annum (Mtpa) and include construction of a single export berth and limited initial stockpiling capacity. The second stage will enable the export of 25 Mtpa of iron ore and operations will see the stockpiles expand, additional screening units in the lump rescreening plant and an additional berth.

Dredging for both berth pockets will be required and a large cutter suction dredge will be used to enable the berth pocket to be dredged to RL –19.5m. Material from Borrow Area A and dredge spoil will be utilised as bulk fill for preparation of the ore stockpile site. The depression created by Borrow Area A will be used as a final settlement/ clarification basin for return water and slimes resulting from the dredge spoil operation (HDMS, 2002a).

In the event that HDMS' project proceeds on the basis of a rail service provided by BHPIO, the project would then entail the construction of new port facilities, construction of some track duplication of the BHPIO railway, new track through part of the Chichester Range and a new rail alignment around South Hedland to Finucane Island.

The main characteristics of the proposal are summarised in Table 2. A detailed description of the proposal is provided in Sections 4 and 5 of the PER (HDMS, 2002a).

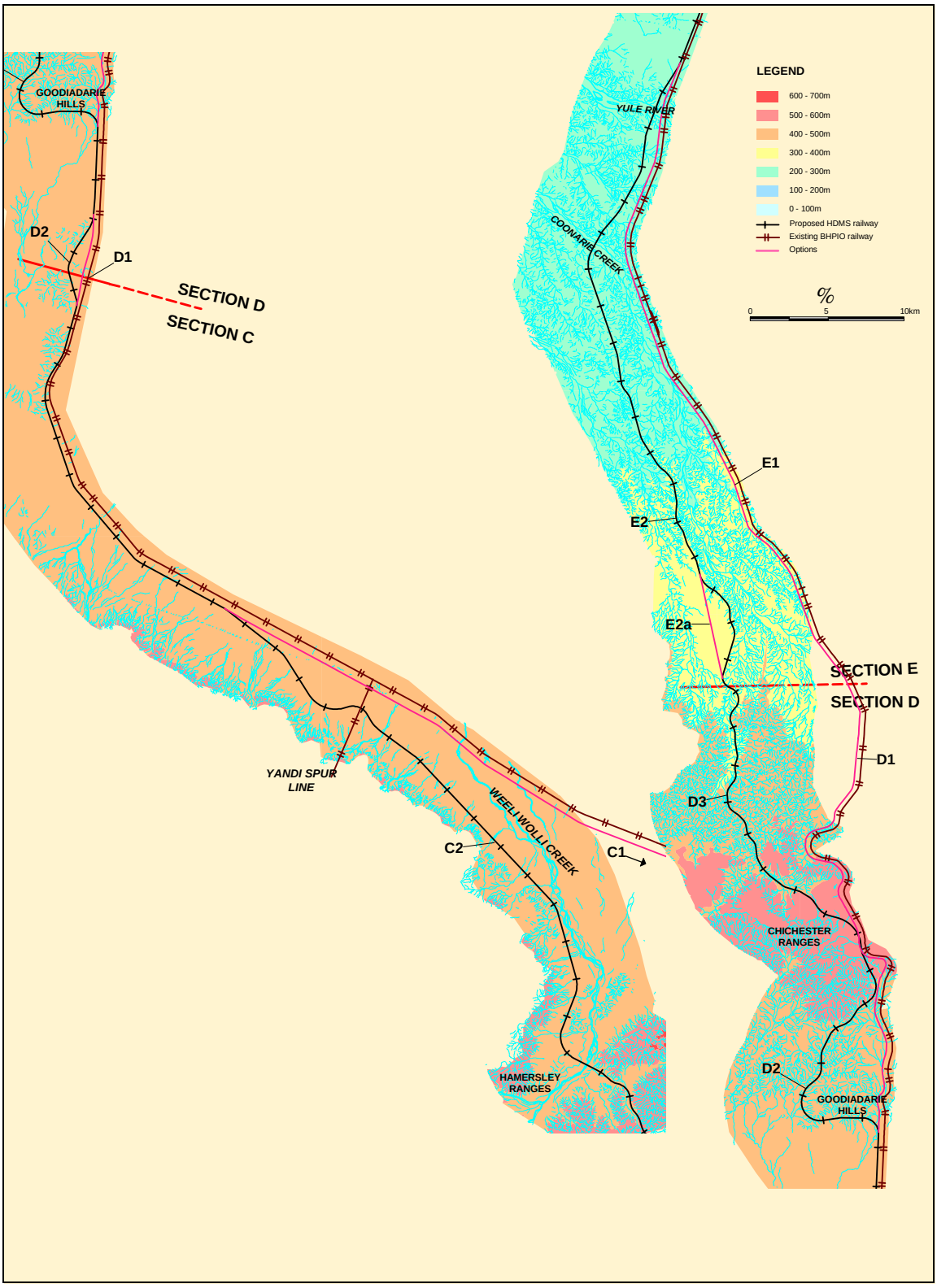

Figure 2a: Proposed Rail Alignment (HDMS, 2002a)

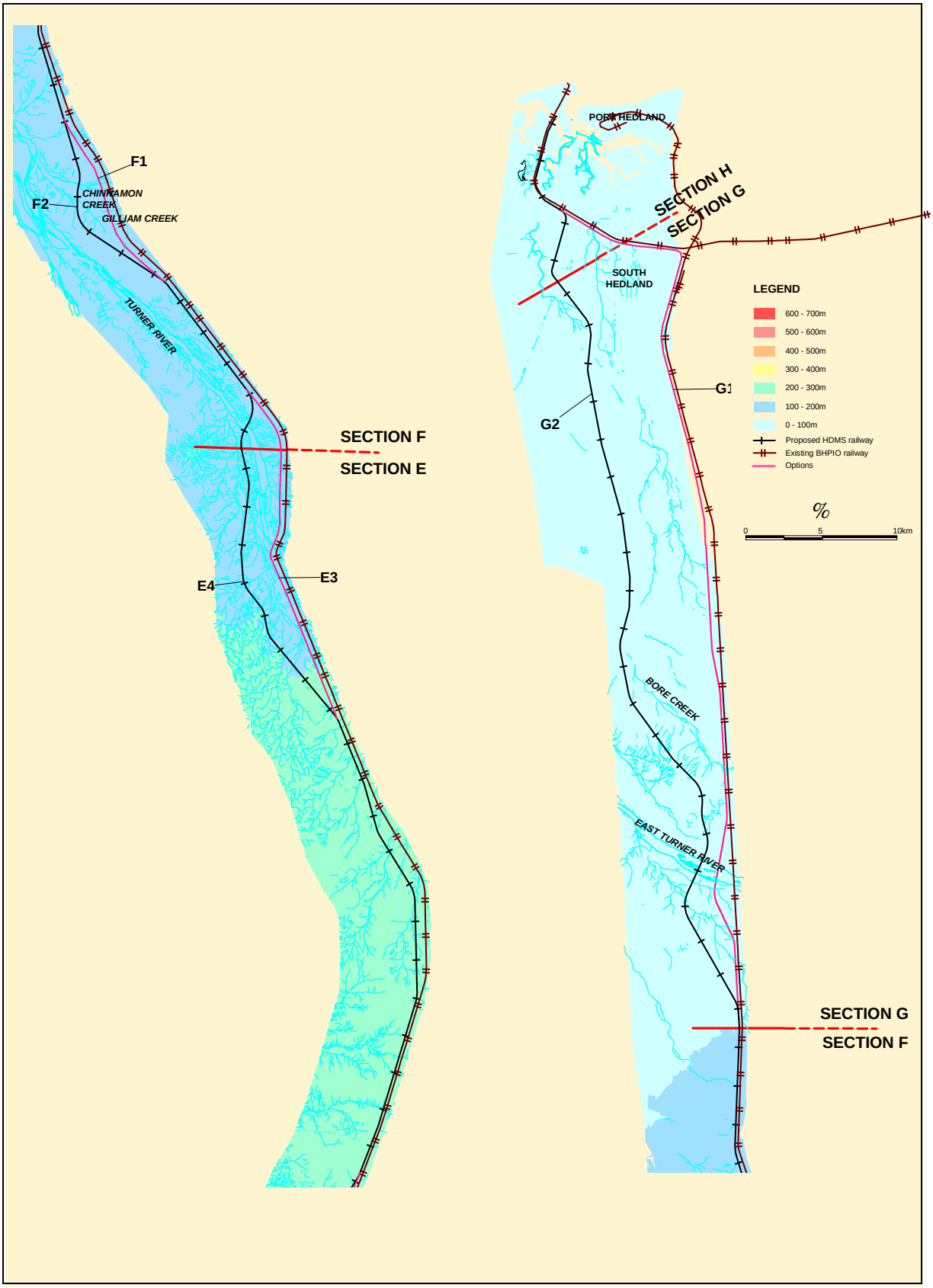

Figure 2b: Proposed Railway Alignment (HDMS, 2002a)

Figure 3: Port Layout (HDMS, 2002a)

The potential impacts of the proposal initially predicted by the proponent in the PER document (HDMS, 2002a) and their proposed management are summarised in Appendix 4.

Table 2: Summary of key proposal characteristics

Element	Characteristics
General	
Construction period Project Life Export Tonnage	2 years approximately 20 years approximately 25 Mtpa approximately
Railway	
Length Support Infrastructure	324 km Sidings Administration Offices and Warehouses Trip Servicing facilities Service and repair workshop Turnaround "Y" Track maintenance facilities
Port	
Stockyard Materials handling Port Development Buildings	2.5 Mt capacity Car dumper Conveyors and Transfer Points Rescreening Plant Stackers and Reclaimers Piled Wharf 750 m long Ships up to 250,000 DWT Shiploaders Dredging – 2.9Mm3. Disposed onshore Administration Office Shift Office Wharf amenities Car dumper control room Substations Workshop/warehouse
Infrastructure	
Power Water Roads Sewage	10.5 Mw from existing system 1.6 GLpa from existing system General traffic, port access, rail service Construction – package treatment plant Operations – septic systems
Disturbance Areas	
Area of railway easement Area of port facilities Borrow Area A Total area disturbed	1,000 ha 104 ha 94 ha 1,198 ha
Workforce	
Construction Permanent Accommodation	Rail – 900 personnel approximately Port – 300 personnel approximately Rail – 50 personnel approximately Port – 60 personnel approximately Construction – single status in Port Hedland Camps for rail Permanent – new or existing residences in Port Hedland

Key:
DWT - dead weight tonnes
GLpa - gigalitres per annum
ha - hectare
km – kilometre
m – metre
Mm^3 - million cubic metres
Mtpa - million tonnes per annum
Mt - million tonnes
MW - megawatts

3. Relevant environmental factors

Section 44 of the *Environmental Protection Act 1986* requires the EPA to report to the Minister for the Environment and Heritage on the environmental factors relevant to the proposal and the conditions and procedures, if any, to which the proposal should be subject. In addition, the EPA may make recommendations as it sees fit.

For this proposal the EPA has identified the relevant environmental factors, firstly by referring to a preliminary list of such factors identified in the EPA's guidelines and secondly from the proponent's PER and from public submissions. In addition, the EPA considered acid sulfate soils (ASS) to be an important issue and one that should be addressed as a relevant factor. This factor was not identified in the guidelines or PER, although subsequent work on the issue has been undertaken by the proponent.

Accordingly, it is the EPA's opinion that the following environmental factors relevant to the proposal require detailed evaluation in this report:

(a) biodiversity – including terrestrial flora (vegetation communities, Declared Rare and Priority Flora, flora of conservation significance), terrestrial fauna (specially protected Threatened Fauna), and marine biota and associated habitat;
(b) surface water hydrology;
(c) noise;
(d) dust; and
(e) acid sulfate soils.

The identification process for the relevant factors selected for detailed evaluation in this report is summarised in Appendix 3. The reader is referred to Appendix 3 for the evaluation of factors not discussed in sections 3.1-3.5 below. A number of these factors, such as marine water quality, are very relevant to the proposal, but the EPA is of the view that the information set out in Appendix 3 provides sufficient evaluation. The summary of relevant factors is summarised in Appendix 4.

Details on the relevant environmental factors and their assessment are contained in Sections 3.1-3.5. The description of each factor shows why it is relevant to the proposal and how it will 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.

3.1 Biodiversity

Description

The port and rail facility will result in the clearing of 1198 hectares (ha) of land through:

- the construction of the rail corridor (1000 ha);
- ore handling facility, port and associated infrastructure (104 ha); and
- Borrow Area 'A' (94 ha).

The proposal lies within Beard's (1975) Hamersley Plateau, Fortescue Valley, Chichester Plateau and Abydos Plain physiographic units and is within the Pilbara Interim Biogeographical Region (Thackway and Cresswell, 1995).

The proposal area has a diverse range of flora and fauna because of a variety of relief and geological types which combine to provide a great diversity of habitats. The flora and fauna survey undertaken for the proposal identified a number of vegetation types, communities with conservation significance, priority flora and fauna. No Declared Rare Flora (DRF) species were recorded for the railway or the port (see Table 3).

Table 3: Description of Existing Environment

	Existing Environment	
	Railway	**Port**
Terrestrial and marine flora	Survey identified: • 131 vegetation types; • four communities with high conservation significance - sand dune associations, cracking clay communities, mulga woodlands, and rockpile associations; and • significant local habitats - linear sand dune (adjacent to the Weeli Wolli Creek delta), Fortescue basin flats, cracking clay habitats (Chichester Ranges and Foothills), granite rockpiles and major drainage systems.	Survey identified: • six mangrove species - *Avicennia marina (*White mangrove), C*eriops tagal* (yellow-leaved spurred mangrove), *Rhizophora stylosa* (stilt-rooted mangrove), *Aegialitis annulata (*club mangrove), *Aegiceras corniculatum* (horned mangrove) and *Bruguiera exaristata* (rib-fruited orange mangrove); • nine mangrove assemblages; • mangal habitats in moderate to very good condition, backed by samphire and halophyte communities on hypersaline flats; and • that mangrove and mud flat habitats were significant on a local scale (given the dependence of some bird and bat species on this habitat, including migratory species).

Declared Rare and Priority flora	• Area supports 763 taxa identified.
	• 14 Priority flora species recorded:
	  • five Priority 2 species (*Euphorbia clementii, Gonocarpus ephemerus, Indigofera ixocarpa ms., Ischaemum albovillosum, Olearia fluvialis*);
	  • eight Priority 3 species (*Albutilon trudgenii ms,. Bulbostylis burbidgeae, Eriachne tenuiculmis, Goodenia nuda, Gymnanthera cunninghamii, Hibiscus brachysiphonius, Phyllanthus aridus, Themeda* sp. Hamersley Station (ME Trudgen 11,431)); and
	  • one Priority 4 species (*Goodenia*	

	Existing Environment	
	Railway	**Port**
	stellata). • 12 flora of interest were recorded for reasons that they are potential priority flora, range extension). • 18 species of introduced flora were recorded, one of which is a declared weed.	
Terrestrial/ marine fauna	Baseline survey identified: • 6 frogs; • 73 reptiles; • 125 avifauna; • 27 ground mammals; and • 11 bats.	Baseline survey identified: • 183 species of benthic invertebrates; • 16 species of fish; • low diversity of phytoplankton and zooplankton; • occasional turtles; and • sargassum beds and mats of filamentous green algae.
Specially protected Threatened Fauna	Baseline surveys recorded: • two Schedule 1 species (Mulgara, Bilby); • two Schedule 4 species (Peregrine Falcon, Woma); • three Priority 1 species (Little Northern free-tail Bat, Short – tailed mouse, *Ctenotus nigrilineatus*); and • five Priority 4 species (Pebble-mound mouse, Australian Bustard, Bush Stonecurluw, Eastern Curlew, Ghost Bat) A further 1 Schedule 1 species, 1 Priority 4 and 1 Priority 3 species were not recorded during the surveys, but could occur in the study area.	

With regard to the port, there will be no sea dumping of dredge spoil. Dredging of the berth pockets will require a large cutter section dredge and material dredged will be utilised as bulk fill for the preparation of the stockpile site (HDMS, 2002a).

Submissions

The key comments made in submissions focused on:

- the flora and fauna surveys having been done very well;
- the information from these surveys being well represented in the PER;
- concern in relation to adequate drainage in areas of mulga;
- minimising disturbance to sand dune vegetation types during construction;
- the impact on mangroves not being reduced to the "minimum practicable level";
- the impact on mangroves adjacent to clearing sites;
- the unacceptability of the location of the ore stockpiles, administrative buildings, borrow pits and settlement ponds in areas in or adjacent to mangroves;
- the need for mangrove studies to include cumulative effects;
- the extension of the Weed Hygiene and Control Plan to include the operations and maintenance phases of the railway;
- the need for flora and vegetation survey results to be compared with the land system mapping of the region by AgWest; and
- post construction environmental monitoring.

Assessment

The area considered for assessment includes:

- the 324km rail line route from Weeli Wolli Creek as it enters the Fortescue Valley near Marillana Station to Port Hedland; and
- ore handling and export facilities adjacent to Owen and Stanley Point at Port Hedland.

The EPA's environmental objectives for this issue are:

Issue	EPA Objectives
Biodiversity	• Maintain the abundance, species diversity, geographic distribution and productivity of terrestrial flora and fauna. • Protect Declared Rare and Priority Flora and Specially Protected (Threatened) Fauna consistent with provisions of the *Wildlife Conservation Act 1950.* • Maintain the ecological function, abundance, species diversity and geographic distribution of marine biota and habitat in order to protect ecosystem health.

The EPA notes that a high standard of biological data collection was carried out, and that the flora and fauna surveys were commended by the Department of Conservation and Land Management (CALM) and the Department of Environmental Protection (DEP).

For the purposes of assessing biodiversity, the railway corridor and the port will be considered separately.

Railway corridor

The EPA notes that clearing of vegetation will be required along the railway corridor and for the establishment of infrastructure such as borrow pits, laydown areas and access tracks. The proposed railway has the potential to impact biodiversity through direct disturbance of vegetation, alterations to surface water flows, the spread of weeds, disrupting fauna movement and the alteration of fire regimes.

With regard to the railway corridor, the EPA notes that no DRF species have been recorded and that none of the habitat types present in the project area appear to be unique to the study corridor or regionally significant. It is noted, however, that there are several habitat types that are significant on a local scale and that management measures have been put in place to minimise or avoid any impacts on fauna habitats that have been identified as either restricted or supporting potentially significant species or fauna communities.

The EPA is also aware that the railway corridor has been relocated to avoid areas of significant vegetation and habitat units such as the large cracking clay deposition plain and granite boulder piles north of the Chichester Ranges and that the rail corridor through the Fortescue Valley has been specifically sited on high ground away from the floodplain where sheetflow occurs.

The EPA notes that disturbance to surface drainage flow (which is addressed under Section 3.2) has the potential to negatively impact downstream vegetation, and that this issue is important as seven of the priority flora recorded from the survey area were restricted to, or occurred principally in creekline habitats. In addition, large areas of mulga are also present towards the southern end of the railway corridor and these are dependent on surface sheet flow.

A range of management measures will be implemented as part of the design, construction and operation of the proposed rail line to reduce impacts on flora and fauna. The EPA notes that some of the key management measures include:

- designing the rail corridor to ensure any impacts on mulga as a result of upstream flooding or downstream starvation is minimised to the satisfaction of CALM;
- protection of areas where priority flora are found;
- avoiding vegetation types of higher conservation significance as part of the final rail design (for example sand dune vegetation types);
- designing the railway to take into account local hydrological patterns to include adequate provision for drainage line habitats;
- dispersal of sheetflow to ensure downstream vegetation is not adversely affected; and
- the extension of the weed management plan to cover weed hygiene and control during the operation and maintenance phases of the railway.

Commitments relating to the protection of biodiversity are detailed below, following consideration of the port facility.

Port

The EPA notes that the development will result in the clearing of approximately 89 ha of mangroves or approximately 8% of the total mangal habitat (1108 ha) within Port Hedland harbour (Paling et al., 2001 cited in HDMS, 2002a). Of this, 37.5ha is represented by the least developed and lowest cover mangal types in the harbour.

It is also noted that none of the mangrove associations that will be affected are restricted to this part of the harbour and that the most affected association would experience the loss of approximately 12% of its total area within the harbour. In addition, it is likely that some colonisation is likely to occur along the perimeter of the completed works areas and this may partially offset the mangroves removed during initial clearing activities (HDMS, 2002a).

Given that mangroves rely on regular tidal flushing to ensure salinities are maintained within their tolerance limits, the EPA notes that the design of the port facility has ensured that existing mangroves, not disturbed by construction, will continue to experience current tidal conditions.

In addition, the EPA also notes that proposed drainage structures and management measures will ensure that impacts relating to the discharge of runoff water from stockpiles, drainage water and return water which have the potential to cause degradation of mangroves in areas adjacent to the proposed facility are minimised.

Furthermore, it is noted that at the completion of the project, mangrove colonisation and rehabilitation will be encouraged in areas which were previously stripped of vegetation to accommodate construction.

Whilst Port Hedland is not specifically identified in the EPA's "Guidance Statement for the protection of tropical arid zone mangroves along the Pilbara coastline" (EPA, 2001b), the proponent undertook a site specific assessment of significance and ecological function of mangrove communities. As such, the mangrove systems present within Port Hedland harbour were approached in accordance with Guidance 4 for all other areas within designated industrial and associated port areas. This guideline requires that the impacts of development on mangrove habitat, and their ecological function, is to be reduced to the 'minimum practicable level'.

In relation to this point, the EPA notes that CALM has indicated that this has not been achieved and that ore stockpiles, settlement ponds and the borrow pits from the mangrove areas should be relocated further inland. In response, the proponent has indicated that the nearest available ground for relocation of these facilities would be south of the HBI plant, some 8km away from the proposed site and that such a distance from the reclaimer to the ship loader is impractical when it comes to hatch changing and hatch top-ups during the loading process (HDMS, 2002b). In addition, the proponent points out that the longest distance in the Pilbara would be less than 3 km (Robe River Iron Associates) and that out of all possible sites available within the port lease, the proposed site is the least invasive environmentally (HDMS, 2002b).

In addition, the proponent has indicated that a number of alternatives of stockyard and rail spur layout were considered and rejected specifically to meet the criteria of keeping the impact on mangroves to a minimum practical level (HDMS, 2002b).

The EPA also notes that a range of project design, management measures and commitments have been made to manage potential impacts. These include:

- locating and aligning the stockpile area so that as much of the footprint as possible occupies supratidal land and to minimise clearing more structurally complex mangroves in seaward areas;
- identifying clearing limits in relation to port and stockpile infrastructure on final design drawings and pegging areas in the field prior to clearing commencing;
- selection of a rail spur over a conventional and more efficient rail loop to reduce clearing impacts on mangroves and other potential hydrodynamic changes;
- ensuring structures that cross tidal channels do not inhibit tidal flushing of upstream mangrove systems;
- best practice management of all surface drainages including run-off from stockpile facilities;
- best practice dust suppression to ensure dust deposition on mangroves is minimised;
- re-establishing surface water flows to allow mangrove recolonisation; and
- commitments relating to mangrove rehabilitation and research (see sub-section on environmental commitments below).

The EPA recognises the intrinsic value of tropical arid zone mangroves and the need to protect distribution and function along the Pilbara coastline. However, based on:

- the above management measures and commitments;
- the fact that HDMS has investigated alternative options for rail alignment and port location; and
- the Guidance Statement specifically recognising that some areas, such as Port Hedland harbour, have had long histories of industrial port use,

the EPA considers that HDMS has reduced the impact on mangroves to a minimum practical level.

With regard to marine biodiversity, the EPA notes that the proponent has made a commitment to address quarantine measures for dredge vessels as part of its dredging and land reclamation management plan. This will ensure that the dredge and associated vessels required as part of this proposal do not represent a potential pathway for exotic marine organisms or diseases to be introduced into the Port Hedland marine environment

Accordingly, the EPA expects that through the implementation of quarantine measures, there will be no fouling organisms on the dredge vessel (associated vessels) or equipment, regardless of whether the last port of call was a domestic or international port.

Environmental commitments

With regard to the rail and port facility, the EPA notes the following commitments have been made:

(i) the preparation and implementation of a Construction Environmental Management Plan (EMP) and an Operations EMP for the railway and port to address:

- vegetation clearing and management, and
- flora and fauna;

(ii) the preparation and implementation of a Dredging and Land Reclamation Management Plan to address a range of issues including the clearing of mangroves and quarantine measures (Commitments 5 and 6);

(ii) the preparation and implementation a Fire Management Plan (Commitments 11 and 12) to reduce the risk of uncontrolled fires arising from track grinding activities and rail maintenance and provide contingency measures. The plan will also include a contingency and response plan in the event of any bushfires that commence as a result of construction works;

(iii) the preparation and implementation of a Weed Hygiene and Control Plan to ensure that weed species identified from the rail corridor are not spread as part of the construction, operations or maintenance of the railway (to the satisfaction of CALM and the APB) (Commitments 13 and 14);

(iv) the preparation and implementation of a Rehabilitation and Topsoil Management Plan (Commitments 15 and 16) to address:

- siting, access tracks, opening, operation and closure of borrow pits and other material sources;
- topsoil recovery, stockpiling and respread;
- the use of provenance seed collection, mixes and application;
- surface stabilisation and other treatments;
- sensitive location and design of borrow pits; and
- monitoring and maintenance;

(v) the preparation and implementation of a Mangrove Rehabilitation Plan (Commitments 19 and 20) to identify areas and systematic management procedures to address the re-establishment of mangroves and littoral vegetation in disturbed areas such as the decommissioned dredge spoil and settlement ponds. This plan will include:

- earthworks, materials management and contouring;
- specification of elevations for the establishment of mangroves and littoral vegetation;
- species selection, proportions and densities;
- propagation and establishment methods; and
- monitoring and management.

