Hamersley Iron – Dampier Port Upgrade to 95 Mtpa Capacity

Hamersley Iron Pty Ltd

Report and Recommendations of the Environmental Protection Authority

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Contents

Page

Table

Figures

Appendices

1. Introduction

This report provides the advice and recommendations of the Environmental Protection Authority (EPA) to the Minister for the Environment on the environmental factors relevant to a proposal by Hamersley Iron to increase the capacity of its Dampier Port operations from 80 million tonnes per annum (Mtpa) (licensed capacity) to 95 Mtpa.

The EPA was advised of the proposal in February 2003. Based on the information provided, the EPA considered that while the proposal had the potential to have an effect on the environment, the proposal could be readily managed to meet the EPA's environmental objectives. Consequently it was notified in *The West Australian* newspaper on 7 April 2003 that, subject to preparation of a suitable Environmental Protection Statement (EPS) document, the EPA intended to set the level of assessment at EPS.

The proponent has prepared an EPS (Sinclair Knight Merz (SKM), 2003), which accompanies this report. The EPA considers that the proposal described can be managed in an acceptable manner subject to the commitments to the proposal being legally binding.

The EPA therefore has determined under Section 40 (1) that the level of assessment for the proposal is EPS, and this report provides the EPA advice and recommendations in accordance with Section 44 (1).

2. The proposal

Hamersley Iron proposes to increase the capacity of its Dampier Port iron ore facility from a licensed capacity of 80 Mtpa (current throughput approximately 74 Mtpa) to 95 Mtpa. The proposal is described in detail in Section 2 of the proponent's "Dampier Port Upgrade to 95 Mtpa Capacity" EPS (SKM, 2003). Hamersley Iron's Dampier Port operations are located at two terminals – Parker Point and East Intercourse Island (Figures 1 and 2). The port operations include rail and port facilities, rail maintenance workshops, power generation (120 MW), laboratories and administrative functions. The focus of the upgrade is the Parker Point terminal (capacity increase from 35 Mtpa to 50 Mtpa) as shown in Figure 3. The proposed upgrade includes the following key components:

- A new twin cell rotary car dumper and associated rail track;
- Two new stackers and a new reclaimer;
- A new lump re-screening house;
- Additional live blending stockpiles (15);
- Relocation of bulk stockpiles;
- Extension of the existing wharf to include a second berth and improved wharf access;
- Upgrade of the existing shiploader and installation of a new shiploader at the new berth;
- Creation of a seawall and land reclamation; and
- Additional dust control measures.

A more comprehensive list is provided in Section 4.2 of the EPS (SKM, 2003). Minor works including additional dust control measures are also planned for the East Intercourse Island terminal.

The town of Dampier (population of approximately 1500 people) lies to the south west of the Parker Point operations, with the nearest residence located approximately 1 km away.

Table 1: Key Proposal Characteristics

Characteristic	Existing Parker Point Operations	Parker Point Operations Following Port Upgrade
Project Life	50 years	50 years
Port Capacity	35Mtpa	50Mtpa
Berth Capacity	180,000 DWT	220,000 DWT
Wharf Length	295m	795m
Number of Shiploading Berths	1	2
Blending stockpile live capacity	1.6 Mt	4.7 Mt
Bulk stockpile capacity	4 Mt	4 Mt
Number of train arrivals	4 per day	6 per day
Rail dump cycle	130 seconds	80 seconds
Facility Footprint	120 ha	186 ha
Major Plant Components	1 Car Dumper 1 Lump Re-screening Plant and 1 Sample Station 2 Stackers 2 Reclaimers 1 Shiploader 9 Stockpiles	2 Car Dumpers 2 Lump Re-screening Plants and 1 Sample Station 4 Stackers 3 Reclaimers 2 Shiploaders 24 Stockpiles
Plant Operation	24-hours, 7-days per week	24-hours, 7-days per week
Water Requirements	1,500ML/yr	2,000ML/yr
Shipping Movements	Approx. 500 ships per year (Parker Point and East Intercourse Island)	Approx. 690 ships per year (Parker Point and East Intercourse Island)
Workforce	Operations approx. 430 personnel	Construction approx. 350 personnel Operations approx. 430 personnel

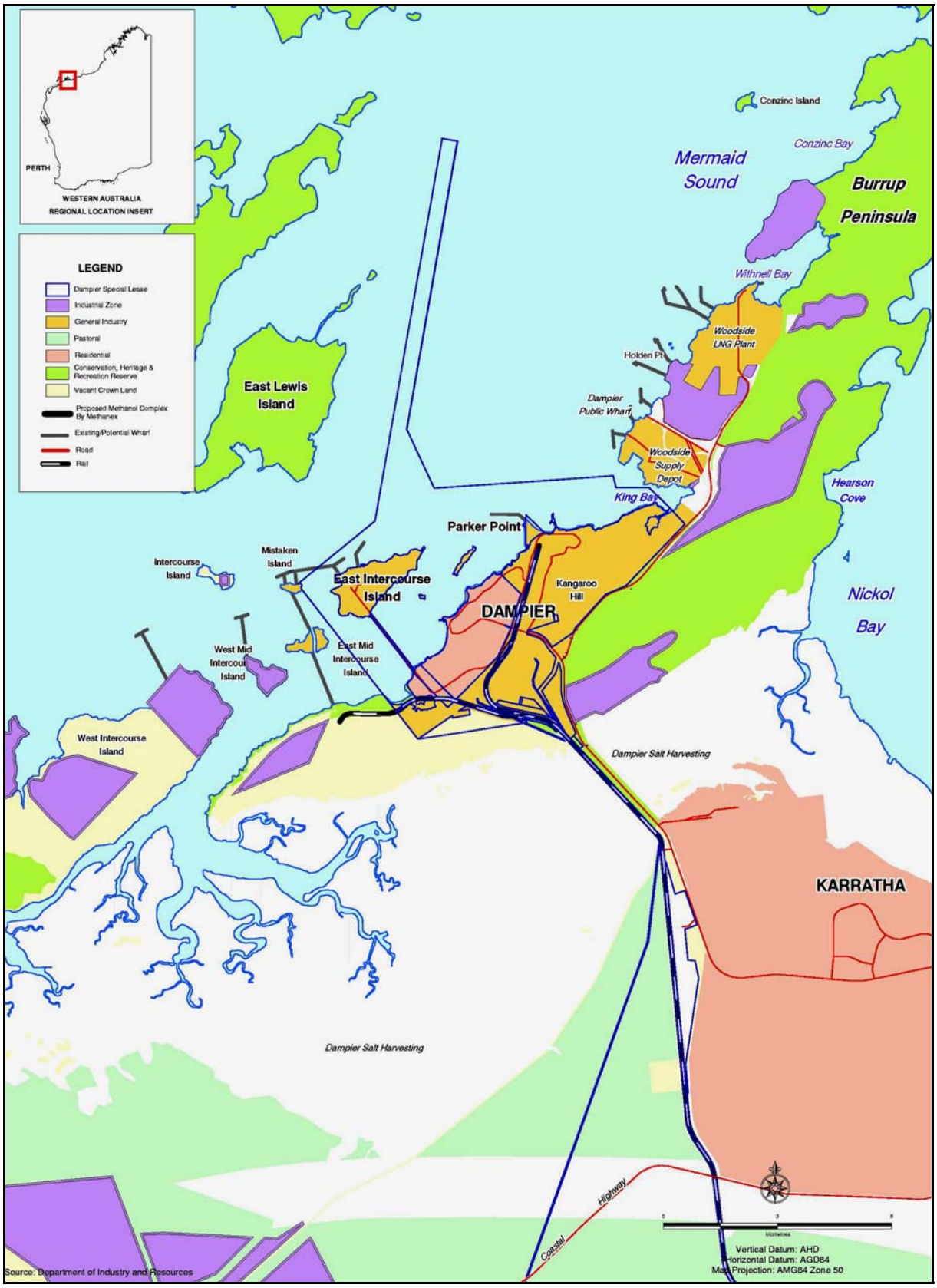

Figure 1: Locality Plan (Source: Figure 3-1 SKM, 2003)

