



# Report and recommendations of the Environmental Protection Authority



## Multi-user Iron Ore Export (Landside) Facility

North West Infrastructure

Report 1419

November 2011

## Assessment on Proponent Information Environmental Impact Assessment Process Timelines

Date	Progress stages	Time (weeks)
05/09/11	Level of assessment set	
05/10/11	Proponent's Final API document received by EPA	4
28/11/11	Publication of EPA report (3 days after report to Minister)	7
12/12/11	Close of appeals period	2

Timelines for an assessment may vary according to the complexity of the project and are usually agreed with the proponent soon after the level of assessment is determined.

In this case, the Environmental Protection Authority met its timeline objective in the completion of the assessment and provision of a report to the Minister.



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Chairman  
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# 1. Introduction and background

This report provides the Environmental Protection Authority's (EPA's) advice and recommendations to the Minister for Environment on the proposal to construct and operate port infrastructure located within existing or proposed Port Hedland Port Authority (PHPA) land and the Boodarie Multi-user Stockyard Area. Iron ore would be unloaded at Boodarie and placed via a conveyor into stockpiles before being reclaimed and delivered, via an elevated overland conveyor, to shipping berths in South West Creek for export. The proponent for this proposal is North West Infrastructure (proponent).

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

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

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

The proponent has submitted a referral document setting out the details of the proposal, potential environmental impacts and proposed commitments to manage those impacts.

The EPA considers that the proposal, as described, can be managed to meet the EPA's environmental objectives, subject to the EPA's recommended conditions being made legally binding.

The EPA has therefore determined under Section 40 of the EP Act that the level of assessment for the proposal is Assessment on Proponent Information (API, Category A), and this report provides the EPA advice and recommendations in accordance with Section 44 of the EP Act.

## 2. The proposal

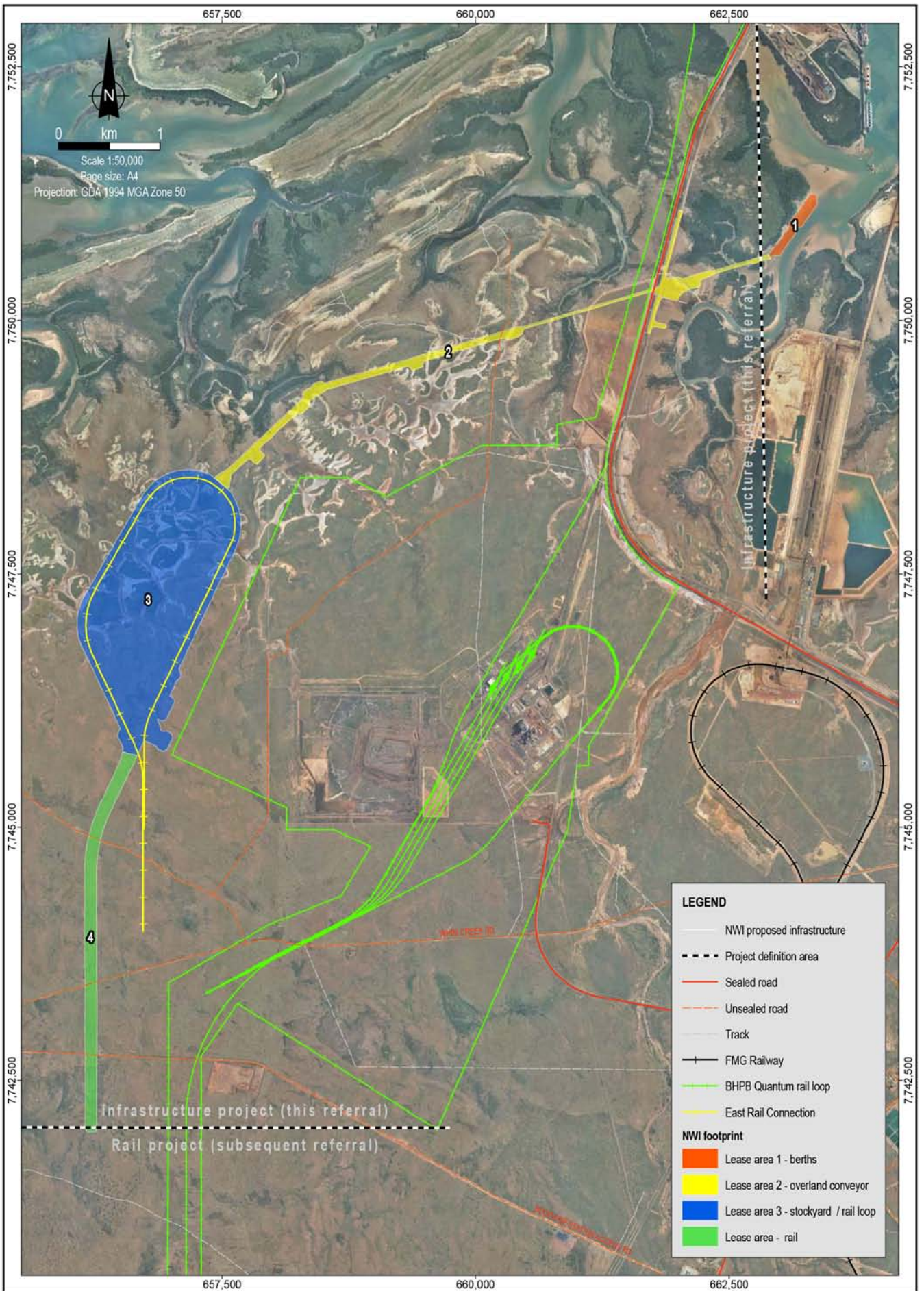
The Multi-user Iron Ore Export Facility is located in the Pilbara Region of Western Australia. The proposal will provide additional port facilities at Port Hedland to receive and stockpile the product from emerging miners, specifically the various mines owned by the proponent's shareholders, and load this product onto ships for export. Each of the shareholders is exploring and developing new iron ore projects in the Pilbara, with one company actively mining ore and exporting through the existing facilities in the Port of Port Hedland. The current shareholders of the proponent are Atlas Iron Limited, Brockman Resources Limited and FerrAus Limited.

In January 2011 the EPA assessed a proposal by the Port Hedland Port Authority (PHPA) for the dredging of 14 million cubic metres of material in South West Creek Port Hedland and the proposal was granted environmental approval in March 2011 (EPA Report 1380, Ministerial Statement 859). Two of the shipping berth pockets (Stanley Point Berths 3 and 4) that formed part of that dredging proposal have been allocated to the proponent and therefore dredging does not form part of this proposal however the construction of the berth and wharf does.

The proponent's proposal involves the construction and use of infrastructure located within Boodarie Stockyard Area and the Port Hedland Inner Harbour. Iron ore would be unloaded at Boodarie and placed via conveyor into stockpiles before being reclaimed and delivered, via an elevated conveyor, to shipping berths in South West Creek for export (Figure 1). The main characteristics of the proposal are summarised in the table below:

**Table 1: Summary of key proposal characteristics**

<b>Element</b>	<b>Description</b>
Rail	Two railway connections, rail loop and train unloader
Stockyard	Stockyard at Boodarie
Conveyor	A 6.2 kilometre long elevated conveyor connecting the stockyard to the wharf at South West Creek
Wharf	Wharf structures, two shipping berths and one ship loader at Stanley Point in South West Creek
Life of project	50 years or more
Throughput	50 million tonnes per annum
Terrestrial vegetation and ground disturbance	Rail corridor, conveyor, stockyard and other infrastructure: not more than 290 hectares within a development envelope of 350 hectares
Mangrove loss	Not more than 4.5 hectares



**Figure 1: Multi-user Facility – indicative layout and development envelope**

The potential impacts of the proposal are discussed by the proponent in the referral document, *Multi-user Iron Ore Export (Landside) Facility, Environmental Referral Document*, 5 October 2011. The rail connection and the supply of water for the operation of the project will be the subject of a separate proposal.