It is also noted that components of commitments 11, 13, 15 and 19 will also be included within the Construction and Operations EMP.

Other commitments and management measures relate to:

- funding additional research into the utilisation of mangroves by bats (Commitment 29);
- providing scientific data to government agencies relating to flora and fauna baseline studies and providing other studies undertaken as part of environmental reporting in a form that is compatible with best practice, to enable the integration of this information into regional databases (Commitment 30) (see Section 5- Other Advice); and
- avoiding any potential impacts on marine turtles by designing lighting on port infrastructure, to the requirements of CALM. This will include the specification of situation, intensity and colour frequencies of port lighting and location of other infrastructure.

Summary

Having particular regard to:

(a) none of the habitat types present in the project area being unique to the study corridor or regionally significant;

(b) impacts on significant fauna habitats (including sand dune associations, cracking clay communities, mulga woodlands and rockpile associations) and fauna communities being minimised or avoided;

(c) the rail corridor being designed, to the requirements of CALM, to ensure any impacts on mulga woodlands as a result of upstream flooding or downstream starvation is minimised;

(d) the protection of areas where priority flora are found;

(e) the avoidance of vegetation types of higher conservation significance as part of the final rail design;

(f) the impact on mangroves being reduced to a minimum practicable level;

(g) tidal flushing characteristics being maintained; and

(h) the proponent's commitments and management measures,

it is the EPA's opinion that the proposal can be managed to meet the EPA's environmental objectives.

3.2 Surface water hydrology

Description

Rivers of the Pilbara are ephemeral and for most of the year the riverbeds are dry with the exception of isolated pools. Streamflow in the Pilbara is highly seasonal and variable with flows occurring as a direct response to rainfall (HDMS, 2002a).

The major rivers and creeks that are intercepted by the railway are the Fortescue River, Yule River, Turner River, East Turner River, Coonarie Creek, Weeli Wolli Creek, Chinnamon Creek, Bore Creek, South Creek and South West Creek.

A description of the existing hydrological features within the rail corridor as the alignment proceeds through sections C-H (see Table 1) are presented in Section 6.4 of the PER (HDMS, 2002a).

Railway construction also has the potential to interrupt surface water flow resulting in upstream flooding of vegetation, downstream vegetation being starved of water (drainage shadow effects) and excessive scour and erosion.

Submissions

Comments raised in submissions focused on:

- the need for a flood impact study to demonstrate that the proposed rail alignment will not cause flooding;
- the need for effective drainage to minimise the potential for mosquito breeding grounds near populated areas;
- the Project being located in the Pilbara Surface Water Area, and thereby being subject to the *Rights in Water and Irrigation Act (RIWI) 1914*, as amended;
- additional commitments being made in relation to plans outlined in the PER for mitigating and managing impacts on surface water hydrogeology as follows:
  - any variation from the plans submitted as part of this proposal will be referred to the WRC for comment and endorsement;
  - the proponent will ensure that the railway and associated works do not act as an artificial barrier or levee, causing water to pond upstream;

- the proponent will undertake the works authorised, with minimal disturbance to the bed and banks of the watercourses on the rail route; and
- the proponent will stabilise all sites affected by construction or removal activities using methods described in the plans submitted as part of this proposal; and

- the need for HDMS to apply separately to the WRC for permits, in the event that the above commitments are not made, for the activities outlined in the PER where there is to be any interference with the bed and banks of a water course.

Assessment

The area considered for assessment includes:

- the 324km rail line from Weeli Wolli Creek as it enters the Fortescue Valley near Marillana Station to Port Hedland.

The EPA's environmental objective for this factor is:

Factor	EPA Objective
Surface water hydrology	Maintain the integrity, functions and environmental values of watercourses and sheetflow.

With regard to the railway component of the proposal, the EPA notes that an extensive preliminary drainage design analysis has been undertaken over the full extent of the railway and that the design philosophy adopted by the proponent is to minimise any alteration to the flow paths that currently exist to ensure that the function and integrity of the hydrological system is maintained (HDMS, 2002a).

Given the undulating terrain along the rail alignment, accompanied by the high rainfall intensities, a number of drainage structures such as bridges and culverts will be required to ensure that stress on the surrounding vegetation from flooding or drainage shadow effects is minimised and that scour and erosion is reduced.

The EPA notes that HDMS has adopted favourable hydrological alignments (in order to avoid, for example, braided rivers and areas of sheet flow) and that in areas adjacent to the BHPIO track, where drainage patterns are already strongly defined, a number of additional culvert structures will be installed to assist in dispersing part of the flow concentrations.

In relation to the proponent's plans for mitigating and managing impacts on surface water hydrogeology, the EPA notes that these are satisfactory to the WRC and that the proponent has made commitments in accordance with those suggested by the WRC.

In response to concerns raised in submissions, the EPA notes that a number of studies on flooding and storm surge have already been undertaken by the proponent, with input from the Town of Port Hedland and the Western Australian Planning Commission, and that there is currently no evidence to suggest that the proposed rail embankment will impact on the present floodwater control provisions.

It is also noted that all earthworks have been designed to have minimal impact on current drainage channels with no additional pooling to that which already exists, and that an increase in habitat or populations of mosquitoes is not anticipated.

Environmental commitments

The EPA notes that the proponent has made commitments to:

(i) prepare and implement a Surface Water and Groundwater Management Plan to the requirements of the WRC and CALM. This plan will contain guidelines and procedures to manage and minimise environmental issues relating to surface water and groundwater regimes and any dependent ecological systems. This will include:

- establishing baseline conditions;
- regular monitoring and reporting;
- minimising the potential for contaminants to enter waterways; and
- maintaining existing flow paths wherever possible.

Furthermore:

- any variation from the plans submitted will be referred to the WRC;
- existing flow paths will be maintained where possible, such that the railway and associated works do not act as a hazardous impediment or cause long term ponding of stream flow;
- works will be undertaken with a minimum of disturbance to the natural environment; and
- all sites affected by construction will be stabilised.

The relevant construction and operation phase components of these commitments will also be included in the preparation and implementation of the Construction Phase EMP and the Operations Phase EMP; and

(ii) flood diversion works will be designed to maintain existing catchment flow volumes and quality to ensure that the railway and port do not adversely impact on the surface water resources of the area (Commitment 26).

The EPA also notes that environmental management measures include:

- designing drainage structures so that there is minimal alteration to flowpaths that currently exist;
- designing bridges and culverts so avoid undue backwater and scour;
- provision of scour protection measures;
- designing the opening in the West Creek causeway so that it does not create a head difference between the upstream and downstream portions of the creek;
- construction of a bridge allowing tidal flow under the product shiploading conveyor to Harriet point; and
- maintaining the existing tidal signature upstream of the West Creek causeway.

Summary

Having particular regard to the:

(a) the proponent's commitment including additional commitments made in response to WRC submission; and

(b) the proponent's management measures,

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

3.3 Noise

Description

The noise environment in Port Hedland is dominated by BHPIO's operations at Nelson Point and Finucane Island.

Noise at the port and surrounding area will be generated as a result of the ship loading, car dumping, stockpiling, ore handling, locomotive workshops and associated facilities and the railways yard.

The predicted noise levels at Port Hedland, under worst case wind conditions, resulting from the Hope Downs port facility are predicted to:

- comply with the *Environmental Protection (Noise) Regulations 1997*, as amended from time to time (hereafter referred to as the Noise Regulations) during the daytime;
- exceed the regulations by 5 dB(A) during the evenings and Sundays/ Public Holidays between 0700 and 1900; and
- exceed the Noise Regulations by 10dB(A) during the night time period (but be 13dB(A) below the existing noise levels).

The noise levels at South Hedland, Wedgefield and White Hills Rural residential area resulting from the Hope Downs port facility are predicted to be below the assigned noise levels during both the daytime and the night-time periods.

The construction of the railway will increase the ambient noise levels in areas adjacent to operations. Due to the location of the railway, noise will not impact on any residences until the railway approaches the Rural Residential Area south of south Hedland and South Hedland itself.

Submissions

Comments raised in submissions focused on:

- an independent review of noise levels by PPK Environment & Infrastructure, conducted on behalf of Town of Port Hedland in relation to:
  - background ambient noise;
  - noise level predictions;
  - adjustments to predicted noise levels;
  - results of modelling; and
  - management of noise impacts;
- noise emissions from port areas currently exceeding the limits set by the Noise Regulations in the nearby residential area that abuts the industrial boundaries; and
- the need for a new approach to noise management in Port Hedland which provides an achievable, whole of port solution, to emissions near to the residential area that may require exemptions from the current Noise Regulations.

Assessment

The area considered for assessment includes:

- the 324 km railway from Weeli Wolli Creek as it enters the Fortescue Valley near Marillana Station to Port Hedland; and
- port facilities at Owen and Stanley Point and surrounding areas including Port Hedland, South Hedland, Wedgefield and the White Hills Rural Residential Area.

The EPA's environmental objectives for this factor are:

Factor	EPA Objectives
Noise	• Ensure noise emanating from the proposed railway construction, any increase in port operations, dredging, reclamation, and other construction activities comply with statutory requirements and acceptable (and appropriate) standards. • Minimise the impact to noise sensitive premises from increased train movement.

The EPA notes that the assigned noise levels, as prescribed by the Noise Regulations, are currently being exceeded in the Port Hedland area as a result of existing operations.

It is also noted that the Noise Regulations define a noise source to "significantly contribute" to the exceedance of allowable levels if that noise emission exceeds a value which is 5dB(A) below the assigned level at the point of reception. Therefore, given the assigned noise levels are already being exceeded, any additional noise from the proposed Hope Downs facility must be 5dB(A) below the assigned noise level for that noise sensitive receiver.

In normal circumstances the EPA would not encourage a proponent to put forward a proposal for consideration that exceeds the Noise Regulations. However, in this case, the EPA notes that the proponent has committed to reduce noise levels as far as is reasonably practicable and that there are mitigating circumstances in regard to existing noise levels. Accordingly, the EPA notes that HDMS has sought a variance to the Noise Regulations, under Part IV of the *Environmental Protection Act*, for its port facility, and that following commencement of operations HDMS will apply, under Regulation 17, for approval to exceed or vary from the prescribed standard specified in the Noise Regulations.

It is also noted that as the HDMS project will operate throughout the night, and noise will be present for more than 10% of any representative time period, the L_{A10} night-time assigned noise levels are the most critical.

Accordingly, the EPA recommends that a condition (Recommended Environmental Condition 6) be placed on HDMS to reduce noise emissions. Components of the condition are as follows:

(1) where it is not reasonably practicable for the noise emitted from the proposal to meet the Noise Regulations, when received in the Port Hedland townsite, the proponent shall ensure that the noise emitted from the proposal, when received at any part of a noise sensitive premises that is within 15 metres of a building that is directly associated with a noise-sensitive use, does not exceed the following L_{A10} levels:

Noise Receiving Premises		**L_{A10} (dB)**
Noise Sensitive Premises in Port Hedland	West of Crowe Street	50
	East of Crowe Street	44

It should be noted that:

1. A L_{A10} level means a level which, measured as a L_{Aslow} value, is not exceeded for more than 10% of any four-hour period.

2. The terms L_{ASlow}, L_{A10} and noise-sensitive premises, have the same meaning as in the Noise Regulations.

3. An emission of noise that contravenes this condition is taken not to breach the condition if:
   (a) the proponent demonstrates to the satisfaction of the Minister for the Environment and Heritage, on advice of the EPA, that the level of the emission is within the limits of accuracy of the noise prediction model used for the assessment of the proposal; or
   (b) the emission is a result of the occurrence of an "abnormal event" which is beyond the immediate control of, and could not reasonably have been foreseen by the proponent (such as an accident or emergency, a breakdown of plant or equipment or extreme weather conditions); and
   (c) (i) the proponent takes all reasonably practicable measures to stop the emission as soon as is reasonably practicable; and

(ii) the proponent notifies the Chief Executive Officer of the DEP of the occurrence of the abnormal event within 21 days after the day on which it occurred, or within any further time allowed by the Chief Executive Officer on the application of the proponent.

4. The level of noise emissions shall be determined in accordance with:
   (a) Part 3 of the Noise Regulations; and
   (b) Regulation 7 (3) of the Noise Regulations.

5. In determining the level of noise emissions the following are not taken into account:
   (a) noise emissions of a kind referred to in regulation 3 of the Noise Regulations;
   (b) noise emitted as a result of construction work carried on by the proponent;
   (c) noise emitted by safety devices attached to plant or equipment for the purpose of ensuring that the proponent complies with its obligations under the *Occupational Safety and Health Act 1984*, as amended from time to time;
   (d) noise received at premises owned by the proponent; and
   (e) adjustments for the characteristics of tonality, impulsiveness and modulation as specified in Table 2 of the Noise Regulations.

(2) the proponent shall keep a register of abnormal events (such as an accident or emergency, a breakdown of plant or equipment or extreme weather conditions) and other events which may result in an L_{ASlow} noise level greater than 60 dB(A) when received at any noise-sensitive premises in Port Hedland at any time;

(3) the proponent shall make the register public available;

(4) the proponent shall, within 18 months following the date of commencement of operations, submit to the Minister for the Environment and Heritage an application under Regulation 17 of the *Noise Regulations* for approval to exceed or vary from the prescribed standard specified in the regulations;

(5) the proponent shall provide a Noise Management Report, in conjunction with the Regulation 17 application, to demonstrate that noise emissions from the proposal have been reduced as far as is reasonably practicable; and

(6) the requirements of (1), (2) and (3) shall remain in force for 18 months from the date of commencement of operations, after which time it will cease to have effect, unless a Regulation 17 application has been submitted to the Minister for the Environment and Heritage, in which case the noise levels shall remain in force until the Minister for the Environment and Heritage, acting on advice of the EPA, grants that application.

With regard to construction noise, the EPA notes that:

- construction noise associated with the railway is expected to be below noise level criteria;
- predicted noise levels are below the current transportation noise criteria adopted by the DEP for similar projects; and
- HDMS will submit a Regulation 13 application in respect to the management of construction noise.

In addition, the EPA also notes that HDMS has made a commitment to prepare and implement a Noise Management Plan (Commitment 9) for both construction and operations to:

- document the equipment to be used and establish state of the art noise specifications for the major noise generating equipment (i.e. bulk materials handling);
- design noise controls to minimise the generation and impacts of noise;
- set out procedures and practices to be adopted in the event of noise exceedances; and
- communicate performance and progress to affected communities.

In conclusion the EPA considers that the proponent has demonstrated that it can achieve noise levels in Port Hedland that are well below existing noise levels. Accordingly, while special noise conditions have been developed to allow Hope Downs to exceed the Noise Regulations, it is considered that these conditions are consistent with the achievement of reasonable cumulative noise levels in the longer term (see Other Advice on cumulative noise levels in Port Hedland).

Summary

Having particular regard to:

(a) Recommended Environmental Condition, 6;
(b) the proponent submitting an application to the Minister for the Environment and Heritage under Regulation 17 of the *Environmental Protection (Noise) Regulations 1997*, and
(c) the proponent preparing and implementing a noise management plan for both construction and operations;

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

3.4 Dust

Description

Port Hedland townsite has been traditionally exposed to elevated dust levels through iron ore operations at Nelson Point and Finucane Island. The dust problem is exacerbated due to the semi-arid nature of the Port Hedland area, which contributes a significant background dust source compared to similar areas within a temperate environment (HDMS, 2002a).

There is potential for dust during port operations at Owen and Stanley Point from wind erosion of the iron ore stockpiles, open areas and roads, vehicle traffic, conveyor transfer points, the lump re-screening plant, reclaimers, stackers and shiploading operations.

The direction of the prevailing strong winds are south easterly (mornings in the winter months) and north westerlies (afternoon sea breezes in the summer months). As such, wind erosion is not predicted to be a significant source to dust levels in Port Hedland due to the lack of strong south westerly winds.

Submissions

Comments raised in submissions focused on:

- the naturally occurring dust levels at Port Hedland exceeding the Ambient Air National Environmental Protection Measure (NEPM) standard for particulates several times each year;
- stringent limits needing to be set on dust emissions and enforced, given the towns' experience with dust from BHPIO's operations;
- dust being a significant environmental health and amenity issue in the Town of Port Hedland;
- Western Australia lacking the enabling legislation that would allow its Pilbara residents enjoyment of air quality at the nationally acceptable standards as provided through the NEPM for air quality;
- modelling methods and techniques based on an independent review of the Ausplume dispersion model for dust by PPK Environment & Infrastructure on behalf of Town of Port Hedland;
- community health;
- the need for HDMS to become a member of the Town of Port Hedland's Air Quality Working Group; and
- the Environmental Protection Policy (EPP) that is currently proposed to implement the Ambient Air NEPM across the whole State.

Assessment

The area considered for assessment includes:

- the 324 km rail line from Weeli Wolli Creek as it enters the Fortescue Valley near Marillana Station to Port Hedland; and
- ore handling and export facilities adjacent to Owen and Stanley Point at Port Hedland.

The EPA's environmental objectives for this factor are:

Factor	EPA Objectives
Dust	• Protect the surrounding land users such that dust and particulate emissions will not adversely impact upon their welfare and amenity or cause health problems in accordance with EPA Guidance Statement No. 18 *Prevention of Air Quality Impacts from Land Development Sites*. • Ensure that particulate/ dust emissions, both individually and cumulatively, meet appropriate criteria and do not cause an environmental or human health problem.

Railway

The EPA considers that the generation of dust from the construction and operation of the railway is expected to have a minimal environmental or health impact.

Port

Based on modelling undertaken by Sinclair Knight Merz (2001), the EPA notes that the expected Hope Downs fines ore (<6mm) has a 'low' dust fraction whilst the lump ore (6-30mm) has a 'very low' fines fraction compared to other iron ores.

It is also noted that the contribution of the proposed HDMS port operations was modelled and that results indicate that the increase in dust levels, is expected to be less than 1% of the existing levels, with a maximum increase of 1.5% for the annual average particulate matter below 10µm (PM_{10}) dust levels (Sinclair Knight Merz, 2002).

In addition, it is noted that dust emissions from the port facility during operations will be below relevant standards and that based on test work, HDMS has incorporated into its design philosophy the requirement to maintain moisture contents for lump and fines at the optimum levels of 4 and 6% (HDMS, 2002a).

With regard to dust on mangroves, the EPA notes that mangroves in the more northerly part of the proposed development area currently experience a moderate dust load due to existing operations on Finucane Island. However, given that the mangroves appear to be in good to very good condition (HDMS, 2002a), it would appear that the large tidal range in the harbour may assist the routine removal of dust from mangroves. In addition, it is noted that studies conducted by Paling et al (1999) cited in HDMS (2002a) demonstrates that iron ore dust does not appear to cause any significant structural damage to mangrove leaves.

Accordingly, the EPA considers that although mangrove communities in the area may experience increased dust deposition levels, there is a minimal risk of dust impacts on mangroves.

In terms of management, HDMS recognises the need to take a proactive approach to the management of fugitive dust emissions and has identified that the best way of achieving this is through the incorporation of best practicable management in the design, construction and operation of the ore handling facility. This will ensure that the potential for dust generation is minimised from the outset.

The EPA notes that the proponent has made a commitment to prepare and implement a dust management plan, as a component of the Construction EMP and the Operations EMP for the railway and port. It is expected that the dust management plan will:

- quantify the significance of dust emissions;
- determine ambient dust conditions;
- develop performance targets and a monitoring plan;
- determine appropriate control practices to be put in place;
- include a programme of maintenance;
- be undertaken in a community consultative manner;
- site the dust monitoring equipment in appropriate locations in consultation with the Port Hedland Air Quality Working Group; and
- monitor the effectiveness of the dust management strategies.

Key dust control strategies that will be employed to ensure the minimisation of dust during operations include:

- installation of dust suppression equipment including a stockpile dust suppression system; water cannons; pressure measuring devices on dust collectors to ensure effective operation of equipment; water tankers; installation of fan spray jets at each loading point and installation of belt covers on the shiploading conveyors;
- general site management including: restricting vehicle speeds; sealing of commonly used roads; use of road cleaning machinery, rationalising laydown areas; vegetating unsealed and unused areas to reduce dust lift-off and implementing a programme of clean-up to reduce the potential for fugitive dust emissions; and
- the addition of water under automatic control at the mine to achieve a constant optimum moisture content for Marra Mamba lump ore or fines.

In the absence of an Air Quality Policy, for the Port Hedland region, the EPA notes that the Air Quality Working Group is in the process of developing a regional strategy for dust management that will ultimately apply to all local contributors (HDMS, 2002a). In addition, the EPA notes that HDMS, in its response to submissions, indicated that it will seek membership to the Town of Port Hedland's Air Quality Working Group (HDMS, 2002b).

It should also be noted that the EPA intends to review requirements for dust emissions and deposition and is preparing a draft EPP for Ambient Air Quality in accordance with prior commitments to implement the Ambient Air Quality NEPM across the State. The Air Quality NEPM establishes a set of ambient air quality standards, with a goal of achieving the standards by 2008.

The EPP will provide a statutory framework for the NEPM and for the establishment and achievement of air quality objectives throughout the State, and provide for a selection of management mechanisms to be used to ensure that the objectives are achieved. Such mechanisms might include the establishment of special air quality management regions, air quality management programmes focussed on particular pollutants, and economic instruments such as taxes, charges, incentives, grants and emissions trading.

It is also anticipated that data arising from the Pilbara Air Quality Study that was initiated in 1997-1998 to provide a sound basis for air quality management in the Pilbara coastal centres of Karratha-Dampier, Cape Lambert and Port Hedland will be drawn upon in the preparation of the State Air EPP.

The EPA also notes the view held by the Office of Major Projects, as expressed in its submission, that the EPP should make provision, where the NEPM standards are being exceeded, for preparation of an EMP, setting out actions to improve ambient air quality to appropriate and achievable standards.

In addition, HDMS' port operations will require a licence for the discharge of wastes (including dust) into the environment under Part V of the *Environmental Protection Act 1986*. It is expected that the licence in this instance will be assessed against the requirements of the Air EPP.

Summary

Having particular regard to the:

(a) the proponent's commitment to prepare and implement a dust management plan as part of the construction EMP and Operations EMP; and

(b) dust being managed under Part V licence conditions;

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

3.5 Acid sulfate soils

Description

Acid sulfate soils (ASS) is the common name given to sediment and soil containing iron sulphides. Exposure of these soils to oxygenation by drainage or excavation leads to the generation of sulphuric acid (ASSMAC, 1997). Special conditions are required for the natural generation of ASS, which often occur around mangrove systems (ASSMAC, 1997).

Potential ASS are usually found in Holocene deposits which occur along most of Australia's northern coastline (Ferguson and Eyre, 1996 cited in Paling, 2002). They are formed in estuaries typically associated with mangroves (Smith and Ahern, 1996 cited in Paling, 2002) because the formation of pyrite occurs within the mangrove environment naturally.

Pyrite is usually found at, or below, 2m AHD (mean sea level) and may go down to 4 – 5 m below the surface of the soil. When oxidising conditions are present, sulphuric acid is produced and this causes the pH to reduce and acid conditions to develop within the soil, or if water moves through the soil to carry the acid elsewhere (Paling, 2002).

Port Hedland is an old river delta that has experienced successive geological events, some considerably predating the Holocene era when most iron sulphides were formed (Paling, 2002). There has been extensive land reclamation, dredging and disturbance of mangroves in the Port Hedland harbour for the past 100 years and particularly since 1962 when the Goldsworthy Mining Company commenced construction at Finucane Island (Paling, 2002). The harbour and mangrove communities are generally in good condition and appear unaffected by potential acid run off (Paling, 1996 and HDMS, 2002a).

There are four areas within the harbour which will be disturbed for the purpose of land reclamation and harbour deepening in the Port Hedland harbour:

1. Borrow Area 'A';
2. dredged material removed adjacent to the turning basin at Harriet Point;
3. settling ponds to the east of the planned stockpile area; and
4. the planned stockpiling area.

Submissions

The issue of ASS was not raised in submissions.

Assessment

The area considered for assessment is Owen and Stanley Point at Port Hedland and its surrounds.

The EPA's environmental objective for this factor is:

Factor	**EPA Objective**
Acid sulfate soils	To minimise the risk to the environment resulting from ASS.

Although ASS have not been recorded in this area specifically, the type of environment associated with the Port Hedland is typical of where ASS can be found.

The EPA expressed concern over the potential environmental impacts associated with ASS particularly with respect to disturbing mangrove muds in the vicinity of Borrow Area 'A', the settling ponds, dredged material and the placement of material from these areas for stockpile filling, and the potential generation of acidic leachate. In addition, the presence of ASS may also affect the anticipated regrowth of mangroves and have implications for the management of spoil resulting from dredging of sediments.

