



**bhpbilliton**

resourcing the future

Section 1  
Introduction





## 1 Introduction

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### 1.1 Overview of document

This Public Environmental Review/Draft Environmental Impact Statement (PER/Draft EIS) assesses the environmental impacts associated with BHP Billiton Iron Ore's proposed Outer Harbour Development Port Hedland. The proposed project will be located adjacent to BHP Billiton Iron Ore's current operations (**Figure 1.1**) at Port Hedland and includes the construction of stockyards within the vicinity of the decommissioned Hot Briquetted Iron (HBI) Plant at Boodarie and a jetty/wharf structure offshore from Finucane Island (**Figure 1.2**).

#### 1.1.1 Proposal Title

The proposed Outer Harbour Development Port Hedland will be referred to in this document as either the "Outer Harbour Development" or "the project".

#### 1.1.2 Proponent

The proponent for the Outer Harbour Development is BHP Billiton Iron Ore, located at:

BHP Billiton Iron Ore  
225 St Georges Terrace  
PERTH WA 6000

The key contact for the environmental approvals component is:

Mr Gavin Price  
Head of Environment  
BHP Billiton Iron Ore  
Ph: (08) 6224 4024  
Email: Gavin.Price@bhpbilliton.com

Further information on the proponent can be sourced from the Company's website ([www.bhpbilliton.com](http://www.bhpbilliton.com)).




#### 1.1.3 Project Objectives

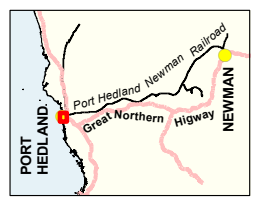
The primary objective of the Outer Harbour Development is to expand the export capacity of BHP Billiton Port Hedland iron ore port operations to support current and future operational and capacity requirements and meet expected increase in global demand.

Increasing BHP Billiton's export capacity at the Port will:

- ▶ maximise the efficiency of existing export operations;
- ▶ enhance health, safety and amenity associated with existing operations; and
- ▶ promote sustainability of the region as an export hub.

**Legend**

-  Principal Road
-  Existing Railway
-  Existing Shipping Channel



0 1 2  
kilometres

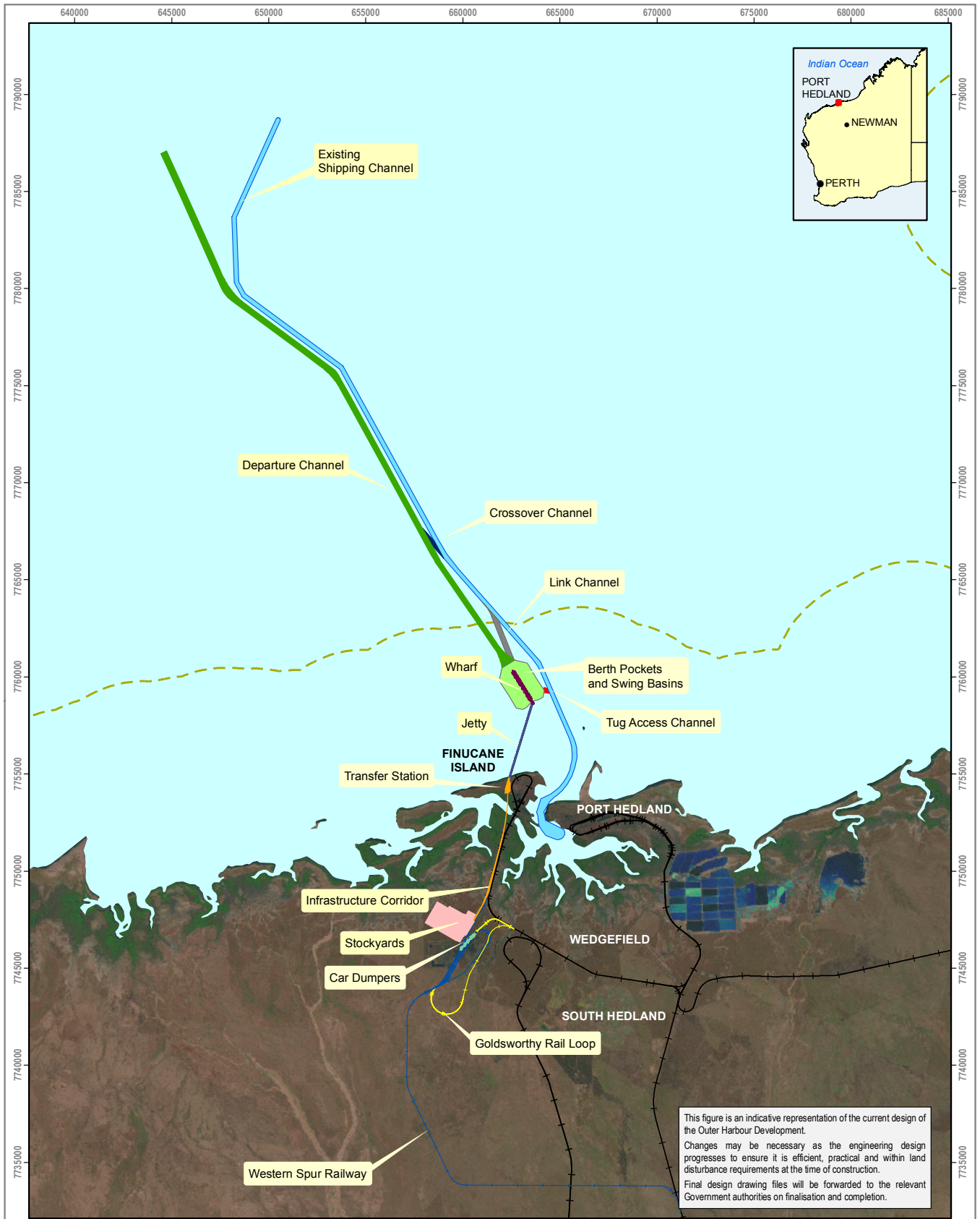
Scale = 1:75 000 at A4  
Datum: GDA94  
Map Grid: MGA94 Zone 50

Source:  
Channel: 112-SK-00500 (01/11/2008)  
Circorectified Aerial Photograph: 15/03/2007 (BHPBIO)  
Topography: Geospatial Information Systems  
© Commonwealth of Australia (GA), 2006



This figure is an indicative representation of the current design of the Outer Harbour Development. Changes may be necessary as the engineering design progresses to ensure it is efficient, practical and within land disturbance requirements at the time of construction. Final design drawing files will be forwarded to the relevant Government authorities for finalisation and completion.

