Iron Bridge

Iron Bridge Port Facility – Referral Supporting Document

September 2015
662PO-0000-RP-EN-0001

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	Iron Bridge Port Facility – Part IV Referral Supporting Documentation		662PO-0000-RP-EN-0001
Revision Number	**0**		
Status	**IFU - ISSUED FOR USE**		
Author	Matt Dowling, Andrew Winzer	Signature	
Checked	Clayton Brandwood	Signature	
Checked	Ken Wilyman	Signature	
Approved	Simon Carter	Signature	17/9/15
Confidentiality	**PUBLIC USE (ACCESS TO ALL)**	**Publish on Extranet**	☐ Yes ☐ No
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EXECUTIVE SUMMARY

IB Operations Pty Ltd proposes to construct the Iron Bridge Port Facility (IB Port Facility) adjacent to Fortescue Metals Group Ltd's Herb Elliott Port Precinct (Herb Elliott Port), located within the Port Hedland Inner Harbour in the Pilbara Region of Western Australia. IB Operations Pty Ltd is the managing entity for the Iron Bridge Joint Venture, a joint venture partnership between FMG Iron Bridge Pty Ltd and Formosa Steel IB Pty Ltd. IB Operations Pty Ltd is the proponent for this Proposal.

The IB Port Facility will accept magnetite concentrate as a slurry from the North Star Mine, located approximately 110km south of Port Hedland. Upon arrival at the IB Port Facility, the concentrate slurry will be dewatered with the excess water returned back to the North Star Mine or used for operational purposes within the IB Port Facility or the Herb Elliott Port. The North Star Mine is also part of the Iron Bridge Joint Venture, but is not subject to this referral.

The dewatered magnetite concentrate will then be stacked within a covered stockpile until a suitable volume has been received for export. Magnetite concentrate will then be reclaimed from the stockpile and loaded into bulk carrier ships for export via Fortescue Metals Group Ltd's outload circuit. This 'outload circuit', consisting of Herb Elliott Port infrastructure i.e. causeway conveyor, transfer stations, wharf and shiploader does not form part of this Proposal.

This document describes IB Operations Pty Ltd's proposal and provides an assessment of the proposal against key preliminary environmental factors, identified through previous discussions with the Office of the Environmental Protection Authority. These factors are:

- Benthic Primary Producer Habitat (BPPH);
- Coastal Processes;
- Air Quality (Dust);
- Amenity (Noise); and
- Offsets (for loss of BPPH).

IB Operations Pty Ltd have undertaken a range of desktop modelling studies to support the assessment of the environmental impact of the proposal on these environmental factors. The outcomes of these studies are presented in Section 5 of this document. Section 5 of this document also demonstrates the management strategies that will be adopted during the operation of the IB Port Facility to ensure impacts are either avoided, minimised or mitigated to as low as reasonably practicable. A summary of the impact of the proposal on Matters of National Environmental Significance are presented in Section 6.

IB Operations Pty Ltd is confident that the Proposal can be implemented to meet the EPA's objectives.

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1. INTRODUCTION

IB Operations Pty Ltd (IBO) proposes to develop the Iron Bridge Port Facility (the IB Port Facility), located in the Port Hedland Port Precinct, in the Pilbara Region of Western Australia. The IB Port Facility will accept magnetite concentrate slurry from the North Star Magnetite Mine, located approximately 110 km South of Port Hedland, whereupon it will be dewatered and stockpiled prior to export.

This document has been prepared as supporting information for formal referral of the Proposal to the Western Australian Environmental Protection Authority (EPA) in accordance with Section 38 of the *Environmental Protection Act 1986* (EP Act) and the Commonwealth Department of Environment in accordance with the *Environmental Protection Biodiversity and Conservation Act 1999* (EPBC Act).

1.1 Purpose of this Document

This document presents supporting information to accompany the referral of the Proposal to the EPA. This document presents a description of the key components of the Proposal and an assessment of the environmental impacts of the proposal in accordance with Environmental Assessment Guideline 14, published by the EPA.

1.2 Proponent

The proponent for the Iron Bridge Port Facility is IB Operations Pty Ltd (IBO). IBO is a joint venture company between FMG Iron Bridge Pty Ltd and Formosa Steel IB Pty Ltd. Under the Joint Venture agreement, IBO is the managing entity for the Iron Bridge Joint Venture.

IB Operations Pty Ltd is located in East Perth, Western Australia:

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Director, Iron Bridge Operations

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1.3 Proposal Location

The IB Port Facility is located within Fortescue Metals Group Ltd's (Fortescue) Herb Elliott Port Precinct (Herb Elliott Port) at Anderson Point, located within the Town of Port Hedland in the Pilbara Region of Western Australia. The location of all infrastructure associated with the Port Facility is depicted in Figure 1. Anderson Point is approximately 1.7 km south of the western end of Port Hedland.

1.4 Assessment Approach

The preliminary key environmental factors associated with this proposal are summarised in Section 5.1. These factors are identified as a result of IBO's understanding of the existing environment, the potential impacts posed by the Proposal and through discussions with the OEPA.

IBO has undertaken a suite of environmental studies in order to fully understand the receiving environment and the impacts associated with the proposal. These studies include a Benthic Primary Producer Habitat Survey and Impact Assessment, Hydrodynamic Modelling and Impact Assessment, Sediment Transport Impact Assessment, Surface Water Impact Assessment, Dust Emissions Source Characterisation Study, Dust Modelling and Noise Modelling.

These studies and all other available data provide a high level of certainty regarding the key environmental factors and the level of impact posed by the Proposal on the environment. This document outlines these factors, discusses the potential impacts, assesses the impact to the environment as a result of the proposal and outlines management measures to be adopted to reduce the level of these impacts such that the Proposal will meet the EPA's objectives.

The Port Hedland Harbour has been extensively studied as a result of the numerous developments that have occurred there, particularly in the last 5 years. Projects that have been formally assessed by the EPA in recent years include:

- Stage A Port and North-South Rail (Fortescue Metals Group)
- Harriett Point RGP5 (BHP Billiton Iron Ore)
- Nelson Point RGP6 (BHP Billiton Iron Ore)
- Third Berth and Associated Infrastructure (Fortescue Metals Group)
- South West Creek Dredging and Reclamation (Port Hedland Port Authority)
- Outer Harbour Development (BHP Billiton Iron Ore)

- Lumsden Point General Cargo Facility (Pilbara Ports Authority)
- Roy Hill Iron Ore – Port Infrastructure
- Utah Point Berth Project (Pilbara Ports Authority)

The environmental data available from these and other 'not assessed' projects allows for a much greater understanding of the environmental impacts associated with developments in the Port precinct. Furthermore, the management and mitigation measures implemented for these projects and their effectiveness at reducing environmental impacts are well documented.

1.5 Alternative Options Considered

IBO has considered a number of alternatives for location of infrastructure associated with the IB Port Facility to minimise disturbance to the environment without interrupting current Herb Elliott Port operations.

Alternative options were evaluated against a number of broad criteria including environmental impacts, conflicting land uses with Fortescue and other parties, ability to complement and support adjacent logistics and safety.

The alternative options considered as part of this proposal are summarised below:

Option A: The IB Port Facility is located to the west of the causeway to Australia Island. This option would result in approximately 6 hectares (ha) of disturbance to mangroves and require large volumes of fill material. This location is within the Department of State Development's (DSD) Strategic Infrastructure Corridor for the Boodarie Strategic Industrial Area (BSIA) and therefore is not supported by the State.