In response to the EPA's concern, HDMS undertook an initial programme to test for ASS in the areas to be disturbed – i.e. Borrow Area 'A', the proposed berth pocket and mangrove muds at Harriet Point.

Based on these initial investigations, and assessment of results (Paling, 2002) the EPA notes:

- test samples returned pH values >8.5;
- Borrow Area 'A' contains soil that tests show is not acid producing;
- it is unlikely that fill material from Borrow Area 'A' will prove to be a problem;
- the settling pond soils (which will not be disturbed) contain sediments with little or no acid generating potential;
- dredged sediments show no appreciable amounts of acidity and thus are unlikely to cause an impact when used as fill; and
- the disturbance, removal and placement of material from dredged areas, Borrow Area 'A' or the settling ponds will not cause an impact in terms of acid soils, and hence there is no requirement for an ASS management plan for this proposal.

The EPA also notes that less than 20% of the total material to be moved as part of the dredging programme comes from the Holocene period and that the material is largely calcareous rock or silt sand, which tend to alkalinity.

Based on the above, the EPA concludes that ASS are unlikely to present a problem in the Port Hedland marine environment. The EPA, however, also notes that even though the results of investigations indicate a low likelihood of problems due to ASS, HDMS has committed to preparing and implementing a Dredging and Land Reclamation Plan (Commitments 5 and 6), which includes implementing a programme of sampling during construction to detect the potential presence of ASS in materials being relocated to areas where potential problems might occur.

In the event that ASS is detected, HDMS will implement a management programme to treat materials to neutralise acidity and continue longer term testing to monitor seepage. The EPA also notes that the nature of the land reclamation and structures would assist such management measures if required and that if acid is generated, the buffering capacity of seawater would prevent significant changes in pH of the waters of Port Hedland.

Environmental Commitments

The EPA notes that HDMS has made commitments to:

(i) prepare and implement a Dredging and Land Reclamation Plan to address ASS; sediment sampling; contingency planning for turbidity and contamination; and monitoring, management and reporting; and

(ii) prepare and implement a Marine Waters Monitoring and Management Plan to establish baseline conditions, minimise the potential for contaminants to enter the harbour during construction and operations and regular monitoring and reporting.

In addition, the EPA notes that as part of the dredging and land reclamation plan, the proponent has committed to undertake sampling for ASS, and that as part of routine sampling for the water monitoring and management plan sample for heavy metals and tributyltin in the testing of sediment and return water.

Summary

Having particular regard to the:

(a) results from initial investigations; and

(b) the proponent's commitments and management measures,

it is the EPA's opinion that ASS are unlikely to present a problem in the Port Hedland marine environment and that the proposal can be managed to meet the EPA's environmental objective for this factor provided that the necessary detection and management strategies are implemented.

4. Conditions and Commitments

Section 44 of the *Environmental Protection Act 1986* requires the EPA to report to the Minister for the Environment and Heritage on the environmental factors relevant to the proposal and on the conditions and procedures to which the proposal should be subject, if implemented. In addition, the EPA may make recommendations as it sees fit.

In developing recommended conditions for each project, the EPA's preferred course of action is to have the proponent provide an array of commitments to ameliorate the impacts of the proposal on the environment. The commitments are considered by the EPA as part of its assessment of the proposal and, following discussion with the proponent, the EPA may seek additional commitments.

The EPA recognises that not all of the commitments are written in a form which makes them readily enforceable, but they do provide a clear statement of the action to be taken as part of the proponent's responsibility for, and commitment to, continuous improvement in environmental performance. The commitments, modified if necessary to ensure enforceability, then form part of the conditions to which the proposal should be subject, if it is to be implemented.

4.1 Proponent's commitments

The proponent's commitments as set in the PER and subsequently modified, as shown in Appendix 5, should be made enforceable.

4.2 Recommended conditions

Having considered the proponent's commitments and information provided in this report, the EPA has developed a set of conditions that the EPA recommends be imposed if the proposal by HDMS to construct a rail line and port facility to support the development of an iron-ore mine, based on the Hope 1 Deposit is approved for implementation.

These conditions are presented in Appendix 5. Matters addressed in the conditions include the following:

(a) that the proponent shall fulfil the commitments in the Consolidated Commitments statement set out as an attachment to the recommended conditions in Appendix 5; and

(b) that the proponent shall reduce noise emissions as far as is reasonably practicable, and

(i) ensure that where it is not reasonably practicable for the noise emitted from the proposal to meet the *Environmental Protection (Noise) Regulations 1997*, when received in the Port Hedland townsite, that the noise emitted from the proposal, when received at any part of a noise sensitive premises that is within 15 metres of a building that is directly associated with a noise-sensitive use, does not exceed the following L_{A10} levels -

Noise Receiving Premises		**L_{A10} (dB)**
Noise Sensitive Premises in Port Hedland	West of Crowe Street	50
	East of Crowe Street	44

(ii) keep a register of abnormal events and other events which may result in an L_{ASlow} noise level greater than 60 dB(A) when received at any noise-sensitive premises in Port Hedland at any time;

(iii) make the register public available;

(iv) within 18 months following the date of commencement of operations, submit to the Minister for the Environment and Heritage an application under Regulation 17 of the *Environmental Protection (Noise Regulations 1997)* for approval to exceed or vary from the prescribed standard specified in the regulations;

(v) provide a Noise Management Report, in conjunction with the Regulation 17 application, to demonstrate that noise emissions from the proposal have been reduced as far as is reasonably practicable; and

(vi) meet the requirements of (i), (ii) and (iii) for a period of 18 months from the date of commencement of operations, after which time the requirements of (i), (ii) and (iii) shall cease to have effect, unless a Regulation 17 application has been submitted to the Minister for the Environment and Heritage, in which case the noise levels shall remain in force until the Minister for the Environment and Heritage, acting on advice of the EPA, grants that application.

5. Other Advice

(a) Noise

The EPA notes that the Hope Downs rail and port proposal has highlighted the fact that industrial noise emissions currently exceed the prescribed limits, set by the *Environmental Protection (Noise) Regulations 1997*, for residential locations within the Port Hedland townsite. It is also recognised that the noise environment in Port Hedland is currently dominated by BHPIO's operations at Nelson Point and Finucane Island.

The EPA acknowledges that Port Hedland is a town that, over many years, has evolved with industry in close proximity and which relies on industry for its long term sustainability. With this is mind, the EPA considers that it may be appropriate for allowable noise levels to be slightly higher in Port Hedland than is normally the case in other areas of the State. However, it is evident from the assessment of this proposal that existing cumulative noise levels are beyond normally acceptable limits and that noise levels within the town of Port Hedland need to be reduced over time.

The EPA notes that new industrial proposals for the Port Hedland area, including the Hope Downs proposal, have the potential to exacerbate this existing cumulative noise problem. Ideally, future proposals for the Town of Port Hedland area will need to demonstrate that their individual noise emissions will be at a level that will not compromise a longer term strategy that aims to reduce cumulative noise emissions to more acceptable levels for the community.

In conclusion, the EPA considers that cumulative noise emissions in the Port Hedland townsite need to be progressively reduced. To achieve this outcome a whole of industry approach is needed in Port Hedland, with encouragement and facilitation to be provided by the Government, as appropriate. The EPA therefore recommends that Government, in conjunction with industry, develop a strategy to resolve the cumulative noise issue in Port Hedland with the aim of moving towards achieving real noise reductions in Port Hedland over time. The strategy needs to encourage industry to reduce cumulative noise emissions, as far as is practicable, towards a level which is reasonable for a town of this nature.

(b) Rail Duplication

Rail systems in the Pilbara have been developed independently as private facilities and are currently exclusively used by their owners (DRD, 2000).

One of the key recommendations arising from the Central Pilbara Infrastructure Planning Study (DRD, 2000), undertaken as part of the Commonwealth Regional Minerals Programme of the Central Pilbara Mineral Province, is to develop the strategic infrastructure corridor concept and determine detailed corridor alignments for the movement of iron ore.

The preliminary infrastructure corridor strategy presented in that report is based on the need for a main north-south corridor connection from the Central Pilbara to the coastal ports, and the continued application of the two main existing rail infrastructure alignments heading to Dampier and Port Hedland.

In relation to the strategy, the conclusions drawn indicate that there is a basis for sound detailed planning and development of a shared infrastructure corridor system in the Central Pilbara that could:

- allow for efficient transport infrastructure access to virtually all iron ore deposits in the study area;
- be positioned on suitable land systems and minimise or avoid environmental impact;
- be effectively screened by terrain and hence leave regional landscapes largely unaffected; and
- avoid visually sensitive zones.

The issue of third party access to private rail facilities however is a vexed one and tenure over the corridors within which the existing rail facilities of Hamersley Iron and BHPIO are located, has been granted under project specific State Agreement Acts.

One of the obligations placed upon the mining companies under these Acts is the requirement to carry freight of the State and of third parties on the railway to the extent that it can do so without unduly prejudicing or interfering with its operations (DRD, 2000). However, in June 1999 the National Competition Council and the Federal Court, in relation to the provision of rail system access by Hamersley Iron (HI) to Robe River Iron Associates, for the transport of ore from its proposed West Angelas project, was determined in favour of HI (DRD, 2000).

In relation to HDMS, the EPA notes that the company has attempted to negotiate with BHPIO and Rio Tinto for access to existing rail infrastructure, and that these negotiations have been unsuccessful to date. The EPA further notes that HDMS is currently challenging BHPIO for access rights through the court system.

The EPA considers it would be preferable for HDMS to share existing railway infrastructure, rather than to duplicate an existing railway line. The EPA also believes that the Government should give consideration to the rationalisation of future rail, road and other corridors in the Pilbara and to the means to ensure that the environmental impacts of future cumulative access proposals are acceptable.

Accordingly, the EPA recommends that Government should progress the development of the strategic infrastructure corridor concept, as outlined in the Central Pilbara Infrastructure Planning Study, and determine detailed corridor alignments for the movement of iron ore.

(c) Vegetation and fauna

The assessment of developments in the Pilbara has been hampered by the absence of consolidated information on the regional distributions of terrestrial flora and fauna. A large number of vegetation surveys have been carried out in the region to date but the results of these are dispersed amongst different mining companies and Government agencies.

As such, the EPA supported the initiation of a project by the DEP and CALM to consolidate vegetation and fauna data for the Pilbara to facilitate the:

- protection of vegetation associations and fauna habitat;
- establishment of an adequate database of significant vegetation associations in the Pilbara region; and
- cumulative impact assessment of future proposals.

Given proponents and the community are both very interested in baseline and other information that is required for project planning and assessment, the EPA notes that the Central Pilbara Infrastructure Planning Study (DRD, 2000) recommended that a database be established to assist in environmental investigations and environmental impact assessment. The report noted that the EPA had drawn attention to the fact that the proposed developments that were being assessed by the EPA were generally unable to demonstrate their impacts on natural systems on a regional basis. This reflected a lack of knowledge, as well as a locally specific approach by the proponent in preparing reports for the assessment process.

In July 2001, a follow up study was completed for the Department of Mineral and Petroleum Resources to identify the amount of information that was available and to consider how this could be transferred into a database. The Pilbara Biological Survey Review identified 789 reports covering the Pilbara Bioregion that were largely held by industry or referenced in two CALM bibliographies (Keating et al, 2002).

Based on the above, the EPA notes that recommendations arising from the Review of the Project Development Approvals System (Keating et al, 2002) in relation to publication of environmental and other data. These recommendations are:

"*All available data on environmental values (ranging from endangered species' habitats to the management plans for maintaining the ambient quality of air, land and water) from formal strategic environmental plans, regional surveys and regional environmental management plans should be made publicly available by government so that proponents can develop their proposals consistent with achieving government objectives for maintaining sustainability*"; and

"The government should build on the progress made by Western Australian Land Information System (WALIS) and in consultation with proponents and stakeholders, invest in the development of a major projects information system as a one-stop-shop approach that links the data bases and ensure consistency and accessibility of those data bases. Given the size of the task, priority should be given to those locations that are subject to most major development activity or perspectively."

In view of the above, the EPA considers that HDMS' approach to supporting and promoting the free exchange of scientific information and its commitment to provide scientific data to government agencies relating to flora and fauna baseline studies and information from other studies undertaken as part of environmental reporting into regional data bases is commendable.

6. Conclusions

The EPA has considered the proposal by HDMS to construct a rail line and port facility to support the development of an iron-ore mine, based on the Hope 1 Deposit.

The EPA notes that a high standard of biological data collection was carried out, and that the flora and fauna surveys were commended by the Department of Conservation and Land Management (CALM) and the Department of Environmental Protection (DEP).

In relation to biodiversity and surface water hydrology the EPA has concluded that:

- none of the habitat types present in the project area appear to be unique to the study corridor or regionally significant;
- the range of management measures to be implemented as part of the design, construction and operation of the proposed rail line will effectively minimise or avoid any impacts on significant fauna habitats (including sand dune associations, cracking clay communities, mulga woodlands and rockpile associations) and fauna communities;
- the impact on mangroves has been reduced to a minimum practicable level; and
- the integrity and function of the existing hydrological system will be maintained.

The EPA considers that the proponent has demonstrated that it can achieve noise levels in Port Hedland that are well below existing noise levels and that although special noise conditions have been developed to allow HDMS to exceed the *Environmental Protection (Noise) Regulations 1997* (hereafter referred to as the Noise Regulations), it is considered that these conditions are consistent with the achievement of reasonable cumulative noise levels in the longer term.

With regard to noise emissions for the Port Hedland area, the EPA notes that this proposal has highlighted the fact that industrial noise emissions currently exceed the prescribed limits set by the Noise Regulations, for residential locations within the Port Hedland townsite.

As a consequence, the EPA recommends that cumulative noise emissions for the Port Hedland townsite need to be progressively reduced and that to achieve this, a whole of industry approach is needed, with encouragement and facilitation to be provided by Government.

In relation to dust, the EPA notes that dust levels at Port Hedland exceed the Ambient Air NEPM standard for particulates several times each year and that dust is a significant environmental health and amenity issue in the Town of Port Hedland. However, based on the modelling undertaken it is noted that the contribution of the proposed port operations is expected to be less than 1% of the existing levels and that HDMS has incorporated into its design philosophy the requirement to maintain moisture content for lump and fine ore at the optimum levels of 4% and 6% (HDMS, 2002a).

As such, the EPA has concluded that the dust arising from the proposed rail and port operations can be managed in accordance with the proponent's commitments and through the incorporation of best practicable management in the design, construction and operation of the ore handling facility.

In addition, although mangrove communities in the area may experience increased dust deposition levels, the EPA considers that based on studies undertaken by Paling (2002) and HDMS (2002a) there is a minimal risk of dust impacts on mangroves.

In relation to acid sulfate soils (ASS) the EPA has concluded that ASS are unlikely to present a problem in the Port Hedland marine environment. This is based on initial investigations undertaken by the proponent that indicate the disturbance, removal and placement of material from dredged areas, Borrow Area 'A' or the settling ponds will not cause an impact in terms of acid soils (Paling, 2002).

With regard to rail duplication, the EPA in its assessment of the Hope Downs mine (EPA, 2001a) noted that it would be preferable for HDMS to share existing railway infrastructure, rather than to duplicate an existing railway line. However, the EPA also acknowledged that the end result of negotiations between the proponent and existing railway owners may not allow shared use and that HDMS may have to develop its own railway and port infrastructure.

Notwithstanding this, the EPA believes that Government should give consideration to the rationalisation of future rail, road and other corridors in the Pilbara and to the means to ensure that the environmental impacts of future cumulative access proposals are acceptable. Accordingly the EPA recommends that Government should progress the development of the strategic infrastructure corridor concept, as outlined in the Central Pilbara Infrastructure Planning Study, and determine detailed corridor alignments for the movement of iron ore.

The EPA also considers that HDMS' approach to supporting and promoting the free exchange of scientific information and its commitment to provide scientific data to government agencies relating to flora and fauna baseline studies and information from other studies, undertaken as part of environment reporting into regional data bases, to be commendable.

This action is seen to complement the conclusions reached in the Independent Review of the Project Development Approvals System (Keating et al, 2002) and the Central Pilbara Infrastructure Planning Study Report (DRD, 2000).

The EPA has therefore concluded that it is unlikely that the EPA's environmental objectives would be compromised provided there is satisfactory implementation by the proponent of the proponent's commitments and the recommended conditions set out in Appendix 5 and summarised in Section 4.

7. Recommendations

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

That the Minister notes that the proposal being assessed is for the construction a rail line and port facility to support the development of an iron-ore mine, based on the Hope 1 Deposit:

1. That the Minister notes that the proposal being assessed is for the construction of a rail line and port facility to support the development of an iron-ore mine, based on the Hope 1 Deposit;

2. That the Minister considers the report on the relevant environmental factors as set out in Section 3;

3. That the Minister notes that the EPA has concluded that it is unlikely that the EPA's objectives would be compromised, provided there is satisfactory implementation by the proponent of the recommended conditions set out in Appendix 5, and summarised in Section 3, including the proponent's commitments;

4. That the Minister imposes the conditions and procedures recommended in Appendix 5 of this report; and

5. That Government, in conjunction with industry, develop a strategy to resolve the cumulative noise issue in Port Hedland with the aim towards achieving real noise reductions in Port Hedland over time; and

6. That in accordance with previous EPA advice where rail facilities in the Pilbara have been assessed, it would be preferable for HDMS to share existing railway infrastructure rather than to duplicate an existing railway line; and

7. That Government should progress the development of the strategic infrastructure corridor concept, as outlined in the Central Pilbara Infrastructure Planning Study, and determine detailed corridor alignments for the movement of iron ore.

Appendix 1

References

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Appendix 2

List of submitters

State/ Local Government

Department of Conservation and Land Management
Department of Environmental Protection – Ecological Systems Branch
Department of Indigenous Affairs
Department of Mineral and Petroleum Resources
Department for Planning and Infrastructure
Office of Major Projects
Pilbara Development Commission
Shire of Ashburton
Town of Port Hedland
Water and Rivers Commission

Organisations

Arminox Australia Pty. Ltd.
BHP Billiton Iron Ore Western Australia
Conservation Council
ntl Australia Pty. Limited
Wildflower Society

Appendix 3

Summary of identification of relevant environmental factors

Table 1: Summary of Identification of Relevant Environmental Factors

Preliminary Environmental Factors	Proposal Characteristics/ Existing Environment	Government Agency and Public Comments	Identification of Relevant Environmental Factors
BIOPHYSICAL			

Terrestrial flora – vegetation communities	Clearing of 1198 ha land through the construction of the rail corridor (1000ha), port facilities (104 ha), borrow pits (94ha) and associated infrastructure and services.
	
	Railway
	• Vegetation and flora surveys identified 131 vegetation types.
	• Communities with the highest conservation significance are:
	  • sand dune associations,
	  • cracking clay communities,
	  • mulga woodlands; and
	  • rockpile associations
	
	Port
	• Loss of 89ha of mangroves as a result of stockpile and infrastructure construction.
	• Mangal habitats in moderate to very good condition and backed by samphire and halophyte communities on hypersaline flats
		CALM:
		• The work done by the consultants for HDMS on the flora and the presentation of this information in their reports has been done very well.
		• The drainage design proposals for the rail in areas where mulga may be impacted should be reviewed by CALM.
		• The Weed Hygiene and Control Plan should be extended to cover weed hygiene and control during the operation and maintenance phases of the railway.
		
		DEP:
		• The material in the PER is well presented and of a high standard. In particular:
		  • it is good to see the vegetation and flora brought forward in the main text, in a thorough manner;
		  • the flora sampling was conducted at appropriate time and it is likely that in excess of 80% of the flora was sampled;
		  • the inclusion of a limitations section is a good feature;
		  • mapping is at an appropriate scale and included the location of sample sites;
		  • the treatment of background material is good, and has an appropriate spectrum and attention to the most detailed recent comparable treatments in the area; and
		  • the outline of values of vegetation and flora is clear and comprehensive.
		
		Wildflower Society of WA:
		• The flora and vegetation survey has been carried out in a thorough manner.
		• The flora and vegetation survey results must be compared with the land system mapping of the region (1:50,000) by AgWest prior to the release of the EPA's report and recommendations.
		• A post construction environmental monitoring should be carried out to assess the accuracy of impact predictions made in the PER and the efficacy of weed control and management.
			Considered to be a relevant factor. To be addressed under the issue of biodiversity.

Preliminary Environmental Factors	Proposal Characteristics/ Existing Environment	Government Agency and Public Comments	Identification of Relevant Environmental Factors

Terrestrial flora – Declared Rare and Priority Flora; flora of conservation significance	Clearing of 1198 ha land through the construction of the rail corridor (1000ha), port facilities (104 ha), borrow pits (94ha) and associated infrastructure and services.
	
	Railway
	• Area supports a species rich flora with 763 taxa identified.
	• No DRF species recorded.
	• 14 Priority flora species were recorded consisting of
	  • Five Priority 2 species;
	  • Eight Priority 3 species; and
	  • One Priority 4 species.
	• 12 flora of interest were recorded.
	• 18 species of introduced flora were recorded, one of which is a declared weed.
	
	Port
	• Six species of mangroves identified.
	• No DRF or priority species recorded.
		CALM and the DEP:
		• The work done by the consultants for HDMS on the flora and the presentation of this information in their reports has been done very well.
		
		CALM:
		• The assessment of the importance of the sand dune vegetation is agreed with. These vegetation types are being considered for listing as Threatened Ecological Communities and should be avoided during construction of the rail line. If disturbance required, written agreement from CALM's Pilbara office should be sought.
			Considered to be a relevant factor. To be addressed under the issue of biodiversity.

Terrestrial fauna	Direct fauna habitat disturbance and modification through clearing 1198 ha land. Baseline survey's identified: • 6 frogs • 73 reptiles • 125 avifauna • 27 ground mammals • 11 bats. Several habitats are considered significant on a local scale. These include linear sand dune (adjacent to the Weeli Wolli Creek delta), Fortescue basin flats, cracking clay habitats (Chichester Ranges and Foothills), granite rockpiles, major drainage systems, and mangroves.	**CALM:** • The work done by the consultants for HDMS on the vertebrate fauna and the presentation of this information in their reports has been done very well. **DEP:** • The PER adequately addresses the overall fauna issues and complies with the EPA's Project Guidelines.	**Considered to be a relevant factor. To be addressed under the issue of biodiversity.**

Preliminary Environmental Factors	Proposal Characteristics/ Existing Environment	Government Agency and Public Comments	Identification of Relevant Environmental Factors
Terrestrial fauna – specially protected (Threatened) Fauna.	Habitat clearing and modification during rail construction activities. Baseline surveys recorded: • two Schedule 1 species; • two Schedule 4 species; • three Priority 1 species; and • five Priority 4. A further 1 Schedule 1 species, 1 Priority 4 and 1 Priority 3 species were not recorded during the surveys, but could occur in the study area.	**CALM:** • The work done by the consultants for HDMS on the vertebrate fauna and the presentation of this information in their reports has been done very well.	**Considered to be a relevant factor. To be addressed under the issue of biodiversity.**
Marine biota and associated habitat.	Direct loss of marine and nearshore habitat as a result of dredging (for wharf) and spoil disposal. Loss of 89 ha of mangroves through clearing. Baseline survey identified: • 183 species of benthic invertebrates; • 16 species of fish; • low diversity of phytoplankton and zooplankton; • occasional turtles; and • sargassum beds and mats of filamentous green algae.	**CALM:** • The impact on mangrove communities has not been reduced to the "minimum practicable level". This would be achieved by removing the ore stockpiles, settlement ponds and the borrow pits from mangrove areas and locating them further inland. • The location of the ore stockpiles, administrative buildings, borrow pits and settlement ponds in areas in or adjacent to mangroves is not acceptable. • There has been no assessment of the impact of the project on mangroves adjacent to clearing sites. • The iron stockpile should be relocated away from Finucane Island area to, for example, Boodarie Industrial Estate where the ore could be transported on an enclosed conveyor belt system, to the proposed port area. **Town of Port Hedland:** • Mangrove studies undertaken by the proponent should include reference to the cumulative effects of all mangrove clearing within the harbour. **Public:** • Preservation of the mangrove system.	**Considered to be a relevant factor. To be addressed under the issue of biodiversity.**
Stygofauna	No major calcretised areas cross the railway corridor. Recharge to groundwater from creeks and rivers.	No comments.	No impacts are predicted. **Not considered to be a relevant environmental factor.**

Preliminary Environmental Factors	Proposal Characteristics/ Existing Environment	Government Agency and Public Comments	Identification of Relevant Environmental Factors
Coastal processes	Construction of port facilities.	No comments.	Modelling has been undertaken to estimate 50 and 100 year return period flood zones in Port Hedland coastal areas. The results suggest that the development will have minimal impact on flushing dynamics and storm surge events. Minimum design levels will be applied to the port development to protect the engineering integrity of the facility. The proposed wharf is located on Harriet Point. The existing outflow rates and tidal regime of West and South Creeks will be maintained. **Not considered to be a relevant environmental factor.**

Surface water hydrology	The major creeks and rivers that are intercepted by the railway are the Fortescue River, Turner River, East Turner River, Coonarie Creek, Weeli Wooli Creek, Chinnamon Creek, Bore Creek, South Creek and South West Creek.	**Town of Port Hedland:**
		• A Flood Impact Study should be undertaken to the satisfaction of the Town of Port Hedland, to demonstrate that the proposed rail alignment will not cause flooding in Wedgefield, South Hedland (Bosna) Rural Estate and the proposed Boodarie Support Industry Area. Any flood mitigation works required should be undertaken in consultation with the Town of Port Hedland.
		• Effective drainage should be is provided tot minimises the potential for mosquito breeding grounds near populated areas.
		