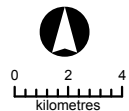
**Figure 1.1 Port Hedland Existing and Proposed Operations**



This figure is an indicative representation of the current design of the Outer Harbour Development. Changes may be necessary as the engineering design progresses to ensure it is efficient, practical and within land disturbance requirements at the time of construction. Final design drawing files will be forwarded to the relevant Government authorities on finalisation and completion.

**Legend**

- Proposed Car Dumper
- Proposed Jetty
- Proposed Wharf
- Proposed Goldsworthy Rail Loop
- Proposed Western Spur Railway
- Existing Railway
- Proposed Tug Access Channel
- State/Commonwealth Jurisdiction Boundary
- Proposed Infrastructure Corridor
- Proposed Stockyards
- Proposed Departure Channel
- Proposed Berth Pockets and Swing Basins
- Proposed Link Channel
- Proposed Crossover Channel
- Existing Shipping Channel



Source: Australian Maritime Boundaries (AMB) and Topography: GEODATA Topo 250K V3 © Commonwealth of Australia (GA), 2006 Channel: 112-SK-00500 (FAST JV 01/11/2008) Channel: Navy Hydrographer, AUS00740 Imagery: Landsat Mosaic (2005)



Figure 1.2 Proposed Outer Harbour Development General Arrangement

The objectives will be achieved whilst:

- ▶ protecting the conservation, amenity and social values of the Port Hedland area;
- ▶ responsibly managing environmental, health and safety requirements; and
- ▶ implementing sound environmental management throughout all phases of the development.

#### 1.1.4 Background to the Project

BHP Billiton Iron Ore is in a period of significant growth and has focused on growing the business via a phased approach to meet market demand.

BHP Billiton Iron Ore plans to continue to grow capacity in line with market demand for iron ore. China and other emerging economies are expected to continue to drive global demand for steel, and hence long term demand for iron ore, as steel remains a critical building block for modernisation.

To meet this expected continuation in demand. BHP Billiton Iron Ore is seeking to further expand export capacity through the development of new port facilities and supporting infrastructure as part of the proposed Outer Harbour Development at Port Hedland. The timing and the composition of the stages will ultimately be dependant on the market demand for iron ore, internal and external approvals and construction methodology.

#### 1.1.5 Scope of Public Environmental Review/ Environmental Impact Statement

This document describes and assesses the significance of the environmental impacts associated with the construction, operation and decommissioning phases of the Outer Harbour Development and how these impacts will be avoided, minimised and managed should the project proceed. The scope of the Outer Harbour Development project assessed in this PER/Draft EIS includes:

- ▶ rail spur and loops from the existing BHP Billiton Iron Ore Newman and Goldsworthy mainline rail infrastructure to proposed stockyards at Boodarie;
- ▶ rail loops and stockyards at Boodarie;
- ▶ infrastructure corridor (including conveyors, access roadway and utilities) from the stockyards to the proposed jetty;

- ▶ jetty, wharf, dredged channel, basins and berthing pockets offshore from Finucane Island to accommodate bulk carriers; and
- ▶ supporting infrastructure including access roads, upgrades to existing roads and utilities, buildings, temporary construction facilities and communication systems.

## 1.2 Environmental Management Framework

### 1.2.1 Approval Process

This PER/Draft EIS has been prepared to satisfy both Western Australian and Commonwealth environmental legislation.

The *Environmental Protection Act 1986* (EP Act) is the principal statute relevant to environmental protection in Western Australia. The Outer Harbour Development was referred to the Environmental Protection Authority (EPA) in accordance with Section 38 of the EP Act. Subsequently on 30 April 2008 the level of assessment for the proposed Outer Harbour Development was set at a Public Environmental Review (PER).

An Environmental Scoping Document (ESD) (BHP Billiton Iron Ore 2008a), describing the potential key environmental factors raised by the proposed Outer Harbour Development and the intended environmental studies to be completed as part of the assessment, was approved by the EPA on 4 November 2008. This PER/Draft EIS has been prepared in accordance with the final approved ESD.

The project description (including dredging volumes) provided in the ESD (BHP Billiton Iron Ore 2008a) has been revised based on advancements in the engineering design, oceanographic data, modelling and detailed bathymetry surveys. The current project description is provided in **Section 2**. Studies and/or technical appendices to the PER/Draft EIS have not been updated to incorporate minor changes in project description if these changes do not alter the significance of the studies' outcomes.

In addition to the assessment by the EPA, the project was referred to the Commonwealth Department of the Environment, Water, Heritage and the Arts (DEWHA) under the provisions of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) on 4 April 2008.

The Commonwealth regulatory authority previously known as DEWHA has recently changed name and is now known as the Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC). The department is referred to as DSEWPaC throughout this document.

DSEWPaC determined that the proposed activity was a 'controlled action' under the EPBC Act due to the potential significant impacts on the following Matters of National Environmental Significance:

- ▶ listed threatened species or communities (Section 18 and 18A);
- ▶ listed migratory species (Section 20 and 20A); and
- ▶ Commonwealth marine areas (Section 23 and 24A).

DSEWPaC set the level of assessment at an Environmental Impact Statement (EIS) on 16 May 2008 and the EIS guidelines were issued on 24 December 2008.

The *Environment Protection (Sea Dumping) Act 1981* (Sea Dumping Act), regulates the loading and dumping of waste at sea. This Act also fulfils Australia's international obligations under the London Protocol to prevent marine pollution by controlling dumping of wastes and other matter.

Under the Sea Dumping Act, the Commonwealth aims to minimise the threat of pollution by:

- ▶ prohibiting ocean disposal of waste considered too harmful to be released in the marine environment; and
- ▶ regulating permitted waste disposal to ensure environmental impacts are minimised.

An application to dispose of dredged material at sea was also submitted to the Federal Minister for the Environment and Heritage under the Sea Dumping Act on 4 April 2008. The Minister's delegate determined that the proposed disposal is likely to

have a significant impact on the environment and sought advice in accordance with Section 160 of the EPBC Act. This requires assessment of the project in accordance with Part 8 of the EPBC Act. The PER/Draft EIS also provides the information required for the DSEWPaC to assess the project for granting of the Sea Dumping Permit. As the project is to be assessed by the Western Australian Government at the PER level of assessment, and the Commonwealth Government at the EIS level of assessment, the EPA and DSEWPaC determined that BHP Billiton Iron Ore should undertake a coordinated assessment (as shown in **Figure 1.3**). The submission of this joint PER/Draft EIS document is intended to satisfy the requirements of both jurisdictions.

Prior to the construction and operation of these facilities, a works approval and licence amendment will be required under Part V of the EP Act.

### 1.2.2 Terms of Reference

The terms of reference (**Table 1.1**) outlines the requirements that should be considered in preparing the PER/Draft EIS. Furthermore, the terms of reference provides the framework for the PER/Draft EIS, including information on the purpose and role of the PER/Draft EIS, and the factors considered to be most significant for the project based on the initial risk assessment undertaken at the Scoping Phase. The Scoping Phase determined the studies necessary and the data required to undertake the impact assessment as described in the ESD (**Appendix B1**).