Option B: The IB Port facility is located to the east of the Herb Elliott Port stockyards. This option takes advantage of an area of land to the east of the Herb Elliott Port infrastructure that does not support mangrove vegetation. This option requires large amounts of fill and extensive lengths of conveyors. This option also requires additional transfer points and dust management has the potential to be an ongoing concern. Option B, when considering the Port Hedland Port Authority's Best Practice Guidelines for dust management does not provide an efficient approach to management of dust.

Option C: This option uses an area within the Herb Elliott Port stockyards and undeveloped land to the east. Option C requires three separate crossings of existing infrastructure at Herb Elliott Port, significantly increasing safety risks for the existing operations. In addition, Option C is spatially constrained with regards to the covered stockpile layout and is also subject to extensive lengths of conveyors, with the attendant dust issues highlighted in Option B.

Option D: This option uses previously disturbed land to the east of the Herb Elliott Port stockyards. This option would result in the least disturbance to mangroves, however the footprint is within the BSIA infrastructure corridor mentioned above highlighted in Option A. The State will not support this option.

Option E: This option is located to the east of the causeway to Australia Island. This location results in some minor disturbance to mangrove communities, but integrates with existing materials handling infrastructure and does not interfere with future DSD plans for infrastructure associated with the BSIA. This option also provides an efficient approach for dust management with conveyor lengths and numbers of transfer stations minimised. Option E has therefore been selected as the preferred option for development.

All Port Facility options considered are depicted in Figure 2.

1.5.1 No Development Option

Whilst no development would result in no environmental disturbance in this location, the Iron Bridge Joint Venture still requires access to a Port Facility in order to deliver its product to its customers. The relatively small amount of disturbance associated with this Proposal, in an area that is already highly disturbed from existing operations and managed specifically for the purpose of export of iron ore, is considered to have far less environmental impact than a potential greenfields Port project, which would also result in significant amounts of dredging to provide navigation channels, turning circles and berth pockets.

1.6 Applicable Legislation and Guidelines

The following section provides a brief legislative context for the IB Port Facility and a summary of associated environmental approvals. Key environmental legislation and regulations relevant to this Project are described below.

1.6.1 *Environmental Protection Act 1986*

The *Environmental Protection Act 1986* (WA) (EP Act) is the primary legislation that governs environmental impact assessment and protection in Western Australia. Part IV of the EP Act requires proposals that have a significant impact on the environment to be subject to formal environmental impact assessment. IBO is referring the Proposal to the EPA under Section 38(1) of the EP Act to determine whether a formal assessment is required. Consultation with the OEPA to date suggests the proposal will not require assessment and a Part V clearing permit will need to be sought by IBO.

Part V of the EP Act regulates the clearing of native vegetation and pollution caused by emissions and discharges from prescribed premises. IBO will submit Works Approvals and

Licence applications to the Department of Environment Regulation for the proposed infrastructure where required.

1.6.2 *Environment Protection and Biodiversity Conservation Act 1999*

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) provides for the protection of nationally and internationally important flora, fauna, ecological communities and heritage places; defined as Matters of National Environmental Significance (MNES).

Under the EPBC Act, a proposal or action which will, or is likely to, have a significant impact on a MNES is required to be referred to the Department of Environment (DoE) for a decision as to whether the proposal constitutes a controlled action. If the Proposal is deemed a controlled action, implementation will consequently be subject to an assessment from the Federal Minister for Environment. IBO does not consider that the Proposal is likely to have a significant impact on Matters of National Environmental Significance, but will refer the Proposal to the Department of Environment for legislative certainty.

1.6.3 *Rights in Water and Irrigation Act 1914*

The *Rights in Water and Irrigation Act 1914* (RIWI Act) (WA) is the primary legislation under which the Department of Water (DoW) manages and allocates terrestrial water resources in Western Australia. Water for construction purposes will be met through Fortescue's existing Section 5C licence for the Port.

1.6.4 Dust Management Guidelines in Port Hedland

Guidance on the assessment and management of air quality include:

- Environmental Protection Bulletin No. 2: Port Hedland Dust and Noise
- National Environment Protection (Ambient Air Quality) Measure (NEPM).
- Air Quality and Air Pollution Modelling Guidance Notes (DoE, 2006)
- A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites remediation and other related activities (DEC, 2011).

These best practice guidelines are an integral reference for all new developments at Port Hedland and include leading practice examples for the main activities leading to the generation of dust: unloading, stacking, stockpiles, reclaiming, conveyors and transfers, and ship loading.

Dust has the potential to impact on both human health and amenity. Particulate matter of 10 microns (µm) in aerodynamic diameter (PM_{10}) or smaller can penetrate the lungs and enter

the bloodstream. Exposure to these small particulates has the potential to exacerbate respiratory problems, particularly in young children and older adults (DSD, 2010).

The *National Environment Protection (Ambient Air Quality) Measure* (Ambient Air NEPM), sets uniform standards and goals for six 'criteria' pollutants (including PM_{10} particles) in ambient air. The standard for PM_{10} set in the Ambient Air NEPM is 50 $\mu g/m^3$ (24 hour average) with a target of five exceedances per year (NEPC, 1998).

The Ambient Air NEPM applies to urban areas with populations greater than 25,000. The Chamber of Minerals and Energy (CME) has submitted a response to the review of the existing AAQ NEPM suggesting that it should not be used as a regulatory instrument in regional, industrial towns.

In 2009 the Port Hedland Dust Management Taskforce (PHDMT) was established. The taskforce, which reports to the Premier, includes representatives from the following:

- the Town of Port Hedland;
- Pilbara Ports Authority (PPA);
- iron ore exporters (including BHPBIO, Fortescue, Roy Hill Infrastructure); and
- relevant Government departments (including the Department of Health, Department of Planning and the Department of Environment Regulation).

In 2010, the PHDMT published the *Port Hedland Air Quality and Noise Management Plan* (DSD, 2010) to enable a framework for effective dust management strategies within Port Hedland. The taskforce made a number of recommendations which have been addressed:

- Establishment of a comprehensive network of air quality measuring devices throughout the Port Hedland area, including South Hedland;
- Adoption of an interim air quality guideline measure for the national standard for PM_{10};
- Development of leading practice dust management guidelines; and
- Undertaking of a Health Risk Assessment (HRA) which will investigate potential health risks from particulate matter and address concerns about air quality and its possible effect on community health following the increased level of port activity.

The PHDMT commissioned a series of studies that considered the application of the national PM_{10} standard to Port Hedland. Expert toxicologists confirmed the national standard for PM_{10} was designed for an urban setting and considered that a departure from the Air NEPM may be justified for Port Hedland as the particulate matter is composed of crustal iron ore dust (other health studies have focused on fine material or organic compounds in an urban setting). The taskforce recommended the adoption of an interim standard for air quality at Port Hedland for PM_{10} of 70 $\mu g/m^3$ (24 hour average) with 10 exceedances per year (as determined at the Taplin Street monitoring station) (DSD, 2010). The PHDMT agreed that this measure sets an

appropriate level of protection for the community whilst requiring industry to adopt current best practice techniques and operate on a continuous improvement basis (DSD, 2010). This standard has since been adopted as the appropriate criteria for air quality management in Port Hedland (DSD, 2010).