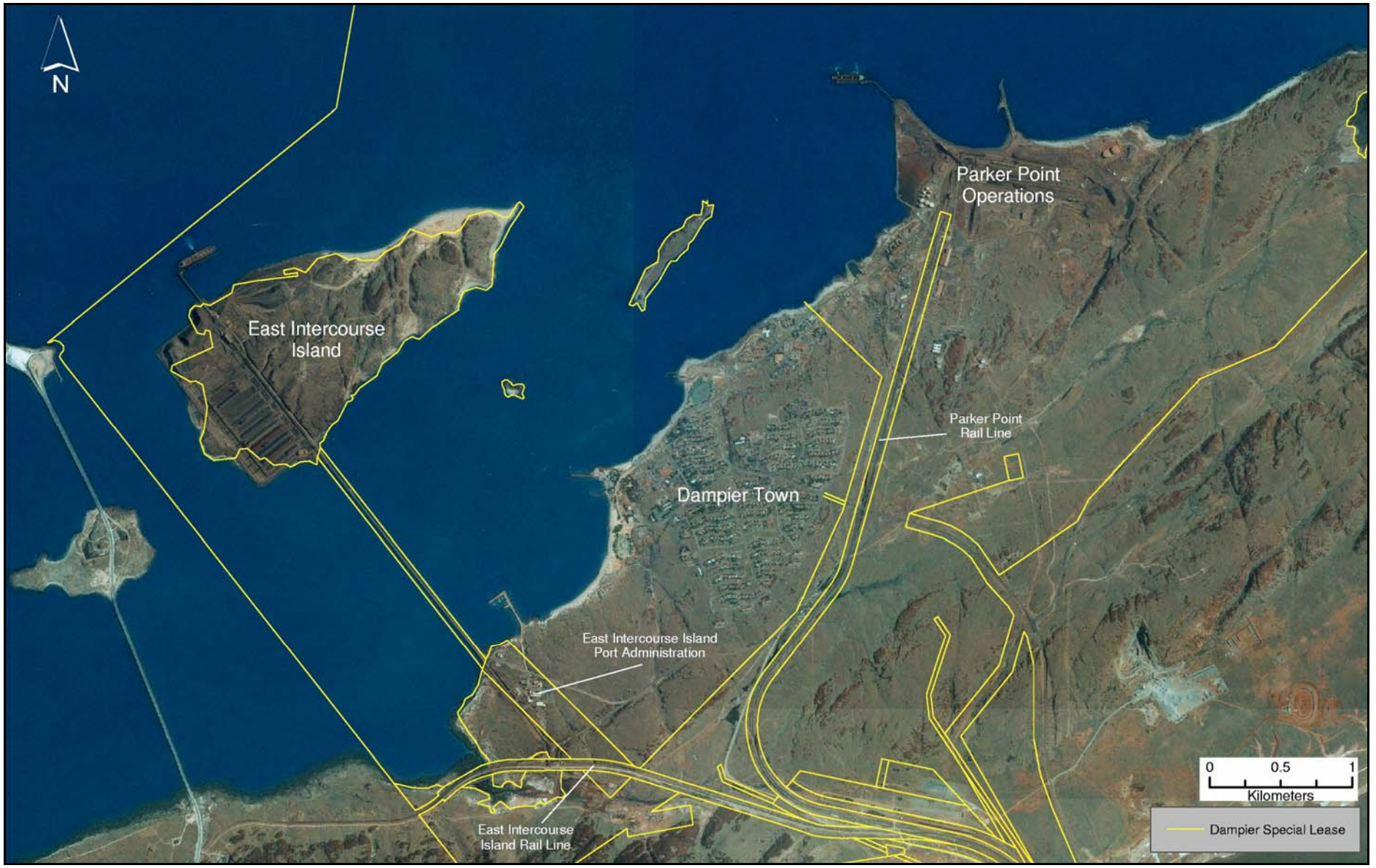

Figure 2: Layout of Dampier Operations (Source: Figure 3-2 SKM, 2003)

Figure 3: Proposed Port Upgrade Works at Parker Point (Source: Figure 4-3 SKM, 2003)

3. Consultation

During the preparation of the EPS (SKM, 2003), the proponent undertook consultation with government agencies and other key stakeholders. The local community was also informed and consulted about the proposed upgrade via a press release, letters to community groups and public information displays at the Karratha City Shopping centre (27 - 29 March 2003) and the Dampier Shopping Centre (27 March – 4 April 2003). A meeting was held in Dampier on 27 March 2003, which was attended by approximately 25 people from the Dampier community. In addition, presentations were made to the Coastal Community Environmental Forum on 19 March and 8 July 2003. A follow up 3-hour workshop was held in Karratha on 30 July 2003 where stakeholders were given the opportunity to discuss the potential impacts arising from the proposed upgrade. A summary of issues raised by the stakeholders along with the proponent's responses is provided in Section 7 and Appendix G of the EPS (SKM, 2003).

In 2001, the Dampier Samson Dust Working Group commissioned a survey of Dampier and Karratha residents which found that approximately 25% of the Dampier respondents (113 people) were "upset a lot of the time" over dust and approximately 60% felt that Hamersley Iron should be doing more to control dust. Hamersley Iron has undertaken a number of activities to improve its community information program in response to the survey as documented in Section 7.2 of the EPS (SKM, 2003).

Feedback during the consultation phase indicates that impacts from dust continues to be the main issue of concern for the Dampier community. The community and stakeholders also raised the following issues:

- The availability of water;
- Impacts from blasting during construction;
- Impacts on Priority flora species;
- Impacts on rock art and other Aboriginal heritage issues;
- Waste management;
- Increased risk of oil spills; and
- Social impacts from the construction workforce/camp.

The EPA considers that waste management and the potential impacts from blasting can be managed by the Department of Environmental Protection (DEP) under the provisions of Part V of the *Environmental Protection Act 1986* and by implementation of the proponent's commitments. The EPA also considers that the potential social problems associated with the large construction workforce can be appropriately managed by the Shire of Roebourne and by Hamersley Iron enforcing its policies at the construction camp. The EPA considers that the increased risk of oil spills can be managed by implementation of the Dampier Port Authority's "Port of Dampier – Marine Pollution Contingency Plan". The proponent has committed to develop a Water Management Plan to ensure water use is minimised.

Hamersley Iron has lodged a Section 18 application with the Department of Indigenous Affairs (DIA) to disturb 12 Aboriginal Heritage sites located in the vicinity of the proposed rail loop. The proponent has committed to obtain DIA approval to disturb sites located in the proposed bulk stockpile area prior to commencing ground disturbance work for the stockpiles. The EPA is satisfied that potential impacts on Aboriginal Heritage can be adequately managed through the Section 18 approval process under the provisions of the *Aboriginal Heritage Act 1972.*

The remaining issues that were raised during the consultation phase are addressed in Section 4 of this report.

4. Relevant environmental factors

The summary of all of the environmental factors and their management is outlined in Table ES1 of the EPS (SKM, 2003).

In the EPA's opinion the following are the environmental factors relevant to the proposal:

a) Dust;

b) Noise;

c) Marine flora and fauna;

d) Terrestrial vegetation and flora.

4.1 Dust

Description

The town of Dampier is exposed to elevated dust levels due to Hamersley Iron's iron ore operations at East Intercourse Island and Parker Point, and from natural background sources.

Hamersley Iron has undertaken dust monitoring in the Dampier region since 1993 to measure ambient dust levels and to determine the contribution from its operations. Monitoring is currently undertaken for Total Suspended Particulates (TSP) and PM_{10} (Particulate Matter less than 10 μm). The National Environment Protection Measure (NEPM) PM_{10} Standard was exceeded in Dampier on 13 days in 2002 (NEPM goal is no more than 5 exceedences per year). Hamersley Iron estimated the PM_{10} contribution from its operations to be about 27% of the total PM_{10} concentration in Dampier (Appendix D, SKM, 2003)

The iron ore export capacity of the Parker Point terminal will increase significantly following the proposed upgrade (from a licensed capacity of 35 Mtpa to 50 Mtpa). There will also be a significant increase in the live blending stockpile capacity at Parker Point (from a nominal 1.6 Mt to 4.7 Mt). Approximately 10% of the stockpile will be Marra Mamba ore, which contains a higher component of super fines. The proponent does not propose to increase the size of the bulk stockpile (4 Mt), although it will be located further to the east as shown in Figure 4-3 of the EPS (SKM, 2003).

SKM developed a dust emission inventory for Hamersley Iron's Dampier Port Operations in 1998 (SKM, 1998). The dust inventory was revised and the estimate of TSP emissions from the existing operations is provided in Table 6-10 of the EPS (SKM, 2003). Environmental Alliances (EA) was engaged to undertake dispersion modelling (Appendix D, SKM, 2003) to predict the impacts of dust emissions from Hamersley Iron's existing operations on the town of Dampier and the King Bay Industrial Area. The contour plots (Figures 6-8 and 6-9, SKM, 2003) show that for the long term average, the main anthropogenic contributor to ambient dust levels in Dampier is dust emitted from the East Intercourse Island terminal which is located upwind of the main prevailing winds to Dampier. The dust source with the greatest impact on Dampier's dust levels was identified as being the 5E conveyor (conveys ore from the mainland to East Intercourse Island) and associated roadway.

Hamersley Iron proposed a number of dust abatement measures for the proposed expansion and the existing operations, including measures to reduce dust emissions from the 5E conveyor by approximately 50% (Table 6-11, SKM, 2003). The overall dust emission rate

from Hamersley Iron's facility is estimated to increase by 46% following the upgrade as shown in Table 6-12 of the EPS (SKM, 2003). Dispersion modelling was undertaken by EA to predict the dust levels in Dampier following the upgrade (Figures 6-20 to 6-23, SKM, 2003) and to determine the effectiveness of the proposed dust suppression measures. The modelling report (Appendix D, SKM, 2003) concluded *"Despite overall increases in emissions at Parker Point due to the proposed expanded operations, Dampier's dust levels are, in general predicted to remain the same. This is mainly attributable to the reduction in emissions from bulking at Parker Point and the improved dust control from the 5E conveyor causeway source"*.