All potentially significant impacts on the environment were to be investigated for the Outer Harbour Development, and requirements for the mitigation of any adverse impacts are detailed in this PER/Draft EIS. The guidelines should, however, not be interpreted as excluding from consideration any matters which were not foreseen or which may arise during ongoing scientific studies or from any changes to the proposal.

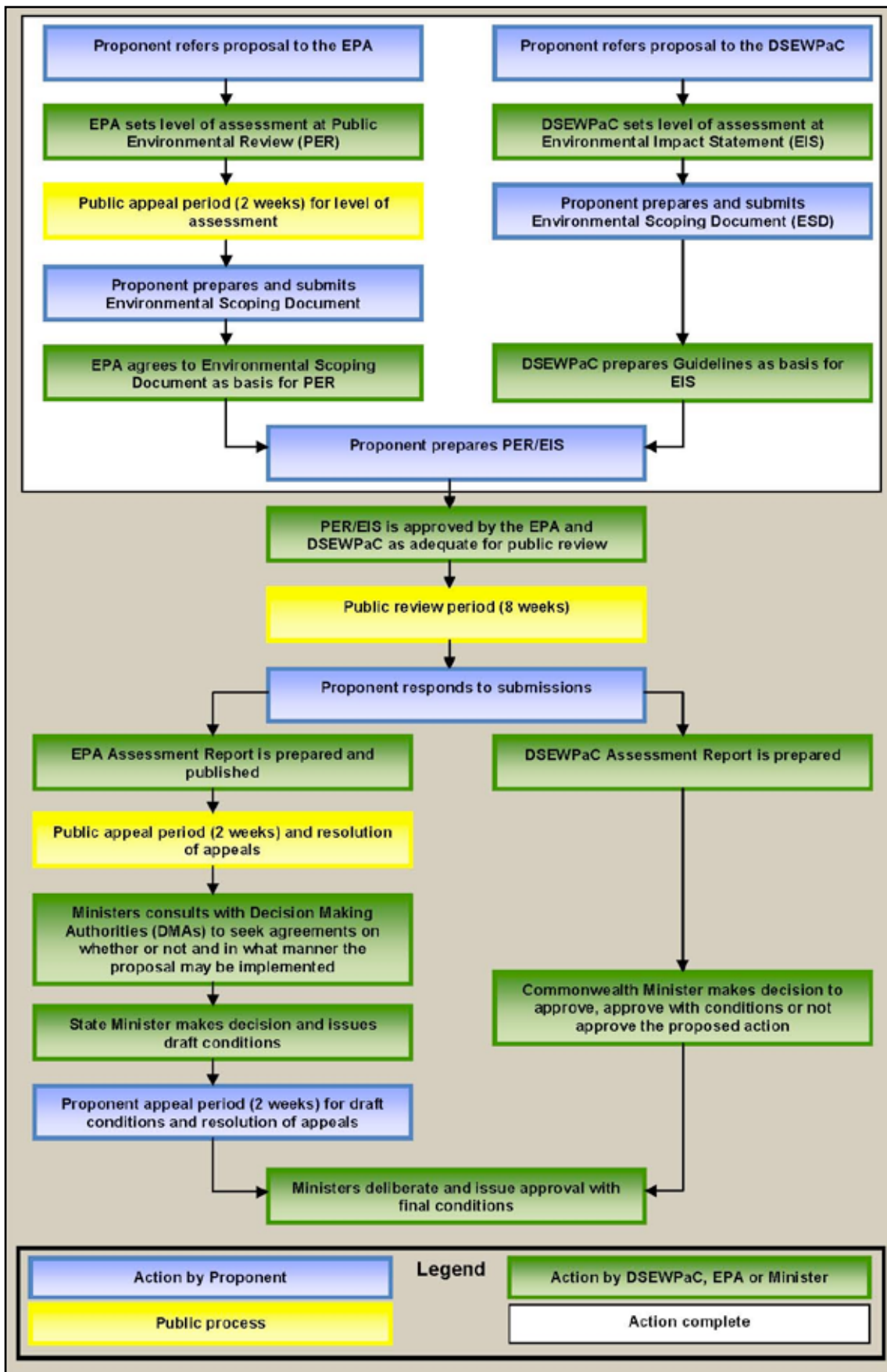


Figure 1.3 – Coordinated Environmental Assessment Process and Indicative Timeframes

**Table 1.1 – Terms of Ref**

<b>Item Number</b>	<b>Consideration</b>	<b>Requirement</b>	<b>Relevant Section of PER/Draft EIS</b>	<b>Relevant Guidelines/ Reference</b>
1	Biodiversity	Biological surveys to document existing baseline conditions and to assess findings in local and regional context.	<b>Sections 5 and 6</b>	<b>Table 7.2, Environmental Scoping Document (Appendix B1)</b>
2	Sustainability	<ul style="list-style-type: none"> <li>▶ Establish a sustainability framework for the project.</li> <li>▶ Conduct cleaner production reviews and life cycle analysis.</li> </ul>	<b>Section 1 Section 3</b>	
3	Cumulative Impacts	<ul style="list-style-type: none"> <li>▶ Evaluate cumulative noise and dust emissions.</li> <li>▶ Evaluate cumulative losses of mangroves and other benthic primary producer habitat.</li> </ul>	<b>Section 11 Section 10</b>	
4	Geology, Soils (including Acid Sulphate Soils) and Landforms	<p>Undertake geotechnical investigations.</p> <p>Undertake :</p> <ul style="list-style-type: none"> <li>▶ preliminary acid sulphate soils investigation; and</li> <li>▶ detailed acid sulphate soils investigation incorporated in the geotechnical investigations.</li> <li>▶ Undertake hydrology impact study for the study area.</li> </ul>	<b>Section 9</b>	
5	Flora and Vegetation (excluding intertidal)	<ul style="list-style-type: none"> <li>▶ Baseline flora and vegetation surveys (inclusive of seasonal surveys).</li> <li>▶ Conduct impact assessment of the proposed project footprint on the local and regional significance of flora species and revegetation communities.</li> </ul>	<b>Section 5 Section 9</b>	
6	Fauna	<ul style="list-style-type: none"> <li>▶ Baseline fauna survey and assessment inclusive of short-range endemics and season.</li> <li>▶ Conduct an impact assessment of the proposed project footprint on the local and regional significance of fauna species.</li> </ul>	<b>Section 5 Section 9</b>	
7	Subterranean Fauna	<ul style="list-style-type: none"> <li>▶ Undertake a subterranean fauna risk assessment.</li> <li>▶ Undertake groundwater/ hydrogeology assessment for proposed dewatering.</li> </ul>	<b>Section 9</b>	
8	Surface Water Flows	Conduct a hydrological assessment of the study area.	<b>Section 9</b>	