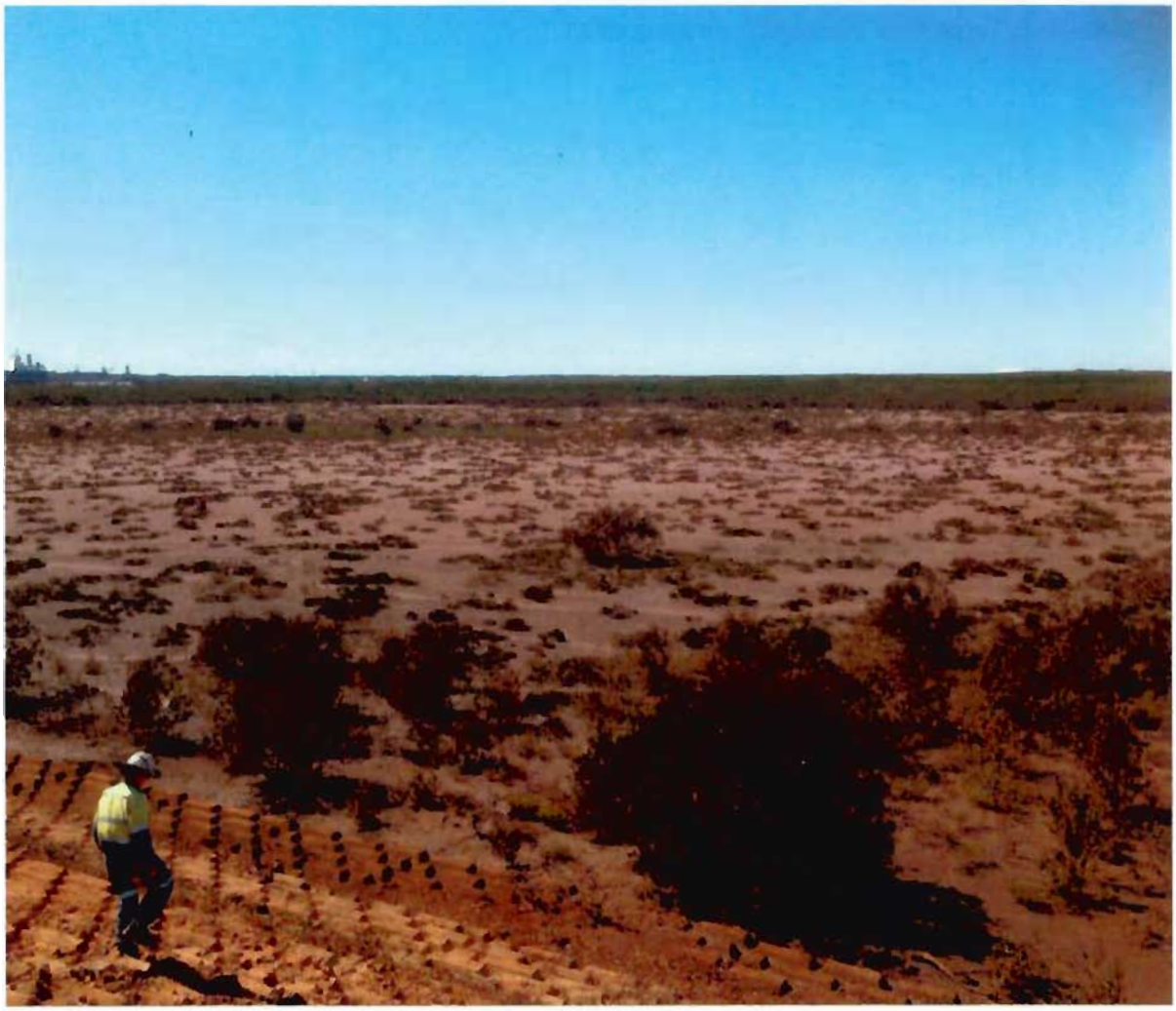
A guidance document applicable to this Proposal is the *Pilbara Ports Authority Dust Management Guidelines: Leading Practice DOC-EH009* (PPA, 2015). The Leading Practice Guideline is based on a review of national and international best practices for the management of dust in bulk materials handling processes for the main activities leading to the generation of dust: unloading, stacking, stockpiles, reclaiming, conveyors and transfers, and ship loading (see Section 5, Table 8 for discussion on air quality).

2. PROJECT DESCRIPTION

2.1 Project Location and Existing Land Use

The site for the proposed IB Port Facility is located adjacent to Fortescue's existing Herb Elliott Port Facility. The proposed location for the IB Port Facility subject to this Proposal is shown in Plate 1. The bare saltmarsh area visible in the plate constitutes the majority of the disturbance.

Plate 1: Proposed Location for the Iron Bridge Port Facility



Fortescue own and operate, through its wholly owned subsidiary The Pilbara Infrastructure Pty Ltd (TPI), the Herb Elliott Port facilities at Anderson Point, within the Port Hedland Port precinct. A general arrangement of the Port Facility in relation to the existing infrastructure at the Herb Elliott Port Facility is shown in Figure 3.

2.2 Project Overview

The Iron Bridge Joint Venture requires access to Port facilities for the export of magnetite concentrate from its North Star Mine, located approximately 110 km south of Port Hedland.

Magnetite concentrate produced by the North Star Mine will be pumped as a slurry via a pipeline to the proposed IB Port Facility. Upon arrival at the IB Port Facility, the concentrate slurry will be dewatered and the filter cake stacked in a covered stockpile until sufficient material is available for export. The dewatered concentrate is then reclaimed and loaded onto vessels via Fortescue's outloading facilities for delivery to customers. The infrastructure required for the IB Port Facility is described in Section 2.3. The entire footprint of the IB Port Facility is 10.2 ha, of which 0.05 ha is already cleared. The infrastructure required for this Proposal will not disturb any marine environment. The key characteristics of the proposal are detailed in Section 2.2.1 below.

2.2.1 Key Characteristics

Table 1: Proposal Summary

Summary of Proposal	
Project Name	Iron Bridge Port Facility
Proponent Name	IB Operations Pty Ltd
Short Description	A facility to accept magnetite concentrate slurry from the North Star Mine, dewater the slurry and stockpile the concentrate in a covered stockpile prior to export. Excess water will be returned to North Star Mine. Magnetite will be reclaimed from the stockpile for export via Herb Elliott Port outload infrastructure.
Project Schedule	Approval to commence development and construction – April 2016 Construction April 2016 – August 2017 Load Commissioning – August 2017

Table 2: Physical Elements

Element	Location	Proposed Extent
Infrastructure Associated with the Port Facility	Figure 3	Up to 10.2 ha within a 10.2 ha Port Facility Envelope.

Table 3: Operational Elements

Element	Location	Proposed Extent
Slurry Pipeline	Figure 3	Approximately 1km on areas previously disturbed under Ministerial Statement 690.
Concentrate Diversion Pond	Figure 3	Located largely in an area previously disturbed, may disturb up to 0.63 ha of highly disturbed vegetation.
Dewatering Facility	Figure 3	Nominally 1,770 tonnes of slurry per hour.
Return Water Pipeline	Figure 3	5 GLpa returned to North Star Mine or used for operations within the Port Facility or Herb Elliott Port precinct.
Stacking Circuit	Figure 3	Nominally 3,540 tonnes of ore per hour
Stockpile	Figure 3	Nominally 300,000 tonnes of magnetite concentrate in a covered stockpile
Reclaim Circuit	Figure 3	Nominally 10,000 tonnes of ore per hour to extent of project boundary.

2.2.2 Exclusions

The IB Port Facility project boundary is depicted in Figure 2 (highlighted in pink). This referral does not include the Herb Elliott Port outload circuit. Any modifications that may need to be made to the outload circuit to enable it to handle the magnetite product can be managed through amendments to the existing Operating Licence (L8194/2007/3).

2.2.3 Relationship to Other Projects

North Star

The Iron Bridge Joint Venture Project is being implemented in two stages.