Modelling predicted that the annual average TSP concentration in the King Bay Supply Base would increase by 30 to 50% as a result of the upgrade as shown in Figures 6-24 to 6-29 of the EPS (SKM, 2003). However, the Environmental Protection (Kwinana) Atmospheric Wastes Policy 1999 (Kwinana EPP) TSP Standard (150 $\mu g/m^3$) is not likely to be exceeded as a result of the proposal.

Hamersley Iron committed to review its Dust Management Plan (DMP) prior to commissioning the new plant. The DMP will incorporate commitments made in the EPS (SKM, 2003). Hamersley Iron will also review its Dust Monitoring Program to better determine its contribution to dust levels in Dampier and to verify the modelling assessment.

Assessment

The area for assessment is the town of Dampier and surrounds, including the King Bay Industrial Area.

The EPA's environmental objectives for this factor are to:

- ensure that dust emissions, including dust from natural sources, meet appropriate criteria and do not cause an environmental or health problem; and
- improve the amenity at Dampier in the short to medium term.

The EPA notes that Hamersley Iron's operations at both Parker Point and East Intercourse Island generate dust that has the potential, in combination with naturally occurring background dust, to impact on the local environment and cause community concern (SKM, 2003). The EPA also notes that the "Monitoring of Ambient Air Quality and Meteorology during the Pilbara Air Quality Study" report released by the DEP (DEP, 2002) as part of the Pilbara Air Quality Study concluded that "the contribution of dust from ore handling facilities to the PM_{10} concentrations measured at the Dampier monitoring station is significant."

The EPA notes that dispersion modelling predicted that ambient dust levels in Dampier would not increase following the proposed upgrade. The EPA considers the set up and use of Ausplume for the modelling to be acceptable. However, the EPA is aware that there are very large uncertainties associated with the modelling of dust impacts due to the uncertainty in emissions and other model inputs. The EPA therefore considers that modelling predictions of potential incremental changes to the impacts on amenity as a result of the proposed upgrade should not be heavily relied upon in its decision-making. The EPA considers that Hamersley Iron's commitment to an upgraded monitoring program and a program of continuous dust management and improvements to be more important, with ambient monitoring providing the main measure of success.

The EPA notes that dispersion modelling indicates that the greatest impact from Hamersley Iron's operations on average dust levels in Dampier is emissions from the East Intercourse Island terminal and therefore supports Parker Point for the proposed expansion. The EPA also notes that Hamersley Iron has proposed to implement a number of significant dust suppression measures for both the existing and new plant (SKM, 2003). The EPA notes that

Hamersley Iron's total dust emissions following the upgrade are estimated to increase by approximately 46%, but based on modelling predictions, dust levels in Dampier are not expected to change significantly.

The EPA notes that a survey of Dampier and some Karratha residents in 2001 found that about a quarter of the Dampier respondents (113 people) were *"Upset a lot of the time*" over dust and 60% felt that Hamersley Iron *"should be doing more to control dust"* (Hamersley Iron, 2002). The EPA notes that since the survey Hamersley Iron has initiated a Dust Suppression Improvement Program and a number of initiatives to better engage the community. However, given that there has been no apparent significant reduction in dust levels in Dampier since the survey, dust is likely to be an ongoing concern to the community. Given that the NEPM is being exceeded in Dampier and the concern expressed by the community, the EPA expects Hamersley Iron's objective for the proposed upgrade to be to reduce rather than maintain existing dust levels in Dampier. The EPA expects Hamersley Iron to progressively implement "best practice" dust control measures across both terminals in the short to medium term in order to achieve a real reduction in dust levels that are currently being experienced in Dampier.

The EPA notes that dust emissions from the 5E conveyor appear to cause a disproportionately high dust impact on Dampier (SKM, 2003) and that the proposed abatement measures are expected to reduce dust emissions from this source by approximately 50%. The EPA notes that Hamersley Iron has considered covering the 5E conveyor, but concluded the benefits of full enclosure to be minimal and not practicable from a safety and maintenance viewpoint (Appendix G, SKM, 2003). The EPA recommends that an independent analysis be conducted in the near future to fully explore options available to effectively eliminate dust emissions from the 5E conveyor and associated roadway.

The EPA is of the opinion, based on the results of the Pilbara Air Quality Study (DEP, 2002), that Hamersley Iron's Dust Monitoring Program may underestimate Hamersley Iron's contribution to the overall dust levels in Dampier. The PM_{10} pollution rose displayed in Figure 4 (DEP, 2002) shows "*the lobes in the plot, centred on directions of approximately 40 and 260 degrees, point directly to the iron handling facilities at Parker Point and East Intercourse Island"* (DEP, 2002). Examination of the polar plot suggests that the background annual dust concentration at the DEP's Dampier monitoring site was no more than approximately 15 $\mu g/m^3$ and therefore Hamersley Iron's contribution is likely to be at least 40% of the total annual average. The EPA recommends that Hamersley Iron's Dust Monitoring Program be reviewed and upgraded to better determine Hamersley Iron's contribution to Dampier's dust levels. The upgrade should incorporate the following:

- An assessment of the distribution of dust impacts across the township of Dampier to determine whether the Dampier Primary School is an adequately representative site;
- Wind measurements at the Dampier Primary School site to determine if the site complies with the Australian Standard for wind measurements;
- A $PM_{2.5}$ monitoring program (for at least a year) consistent with the NEPM $PM_{2.5}$ monitoring protocol;
- Appropriate monitoring close to dust sources to assess the effectiveness of dust abatement measures; and
- A more sophisticated method for determining Hamersley Iron's contribution, including a review of:
    - The wind direction arc for each of its facilities, to properly account for wind direction fluctuations; and

- A reliable determination of the background dust concentration, possibly by monitoring at a remote, undisturbed site.

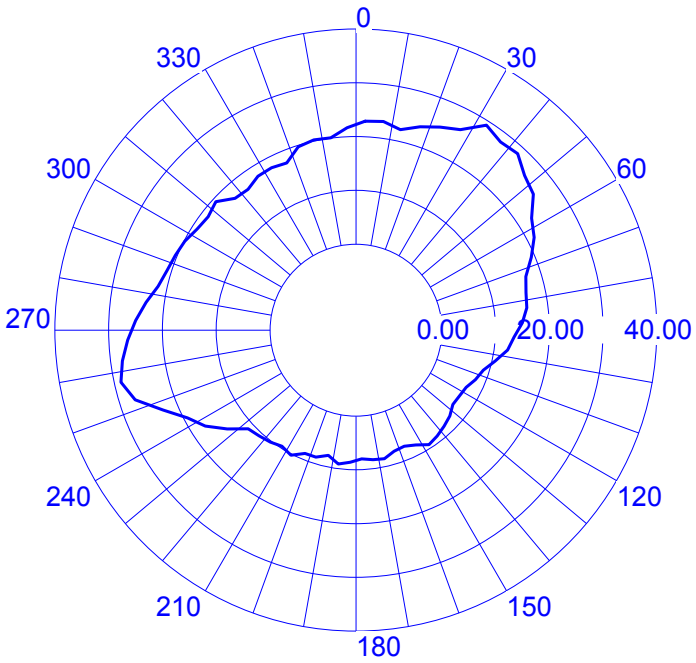

Figure 4: Polar plot, for the Dampier monitoring station, of the annual average of PM_{10} concentrations measurements in each of 72 five degree wind direction sectors for the 1999 calendar year.

The EPA, while recognising the need to better determine Hamersley Iron's contribution to dust levels in Dampier, considers that the main focus must be to reduce dust levels in Dampier. The EPA expects Hamersley Iron to fully engage the community on dust abatement, and to employ best endeavours to reduce emissions from its operations in the short to medium term. The EPA expects a strategy to reduce dust levels within the town of Dampier to be incorporated within Hamersley Iron's revised Dust Management Plan. The EPA advises Hamersley Iron to "work" with the Shire of Roebourne and the community to address, where practicable, dust emissions from sources that may not be directly related to Hamersley Iron's operations. The EPA recommends that a follow up "dust survey" be conducted in Dampier and Karratha within 3 years in order to measure the effectiveness of dust suppression measures and community consultation.

Since there is limited water available in the Pilbara region, the EPA expects water use for dust suppression to be optimised and that preference be given to using other ways to reduce dust emissions, where practicable. The EPA notes that Hamersley Iron has committed to develop a Water Management Plan.

Summary

Having particular regard to the:

(a) proposed expansion being restricted to the Parker Point facility;

(b) proposed dust suppression measures; and

(c) recommended Ministerial Conditions and proponent commitments;

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

4.2 Noise

Description

Hamersley Iron's Parker Point and East Intercourse Island terminals are located close to the town of Dampier, with the nearest resident being approximately 1 km from the Parker Point terminal. In the EPS (SKM, 2003), the noise emissions from the port facilities were considered to consist of the following two components:

- Fixed plant, including car dumpers, stackers, reclaimers, conveyors, screenhouses and the power station; and
- Rail transport.