### **3. Consultation**

During the preparation of the environmental referral document, the proponent has undertaken consultation with government agencies and key stakeholders. The agencies, groups and organisations consulted and the comments received are detailed in Section 3 of the proponent's referral document *Multi-user Iron Ore Export (Landside) Facility, Environmental Referral Document*, 5 October 2011.

A number of environmental issues were raised by the stakeholders during the consultation and the EPA considers that the consultation process has been appropriate and that reasonable steps have been taken to inform the community and stakeholders on the proposed development.

### **4. Key environmental factors**

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

- (a) Benthic Primary Producer Habitat;
- (b) Surface water and tidal processes; and
- (c) Emissions (dust and noise).

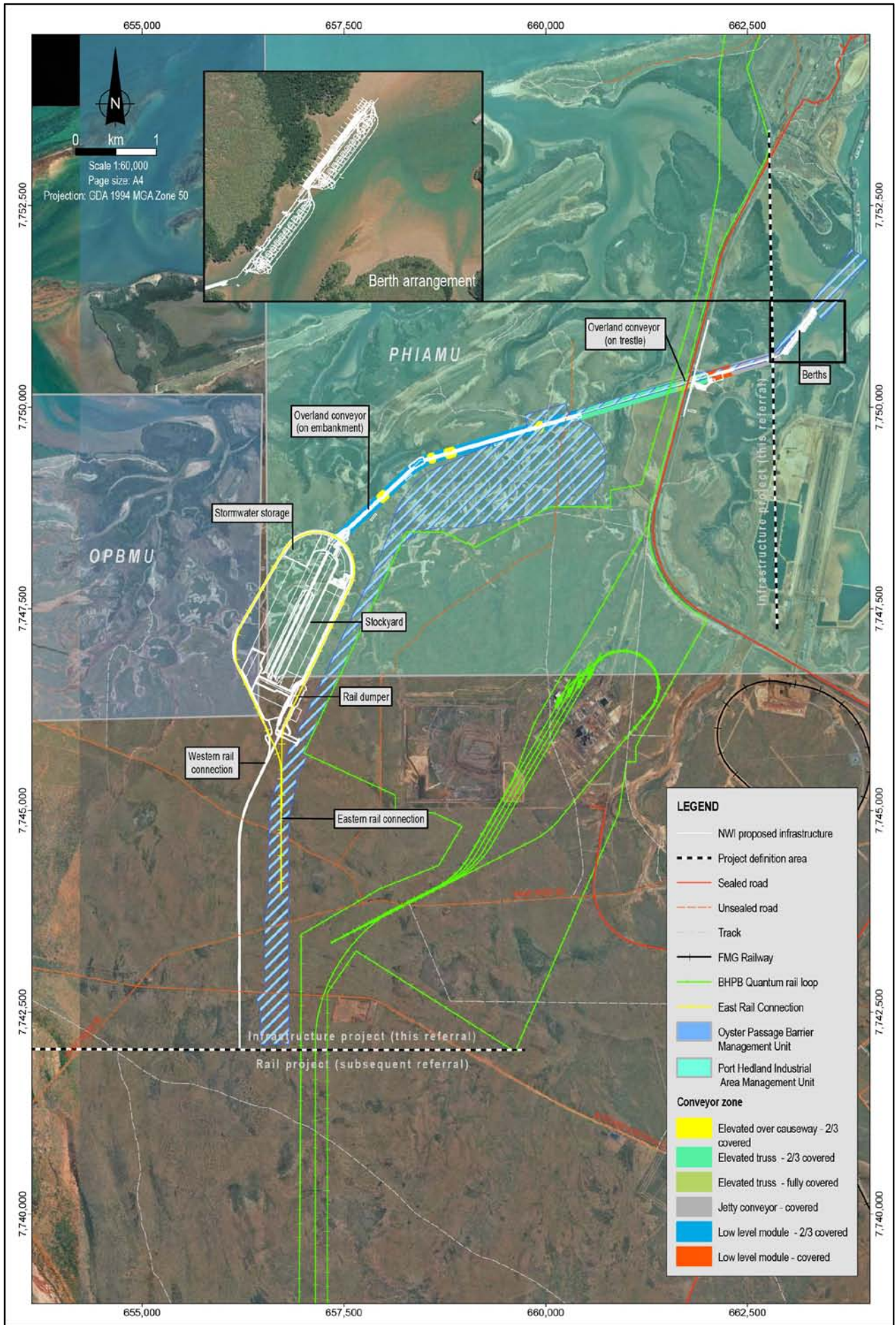
The key environmental factors are discussed in Sections 4.1- 4.3. The description of each factor demonstrates why it is relevant to the proposal and how it would be affected by the proposal. The assessment of each factor is where the EPA decides whether or not a proposal meets the environmental objective set for that factor.

#### **4.1 Benthic Primary Producer Habitat**

##### **Description**

The Benthic Primary Producer Habitat (BPPH) communities that are considered relevant to the proposal are primarily mangroves with other BPPH existing within the proposal footprint which includes salt marshes (samphire) and cyanobacterial algal mats. These communities will be impacted by the proposal due to the location of the stockyard and rail loop at the fringe of the inter-tidal zone and the elevated trestle conveyor which traverses several creeks and terminates at the proposed berth and ship loading facility in South West Creek within the Inner Harbour.

The total loss of mangroves that would result from this proposal is 4.5 ha which is required to construct the overland conveyor from the stockyard to the wharf. This loss is located within the Port Hedland Industrial Area Local Assessment Unit (LAU)<sup>1</sup>. This assessment unit includes the Port Hedland Harbour, South West Creek, conveyor corridor and Boodarie Estate and has been used in all recent previous proposals within the Port Hedland region by the EPA (Figure 2).



**Figure 2: Spatial location in the context of relevant local assessment units**

<sup>1</sup> **Note** – The proponent has noted that the EPA recently released Environmental Protection Bulletin No. 14, *Guidance for the assessment of benthic primary producer habitat loss in and around Port Hedland*, EPA, 2011. This bulletin and supporting data effectively supersedes the use of the Port Hedland Industrial Area Local Assessment Unit for consideration of BPPH loss within the Port Hedland Region. **At the direction of the EPA, this new guidance is to be related to new referrals to the EPA only.**

Previously reported losses of mangroves within the Port Hedland Industrial Area LAU, comprise approximately 342.1 ha (EPA 2011a). This is equivalent to approximately 12.8% cumulative mangrove loss as calculated from the original historical mangrove extent estimated at 2,676 ha. This proposal would increase the mangrove loss figure to 346.6 ha which equates to approximately 13% cumulative loss within the Port Hedland Industrial Area LAU.

A portion of the proposal footprint is also located within an area that contains mangrove communities that are considered to be of regional significance and high conservation value (Figure 2). This is another LAU and guidance is provided in the EPA's Guidance Statement No. 1, *Protection of Tropical Arid Zone Mangroves along the Pilbara Coastline* (EPA, 2001) regarding proposed developments that have the potential through either direct or indirect impacts to adversely affect the ecological integrity of the BPPH communities that are present. This area is also defined in Guidance Statement No.1 as 'Area No.21' or 'The Oyster Passage Barrier'.

In response to this, the proponent has designed and engineered key components of the proposal to minimise the level of direct and indirect impact on mangroves and other BPPH wherever practicable, particularly with regard to the Oyster Passage Barrier. The key design component of the proposal that seeks to minimise loss of mangroves is the elevated trestle conveyor which would transfer the iron ore from the stockyard and rail loop location in Boodarie to the berth and ship loader in South West Creek.

In addition to the above direct impacts, a number of potential indirect impacts were identified by the proponent which include:

- reduction in tidal flushing and inundation due to restriction of tidal exchange;
- changes in patterns of erosion or accretion which can lead to undermining or burial of pneumatophores;
- impoundment of water at higher than natural levels leading to sustained inundation of pneumatophores and/or a decline in water quality;
- release of contaminants from iron ore stockpiles into surface water runoff;
- alteration to fresh water surface drainage or changes in groundwater flow pattern; and
- deposition of dust and other particulates on mangrove leaves.