**Table 1.1 – Terms of Ref**

Item Number	Consideration	Requirement	Relevant Section of PER/Draft EIS	Relevant Guidelines/ Reference
9	Intertidal and Subtidal Benthic Primary Producer Habitats and associated Biota	<ul style="list-style-type: none"> <li>▶ Baseline surveys including benthic ecology investigations, baseline water quality and coral health will be conducted to:</li> <li>▶ describe and evaluate intertidal, supratidal and subtidal habitats;</li> <li>▶ determine the presence and distribution of benthic primary producer habitat;</li> <li>▶ conduct a sampling and analysis pilot program to characterise sediments;</li> <li>▶ provide baseline data to assist development of the future monitoring program;</li> <li>▶ determine cumulative (historic) losses; and</li> <li>▶ determine requirement for a benthic primary producer habitat offset plan.</li> </ul> <p>Conduct associated modelling and surveys to identify areas of sensitivity and influence;</p> <ul style="list-style-type: none"> <li>▶ Nearshore hydrodynamic/ tidal flow modelling to identify areas of sensitivity and influence; and</li> <li>▶ Dredging plume modelling to predict the impact zone for benthic primary producer habitat (mortality, sub-lethal and no detectable change).</li> </ul>	<p><b>Section 10</b>  <b>Appendices B2, B3, B6</b>  <b>B18 and B19</b>  <b>Appendix B4</b></p>	<p><b>Table 7.2,</b>  <b>Environmental</b>  <b>Scoping Document</b>  <b>(Appendix B1)</b></p>
10	Hydrodynamics and Coastal Processes	<ul style="list-style-type: none"> <li>▶ Collect baseline data to determine existing coastal hydrodynamic and geomorphic processes.</li> <li>▶ Establish hydrodynamic and geomorphic models for the study area and determine the impact of the proposed design on coastal processes and sediment stability.</li> </ul>	<p><b>Section 10</b></p>	
11	Protected Marine Biota	<ul style="list-style-type: none"> <li>▶ Conduct an offshore marine environmental survey to: <ul style="list-style-type: none"> <li>▶ provide baseline data to describe the existing marine environment and presence of any significant features and map the distribution of marine habitats;</li> <li>▶ address data limitations on listed species or habitats;</li> <li>▶ provide background data to assist development of future monitoring programs; and</li> <li>▶ determine the presence and distribution of fauna habitats and potential foraging grounds.</li> </ul> </li> <li>▶ Dredging plume dispersion and sediment re-suspension modelling.</li> <li>▶ Baseline water quality and coral health monitoring.</li> <li>▶ Marine turtle survey and assessment.</li> <li>▶ Marine mammal study to incorporate potential impacts from lighting and noise generated during construction.</li> <li>▶ Undertake marine mammal study to identify migration paths, potential for study area to be utilised (for foraging, breeding or migration) by marine mammals.</li> </ul>	<p><b>Section 10</b></p>	

Table 1.1 – Terms of Ref

Item Number	Consideration	Requirement	Relevant Section of PER/Draft EIS	Relevant Guidelines/ Reference
12	Non-endemic Marine Species	Undertake a desktop assessment of impacts associated with introduced marine species and pathogens through increased shipping movements and construction equipment.		
13	Air – Particulate Dust Emissions	<ul style="list-style-type: none"> <li>▶ Undertake a dust modelling assessment to: <ul style="list-style-type: none"> <li>▶ develop an atmospheric model;</li> <li>▶ identify dust sources;</li> <li>▶ predict likely dust emissions;</li> <li>▶ describe existing emissions from natural background sources and other Port Hedland sources including existing BHP Billiton Iron Ore operations, proposed BHP Billiton Iron Ore operations, PHPA operations inclusive of Utah Point and FMG operations;</li> <li>▶ evaluate cumulative impacts as a result of the project; and</li> <li>▶ determine potential impacts and evaluate the results against accepted guidelines, Section 46 targets and statutory requirements.</li> </ul> </li> <li>▶ Depositional modelling to determine any potential impacts to areas of heritage significance.</li> <li>▶ Undertake community consultation and engagement.</li> </ul>	Section 11	
14	Air – Greenhouse Gases	Conduct a greenhouse gas assessment.	Greenhouse Gas Assessment (SKM 2009o)	
15	Groundwater and Surface Water Quality	Identify potential contamination sources, pathways and determine management controls required to prevent contamination and manage stormwater.	Section 8	
16	Marine Water and Sediment Quality	<ul style="list-style-type: none"> <li>▶ Undertake sampling and analysis of marine sediments to identify presence of potential contaminants and determine sediment particle size.</li> <li>▶ Undertake sediment plume modelling to determine the geographic extent of the proposed plume.</li> <li>▶ Characterise baseline water quality parameters for a minimum of 12 months, at representative impact and reference sites in State and Commonwealth waters.</li> <li>▶ Undertake contamination and acid sulphate soils testing of spoil material identified for disposal to land.</li> </ul>	Section 10 Appendices B4, B6 and B19 Water Quality Monitoring Report (SKM 2009f)	
17	Hydrocarbons and Hazardous Materials	Identify potential contamination sources and pathways.	Sections 9, 10 and 11	
18	Solid and Liquid Waste Disposal	Conduct a waste study to identify sources, quantities and disposal options.	Waste Management Study (SKM 2009s) Section 8	

**Table 1.1 – Terms of Ref**

Item Number	Consideration	Requirement	Relevant Section of PER/Draft EIS	Relevant Guidelines/ Reference
19	Terrestrial Noise and Vibration	<p>Conduct a noise assessment to:</p> <ul style="list-style-type: none"> <li>▶ identify noise sources (including conveyor drives, traffic, rail, piling, etc);</li> <li>▶ predict likely noise emissions;</li> <li>▶ identify opportunities to minimise noise emissions;</li> <li>▶ evaluate noise emissions resulting from the project in isolation; and</li> <li>▶ model noise impacts on sensitive receptors from the proposal in isolation and cumulatively with other sources including impacts from associated increase in rail and traffic noise.</li> </ul>	<b>Section 11</b>	
20	Marine Noise, Blasting and Vibration	<ul style="list-style-type: none"> <li>▶ Conduct noise emission modelling and establish baseline noise data for marine environment;</li> <li>▶ Conduct a marine noise and vibration assessment to: <ul style="list-style-type: none"> <li>▶ identify marine fauna at risk and extent of impacts;</li> <li>▶ determine potential noise and vibration impacts from dredging, blasting, piling and shipping; and</li> <li>▶ establish management strategies to minimise any significant impacts.</li> </ul> </li> <li>▶ Establish tolerance limits of sensitive marine fauna.</li> </ul>	<b>Section 10</b>	
21	Light	Conduct a light impact assessment.	<b>Appendix B5 Sections 9, 10 and 11</b>	
22	Fisheries	<ul style="list-style-type: none"> <li>▶ Liaise with relevant fishing groups and relevant stakeholders.</li> <li>▶ Conduct a fisheries study to include: <ul style="list-style-type: none"> <li>▶ identification of recreational, commercial fisheries;</li> <li>▶ assessment of aquaculture operations within the vicinity of the development area; and</li> <li>▶ identification of key commercial species.</li> </ul> </li> <li>▶ Undertake seasonal characteristics and identification of any significant issues for consideration in project design.</li> </ul>	Desktop Fisheries Study (SKM 2009n)	
23	Indigenous Heritage	<ul style="list-style-type: none"> <li>▶ Conduct archaeological and ethnographic surveys over the study area.</li> <li>▶ Relevant local Aboriginal groups and representatives will be consulted.</li> </ul>	<b>Section 7</b>	