		WRC:
		• The Project is located in the Pilbara Surface Water Area, and is subject to the *Rights in Water and Irrigation Act (RIWI) 1914*, as amended. Changes to the RIWI Act in 2001 mean that, any interference with the bed and banks of a water course must be "Permitted" prior to that interference taking place, including new structures and alterations to existing structures in watercourses. There is provision under the RIWI Act for these approvals to be given under another Act, with due regard given to the requirements of the RIWI Act and WRC.
		• Under the RIWI Act several permits would need to be issued for the entire railway which cover several sub-catchments over the entire route (Permits are issued on a sub-catchment basis). The plans outlined in the PER for mitigating and managing impacts on surface water hydrogeology meets the requirements of the WRC, and as such, it would be preferable for the proponent to make the following commitments as suggested below.
		  • any variation from the plans submitted as part of this proposal will be referred to the WRC for comment and endorsement;
		  • the proponent will ensure that the railway and associated works does not act as an artificial barrier or levee, causing water to pond upstream;
			A comprehensive array of commitments have been made to prepare and implement management plans, and to comply with the RIWIA 1914 (as suggested by WRC).
			
			Interruption to existing surface water flow may occur from rail construction leading to:
			• upstream flooding of vegetation;
			• downstream starvation of vegetation (drainage shadow effects); and
			• scour.
			
			Considered to be a relevant environmental factor.

Preliminary Environmental Factors	Proposal Characteristics/ Existing Environment	Government Agency and Public Comments	Identification of Relevant Environmental Factors
		• the proponent will undertake the works authorised, with minimal disturbance to the bed and banks of the watercourses on the rail route; and • the proponent will stabilise all sites affected by construction or removal activities using methods described in the plans submitted as part of this proposal. • If the proponent does not commit to the above points, HDMS will be required to apply to the WRC separately for a Permit for the activities outlined in the proposal where there is to be any interference with the bed and banks of a water course.	
Groundwater quantity	Groundwater will be extracted for construction of the railway. Water supply for port operations will be supplied from existing borefields. Port facilities are estimated to use 0.9GL/yr in the first year of production. This is expected to increase to approximately 8.9 GL/yr within 5 years of project initiation.	**WRC:** • There are several Public Drinking Water Supply Areas in the vicinity, the protection of which will need to be taken into account. • The Project is located in the Pilbara Groundwater Area. The construction of wells and the take of water must be licensed under the RIWI Act. Water will also be required for the construction of the railway - these bores and their take must also be licensed.	A comprehensive array of commitments have been made to prepare and implement management plans. The EPA notes the WRC advice and that no significant impact on existing groundwater resources are expected. The water for rail construction villages will be supplied from bores. **Not considered to be a relevant environmental factor.**

Preliminary Environmental Factors	Proposal Characteristics/ Existing Environment	Government Agency and Public Comments	Identification of Relevant Environmental Factors
POLLUTION			

Surface water quality	Construction and operation of a railway corridor and port facilities.
	
	Overflow water from Borrow Area A will be discharged into South West Creek
		No comments.	The EPA notes that:
			• HDMS has made a commitment to prepare and undertake a Surface Water and Groundwater Management Plan to manage and minimise the potential effects of the railway and port on the surface and groundwater regimes to the requirements of CALM and the WRC;
			• discharges from Borrow Area A will have approximately 11-20 days of settlement prior to discharge to South West Creek;
			• contamination of surface water will be minimised by methods such as:
			  • direction of stormwater from bunded areas through settling ponds prior to discharge;
			  • suitably designed drainage areas and settling basins;
			  • design of areas to contain hazardous materials such as hydrocarbons;
			  • treatment of local runoff prior to release into the environment; and
			  • washdown water will be collected in drains, transferred to settling ponds having passed through sediment traps and an oil separation system.
			
			Not considered to be a relevant environmental factor.

Groundwater quality	Construction and operation of a railway corridor and port facilities.	No comments	The EPA notes that: • HDMS has made a commitment to prepare and undertake a Surface Water and Groundwater Management Plan to manage and minimise the potential effects of the railway and port on the surface and groundwater regimes to the requirements of CALM and the WRC; • all potentially hazardous materials will be stored in accordance with relevant legislation;

Preliminary Environmental Factors	Proposal Characteristics/ Existing Environment	Government Agency and Public Comments	Identification of Relevant Environmental Factors
			• no significant reduction in groundwater quality during the construction or operation phases of the project is expected; and • the proponent is required to apply for groundwater licences, under the RIWI Act. **Not considered to be a relevant environmental factor.**

Marine water and sediment quality	Construction and operation of port facilities, including dredging, onshore spoil disposal.
	
	Concentrations of metals in harbour waters and sediments are comparable to regional values. The exception is immediately adjacent to the iron ore export berths were sediments contain elevated levels of iron.
		Town of Port Hedland:
		• The PER has based its statements regarding heavy metal content in the harbour on 1996 data. This does not take into account increased shipping movement since the 1997/98 capacity expansion project and the cumulative effect of the proposed Finucane Island Expansion.
		• Using current data on heavy metal concentrations within the Port Hedland harbour, the proponent should describe the environment and any management strategies that will be employed by the proponent to minimise the potential for the project to impact on the chemical environment of the harbour.
			The EPA notes that HDMS has made commitments to:
			• prepare and implement a Marine Waters Monitoring and Management Plan to establish:
			  • baseline conditions,
			  • manage suspended sediment levels during construction
			  • minimise the potential for contaminants to enter the harbour during construction and operation; and
			  • to undertake regular monitoring and reporting; and
			• prepare and implement a Dredging and Land Reclamation Management Plan to address issues relating to the dredging and disposal of dredge spoil, return water, acid sulfate soils, land reclamation, and quarantine measures for dredging vessels.
			
			In addition, the EPA notes:
			• the proposed wharf site has a history of dredging and is subjected to naturally high turbidity levels and increased turbidity during maintenance dredging; and
			• turbidity associated with construction will be localised in the short-term.
			
			The issue of acid sulfate soils is considered to be a relevant factor.

Preliminary Environmental Factors	Proposal Characteristics/ Existing Environment	Government Agency and Public Comments	Identification of Relevant Environmental Factors
Contamination – oil spill and dredge spoil	Construction of a railway and port facilities.	No comments.	The EPA notes that HDMS has made commitments to: • prepare and implement a Construction EMP and an Operations EMP which include a sub management plan to deal with waste and hazardous management; and • prepare and implement a Dredging and Land Reclamation Management Plan to address issues relating to dredge soil disposal management and contingency plans for contamination. The EPA also notes that: • the Port Hedland Port Authority has in place an Oil Spill Contingency Plan; • no fuel storage areas will be within the port area; • no vessel refuelling will be undertaken; and • dredge spoil will be disposed onshore. **Not considered to be a relevant environmental factor.**
Introduction of exotic organisms.	Increased shipping activity associated with the project.	No comments.	The EPA notes that HDMS has made a commitment to prepare and implement a Dredging and Land Reclamation Management Plan to address quarantine measures for dredging vessels. In addition, the EPA notes: • HDMS does not have direct responsibility for ballast water management; and • the PHPA has reached agreement that AQUIS will take responsibility for ballast water management. **Not considered to be a relevant environmental factor.**

Preliminary Environmental Factors	Proposal Characteristics/ Existing Environment	Government Agency and Public Comments	Identification of Relevant Environmental Factors
Greenhouse gases	The project (port and rail) will emit 6.06 kg of CO_{2e}/t of ore shipped. Greenhouse gas emissions will be created by: • combustion of diesel fuel (equipment and locomotives); • decomposition of cleared vegetation; and • combustion of natural gas in the existing power station.	No comments.	The EPA notes that proposed management entails: • the establishment of an ongoing program of greenhouse gas reduction; • management of emissions in compliance with the EPA interim guidance for minimising Greenhouse Gas emissions; and • HDMS will adopt industry best practice standards for the design and specification of equipment generating or requiring generation of Greenhouse gases. **Not considered to be a relevant environmental factor.**
Particulates/ dust emissions during construction	Dust emissions will be generated during operations from activities such as ore stockpiling, ore stockpiles, ore reclaiming, conveyor transfer points, shiploading operations and vehicle traffic. Overall dust levels in the Town of Port Hedland are predicted to increase by less that 1% under certain atmospheric conditions.	**Town of Port Hedland:** Comments focused on: • dust being a significant environmental health and amenity issue in the Town of Port Hedland; • Western Australia lacking the enabling legislation that would allow its Pilbara residents enjoyment of air quality at the nationally acceptable standards as provided through the National Environmental Protection Measure (NEPM) for air quality; • questions raised in relation to modelling, methods and techniques used, based on an independent review of the Ausplume dispersion model for dust by PPK Environment & Infrastructure on behalf of Town of Port Hedland; • community health; and • stringent limits needing to be set on dust emissions and enforced, given the towns experience with dust from BHPIO's operations. **Pilbara Development Commission:** • HDMS should seek membership to the Town of Port Hedland's Air Quality Working Group. **Office of Major Projects:** • the naturally occurring dust levels at Port Hedland exceed the Ambient Air NEPM standard for particulates several times each year; • the Environmental Protection Policy that is currently proposed to implement the Ambient Air NEPM across the whole State, should make provision, where the NEPM standards are being exceeded, for preparation of an environmental management plan, setting out actions to improve ambient air quality to appropriate and achievable standards.	The proponent has committed to preparing a Dust Management Plan as a component for the Construction EMP and Operations EMP. **Considered to be a relevant factor.**

Preliminary Environmental Factors	Proposal Characteristics/ Existing Environment	Government Agency and Public Comments	Identification of Relevant Environmental Factors

Noise	Construction activities will increase the ambient noise levels in areas adjacent to operations.
	
	Noise at the port will be generated as a result of shiploading, car dumping, stockpiling, ore handling, locomotive facilities and railway yard.
	
	Noise levels during night time, evening, Sundays and Public Holidays at the Port will exceed the Noise Regulations by 10dB(A) and 5dB(A) respectively under worst case south westerly winds. Current operations already exceed the Regulations by an excess of 20dB(A) under certain conditions.
	
	There are no noise sensitive residences in proximity to the rail corridor.
	
	The construction of the railway will increase the ambient noise levels surrounding the rail corridor. Noise will be generated by construction equipment and blasting activities.
		Town of Port Hedland:
		• Comments raised in the submission focussed on an independent review of the assessment of noise levels by PPK Environment & Infrastructure, conducted on behalf of Town of Port Hedland. Issues raised related to:
		  • background ambient noise;
		  • noise level predictions;
		  • adjustments to predicted noise levels; and
		  • results of modelling; and
		  • management of noise impacts.
		
		Office of Major Projects:
		• Noise emissions from port areas currently exceed the limits set by the *Environmental Protection (Noise) Regulations 1997* in the nearby residential area that abuts the industrial boundaries. Noise from a particular location must not cause the assigned amount, as determined by the regulations, to be exceeded at the receiving premises. Noise emissions from HDMS must be considered in this context, as they may not significantly contribute to the existing levels.
		• There is a need for a new approach to noise management in Port Hedland which provides an achievable, whole of port solution, to emissions near to the residential area that may require exemptions from the current regulations.
			The EPA notes that HDMS has sought a variance to the *Environmental Protection (Noise) Regulations 1997*, as amended, under Part IV of the *Environmental Protection Act*, for its port facility and that following commencement of operations the proponent will apply, under Regulation 17, for approval to exceed or vary from the prescribed standard specified in the regulations.
			
			Noise at the port is considered to be a relevant factor.

SOCIAL SURROUNDINGS			
Recreational activity	Construction and operation of port facilities.	**Town of Port Hedland:** Issues of concern relating to recreation include: • access to Finucane Island; • the condition of the town boat ramp; • the ability of the town's existing recreational facilities and services to cater for an increased population; • general access to recreational sites, past, present and future; • maintaining access to recreational fishing areas; • maintaining public access to the Utah landing; • improving roads and ramps and other recreational services and facilities where the project has a potential impact, in consultation with the Town of Port Hedland.	The EPA notes that the proponent has: • committed to prepare and implement a public access plan as part of the Construction EMP and Operations EMP for the railway and port; and • committed to ensure that alternative access will be made available to the public to the major fishing spots after completion of construction and to consider offsets for the public (eg creation of new easily accessible recreational fishing/ picnic spots for local residents). **Not considered to be a relevant environmental factor.**

Preliminary Environmental Factors	Proposal Characteristics/ Existing Environment	Government Agency and Public Comments	Identification of Relevant Environmental Factors
Visual amenity	Construction of railway corridor and port facilities. Rail corridor will be visible from the Great Northern Highway and the North west Coastal Highway.	No comments.	The EPA notes that: • HDMS has made commitments to rehabilitate all disturbed surfaces not required for ongoing operations; and • the rail corridor will be visible from the Great Northern Highway and the North West Coastal Highway. **Not considered to be a relevant environmental factor.**

Heritage – Aboriginal culture and heritage, Register of the National estate	The rail corridor passes through or close to the native title claims of seven discrete claimant groups.
	
	There are 26 previously recorded aboriginal sites within, or intersecting the rail corridor.
	
	No known European Heritage Sites.
		DIA:
		• The proponent has undertaken adequate ethnographic and archaeological surveys and is consulting with the appropriate native title groups and Aboriginal people with known or claimed associations with the proposed development area.
		
		Pilbara Development Commission:
		• HDMS construction and operations workforce should undertake a Cross Cultural induction programme delivered by an approved service provider in the Pilbara.
			The EPA notes that:
			• HDMS has committed to the preparation and implementation of an Aboriginal Heritage Plan as part of the Construction EMP and Operations EMP. This plan will be prepared in consultation with all affected parties to:
			  • ensure that changes to the biological and physical environment as a result of the railway and port do not adversely affect cultural associations with the area;
			  • increase the culture understanding of the area by implementing an ongoing programme of investigation and cultural management; and
			  • manage access to important sites for purposes of their ongoing preservation.
			
			HDMS has also committed to:
			• undertake additional Aboriginal heritage surveys in areas not already surveyed and that are likely to be disturbed or otherwise affected by port operations or the construction of associated transportation infrastructure;
			• consult with the affected native title claimant working groups regarding the necessary disturbance of sites prior to the construction phase;
			• taking into account the 26 sites in the

Preliminary Environmental Factors	Proposal Characteristics/ Existing Environment	Government Agency and Public Comments	Identification of Relevant Environmental Factors
			anthropological survey and the sites recorded in the final survey will be taken into account in the final planning of the rial corridor; • undertake appropriate consultation and management strategies, in conjunction with the traditional owners, to mitigate any disturbance; and • comply with the Aboriginal Heritage Act 1972. **Not considered to be a relevant environmental factor.**
OTHER			
Duplication of rail corridor.	Construction of a 324km rail line from Weeli Wolli Creek as it enters the Fortescue Valley near Marillana Station to Port Hedland.	**Conservation Council:** • The development of another rail line in the Pilbara is not supported. The EPA should recommend that the companies involved be required to negotiate an agreement for the sharing of rail infrastructure. • All rail systems in the Pilbara should come under a central Pilbara rail authority. This would lead to a consolidation of railway operations servicing all the Pilbara mines. **CALM:** • The duplication of infrastructure and the consequent impact on the environment is of concern. CALM's preferred alignment for the rail line is alongside the existing BHPIO rail line and preferably on the same embankment. This option is likely to have the least environment impact as well as having the most benefits to HDMS and BHPIO in the sharing of infrastructure costs such as road and rial maintenance, as well as enabling both companies to increase iron ore volumes hauled on the rail line. • HDMS should be required to agree with the Office of Major Projects the general terms and conditions for the sharing of their rail and port, and the design criteria for the new rial line. This agreement should be reviewed by the EPA/ DEP prior to final agreement. • Likely requirements for future rail lines for HDMS, BHPIO or potential new rail operators **Wildflower Society:** • Consultation between HDMS and BHPIO to gain access to the existing main line facilities of BHPIO is encouraged. This will obviate the need to duplicate some 324km of mainline railway and its associated clearing of native vegetation.	EPA notes the views of CALM and the Conservation Council. The EPA recommends that it would be preferable for HDMS to share existing railway infrastructure. HDMS currently has approval for a rail corridor between the Hope Downs mine site and BHPIO's Newman to Port Hedland railway. **To be addressed under 'Other Advice'.**

Appendix 4

Summary of Relevant Environmental factors/ issues in relation to management

Summary of Relevant Environmental Factors/ Issues in relation to management

Factors/ Issues	EPA Objective(s)	Summary of Government Agency and Public Comments	Co-proponents commitments and environmental management measures	EPA Assessment

Biodiversity –
• Terrestrial flora – vegetation communities
• Terrestrial flora – Declared Rare and Priority Flora; flora of conservation significance
• Terrestrial fauna
• Terrestrial fauna – specially Protected (Threatened) Fauna
• Marine biota and associated habitat
	• Maintain the abundance, species diversity, geographic distribution and productivity of terrestrial flora and fauna.
	• Protect Declared Rare and Priority Flora and Specially Protected (Threatened) Fauna consistent with provisions of the *Wildlife Conservation Act 1950.*
	• Maintain the ecological function, abundance, species diversity and geographic distribution of marine biota and habitat in order to protect ecosystem health.
		CALM:
		Comments made by CALM focused on:
		• the flora and vertebrate fauna survey being done very well;
		• adequate drainage in areas of mulga;
		• extension of the Weed Hygiene and Control Plan to include the operation and maintenance phases of the railway;
		• minimising disturbance to sand dune vegetation types during construction;
		• the impact on mangroves not being reduced to the "minimum practicable level";
		• the impact on mangroves adjacent to clearing sites; and
		• the unacceptability of the location of the ore stockpiles, administrative buildings, borrow pits and settlement ponds in areas in or adjacent to mangroves; and
		
		Town of Port Hedland:
		• Mangrove studies to be undertaken by the proponent should include reference to the cumulative effects of all mangrove clearing within the harbour.
		
		DEP:
		• The flora and fauna surveys have been carried out in a competent manner; and
		• The information from these surveys has been well represented in the text.
		
		Wildflower Society of WA:
		• The flora and vegetation survey has been carried out in a thorough manner.
		• The flora and vegetation survey results must be compared with the land system mapping of the region by AgWest.
		• Post construction environmental monitoring must be carried out to assess the accuracy of impact predictions and the efficacy of weed control and management.
			Environmental management commitments:
			Prepare and implement a:
			• construction EMP (Commitments 3 and 4) and an operations EMP (Commitments 7 and 8) for the railway and port to address:
			  • vegetation clearing and management, and
			  • flora and fauna;
			• dredging and land reclamation management plan to address a range of issues including the clearing of mangroves and quarantine measures (Commitments 5 and 6);
			• a fire management plan (Commitments 11 and 12);
			• weed hygiene and control plan (to the satisfaction of CALM and the APB) (Commitments 13 and 14);
			• rehabilitation and topsoil management plan (Commitments 15 and 16); and
			• mangrove rehabilitation plan (Commitments 19 and 20) to identify areas systematic management procedures to address the re-establishment of mangroves and littoral vegetation in disturbed areas such as the decommissioned dredge spoil and settlement ponds.
			
			Other commitments relate to:
			• avoiding vegetation types of higher conservation significance as part of the final rail design; (Commitment 25);
			• contributing and supporting ongoing research into fire history, fire ecology and related processes in the Pilbara, including additional research into the utilisation of mangroves by bats (Commitment 29);
			• providing scientific data to government agencies relating to flora and fauna baseline studies . Other studies undertaken as part of environment reporting in a form that is compatible with the best practice, to enable the integration of this information into regional databases (Commitment 30).
				The EPA notes that a high standard of biological data collection was carried out, and that the flora and fauna surveys were commended by CALM and the DEP.
				
				In relation to the **railway** the EPA notes:
				• no DRF species have been recorded for the railway corridor and port areas;
				• CALM will be consulted during the detailed design phase for the rail corridor to ensure any impacts on Mulga as a result of upstream flooding or downstream starvation is minimised;
				• the rail corridor through the Fortescue Valley has been specifically sited on high ground away from the floodplain where sheetflow occurs;
				• the railway corridor was relocated to avoid areas of significant vegetation – particularly the large cracking clay deposition plain north of the Chichester Range;
				• no significant vegetation communities will be affected; and
				• the land system mapping by AgWA is not publicly available (proponent response).
				
				In relation to the **port** the EPA notes that:
				• there will be a loss of 89ha of mangroves as a result of stockpile and infrastructure construction;
				• all mangrove associations recorded also occur elsewhere in the Port Hedland harbour;
				• tidal flushing characteristics will be maintained, therefore there will be no indirect loss of mangrove communities;
				• there will be no significant impact on turtles;
				• the proponent has reduced the impact on mangroves to a minimum practical level; and
				• there will be no sea dumping of dredge spoil.
				
				In addition, the EPA notes that the proponent, in response to submissions, has indicated:
				• the nearest available ground for relocation of ore stockpiles etc would, would 8km away from the proposed site. Such as distance from the reclaimer to the ship loader would be impractical);

Factors/ Issues	EPA Objective(s)	Summary of Government Agency and Public Comments	Co-proponents commitments and environmental management measures	EPA Assessment
			Management measures include: • minimising vegetation clearing; • prohibiting off-road driving over vegetated areas; • locating the berth as close as possible to the existing turning basin to minimise dredging impacts; • utilisation of dredge spoil as fill for port earthworks; • consultation with CALM to ensure a lighting from port infrastructure does not disorient turtle hatchlings; and • re-establishing surface water flows to allow mangrove recolonisation.	• that all options within and outside the harbour have been evaluated and the proposed site is the least invasive environmentally; • a number of alternatives of stockyard and rail spur layout were considered and rejected specifically to meet the criteria of keeping the impact on mangroves to a minimum practical level; • Port Hedland harbour is not identified as a mangrove conservation area of significance in the EPA's guidelines; and • that it has committed to funding research work on mangrove ecology within the harbour. Having particular regard to: • the co-proponents commitments, and • management measures, it is the EPA's opinion that the proposal can be managed to meet the EPA's objectives.
Surface water hydrology	Maintain the integrity, functions and environmental values of watercourses and sheetflow.	**Town of Port Hedland:** • A flood impact study should be undertaken to demonstrate that the proposed rail alignment will not cause flooding. • Effective drainage should be provided to minimise the potential for mosquito breeding grounds near populated areas. **WRC:** • The Project is located in the Pilbara Surface Water Area, and is subject to the *Rights in Water and Irrigation Act (RIWI) 1914*, as amended. Changes to the RIWI Act in 2001 mean that, any interference with the bed and banks of a water course must be "Permitted" prior to that interference taking place, including new structures and alterations to existing structures in watercourses. • Under the RIWI Act several permits would need to be issued for the entire railway which covers several sub-catchments over the entire route (Permits are issued on a sub-catchment basis). The plans outlined in the PER for mitigating and managing impacts on surface water hydrogeology meet the requirements of the WRC, and as such, the	**Environmental management commitments:** • A Surface Water and Groundwater Management Plan will be prepared (Commitment 21) and implemented (Commitment 22) to the satisfaction of the WRC and CALM. The plan will contain guidelines and procedures to manage and minimise environment issues relating to surface water and groundwater regimes and any dependent ecological systems. This will include: • establishing baseline conditions; • regular monitoring and reporting; • minimising the potential for contaminants to enter waterways; and • maintaining existing flow paths wherever possible. Furthermore: • any variation from the plans submitted will be referred to the Water and Rivers Commission; • existing flow paths will be maintained where possible, such that the railway and associated works do not act as a hazardous impediment or cause long term ponding of stream flow; • works will be undertaken with a minimum of	The EPA notes that: • the proponents plans for mitigating and managing impacts on the surface water hydrogeology in the project are satisfactory to the WRC; • the proponent has made commitments in accordance with those suggested by WRC; • drainage structures (eg bridges, culverts) will maintain pre-construction surface hydrology, thus protecting the function and integrity of the hydrological system (watercourses and sheetflows) to avoid drainage shadows, erosion, scour; • a number of additional culvert structures are proposed to assist in dispersing part of the flow concentrations caused by the existing track and that this will allow an option for BHPIO to install additional culverts in the future; • HDMS has adopted favourable hydrological alignments (in order to avoid, for example braided rivers and areas of sheet flow); and • the existing tidal signature upstream of the West Creek causeway will be maintained. The EPA also notes that the proponent, in response to submissions, has indicated: • a number of studies on flooding and storm surge have already been undertaken with input from the