### **Assessment**

The EPA's environmental objective for this factor is to maintain the abundance, diversity, geographical distribution and productivity of mangroves and other BPPH at species and ecosystem levels through the avoidance or management of adverse impacts and improvement in knowledge.

The area for assessment for mangrove loss is the Port Hedland Industrial Area LAU which includes the Port Hedland Harbour, South West Creek, proposed conveyor corridor and Boodarie Estate. With regard to the Oyster Passage Barrier LAU, the EPA notes that there will be no direct impacts on the mangroves within this LAU and that only a small area of other BPPH (samphires and algal mats) would be affected.

The cumulative loss of mangroves within the Port Hedland Industrial Area LAU is shown in Table 2 below.

**Table 2: Potential direct impact on mangroves - calculations for the Port Hedland Industrial Area Local Assessment Unit**

<b>Benthic Primary Producer Habitat (Mangroves)</b>	<b>Port Hedland Industrial Area Local Assessment Unit (ha)</b>	<b>Percentage Impact (%)</b>
Total size of management unit	15,430	
Historical area of mangroves as defined by the EPA	2,676	
Current area of mangroves as defined by the EPA	2,378.9 (Inclusive of 40 ha for South West Creek and 5 ha for Roy Hill Infrastructure)	
Estimated historic and approved mangrove loss by difference (Inclusive of 40 ha for South West Creek and 5 ha for Roy Hill Infrastructure)	342.1	12.8
Potential permanent loss due to this proposal	4.5	
<b>Potential cumulative loss including NWI Landside facility</b>	<b>346.6</b>	<b>13.0</b>
Resulting extent of mangroves	2329.4	

The EPA notes that the proponent's proposal would result in the loss of up to 4.5 ha of mangroves within the development footprint of the proposal. This would bring the cumulative loss of mangroves to 13.0%, an increase of 0.2% over the existing historical loss within the Port Hedland Industrial Area LAU which is not considered by the EPA to be a significant exceedance of the BPPH cumulative loss guideline of 10%. It should be noted however, this assumes the loss of all mangroves within the conveyor corridor whereas construction may be able to avoid at least some of this loss. Consideration of cumulative loss of mangroves in this area includes all approved proposals, but does not include the future BHP Billiton Outer Harbour proposal which is currently being assessed by the EPA.

The EPA has considered the proposed loss of 4.5 ha of mangroves that would result from the proponent's proposal in the context of Environmental Assessment Guideline No.3, *Protection of Benthic Primary Producer Habitats in Western Australia's Marine Environment*, December 2009 (EPA, 2009) (EAG No.3) and concludes that the loss of 4.5 ha of mangroves is not a significant contribution to the cumulative loss figure within the Port Hedland Industrial Area LAU. The EPA also notes that the proponent has given due consideration to both the overarching assessment principles and the overall risk to the ecological integrity of the mangroves located at the proposal location, both within the Port Hedland Industrial Area LAU and through avoiding mangroves within the Oyster Passage Barrier LAU.

The EPA notes that as part of the consideration of the overarching assessment principles the proponent has, in its referral document for the proposal, demonstrated the following.

- Consideration of design options and locations of the proposed stockyard and railway loop to avoid damage/loss of mangroves. Specifically, the final location of the railway loop bund with internal stockyard has been situated in a location that is as far as practicable from the intertidal zone and existing mangroves and is adjacent to the Roy Hill Iron Ore infrastructure to minimise the overall disturbance footprint (Figure 2).
- A commitment to a design for an elevated trestle conveyor that would extend from the railway loop bund to the berth and ship-loading facility in South West Creek.
- Adoption of best practicable design, construction methods, environmental management and commitment to minimise the direct loss of mangroves and maximise the potential for recovery.
- A commitment to design and implementation of a storm water drainage system to capture surface water from operational areas in the stockyard including the use of silt traps and sedimentation basins. Storm water would be treated (if required) prior to discharge off-site.
- Development and implementation of procedures for the construction team to enable disturbance during construction to be minimised and the opportunities for recovery of mangroves optimised.
- Incorporation of a 10m buffer zone between the infrastructure edge and disturbance boundaries where practical to avoid impacts on mangroves outside the approved area.
- Adoption of a design for the proposed infrastructure which would be based on current best practice to withstand a 1:100 year flood event.

The EPA has recommended Condition 5 that prescribes the maximum level of mangrove clearing to be 4.5 ha with no additional direct or indirect impacts outside the proposal footprint.

## **Summary**

Having particular regard to the:

- proposal design and engineering solutions that seek to avoid where possible and then limit impact to mangroves of up to 4.5 ha loss (elevated trestle conveyor, stockyard and rail loop design and location);

- the proposed level of clearing for the proposal that is not regarded by the EPA to be a significant exceedance of the BPPH cumulative loss guideline of 10%; and
- EPA's recommended Condition 5,

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

## 4.2 Surface water and tidal processes

### Description

The topography of the Port Hedland Harbour ranges from open harbour leading to tidal creeks, intertidal mudflats, bare coastal mudflats and sandy lowlands. Several intertidal creeks converge in the harbour which has been highly modified by dredging activities and the development and operation of port-related industry. Surface water mostly drains to the north towards the coast along ephemeral drainage lines and the Turner River located to the west of Boodarie is the most significant of these features with a large catchment area. The South Creek and South West Creek catchment is sufficiently flat that during periods of flood or high tides and storm surge the flows from the two creeks combine into a single drainage system.

The majority of the proposal is located within the western part of the catchment of South and South West creeks, though part of the rail alignment runs along the divide between this catchment and that of the Turner River. The orientation of the proposal is generally parallel to existing drainage lines and under current conditions, combined storm surges and flood events with an annual exceedance probability (AEP) of 1 in 50 and 1 in 100 could cause flooding in the proposal area. Without mitigation, the proposal would impede the surface water flows of the site and the existing tidal patterns of inundation. Proposal components likely to impact surface water flows are; the earthen embankment, rail loop, enclosed stockyards, overland conveyor and the ship loading facility in South West Creek.

Much of the area of the estuary which is directly affected by the rail loop and stockpile is generally above +3 m Australian height datum (AHD) and is therefore only minimally impacted by tidal flows during large spring tides, although some areas of the proposal site are between +1 and +2 m AHD.

The proponent has undertaken hydrodynamic modeling to predict flooding under existing conditions and assess the impacts of the proposed development and a cumulative scenario that includes the Roy Hill proposal. The modeling was undertaken for a simulated Mean High Water Spring condition for the AEP 1 in 10 events, while the AEP 1 in 50 and 1 in 100 events were simulated with the flood peak in the catchment coinciding with the storm surge peak. Results of the modelling demonstrated that only minor changes would be likely to result from construction of the proposal in conjunction with the Roy Hill proposal. These changes can be summarised as follows and examined further in Appendix D, *Surface Water Report* of the proponent's API document (Appendix 3).

- For the 1 in 10 AEP events, flow velocities in the proposal area are virtually unchanged and very minor increases in water depth of between 0.03 and 0.15 m will be experienced south of the BHP-Billiton dredge pond and South West Creek.

- The proposed railway loops for the proponent and Roy Hill would impede the passage of storm surge for the 1 in 50 AEP and the 1 in 100 APE events and as a result show:
  - reductions in the peak flood levels of more than 0.15 m across the area to the south of the Roy Hill railway loop and to the west of the BHP Billiton Railway;
  - reductions in the peak flood levels of about 0.1 m in the area to the east of the BHP Billiton Railway line; and increases in the peak flood levels were shown to be negligible;
  - during the 1 in 50 AEP events, peak velocities are not predicted to increase significantly; and
  - during a 1 in 100 AEP event, the flow velocities would be virtually unchanged in the proposal area.