The two components were assessed separately since only noise from the fixed plant is regulated under the *Environmental Protection (Noise) Regulations 1997* (Noise Regulations).

Fixed Plant Noise

SVT Engineering Consultants (SVT) was engaged to undertake an environmental assessment to predict Hamersley Iron's contribution to ambient noise levels within Dampier (Appendix E, SKM, 2003). An acoustic model based on the Environmental Noise Model (ENM) was developed. The model predicted noise levels from the existing fixed plant would exceed the Noise Regulations in Dampier by up to 14 dB(A) (night time noise limit of 35 dB(A)) under the worst-case scenario as described in Section 6.6.3 of the EPS (SKM, 2003). The following plant items were found to significantly contribute (regularly) to the noise levels:

- The power station (impacts the northern end of town); and
- The East Intercourse Island causeway conveyor (impacts the western end of town).

The proponent proposed a number of noise reduction measures as outlined in Section 4.5 of the EPS (SKM, 2003), including the replacement of idlers on the 5E conveyor.

The noise model was further developed to predict the impact of the proposed upgrade on noise levels within the town of Dampier and the effectiveness of the proposed noise attenuation measures (Section 6.6.5, SKM, 2003). The noise levels following the upgrade (from the "fixed" plant) were predicted to be similar in magnitude to those for existing operations since noise levels from the new plant are relatively low and noise reduction measures are proposed for the existing plant. The worst-case exceedances of the assigned noise levels were predicted to be as high as 13 dB at night-time. Noise emissions from the new plant, when considered in isolation, may exceed the assigned noise levels by up to 2.7 dB(A) under worst case operating and meteorological conditions. A range of noise control measures were assumed for the new plant including; low noise conveyors and drives, enclosing the new car dumper, reorientating and partially enclosing the screenhouse and incorporating noise control in the design of the dust extraction system. SVT advised that in its

opinion, further noise reductions for the new plant are not practicable. SVT also considered the risk of the worst case operating conditions coinciding with the worst-case meteorological conditions to be low.

Rail Noise

Train activities at Parker Point have a greater impact on noise levels in Dampier than train activities associated with the East Intercourse Island operations. The main source of rail noise is from ore car collisions that occur when fully laden ore cars are fed into the car dumper and when empty ore cars are moved down the track. Train arrivals and departures and idling locomotives also impact on the noise amenity. A significant reduction in rail noise associated with the unloading operations is expected since the proposal includes the construction of a new car dumper further away from the town of Dampier. The new rail unloading system also removes idling locomotives from the area and is designed to minimise collision forces between rail cars. The new car dumper will not meet the maximum port capacity however, and the existing car dumper will therefore be used occasionally.

Hamersley Iron has committed to develop a Construction Noise Management Plan in order to minimise noise emissions during construction activities. Hamersley Iron has also committed to develop a Environmental Noise Management Program to evaluate and where practicable reduce noise emissions from existing operations and the proposed new plant. Hamersley Iron advised that it has not received public complaints due to noise and that the noise when heard in Dampier is not considered offensive.

Assessment

The area considered for assessment is the town of Dampier.

The EPA's environmental objectives for this factor are to ensure that:

- noise emanating from the new plant and associated rail activities will comply with statutory requirements and acceptable standards; and
- impacts on the noise amenity of the town of Dampier are minimised as low as reasonably practicable.

The EPA notes that Hamersley Iron's existing operations currently exceed the Noise Regulations. The EPA notes that following the upgrade, noise levels in Dampier are expected to be similar to existing noise levels, given Hamersley Iron's commitment to implement a number of noise reduction measures in the existing plant.

The EPA notes that noise emissions from the new (attenuated) plant, when considered in isolation, are predicted to meet the assigned noise levels in Dampier, except under worst case operations during rare and conservative meteorological conditions (N/E winds with 2^0C/100m thermal inversion). Given this, the EPA is satisfied that the new plant will meet the assigned noise levels as per its draft Guidance Statement No. 8 "*Environmental Noise*" which requires that compliance with the assigned noise levels needs to be demonstrated for 98% of the time, for the month of the year in which the "worst case" weather conditions prevail (EPA, 1998). Any exceedance is likely to be rare, given the low incidence of N/E winds of less than 3 km/h at night (approximately 1.3% based on data in the EPS) coupled with the low likelihood of temperature inversion, combined with worst case operating conditions.

The EPA notes that noise emissions from the new plant should ideally be somewhat below the assigned noise levels in order to accommodate the long-term goal of compliance with the assigned noise levels for both new and existing plant. However, the EPA notes that SVT consider further noise reductions for the new plant may not be practicable. The EPA notes that the proposed upgrade will not significantly increase existing noise levels. The EPA also

notes that the proponent has committed to develop a Noise Management Program to identify key areas of the existing operation that require noise remediation works and work towards overall compliance with the Noise Regulations.

The EPA expects Hamersley Iron to develop a Noise Management Plan that reviews noise sources in the new and existing plant that are likely to contribute to a noise emission that exceeds the prescribed standard under the Noise Regulations. The EPA expects the plan to contain practicable noise reduction measures, designed to be consistent with overall compliance with the prescribed standard and include timeframes for the implementation of each measure. The plan should also include a review of operating procedures to minimise noise impacts by restricting, where practicable, the operation of particularly noisy equipment (eg. existing car dumper) to normal hours.

The EPA considers that the noise emissions from the new plant are not inconsistent with the goal of long-term compliance with the Noise Regulations (for all plant). The EPA however, recommends that an acoustic modelling assessment be undertaken once the new plant is commissioned to confirm that the new plant (in isolation) meets the assigned levels under the Noise Regulations. The EPA considers the proposed impact on noise levels in Dampier to be acceptable should a satisfactory Noise Management Plan be developed prior to commissioning.

Summary

Having particular regard to:

(a) the proposed new plant meeting the assigned noise levels under the Noise Regulations;

(b) similar noise levels being experienced in Dampier following the expansion;

(c) the expectation of ongoing reductions in noise levels; and

(d) the recommended Ministerial Conditions and proponent's commitments;

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

4.3 Marine flora and fauna

Description

The proposed expansion includes the construction of a sea wall and reclamation of land between Parker Point and the Service Jetty. The fill material will be sourced mainly from the hard rock excavation from the new stockpile area. However, the land reclamation is expected to smother approximately 1 ha of inshore coral. The coral covers approximately 10% of the seabed and its diversity is considered to be moderate (IRCE, May 2003).

A description of the marine environment near Hamersley Iron's operations is provided in Section 5.3.6 of the EPS (SKM, 2003), based on the findings of desktop studies and several marine surveys conducted by Environmental Contracting Services (1995) and IRC Environment (IRCE) (2000, 2001, March 2003, April 2003, May 2003). A preliminary field survey of corals along the southern shoreline from Foul Point to King Bay (Figure 5-5, SKM, 2003) found that in general the corals appeared to be healthy, showing no evidence of coral bleaching or stress caused by sedimentation (IRCE, 2000). However, some coral communities located close to Hamersley Iron's operations, including the proposed reclamation area, were found to be highly disturbed (IRCE, March 2003).

The preliminary results from the field survey indicate that the proposed area of coral disturbance (1 ha) represents approximately 1.5% of the existing coral community distribution (areas with greater than 10% coral cover) within the survey area (Table 6-4, SKM

2003). The proponent advised that it is unable to reliably estimate the total loss of inshore coral associated with its operations since commencing in the early 1960's.

Hamersley Iron has committed to develop and implement a long-term marine monitoring programme to identify any impacts on the marine environment caused by its operations.

Assessment

The area considered for assessment of this factor is the area of Mermaid Sound in the vicinity of Hamersley Iron's operations.

The EPA's environmental objective for this factor is to maintain marine ecological integrity and biodiversity and ensure that impacts on adjacent marine communities are avoided.

The EPA considers that the surrounding waters of the Dampier Archipelago are of high environmental value, with areas designated as nature reserves and consideration being given to the establishment of a marine conservation reserve. Western Australia's coral reefs stretching from the North-West Cape to Perth have been ranked among the most diverse marine environments in the world. The coral reefs of the Dampier Archipelago are a significant feature of the Pilbara coastal marine environment (CALM, 1994).

The EPA notes that the proposal is expected to impact on approximately 1 ha of an inshore coral community located between the Parker Point Wharf and the Service Jetty. The EPA notes that this coral community is thought to represent approximately 1.5% of the inshore corals (with a cover of greater than 10%) within the study region (from Foul Point to King Bay). The EPA notes that this coral community is showing evidence of stress due to sedimentation (IRCE, March 2003). The EPA accepts the loss of the inshore coral community, given its location within a major industrial area. However, the EPA is concerned that the cumulative loss of inshore corals has not been estimated and that compliance with the EPA's draft Guidance Statement No. 29 *Benthic Primary Producer Habitat Protection* cannot currently be determined.