Factors/ Issues	EPA Objective(s)	Summary of Government Agency and Public Comments	Co-proponents commitments and environmental management measures	EPA Assessment
		proponent should make the following commitments as suggested below: • any variation from the plans submitted as part of this proposal will be referred to the WRC for comment and endorsement; • the proponent will ensure that the railway and associated works does not act as an artificial barrier or levee, causing water to pond upstream; • the proponent will undertake the works authorised, with minimal disturbance to the bed and banks of the watercourses on the rail route; and • the proponent will stabilise all sites affected by construction or removal activities using methods described in the plans submitted as part of this proposal If the proponent does not commit to the above points, HDMS will be required to apply to the WRC separately for a Permit for the activities outlined in the proposal where there is to be any interference with the bed and banks of a water course.	disturbance to the natural environment; and • all sites affected by construction will be stabilised. • The relevant construction and operation phase components of theses commitments will also be included in the preparation and implementation of the Construction Phase EMP and the Operations Phase EMP. • Flood diversion works will be designed to maintain existing catchment flow volumes and quality. Existing flow paths will be maintained where possible (Commitment 26). • Environmental Management measures include: • designing drainage structures so that there is minimal alteration to flowpaths that currently exist. • designing bridges and culverts so avoid undue backwater and scour; • provision of scour protection measures. • designing the opening in the West Creek causeway so that it does not create a head difference between the upstream and downstream portions of the creek; • construction of a bridge allowing tidal flow under the product shiploading conveyor to Harriet point.	Town of Port Hedland and the WA Planning Commission; • there is currently no evidence to suggest that the proposed rail embankment will impact on the present floodwater control provisions in the areas stated in the Town of Port Hedlands' submission; and • all earthworks have been designed to have minimal impact on current drainage channels with no additional pooling to that which already exists. No increase in habitat or populations of mosquitoes is anticipated. Having particular regard to: • the co-proponents commitments, and • management measures, it is the EPA's opinion that the proposal can be managed to meet the EPA's objectives.
Particulate/ dust emissions	• Protect the surrounding land users such that dust and particulate emissions will not adversely impact upon their welfare and amenity or cause health problems in accordance with EPA Guidance Statement No. 18 Prevention of Air Quality Impacts	**Town of Port Hedland:** Comments made focused on: • dust being a significant environmental health and amenity issue in the Town of Port Hedland; • Western Australia lacking the enabling legislation that would allow its Pilbara residents enjoyment of air quality at the nationally acceptable standards as provided through the National Environmental Protection Measure (NEPM) for air quality. • questions raised in relation to modelling, methods and techniques used, based on an independent review of the Ausplume dispersion model for dust by PPK	**Environmental management commitments:** • Prepare and implement a dust management plan as a component of the Construction EMP (Commitments 3 and 4) and an Operations EMP (Commitments 7 and 8) for the railway and port. Management measures to be addressed within the plan include: • dust suppression, and • monitoring.	The EPA notes that**:** • the proponent has committed to preparing a dust management plan as a component for the Construction EMP and Operations EMP; • modelling has indicated that dust emissions from the facility during operations will be below relevant standards; • dust levels will be managed by minimising vegetation clearing, minimising unnecessary machinery movement, the use of dust suppression equipment and appropriate site management; • HDMS has committed to best practicable management in the design and operation of the ore handling facility; • HDMS has indicated it will seek membership to the

Factors/ Issues	EPA Objective(s)	Summary of Government Agency and Public Comments	Co-proponents commitments and environmental management measures	EPA Assessment
	from Land Development Sites • Ensure that particulate/ dust emissions, both individually and cumulatively, meet appropriate criteria and do not cause an environment or human health problem.	Environment & Infrastructure on behalf of Town of Port Hedland; • community health; and • stringent limits needing to be set on dust emissions and enforced, given the towns experience with dust from BHPIO's operations. **Pilbara Development Commission:** • HDMS should seek membership to the Town of Port Hedland's Air Quality Working Group. **Office of Major Projects:** • The naturally occurring dust levels at Port Hedland exceed the Ambient Air NEPM standard for particulates several times each year. • The Environmental Protection Policy that is currently proposed to implement the Ambient Air NEPM across the whole State, should make provision, where the NEPM standards are being exceeded, for preparation of an environmental management plan, setting out actions to improve ambient air quality to appropriate and achievable standards.		Town of Port Hedland's Air Quality Working Group; • the proponent, based on test work, has incorporated into its design philosophy the requirement to maintain moisture contents for lump and fines at the optimum levels of 4 and 6% where no dust will be generated; and • dust will be managed under Part V licence conditions Having particular regard to: • the co-proponents commitments; and • dust being managed under Part V licence conditions, it is the EPA's opinion that the proposal can be managed to meet the EPA's objectives.
Noise	Ensure noise emanating from proposed railway construction, other construction activities, any increase in port operations, dredging, reclamation, comply with statutory requirements and acceptable (and appropriate standards)	**Town of Port Hedland:** Comments raised in the submission focussed on an independent review of the assessment of noise levels by PPK Environment & Infrastructure, conducted on behalf of Town of Port Hedland. Issues raised related to: • background ambient noise; • noise level predictions; • adjustments to predicted noise levels; and • results of modelling; and • management of noise impacts. **Office of Major Projects:** • Noise emissions from port areas currently exceed the limits set by the *Environmental Protection (Noise) Regulations 1997* in the nearby residential area that abuts the industrial boundaries. Noise from a particular location must not cause the	**Environmental management commitments:** • Preparation and implementation of a noise management strategy (plan) for both construction and operations. This plan will: • establish state of the art noise specifications for the major noise generating equipment (i.e. bulk materials handling); • design noise controls to minimise the generation and impacts of noise; • set out procedures and practices to be adopted in the event of noise exceedances; and • communicate performance and progress to affected communities;	The EPA notes that: • HDMS has sought a variance to the *Environmental Protection (Noise) Regulations 1997*, as amended, under Part IV of the *Environmental Protection Act*, for its port facility, and that following commencement of operations, the proponent will apply under Regulation 17 for approval to exceed or vary from the prescribed standard specified in the regulations; • the proponent will submit a Regulation 13 application in respect to the management of construction noise; • predicted noise levels are below the current transportation noise criteria adopted by the DEP for similar projects; and • construction noise associated with the railway is expected to be below noise level criteria. Having particular regard to:

Factors/ Issues	EPA Objective(s)	Summary of Government Agency and Public Comments	Co-proponents commitments and environmental management measures	EPA Assessment
		particular location must not cause the assigned amount, as determined by the regulations, to be exceeded at the receiving premises. Noise emissions from HDMS must be considered in this context, as they may not significantly contribute to the existing levels. • There is a need for a new approach to noise management in Port Hedland which provides an achievable, whole of port solution, to emissions near to the residential area that may require exemptions from the current regulations..		• Recommended Environmental Condition, 6; • the proponent submitting an application to the Minister for the Environment and Heritage under Regulation 17 of the Environmental Protection (Noise) Regulations 1997, as amended; and • the proponent's commitments, it is the EPA's opinion that the proposal can be managed to meet the EPA's objectives.

Acid Sulfate Soils	To minimise the risk to the environment resulting from ASS.	No comments made as part of submissions**.**	**Environmental management commitments:**
			• The EPA notes that the proponent has made commitments to:
			  • prepare and implement a Dredge and Land reclamation Management Plan (Commitments 5 and 6) to address acid sulfate soils. This will include the implementation of a programme of sampling during construction to detect the potential presence of acid sulfate soils in materials being relocated to areas where potential problems might occur; and
			  • prepare and implement a Marine Waters Monitoring and Management Plan to establish baseline conditions, minimise the potential for contaminants to enter the harbour during construction and operations and regular monitoring and reporting.
				The EPA notes that:
				• the disturbance, removal and placement of material from dredged areas, Borrow Area 'A' or the settling ponds will not cause an impact in terms of acid sulfate soils; and
				• acid sulfate soils are unlikely to present a problem in the Port Hedland marine environment.
				
				Having particular regard to:
				• results from initial investigations; and
				• the proponent's commitments and management measures,
				
				it is the EPA's opinion that acid sulfate soils are unlikely to present a problem in the Port Hedland marine environment and that the proposal can be managed to meet the EPA's environmental objective for this factor provided that the necessary detection and management strategies are implemented.

Appendix 5

Recommended Environmental Conditions and Proponent's Consolidated Commitments

RECOMMENDED ENVIRONMENTAL CONDITIONS

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

HOPE DOWNS IRON ORE PROJECT – RAIL AND PORT FACILITY

Proposal: Construction of a rail line and port facilities to support the development of an iron-ore mine, based on the Hope 1 deposit, as documented in Schedule 1 of this statement.

Proponent: Hope Downs Management Services Pty Ltd

Proponent Address: P O Box 309
WEST PERTH WA 6872

Assessment Number: 1397

Report of the Environmental Protection Authority: Bulletin 1066

The proposal referred to above may be implemented subject to the following conditions and procedures:

Procedural conditions

1 Implementation and Changes

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

1-2 Where the proponent seeks to change any aspect of the proposal as documented in schedule 1 of this statement in any way that the Minister for the Environment and Heritage determines, on advice of the Environmental Protection Authority, is substantial, the proponent shall refer the matter to the Environmental Protection Authority.

1-3 Where the proponent seeks to change any aspect of the proposal as documented in schedule 1 of this statement in any way that the Minister for the Environment and Heritage determines, on advice of the Environmental Protection Authority, is not substantial, the proponent may implement those changes upon receipt of written advice.

2 Proponent Commitments

2-1 The proponent shall implement the environmental management commitments documented in schedule 2 of this statement.

2-2 The proponent shall implement subsequent environmental management commitments which the proponent makes as part of the fulfilment of conditions and procedures in this statement.

3 Proponent Nomination and Contact Details

3-1 The proponent for the time being nominated by the Minister for the Environment and Heritage under section 38(6) or (7) of the *Environmental Protection Act 1986* is responsible for the implementation of the proposal until such time as the Minister for the Environment and Heritage has exercised the Minister's power under section 38(7) of the Act to revoke the nomination of that proponent and nominate another person as the proponent for the proposal.

3-2 If the proponent wishes to relinquish the nomination, the proponent shall apply for the transfer of proponent and provide a letter with a copy of this statement endorsed by the proposed replacement proponent that the proposal will be carried out in accordance with this statement. Contact details and appropriate documentation on the capability of the proposed replacement proponent to carry out the proposal shall also be provided.

3-3 The nominated proponent shall notify the Department of Environmental Protection of any change of contact name and address within 60 days of such change.

4 Commencement and Time Limit of Approval

4-1 The proponent shall provide evidence to the Minister for the Environment and Heritage within five years of the date of this statement that the proposal has been substantially commenced or the approval granted in this statement shall lapse and be void.

Note: The Minister for the Environment and Heritage will determine any dispute as to whether the proposal has been substantially commenced.

4-2 The proponent shall make application for any extension of approval for the substantial commencement of the proposal beyond five years from the date of this statement to the Minister for the Environment and Heritage, prior to the expiration of the five-year period referred to in condition 4-1.

The application shall demonstrate that:

- the environmental factors of the proposal have not changed significantly;
- new, significant, environmental issues have not arisen; and
- all relevant government authorities have been consulted.

Note: The Minister for the Environment and Heritage may consider the grant of an extension of the time limit of approval not exceeding five years for the substantial commencement of the proposal.

Environmental conditions

5 Compliance Auditing and Performance Review

5-1 The proponent shall prepare an audit programme in consultation with and submit compliance reports to the Department of Environmental Protection which address:

- the implementation of the proposal as defined in schedule 1 of this statement;
- evidence of compliance with the conditions and commitments; and
- the performance of the environmental management plans and programmes.

Note: Under sections 48(1) and 47(2) of the *Environmental Protection Act 1986*, the Chief Executive Officer of the Department of Environmental Protection is empowered to audit the compliance of the proponent with the statement and should directly receive the compliance documentation, including environmental management plans, related to the conditions, procedures and commitments contained in this statement.

Usually, the Department of Environmental Protection prepares an audit table which can be utilised by the proponent, if required, to prepare an audit program to ensure that the proposal is implemented as required. The Chief Executive Officer is responsible for the preparation of written advice to the proponent, which is signed off by either the Minister or, under an endorsed condition clearance process, a delegate within the Environmental Protection Authority or the Department of Environmental Protection that the requirements have been met.

5-2 The proponent shall submit a performance review report every five years after the start of the operations phase, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority, which addresses:

- the major environmental issues associated with the project; the targets for those issues; the methodologies used to achieve these; and the key indicators of environmental performance measured against those targets;
- the level of progress in the achievement of sound environmental performance, including industry benchmarking and the use of best available technology where practicable;
- significant improvements gained in environmental management, including the use of external peer reviews;
- stakeholder and community consultation about environmental performance and the outcomes of that consultation, including a report of any on-going concerns being expressed; and
- the proposed environmental targets over the next five years, including improvements in technology and management processes.

6 Noise Emissions

Noise emissions from the proposal are to be reduced as far as is reasonably practicable.

6-1 Where it is not reasonably practicable for the noise emitted from the proposal to meet the prescribed standard in the *Environmental Protection (Noise) Regulations 1997*, as amended from time to time, hereinafter referred to as the Noise Regulations, when received in the Port Hedland townsite, the proponent shall ensure that the noise emitted from the proposal, when received at any part of a noise-sensitive premises that is within 15 metres of a building that is directly associated with a noise-sensitive use, does not exceed the following L_{A10} levels -

Noise Receiving Premises		**L_{A10} (dB)**
Noise Sensitive Premises in Port Hedland	West of Crowe Street	50
	East of Crowe Street	44

Notes:

1. A L_{A10} level means a level which, measured as a L_{Aslow} value, is not exceeded for more than 10% of any four-hour period.

2. The terms L_{ASlow}, L_{A10}, and noise-sensitive premises, have the same meaning as in the Noise Regulations.

3. An emission of noise that contravenes this condition is taken not to breach the condition if:

   (a) the proponent demonstrates to the satisfaction of the Minister for the Environment and Heritage, on advice of the Environmental Protection Authority, that the level of the emission is within the limits of accuracy of the noise prediction model used for the assessment of the proposal; or

   (b) the emission is a result of the occurrence of an "abnormal event" which is beyond the immediate control of, and could not reasonably have been foreseen by the proponent (such as an accident or emergency, a breakdown of plant or equipment or extreme weather conditions); and

   (c) (i) the proponent takes all reasonably practicable measures to stop the emission as soon as is reasonably practicable; and

   (ii) the proponent notifies the Chief Executive Officer of the Department of Environmental Protection of the occurrence of the abnormal event within 21 days after the day on which it occurred, or within any further time allowed by the Chief Executive Officer on the application of the proponent.

4. For the purposes of conditions 6-1 and 6-2, the level of noise emissions shall be determined in accordance with:

   (a) Part 3 of the Noise Regulations; and

   (b) Regulation 7 (3) of the Noise Regulations.

5. In determining the level of noise emissions for the purposes of conditions 6-1 and 6-2, the following are not taken into account:

   (a) noise emissions of a kind referred to in regulation 3 of the Noise Regulations;

   (b) noise emitted as a result of construction work carried on by the proponent;

   (c) noise emitted by safety devices attached to plant or equipment for the purpose of ensuring that the proponent complies with its obligations under the *Occupational Safety and Health Act 1984*, as amended from time to time;

   (d) noise received at premises owned by the proponent; and

   (e) adjustments for the characteristics of tonality, impulsiveness and modulation as specified in Table 2 of the Noise Regulations.

6-2 The proponent shall keep a register of reportable noise events as follows:

1 abnormal events referred to in condition 6-1 (3(b)); and

2 other events which may result in an L_{ASlow} noise level greater than 60 dB(A) when received at any noise-sensitive premises in Port Hedland at any time.

The proponent shall detail in this register the following:

1 the nature of the event;

2 the date and time of the occurrence of the event;

3 details of the emission, including the level and characteristics of the noise (if known) and the duration of the emission;

4 the measures taken by the proponent to stop the emission; and

5 the measures (if any) taken by the proponent to prevent or minimise the possibility of a similar event occurring in the future, or to minimise the level of noise emission if a similar event occurs in the future,

to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

6-3 The proponent shall make the register required by condition 6-2 publicly available, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

6-4 Within 18 months following the date of commencement of operations, the proponent shall submit to the Minister for the Environment and Heritage an application under Regulation 17 of the Noise Regulations; for approval to exceed or vary from the prescribed standard specified in the regulations.

6-5 The proponent shall provide with the application referred to in condition 6-4, a Noise Management Report, prepared to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

The objective of this report is to demonstrate that noise emissions from the proposal have been reduced as far as is reasonably practicable.

This report shall:

1 identify the sources of noise emissions from the proposal;

2 show revised noise modelling contours based on operations since commencement;

3 identify reference positions for the measurement and monitoring of noise levels;

4 identify noise control measures which have been implemented to reduce noise;

5 specify further noise controls which are being considered for equipment and set out a cost-benefit analysis for the implementation of each of those options;

6 set out the measures that the proponent considers can reasonably and practicably be taken; and

7 set out the minimum noise levels emitted from the proposal which the proponent considers can reasonably and practicably be achieved.

6-6 The requirements of conditions 6-1, 6-2 and 6-3, shall remain in force for 18 months from the date of commencement of operations, after which time they shall cease to have effect, unless an application has been submitted in accordance with condition 6-4, in which case the noise levels shall remain in force until the Minister for the Environment and Heritage, acting on advice of the Environmental Protection Authority, grants that application.

7 Decommissioning Plan

7-1 Prior to the construction phase, the proponent shall prepare and subsequently implement, a Preliminary Decommissioning Plan for the railway and port, which provides the framework to ensure that the sites are left in an environmentally acceptable condition to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority.

Note: In the preparation of advice to the Minister, the Environmental Protection Authority expects that the advice of the following agencies will be obtained:

- Department of Conservation and Land Management;
- Department of Mineral and Petroleum Resources; and
- Water and Rivers Commission.

The Preliminary Decommissioning Plan shall address:

1 rationale for the siting and design of plant and infrastructure as relevant to environment protection, and conceptual plans for the removal or, if appropriate, retention of plant and infrastructure;

2 a conceptual rehabilitation plan for all disturbed areas and a description of a process to agree on the end land use(s) with all stakeholders;

3 a conceptual plan for a care and maintenance phase; and

4 management of noxious materials to avoid the creation of contaminated areas.

7-2 At least six months prior to the anticipated date of decommissioning, or at a time agreed with the Environmental Protection Authority, the proponent shall prepare a Final Decommissioning Plan designed to ensure that the site is left in an environmentally acceptable condition to the requirements of the Minister for the Environment and heritage on advice of the Environmental Protection Authority.

Note: In the preparation of advice to the Minister, the Environmental Protection Authority expects that the advice of the following agencies will be obtained:

- Department of Conservation and Land Management;
- Department of Mineral and Petroleum Resources; and
- Water and Rivers Commission.

The Final Decommissioning Plan shall address:

1 removal or, if appropriate, retention of plant and infrastructure in consultation with relevant stakeholders;

2 rehabilitation of all disturbed areas to a standard suitable for the agreed new land use(s); and

3 identification of contaminated areas, including provision of evidence of notification and proposed management measures to relevant statutory authorities.

7-3 The proponent shall implement the Final Decommissioning Plan required by condition 7-2 until such time as the Minister for the Environment and Heritage determines, on advice of the Environmental Protection Authority, that the proponent's decommissioning responsibilities are complete.

7-4 The proponent shall make the Final Decommissioning Plan required by condition 7-2 publicly available, to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority

Procedures

1 Where a condition states “to the requirements of the Minister for the Environment and Heritage on advice of the Environmental Protection Authority", the Chief Executive Officer of the Department of Environmental Protection will obtain that advice for the preparation of written advice to the proponent.

2 The Environmental Protection Authority may seek advice from other agencies, as required, in order to provide its advice to the Chief Executive Officer of the Department of Environmental Protection.

Note

1 The Minister for the Environment and Heritage will determine any dispute between the proponent and the Environmental Protection Authority or the Department of Environmental Protection over the fulfilment of the requirements of the conditions.

2 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*.

3 Compliance and performance reporting will endeavour to be in accord with the timing requirements of the State Agreement Act.

4 The conditions for Hope Downs Iron Ore Mine (Assessment Number 1308) were published on 1 February 2002 in Statement No. 584.

Schedule 1

The Proposal (Assessment Number 1397)

The proposal involves the construction of a rail line and port facilities to support the development of the Hope Downs Iron Ore Mine (Assessment No. 1308), based on the Hope Downs 1 Deposit, located approximately 75 kilometres north-west of Newman (see figure 1 attached).

The proposal has the following main components:

- a 324 kilometre rail line from Weeli Wolli Creek as it enters the Fortescue Valley near Marillana Station to Port Hedland (see Figure 2); and
- ore handling and export facilities adjacent to Owen and Stanley Point at Port Hedland, including the construction of new shiploading facilities at Harriet Point (see Figure 3).

The key characteristics of the proposal are described in Table 1 below.

Table 1: Key proposal characteristics

Element	Characteristics
General	
Construction period	2 years approximately
Project Life	20 years approximately
Export Tonnage	25 Mtpa approximately
Railway	
Length	324 km
Support Infrastructure	Sidings Administration Offices and Warehouses Trip Servicing facilities Service and repair workshop Turnaround "Y" Track maintenance facilities
Port	
Stockyard	2.5 Mt capacity
Materials handling	Car dumper Conveyors and Transfer Points Rescreening Plant Stackers and Reclaimers
Port Development	Piled Wharf 750m long Ships up to 250,000 DWT Shiploaders Dredging – 2.9 Mm^3. Disposed onshore
Buildings	Administration Office Shift Office Wharf amenities Car dumper control room Substations Workshop/ warehouse
Infrastructure	
Power	10.5 Mw from existing system
Water	1.6 GLpa from existing system
Roads	General traffic, port access, rail service
Sewage	Construction – package treatment plant Operations – septic systems
Disturbance Areas	
Area of railway easement	1,000 ha
Area of port facilities	104 ha
Borrow Area A	94 ha
Total area disturbed	1,198 ha

Workforce	
Construction	Rail – 900 personnel approximately Port – 300 personnel approximately
Permanent	Rail – 50 personnel approximately Port – 60 personnel approximately
Accommodation	Construction – single status in Port Hedland Camps for rail Permanent – new or existing residences in Port Hedland
Key: DWT - dead weight tonnes GLpa - gigalitres per annum ha - hectare km – kilometre m – metre Mm^3 - million cubic metres Mtpa - million tonnes per annum Mt - million tonnes MW - megawatts	

Figures (attached)

Figure 1 – Hope Downs Iron Ore Project Rail and Port Location
Figure 2a and 2b – Hope Downs Iron Ore Project – Rail Alignment
Figure 3 – Hope Downs Iron Ore Project - Port Layout

Schedule 2

Proponent's Environmental Management Commitments

August 2002

HOPE DOWNS IRON ORE PROJECT – RAIL AND PORT FACILITY
(ASSESSMENT NO. 1397)

Hope Downs Management Services Pty Ltd

No.	Topic	Action	Objectives	Timing	Advice
1	Environmental Management System (EMS).	Prepare an EMS which includes: 1. an environmental policy and corporate commitment to EMS; 2. planning to meet environmental requirements; 3. specification and implementation of actions to meet environmental requirements; 4. measurement and evaluation of environmental performance; and 5. review and improvement of environmental outcomes.	To manage the relevant environmental factors of the railway and port and to fulfil the requirements of the Conditions and procedures in the Statement.	An Operations Phase EMS will be substantially completed prior to operations commencing.	Accredited assurance service.
2	EMS.	Implement the EMS referred to in Commitment 1.	To achieve the objectives of Commitment 1.	Operations Phase.	Accredited assurance service.
3	Construction Phase Environmental Management Programme (EMP).	Prepare an EMP which will contain plans, guidelines and procedures to manage environmental issues associated with construction of the project including: 1. vegetation clearing and management; 2. surface water quality; 3. groundwater quality; 4. flora and fauna; 5. Aboriginal heritage; 6. public access; 7. greenhouse gases; 8. dust and noise; 9. waste and hazardous materials; 10. decommissioning and rehabilitation; 11. management of contractors; and 12. continuous improvement. The relevant Construction Phase components of Commitments 7, 9, 11, 13, 15, 17, 19, 21, 23 and 30 will also be included.	To manage and minimise the potential impacts of the Construction Phase of the railway and port.	During the Pre-construction Phase.	DMPR, CALM, WRC, MRD and Native Title Claimants/PNTS (depending on the project component).
4	Construction Phase EMP.	Implement the EMP referred to in Commitment 3.	To achieve the objectives of Commitment 3.	Construction Phase.	DMPR, CALM, WRC, MRD and Native Title Claimants/PNTS (depending on the project component).