To manage and further mitigate the impacts to surface water and tidal processes, the proponent is proposing:

- elevation of the conveyor on trestles except in the immediate vicinity of the Roy Hill Stockpile and rail line where there is no environmental benefit to a trestle design;
- to construct appropriate sized culverts where the conveyor is constructed on an embankment (in consultation with the proponent of Roy Hill);
- appropriate scour protection in the vicinity of the waterway openings in the conveyor and culvert to control erosion during flood and storm surge events;
- baseline and continuous monitoring of sediment and other pollutants would be conducted during construction and operation of the proposal to detect in changes in water quality attributable to the proposal; and
- implementation of site storm water management to detain runoff produced from impervious areas and to minimise scour cause by direct runoff from these areas.

### **Assessment**

The EPA's environmental objectives for these factors are:

1. to maintain the quantity of water so that existing and potential environmental values, including ecosystem maintenance, are protected; and
2. to maintain the integrity, ecological functions and environmental values of the seabed and coast.

The area for assessment is the Port Hedland Industrial Area LAU and Oyster Passage Barrier LAU which includes the Port Hedland Harbour, South West Creek, proposed conveyor corridor and Boodarie Estate.

The EPA considers that the proposal is unlikely to have a significant impact on the existing surface and tidal water patterns of the receiving environment. The proponent has designed the railway embankment and stockyard area to run predominately parallel to the existing natural water drainage channels. The EPA notes that although the rail loop and stockyard would obstruct surface water flows, this would only be likely to cause localised changes in close proximity to these structures.

The EPA notes that the most significant change is likely to be within the channels which convey water to and from the inter-tidal areas near the railway and conveyor embankments. The proponent has committed to implementing scour protection in these areas as well as a regular program of inspection and maintenance to ensure that the culverts continue to function effectively. The predicted level of increases in flood water velocity and inundation levels are unlikely to have a significant impact and the EPA notes that no changes are predicted to the adjacent Turner River.

The EPA also notes that the proponent has incorporated advice provided as part of the Roy Hill Iron Ore Port Infrastructure proposal (EPA Report 1377) and designed the conveyor component of this proposal to be an elevated structure and this has significantly reduced the level of environmental impact on both surface water flows and tidal processes. They have also designed the proposal to include a shared access corridor to minimise the impact arising from conveyor footprints.

The EPA notes that the proposed wharf structure in South West Creek would be constructed as a pylon structure, with no substantial impediments to tidal flows.

The EPA has recommended Condition 5 to ensure that mangroves and other BPPH located in proximity to components of the proposal are not adversely affected by changes in surface water patterns, water quality or tidal processes to which they are known to be susceptible.

## **Summary**

Having particular regard to the proposal design and engineering solutions which aim to avoid (where possible) and limit impacts to surface water and tidal processes, it is the EPA's opinion that the proposal can be managed to meet the EPA's environmental objectives for this factor.

## **4.3 Emissions (dust and noise)**

### **Description**

#### ***Dust***

The semi-arid landscape of the Port Hedland region promotes the generation of high background levels of naturally occurring dust. The levels of this dust have been found to exceed the National Environment Protection Measure (NEPM) standard for particulate matter (PM<sub>10</sub>) of 50 µg/m<sup>3</sup> on a regular basis. Contributing to these naturally high background levels are emissions from local industry, compounded by the frequent proximity of industry to residential areas (DSD, 2010)

The Port Hedland town site has been exposed to elevated dust levels through iron ore operations at Nelson Point and Finucane Island since the mid to late 1960s. The significance of dust and noise from an environmental and health perspective has resulted in the formation of the Port Hedland Dust Management Taskforce (Dust Taskforce), which is comprised of industry and government representatives. The Dust Taskforce recently reviewed the available evidence and released the *Port Hedland Air Quality and Noise Management Plan, The Port Hedland Dust Management Taskforce Report* in March 2010 (DSD, 2010) (Taskforce Report). This report recognises that there are five broad categories where clear direction for action is required: health risk assessment and analysis, environmental management controls, governance, industry initiatives, and land use planning.

Management of dust in Port Hedland is an ongoing issue that requires collaboration of industry and government with further research and monitoring, however the Taskforce Report has established interim guidelines for dust levels in Port Hedland. This criterion is for a PM<sub>10</sub> level of 70 µg/m<sup>3</sup> at (and east of) Taplin Street, with up to 10 exceedances of this level per year. This interim guideline is to be reviewed after five years.

The proposal would generate additional dust from construction and operational activities. Potential sources of dust from the proponent's operations would include:

- train unloading;
- vehicle generated dust;
- ore stock piling and reclaiming;
- wind erosion from stockpiles and unsealed areas;
- conveyor movements and transfers; and
- ship-loading.

The proponent has undertaken modelling of the likely increase to the cumulative dust load as a consequence of its operations. Existing and future proposed developments for the inner harbour have been modelled, with and without the proponent's operations. As the EPA is currently conducting an assessment of the BHP Outer Harbour proposal in Port Hedland, the proponent has undertaken modelling for a fully expanded Port Hedland Port that includes the proposed BHP Billiton Outer Harbour proposal for context. The future throughputs for Port Hedland are shown in Table 3 below.

**Table 3: Expected future iron ore throughputs in Port Hedland on which the dust modelling is based.**

<b>Operation</b>	<b>Throughput (Mtpa)</b>
PHPA Nelson Point	4
PHPA Utah Point Multi-User	16
BHP Billiton Iron Ore Inner Harbour	240
FMG Anderson Point	120
Roy Hill Iron Ore	55
North West Infrastructure	50
<b>Inner Harbour Total</b>	<b>482</b>
BHP Billiton Iron Ore Outer Harbour	240
<b>Inner and Outer Harbour Total</b>	<b>722</b>

**Table 4: Summary of 24-hour PM<sub>10</sub> (Average) Model Predictions by Scenario**

Receptor	2004-05 Validated Model (ug/m <sup>3</sup> )	Future (no NWI) (ug/m <sup>3</sup> )	Future (with NWI) (ug/m <sup>3</sup> )	Future (with NWI and Outer Harbour) (ug/m <sup>3</sup> )
	106 Mtpa	432 Mtpa	482 Mtpa	722 Mtpa
Harbour	49	60	62	63
BMX	-	51	52	53
Hospital	44	47	48	49
St Cecillas	-	37	37	38
Shops	-	32	33	34
Primary School	22	25	26	26
Secondary School	19	23	23	24
Wedgefield	19	28	29	30

The modeling concludes that this proposal would result in an increase in the maximum and average 24 hour PM<sub>10</sub> ground level concentrations and the number of exceedances of the 70 µg/m<sup>3</sup> level across all sites, with the exception of the Hedland Senior High School located in South Hedland (Table 4). Modeling also shows that the dust levels for all approved operations (i.e. not including the proponent) in the inner harbor already exceed the guidelines specified by NEPM and the Taskforce Report (Table 5).

**Table 5: Modelled results for number of exceedances of the 70 ug/m<sup>3</sup>, east of Taplin Street**

Scenario	NWI only	Future (no NWI)	Future (with NWI)	Future (with NWI and Outer Harbour)
Exceedences of 70 µg/m <sup>3</sup> @ Taplin St	0	19	23	25

The proponent has sought to minimise the contribution of the proposal to the existing dust load within the Port Hedland air-shed by proposing the following dust control methods:

- maintenance of high ore moisture levels above dust extinction levels;

- stockpile surface moisture content would be monitored by inspection and water cannons used to dampen the surfaces, as required, to prevent fugitive dust generation;
- conveyors between the stockyard and the wharf would be covered to minimise fugitive dust and noise emissions;
- enclosure of key components at the rail car dumpers, use of fogging water sprays and the time of dumping and installation of a particulate extraction system around the wagon tipper;
- total enclosure and utilisation of water sprays at the conveyor transfer points and the use of belt scrapers to clean conveyor belts;
- stackers would be slewing, luffing types so that the drop height to the stockpile is minimised to reduce the energy dissipation level to the minimum; and
- minimising the ship loader discharge height and installation of water sprayers at the boom discharge and boom conveyor system.