The EPA recommends that the proponent undertake a field study of the current distribution of coral reef habitat (greater than 10% cover) within the "Special Lease 3116/3471 (Dampier Offshore Lease)" to provide information on the integrity and biodiversity of the marine ecosystems of the Dampier Archipelago. The main objective of the survey should be to establish a baseline for assessing losses of coral reef habitat resulting from human activity (dredging, land reclamation, interrupted recruitment processes etc). The EPA also recommends that the proponent estimate the original historical (pre-development) distribution of coral reef habitat within the Dampier Offshore Lease to estimate cumulative loss of coral reef habitat to date. Development associated impacts on coral reef habitat in the Dampier Archipelago are unlikely prior to the 1950s. The information sources should include historical aerial photographic records, marine monitoring programs and previous environmental review documents. The information will be used for future assessments to determine compliance with the EPA's draft Guidance Statement No. 29 *Benthic Primary Producer Habitat Protection.* The determination of historical coral reef habitat distribution will therefore be required prior to referral to the EPA of any future development proposals that may impact on coral communities in the region. With this in mind, and the likely impacts on turbidity of proposed dredging programmes in Mermaid Sound, the proponent should consider undertaking the field survey prior to dredging.

The EPA notes that Hamersley Iron has committed to develop and implement a long-term marine monitoring programme to identify the impact of its operations on the marine environment. The EPA notes that the preliminary marine survey found the macroalgae, corals, reef fish and epibenthic fauna adjacent to the proposed blending stockpiles and new bulk heap area to be highly diverse, abundant and effectively unmodified (IRCE, March 2003). The

EPA expects the proponent to not only monitor impacts on the marine environment, but to manage its operations to ensure potential impacts are minimised. In particular, stormwater run-off from the blending stockpiles and bulk heaps must be managed to protect the marine environment from potential sedimentation impacts.

Summary

Having particular regard to the:

(a) location and size of the coral community to be impacted; and

(b) recommended Ministerial Conditions and proponent's commitments;

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

4.4 Terrestrial vegetation and flora

Description

The Burrup Peninsula supports vegetation that is quite distinct from the adjoining mainland (Blackwell et al., 1979; Trudgen, 2002). At a regional level, all of the vegetation associations can be considered to be rare, given the apparent geographical restriction of these floristic communities and the relatively small total area occupied by each association (Trudgen, 2002).

The proposed expansion will directly impact on approximately 91 ha of Hamersley Iron's lease. The majority of the upgrade is within areas of low conservation significance although the proponent proposes to clear approximately 37 ha of previously undisturbed land. The clearing of undisturbed land is mainly required in order to construct new bulk stockpiles (23 ha) and a railway loop (11.5 ha). The Dampier Special Lease area has been surveyed by Astron (1996) and Joder and Thoma of Hamersley Iron (February, April and July 2003).

A description of the vegetation and flora found on the project site and on the Burrup Peninsula in general is provided in Section 5.3 of the EPS (SKM, 2003). The potential impacts of the proposal on the vegetation communities are detailed in Section 6.2 of the EPS (SKM, 2003). A vegetation map with the proposed envelop of disturbance is presented in Figure 6-1 of the EPS (SKM, 2003). The significant vegetation communities likely to be impacted by the expansion are as follows:

- Rocky outcrops (9.8 ha);
- Rocky slopes and valley floors (17.9 ha);
- Saline Samphire flats (1.5 ha); and
- Beach and dune vegetation (0.3 ha).

No Declared Rare Flora (DRF) species were recorded within the Dampier Special Lease area. The Priority 1 species *Terminalia supranitifolia* was recorded at a number of locations within the lease and three (or possibly four) specimens are likely to be impacted by the upgrade (Jodder and Thoma, February 2003).

Hamersley Iron has committed to develop a Vegetation and Flora Management Plan that includes weed management and rehabilitation and/or re-establishment of local native flora.

Assessment
The area considered for assessment is the Dampier Special Lease area located on the Burrup Peninsula.

The EPA's environmental objectives for this factor are to:

- protect Declared Rare and Priority Flora consistent with the provisions of the *Wildlife Conservation Act 1950*;
- protect flora listed in the Schedules of the Environment Protection Biodiversity Act 1999; and
- maintain the abundance, species diversity, geographical distribution and productivity of vegetation communities.

In its assessment, the EPA is mindful of the fact that through the Burrup Peninsula Land Use Plan and Management Strategy (O'Brien Planning Consultants, 1996) about 5,400 hectares (62%) of the Burrup Peninsula has been set aside for conservation, recreation and heritage protection. The EPA has previously recognised the importance of the floristic communities on the Burrup, and has required proponents to demonstrate that their site plan takes into account the most important of the floristic communities and avoids impact to the greatest extent practicable.

The EPA notes that the proponent proposes to significantly increase the live blending stockpile capacity at Parker Point to allow for an increase in the number of products that can be shipped from the terminal. The EPA notes that to extend the ore stockpiles and develop the railway loop, it will be necessary to clear undisturbed land (37ha). The EPA is satisfied that the proponent has taken into consideration impacts on significant vegetation communities in designing the port upgrade and that the proposed impacts on significant vegetation, namely "rocky outcrops", "saline samphire fats" and "beach and dunes", cannot reasonably be avoided.

The EPA notes that although no DRF has been found on the lease, the Priority 1 species *Terminalia supranitifolia* will be impacted by the upgrade. The EPA considers all reasonable endeavours should be undertaken to protect the T. *supranitifolia* specimen located on the southern perimeter of the proposed new bulk heap stockpile.

Summary
Having particular regard to the:

(a) indicative envelope of disturbance that shows optimal use of previously disturbed vegetation;

(b) minimal impact on Priority flora; and

(c) proponent's commitments,

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

5. Conclusions

Section 44 of the *Environmental Protection Act 1986* requires the EPA to report to the Minister for the Environment 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.

Dust

The EPA concludes that the factor of dust can be managed to meet the EPA's objectives to ensure dust emissions, including from natural sources, meet appropriate criteria and do not cause an environmental or health problem; and to improve the amenity at Dampier in the short to medium term.

The proponent proposes to significantly reduce dust emissions from sources that appear to cause a disproportionately high dust impact on Dampier in order to effectively offset dust impacts from the upgrade. Ongoing improvements to the amenity at Dampier are expected through the development and implementation of an approved Dust Management Plan. An upgraded Dust Monitoring Program will enable Hamersley Iron's contribution to dust levels in Dampier to be better determined.

Noise

The EPA concludes that the factor of noise can be managed to meet the EPA's objectives to ensure noise emanating from the new plant and associated rail activities will comply with statutory requirements and acceptable standards; and that impacts on the noise amenity of the town of Dampier are minimised as low as reasonably practicable.

The proponent proposes to implement a number of noise reduction measures to the existing plant so that similar noise levels are experienced in Dampier following the upgrade. The proposed new plant, when considered in isolation, is expected to meet the assigned noise levels. The proponent has committed to develop and implement an approved Noise Management Plan (for new and existing plant) to reduce noise levels.

Marine flora and fauna

The EPA concludes that the factor of marine flora and fauna can be managed to meet the EPA's objectives to maintain marine ecological integrity and biodiversity and ensure that any impacts on locally significant marine communities are avoided.

The proponent proposes to smother a relatively small isolated area of inshore coral. The proposed area of coral disturbance represents approximately 1.5% of the existing coral community distribution of inshore corals in the region. The coral community is well developed, but located in a heavily disturbed area. The EPA considers the proposed impact on the coral community to be acceptable, but recommends further field work be undertaken by the proponent so that compliance with the EPA's draft Guidance Statement No. 29 *Benthic Primary Producer* Habitat Protection be determined for future proposals.

Terrestrial vegetation and flora

The EPA concludes that the factor of terrestrial vegetation and flora can be managed to meet the EPA's objectives to protect Declared Rare and Priority Flora consistent with the provisions of the *Wildlife Conservation Act 1950*; protect flora listed in the Schedules of the

Environment Protection Biodiversity Act 1999; and maintain the abundance, species diversity, geographical distribution and productivity of vegetation communities.

The proponent has considered impacts on significant vegetation communities in designing the port upgrade and the proposed impacts on significant vegetation and the Priority 1 species, cannot reasonably be avoided.

6. Recommendations

The EPA considers that the proponent has demonstrated, in the EPS document, that the proposal can be managed in an environmentally acceptable manner and provides the following recommendations to the Minister for the Environment:

1. That the Minister notes that the proposal being assessed is for Hamersley Iron's Dampier Port Upgrade to 95 Mtpa.
2. That the Minister considers the report on the relevant environmental factors as set out in Section 4.
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 and proponent commitments as set out in Appendix 2, including the provision for implementation of an environmental management system.
4. That the Minister imposes the conditions and procedures recommended in Appendix 2 of this report.