Stage 1 of the Project is the construction and operation of the North Star Hematite Project. This stage of the Project targets an oxide (mag-hematite) zone which overlies a larger magnetite ore body. Stage 1 is a 10 Mtpa iron ore mine producing 2 Mtpa of magnetite concentrate. Magnetite produced by the mine is dewatered on site and will be trucked to Port Hedland for export using the existing infrastructure at Herb Elliott Port. The Hematite Project was referred to the EPA in July 2012 and was not formally assessed. IBO has subsequently obtained secondary environmental approvals to allow for construction and operation of the mine. Stage 1 is currently fully constructed and is in the commissioning phase. The stockpile, handling and export of 2 Mtpa of magnetite concentrate at Herb Elliott Port is approved under Part V of the EP Act (W5749/2014/1). The export of the magnetite concentrate produced by Stage 1 of the

Project is not dependent on the construction of the IB Port Facility and is not subject to this referral.

Stage 2 of the Project is a larger, 30 Mtpa mine (the North Star Magnetite Project). This Project was referred to the EPA in October 2012 and formally assessed through a Public Environmental Review (Assessment No. 1947). The EPA released its report on the Magnetite Project (Report No. 1514) in June 2014 and the Minister released the Ministerial Statement (MS 993) on 9 January 2015.

The Magnetite Project was also assessed by the Commonwealth Department of the Environment under the EPBC Act (EPBC 2012/6689). The Federal Minister authorised the controlled action on 6 February 2015. It is the magnetite concentrate produced by the North Star Stage 2 Mine, delivered via its approved slurry pipeline that will be handled and stockpiled by the IB Port Facility subject to this referral.

Note: construction and operation of the North Star Magnetite Project has not yet commenced.

Herb Elliott Port Facility

Fortescue, through its wholly owned subsidiary The Pilbara Infrastructure Pty Ltd (TPI) own and operate the Herb Elliott Port. TPI and IBO have reached agreement with regards to port services provided by TPI. These agreements will enable IBO commercial access to TPI's Port facilities and additional infrastructure which operate under the Railway and Port (TPI) Agreement Act 2004on land governed by the existing leases and licences from the Pilbara Ports Authority (PPA).

2.3 Project Infrastructure

The IB Port Facility will accept magnetite concentrate slurry from the North Star Magnetite Mine, located approximately 110 km South of Port Hedland, whereupon it will be dewatered and stockpiled prior to export.

2.3.1 Slurry Pipeline

A slurry pipeline will deliver magnetite concentrate to the Dewatering Plant. A 3 km length of pipeline is required to be constructed to link the Dewatering Plant and the slurry pipeline approved under the North Star Magnetite Project (Figure 3). The pipeline is likely to be installed above ground and buried at locations to avoid conflicts with existing infrastructure and access roads within the Herb Elliott Port precinct. A final pipeline alignment will be dependent on negotiations with third parties on the most appropriate point to cross infrastructure corridors. No disturbance to vegetation is required for the installation of the 3 km of slurry pipeline. An indicative pipeline route is demonstrated in Figure 3.

A concentrate diversion pond will be located to the east of the port entrance and will provide holding capacity for contents of the slurry pipeline in the unlikely event of a prolonged failure of the Dewatering Plant. The concentrate diversion pond is located largely on previously disturbed land and may remove up to 0.63 ha of highly disturbed vegetation.

2.3.2 Dewatering Plant

The Dewatering Plant receives material from the slurry pipeline into two agitated storage tanks from which the slurry is pumped to pressure filters for dewatering (Figure 3). The Dewatering Plant is designed to process 10.1 Mtpa magnetite concentrate. The plant filters the magnetite concentrate at approximately 8% moisture content. The dewatering plant discharges the dewatered concentrate onto the Stacking Circuit. After the filtered concentrate is discharged, the filters are washed and any residue is then pumped back to a clarifier tank. This tank thickens the slurry for return back to the storage tanks. Overflow from the clarifier is sent back to the North Star mine via the return water pipeline. A small portion of the overflow is recycled for use in washing the filter pads.

2.3.3 Stacking Circuit

The stacking circuit receives product from the dewatering plant and discharges at the Stockpile Shed tripper. The stacking circuit consists of a conveyor with transfer station and a stacking conveyor with travelling tripper.

2.3.4 Stockpile

The magnetite is stockpiled in a storage shed large enough to maintain up to 300,000 tonnes of concentrate (Figure 3). The stacking conveyor is suspended from the apex of the shed. At capacity, the stockpile shed will contain a stockpile of 200,000 tonnes and a second stockpile of 100,000 tonnes. During outloading, the 200,000 tonne stockpile is depleted whilst stacking continues on the 100,000 tonne stockpile.

2.3.5 Reclaim Circuit

The reclaim circuit takes material from the stockpile and discharges the material onto the outload circuit. The reclaim circuit consists of:

- A bi-directional bucket-wheel Bridge Reclaimer
- A reclaim conveyor and transfer station
- A transfer conveyor and transfer station
- A sample station

The reclaimer is rail mounted and is capable of reclaiming stockpiles in both directions for the full length of the stockpile shed. The stacking circuit can continue to operate while the Reclaimer is operating.

The sample station will cut samples from the reclaim circuit prior to discharge to the outload circuit. Samples will be tested to provide data for moisture, size distribution and grade determination.

2.3.6 Return Water Pipeline

The return water pipeline will follow the same route as the slurry pipeline and will connect to the return water pipeline approved under the North Star Magnetite Project.

2.3.7 Power Requirements

Power requirements for this Proposal will be met from the existing Herb Elliott Port supply by installing new connections to Horizon Power's South West Creek Substation and Alinta's Tiger Substation. A switchroom within the IB Port Facility will distribute power to the new infrastructure.

2.3.8 Water Requirements

Water for construction will be met from the existing Anderson Point water supply network. Water during operations will be supplied from the water extracted from the magnetite concentrate by the dewatering plant. This water will also supply the belt scraper sprays, belt washing stations, dust sprays and general service.

2.3.9 Bulk Earthworks

Approximately 400,000 m^3 of fill material will be required to form a raised pad on which to place the IB Port Facility. This material will be sourced from existing quarries or suppliers in the Port Hedland area and is not related to this proposal.

2.3.10 Ancillary Facilities

A crib room and ablutions block will be established for the operations and maintenance workforce. A local potable water storage tank with a nominal two day operational usage capacity will be provided to the crib facility.

2.3.11 Workforce

During construction approximately 300 personnel will be required. The construction workforce will be housed at Fortescue's existing accommodation in South Hedland.

2.4 Tenure

TPI hold a lease over the Herb Elliott Port from the Pilbara Port Authority. As described in Section 2.2.3, TPI and IBO have an agreement for access to TPI's lease area and existing port facilities.

2.5 Approval Timeframes

Approval timeframes for the IB Port Facility are provided in Table 4.

Table 4: Key Milestone Dates

Milestone	Date
Approvals in Place to Commence Site Development	April 2016
Approvals in Place to Commence Construction	October 2016
Commence Load Commissioning	August 2017

3. STAKEHOLDER CONSULTATION

Consultation with key stakeholders and the community is an important element of the environmental impact assessment process. IBO considers that consultation with the community, key stakeholders and decision-making authorities is vitally important to ensure all parties have the opportunity to make informed comment about the proposal.