In addition to the above design measures, and as a member of the Dust Taskforce, the proponent is required to develop a dust monitoring program in consultation with the Department of Environment and Conservation (DEC) and would continue to participate in the development of initiatives and requirements of the Dust Taskforce.

### **Noise**

Background night-time noise levels at sensitive receptors in Port Hedland region currently exceed the *Environmental Protection (Noise) Regulations 1997* (Noise Regulations). The proposal would introduce a number of additional sources of industrial noise. These include:

- rail operations, including train unloading;
- conveyor operations, stockpiling and reclamation of ore;
- ship-loading; and
- piling (construction of the wharf structure).

The proponent modelled the likely levels of operational noise generated by the proposal and considered approximately 50 noise sources comprising all the major elements of the proposal. The dominant noise from the proposal is from the wharf conveyor and modelling predicts that the received night time level at one sensitive receptor (old Hospital site) would be 5.6 dB above those prescribed by the Noise Regulations. Modelling of noise from the rail (exempt under the Noise Regulations) was not undertaken but the dominant noise source would be noise from the wagons.

In order to comply with the Noise Regulations the following measures are being proposed:

- either low noise idlers or shielding of idlers on conveyors, CV501, CV502, CV401, CV402 and CV511; and
- either shielding or specifying the following 88 kW drives to 82 dB at 1m:
  - 2 x CV 502 drives
  - 2 x CV 501 drives
  - 2 x CV511 drives

With regard to noise from construction, the primary source is likely to be piling during wharf construction and the proponent would need to ensure the requirements of the Environmental Protection (Noise) Regulations 1997 are met.

Noise related impacts on marine fauna from the construction of the wharf, such as turtles, are expected to be limited to the immediate vicinity (20–30 metres). It is anticipated that any turtles in the area at the commencement of piling are likely to move away from the activity. The proponent would apply the following controls to reduce any potential impacts on marine fauna from piling:

- prior to the commencement of operations each day, a Marine Fauna Observer(s) would be used to inspect a 300 m radius around the work area for the presence of turtles and marine mammals;
- piling would not commence until the Marine Fauna Observer(s) has designated the area as clear no more than 15 minutes prior to commencement;
- should a turtle or marine mammal be sighted within 100 m of operations, piling would cease until the Marine Fauna Observer(s) designate the area as clear for at least 15 minutes;
- soft-startup procedures;
- the Marine Fauna Observer(s) would maintain records of all sightings of turtles and marine mammals and other unusual observations, such as fish kills; and
- an information package on turtles and marine mammals potentially occurring in the area would be produced and distributed to all personnel.

### **Assessment**

The EPA's environmental objectives for these factors are:

1. to ensure that dust emissions do not adversely affect environmental values or the health, welfare and amenity of people and land uses by meeting statutory requirements and acceptable standards; and
2. to protect the amenity of nearby residents from noise impacts resulting from activities associated with the proposal by ensuring the noise levels meet statutory requirements and acceptable standards.

The area for assessment is the locality of Port Hedland which includes Boodarie Estate, Port Headland, Wedgefield and South Hedland.

### **Dust**

The EPA acknowledges that effective dust management is complicated in Port Hedland because of the range of dust sources and the lack of an adequate buffer between the existing port operations and sensitive land uses. The significance of dust and noise from an environmental and health perspective has been extensively examined by the EPA and resulted in the formation of the Dust Taskforce following the EPA's assessment of the PHPA Utah Point proposal in 2009.

The EPA notes that modelling undertaken by the Dust Taskforce in 2009 demonstrated that a fully expanded inner harbour, incorporating best practice dust management techniques, predicted no more than 10 exceedances per year of the interim  $70\mu\text{g}/\text{m}^3$  guideline for  $\text{PM}_{10}$  at Taplin Street. The Taskforce prescribed that the guideline would be met at (and east of) Taplin Street. Modelling conducted by

the proponent for this proposal has predicted dust emissions from approved proposals are likely to exceed this interim guideline.

Importantly, the EPA has been made aware as part of its assessment of BHP Billiton's proposed Outer Harbour Development that the modelling and subsequent predicted impacts attributable to the North West Infrastructure proposal and the cumulative scenario for all sources is highly likely to be overly conservative.

In addition to the above point, the EPA has noted that the proposal would make a relatively minor contribution to existing ambient air quality within the Port Hedland airshed. However, an increase is predicted in the number of days when the 24-hour average PM<sub>10</sub> value is likely to exceed the 70µg/m<sup>3</sup>/10 exceedance interim guideline prescribed by the Task Force. The main source of dust would be the operations at the stockyard, conveyors and the ship loader. Proposed dust management and mitigation methods include high moisture content ore, enclosed car dumper and dust extraction, partially covered conveyors, minimising discharge height, fugitive dust control and a monitoring and improvement program.

As a component of this assessment, the EPA has liaised with the DEC with regard to the ongoing management of the proposed facility and concluded that the most appropriate way to regulate dust emissions is under Part V of the EP Act, which includes Section 62A (1) (q), which relates to the requirement for environmental management and improvement plans. As such, the EPA has not recommended an Environmental Condition for dust.

### **Noise**

The EPA notes that the Taskforce Report, in the context of environmental management controls, recommended that the EPA establishes a State Environmental Policy for Port Hedland to monitor and manage noise using Regulation 17 exemptions where appropriate. This includes:

- developing a cumulative noise model;
- defining noise sensitive zones;
- clarifying planning measures; and
- clarifying building standards.

The proponent, as a member of the Port Hedland Dust Management Taskforce, is aware of the need to limit noise emissions to the lowest practicable level and to play an ongoing role in the implementation of the Taskforce Report Recommendations. Given the location of the stockyard away from the harbour and residential areas, and the inclusion of a range of design measures to limit noise emissions from ship loading and ore handling at the berth, the impact on sensitive receptors within the residential area is not expected to be significant.

The EPA concludes that operational noise emissions from the proposal would comply (if all proposed mitigation methods are applied) with the assigned levels under the Noise Regulations and the State Planning Policy 5.4 *Road and Rail Transport Noise and Freight Considerations in Land Use Planning*, at all noise sensitive premises. Furthermore, construction noise emissions would be effectively addressed through the mitigation measures proposed.

The EPA notes however, that while the proposal will comply with the Noise Regulations in isolation, overall there will be a minor increase in noise levels in Port Hedland. The EPA is aware that cumulative noise emissions in Port Hedland do not meet the regulations and believes that this matter is best considered through a noise regulation 17 exemption process.

The EPA expects that the proponent will consider noise emissions of plant and equipment when sourcing in order to minimise at much as practicable the proponent's contribution to noise levels in Port Hedland. As such, the EPA has not recommended an Environmental Condition for noise.

## Summary

Having particular regard to the:

- long standing dust and noise problems in the region of Port Hedland;
- significant, industry-wide progress into implementation of the findings and recommendations of the Taskforce Report;
- likelihood that implementation of the proposal would only lead to a minor increase in the levels of fugitive dust and unwanted noise to the Port Hedland air-shed, albeit at a greater distance away from sensitive receptors compared to earlier proposals;
- proposal design and use of best practice and plant available; and
- that the proposal, if implemented, would be subject to licensing under Part V of the EP Act that can have regard for air quality limits for dust and noise and the requirement for the preparation and implementation of a management plan.

it is the EPA's opinion that the implementation of this proposal will likely lead to an overall short-term increase in dust and noise levels within Port Hedland. It is the view of the EPA that as allied industry in Port Hedland adopt best practice dust control measures, the levels will decline and eventually meet the EPA's objective.