**Table 1.1 – Terms of Ref**

<b>Item Number</b>	<b>Consideration</b>	<b>Requirement</b>	<b>Relevant Section of PER/Draft EIS</b>	<b>Relevant Guidelines/ Reference</b>
24	European Heritage	<ul style="list-style-type: none"> <li>▶ Complete a desktop review of non-indigenous heritage surveys including maritime heritage sites.</li> <li>▶ Identify any heritage sites listed on the Register of National Estate, the State Heritage Council's Register of Sites and the local Municipal Inventory.</li> <li>▶ Finalise and implement a Community Engagement and Consultation Plan.</li> </ul>	<b>Section 7</b>	
25	Social Impacts	Conduct a social impact assessment of the overall growth strategy of the project.	<b>Sections 7 and 11</b>	
26	Visual Amenity	Conduct a visual amenity assessment to determine the visual impacts of the project during day and night time operations.	<b>Sections 7 and 11</b>	
27	Recreation	<p>Conduct a social impact assessment to:</p> <ul style="list-style-type: none"> <li>▶ identify the recreational areas within the proximity to the study area; and</li> <li>▶ determine the potential impacts.</li> </ul>	<b>Sections 4, 7 and 11</b>	
28	Decommissioning	Establish a preliminary Closure and Decommissioning Strategy that outlines the approach of the closure planning process in accordance with closure standards	<b>Section 12</b>	
29	Management Plans to be included in the PER	<ul style="list-style-type: none"> <li>▶ Acid Sulphate Soils Management Plan</li> <li>▶ Dust Management Plan</li> <li>▶ Noise Reduction Management Plan</li> <li>▶ Marine Turtle Management Plan</li> <li>▶ Marine Mammal Management Plan</li> <li>▶ Dredging and Spoil Disposal Management Plan</li> <li>▶ Non-Endemic Marine Species Management Plan</li> </ul>	<b>Appendix A7</b> Refer to Port Hedland Dust Management Program  Refer to Port Hedland Noise Reduction Management Program  Turtles – <b>Appendix A1</b> Marine Mammals – <b>Appendix A4</b> Appendix A3 Invasive Marine Species – <b>Appendix A5</b>	Table 9.1, Environmental Scoping Document ( <b>Appendix B1</b> )
30	General Information	Provide background and context.	<b>Section 1</b>	Section 1 EIS Guidelines

**Table 1.1 – Terms of Ref**

Item Number	Consideration	Requirement	Relevant Section of PER/Draft EIS	Relevant Guidelines/ Reference
31	Description of the Action/ Proposal	<p>Includes description of:</p> <ul style="list-style-type: none"> <li>▶ key components and construction in detail;</li> <li>▶ how the works are to be undertaken;</li> <li>▶ design parameters related to relevant impacts;</li> <li>▶ provide a comprehensive description of the proposal;</li> <li>▶ provide plans of the proposal which are significant from an environmental protection perspective;</li> <li>▶ describe timing and staging of project; and</li> <li>▶ detail ownership and liability for other aspects related to the proposal.</li> </ul>	Section 2	Section 2 EIS Guidelines Section 4.1 PER Guidelines
32	Feasible Alternatives	<p>Discuss feasible alternatives to the action.</p>	Section 3	Section 3 EIS Guidelines
33	Description of the Environment	<p>▶ Describe environment of the proposal site and surrounding areas that may be affected by the action.</p>	Sections 5, 6 and 7	Section 4 EIS Guidelines
		<p>▶ Develop and undertake Sampling &amp; Analysis Plan (SAP).</p>	Appendix B6	
		<p>▶ Develop and undertake additional offshore disposal site selections for dredged material.</p>	Section 3 and Spoil Ground Selection Study (SKM 2009h)	
<p>▶ Describe Commonwealth marine environment with respect to significant regional habitat for listed threatened and migratory marine species.</p> <p>Describe existing environment in a local and regional context, including:</p> <ul style="list-style-type: none"> <li>▶ key ecosystem processes;</li> <li>▶ biodiversity;</li> <li>▶ existing site condition; and</li> <li>▶ environmental issues that may be constraints or fatal flaws to the proposal</li> </ul>	Sections 6 and 10	Section 4.2 PER Guidelines		

**Table 1.1 – Terms of Ref**

Item Number	Consideration	Requirement	Relevant Section of PER/Draft EIS	Relevant Guidelines/ Reference
34	Relevant Impacts	<p>Describe potential relevant impacts on the ecology, hydrology and geomorphology related to the Matters of National Environmental Significance (NES), including:</p> <ul style="list-style-type: none"> <li>▶ assessing the nature and extent of likely short-term, long-term and consequential relevant impacts;</li> <li>▶ potential direct, indirect and consequential impacts on regional and Commonwealth marine environment;</li> <li>▶ impacts on other users;</li> <li>▶ potential impacts on important amenities, navigation, culturally and historically significant sites, threatened or migratory species or sensitive habitats;</li> <li>▶ potential impact on listed marine species;</li> <li>▶ potential risk of pest species becoming established in Commonwealth marine area; and</li> <li>▶ changes in air and water quality.</li> </ul> <p>Focus on the key or more significant environmental issues and the associated factors.</p> <ul style="list-style-type: none"> <li>▶ Discuss the extent to which best practice will be applied to the proposal.</li> <li>▶ Provide summary table for all environmental factors.</li> </ul>	<p><b>Sections 9, 10 and 11</b></p> <p><b>Sections 9, 10 and 11 Section 12 Executive Summary</b></p>	<p>Section 5 EIS Guidelines</p> <p>Section 4.3 PER Guidelines</p>
35	Proposed Safeguards and Mitigation Measures	<ul style="list-style-type: none"> <li>▶ Describe proposed safeguards and mitigation measures.</li> <li>▶ Assess expected or predicted effectiveness of mitigation measures.</li> <li>▶ Provide costs of the mitigation measures.</li> <li>▶ Provide Framework Environmental Management Plan.</li> <li>▶ Name agency/ies responsible for endorsing or approving each mitigation measure or monitoring program.</li> </ul>	<p><b>Sections 9, 10 ,11 and 12 and relevant Management Plans</b></p>	<p>Section 6 EIS Guidelines</p>
36	Other Approvals and Conditions	<p>Detail any other requirements for approval or conditions that apply.</p>	<p><b>Section 1</b></p>	<p>Section 7 EIS Guidelines</p>
37	Consultation	<p>Describe public participation and consultation activities undertaken.</p>	<p><b>Section 4</b></p>	<p>Section 8 EIS Guidelines</p> <p>Section 5 PER Guidelines</p>
38	Information Sources	<p>Details of source, age and reliability of information referenced in the EIS.</p>	<p><b>Section 13</b></p>	<p>Section 9 EIS Guidelines</p>