3.1 Stakeholder Identification and Engagement

IBO has developed a Communications Strategy to recognise key stakeholders and plan for their engagement with the proposal at the earliest opportunity in a format applicable to their level of interest and involvement. Key stakeholders identified for the IB Port Facility are:

Government (State and Commonwealth)

- Environmental Protection Authority (EPA)
- Department of the Environment (Cwlth)
- Department of State Development
- Department of Environment Regulation
- Department of Water
- Department of Mines and Petroleum
- Department of Parks and Wildlife

Local Government

- Town of Port Hedland

Indigenous Groups

- Native Title Claimants – Kariyarra
- Aboriginal Corporations – Yamitji Marlpa Aboriginal Corporation

Community Interest Groups

- Care for Hedland

3.2 Stakeholder Comments and Outcomes

A summary of stakeholder consultation for the proposal to date and where specific comments, if any, are addressed in the document is shown in Table 5.

Table 5: Summary of Iron Bridge Port Facility Consultation

Stakeholder	Date	Format	Comments Raised	Where Addressed
Department of State Development (DSD)	Monthly	Meeting	Several options conflict with DSD Boodarie Strategic Infrastructure Corridor associated with Boodarie Strategic Industrial Area. Option E supported.	Section 1.5
OEPA	26 February 2015 27 May 2015 31 July 2015	Meeting Meeting Presentation	Benthic habitat and coastal processes are potential key factors but also noise and dust due to increased product handling.	Section 4, Table 8
Care for Hedland	12 March 2015	Presentation Note, the presentation given to Care for Hedland was based on Option A but also applicable to Option E.	Disturbance to mangroves Impacts to water quality in the harbour Surface water management Re-use of excess water for dust suppression	Section 4, Table 8
Department of Environment Regulation (DER)	12 March 2015 4 August 2015	Presentation Presentation	Covered stockyards Dust Boundary Monitor Network shared with Fortescue	Section 4, Table 8
Town of Port Hedland (ToPH)	13 March 2015	Presentation	Re-use of excess water for other Port users	Executive Summary, Section 2, Table 3

Stakeholder	Date	Format	Comments Raised	Where Addressed
Pilbara Port Authority (PPA)	24 March 2015 4 August 2015	Presentation Presentation	A Port Facility Development Application is being progressed by IBO. PPA and IBO have entered into an agreement to detail certain matters in relation to their engagement in connection with the development of the Port Facility by the Iron Bridge Joint Venture. Mangrove Offsets	Section 1.5 Section 4, Table 8
EPA Chair and OEPA	26 March 2015	Presentation	Consider the following EPA Guidance Statements: EAG 8-Environmental principles, factors and objectives EAG 9-Application of a significance framework in the environmental impact assessment process Dust modelling to be cumulative Mangrove Offsets to be addressed	 Section 4, Table 8 Section 8 Section 4, Table 8 Section 4, Table 8
Department of the Environment (DoE)	12 June 2015 20 August 2015	Presentation Presentation	Mangrove Offsets Address the potential impacts of the proposal on the Airlie Island Skink	Section 6. Section 6.4

3.3 Ongoing Consultation

IBO will continue to consult with key stakeholders during the construction and operations phases. In addition, Fortescue maintains a community office in South Hedland where stakeholders can access information on all of Fortescue's developments, including the Iron Bridge Joint Venture with Formosa.

4. ENVIRONMENTAL STUDIES AND EFFORT

IBO has considered the key environmental factors for this proposal and has undertaken a range of environmental studies to support the assessment of the environmental impacts associated with this proposal. All studies have undertaken in accordance with guidance statements with reference to regulatory thresholds and targets.

All studies are detailed in Table 6.

Table 6: Environmental Studies and Surveys

Factor	Title	Study Area and Type	Study standard/guidance and Limitations	Appendix
Benthic Primary Producer Habitat	North Star Stage 2 Port Expansion: Benthic Primary Producer Habitat Survey and Impact Assessment	Port Hedland Local Assessment Unit (LAU). Desktop study utilising BPPH mapping undertaken for previous proposals within the Port Hedland LAU.	EAG3: Protection of Benthic Primary Producer Habitats in Western Australia's Marine Environment – provides guidance on assessing potential impacts, including cumulative loss in WA's marine environment. (EPA, 2009) Guidance for the Assessment of Environmental Factors No. 1: Guidance statement for the Protection of Tropical Arid Zone Mangroves along the Pilbara Coastline (EPA, 2001) Environmental Protection Bulletin No. 14: Guidance for the assessment of benthic primary producer habitat loss in and around Port Hedland. (EPA , 2011)	Appendix 1
	North Star Stage 2 Marine Studies: Hydrodynamic Impact Assessment - Option E	Port Hedland and surrounding offshore area from Depuch Island to Larrey Point, extending 60 km offshore (Figure 3-2 of Appendix 2). Desktop assessment utilising a range of data sources (Table 3-1 of Appendix 2)		Appendix 2
	North Star Stage 2 Marine Studies: Sediment Transport Impact Assessment - Option E	Port Hedland and surrounding offshore area from Depuch Island to Larrey Point, extending 60 km offshore (Figure 3-2 of Appendix 3). Desktop assessment utilising a range of data sources (Table 3-2 of Appendix 3)		Appendix 3

Factor	Title	Study Area and Type	Study standard/guidance and Limitations	Appendix
	North Star Stage 2, Port Expansion Environmental Marine Studies: Surface Water Impact Assessment	Desktop assessment of the proposal area pre and post development.		Appendix 4
Coastal Processes	North Star Stage 2 Marine Studies: Hydrodynamic Impact Assessment - Option E	Port Hedland and surrounding offshore area from Depuch Island to Larrey Point, extending 60 km offshore (Figure 3-2 of Appendix 2). Desktop assessment utilising a range of data sources (Table 3-1 of Appendix 2)	State Coastal Planning Policy No. 2.6	Appendix 2
	North Star Stage 2 Marine Studies: Sediment Transport Impact Assessment - Option E	Port Hedland and surrounding offshore area from Depuch Island to Larrey Point, extending 60 km offshore (Figure 3-2 of Appendix 3). Desktop assessment utilising a range of data sources (Table 3-2 of Appendix 3)		Appendix 3

Factor	Title	Study Area and Type	Study standard/guidance and Limitations	Appendix
	North Star Stage 2, Port Expansion Environmental Marine Studies: Surface Water Impact Assessment	Desktop assessment of the proposal area pre and post development.		Appendix 4
Air Quality	Dust Assessment - North Star Stage 2 Export Facility	Desktop assessment of the proposal area, inclusive of Port Hedland airshed. Several modelling runs were performed both with the Proposal in isolation and cumulative with all other dust sources.	Environmental Protection Bulletin No. 2: Port Hedland Dust and Noise (EPA, 2009b) National Environment Protection (Ambient Air Quality) Measure (NEPM). Air Quality and Air Pollution Modelling Guidance Notes (DoE, 2006) A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites remediation and other related activities (DEC, 2011)	Appendix 5
Noise	Magnetite Facility Stage 2 Environmental Noise Assessment	Desktop assessment of the proposal area, inclusive of sensitive receptors in proximity to the Proposal. Two modelling runs were performed using worst case scenarios.	Environmental Protection (Noise) Regulations 1997: Gazetted to present a fair and effective set of rules to govern noise emissions. The regulations are the 'prescribed standard' under the EP Act.	Appendix 6

Factor	Title	Study Area and Type	Study standard/guidance and Limitations	Appendix
			State Planning Policy 5.4 Road and Rail Transport Noise and Freight Considerations in Land Use Planning. EAG13: EPA Considerations of environmental impacts from noise (EPA, 2004): *Where noise emissions likely to be caused by the implementation of a proposal are regulated by the noise regulations or dealt with in SPP 5.4, the EPA expects proponents to use best practice design and noise management and to demonstrate how the proposal will be implemented to achieve compliance with the se statutory and policy instruments.* Port Hedland Air Quality and Noise Management Plan (DSD, 2010)	

5. ASSESSMENT OF PRELIMINARY KEY ENVIRONMENTAL FACTORS

The purpose of this section is to summarise key considerations in the environmental assessment of the proposal and show how the proposal can be managed to meet the EPA's objectives for each preliminary key environmental factor.