## 5. Other advice

### **Air quality in Port Hedland and future compliance with the interim guideline of 70µg/m<sup>3</sup>/10 exceedances as prescribed in the Taskforce Report**

The EPA acknowledges that there is an existing air quality problem in Port Hedland with regard to fugitive dust levels. This dust is a combination of naturally occurring and anthropogenic sources which has steadily been increasing primarily due to the amount of expansion in exporting iron ore through the port.

This proposal will add to the existing dust problem within Port Hedland, albeit as a minor contributor in a comparative sense. However, the EPA is concerned that cumulatively, the accepted interim guideline of 70 µg/m<sup>3</sup> at (and east of) Taplin Street, with up to 10 exceedances of this level per year will soon be exceeded.

The EPA notes that earlier advice provided to proponents and government regulators as a component of its assessment of the PHPA's South West Creek Dredging and Reclamation Proposal (January 2011) and the Roy Hill Port Infrastructure proposal called for specific actions to be taken to seek to resolve this issue.

In view of the current and predicted dust levels from future expansions in Port Hedland, the EPA considers that all future proponents of the iron ore export facilities in South West Creek should seek to minimise the contribution of their proposals to the existing dust load. To limit dust emissions to the lowest practicable level, the EPA considers that proponents of berth infrastructure will need to demonstrate the use of best practice dust management and engineering solutions to minimise emissions. The EPA would therefore expect that the Port Hedland Dust Management Taskforce has a leadership role in ensuring that best practice dust management is applied to future iron ore export facilities.

To further reinforce the need for appropriate actions to be taken now, the EPA intends to write to the Port Hedland Industries Council (PHIC) requesting a commitment to:

1. Further dust modelling to accurately predict the likely change to the maximum 24 hour PM<sub>10</sub> ground level concentrations at sensitive receptors in Port Hedland as a result of full development of both the inner and outer harbour and the extent to which the interim dust guideline measure for 24 hour PM<sub>10</sub> can be met; and
2. The implementation of strategies and actions in the Taskforce Report that will need to be revised or updated in line with recent information about foreseeable developments and iron ore export projects in South West Creek.
3. Rapid deployment of the air monitoring network to validate predictions and assess the effectiveness of management actions.

Finally, it is an expectation of the EPA that cumulatively, dust emissions will be compliant with the interim guideline of 70 µg/m<sup>3</sup> at (and east of) Taplin Street, with a maximum of 10 exceedances of this level per year will be achieved by 2015. As such, the EPA has a strong expectation of the Port Hedland Industries Council to effectively coordinate best management practices to bring about the required effective management and monitoring of cumulative dust levels to meet the interim guideline.

## **6. Conclusions**

The EPA has considered the proposal by the proponent to construct and operate the Multi-user Iron Ore Export Facility proposal which includes a stockyard facility, rail loop, conveyor, wharf and ship-loading facility.

In conducting its assessment of the proponent's proposal the EPA determined that the key environmental factors of Benthic Primary Producer Habitat (mangroves, samphire and algal mats) surface water and tidal processes, and emissions (dust and noise) required further detailed assessment.

Despite the predicted loss of 4.5 ha of mangroves, the EPA considers that the proponent has designed to the proposal to avoid and minimise the level of adverse impacts on mangroves wherever practicable. The key design component of the proposal to reduce loss of mangroves is the elevated trestle conveyor which would transfer the iron ore from the stockyard and rail loop located in Boodarie Estate to the

berth and ship loader in South West Creek. The proponent has further reduced its impact through a shared corridor with Roy Hill Iron Ore Pty Ltd.

The proposal has the potential to influence the surface water flows of the site and the existing tidal patterns of inundation, however the EPA considers that the proposal is unlikely to have a significant impact on the existing surface water patterns of distribution to the receiving environment. While the EPA notes that although there would be an obvious change in flow characteristics beneath the rail loop and stockpile area these changes are limited to areas close to the proposed infrastructure and would not significantly affect the existing surface water patterns.

The EPA notes that the proponent has committed to limit noise emissions through best practice design and operation of the facility. The proposal in isolation would be able to meet the Environmental Protection (Noise) Regulations 1997 (regulations); however, the EPA is aware that cumulative noise emissions do not meet the regulations and believes that this is best considered through the noise regulation 17 exemption process.

With regard to dust, the EPA has noted that the proposal would make a relatively minor contribution to existing ambient air quality within the Port Hedland air-shed however, an increase is predicted in the number of days when the 24-hour average PM<sub>10</sub> value is likely to exceed the 70µg/m<sup>3</sup> /10 exceedance interim guideline prescribed by the Task Force. The EPA has liaised with the DEC with regard to the ongoing management of the proposed facility and concluded that the most appropriate way to regulate dust emissions is under Part V of the EP Act. In the longer term, further progress is expected to be made towards achieving the EPA's environmental objective for these factors through port-wide measures under the Port Hedland Air Quality and Noise Management Plan.

The EPA has therefore concluded that the proposal can be managed to meet the EPA's environmental objectives for the key environmental factors of BPPH and surface water and tidal processes, provided there is satisfactory implementation of the proposal as outlined in the referral documentation by the proponent and the recommended conditions set out in Appendix 2. For the key environmental factor of "emissions (dust and noise)" this proposal of itself would not compromise the EPA's environmental objective for dust provided that Port-wide improvements to dust management continue to be made through the work of the Dust Taskforce with respect to the Port Hedland Air Quality and Noise Management Plan.

## **7. Recommendations**

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

1. That the Minister notes that the proposal being assessed is for the construction and operation of the proponent's proposal which includes a stockyard facility, rail loop, conveyor and ship-loading facility.
2. That the Minister considers the report on the key environmental factors as set out in Section 4.
3. That the Minister notes that the EPA has concluded that the proposal can be managed to meet the EPA's environmental objectives, provided there is satisfactory implementation of the proposal as outlined in the referral

documentation by the proponent and the recommended conditions set out in Appendix 2.

4. That the Minister imposes the conditions and procedures recommended in Appendix 2 of this report.
5. That the Minister notes that the EPA intends to write to the Port Hedland Industries Council requesting a commitment to:
  - (a) further dust modelling to accurately predict the likely change to the maximum 24 hour  $PM_{10}$  ground level concentrations at sensitive receptors in Port Hedland as a result of full development of both the inner and outer harbour and the extent to which the interim dust guideline measure for 24 hour  $PM_{10}$  can be met;
  - (b) the implementation of strategies and actions in the Taskforce Report that will need to be revised or updated in line with recent information about foreseeable developments and iron ore export projects in South West Creek; and
  - (c) rapid deployment of the air monitoring network to validate predictions and assess the effectiveness of management actions.

# **Appendix 1**

## **References**

Department of State Development (DSD) 2010. *Port Hedland Air Quality and Noise Management Plan – The Port Hedland Dust Management Taskforce Report*, March 2010 Perth, Western Australia.

Department of Planning (2009) State Planning Policy 5.4 *Road and Rail Transport Noise and Freight Considerations in Land Use Planning*. Department of Planning, Perth, Western Australia, September 2009

Environmental Protection Authority (EPA) 2001, *Guidance for the Protection of Tropical Arid Zone Mangroves along the Pilbara Coastline* - EPA Guidance Statement No. 1, Environmental Protection Authority, Perth, Western Australia, April 2001.

Environmental Protection Authority (2004) *Guidance for the Assessment of Environmental Factors Western Australia, No. 29: Benthic Primary Producer Habitat Protection for Western Australia's Marine Environment*, June 2004.

Environmental Protection Authority (EPA) 2009, *Environmental Assessment Guideline No. 3 Protection of Benthic Primary Producer Habitat in Western Australia's Marine Environment*, Environmental Protection Authority Perth Western Australia, December 2009.

Environmental Protection Authority (EPA) 2010, *Report and Recommendations of the Environmental Protection Authority – Roy Hill 1 Iron Ore Project Port Infrastructure*, Environmental Protection Authority, Report 1377, Perth Western Australia December 2010.