**Table 1.1 – Terms of Ref**

Item Number	Consideration	Requirement	Relevant Section of PER/Draft EIS	Relevant Guidelines/Reference
39	Environmental record of Person(s) Proposing to Take the Action	<ul style="list-style-type: none"> <li>▶ Provide details of any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources.</li> <li>▶ Provide details of the corporation's environmental policy and planning framework.</li> </ul>	Section 12	Section 10 EIS Guidelines
40	Conclusion	<p>Provide an overall conclusion as to the environmental acceptability of the proposal.</p> <ul style="list-style-type: none"> <li>▶ Indicate the proponent's view of the environmental costs (substantial investment) and benefits of the proposal.</li> <li>▶ Outline the basis upon which the proponent believes the EPA should conclude that the proposal is environmentally acceptable.</li> </ul>	Executive Summary Sections 9.8 and 10.5	Section 11 EIS Guidelines Section 6 PER Guidelines
41	Principles	Provide a table showing how consideration has been given to the principles of environmental protection.	Section 1 Table 1.5	Section 4.4 PER Guidelines
42	Environmental Management	Provide a brief description of the proposed environmental management system	Section 12	Section 4.5 PER Guidelines

### 1.2.3 Key Legislation and Policies

#### State and Commonwealth Legislation and Policies

The Outer Harbour Development is required to comply with relevant Western Australian and Commonwealth legislation. Current key legislation applicable to this project includes but is not limited to that outlined in **Table 1.2**.

**Table 1.2 – Key Western Australian and Commonwealth Legislation**

<b>Western Australian Legislation</b>	
Aboriginal Heritage Act 1972	Explosives and Dangerous Goods Act 1961
Aboriginal Heritage Regulations 1974	Fish Resources Management Act 1994
Agriculture and Related Resources Protection Act 1976	Health Act 1911
Agricultural and Related Resources (Declared Plants and Restricted Animals) Regulations 1982	Heritage of Western Australia Act 1990
Biosecurity and Agriculture Management Act 2007	Iron Ore (Mount Goldsworthy) Agreement Act 1964
Bush Fires Act 1954	Jetties Act 1926
Conservation and Land Management Act 1984	Land Administration Act 1997
Conservation and Land Management Regulations 2002	Litter Act 1979
Contaminated Sites Act 2003	Local Government Act 1995
Contaminated Sites Regulations 2002	Main Roads Act 1930
Country Areas Water Supply Act 2003	Marine and Harbours Act 1981
Dangerous Goods Safety Act 2004	Mining Act 1978
Dangerous Goods (Transport) Act 1998	Native Title (State Provisions) Act 1999
Dangerous Goods Safety (Storage and Handling of Non-explosives) Regulations 2007	Occupational Health and Safety Act 1984
Dangerous Goods Safety (Goods in Ports) Regulations 2007	Planning and Development Act 2005
Electricity Act 1945	Pollution of Waters by Oil and Noxious Substances Act 1987
Environmental Protection Act 1986	Port Authorities Act 1999
Environmental Protection Regulations 1987	Rail Safety Act 2010
Environmental Protection (Clearing of Native Vegetation) Regulations 2004	Rights in Water Irrigation Act 1914
Environmental Protection (Controlled Waste) Regulations 2004	Shipping and Pilotage Act 1987
Environmental Protection (NEPM-NPI) Regulations 1998	Soil and Land Conservation Act 1945
Environmental Protection (Noise) Regulations 1997	Soil and Land Conservation Regulations 1992
Environmental Protection (Unauthorised Discharges) Regulations 2004	Wildlife Conservation Act 1950
<b>Commonwealth Legislation</b>	
Aboriginal and Torres Strait Islander Heritage Protection Act 1984	Environment Protection (Sea Dumping) Regulations 1983
Australian Ballast Water Management Requirements & Australian Quarantine Regulations 2001	National Environmental Protection Council Act 1994
Australian Heritage Council Act 2003	Historic Shipwrecks Act 1976
Australian Maritime Safety Authority Act 1990	Native Title Act 1993
Energy Efficiency Opportunities Act 2006	Navigation Act 1912
Environment Protection and Biodiversity Conservation Act 1999	National Greenhouse and Energy Reporting Act 2007
Environment Protection and Biodiversity Conservation Regulations 2000	Protection of the Sea (Prevention of Pollution from Ships) Act 1983
Environment Protection (Sea Dumping) Act 1981	

## International Conventions

In addition to State and Commonwealth legislation, there are a number of international conventions and bilateral agreements for the protection of fauna and flora. In undertaking the PER/Draft EIS, the agreements and conventions included in **Table 1.3** have been considered and applied where appropriate.

**Table 1.3 – Bilateral Agreements and International Conventions**

<b>Bilateral Agreements</b>
China-Australia Migratory Bird Agreement (CAMBA)
Japan-Australia Migratory Bird Agreement (JAMBA)
Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA)
<b>International Conventions</b>
The Convention on Biological Diversity 1993 (CBD)
The Convention on the Conservation of Migratory Species of Wild Animals 1979 (CMS or Bonn Convention)
The Convention on the International Trade in Endangered Species of Wild Fauna and Flora 1973 (CITES)
The Convention on Wetlands of International Importance 1971 (Ramsar Convention)
The London Convention 1972 (replaced by the 1996 Protocol)

### 1.2.4 BHP Billiton Sustainable Development Framework

The growth opportunity presented by the expansion of the market for iron ore represents a significant challenge to BHP Billiton Iron Ore to capture this growth in partnership with the communities in which it operates, while realising the social benefits and protecting the environment.

The Outer Harbour Development represents the largest engineering project yet undertaken at Port Hedland, and will present BHP Billiton Iron Ore with many opportunities to incorporate sustainability principles into its development approach.