5.1 List of Preliminary Key Environmental Factors

The preliminary key environmental factors identified as a result of IBO's understanding of the existing environment, the potential impacts posed by the Proposal and through discussions with the OEPA, are listed in Table 7.

Table 7: Preliminary Key Environmental Factors Table

Factor	Envelope	Environmental Aspect	Impact
Benthic Primary Producer Habitat	Port Facility	Clearing of BPPH Chemical and Hydrocarbon Spill potentially caused by lube bays and fuel facilities Concrete piling in inter tidal zone exposing Potential Acid Sulphate Soils (PASS)	Loss of BPPH Degradation of BPPH
Coastal Processes	Port Facility	Port Facility located within supra and inter tidal zones	Changes to Hydrodynamics Sedimentation and Erosion
Air Quality	Port Facility	Materials Handling and associated activities resulting in dust emissions	Health and Amenity
Amenity	Port Facility	Materials Handling and associated activities resulting in noise emissions	Health and Amenity

In addition, this document will discuss Matters of National Environmental Significance (to satisfy requirements of the EPBC Act (1999)) and Offsets (to satisfy requirements of EAG 8).

5.2 Discussion

An assessment of the impact of the proposal on the preliminary key environmental factors is presented in Table 8.

Table 8: Assessment Table – Preliminary Key Environmental Factors

Inherent Impact	Environmental Aspects	Mitigation Actions to Address Residual Impacts	Proposed Regulatory Mechanisms for Ensuring Mitigation	Outcome to Demonstrate that Proposal Meets EPA Objective.
Benthic Primary Producer Habitat: *To maintain the structure, function, diversity, distribution and viability of benthic communities and habitats at local and regional scales*				
Context Relevant policies and guidelines include: • *EAG3' Protection of Benthic Primary Producer Habitats in Western Australia's Marine Environment* (EPA, 2009a) • *Guidance for the Assessment of Environmental Factors No 1: Guidance statement for the Protection of Tropical And Zone Mangroves along the Pilbara Coastline* (EPA, 2001) • *Environmental Protection Bulletin No 14 Guidance for the assessment of benthic primary producer habitat loss in and around Port Hedland*. (EPA , 2011) To provide a consistent basis for assessment of cumulative impacts to BPPH in and around Port Hedland, the EPA have released spatial data for the Port Hedland Local Assessment Unit (LAU) (EPA , 2011). The LAU and the extent of BPPH mapped within this area is demonstrated in Figure 4. The BPPH present in the Port Hedland LAU includes mangroves, corals, seagrass, turfing algae, macroalgae, reef habitat and sandy (benthic micro-algal) habitat. The most dominant habitat was identified as bare sediment. Mangroves include the species *Avicennia marina, Rhizophora stylosa*, and a small proportion of *Ceriops australis* (WorleyParsons, 2015a). Previous studies of potential acid sulphate soil (PASS) for Fortescue's AP5 Project have demonstrated that whilst PASS material may be present, the sediments contain high levels of $CaCO_3$ which provide buffering capacity (WorleyParsons, 2011). Note that although shell fragments were identified in the samples analysed, which increases the apparent Acid Neutralising Capacity (ANC) of a sample during laboratory analysis, this was compensated for by increasing the Fineness Factor (FF) proportionally. The FF is a unitless parameter to characterise the chemical availability of the $CaCO_3$ within the sediment and is minimised to 1.5 when it is available in a fine powder-like form. For samples containing shell fragments, the FF was increased to 2 to compensate for the reduced chemical availability of the $CaCO_3$ (WorleyParsons, 2011). The risk of acidification is therefore low.	Clearing of BPPH Chemical and Hydrocarbon Spill caused by lube bays and fuel facilities Concrete piling in inter tidal zone exposing Potential Acid Sulphate Soils (PASS) Chemical and Hydrocarbon Spills	**Control Measures** Bunding to be placed around any refuelling area. Spill kits to be available in the event of a chemical or hydrocarbon spill. **Avoidance** Final design to reduce the footprint of the port facility to as small as reasonably practicable. **Minimisation** All disturbance to be undertaken in accordance with established Ground Disturbing Permit (GDP) process. Only small amounts of soil will be excavated for concrete foundations, therefore, the risk of acidification of PASS is extremely low. **Management** Implement a Mangrove Protection Management Plan (Appendix 7). Health of mangrove communities will be monitored under the Mangrove Protection Management Plan. Implement existing Acid Sulphate Soil Management Plan. Stormwater to be directed to a central sump to allow sediments to settle before evaporation or release to the surrounding environment.	A Mangrove Protection Management Plan (MPMP) will be implemented. This plan incorporates an offsets plan. The MPMP will specify the methods, procedures and management required to avoid and minimise impacts to mangrove habitat.	The proposal has been designed to limit the disturbance to BPPH to as low as reasonably practicable. The proposal can be managed to meet the EPA's objective for BPPH subject to: • A MPMP being implemented; and • An offset condition being applied to a native vegetation clearing permit to counterbalance the significant residual impact due to the permanent loss of mangrove habitat in an area that is already above threshold limits. • An Acid Sulphate Soils Management Plan will be developed prior to the construction phase. • A Chemical; and Hydrocarbon management Plan will be developed prior to the construction phase.

Inherent Impact	Environmental Aspects	Mitigation Actions to Address Residual Impacts	Proposed Regulatory Mechanisms for Ensuring Mitigation	Outcome to Demonstrate that Proposal Meets EPA Objective.
Key Study Findings BPPH mapping exists over the area subject to this proposal (WorleyParsons, 2015a), depicted in Figure 5. This includes: • *Avicennia marina* closed canopy, seaward edge • *A. marina* scattered • *Rhizophora stylosalA marina* closed canopy • Tecticornia Open Samphire All vegetation is considered to be in excellent condition. **Impacts** • Direct loss of 2.01 hectares (ha) of mangrove habitat • Direct loss of 8.14 ha of samphire saltmarsh habitat • Cumulative loss of mangroves as a result of the proposal will increase from 14.45% to 14.53% • No indirect loss of BPPH predicted (see Coastal Processes factor below) • Potential contamination from chemicals and hydrocarbons • Potential degradation from acid sulphate soils				
Coastal Processes: *To maintain the morphology of the sub-tidal, intertidal and supra-tidal zones and the local geophysical processes that shape them*				
Context The Department of Planning's State Coastal Planning Policy No. 2.6 guides coastal planning activities and provides objectives to guide coastal development, including port developments. These objectives are: • Protect conserve and enhance coastal values, particularly in areas of landscape, nature conservation, indigenous and cultural significance. • Provide for public foreshore areas and access to the coast • Ensure the identification of appropriate areas for the sustainable use of the coast for housing, tourism, recreation, ocean access, maritime industry, commercial and other activities. • Ensure the location of coastal facilities and development takes into account coastal processes including erosion, accretion, storm surge, tides, wave conditions, sea level change and biophysical criteria. The hydrodynamics of the coastal waters near Port Hedland and within the Port Hedland Inner Harbour are dominated by a large tidal range that drives strong flood and ebb tidal currents (WorleyParsons, 2015b). These currents are of scales of about 1 m/s in the near shore region, and greater than 1 m/s in the estuary entrances and	IB Port Facility located within supra and inter tidal zones	Modelling has demonstrated that there will be negligible impacts from the proposal. Therefore, no specific mitigation actions are required to manage residual impacts to coastal processes. A Surface Water Management Plan will be implemented to manage stormwater to mitigate residual impacts to coastal processes	Not required	The proposal has been designed to limit the disturbance to coastal processes to as low as reasonably practicable. The proposal can be managed to meet the EPA's objective for Coastal Processes.