Environmental Protection Authority (EPA) 2011a, *Report and Recommendations of the Environmental Protection Authority – South West Creed Dredging and Reclamation Proposal*, Environmental Protection Authority, Report 1380, Perth Western Australia January 2011.

Environmental Protection Authority (EPA) 2011b, *Environmental Protection Bulletin No. 14 Guidance for the assessment of benthic primary producer habitat loss in and around Port Hedland*. Environmental Protection Authority, Perth Western Australia September 2011

Environmental Protection Authority (EPA) 2001, *Guidance for the Protection of Tropical Arid Zone Mangroves along the Pilbara Coastline* - EPA Guidance Statement No. 1, Environmental Protection Authority, Perth, Western Australia, April 2001.

Environmental Protection Authority (2004) *Guidance for the Assessment of Environmental Factors Western Australia, No. 29: Benthic Primary Producer Habitat Protection for Western Australia's Marine Environment*, June 2004. North West Infrastructure (2011) *Multi-user Iron Ore Export (Landside) Facility, Environmental Referral Document*, 5 October 2011.

# **Appendix 2**

## **Identified Decision-making Authorities and Recommended Environmental Conditions**

## Identified Decision-making Authorities

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

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

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

<b>Decision-making Authority</b>	<b>Approval</b>
1. Minister for Indigenous Affairs	<i>Aboriginal Heritage Act 1972 – Section 18 Clearances</i>
2. Minister for Water	<i>Rights in Water and Irrigation Act 1914 – license to dewater</i>
2. Department of Environment and Conservation	Works Approval and License (Part V)
4. Port Hedland Port Authority	Lease and Operations
6. Minister for Transport	<i>Port Authorities Act 1999</i>

RECOMMENDED ENVIRONMENTAL CONDITIONS

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

MULTI-USER IRON ORE EXPORT (LANDSIDE) FACILITY  
PORT HEDLAND

**Proposal:** The proposal is to construct and operate port infrastructure which includes a stockyard facility, rail loop, conveyor, wharf and ship-loading facility at Port Hedland.

The proposal is further documented in schedule 1 of this statement.

**Proponent:** North West Infrastructure

**Proponent Address:** 46 Parliament Place,  
WEST PERTH WA 6005

**Assessment Number:** 1902

**Report of the Environmental Protection Authority:** Report XXXX

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

**1 Proposal Implementation**

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

**2 Proponent Nomination and Contact Details**

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

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

### **3 Time Limit of Authorisation**

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

### **4 Compliance Reporting**

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

The compliance assessment plan shall indicate:

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

- 4-6 The proponent shall submit to the Chief Executive Officer of the Office of the Environmental Protection Authority the first compliance assessment report fifteen months from the date of issue of this Statement addressing the twelve month period from the date of issue of this Statement and then annually from the date of submission of the first compliance assessment report.

The compliance assessment report shall:

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

## **5 Benthic Primary Producer Habitat**

- 5-1 The proponent shall ensure that implementation of the proposal does not cause the permanent loss of mangroves or deterioration in the condition of, any mangroves or their habitats outside of the spatially defined proposal footprint as shown in Figure 2, Schedule 1.

Note: 'Permanent loss' is defined as the mortality of, or long term serious damage to, mangrove communities.

- 5-2 The total area of mangroves directly and indirectly adversely impacted shall not exceed 4.5 hectares.
- 5-3 To verify that the requirements of condition 5-1 and 5-2 are met, the proponent shall prepare and implement a monitoring plan to the satisfaction of the Chief Executive Officer of the Office of the Environmental Protection Authority prior to the commencement of construction, and shall implement the monitoring plan until such time as the Chief Executive Officer of the Office of the Environmental Protection Authority determines that monitoring actions may cease.

The monitoring plan shall identify any areas of mangroves potentially impacted by the proposal, both direct loss and potential indirect loss and include, but not be limited to:

1. mangrove health monitoring and reference site locations;
    - (a) the identification of potential impact monitoring sites at locations where mangrove communities are found and which are as close as practicable to the spatially defined footprint of the proposal. There shall be at least four monitoring sites established;
    - (b) the identification of reference monitoring sites at locations which are similar to each impact monitoring site in all respects including mangrove associations and which do not have the potential to be affected by the implementation of the proposal or any other activities that may affect mangrove health.
  2. the establishment of trigger levels for mangrove health and cover;
  3. appropriate management actions should trigger levels be exceeded;
  4. surface water flows monitoring, including in the vicinity of mangroves;  
and
  5. monitoring the health and cover of mangroves defined by 5-3(1).
- 5-4 In the event that monitoring required by condition 5-3 indicates an exceedance of trigger levels:
1. the proponent shall report such findings to Chief Executive Officer of the Office of the Environmental Protection Authority within 7 days of the exceedance being identified;
  2. the proponent shall provide evidence which allows determination of the cause of the exceedance;
  3. if determined by the Chief Executive Officer of the Office of the Environmental Protection Authority to be project attributable, the proponent shall submit actions to be taken to address the exceedance within 7 days of the determination being made to the Chief Executive Officer of the Office of the Environmental Protection Authority; and
  4. the proponent shall implement actions to address the exceedance upon approval of the Chief Executive Officer of the Office of the Environmental Protection Authority and shall continue until such time as the Chief Executive Officer of the Office of the Environmental Protection Authority determines that the remedial actions may cease.
- 5-5 The proponent shall submit bi-annually, or at a frequency defined to the satisfaction of the Chief Executive Officer of the Office of the Environmental Protection Authority, the results of monitoring required by condition 5-3 to the Chief Executive Officer of the Office of the Environmental Protection Authority, until such time as the Chief Executive Officer of the Office of the Environmental Protection Authority determines that reporting may cease.

5-6 The proponent shall make the monitoring reports required by condition 5-5 publicly available in a manner approved by the Chief Executive Officer of the Office of the Environmental Protection Authority.

5-7 The proponent shall undertake mangrove health surveys and report to the CEO of the Office of the EPA the total permanent loss of mangrove communities caused by the proposal:

- a) 2 months;
- b) 12 months; and
- c) 24 months, or

at a frequency defined to the satisfaction of the Chief Executive Officer of the Office of the EPA, following the completion of proposal implementation to verify the requirements of conditions 5-1 and 5-2 have been met.

The reports shall include co-ordinates and a map confirming the areas of mangrove losses caused by the proposal.