No.	Topic	Action	Objectives	Timing	Advice
5	Dredging and Land Reclamation Management Plan	A Dredging and Land Reclamation Management Plan will be prepared to address issues related to the movement and disposal of dredge spoil, effluent, and borrow material including: 1. construction of bunds, levees and retaining areas; 2. installation of batter armour; 3. construction of drains; 4. clearing of mangroves; 5. acid Sulphate soils; 6. return water disposal; 7. dredging and disposal of dredge spoil; 8. transportation of fill material; 9. heritage sites; 10. sediment sampling; 11. management of suspended sediments; 12. contingency plans for turbidity and contamination; 13. quarantine measures for dredge vessels; and 14. management, monitoring and reporting. The above plan is complementary to the Construction Phase EMP referred to in Commitments 3 and 4.	To manage and minimise the potential impacts of dredging and land reclamation.	During the Pre-construction Phase	CALM, PHPA, Town of Port Hedland, Department of Fisheries and Native Title Claimants/PNTS
6	Dredging and Land Reclamation Management Plan	Implement the Dredging and Land Reclamation Management Plan referred to in Commitment 5	To achieve the objectives of Commitment 5	Construction Phase	CALM, PHPA, Town of Port Hedland, Department of Fisheries and Native Title Claimants/PNTS
7	Operations Phase Environmental Management Programme	Prepare an EMP which will contain plans, guidelines and procedures to manage environmental issues associated with operation of the project including: 1. vegetation clearing and management; 2. surface water quality; 3. groundwater quality; 4. flora and fauna; 5. Aboriginal heritage; 6. public access; 7. greenhouse gases; 8. dust and noise; 9. waste and hazardous materials; 10. decommissioning and rehabilitation; 11. management of contractors; and 12. continuous improvement. The relevant Operations Phase components of Commitments 7, 9, 11, 13, 15, 17, 19, 21, 23 and 30 will also be included.	To manage and minimise the potential impacts of the Operations Phase of the railway and port.	Prior to commissioning.	DMPR, CALM, WRC, MRD and Native Title Claimants/PNTS (depending on the project component).
8	Operations Phase EMP.	Implement the EMP referred to in Commitment 7.	To achieve the objectives of Commitment 7	Operations Phase.	DMPR, CALM, WRC, MRD and Native Title Claimants/PNTS (depending on the project component).

No.	Topic	Action	Objectives	Timing	Advice
9	Noise Management Plan.	A Noise Management Plan will be prepared to: 1. establish state-of-the-art noise specifications for the major noise generating equipment; 2. design noise controls to minimize the generation and impacts of noise;; 3. set out procedures and practices to be adopted in the event of noise exceedances including complaints register, recording etc; and 4. communicate performance and progress to affected communities.	To manage and minimise the impacts of noise on the communities in the vicinity of the operations.	Pre-construction Phase.	Town of Port Hedland
10	Noise Management Plan.	Implement the Noise Management Plan referred to in Commitment 9.	To achieve the objectives of Commitment 9.	Construction Phase, Operations Phase.	Town of Port Hedland
11	Fire Management Plan.	A Fire Management Plan will address procedures to minimise project induced fires, including: 1. work procedures for all welding and grinding work; 2. personnel fire hazard procedures; 3. fire response vehicles on site; and 4. bushfire contingency plans.	To minimise the risk of fires occurring in the rail corridor and port as a result of construction and operations.	Pre-construction Phase.	CALM, FESA.
12	Fire Management Plan.	Implement the Fire Management Plan referred to in Commitment 11.	Achieve the objectives of Commitment 11.	Construction Phase, Operations Phase.	CALM, FESA.
13	Weed Hygiene and Control Plan.	A Weed Hygiene and Control Plan will be prepared which will contain procedures to minimise the risk of introducing or spreading weeds, including: 1. identification of serious weed infestations; 2. hygiene and washdown procedures for all plant and equipment; 3. topsoil and materials management; 4. control measures that may be necessary for some species; and 5. monitoring and any follow-up control including reporting to relevant authorities.	To minimise the risk of introducing or spreading weeds along the rail corridor, during construction, operations and maintenance.	Pre-construction Phase..	CALM, APB.
14	Weed Hygiene and Control Plan.	Implement the Weed Hygiene and Control Plan referred to in Commitment 13.	To achieve the objectives of Commitment 13.	Construction Phase.	CALM, APB.
15	Rehabilitation and Topsoil Management Plan.	A Rehabilitation and Topsoil Management Plan will be prepared which will address: 1. siting, access tracks, opening, operation and closure of borrow pits and other material sources; 2. topsoil recovery, stockpiling and respread; 3. provenance seed collection, mixes and application; 4. surface stabilisation and other treatments; and 5. monitoring and maintenance.	To ensure that disturbed areas along the railway are rehabilitated as efficiently and thoroughly as possible.	Pre-construction Phase.	CALM.
16	Rehabilitation and Topsoil Management Plan.	Implement the Rehabilitation and Topsoil Management Plan referred to in Commitment 15.	To achieve the objectives of Commitment 15.	Construction Phase, Operations Phase.	CALM.

No.	Topic	Action	Objectives	Timing	Advice
17	Marine Waters Monitoring and Management Plan.	A Marine Waters Monitoring and Management Plan will be prepared which will contain guidelines, procedures and criteria to manage the impact of the project on the marine environment including: 1. establishment of baseline conditions; 2. management of suspended sediment levels; 3. minimising the potential for contaminants to enter the harbour during construction and operations; and 4. regular monitoring and reporting of sediment and return water.	To ensure protection of the marine environment at the port.	Pre-construction Phase.	CALM, Department of Fisheries, Port Hedland Port Authority.
18	Marine Waters Monitoring and Management Plan.	Implement the Marine Waters Monitoring and Management Plan referred to in Commitment 17.	To achieve the objectives of Commitment 17.	Construction Phase, Operations Phase.	CALM, Department of Fisheries, Port Hedland Port Authority.
19	Mangrove Rehabilitation Plan.	A Mangrove Rehabilitation Plan will be prepared which will contain management procedures and plans aimed at the re-establishment of mangroves in areas disturbed during construction that are not required for operations. This will include: 1. earthworks, materials management and contouring; 2. specification of elevations for the establishment of mangroves and littoral vegetation; 3. species selection, proportions and densities; 4. propagation and establishment methods; and 5. monitoring and maintenance plans.	To minimise the net loss of mangrove and littoral vegetation associated with the port.	Pre-construction Phase.	CALM, Department of Fisheries, Port Hedland Port Authority.
20	Mangrove Rehabilitation Plan.	Implement the Mangrove Rehabilitation Plan referred to in Commitment 19.	To achieve the objectives of Commitment 19.	Construction Phase, Operations Phase.	CALM, Department of Fisheries, Port Hedland Port Authority.

No.	Topic	Action	Objectives	Timing	Advice
21	Surface Water and Groundwater Management Plan.	A Water Management Plan will be prepared which will contain plans, guidelines and procedures to manage and minimise environmental issues relating to the potential effects on the surface and groundwater regimes and any dependent ecological systems. This will include: 1. establishing baseline conditions; 2. regular monitoring and reporting; 3. minimising the potential for contaminants to enter waterways; and 4. maintaining existing flow paths wherever possible. Furthermore: • Any variation to the plans submitted will be referred to the Water and Rivers Commission. • Existing flow paths will be maintained where possible, such that the railway and associated works do not act as a hazardous impediment or cause long-term ponding of stream flow. • Works will be undertaken with a minimum of disturbance to the natural environment. • All sites affected by construction will be stabilised.	To manage and minimise the potential effects of the railway and port on the surface and groundwater regimes.	Pre-construction Phase.	WRC, CALM.
22	Surface Water and Groundwater Management Plan.	Implement the Surface Water and Groundwater Management Plan referred to in Commitment 21.	To achieve the objectives of Commitment 21.	Construction and Operations Phase.	WRC, CALM.
23	Aboriginal Heritage Management Plan.	Prepare an Aboriginal Heritage Management Plan in consultation with all affected parties which protects cultural associations with the local area.	To ensure that changes to the biological and physical environment as a result of the railway and port do not adversely affect cultural associations with the area. To increase the cultural understanding of the area by implementing an ongoing programme of investigation and cultural management. To manage access to important sites for purposes of their ongoing preservation.	Pre-construction Phase.	Native Title Claimants/PNTS, DIA.
24	Aboriginal Heritage Management Plan.	Implement the Aboriginal Heritage Management Plan referred to in Commitment 23.	To achieve the objectives of Commitment 23.	Construction Phase, Operations Phase.	Native Title Claimants/PNTS, DIA.
25	Conservation Areas.	Take account of the locations of features of higher conservation significance as part of the final design of the railway and associated clearing envelopes. Conduct additional confirmation surveys of borrow pits, access tracks and other disturbance areas for threatened species as required.	To avoid or eliminate impacts on significant fauna habitats, threatened fauna, significant vegetation types and threatened flora populations along the railway.	Construction Phase.	CALM.
26	Flood diversion.	Flood diversion works will be designed to maintain existing catchment flow volumes and quality. Existing flow paths will be maintained where possible.	To ensure that the railway and port do not adversely impact on the surface water resources of the area.	Pre-construction Phase.	WRC, CALM.

No.	Topic	Action	Objectives	Timing	Advice
27	Aboriginal heritage surveys.	Undertake additional Aboriginal heritage surveys in areas not already surveyed and that are likely to be disturbed or otherwise affected by port operations or the construction of associated transportation infrastructure.	To identify any heritage sites associated with the railway and port.	Pre-construction Phase.	Native Title Claimants/PNTS, DIA.
28	Aboriginal consultation.	Consult with the affected native title claimant working groups regarding the unavoidable disturbance of sites.	To consult with affected native title claimant working groups in respect of heritage sites in the project area before any Section 18 (*Aboriginal Heritage Act 1972*) application is developed for the railway and/or port.	Pre-construction Phase.	Native Title Claimants/PNTS, DIA.
29	Conservation Offsets.	Support of ongoing research into fire history, fire ecology and related processes in the Pilbara. Additional research into the utilisation of mangroves by bats.	To contribute to improvement in the level of knowledge on regional ecology in the Pilbara.	Construction Phase, Operations Phase.	CALM.
30	Scientific information.	Provide scientific data to government agencies relating to flora and fauna baseline studies. Other studies undertaken as part of environmental reporting in a form that is compatible, and in line, with the best practice, to enable the integration of this information into regional databases.	To assist in a better understanding of biodiversity and regional impact.	Contributions have already commenced and will be reviewed regularly.	CALM, WRC, and Native Title Claimants/PNTS.
31	Section 16 *(Conservation and Land Management Act 1984)* Agreements.	Assist, where possible, in the implementation and supervision of compliance with management guidelines for Section 16 *(Conservation and Land Management Act 1984)* Agreements, in respect of areas falling within the boundaries of its project leases. Seek agreement with CALM and pastoral station owners on management guidelines and responsibilities for: • water resources; • fencing; • stock control; • flora; • fauna; • fire management; • rehabilitation; • access and infrastructure; • including roads; • signage; and • management plans for areas of special significance and future activities.	To improve management of conservation, recreation, heritage and research for the nominated areas affected by the railway and port.	As soon as required.	CALM, Pastoral Station Owners, Native Title Claimants/PNTS, DPI, and Conservation Commission of Western Australia.

Abbreviations:

APB	Agriculture Protection Board
CALM	Department of Conservation and Land Management
DIA	Department of Indigenous Affairs
DPI	Department for Planning and Infrastructure
DMPR	Department of Mineral and Petroleum Resources
MRD	Main Roads Department
PHPA	Port Hedland Port Authority
PNTS	Pilbara Native Title Service
WRC	Water and Rivers Commission

Appendix 6

Summary of Submissions and
Proponent's Response to Submissions

HOPE DOWNS IRON ORE PROJECT – RAIL AND PORT FACILITY, PILBARA (ASSESSMENT NO. 1397)

The public submission period for Hope Downs Management Services Pty Ltd (HDMS) Port and Rail Facility proposal, Public Environmental Review (PER) commenced on 18 February 2002 for a period of eight weeks, ending on 15 April 2002.

The Environmental Protection Authority (EPA) received fifteen submissions on the project (see Attachment 1).

The principal issues raised in the submissions related to environmental and social issues. Many submissions were framed in the form of statements and the essence of these is reproduced here. It may be helpful to the proponent to view these in the form of questions where possible and respond accordingly.

Although not all of the issues raised in the submissions are environmental, the proponent is asked to address all issues, comments and questions, as they are relevant to the proposal.

In summary the key issues were identified as:

1. General
   - 1.1 The Proposal
   - 1.2 Evaluation of alternatives – rail route

2. Biophysical
   - 2.1 General
   - 2.2 Flooding
   - 2.3 Flora and fauna
   - 2.4 Weed management
   - 2.5 Groundwater

3. Pollution
   - 3.1 Dust
   - 3.2 Noise

4. Social Surroundings
   - 4.1 Heritage
   - 4.2 Planning and Infrastructure
   - 4.3 Socio-economic environment

5. Other
   - 5.1 Royalties

1 GENERAL

1.1 The Proposal

1.1.1 Table 1.1 entitled 'Key Characteristics of the Project' sets out a project life of 20 years at an export rate of 25 Mtpa (total 500 Mt). However, Section 2.1 indicates an aggregate resource base of 810 Mt which suggests the life of the project could extend to 30 years or more. Can the proponent clarify the anticipated life of the project?

A *The current known resource at Hope 1 is estimated at 489 Mt with Proved and Probable reserves of 401 Mt. The resource at Hope 2 and 3 is estimated at 314 Mt but insufficient drilling has been undertaken to define reserves. Accordingly, HDMS has only the reserves at Hope 1 on which to base its Project. The current known life of the Project is therefore 20 years.*

1.1.2 There is evidence emerging of structural distress where major critical concrete structures are used in mining ventures and in infrastructure facilities, with similar chloride footprints to Harriet Point. Has the proponent considered the initial and whole life costs of using stainless steel reinforcement in new structures to prevent chloride induced corrosion?

A *Structural distress in concrete structures in chloride environments is well known worldwide and is not just limited to mining ventures, it can affect virtually any type of infrastructure and particularly marine infrastructure. Concrete technology has advanced enormously over the last 25 years and the mechanisms of chloride penetration of concrete and attack on reinforcement are well understood.*

Hope Downs has made adequate allowance in its budgeting for application of appropriate concrete technology to ensure the structures will endure for the life of the project. Use of stainless steel is not considered a cost-effective option and is rarely used anywhere in the world. In some circumstances the use of stainless steel can be dangerous where the steel is highly stressed and subject to chloride attack, as structural failure can occur without any evidence of distress.

It is worth noting that piled structures for example for construction of the new wharf are designed as a steel jacket with a concrete core for additional strength. The concrete in this instance is not designed to be in contact with the seawater.

1.2 Evaluation of Alternatives – Rail Route

1.2.1 The development of another rail line in the Pilbara is not supported. HDMS and BHP Iron Ore (BHPIO) should be required to share rail infrastructure rather than build new infrastructure. The Environmental Protection Authority (EPA) should recommend that the companies involved be required to negotiate an agreement for the sharing of rail infrastructure.

A *Both HDMS and the Mt Newman Joint Venture (managed by BHPIO) have provisions within their respective State Agreements that require each to "carry …. iron ore products of third parties".*
Neither Agreement provides the facility for the State to <u>require</u> the Agreement party to reach agreement with a third party, on the commercial terms for the provision of a haulage service.

HDMS has been pursuing such a service from the Mt Newman Joint Venture for over 4 years, without success. In the absence of a commercial agreement between the parties, the Hope Downs Project has been required to develop its own rail facilities. HDMS remains willing to negotiate a haulage service, under the auspices of the Iron Ore (Mt Newman) Agreement Act 1964, as amended, but the Project is not in a position to consider this option in the absence of an acceptable offer from BHPIO.

1.2.2 HDMS should be required to agree with the Office of Major Projects the general terms and conditions for the sharing of their rail and port. This agreement should be reviewed by the EPA/Department of Environmental Protection (DEP) prior to final agreement.

A The Iron Ore (Hope Downs) Agreement Act 1992 confers on the Hope Downs Project the obligation to "carry …. iron ore products of third parties", "in accordance with arrangements ….. similar in all material respects with any other arrangements for the carriage of iron ore products of third parties made pursuant to any other agreement with the State relating to the mining of iron ore". This means that HDMS would have the same obligations as the other iron ore producers and indeed, in this response, reaffirms its commitment to meeting this obligation.

In addition, HDMS should reach agreement with the Office of Major Projects on the design criteria for the new rail line. This agreement should cover the following items to the satisfaction of the DEP/EPA:

- the number of rail lines that must be able to be built on this alignment;
- works required to enable adjacent future rail lines to be built with minimal disturbance to existing operators, eg blasting, drainage, bridges;
- cross over arrangements for rail operators. How will trains be able to cross over other operators lines with minimal environmental disturbance; and
- access and sharing arrangements for other rail infrastructure such as roads, borrow pits, quarry materials and associated maintenance operations.

A HDMS would be prepared to incorporate the above issues in the design of the proposed railway, provided such accommodation did not unduly inflate the cost of the facility.

1.2.3 Consultation between HDMS and BHPIO to gain access to the existing main line facilities of BHPIO should be encouraged. However, if this cannot be achieved, the preferred alignment for the rail line is alongside the existing BHPIO rail line and preferably on the same embankment. This option will have the least environmental impact as well as having the most benefits to HDMS and BHPIO in the sharing of infrastructure costs such as road and rail maintenance, as well as enabling both companies to increase iron ore volumes hauled on the rail line.

A *Under the leases granted pursuant to the Iron Ore (Mt Newman) Agreement Act 1964, as amended, the Mt Newman joint venturers enjoy exclusive rights to the corridor containing their railway and accordingly, HDMS has no right to construct a railway on their lease. Further, the construction of a parallel railway on a common embankment would be highly disruptive of BHPIO's rail operations.*

1.2.4 The preferred alignment was selected by HDMS based on a number of criteria as indicated in section 3.2.1. Can the proponent explain how these criteria were used in the assessment of the options and what if any weighting was given to each of the criteria.

A *There were four main criteria used in the assessment of the railway alignment. These were proximity to the Mt Newman line, avoidance of areas of high environmental and/or heritage value, efficiency of operations and cost of construction.*

<u>Proximity to the Mt Newman line</u>

To minimize the environmental footprint of the Hope Downs railway, the design engineers were required to design the alignment to be adjacent to the Mt Newman lines where practically possible. This criterion was relaxed in areas where construction adjacent to the line would either be highly disruptive to the BHPIO operations due to earthworks or cause unsatisfactory backwater effects on the bridges and/or culverts on the Mt Newman line.

This resulted in a grade separated crossing of the Yandi spur line, an alternate route through the Chichester Ranges and river crossings well downstream of the Mt Newman crossings.

<u>Avoidance of High Environmental and/or Heritage Values</u>

The Hope Downs alignment was chosen to minimize its effect on areas where base line studies, including flora, fauna and heritage surveys, identified high levels of concern over possible impacts.

This resulted in maintaining an alignment well above the Mulga groves in the Weeli Wolli delta, a realignment around an area of "Gilgite" clays (also known as cracking clays) north of the Chichester Range, culvert numbers and design to minimise the disturbance of sheet flows, a review of river crossings to ensure minimal heritage impact and river and creek crossings perpendicular to the direction of flow to minimize the impacts on surrounding vegetation.

Social impacts were considered in the route chosen to the west of South Hedland, reducing the disturbance of traffic between South Hedland and Port Hedland.

<u>Efficiency of Operations</u>

The design engineers were instructed to minimize the length of the new railway and to ensure ruling grades and curves were within the design capability of the train configuration chosen for the Project.

Cost of Construction

As well as minimizing the length of track, the alignment was chosen to minimize earthworks generally, and where a balance of cut and fill was not available, to minimize the material to be won from borrow pits. Reducing the number of bridges was also an important criterion in reducing construction cost.

1.2.5 With regard to the rail line deviations can the proponent please provide comment on the following:

(a) Option C1 - "*It would be impractical to construct a grade separated crossing of the BHPIO Yandi railway"*.

This assumes a grade separation is required. Why? There are many examples world wide of rail crossings without a grade separation.

A *HDMS believes that BHPIO intends to significantly increase the volume of traffic on the Yandi spur line, increasing the potential for delays to rail traffic sharing an at-grade crossing. Given the double benefit of remaining above the Mulga groves and obviating any disruption caused by an at-grade crossing, the grade-separated option was chosen.*

(b) Option C2 - "*Based on advice that BHPIO would be unlikely to consider that an at-grade crossing was acceptable, this option was not considered in detail"*.

It is disappointing to see an option ruled out based on this type of advice. It would be more appropriate to consider the option to allow a more considered decision to be made by HDMS and the Government authorities. Can HDMS provide an assessment of an at-grade crossing on Option C2 for consideration?

A *An at-grade alignment could be designed, at a considerable expense to HDMS. Without a clear signal that BHPIO would consider such an alternative, HDMS could not justify the expense.*

(c) Option D1 - *This option was rejected as:"…major earthworks preclude a parallel alignment,…drilling and blasting adjacent to an operating railway would need to occur. This would necessitate the unacceptable closure of the BHPIO railway…"*

Can HDMS supply further information to justify the claims that earthworks and blasting will cause unacceptable closure of the BHPIO rail line, based on the recent blasting and major earthworks carried out by Robe adjacent to the HI line.

A *HDMS is unaware of the details surrounding Robe's rail construction. It is HDMS' understanding that Robe is not currently planning to build rail parallel to the Hamersley Iron alignment. The Mt Newman route through the Chichester Range is through extremely rugged country. A rail route adjacent to the Mt Newman lease would involve huge cut and fill structures for the Hope Downs line due to BHPIO securing the most favourable route. HDMS believes that its chosen alignment would be less environmentally disruptive that an adjacent route, as well as less expensive.*

Further, the Mt Newman route is probably less fuel-efficient than the HDMS route due to the higher ruling grade and the attendant higher fuel consumption resulting from the requirement for more locomotive power.

(d) *"grade constraints. The maximum desirable grade for loaded trains is 0.33%. The BHPIO has sections where the maximum grade is 0.55%.*

BHPIO have successfully operated an iron ore rail line on grades of up to 0.55% for over 30 years. This reason would indicate that Hope Downs is not prepared to consider grades in excess of those considered desirable for loaded trains (0.33 %). If this is not the case, what is the maximum grade acceptable to HDMS?

A *A maximum 0.33% ruling grade, against the loaded train, is the norm for Pilbara rail design. The 0.55% grade on the Mt Newman route through the Chichester Ranges is a result of history, and even BHPIO has long considered the proposed HDMS route through this range, although it has never been able to justify replacing its current line in this area. Higher fuel efficiency means lower levels of greenhouse gases.*

(e) Option D3 - The reasons given for this option are all economic. There is no assessment against any of the other rail alignment criteria.

A *By following the natural surface on this alignment as much as possible, this is the route which disturbs the environment least, leading to it being the least expensive.*

It is claimed that this route is similar to one proposed by BHPIO. Does BHPIO still have this route under consideration? If HDMS construct this rail line option, will it constrain BHPIO or any future rail line operator from using this route?

A *The answer to the first question is: HDMS does not know. Clearly, once HDMS builds its line on this alignment, for the same reasons as for the Mt Newman alignment, a second line on the same alignment is not practicable.*

(f) Option E1 - All the reasons given for rejecting this option would indicate that it would not be appropriate for BHPIO to construct a dual track in this section. Presumably BHPIO picked their rail route so that it could at some future point be upgraded to a dual track rail line.

A *HDMS is not aware of BHPIO's intentions regarding this section of its track.*

In relation to the above points, can HDMS indicate the rating for each rail selection criteria indicated in section 3.2.1 and indicate how this assessment was used to determine the final alignment.

A *As previously indicated there were four main criteria used in the assessment of the railway alignment. These were proximity to the Mt Newman line, avoidance of areas of high environmental and/or heritage value, efficiency of operations and cost of construction. (See response to 1.2.4)*

1.2.6 There is no discussion in the document on the likely requirements for future rail lines for HDMS, BHPIO or potential new rail operators. There appears to be no planning to ensure that the problems HDMS has faced with not being able to access and build adjacent to the BHPIO line, will not be repeated when new rail lines are required between the Hamersley Ranges and Port Hedland.

A *HDMS is not aware of any future plans to build further rail lines. In paralleling the Mt Newman line, HDMS is seeking to minimize its impact on the environment. HDMS is open to rationalisation of rail facilities, now and in the future.*

1.2.7 There is no indication in this document that allowances have been made for any future rail lines. Rail lines may be required for:

- HDMS – will the design of this rail line allow it to be upgraded to dual track over the whole length of the line?

A *HDMS will not require dual track over the full length of the line, nor is it designed for this. Three sidings, of approximately 5 km in length, are sufficient to allow the transport of 25 Mt/a. Significant expansion can be achieved with additional sidings over the 370 km.*

- BHPIO – what rail alignments and requirements are needed in any future upgrade to the existing line to a dual track over the total length of their existing line?

A *The Mt Newman track is reported to be able to carry 90 Mt/a after the current sidings upgrades. HDMS is not aware of BHPIO's plans for the future track configuration.*

- Other Rail Operators – Is there room for a third party to build a separate rail on the HDMS alignment? If yes, under what conditions, eg will earthworks and blasting be a problem? Should any of this work be done now?

A *No. On some parts of the HDMS alignment there is not room for a third railway line.*

2 BIOPHYSICAL

2.1 General

2.1.1 Section 7.2.1 indicates the environment is naturally saline through its susceptibility to tidal inundations and can be subject to strong salinity gradients from creek systems where hypersaline water (from evaporation) can move from tidal flats to creek. Can the proponent provide the measure of intensity for such salinity used to determine this.