Inherent Impact	Environmental Aspects	Mitigation Actions to Address Residual Impacts	Proposed Regulatory Mechanisms for Ensuring Mitigation	Outcome to Demonstrate that Proposal Meets EPA Objective.
deeper channels in the tidal creeks during peak ebb and flood tides (WorleyParsons, 2015b). The tidal currents are typically aligned along local bathymetric contours (WorleyParsons, 2015b). Substantial areas of mudflats occur along the coastline and within the Port Hedland estuary. The bathymetry is typically flat and shallow, typical of intertidal flats in the region. Winds in summer are quite persistent from the west/northwest and typically result in a long-term drift towards the north and east, following the coastline. Weaker and less persistent current reversals occur during times of northerly and easterly winds during autumn and winter (WorleyParsons, 2015b). Tides at Port Hedland are semi-diurnal and macro-tidal with a mean spring tidal range of 5.5 m (WorleyParsons, 2015b). Wind roses for Port Hedland Airport show the onshore wind climate is dominated by north-westerly onshore winds and south-easterly offshore winds. Offshore at Beacon 15 (approximately 20 km north-west of the Project site), the north-westerly onshore winds and south-easterly offshore winds are also evident, with a moderately higher occurrence of westerly winds and more consistent directionality to these dominant wind directions than that at Port Hedland Airport. Within the Inner Harbour, waves are influenced by local bathymetry and sheltering and are predominantly generated by local winds. **Key Study Findings** Modelling has demonstrated that there is negligible changes to the rate of sediment accretion or erosion as a result of the proposed development (WorleyParsons, 2015c). Similarly, the study has demonstrated that there is a negligible change to peak flow velocities within the Port Hedland Inner Harbour as a result of the presence of the IB Port Facility (WorleyParsons, 2015b). This is largely a result of the Port Facility being located on relatively high ground that is inundated infrequently. **Impacts** • No indirect loss to BPPH • Negligible increase in accretion or erosion in or around proposal area • Negligible increase in mean current velocities and inundation patterns in or around proposal area				

Inherent Impact	Environmental Aspects	Mitigation Actions to Address Residual Impacts	Proposed Regulatory Mechanisms for Ensuring Mitigation	Outcome to Demonstrate that Proposal Meets EPA Objective.
Air Quality: *To maintain air quality for the protection of the environment and human health and amenity and to minimise the emission of greenhouse and other atmospheric gases through the application of best practice.*				
Context Guidance on the assessment and management of air quality include: • Environmental Protection Bulletin No. 2: Port Hedland Dust and Noise (EPA, 2009b) • National Environment Protection (Ambient Air Quality) Measure (NEPM). • Air Quality and Air Pollution Modelling Guidance Notes (DoE, 2006) • A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated sites remediation and other related activities (DEC, 2011). In 2010, the PHDMT published the *Port Hedland Air Quality and Noise Management Plan* (DSD, 2010) to enable a framework for effective dust management strategies within Port Hedland. The taskforce made a number of recommendations which have been addressed. These include: • Establishment of a comprehensive network of air quality measuring devices throughout the Port Hedland area, including South Hedland; • Adoption of an interim air quality guideline measure for the national standard for PM_{10}; • Development of leading practice dust management guidelines, and • Undertaking of a Health Risk Assessment (HRA) which is scheduled for completion in Q4 FY2015. The HRA will investigate potential health risks from particulate matter and address concerns about air quality and its possible effect on community health following the increased level of port activity. Monitoring for PM_{10} was completed at the end of May 2014. Monitoring for other elements of concern such as silica, mineral fibres, sulphur oxides (SO_x) and nitrogen oxides (NO_x), will continue until the end of February 2015. The PPA developed best practice guidelines for the management of dust impacts associated with the activities and operations taking place within the area controlled by the PPA. The *Dust Management Guidelines: Leading Practice A232535* (PPA, 2015) sets out findings based on a review of national and international best practice and describes what is broadly considered to be leading practice for dust management in bulk materials handling processes. The Pilbara is a naturally dusty environment with wind-blown dust a significant contributor to dust levels in the region. In Port Hedland, operations at the Port increases dust levels. The PHDMT recognises that Port Hedland is a naturally dusty environment and is not an urban environment. A	Materials Handling and associated activities resulting in dust emissions	Note, modelling suggests that there will be no increased dust levels as a result of the proposed development and that dust levels may decrease. However, mitigation actions are listed below. **Avoidance** The magnetite concentrate is stored at approximately 8% moisture content. This is well above dust extinction moisture level. Integration of the existing Fortescue Air Management System (AQMS) with the IBO AQMS Boundary Monitor Dust Network will provide an effective dust management tool. **Minimisation** Product inloading is via a slurry pipeline and all stacking and reclaiming occurs within the covered area, therefore potential dust emissions from the facility are minimised. Belt wash stations will be installed at specific IBO outload circuit transfer stations to avoid carry back of the product. All belt wash emissions will be captured in a sump and slurried back to the IB Port Facility for dewatering.	Dust can be managed under the conditions of a licence under Part V of the EP Act	The proposal can be managed to meet the EPA's objective for air quality (dust) subject to the emissions being managed under Part V Licence.

Inherent Impact	Environmental Aspects	Mitigation Actions to Address Residual Impacts	Proposed Regulatory Mechanisms for Ensuring Mitigation	Outcome to Demonstrate that Proposal Meets EPA Objective.
PM_{10} level of 70 $\mu g/m^3$ has been set at the Taplin Street receptor. There must be no more than 10 exceedances of this level per year. **Key Study Findings** The cumulative scenario (existing, approved and IBO) was modelled to determine the impact that the introduction of 10 Mtpa of magnetite concentrate would have on dust levels in the Port Hedland airshed (PEL, 2015). The cumulative scenario based on Fortescue exporting 165 Mtpa of hematite ore and IBO exporting 10 Mtpa of magnetite concentrate, the predicted number of exceedances of the PHDMT PM_{10} level actually falls from 9 to 6 exceedances per year at the Taplin Street receptor. This is due to the emission characteristics of the magnetite product which has zero (or very low emissions) from stacking, reclaiming and shiploading displacing the inload of 10Mtpa of hematite (PEL, 2015). **Impacts** Potential for impacts to health and amenity				
Amenity: *To ensure that impacts to amenity are reduced as low as reasonably practicable*				
Context Noise characteristics such as vibration, tonality (humming or whining), modulation (changes in level of pitch) or impulsiveness (hammering) can increase the level of annoyance and a decrease in the amenity of residents. Noise management in Western Australia is implemented through the Environmental Protection (Noise) Regulations 1997 which operate under the *Environmental Protection Act 1986* A PHIC cumulative noise assessment has identified that cumulative noise emissions from industry in Port Hedland currently exceed the regulatory noise levels (SVT, 2015). **Key Study Findings** Under a worst case scenario, the addition of the IB Port Facility will not increase cumulative noise levels (PEL, 2015). As a result, no noise mitigation measures are required for the Port Facility. **Impacts** Potential for impacts to health and amenity	Materials Handling and associated activities resulting in noise emissions	**Best Practice** The IB Port Facility will utilise new, modern equipment and will be maintained in good working order. **Minimisation** Stacking and Reclaiming will occur within a covered area. This will attenuate much of the noise associated with the handling of magnetite concentrate.	Noise can be managed under the provisions of the Environmental Protection (Noise) Regulations.	The proposal can be managed to meet the EPA's objective for amenity (noise).
Offsets: *To counterbalance any significant residual environment impacts or uncertainty through the application of offsets*				
Context The loss of 2.01 ha within the Port Hedland LAU constitutes a significant residual impact as the cumulative loss of mangroves in this area is already greater than 10%. Whilst areas of the	Not applicable	Not applicable	The Mangrove Protection Management Plan specifies a range of measures to offset the loss of 2.01 ha of mangroves including: • Identifying new mangrove habitat using results of Annual Mangrove Recruitment Surveys	The proposal can be managed to meet the EPA's objectives provided there is an offset applied to a native vegetation clearing permit to counterbalance the residual impact to mangrove communities.