BHP Billiton's commitment to sustainable development has evolved over a long history of operational experience. The Company recognises the benefits of successful management of environmental and social performance while delivering economic benefits.

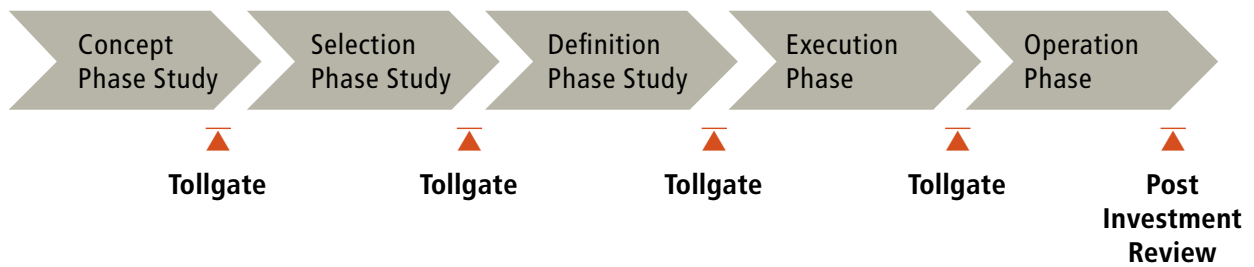
As the world's largest diversified resource company, BHP Billiton's decisions have the potential to impact the environment and society, both now and into the future. The continuing success and sustainability of the Company is heavily dependent upon securing and maintaining a licence to operate and grow. This requires BHP Billiton to demonstrate on an ongoing basis that the Company can and will protect the value of environmental and social resources in the communities in which it operates, and that the host communities will continue to share in the business success.

The BHP Billiton Group operates under a series of corporate requirements, including a Charter, Sustainable Development Policy, health safety

environment and community standards and a Code of Business Conduct. These corporate requirements promote a mutually beneficial relationship between the Company, the environment and the communities in which it operates, including Indigenous communities. The main principles of the Health and Safety Environment and Community Management Standards are:

- ▶ an overriding commitment to health, safety, environmental responsibility and sustainable development;
- ▶ the development, implementation and maintenance of management systems that drive sustainable development and continual improvement;
- ▶ consideration of the entire asset's lifecycle, from planning to design, construction, operation and closure; and
- ▶ a requirement that all employees are accountable for behaving in accordance with the corporate policies and standards.

BHP Billiton Iron Ore develops and assesses each of its development projects against an internal project evaluation process. The process requires identification of economic, environmental and social aspects arising from a project at each stage of development, and requires each aspect to be addressed satisfactorily before the project is permitted to proceed through the 'tollgate' to the next stage of development (**Figure 1.4**). The BHP Billiton Group is continually looking to optimise the performance of its operations.



**Figure 1.4 – BHP Billiton Group’s Project Evaluation and Investment Process**

The BHP Billiton Group has developed a proprietary risk management standard which provides a consistent platform across the Company’s operations by which risks are rated and ranked. The phased project development process is integrated with this risk assessment process to ensure that risks associated with proposed projects are identified and that the outcomes of the risk assessment process are considered and addressed in each successive project review. BHP Billiton Iron Ore used the risk standard to assess the risks of the project:

- ▶ against safety, health, environmental, community and economic performance, including the implications for Matters of National Environmental Significance (NES) protected under Part 3 of the EPBC Act; and
- ▶ to conform with the BHP Billiton Group and BHP Billiton Iron Ore’s policies and standards.

**1.2.5 Applicable Guidelines and Standards**

In undertaking the PER/Draft EIS, the guidelines and statements included in **Table 1.4** have been considered and applied where appropriate.

**1.2.6 Principles of Environmental Protection**

In 2003, the EP Act was amended to include the following principles of environmental protection (EPA 2004a):

- ▶ the precautionary principle;
- ▶ the principle of intergenerational equity;
- ▶ the principle of the conservation of biological diversity and ecological integrity;
- ▶ principles relating to improved valuation, pricing and incentive mechanisms; and
- ▶ the principle of waste minimisation.

The EPBC Act describes the following principles of ecologically sustainable development:

- ▶ decisionmaking processes should effectively integrate both longterm and shortterm economic, environmental, social and equitable considerations;
- ▶ if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation;
- ▶ the principle of intergenerational equity that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations;
- ▶ the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision making; and
- ▶ improved valuation, pricing and incentive mechanisms should be promoted.

The application of these principles to the Outer Harbour Development is described in **Table 1.5**.

**Table 1.4 – Applicable Guidelines and Standards**

<b>Guidelines and Standards</b>
<b>EPA Guidance Statements</b>
No. 1: Protection of Tropical Arid Zone Mangroves along the Pilbara Coast
No. 12: Minimising Greenhouse Gases
No. 18: Prevention of Air Quality Impacts from Land Development Sites
No. 20: Sampling of Short-range Endemic Invertebrate Fauna for Environmental Impact Assessment in Western Australia
No. 33: Environmental Guidance for Planning and Development
No. 40: Management of Mosquitoes by Land Developers
No. 41: Assessment of Aboriginal Heritage
No. 51: Terrestrial Flora and Vegetation Surveys for Environmental Impact Assessment in Western Australia
No. 54: Consideration of Subterranean Fauna in Groundwater and Caves
No. 55: Implementing Best Practice in Proposals Submitted to the Environment Impact Assessment Process
No. 56: Terrestrial Fauna Surveys for Environmental Impact Assessment in Western Australia
<b>Draft EPA Guidance Statements</b>
No. 8: Environmental Noise
<b>Environmental Assessment Guideline</b>
No. 1: Defining a Proposal.
No. 3: Protection of Benthic Primary Producer Habitats In Western Australia's Marine Environment
No. 4: Towards Outcome-based Conditions Draft
No. 5: Draft Environmental Assessment Guideline for Protecting Marine Turtles from Light Impacts
<b>EPA Position Statements</b>
No. 2: Environmental Protection of Native Vegetation in Western Australia
No. 3: Terrestrial Biological Surveys as an Element of Biodiversity Protection
No. 7: Principles of Environmental Protection
<b>Miscellaneous Publications</b>
Australian and New Zealand Environment Conservation Council & Agricultural and Resource Management Council of Australia and New Zealand (ANZECC/ARMCANZ) Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000.
Contaminated Sites Management Series: Assessment Levels for Soil, Sediment and Water, Draft for Public Comment
Department of Environment: General Guidance on Managing Acid Sulfate Soils 2006a
Department of Environment: Pilbara Coastal Water Quality Consultation Outcomes: Environmental Values and Environmental Quality Objectives 2006
Department of Water: Stormwater Management Manual for Western Australia 2004-2007
Department of Environment and Conservation: Draft Identification and Investigation of Acid Sulfate Soils (2009a)
Department of State Development: Port Hedland Air Quality and Noise Management Plan, the Port Hedland Dust Management Taskforce Report, March 2010
EPA Application of Risk-based Approach in EIA, Draft for Comment, November 2008
EPA Guide to Preparing a Public Environmental Review/ Environmental Review and Management Program, June 2008
National Environment Protection Goals as defined in the National Environment Protection (Ambient Air Quality) Measure