A *During May 1996, salinity was vertically contoured along the length of South West Creek during both flood and the early part of the ebb tide (Halpern Glick Maunsell, 1996). Tidal range was approximately 5.8 m. During the flood tide, salinities ranged from 35.5 psu (practical salinity units, approximately equal to parts per thousand) at the downstream end to 40 psu at the upstream end of the creek. After*

commencement of the ebb tide, salinities ranged from 36 psu at the downstream end to 42 psu at the upstream tend.
The strongest salinity gradient was observed upstream where salts in water flowing from the tidal flats back into the creek had been concentrated through evaporation.

2.2 Flooding

2.2.1 The proponent should undertake a Flood Impact Study, to the satisfaction of the Town of Port Hedland, to demonstrate that the proposed rail alignment will not cause flooding in Wedgefield, South Hedland (Bosna) Rural Estate and the proposed Boodarie Support Industry Area. Any flood mitigation works required should be undertaken in consultation with the Town of Port Hedland.

A *There have been a number of studies on flooding and storm surge undertaken in the past with input from the Town of Port Hedland, the WA Planning Commission and other government authorities. Principle amongst these was prior work performed by GEMS Consulting.*

In 2001, in anticipation of a need to answer questions of this nature, and for design purposes, HDMS funded a review of the original GEMS study. Following the provision to GEMS of new topographical data from HDMS' aerial mapping programme, a revised storm surge and flooding profile was generated in the vicinity of the planned Hope Downs project infrastructure.

This latest information has been taken into account in the design of the Hope Downs facilities. In this respect the following comments are relevant: -

- *The refined regional topographical data and more sophisticated modelling techniques now used by GEMS reveal that previous estimates of the flood risk due to storm surge can be modified marginally downwards.*
- *The proposed railway lies to the west of Wedgefield, South Hedland and the Bosna Rural Estate and is between these areas and South West Creek. There is currently no evidence to suggest that the proposed rail embankment, which will incorporate any necessary drainage provisions, will impact on the present flood risk and it should, if anything, serve to add additional protection to these areas.*
- *Crossing of South West Creek will be by way of access to the existing railway alignment, hence no change to drainage patterns at this point will occur.*
- *In recent years a diversion channel has been constructed to divert potential floodwaters from South West Creek to the west, into Salmon Creek, thus alleviating concerns of flooding (principally at Boodarie) due to backing up of water caused by the Goldsworthy railway.*
- *It is not anticipated that construction of HDMS' rail or other infrastructure facilities will have any tangible effect on present floodwater control provisions in the areas of Wedgefield, South Hedland, the Bosna Rural Estate or the planned Boodarie Industrial Area.*

2.2.2 All works should be completed such that effective drainage is provided that minimises the potential for mosquito breeding grounds near populated areas. Any increase in breeding ground would require a commitment by HDMS to independently engineer a solution or demonstrate a commitment to work with the Town of Port Hedland on eradicating new breeding grounds.

A *All earthworks have been designed to have minimal impact on current drainage channels with no additional pooling to that which already exists. No increase in habitat or populations of mosquitoes is anticipated.*

2.3 Flora and fauna

2.3.1 The material in the PER is well presented and of a high standard. In particular:

- the flora and vegetation surveys have been carried out in a thorough manner;
- it is good to see the vegetation and flora brought forward in the main text, in a thorough manner;
- the flora sampling was conducted at appropriate times, following summer rain, and at a density attuned to the vegetation at a level approximating the association (Montpellier sense), so that a majority of species was likely to have been found. As noted, more sampling, more intensively in space, would likely have extended the species found if also conducted in other seasons. However, it is likely that in excess of 80% of the flora was sampled;
- the inclusion of a limitations section is a good feature;
- mapping is at an appropriate scale and included the location of sample sites;
- the treatment of background material is good, and has an appropriate spectrum and attention to the most detailed recent comparable treatments in the area; and
- the outline of values of vegetation and flora is clear and appears to be comprehensive. It is makes appropriate referral to non-statutory as well as statutory values, and places values in context of the current work and the nearest comparable information.

A. *Agreed.*

2.3.2 The PER adequately addresses the overall fauna issues and complies with the EPA's Project Guidelines. The Environmental Factors relevant to this proposal appear to be adequately addressed for fauna by the management proposals and commitments outlined in Part Five of the PER.

A. *Agreed.*

2.3.3 There are a few minor technical and editorial errors and inconsistencies in the PER:

- Part 3 page 6-24: confusion over references eg Biota 2001a, Biota in prep. and Biota 2001a in prep.;
- Part3 page 6-27: inconsistency in listing of Undescribed Planigale – *Planigale* sp Nov. which is presumably the same as Planigale – *Planigale ingrami* sp nov. in Appendix 4;
- is Woolley's Pseudantechinus? woolleyae the same species as the Fat-tailed *Pseudantechinus macdonnellensis* in Appendix 4? *Pseudantechinus roryi* in Appendix 4 is not listed in Table 6.12 on page 6-27;
- Part3 page 6-35:reference How *et al.* (1982) should be 1991; and
- Appendix 4: in the fauna list there is inconsistency in indication when species were recorded. The herpetofaunal list does not designate all species recorded on each of the two survey periods and the bird list does not designate when any species was recorded.

A. The above items are clarified below:

- *citations given in the PER as Biota 2001a should always refer to the Vertebrate Fauna Survey Report (Biota, 2001a). Those cited as Biota (in prep.) refer to the Mulgara and Bilby Survey Report;*
- *the confusion regarding the Planigale taxa partly reflects the fact that the WA Museum was in the process of revising the taxonomy of this genus during the preparation of the survey report and the PER. There are two currently undescribed Planigale taxa involved* Planigale *sp. nov. and* Planigale Sp. *1, both of which were recorded during the fauna survey. Appendix 4 should have listed both taxa and not listed Planigale ingrami;*
- *the Fat-tailed* Pseudantechinus ?woolleyae *was recorded during the first phase of the fauna survey and is listed in Appendix 4.* Pseudantechinus roryi *was recorded during the second phase of the survey (identification still pending confirmation by the WA Museum). Woolley's Pseudantechinus* macdonnellensis *was not recorded from the proposed rail corridor. Again, reviews of the taxonomy and distribution of the* Pseudantechinus *species during the preparation of the PER contributed to these inconsistencies;*
- *the reference on page 6-35 to How et al. (1982) should be How et al (1991); and*
- *the lists supplied in Appendix 4 were intended to only be a full listing of all species recorded and not necessarily to supply data on when and where species recorded. The full listing of when all bird species were recorded represents a very large database that was too detailed for inclusion in the PER. A summarised version of this information is provided in the Fauna Survey Report.*

2.3.4 With regard to Table 1.2 of the PER summary for the factor vegetation, under Existing Environment – Rail, a more fulsome outline of the vegetation of conservation significance is appropriate. The highest conservation significance only is mentioned. On pages 6-15 to 6-16 there are uncommon vegetation associations (eg T. angusta – Apt5 & Apt8, and Aps9 & Aps10) and others with moderate values. At the very least a total should appear here and a reference to the relevant pages in the main text. Can the proponent provide a table of the less common vegetation

types and a brief summary of their values?

A. *The summary outlining the less common vegetation types and their conservation significance is reproduced below to address the request made in the above submission:*

'*Other uncommon vegetation types of high conservation significance were:*

- *Apt1 & Apt2 (hummock grasslands dominated by* Triodia secunda*, a species not particularly common in the area) - uncommon.*
- *Apt5 & Apt8 (hummock grasslands dominated by* Triodia angusta*, a species not common in the area) - uncommon.*
- *Aps9 & Aps10 (shrublands of* Cullen leucochaites *and* Cajanus cinereus *respectively over* Triodia epactia*) - small representation in the project area; likely to be uncommon and restricted to the Abydos Plain.*
- *Ah3 (unusual combination of* Acacia bivenosa *and* Melaleuca eleuterostachya *over* Triodia lanigera*) - restricted distribution and possibly rare.*
- *Ac21 (unusual combination of* Acacia ampliceps *over* Triodia secunda*) - probably restricted.*
- *Ch5 (vegetation of breakaways) - habitat makes up a small proportion of the area; may support restricted Mulga taxa.*
- *Ch9 & Ch10 (unusual combination of* Corymbia deserticola *and* 'Acacia aneura' *over* Triodia lanigera*) - probably restricted to southern Chichester Range; may support restricted Mulga taxa.*
- *Cc3, Cc4 & Cc14 (woodlands and shrublands of creeklines with* Sorghum plumosum *as a dominant grass) - uncommon; small representation in project area; probably restricted.*
- *Cx2, Cx3 & Cx5 (shrublands of cracking clays in the Chichester Range) - edaphically restricted; variable; support restricted flora.*
- *Fh1 (Mulga shrublands over* Triodia brizoides *hummock grasslands) - may be restricted in area; may support restricted Mulga taxa.*
- *Fa1 to Fa7 (Mulga-dominated shrublands to low woodlands of the Fortescue Valley) - uncommon; may support restricted Mulga taxa.*
- *Fc2 (*Acacia stenophylla *open scrub over* Triodia longiceps *and/or tussock grasses) - very unusual combination; probably restricted.*
- *Fc3 (a Coolibah woodland over* Acacia sclerosperma *shrubland over grasses) - uncommon.*
- *Fx2, Fx3, Fx4 & Fx6 (various vegetation units of the cracking clays of the Fortescue Valley) - possibly uncommon and restricted.*
- *Hc8 (*Gossypium shrublands *of alluvial plains) - uncommon; possibly restricted; in good condition.*

The majority of the remaining vegetation types were of moderate significance, with the exceptions being those areas degraded by weed invasion.'

2.3.5 The flora and vegetation survey results must be compared with the land system mapping of the region (1:50,000) by AgWest prior to the release of the EPA's report and recommendations. It is imperative that the flora and vegetation results are thoroughly assessed for conservation significance prior to decisions being made.
The use of Beard's (1975) 1:1000000 scale mapping is not sufficiently detailed to provide an entire basis for the assessment of conservation value for vegetation due to the scale of the mapping and the consequent low intensity of ground truthing (6.5.4.). This may have design and management implications for the proposal. The vegetation types considered to be of the highest conservation significance are sand dune associations, cracking clay communities, mulga woodlands and rockpile associations (Section 6.5.6).

It is recommended that attention be given to:

- flora restricted to specific habitats such as Ar6 (quartz rocky outcrops), Ac21 & Fc2, Fc3 (creekline);
- *Acacia* aneura mulga dominated associations restricted to the southern edge of the Chichester Ranges; and
- Aps9 and Aps10, which are likely to be uncommon in the region.

A. A number of attempts were made to source the land system mapping from AgWA during the preparation of the PER. The Department (AgWA) consistently advised that the mapping was not available for release as it was in a draft state only. This limitation was clearly noted in the PER and the supporting Flora and Vegetation survey report. The above submission reiterates the conclusions reached in the PER regarding the limited value of Beard mapping in assessment of conservation significance. The PER has also already reached the conclusions outlined above regarding the vegetation types of highest conservation value. The proponent has provided a commitment to avoid vegetation types of higher conservation significance as part of the final rail design, which addresses the points raised above.

2.3.6 The Pilbara Bioregion, which will be affected by this proposal, is listed as a high priority for funding for land purchase under the National Reserves System Co-operative Program due to the limited representation of the area in conservation reserves. The area of land affected by the rail line in the Pilbara Bioregion should be given particular attention by the EPA during their assessment process, to identify areas of high potential conservation significance that may be important for inclusion into the NRS.

A. Several submissions have noted the high standard of biological data collection and the assessments of conservation significance carried out as part of the preparation of the PER. In the proponent's view, the EPA has therefore been provided with the necessary information to the make the assessment called for by the above submission.

2.3.7 The impacts of the project on the mangroves in the Port Hedland area are significant. In the document the impacts are stated as:

- "The development will result in the clearing of approximately 89 ha of mangroves or 8 % of the total mangal habitat within the Port Hedland Harbour"; and
- "The most affected association would experience the loss of approximately 12 % of its total area within the harbour".

Presumably these percentages relate to the remaining mangrove habitat and do not take into account the loss of mangroves due to existing developments in this port.

A *The areas quoted in the PER for mangrove impacts represent an assessment of the mangrove areas within the harbour as they occur today. Whilst the figures may suggest a significant impact, the type of mangrove associations impacted must be taken into account. A breakdown of the mangrove associations impacted was provided in the PER and is reproduced below for reference.*

Table 7.1: Representation of mangrove associations within Port Hedland Harbour (after Paling *et al.*, 2001a) and estimated disturbance areas arising from the proposed port infrastructure.

Association	Area within Port Hedland Harbour (ha)	Estimated area to be disturbed (ha)
Closed canopy woodland of *Rhizophora stylosa*	203	20.4
Closed canopy woodland of *R. stylosa* and *Avicennia marina*	152	0.3
Closed canopy woodland of *A. marina* (seaward fringe)	37	2.6
Closed canopy woodland of *A. marina* (landward margins)	451	27.9
Low open shrubland of *A. marina* on saline flats	241	31.2
Low scattered *A. marina* and scattered samphires		6.3
Low, dense *Aegiceras corniculatum*	10	-
Low open *Ceriops tagal*	3	-
Aegialitis annulata	11	-
Total:	1108	88.7

It is important to recognise that 37.5 ha of the total mangrove area to be impacted include the two least developed and lowest cover mangal types in the harbour ('Low open shrubland of A. marina *on saline flats' grading into 'Low scattered* A. marina and *scattered samphires'). These units represent marginal mangrove habitat and the least developed in terms of structure and species richness in the harbour as can be seen from the plates below.*

If the analysis of impacts from the proposed port facility considers only the better-developed closed canopy mangrove, then the area of impact on these units is 51.2 ha out of 843 ha in the harbour (6%).

In addition, it should be noted that the assessment has only considered mangrove

cover associated with creeks within the harbour itself. There are other areas of mangrove in the immediate Port Hedland locality (Salmon Creek in particular), which would considerably increase the total area figure of 1108 ha.

2.3.8 There has been no assessment of the impact of the project on mangroves adjacent to clearing sites. This impact on adjacent mangroves is likely to be large due to the changes that will occur as a result of the altered environment and changed drainage patterns at Borrow Pit A, the Ore stockpiles and the Primary settlement ponds. This will increase the area of impact on mangroves well above those areas stated above in 2.3.7.

A The 89 ha quoted in the PER is the total of the area of mangroves impacted, including consideration of collateral impacts during earthworks. The design of the facilities has ensured that existing mangroves, not disturbed by construction, continue to experience current tidal conditions. This is the key requirement to ensure ongoing survival and recruitment of mangroves in the area. Experience in other locations suggests that there is often a mangrove colonisation effect on completed earthworks and armour. This could actually result in some localised increases in mangrove cover. It should also be noted that the Borrow Pit A area currently has very little mangrove cover and is at the upper limit of the tide range.

2.3.9 Although the proponent has gone some way to limit impact on mangrove communities, the impact has not been reduced to the "minimum practicable level". It is considered that the minimum practicable level would be achieved by removing the ore stockpiles, settlement ponds and the borrow pits from mangrove areas and locating them further inland. The transfer of these facilities inland would leave only the conveyor system and ore loading facility impacting on the mangrove areas.

A The nearest available ground, outside of the harbour lease would be south of the HBI plant, some 8 km away from the proposed site. Such a distance from the reclaimer to the ship loader would be totally impractical when it came to hatch changing and hatch top-ups during the loading process. The longest such distance in the Pilbara would be less than 3 km (RRIA). The port of Port Hedland has been designated for port development and it is a global feature, which sees product stockpiles as close to the ship loading point as possible. Of all possible sites available within the port lease, the proposed site is the least invasive environmentally.

Only two options are presented as port alternatives. Neither of these options looks at locating the ore stockpiles, settlement ponds and borrow pits outside of the mangrove areas. If the ore stockpiles are moved to the nearby industrial estate it would reduce and possibly eliminate the need for the borrow pits and settlement ponds proposed in areas of mangroves. As such the location of the ore stockpiles, administrative buildings, borrow pits and settlement ponds in areas in or adjacent to mangroves is not acceptable.

A For the reasons stated above, it is not practicable to develop the stockpiles anywhere outside of the port lease, and the proposed site is the least invasive. HDMS has gone to considerable lengths to evaluate all of the options within and outside the harbour area and believes the final proposal to be the best practical solution from an environmental standpoint.

It is worth reiterating that Port Hedland harbour is not identified as a mangrove conservation area of significance in the EPA's Guidance Statement on Tropical Arid Mangrove Systems in the Pilbara. The Guidance Statement specifically recognises that some areas, such as Port Hedland harbour, have had long histories of industrial port use. In such areas, the EPA position is that projects should be allowed to proceed, provided impacts on mangroves are kept to the minimum practicable level.

A number of alternatives of stockyard and rail spur layout were considered and rejected specifically to meet the criteria of keeping the impact on mangroves to a minimum practical level. As stated above, it is the view of HDMS that this requirement has been met in the evaluation and design of the proposed port facilities. Further HDMS has committed to funding research work on mangrove ecology within the harbour, which is also consistent with the requirements of the EPA guidance statement.

2.3.10 With regard to minimising the clearing of existing mangroves, has the proponent considered relocating the iron stockpile away from Finucane Island area to, for example, Boodarie Industrial Estate where the ore could be transported on an enclosed conveyor belt system, similar to that used by BHP Billiton, to the proposed port area.

A The HBI plant does not ship load directly from its overland conveyor. It utilises a stockpile on Finucane Island from which it loads ships. Further HBI is loaded at less than 2 000 t/h where Hope Downs ore will be loaded at rates of up to 10 000 t/h.

2.3.11 The requirement and location of the settling ponds are of concern as these ponds are in areas of mangroves and will be used to initially dump the dredge spoil. It is understood that settling ponds were not required at the works recently done at Mermaid Marine at the King Bay Supply Base on the Burrup Peninsula. This project used dredge spoil directly onto the areas where the spoil was to be used.

A HDMS is not aware of the geotechnical conditions present in the construction of the King Bay Supply Base but would believe the geology of that region to be very substantially different than Port Hedland.

HDMS intends using the dredge spoil to form the base of iron ore stockpiles. To do this, only appropriately sized material can be used to create a stable base. The mud has to be removed, transported and stored, with the water used to transport it clarified before returning it to the harbour. HDMS is using the same basic techniques as used by BHP when it reclaimed its South Yard using material from the dredging programme conducted in 1985.

2.3.12 Mangrove studies to be undertaken by the proponent should include reference to the cumulative effects of all mangrove clearing within the harbour.

A HDMS will put in place a programme to monitor both mangrove areas with the potential to be affected by the Project and control areas at other locations within the harbour. Such studies will be funded by HDMS but preferably coordinated by a central body such as CALM or UWA such that the results can draw together work by HDMS, BHP and other groups in the harbour area.

2.3.13 How will the environmental value of the mangrove ecosystem be preserved?

A *As outlined in the PER, the design of the facility has aimed to minimise the direct impacts on mangroves to the greatest extent possible. All other aspects of the port facilities have been designed to ensure that tidal exchange is not reduced, ensuring that adjacent mangrove areas are not impacted by the ongoing presence of the port infrastructure. This will be part of the monitoring programme referred to in 2.3.10. In addition, a commitment to rehabilitation of mangroves is made in the Proponent Commitments in the PER.*

2.3.14 Adequate drainage will not be provided in areas of mulga. The drainage design proposals for the rail in areas where mulga may be impacted should be reviewed by CALM.

A *CALM will be consulted during the detailed design phase for the rail, to ensure that Mulga impacts are minimised both by final alignment selection and adequate drainage design. The rail corridor through the Fortescue Valle has been specifically sited on high ground well removed from the floodplain where sheetflow occurs and where the best provisions for optimal drainage can be made.*

2.3.15 The assessment of the importance of the sand dune vegetation mentioned in 6.5.4 Terrestrial Vegetation – Vegetation Conservation Significance on page 6-15 at dot point Hamersley Range is agreed with. These vegetation types are being considered for listing as Threatened Ecological Communities.

The rail route should avoid these sand dune vegetation types. The dunes should also not be disturbed in any way during construction of the rail line. If disturbance is required then this should only be done with the written agreement of CALM's Pilbara office.

A *As stated in the PER, the presence of the sand dune vegetation types will be treated as a design constraint in the development of the final rail alignment. At present they are well removed from the centreline of the proposed rail corridor, so disturbance to these vegetation types by the proposal is not likely. If this situation changes later at some later stage of the design process, then the CALM Pilbara office will be consulted as to its requirements.*

2.3.16 An additional dot point should be added to these rehabilitation guidelines:

- Pits are to be free draining. Water should not pond in the bottom of pits.

A *Whilst free-draining borrow pits will be preferred, in flat lying areas, a greater level of disturbance to the existing landscape is likely to be the outcome of pursuing this goal. Typically, the only reliable way to create a true free-draining pit in flat country is to excavate an exit drain. In flat terrain, where drainage in pits is likely to be the worst, this is likely to result in the requirement for a lengthy drainage channel, increasing land clearing requirements and interrupting surface water flows.*

2.4 Weed management

2.4.1 Post construction environmental monitoring must be carried out over a number of years to assess the accuracy of impact predictions made in the PER and the efficacy of weed control (eg Ruby Dock, Buffel grass) and management. The monitoring program will provide a means for the responsible authorities to respond to the results and implement them into a program of adaptive management. With the large number of pegged quadrats, an accurate well-structured monitoring program and adaptive management plan (particularly for weed control issues) should be possible. Success indicators and criteria reflecting the rehabilitation of disturbed areas should include; weed/native vegetation species, biodiversity, nutrient cycling, hydrological balance, site stability and resilience as indicators of pre-disturbance ecosystem functions. The proponents should be responsible for weed management and this should form a major component of the Environmental Management Plan (EMP). A substantial bond should also be put in place as part of the EMP compliance requirements.

A *HDMS has committed to the development and conduct of a Weed Management Programme. This will incorporate an element of weed monitoring, the development of the various parameters to be recorded, and weed management protocols. The design and implementation of this programme will be carried out in consultation with CALM. HDMS does not believe that a bond is necessary to facilitate this work.*

2.4.2 The Weed Hygiene and Control Plan should be extended to cover weed hygiene and control during the operation and maintenance phases of the railway

A *This is HDMS' intention.*

2.4.3 Large sections of the rail line will create another infrastructure corridor. This corridor will be a new source of weed invasions into previously undisturbed areas. Many of these areas are in excess of 5 km from the existing BHPIO line.

A *The Weed Management Programme will take this into consideration.*

2.5 Groundwater

2.5.1 The PER mentions that there will be mining camps but does not say where they are likely to be located. There are several Public Drinking Water Supply Areas in the vicinity, the protection of which will need to be taken into account.

A *Construction camps will be sited with due consideration for environmental and heritage issues. In particular, action has been undertaken to obtain information of the Public Drinking Water Supply Areas (PDWSA). Should a construction camp be required within a PDWSA, the appropriate protection precautions will be followed.*

2.5.2 The Project is located in the Pilbara Groundwater Area and so both the construction of wells and the take of water must be licensed under the *Rights in Water and Irrigation Act 1914* (RIWI Act). This is acknowledged in the PER which states that applications will be made for groundwater licences for camp water supply (pgs 9-12). This however, requires some clarification, particularly given that changes to the RIWI Act in January 2001 mean that the construction of those wells are licensed separately. Water will also be required for the construction of the railway - these bores and their take must also be licensed.

A *It is acknowledged that recent changes to the Rights in Water and Irrigation Act 1914 (RIWI Act) require separate licensing of both the construction of wells and the abstraction of water for water supplies for the railway construction and mining operation. Plans for the initial stages of the Project development are being drawn up, and Hope Downs will be contacting the relevant agencies in due course (second half, 2002) with specific licence applications.*

2.5.3 The Hope Downs Project is located in the Pilbara Surface Water Area, and as such is subject to the requirements of the Rights in Water and Irrigation Act 1914. Changes to the RIWI Act in 2001 mean that, any interference with the bed and banks of a watercourse must be "Permitted" prior to that interference taking place under s17. This includes both new structures and alterations to existing structures in the watercourses, eg bridge construction etc. There is provision in the Act for those approvals to be given under another Act, with due regard given to the requirements of the RIWI Act and Water and Rivers Commission. This is not mentioned in the PER as one of the regulatory requirements. Permitting is not retrospective and applies to new works and alterations only.

Under the RIWI Act several permits would need to be issued for the entire railway, which covers several sub-catchments over the entire route (Permits are issued on a sub-catchment basis). There is provision in the RIWI Act which allows works which should be permitted to be approved under another Act. Chapter 6.4 of the PER outlines the plans for mitigating and managing impacts on the surface water hydrogeology in the project, and these are satisfactory to the WRC.

As those plans meet the requirements of the WRC, it would be preferable for the proponent to make the following commitments as suggested below.

- Any variation from the plans submitted as part of this proposal will be referred to the Water and Rivers Commission for comment and endorsement.
- The proponent will ensure that the railway and associated works does not act as an artificial barrier or levee, causing water to pond upstream.
- The proponent will undertake the works authorised, with minimal disturbance to the bed and banks of the watercourses on the rail route.
- The proponent will stabilise all sites affected by construction or removal activities using methods described in the plans submitted as part of this proposal.

If the proponent does not commit to the above points, HDMS will be required to apply to the Karratha office of the WRC separately for a Permit for the activities outlined in their proposal where there is to be any interference with the bed and banks of a water course.