Appendix 1

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Appendix 2

Recommended Environmental Conditions

and Proponent's Commitments

Statement No.

Recommended Conditions and Procedures

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

HAMERSLEY IRON DAMPIER PORT UPGRADE TO 95 MTPA CAPACITY

Proposal:	To increase the capacity of Hamersley Iron's iron ore operations at its Dampier Port from a licensed capacity of 80 million tonnes per annum (Mtpa) to 95 Mtpa, as documented in schedule 1 of this statement.
Proponent:	Hamersley Iron Pty Ltd
Proponent Address:	Level 22, Central Park, 152–158 St George's Terrace, PERTH WA 6004
Assessment Number:	1489

Report of the Environmental Protection Authority: Bulletin 1114

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

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 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 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 fulfilment of the conditions in this statement.

3 Proponent Nomination and Contact Details

3-1 The proponent for the time being nominated by the Minister for the Environment 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 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 substantially commence the proposal within five years of the date of this statement or the approval granted in this statement shall lapse and be void.

Note: The Minister for the Environment 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, prior to the expiration of the five-year period referred to in condition 4-1.

The application shall demonstrate that:

1 the environmental factors of the proposal have not changed significantly;

2 new, significant, environmental issues have not arisen; and

3 all relevant government authorities have been consulted.

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

5 Compliance Audit and Performance Review

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

1 the status of implementation of the proposal described in schedule 1 of this statement;

2 evidence of compliance with the conditions and commitments; and

3 the performance of the environmental management plans and programs.

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.

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 on advice of the Environmental Protection Authority, which addresses:

1 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;

2 the level of progress in the achievement of sound environmental performance, including industry benchmarking, and the use of best available technology where practicable;

3 significant improvements gained in environmental management, including the use of external peer reviews;

4 stakeholder and community consultation about environmental performance and the outcomes of that consultation, including a report of any on-going concerns being expressed; and

5 the proposed environmental targets over the next five years, including improvements in technology and management processes.

5-3 The proponent shall submit a report prepared by an auditor approved by the Department of Environmental Protection under the "Compliance Auditor Accreditation Scheme" to the Chief Executive Officer of the Department of Environmental Protection on each condition/commitment of this statement which requires the preparation of a management plan, programme, strategy or system, stating that the requirements of each condition/commitment have been fulfilled within the timeframe stated within each condition/commitment.

6 **Decommissioning**

6-1 Prior to commissioning, the proponent shall prepare a Preliminary Decommissioning Plan which provides the framework to ensure that the site is left in an environmentally acceptable condition to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

The Preliminary Decommissioning Plan shall address:

1 rationale for the design of plant and infrastructure as relevant to environmental 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.

6-2 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 on advice of the Environmental Protection Authority.

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.

6-3 The proponent shall implement the Final Decommissioning Plan required by condition 6-2 until such time as the Minister for the Environment determines, on advice of the Environmental Protection Authority, that the proponent's decommissioning responsibilities have been fulfilled.

6-4 The proponent shall make the Final Decommissioning Plan required by condition 6-2 publicly available, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

7 Dust Management

7-1 The proponent shall review the Dust Monitoring Program to better determine the proponent's contribution to the dust levels within the township of Dampier. The review of the Dust Monitoring Program shall be completed within two years following the date of publication of this statement and shall include the following:

1 Assessment of the distribution of dust impacts across the township of Dampier to determine whether the current monitoring site at the Dampier Primary School adequately represents dust levels within Dampier;

2 Determine if the Dampier Primary School dust monitoring site complies with the Australian Standard 2923-1987 for wind measurements and, if not, establish an additional meteorological station which does comply with this standard;

3 Incorporation of a $PM_{2.5}$ monitoring program (for a minimum of 12 months) in accordance with the National Environment Protection Measure $PM_{2.5}$ monitoring protocol;

4 Development of a more sophisticated method for determining Hamersley Iron's contribution to dust levels within Dampier, including a review of the wind direction arc for the Parker Point and East Intercourse Island facilities to properly account for wind direction variability; and

5 A summary of the modifications required to the Dust Monitoring Program to the satisfaction of the Environmental Protection Authority;

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

7-2 The proponent shall implement the modifications referred to in condition 7-1 (5) to upgrade the Dust Monitoring Program within three years of the date of this statement, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

7-3 The proponent shall update the Dust Emissions Inventory to:

1 Incorporate new dust sources from the upgraded plant at Parker Point;

2 Determine the effectiveness of dust abatement measures that have been completed within the existing plant;

3 Confirm, where practicable, assumptions made in the proponent's Environmental Protection Statement (SKM, 2003) regarding dust emissions, including the Particulate Matter less than 10 μm component; and

4 Compare the estimated total dust emission with the predicted total dust emission presented in the above mentioned Environmental Protection Statement.

The proponent shall engage an approved consultant to undertake on-site dust sampling (Total Suspended Particles i.e. particulate matter less than 50 μm) and shall submit a report on the finding within 12 months following commissioning of the upgraded facility, to the requirements of the Minister for the Environment on advice from the Environmental Protection Authority.

7-4 The proponent shall undertake Dust Dispersion Modelling for the upgraded operations at Dampier (based on the updated emissions inventory data) to demonstrate that dust impacts (Total Suspended Particulates and Particulate Matter less than 10 μm) on the town of Dampier are no greater than those prior to the upgrade (as documented in the proponent's Environmental Protection Statement, SKM, 2003).

The proponent shall engage an approved consultant to model the dust impacts on the town of Dampier (and the King Bay Industrial area) and shall submit a report within 18 months of commissioning the upgraded facility.

The report shall compare and contrast the results with those presented in the above mentioned Environmental Protection Statement and the results obtained from the Dust Monitoring Program and shall be prepared to the requirements of the Minister for the Environment on advice from the Environmental Protection Authority.

7-5 The proponent shall update its Dust Management Plan prior to commissioning the upgraded facility. The plan shall incorporate a strategy to achieve an overall reduction in dust impacts on the town of Dampier. The plan shall include:

1 Identification of potential dust remediation works;

2 Commitments to undertake practicable dust remediation works;

3 Timelines to implement practicable dust remediation works;

4 A review of operational and maintenance procedures to ensure dust emissions are minimised, including optimising the performance of dust suppression equipment, and where practicable, restricting potentially dusty operations during adverse weather conditions;

5 A dust level (PM_{10}) reduction target (to the requirements of the Environmental Protection Authority) on existing dust levels within the town of Dampier, and a plan to achieve the target dust level reduction;

6 Frequent reporting of ambient dust levels to the community;

7 Recording and investigating community complaints;

8 Investigation and recording of the cause for all exceedances of the National Environmental Protection Measure (for particles as PM_{10}) in the town of Dampier; and

9 Reporting of dust monitoring, complaints and progress on dust remediation works;
to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

7-6 The proponent shall conduct a survey in Dampier and Karratha to gauge its success in addressing community concerns related to impacts from dust. The survey shall build upon the survey commissioned by the Dampier Sampson Dust Working Group in 2001 such that outcomes can be readily compared. The survey shall be conducted by an approved consultant, within three years following the date of publication of this statement, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

7-7 The proponent shall conduct an analysis to fully explore practicable options to achieve further significant reductions or preferably eliminate dust emissions from the 5E Conveyor and associated roadway. The options shall include enclosing the 5E Conveyor. The analysis shall be undertaken by an approved consultant to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

8 Noise

8-1 Prior to commissioning, the proponent shall prepare and implement a Noise Management Plan, prepared or audited by an approved independent acoustic engineer, to minimise impacts on the amenity of the town of Dampier. The plan shall include, for each noise source in the new and existing plant that is likely to contribute to a noise emission that exceeds the prescribed standard under the Environmental Protection (Noise) Regulations 1997:

1 Practicable noise reduction measures, designed to be consistent with overall compliance with the prescribed standard;

2 The estimated sound power level of the attenuated noise source;

3 An acoustic model enabling prediction of source noise levels received in the town of Dampier;

4 A source sound pressure level and monitoring point which characterise the noise source; and

5 Timelines for the implementation of the noise reduction measures;

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

8-2 Prior to commissioning, the proponent shall prepare and implement a Noise Monitoring Program to verify the accuracy of the acoustic model and to confirm the effectiveness of the proposed noise reduction measures. The program shall include monitoring and

reporting of noise emissions at the monitoring point for each noise source (in the new and existing plant) that is likely to contribute to a noise emission that exceeds the prescribed standard under the *Environmental Protection (Noise) Regulations 1997*, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

8-3 Within 12 months following commissioning, the proponent shall review its maintenance and operating procedures (for new and existing plant) with the objective of minimising noise emissions, including where practicable, restrictions on the out of hours operations of noisy items of equipment (such as the existing car dumper) or scheduling of operations to minimise the out-of-hours use of noisy equipment, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

8-4 Within 18 months of commissioning, the proponent shall undertake an acoustic modelling assessment of the new plant in isolation (using noise emissions data from the noise monitoring program) to determine if the assigned noise levels under the *Environmental Protection (Noise) Regulations 1997* are met in the town of Dampier, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

9 Marine Flora and Fauna

9-1 Prior to December 2005, the proponent shall conduct a field survey of the current distribution of coral reef habitat* within the "Special Lease 3116/3471 (Dampier Offshore Lease)", outside periods when water clarity is affected by dredging in the vicinity of the survey area, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

In the survey, the proponent shall:

1 Identify the location, spatial extent and percent cover of the different scleractinian coral communities in the area; and

2 Record existing scleractinian corals observed within the communities to species level.

* Note: "Coral reef habitat" is defined as "areas of the seafloor that support scleractinian corals at a density of greater than 10% cover".