**Multi-user Iron Ore Export Facility (Assessment No. 1902)**

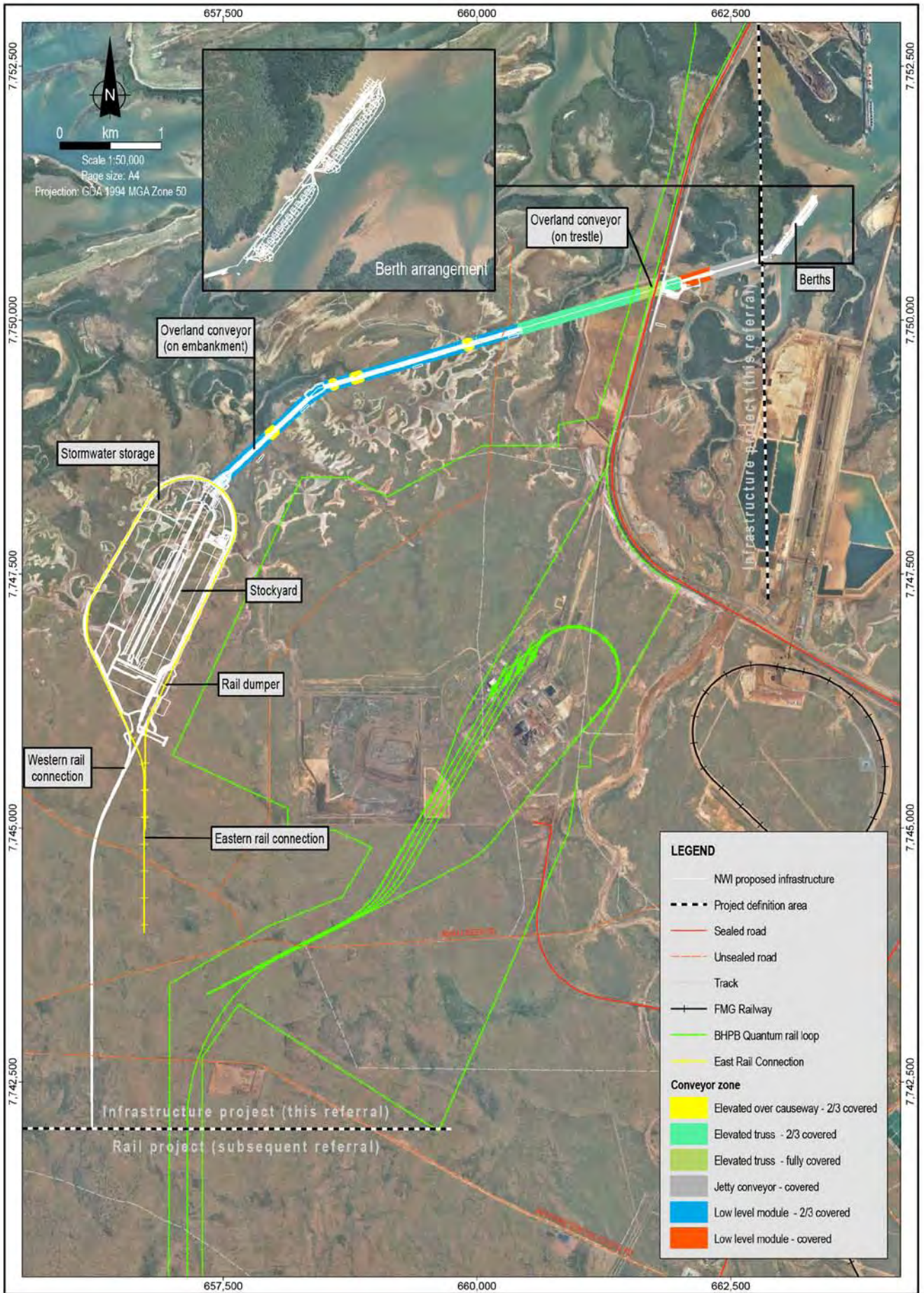
The NWI proposal involves the construction and use of infrastructure located within Boodarie Stockyard Area and the Port Hedland Inner Harbour. Iron ore would be unloaded at Boodarie and placed via conveyor into stockpiles before being reclaimed and delivered, via an elevated conveyor, to shipping berths in South West Creek for export.

The location of the various project components is shown in Figure 1 and the maximum footprint of the proposal is shown in Figure 2.

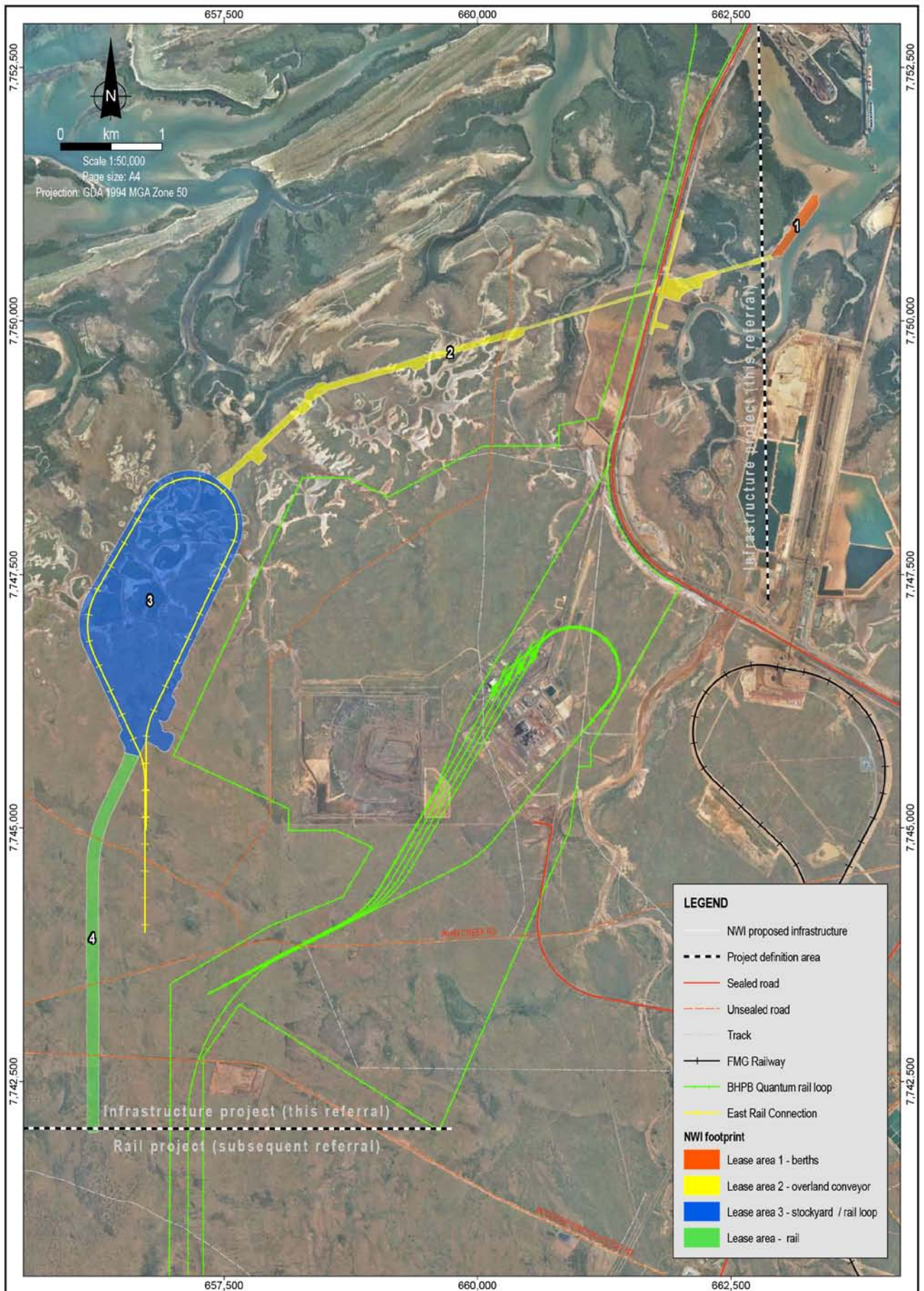
The main characteristics of the proposal are summarised in Table 1 below. A detailed description of the proposal is provided in sections 1 to 2 of the project referral document, Multi-user Iron Ore Export Facility (Landside): Port Infrastructure Project prepared by North West Infrastructure, 46 Parliament Place West Perth, Western Australia 6005, 5 October 2011

**Table 1: Summary of key proposal characteristics**

<b>Element</b>	<b>Description</b>
Rail	Two railway connections, rail loop and train unloader
Stockyard	Stockyard at Boodarie
Conveyor	A 6.2 kilometre long elevated conveyor connecting the stockyard to the wharf at South West Creek
Wharf	Wharf structures, two shipping berths and one ship loader at Stanley Point in South West Creek
Life of project	50 years or more
Throughput	50 million tonnes per annum
Terrestrial vegetation and ground disturbance	Rail corridor, conveyor, stockyard and other infrastructure: not more than 290 hectares within a development envelope of 350 hectares
Mangrove loss	Not more than 4.5 hectares



**Figure 1: Indicative layout of proposed infrastructure within the proposal footprint**



**Figure 2: Spatially defined maximum footprint of proposal**

# **Appendix 3**

**Proponents referral document**