A *It is acknowledged that the Rights in Water and Irrigation Act 1914 (RIWI Act, as amended) requires that any interference with the bed and banks of a water course must be "Permitted" on a sub-catchment basis prior to that interference taking place under s17. This includes both new structures and alterations to existing structures in the watercourses, eg bridge construction etc. Chapter 6.4 of the PER outlined the plans for mitigating and managing impacts on the surface water hydrology in the project, and the Water and Rivers Commission (WRC) has found these arrangements to be satisfactory.*

There is provision in the RIWI Act for those approvals to be given under another Act, with due regard given to the requirements of the RIWI Act and Water and Rivers Commission. Accordingly, to ensure that the development is consistent with the RIWI Act requirements regardless of which Acts become the vehicles for project authorisation, Hope Downs makes the following commitments in regard to drainage works associated with water courses:

- *Any variation from the plans regarding watercourses submitted as part of the Hope Downs Project proposal will be referred to the Water and Rivers Commission for comment and endorsement.*
- *Hope Downs will design and construct the railway and associated works such that it does not act as an artificial barrier or levee, causing water to pond upstream.*
- *Hope Downs will undertake the works authorised, with minimal disturbance to the bed and banks of watercourses on the rail route.*
- *Hope Downs will stabilise all sites associated with watercourses affected by construction or removal activities using methods described in the plans submitted as part of the Hope Downs Project proposal.*

3 POLLUTION

3.1 Dust

3.1.1 HDMS should seek membership to the Town of Port Hedland's Air Quality Working Group. This will allow HDMS to be a participant to an overall dust management solution for Port Hedland.

A *HDMS would seek membership of this Working Group when a decision to proceed with the Project is made.*

3.1.2 Due to climatic conditions and fire regime at Port Hedland, the naturally occurring dust levels exceed the Ambient Air NEPM standard for particulates several times each year. This demonstrates that the ambient conditions are very dusty, regardless of industrial activities, and also that as the climate is so conducive to dust production, dust emissions from any industrial activity would be greater than would be experienced in other environments.

The Environmental Protection Policy (EPP) that is currently proposed to implement the Ambient Air NEPM across the whole State, should make provision, where the NEPM standards are being exceeded, for preparation of an environmental management plan, setting out actions to improve ambient air quality to appropriate and achievable standards.

A *HDMS appreciates that the natural high levels of background dust in the Pilbara is recognised. It further understands that a comprehensive long term Dust Management Programme has been adopted by the iron ore industry in Port Hedland to address the long-standing dust issues experienced by the town.*

The work commissioned by HDMS has shown the key to dust generation caused by the natural environmental conditions of high evaporation and strong onshore winds to be close attention to inherent moisture levels in the ore at all stages of the production process. This combined with the location of stockpiles well to the south and west of Port Hedland shows predicted dust levels from the Hope Downs ore handling plant to be well below NEPM standards.

Dust management will be a priority in the environmental management plan and this is reflected in the Part 5 of the PER and in the Proponent Commitments.

3.1.3 It is noted that HDMS uses BHP dust concentration figures for the town from the years 1991 – 1998, which show a decline in concentration since 1995. HDMS concludes from these figures that dust problems can be effectively managed.

However, BHP figures for the years 1999-2001 as outlined in BHP's report "Meeting the Challenge, Port Hedland Dust Management Program" show increasing levels, well above the proposed NEPM standard and exceeding the company's 24-hour average TSP limit, maximum 24-hour average PM10 level and TSP annual average target. Can the proponent comment on this?

A *At the time of preparation of the PER only the 1991-1998 figures were available. The latest figures have subsequently become available*.

HDMS does not have sufficient information to comment on the operations of BHP Billiton. To put the matter of cumulative impact into perspective, no measurable increase in dust levels in the Town of Port Hedland are expected under any climatic conditions as a consequence of Hope Downs operations.

3.1.4 What will be the impact on the health of the community, especially small children and adults with respiratory problems?

A *HDMS is not qualified to comment on public health issues but it has, however, gone to considerable lengths in the design and location of its facilities to minimise the dust levels in the region.*

3.1.5 How harmful is the iron ore dust to humans considering it is different to the Marra Mamba being stockpiled by BHP?"

A *Once again HDMS is not qualified to comment on public health issues although it is not aware that iron ore dust at the levels generated by its facilities is of concern from a health perspective.*

HDMS is only aware of Marra Mamba being stockpiled by BHP from its proposed Mining Area C deposit. HDMS has no means or reason to obtain samples of this ore for testing but would believe that the ore, which originates from the same geological sequence and is located immediately adjacent to the Hope Downs deposit is virtually identical.

3.1.6 Stringent limits need to be set on dust emissions and enforced. The town's experience with dust from BHP has been very negative – there needs to be much stricter regulations to protect residents' health and the visual amenity of the town and surrounding environment - including reefs already covered in BHP's iron ore dust. Government regulation of mining companies' activities needs to be tightened and enforced, with real penalties if they don't meet proper standards."

A *HDMS endorses a policy of setting and meeting realistic limits of dust emission.*

3.1.7 The issue of dust is a significant environmental health and amenity issue in the Town of Port Hedland currently.

Western Australia lacks the enabling legislation that would allow its Pilbara residents enjoyment of air quality at the nationally acceptable standards as provided through the National Environmental Protection Measure (NEPM) for air quality.

An independent review of the Ausplume dispersion model for dust was conducted by PPK Environment & Infrastructure on behalf of Town of Port Hedland of the dust impact section of the PER. The "Assessment Report of Fugitive Dust Emissions from HDMS Proposed Port Facilities at Port Hedland" for HDMS by Sinclair Knight Merz, was also assessed.

On the basis of this review, can the proponent please provide:

- further justification of the reasons for the selection of Ausplume to model dust emissions, given that it is known to have limitations in coastal environments;
- justification for the relationship between the estimated emissions and those mass rates used in the model;
- clarification of the interpretation of the outputs of the model. It is difficult to understand the graphs presented in the report (pages 31 and 32) and there are conflicting comments regarding the significance of dust sources at the site.
- further justification for halving the "high moisture" dust emission estimations, considering the NPI Emission Estimation Techniques already address this issue.

A *HDMS has independently responded to the report prepared for the Town of Port Hedland. Based on this response, taking the above points in turn and without wishing to unnecessarily complicate the response, HDMS advises as follows.*

The limitation cited in respect of the selection of Ausplume, (for which the technical term is fumigation) is primarily applicable to elevated plumes. This phenomenon has no relevance to surface releases such as dust from wind erosion as the plumes will always be in the surface turbulent layer. It was not considered necessary to use a more sophisticated model such as CALPUFF when the concentrations were well below the respective standards.

In respect of the justification for the relationship between the estimated emissions and mass rates used in the model it is considered in the report that the two are the same. These were calculated on an hourly basis dependent on the wind speed and whether the plant was operational for that hour.

In respect of clarification of the interpretation of the outputs of the model, HDMS advises that the plots presented, the most relevant of which are also presented in the PER, are typical "standard outputs" from models.

These contour plots essentially indicate that the Hope Downs operations will contribute very marginally to dust levels in Port Hedland.

In respect of the need for further justification for halving the "high moisture" dust emission estimations HDMS advises that the NPI Emission rates for high and low moisture content ores are developed primarily from US and some Australian ***coal mines****. Therefore, these relationships are extremely tenuous when applied to iron ore. As such, to improve the estimates, test work was conducted using a rotating drum test rig (see page 7-20 of the PER), which indicates that dust emissions are negligible for moisture contents of the lump and fines of 4 and 6% respectively. This relationship is similar to that measured in the field for other iron ores, where, above a certain moisture content dust generation ceases. Based on this test work, Hope Downs has incorporated into its design philosophy the requirement to maintain the moisture contents at these optimum levels where no dust will be generated. To account that even in the best control systems, some variation in moisture levels will occur, a higher dust emission rate equal to half that of the high moisture content ores has been chosen.*

HDMS believes that the work undertaken by its consultants represents the "state-of-the-art" in assessing the behaviour of Marra Mamba iron ore and is the best information currently available.

3.2 Noise

3.2.1 Noise emissions from port areas currently exceed the limits set by the *Environmental Protection (Noise) Regulations 1997* in the nearby residential area that abuts the industrial boundaries. Noise from a particular location must not cause the assigned amount, as determined by the regulations, to be exceeded at the receiving premises. Noise emissions from HDMS must be considered in this context, as they may not significantly contribute to the existing levels. There would appear to be a need for a new approach to noise management in Port Hedland which provides an achievable, whole of port solution, to emissions near to the residential area that may require exemptions from the current regulations.

A *Agreed. Although the noise levels from HDMS facilities have been reduced as much as possible within the limits of existing technology and these noise levels are*

considerably below the noise levels which currently exist they will still exceed the regulations at some locations at certain times. An exemption from the regulations will therefore be necessary. The process by which this will be sought is still under consideration.

3.2.2 An independent review of the assessment of noise levels from the proposed HDMS Rail and Port Facilities Port Hedland, prepared by Lloyd Acoustics Pty Ltd, February 2002, was conducted by PPK Environment & Infrastructure on behalf of Town of Port Hedland.

On the basis of this review can the proponent please address the following:

(a) Background/ambient noise

- Can the proponent verify the background noise for Wedgefield and White Hills rural residential area.

A *Both Wedgefield and White Hills are a considerable distance from the principal existing and proposed noise sources. The worst case predicted noise levels from the proposed Hope Downs facility are 3 6dB(A) day, 22 dB(A) night and 26dB(A) day and 13dB(A) night for Wedgefield and White Hills respectively. These levels are significantly within the regulations and background noise levels are similarly predicted to be far lower than the regulations for the zonings in question permit. Hope Downs will be in compliance with the regulations at these locations, irrespective of the background noise levels.*

This suggests that measurement at this time is unnecessary. Background readings will be undertaken as part of the Environmental Management Plan (Part 5 of the PER), which will be continually updated in line with operational requirements.

- The guidance document indicates that noise levels should be logged continuously at one or more locations over a period of at least two weeks and that at least one measurement be carried out at representative locations. The methodology and justification for the ambient noise measurements is limited. It is noted that on-site noise measurements were made from the 31 July to the 2 August 2001. As noise levels at receptors are influenced by weather conditions, information about the weather conditions during monitoring and assessment of noise need to be made with respect to conditions all year round.

A *For Port Hedland, the short-term noise measurements showed a night noise level of L_{A90} 56 dB(A) during BHP Iron Ore reclaiming operations. Investigations revealed that reclaiming occurs most nights and it was considered that this short-term noise level was representative of the normal ambient level. A long-term noise measurement in this area could be considered useful to determine how typical this ambient noise level is and the true impact from the proposed facility.*

However, as the assessment of noise impacts from the proposed facility to Port Hedland already incorporates the 5 dB(A) penalty for contributing noise sources, the outcome of any long-term ambient noise measurement is unlikely to affect the results presented in the PER.

It would be HDMS' intention to undertake testing over a longer period as part of its Environmental Management Plan but it is not anticipated that these measurements would produce a greatly different result.

- Evidence of instrument calibration is required. No evidence is presented.

A *All instrumentation used by the noise consultants Lloyd Acoustics Pty Ltd complies with the requirements of Regulation 22 of the Environmental Protection (Noise) Regulations 1997. Calibration certificates can be provided on request.*

(b) Noise level predictions

- The text and tables within the report provide results of calculations, including for the 'influencing factors' and 'overall noise levels'. Independent calculations made by PPK have shown these values to be correct, although the calculations should be provided within the report.
- Further information/clarification on where and when the on-site levels were measured and the data including manufacturer's specifications and DEP data should be provided. Other information should include operating conditions for the equipment modelled, the construction of any buildings in which equipment proposed to be housed and other assumptions that should be documented in the report (as per the Guidance document).

A *For an assessment of this size, the noise prediction calculations are extremely complicated and lengthy, and it was felt that their inclusion in the report would cloud the critical information which the reader is seeking. Details of the proposed items of plant assessed, the resultant noise levels, and compliance with the regulations were provided.*

The on-site noise levels were all measured downwind (worst-case conditions) of the plant under consideration, and the noise levels recorded onto digital, audiotape for later analysis. All plant measured was observed to be operating under normal conditions. The calculated sound power levels were then verified using the noise model, by predicting the noise levels from the item of plant under consideration, at the same measurement location, under similar meteorological conditions. The results of the predicted levels were then compared against the measured levels, and adjusted if required.

It was a requirement that all data provided by the manufacturer related to the equipment operating at full load capacity. Significant noise producing equipment for the proposed facility is not housed in buildings. Building construction is therefore not relevant.

(c) Adjustments to Predicted Noise Levels

- It is noted that adjustments were made to noise level characteristics. Noise tonality data was not present for Port Hedland. Tonality is present for South Hedland, Wedgefield and White Hills rural residential area therefore a 5dB(A) penalty was applied to the daytime predicted noise levels.
- The report does not discuss the presence of modulation and impulsiveness as required in the guidelines. However the report discusses the use of wet scrubbers incorporated as standard equipment for this type of operation.

A *The operating conditions for the proposed facility are expected to be similar to those of BHP Iron Ore. Assessment of these facilities, which included tests for tonality, impulsiveness and modulation, showed there to be no annoying noise characteristics. From our predictions of the engine test facility, which incorporates a stationary locomotive running at high notch settings for some period of time, a tonal component would be expected, however, noise sources of this nature would not be expected to exhibit impulsive or modulating noise characteristics.*

(d) Results of the Modelling

- The predicted noise levels at Port Hedland from the proposed HDMS port facility:
  - comply with regulations during the daytime;
  - exceed the regulations by 5dB(A) during evening and Sunday/public holidays (0700 and 1900hrs); and
  - exceed the regulations by 10dB(A) during night-time period.
- The ship loaders contribute to the major noise sources. It is noted that the short-term noise measurements showed the ship-loading operations to be L_{A90}56dB(A). An addition of 44dB(A) will not increase the existing background noise and is unlikely to be noticed.
- A noise management plan is proposed to address the noise contribution from the Hope Downs facility. It is also noted that a potential for an exemption can be sought through the *Environmental Protection Act 1986* or Part 2 of the noise regulations.
- The noise levels at South Hedland, Wedgefield and White Hills rural residential area are all below the assigned noise levels during the daytime and night-time periods.
- It is noted that the L_{Amax} and the $L_{Aeq(8hr)}$ predicted noise levels from the trains are below the transportation noise criteria adopted by the DEP for similar projects.

A *Agreed*

(e) Management of Noise Impacts

- Can the proponent confirm whether the noise reduction measures at Newcastle are satisfactory (i.e. Does Newcastle experience noise issues?)
- The management of noise impacts recommended for the railway are not specific.
- A detailed noise management plan should be developed to address all noise issues identified. This should include and not be limited to maintenance of equipment, responsibility for monitoring noise levels and conditions, etc. The Town of Port Hedland should have input into the development of the noise management plan, given the potential for Council to receive noise complaints from the facility.

A *The noise reduction measures employed at Newcastle are considered to be the state-of–the-art for this type of equipment. Whether Newcastle experiences a noise issue may not be relevant to this project, as the noise impacts depend upon the location of the receivers in relation to the noise source, land use of the surrounding area, prevalent meteorological conditions and land topography. All these factors are likely to be very different to those at Port Hedland.*

The management of noise impacts from the railway would generally relate to good maintenance of the locomotives, wagons and the track. It has been shown in the PER that the impacts from the railway are not significant, based on transportation noise criteria adopted by the DEP for similar projects. HDMS has, in the PER, indicated a considerable commitment to the management of noise sources and the enforcement of measures to mitigate noise.

HDMS acknowledges the suggestions provided by PPK and confirms that a detailed management plan, addressing all noise issues identified, including but not limited to, maintenance of equipment, responsibilities for monitoring, etc, will be developed as part of the commitment by Hope Downs to minimise noise impacts were practicable.

3.3 Heavy Metals

3.3.1 The PER has based its statements regarding heavy metal content in the harbour on 1996 data. This does not take into account increased shipping movement since the 1997/98 capacity expansion project and the cumulative effect of the proposed Finucane Island Expansion.

Using current data on heavy metal concentrations within the Port Hedland harbour, can the proponent describe the environment and any management strategies that will be employed by the proponent to minimise the potential for the project to impact on the chemical environment of the harbour.

A *HDMS does not have access to data collected since 1996. However, regardless of the industrial activity which has previously occurred in the harbour, HDMS will have a number of controls in place to ensure that any inputs of contaminants to the harbour will be minimised. These will include:*

- *installation of state of the art dust suppression technology to minimise emissions from stockpiles, materials handling and exposed areas;*
- *conveyors being fitted with break detection that will detect failure of the belt and result in the conveyor stopping and product spillage being minimised;*

- *design of areas containing hazardous materials to ensure that offsite contamination does not occur; and*
- *collection and treatment of local runoff in settlement ponds to remove sediments to acceptable levels prior to release.*

Additional dust control strategies are provided in Section 7.9.7 of the PER.

4 SOCIAL SURROUNDINGS

4.1 Heritage

4.1.1 The proponent has undertaken adequate ethnographic and archaeological surveys and is consulting with the appropriate native title groups and Aboriginal people with known or claimed associations with the proposed development area.

A *Agreed.*

4.1.2 The HDMS initiative to educate its workforce in relation to Aboriginal heritage obligations is supported. However, it is considered that these obligations would be more effectively understood if employees and contractors broaden their knowledge of the Pilbara Indigenous culture and heritage and undertake a Cross Cultural induction programme, delivered by an approved service provider in the Pilbara.

A *Such a programme will be incorporated as part of the induction process.*

4.2 Planning and Infrastructure

4.2.1 Any road crossings within the Shire of Ashburton should be subject to:

i prior Council approval of detailed engineering design;

ii all capital costs of such crossings being the responsibility of the Hope Downs Project participants; and

iii all ongoing maintenance work in relation to road crossings being the responsibility of the Hope Downs Project participants, to the satisfaction of the Shire of Ashburton.

A *Agreed.*

4.2.2 Can the proponent indicate whether the freehold property, specifically Forrest Location 124, Certificate of Title Volume 1397 Folio 722 which is located to the south of Port Hedland on Finucane Road, and utilised as a radio and television broadcast facility, is likely to be impacted upon?

Any proposal to utilise all/part of this land for the construction of the rail line would cause disturbance to existing facilities and result in the loss of or interruption to television and radio services in the region. Given HDMS has indicated that the actual route has yet to be finalised, following further assessment, it would be preferable for the proposed rail line to be constructed to the south of the existing rail line, to avoid any impact on the broadcast facility. Relocation of the broadcast facility is possible, however, any costs associated with any relocation would be expected to be met by HDMS.

A *The current Hope Downs alignment sees the HD railway running south of the existing line, joining it east of South West Creek, and departing the existing track west of South West Creek. It is not anticipated that there will be any interference with the broadcast facility.*

4.2.3 Prior to the establishment of any new industry development in Port Hedland, a review of the Port Hedland town planning should be undertaken. This review should address the current zoning of the Port Hedland Central Business District and surrounds and should consider issues including the proposed Air Quality EPP, noise regulations and strategic plans for the development of the port Hedland Port Authority.

Such a review would contribute positively to the management of cumulative impacts resulting from industry in the Port Hedland region and in particular to the future and overall State and Pilbara regional development strategies.

A *The WA. Planning Commission has just recently undertaken additional work in Port Hedland. The PHPA is currently conducting a long-term strategy plan. HDMS has been in contact with both organisations and is supportive of ongoing reviews to update regional development strategies.*

4.3 Socio-economic environment

4.3.1 Although the construction workforce proposed for the HDMS project is smaller than the construction workforce used for BHP Billiton's HBI plant, HDMS' proposed construction and permanent workforce would place significant pressure and impact on the housing market in Port Hedland as previously experienced with the HBI plant. This could include the reduced availability of rental housing for an increased population, increasing rental prices, impacts on small business, caravan parks becoming full with permanent residents, and impacts on the ability of tourists to obtain accommodation in Port Hedland.

The proposed development timeframe of the HDMS Project coincides with the development timeframe of BHP Billiton's Mining Area C and Products and Capacity Expansion (PACE) project. The combined accommodation demands resulting from these projects could see Port Hedland experience substantially increased housing prices, forcing many low-income earners to vacate the community.

In order to resolve any potential negative impacts on the Port Hedland housing market, a working group should be created to manage the issue.

The working group should consist of HDMS, BHP, The Town of Port Hedland, the Office of Major Projects, the Pilbara Development Commission and relevant contractors and government agencies. The Pilbara Development Commission is willing to help facilitate the creation of this working group as it did with the establishment of the Nickol Bay Accommodation and Associated Issues Taskforce in Karratha.

The working group should also consider the issue of increasing resources to meet the demand for local government and community services as part of its terms of reference.

A *HDMS would be prepared to participate in such an exercise.*

4.3.2 The PER makes false assumptions in sections 4.6 and 5.7 regarding the availability of existing accommodation and further false assumptions in section 7.16.1 that support services. The population increase will also include workers' dependents and those in search of work. It is suggested that HDMS should:

- develop and implement a home ownership and rental scheme for its temporary and permanent employees that includes the construction of suitable housing beyond existing stock available in the town; and
- fund a Community Impact Study to ascertain the impacts that an influx of population would have on housing availability in Port Hedland.

A *HDMS will assess its housing needs following a decision to proceed with the Project. Should new housing be required, HDMS will consider all options in providing accommodation for its workforce.*

4.3.3 The PER does not detail what strategies will be used by HDMS to provide contractual and employment opportunities for the Port Hedland, and possibly Newman communities. It is suggested that HDMS conduct a number of seminars in conjunction with the Port Hedland and Newman Chambers of Commerce and Industry for Port Hedland and Newman businesses and contractors on the likely supply requirements and employment opportunities resulting from the project.

A *HDMS has already attended a meeting with the Newman CCI and would be happy to convene a similar meeting in Port Hedland to discuss how this issue might be addressed.*

4.3.4 HDMS should make a "buy local" commitment to businesses in Port Hedland, Newman and surrounding areas that are able to competitively supply the Hope Downs Rail and Port Project with relevant goods and services.

A *Where local service providers can supply a competitive and reliable service to the Project, HDMS would seriously consider the use of such services.*

4.3.5 HDMS should consult with local Aboriginal organisations and representative bodies including ATSIC and the Office of Aboriginal and Economic Development to identify employment opportunities for Aboriginal people and workable strategies to achieve this.

A *This has already been discussed with the local Aboriginal organisations and is a matter that will be the subject of land use discussions with the Claimants upon whose claims the project will be constructed.*

4.3.6 HDMS should develop and implement a comprehensive strategy for employment. This strategy should focus on indigenous employment and training, opportunities for local people, cultural awareness training for all employees and contractors, and provision of incentives for local business to fulfil product and service requirements.

A *This is a matter which will be the subject of land use discussions with the Claimants upon whose claims the project will be constructed.*

4.3.7 HDMS should undertake a Community Impact Study to determine the socio-economic impacts of the HDMS proposal.

A *For such a study to be of value, and to have an appropriate context, it should be broader than just a study of the Hope Downs Project impacts. All potential developments should be included in such a study, to ensure that a regional approach is taken, rather that an isolated view of the impact of one project. See the study proposed in 4.3.1 by the Pilbara Development Commission.*

4.3.8 HDMS should ensure either directly or through the State Government of Western Australia that primary health care services in the community are increased to account for the expected population increase, not only via proposed construction and permanent workforce, but dependents, family and other job seekers expected to be part of the population influx. This undertaking must be conducted in consultation with all local service providers to ensure adequate and sustainable outcomes.

A *It is the State's role to plan health services for the community, not Hope Downs'. Clearly a larger population will be better able to justify an acceptable level of services.*

4.3.9 Issues of concern relating to recreation include access to Finucane Island, the condition of the town boat ramp, the ability of the town's existing recreational facilities and services to cater for an increased population, and general access to recreational sites, past, present and future.

A *It is not HDMS' intention to create any permanent barriers preventing access to any current facilities or sites, although some access restrictions will be necessary during construction for safety reasons.*

Can the proponent please indicate:

- how public access to the Utah landing will be maintained;

A *It is not HDMS' intention to create any permanent barriers to access to any current facilities or sites. A The Utah landing and access is not located within the proposed lease area for the Hope Downs facilities and Hope Downs can therefore give no assurance regarding the long-term public access to this facility. It is likely that, during construction, access to the landing will be restricted for safety reasons.*

- whether access to recreational fishing areas will remain open without compromising occupational, health and safety concerns of the project;

A *It is not HDMS' intention to create any permanent barriers to access to any current facilities or sites services by recognised access tracks.*

and

- whether HDMS intends to improve roads, boat ramps and other recreational services and facilities where the project has a potential impact, in consultation with the Town of Port Hedland.

A *HDMS has designed its facilities so as to minimise its impact on existing facilities. No plans have been made to upgrade any existing facilities.*

5 Other

5.1 Royalties

5.1.1 HDMS should join with the Town of Port Hedland, other Pilbara Shires, fellow resource companies, elected state members and other stakeholders to engage the state government on the issue of equitable distribution of mining resource royalties as an effective way of addressing sustainable regional development.

A *HDMS would be happy to engage with any or all of the above parties on this issue.*

References

- Hope Downs Iron Ore Project - Public Environmental Review February 2002
- Iron Ore (Hope Downs) Agreement Act 1992