9-2 Prior to December 2005, the proponent shall determine the original historical* distribution of scleractinian coral reef habitat within the Hamersley Iron State Agreement Act area and determine the cumulative coral loss resulting from human activity, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

This investigation shall:

1 employ historical aerial photographic records, previous environmental review documents, management plans, monitoring programs and other relevant

information to assist in determining the original extent of coral habitat and historical losses; and

2 provide best, most probable and worst case estimates of coral reef habitat loss and the assumptions used for each estimate.

* Note: "Historical distribution of scleractinian coral reef habitat" is defined as "the original distribution of coral reef habitat with a density of greater than 10% cover of the seafloor prior to European impact".

9-3 Prior to commencement of the upgrade, the proponent shall prepare a Marine Management Program which addresses the following:

1 establishes the environmental values and environmental quality objectives (as defined in the Environmental Protection Authority document Perth's Coastal Waters, Environmental Values and Objectives) which explicitly identify uses and values and where they will be protected;

2 the environmental quality criteria to be met in order to sustain each environmental quality objective;

3 water and sediment quality surveys, including the determination of contaminants, turbidity, temperature, dissolved oxygen and pH);

4 contaminant accumulation in biological tissues (eg. deployed oysters);

5 characterisation of the effluent and spatial extent of the Power Station outfall;

6 benthic habitat health surveys, including clear objectives to measure spatial and temporal changes/variation;

7 spatial changes to distribution of coral habitat;

8 regular marine pest surveys (every three years);

9 oil and chemical spill response;

10 a management framework to prevent or mitigate any identified environmental impacts; and

11 other parameters as determined by the Environmental Protection Authority from time to time;

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

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

- Department for Planning and Infrastructure (Maritime Transport)
- Department of Fisheries; and
- Department of Conservation and Land Management.

9-4 The proponent shall implement the Marine Management Program within one year following the date of publication of this statement, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

9-5 The proponent shall make the Marine Management Program required by condition 9-3 publicly available and report annually on its implementation, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

9-6 The proponent shall design the blending stockpile and bulk heap storage areas to avoid stormwater run-off and other potential impacts on the adjacent marine environment, particularly the coral community, to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority.

Procedures

1 Where a condition states "to the requirements of the Minister for the Environment on advice of the Environmental Protection Authority", the Environmental Protection Authority will provide that advice to the Department of Environmental Protection for the preparation of written advice to the proponent.

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

3 Where a condition lists advisory bodies, it is expected that the proponent will obtain the advice of those listed as part of its compliance reporting to the Department of Environmental Protection.

Notes

1 The Minister for the Environment 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 Within this statement, to "have in place" means to "prepare, implement and maintain for the duration of the proposal".

3 The proponent is required to apply for a Works Approval and Licence for this project under the provisions of Part V of the *Environmental Protection Act 1986*.

4 Compliance and performance reporting will endeavour to be in accord with the timing requirements of the *Iron Ore (Hamersley Range) Agreement Act 1963*.

Schedule 1

The Proposal (Assessment No. 1489)

Hamersley Iron Pty Ltd proposes to increase the capacity of the iron ore operations at Dampier Port from a licensed capacity of 80 million tonnes per annum (Mtpa) to 95 Mtpa. The main works associated with the port upgrade are proposed for the Parker Point terminal (capacity increase from 35 Mtpa to 50 Mtpa). The main characteristics of the proposal are summarised in Table 1 below.

Table 1: Key Proposal Characteristics

Characteristic	Existing Parker Point Operations	Parker Point Operations Following Port Upgrade
Project Life	50 years	50 years
Port Capacity	35Mtpa	50Mtpa
Berth Capacity	180,000 DWT	220,000 DWT
Wharf Length	295m	795m
Number of Shiploading Berths	1	2
Blending stockpile live capacity	1.6 Mt	4.7 Mt
Bulk stockpile capacity	4 Mt	4 Mt
Number of train arrivals	4 per day	6 per day
Rail dump cycle	130 seconds	80 seconds
Facility Footprint	120 ha	186 ha
Major Plant Components	1 Car Dumper 1 Lump Re-screening Plant and 1 Sample Station 2 Stackers 2 Reclaimers 1 Shiploader 9 Stockpiles	2 Car Dumpers 2 Lump Re-screening Plants and 1 Sample Station 4 Stackers 3 Reclaimers 2 Shiploaders 24 Stockpiles
Plant Operation	24-hours, 7-days per week	24-hours, 7-days per week
Water Requirements	1,500ML/yr	2,000ML/yr
Shipping Movements	Approx. 500 ships per year (Parker Point and East Intercourse Island)	Approx. 690 ships per year (Parker Point and East Intercourse Island)
Workforce	Operations approx. 430 personnel	Construction approx. 350 personnel Operations approx. 430 personnel

Figures (attached)

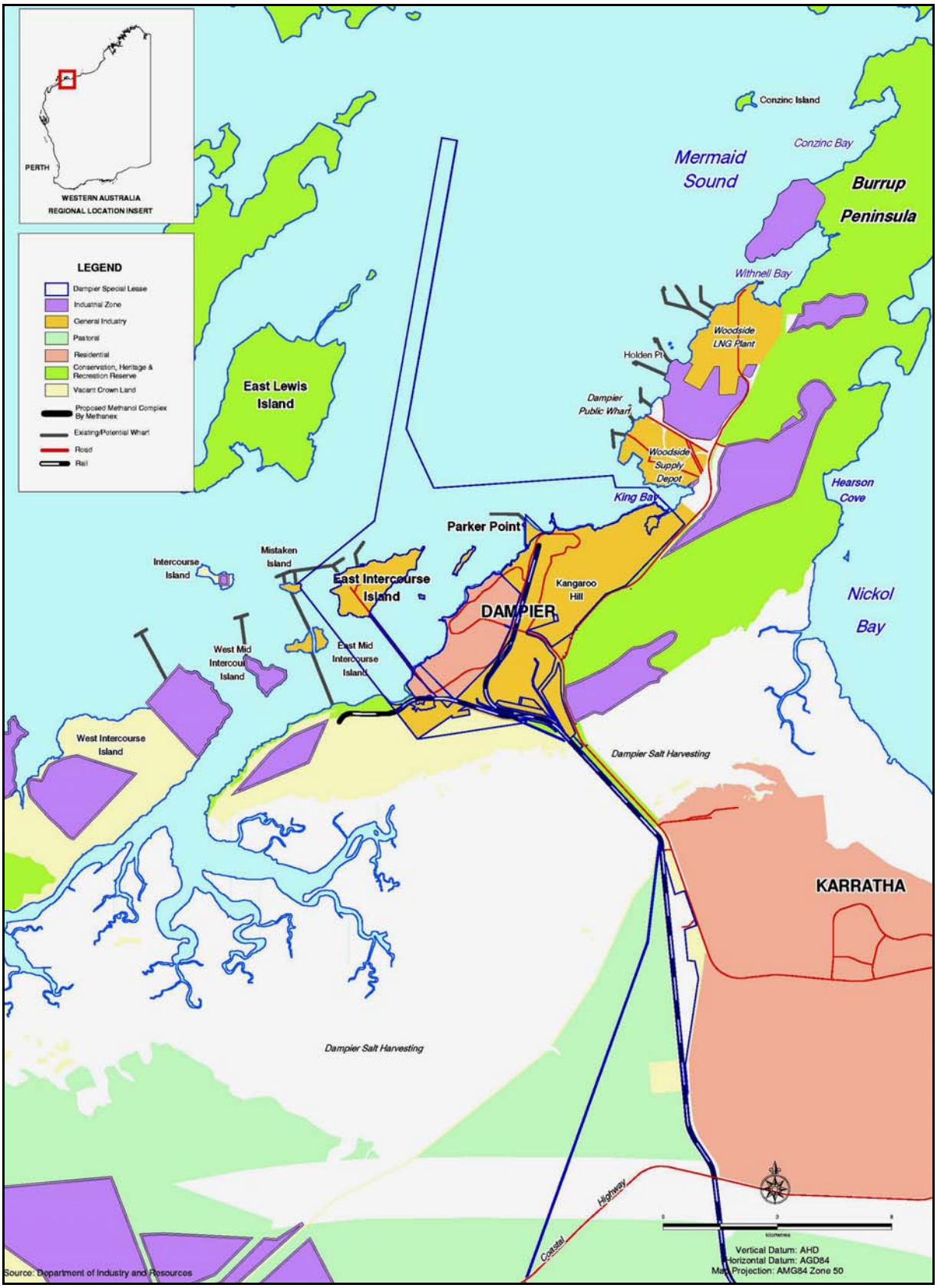

Figure 1: Locality Plan

Figure 2: Layout Plan

Schedule 2

Proponent's Environmental Management Commitments

18 September 2003

Hamersley Iron - Dampier Port Upgrade to 95 Mtpa

(Assessment No. 1489)

Hamersley Iron Pty Ltd

Proponent's Environmental Management Commitments

Dampier Port Upgrade to 95 Mtpa (Assessment No. 1489) – 18 September 2003

Note: The term "commitment" as used in this schedule includes the entire row of the table and its six separate parts as follows:

- a commitment number;
- a commitment topic;
- the 'action' to be undertaken by the proponent;
- the objective of the commitment;
- the timing requirements of the commitment; and
- the body/agency to provide technical advice to the Department of Environmental Protection.