<b>Guidelines and Standards</b>
National Ocean Disposal Guidelines for Dredged Material <sup>1</sup> (NODGDM) 2002
North-West Marine Bioregional Plan 2008
Water and Rivers Commission: Environmental Water Provisions Policy for Western Australia 2000: Statewide Policy No. 5
Western Australian Planning Commission: Draft Statement of Planning Policy: Road and Rail Transport Noise
Western Australian Planning Commission Planning Bulletin 64: Acid Sulfate Soils
Western Australian Planning Commission: Visual Landscape Planning in Western Australia: A Manual for Elevation, Assessment, Siting and Design

<sup>1</sup>The proposed Outer Harbour Development approvals for sea dumping were sought under the National Ocean Disposal Guidelines for Dredge Management (Environment Australia 2002). During this period, the NODGM have been revised and the environmental assessment process is now guided by the National Assessment Guidelines for Dredging (2009).

**Table 1.5 – Core Environmental Principles**

<b>Principle</b>	<b>Consideration</b>	<b>Section of PER/EIS</b>
<p>1) EP Act: The precautionary principle Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In application of this precautionary principle, decisions should be guided by:</p> <ul style="list-style-type: none"> <li>a) careful evaluation to avoid, where practicable, serious or irreversible damage to the environment; and</li> <li>b) assessment of the risk weighted consequences of various options.</li> </ul>	<p>The Outer Harbour Development has been subjected to a rigorous options evaluation which assessed the project against potential environmental and social impacts and related criteria. A risk assessment has been completed on the potential key and relevant environmental factors associated with the project. Specialist studies and site investigations have been conducted to increase the knowledge of the Port Hedland terrestrial and marine environments. Numerical models have been used to predict the potential impacts resulting from dredging, and noise and dust emissions.</p>	<p><b>Section 3</b> <b>Section 12</b> <b>Sections 5 and 6</b> <b>Sections 10 and 11</b></p>
<p>2) EP Act: The principle of intergenerational equity The present generation should ensure that the health, diversity and productivity of the environment is maintained and enhanced for the benefit of future generations.</p>	<p>BHP Billiton Iron Ore recognises the importance of sustainable development as detailed in BHP Billiton Iron Ore’s Sustainable Development Policy, and considers that this project can be implemented without adversely impacting on the environment for future generations. Where practicable, Indigenous heritage sites have been avoided. Where an indigenous heritage site cannot be avoided by the proposed works, consent from the Minister for Indigenous Affairs pursuant to Section 18 of the Aboriginal Heritage Act 1972 will be sought. BHP Billiton Iron Ore has implemented a community consultation program and is committed to maintaining open dialogue with the community and addressing issues such as ongoing access to the social services and recreational facilities.</p>	<p><b>Section 11</b> <b>Section 4</b></p>
<p>3) EP Act: The principle of conservation of biological diversity and ecological integrity Conservation of biological diversity and ecological integrity should be a fundamental consideration.</p>	<p>Site specific studies have been undertaken to determine the presence of Declared Rare Flora/Fauna, Priority Flora/Fauna and Threatened or Endangered Communities. Final design has considered the environmental values over the marine and terrestrial study areas and where practicable, measures have been taken to avoid (where possible) and minimise impacts (e.g. location of project footprint to minimise disturbance to mangroves). Dispersion modelling has been conducted to determine the impacts that dredging activities and disposal may have on the benthic primary producers in the area.</p>	<p><b>Sections 5 and 6</b> <b>Sections 9 and 10</b> <b>Section 10</b></p>

Principle	Consideration	Section of PER/EIS
<p>4) EP Act: The principles relating to improved valuation, pricing and incentive mechanisms</p> <p>a) Environmental factors should be included in the valuation of assets and services.</p> <p>b) The polluter pays principles – those who generate pollution and waste should bear the cost of containment, avoidance and abatement.</p> <p>c) The user of goods and services should pay prices based on the full life cycle costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste.</p> <p>d) Environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structure, including market mechanisms, which enable those best placed to maximise benefits and/or minimise costs to develop their own solution and responses to environmental problems.</p>	<p>BHP Billiton Iron Ore recognises and accepts the costs of managing the project and its environmental impacts and these costs have been factored into the construction activities and ongoing operation/ maintenance of the proposed facilities.</p> <p>When procurement and services are purchased during the execution phase of the Outer Harbour Development, BHP Billiton Iron Ore will make decisions which incorporate valuation, pricing and incentive mechanisms. BHP Billiton Iron Ore will also endeavour to pursue these principles where ever possible during the life of the Outer Harbour Development.</p> <p>Decommissioning estimates will be accrued as part of BHP Billiton Iron Ore's closure planning processes.</p>	<p><b>Section 3</b></p>
<p>5) EP Act: The principle of waste minimisation</p> <p>All reasonable and practicable measures should be taken to minimise the generation of waste and its discharge into the environment.</p>	<p>BHP Billiton Iron Ore will adopt the following approach to waste management for the Outer Harbour Development , in order of preference:</p> <p>avoid and reduce at source; reuse and recycle; and treat and/or dispose.</p>	<p><b>Sections 3 and 11</b></p>
<p>EPBC Act: Decision making processes should effectively integrate both longterm and shortterm economic, environmental, social and equitable considerations.</p>	<p>The Outer Harbour Development has been subjected to a rigorous options evaluation which assessed the project against potential impacts and environmental, social and economic criteria.</p>	<p>Section 3</p>
<p>EPBC Act: If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.</p>	<p>Refer to discussion regarding the equivalent EP Act precautionary principle above.</p>	<p><b>Sections 3, 5, 6, 10 and 11</b></p>
<p>EPBC Act: The principle of intergenerational equity--that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.</p>	<p>Refer to discussion regarding the equivalent EP Act principle of intergenerational equity above.</p>	<p><b>Sections 4 and 11</b></p>
<p>EPBC Act: The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision making.</p>	<p>Refer to discussion regarding the equivalent EP Act principle of conservation of biological diversity and ecological integrity above.</p>	<p><b>Sections 5, 6, 9 and 10</b></p>
<p>EPBC Act: Improved valuation, pricing and incentive mechanisms should be promoted.</p>	<p>Refer to discussion regarding the equivalent EP Act principles relating to improved valuation, pricing and incentive mechanisms above.</p>	<p><b>Section 3</b></p>