Inherent Impact	Environmental Aspects	Mitigation Actions to Address Residual Impacts	Proposed Regulatory Mechanisms for Ensuring Mitigation	Outcome to Demonstrate that Proposal Meets EPA Objective.
inner harbour are demonstrating mangrove recruitment, permanent recruitment of 2.01 ha of mangroves remains uncertain.			which have occurred at the Herb Elliott Port since 2006. New mangrove habitat has been reported to occur in the following ways: o Excavation of sand cheniers through construction phase earthworks o Localised seepage along the Port Facility embankment o Excavation of artificial tidal creek channels o Discharge of stormwater to an area that receives partial tidal inundation • Once these newly created mangrove habitats are identified, further investigations aimed at increased recruitment and survival rates is proposed. • This approach is seen as a viable alternative to artificially creating suitable habitat for mangrove seedlings to propagate.	

6. MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE

The EPBC Act provides for the protection of nationally and internationally significant flora, fauna, ecological communities and heritage places. Under the EPBC Act, the following are Matters of National Environmental Significance (MNES):

- World heritage properties.
- National heritage places.
- Wetlands of international importance (listed under the RAMSAR Convention).
- Listed threatened species and ecological communities.
- Migratory species protected under international agreements.
- Commonwealth marine areas.
- The Great Barrier Reef Marine Park.
- Nuclear actions (including uranium mines).

The proposal has been separately referred to the Department of Environment.

6.1 EPBC Act Objectives

The objectives of the EPBC Act are to:

- Provide for the protection of the environment, especially for MNES.
- Conserve Australian biodiversity.
- Promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resources.
- Enhance the protection and management of important natural and cultural places.
- Control the international movement of wildlife, wildlife specimens and products made or derived from wildlife.

Guidance on the assessment and management of MNES exists at a Federal government level, as shown in Table 9.

Table 9: Commonwealth Guidance for Assessment and Management of MNES

Document	Description
Environment Protection and Biodiversity Conservation Act 1999	Provides guidance for the preparation and evaluation of impact assessment. The Act aims to prevent significant impacts occurring to Matters of National Environmental Significance.
Matters of National Environmental Significance: Impact Guidelines 1.1 *Environment Protection and Biodiversity Conservation Act 1999* (2009)	Provides overarching guidance for the assessment of proposed actions to determine whether the action is likely to have significant impacts on a matter protected under national environmental law.
Matters of National Environmental Significance: Impact Guidelines 1.2 Actions on, or impacting upon, Commonwealth land and Actions by Commonwealth Agencies (2010)	This guideline helps to determine whether or not to submit a referral to the DoE and whether approval is required under the EPBC Act.
Draft EPBC policy statement: Use of environmental offsets under the *Environment Protection and Biodiversity Conservation Act 1999* (2007)	The purpose of this draft policy statement is to outline the Australian Government's position on the use of environmental offsets under the EPBC Act. The aim is to ensure the consistent, transparent and equitable use of environmental offsets under the Act.
Discussion paper: Use of environmental offsets under the *Environment Protection and Biodiversity Conservation Act 1999* (2007)	The purpose of this paper is to facilitate the development of a public policy and internal guidance for the application of environmental offsets under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).
National Assessment Guidelines for Dredging	Sets out the framework for the environmental impact assessment and permitting of the ocean disposal of dredged material.
National Strategy for the Management of Coastal Acid Sulphate Soils (2000)	Outlines the objectives for the identification, avoidance and mitigation of Acid Sulfate Soils.
Australian Ballast Water Management Requirements (Version 5, 2013)	Management requirements to reduce the risk of introducing harmful aquatic organisms into Australia's marine environment through ballast water from international vessels.

6.2 Studies

Studies relevant to the IB Port Facility include:

- Protected Matters Search Tool – 7 July 2015 (DoE, 2015)
- Report for Pilbara Gateway Port – Flora and Vegetation, Vertebrate Fauna and Short Range Endemic Fauna Assessment (GHD, 2012)

6.3 Existing Environment

6.3.1 Fauna Habitat

A survey of the wider study area identified 11 fauna habitat types. Of these only two occur within the proposal footprint (GHD, 2012). These are:

- Mangroves
- Samphire and intertidal mudflats.

As a result, the range of conservation significant fauna species that are likely to occur within the proposed footprint or immediate surrounds is limited. These species are discussed further in Section 6.3.2.

Impacts from the loss of 10.15 ha of fauna habitat are discussed in Section 6.4.1.

6.3.2 Listed Threatened Species

The Protected Matters Search Tool identified that the listed threatened species shown in Table 10 may potentially occur within a 10km radius around the proposed IB Port Facility, including those occurring within marine waters (DoE, 2015). Migratory wetland bird species are listed in Section 6.3.3. Those species that are likely to occur within the Inner Harbour or utilise the habitat within the footprint of the Port Facility are discussed below.

Marine Mammals

Jenner and Theile (2008) note that no publications exist for any cetacean surveys in the Port Hedland area and the use of the Inner Harbour by smaller cetaceans such as dolphins cannot be confirmed, although it is reasonable to expect that dolphins would enter the Inner Harbour to forage. There have been sporadic sightings of individual dugongs in and around the Inner Harbour. Port Hedland is not considered an important aggregation area for dugongs (Prince, 2001) and a lack of extensive seagrass meadows within the harbour suggests the area is not suitable habitat for the dugong.

Marine Reptiles

According to the Protected Matters Search Tool, the Short-nosed Seasnake (*Aipysurus apraefrontalis*) is listed as Critically Endangered under the EPBC Act and may potentially occur within waters around Port Hedland. There is no information regarding the potential for this seasnake to occur within the Inner Harbour, however, given its preferred habitat is reefs and shallow waters along the outer reef edge in water depths of 10m (DoE, 2015), it is highly unlikely that this seasnake would occur within the Inner Harbour.

Pendoley Environmental (2009) provides a summary of the use of the Inner Harbour by marine turtles. Based on satellite tracking of Flatback Turtles, inter-nesting Flatback Turtles were not expected to occur within the Inner Harbour. Green and Leatherback Turtles may both forage in the Inner Harbour and tidal creeks, with mangroves being used as an opportunistic food source. There is an anecdotal report of a Loggerhead Turtle south of Finucane Island and juvenile green turtles have been identified within the Inner Harbour. They are likely to feed on sea grass and algal mats and may use the mangrove habitat for an additional food source.

Fish

The Green Sawfish may occur within the Inner Harbour and tidal creeks based on its known range and preferred habitat.