Table 1: Dampier Port Upgrade to 95Mtpa Capacity (Assessment No. 1489) – 18 September 2003

Commitment No	Topic	Action	Objective	Timing	Advice
1.0	Construction Environmental Management	Develop a Construction Environmental Management Program (CEMP) that includes the following plans: ❑ Flora and Vegetation; ❑ Fauna Management; ❑ Construction Dust Management; ❑ Construction Noise Management; ❑ Blasting Management; ❑ Waste Management; ❑ Water Management; ❑ Stormwater Management; ❑ Aboriginal Heritage Site Management; and ❑ Traffic Management.	To manage all relevant environmental factors associated with the construction phase of the upgrade.	Pre-construction	DoE CALM Shire of Roebourne Main Roads DoIR
1.1		Prepare a Flora and Vegetation Management Plan that includes: ❑ Site clearance procedures; and ❑ Weed management.	To manage construction impacts on vegetation, flora and particularly Priority Flora.	Pre-construction	CALM
		Implement the Flora and Vegetation Management Plan		During construction	DoE
1.2		Prepare a Fauna Management Plan that includes: ❑ Procedures for fauna handling and evacuating procedures; ❑ Procedures to minimise impacts on Pilbara Olive Python ❑ Procedures to control introduced species; and ❑ Procedures for ensuring disturbance is kept within designated areas of the project site	To minimise impacts on fauna	Pre-construction	CALM
		Implement the Fauna Management Plan		During construction	DoE
1.3		Prepare a Construction Dust Management Plan that includes procedures for controlling dust emissions and monitoring of the performance of implemented dust control strategies	To ensure dust generated during construction does not cause any environmental or human health problem or adversely impact on amenity	Pre-construction	DoE
		Implement the Dust Management Plan		During construction	DoE
1.4		Prepare a Construction Noise Management Plan that includes: ❑ The use of low level noise equipment where practicable; ❑ Hours of operation; and ❑ Noise monitoring and reporting.	To minimise construction noise emissions and comply with Noise regulations	Pre-construction	DoE Shire of Roebourne
		Implement Construction Noise Management Plan		During construction	DoE
1.5		Prepare a Blasting Management Plan that includes: ❑ Procedures to address the issue of ground vibration from blasting activities; and ❑ Procedures to address the issue of the gas pipeline in the vicinity of blasting to be conducted for car dumper.	To ensure that blasting complies with Australian Standards and minimise risk to gas pipeline	Pre-construction	DoIR
		Implement the Blasting Management Plan		During construction	

Commitment No	Topic	Action	Objective	Timing	Advice
1.6		Prepare a Waste Management Plan based on a waste management hierarchy and include a solid waste inventory and procedures for sorting and disposing of solid wastes during construction.	To minimise waste.	Pre-construction	Shire of Roebourne
		Implement Waste Management Plan		During construction	DoE
1.7		Prepare a Water Management Plan that includes: ❑ Re-use/disposal of water generated from de-watering during construction of new car-dumper; ❑ Opportunities for the collection and possible re-use of storm water or washdown water at Parker Point; and ❑ Use of water for dust suppression.	To minimise water consumption	Pre-construction	DoE
		Implement Water Management Plan		During construction	DoE
1.8		Prepare a Stormwater Management Plan that includes: ❑ Diversion of drainage lines; ❑ Surface water management and monitoring programme; and ❑ Stormwater management.	To minimise erosion and impacts to downstream environments	Pre-construction	DoE
		Implement Stormwater Management Plan.		During construction	DoE
1.9		Prepare an Aboriginal Heritage Site Management Plan addressing: ❑ Development of a management strategy for any known heritage sites susceptible to disturbance during construction; and ❑ Provide cultural awareness training to the construction workforce.	To protect known heritage sites from inadvertent damage or preserve the items of significance at an appropriate alternative location. To minimise disturbance to areas of Aboriginal cultural significance. To increase awareness of any Aboriginal sites of significance that may be uncovered during construction.	Pre-construction	Department of Indigenous Affairs Relevant Aboriginal groups
		Implement Aboriginal Site Management Plan		During construction	
1.10		Prepare a Traffic Management Plan that will focus on: ❑ Restricting vehicle access to designated routes such that unnecessary disturbance to the surrounding environment is prevented; and ❑ Monitoring the transportation of oversized loads.	To minimise potential traffic impacts	Pre-construction	MRWA Shire of Roebourne
		Implement the Traffic Management Plan		During construction	
2	Dust	Review and update the current Dust Management Plan to: ❑ Incorporate the proposed dust control initiatives associated with the port upgrade; ❑ Review operational and maintenance procedures so that all new and upgraded dust suppression equipment is operated in an appropriate manner to produce optimal performance; ❑ Set long-term targets to achieve overall reduction in existing dust impacts.	To reduce dust levels within the town of Dampier from the Dampier Port Operations through continuous improvement.	Pre-commissioning	DoE
		Implement the updated Dust Management Plan.	As above	Ongoing	DoE

Commitment No	Topic	Action	Objective	Timing	Advice
3	Dust	Modify the current dust monitoring program in order to take account of the port upgrade and to better understand its contribution to dust levels within Dampier.	To improve existing dust monitoring programme.	Pre-commissioning	DoE
		Review the dust monitoring data from the modified dust monitoring program against the predictions of the dust modelling assessment.	To confirm the modelling assessment and understand the implications of dust from the Dampier Operations on the town of Dampier.	Post-commissioning	DoE
4	Noise	Develop a Noise Management Program for new and existing plant that includes: ❑ Identification of main noise sources; ❑ Practicable noise remediation works; ❑ Timeframe to implement noise remediation works; ❑ Procedures to minimise noise emissions, particularly during out of hours; ❑ Noise Monitoring; and ❑ Complaint Management Procedures.	To work towards compliance with Noise Regulations.	Pre-commissioning	DoE
		Implement the Noise Management Program.	As above	Ongoing	DoE
5	Water Supply	Develop a water balance for the port operations, incorporating the port upgrade, to identify opportunities for reductions in water demand. Opportunities reviewed will include: ❑ Conditioning of the ore at the mine sites, where practicable; ❑ Minimising water use; and ❑ Recycling water.	To better understand where water is used and minimise water use.	Pre-commissioning Ongoing	DoE
6	Water Supply	Implement water recycling and water minimisation initiatives and progress a staff awareness program of water use minimisation.	To reduce the water supply demand from the port operations.	During construction and ongoing	
7	Marine Environment	Develop and implement a long-term marine monitoring programme.	To identify any impacts on the marine environment	Pre-commissioning	DoE CALM
8	Aboriginal Heritage	Consult with relevant Aboriginal groups regarding the identification and assessment of significance of Aboriginal heritage sites within the port upgrade area.	To identify significant Aboriginal people heritage sites.	Pre-construction	Relevant Aboriginal groups
9	Aboriginal Heritage	Develop a Section 18 application to the ACMC in consultation with the three Aboriginal claimant groups, where direct impacts on Aboriginal sites cannot otherwise be avoided.	To consider the views of relevant Aboriginal groups in protection of Aboriginal heritage sites.	Pre-construction	Minister for Aboriginal Affairs
10	Aboriginal Heritage	Evaluate reasonable protective measures with Aboriginal groups where the remaining Aboriginal sites within the lease are at risk from indirect impacts from construction works. Implement those measures as required.	To consider the views of relevant Aboriginal groups in protection of Aboriginal heritage sites.	Pre-construction	Minister for Aboriginal Affairs, Department of Indigenous Affairs
11	Community Consultation	Actively support and discuss local environmental issues through the Coastal Community Environmental Forum	To maintain ongoing community consultation on local environmental issues.	Ongoing	DoE

With respect to management plans, programmes, strategies, systems and the like required within the conditions and/or committed to by the proponent, the proponent shall obtain third party certification by an accredited auditor that the proponent has met the requirements and adequately addressed the topics included at frequencies advised by the Department of Environmental Protection.