

Port Hedland Port Authority Utah Point Berth Project

FRAMEWORK ENVIRONMENTAL MANAGEMENT PLAN

- Rev 1
- May 2008



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1. Introduction

This Framework Environmental Management Plan (EMP) has been developed by Sinclair Knight Merz (SKM) on behalf of Port Hedland Port Authority (PHPA) for the construction and operations of the Utah Point Berth Project (UPBP). This EMP outlines the minimum environmental management tasks to be undertaken for all construction and operational activities associated with the UPBP.

This EMP has been designed to complement the Environmental Management System in place for PHPA's current port operations. Its scope however, is primarily limited to the management of activities relevant to the construction and operations of the UPBP.

1.1 Objective

The purpose of this EMP is to describe management tasks that will be implemented so that environmental impacts associated with construction and operations of the UPBP are minimised. This EMP outlines the environmental management and monitoring requirements for all relevant design, construction, commissioning and operational activities. It provides the framework for the management of identified key environmental issues and takes into account the expressed requirements contained within the PHPA UPBP Public Environmental Review (PER).

The key objectives of the EMP are to:

- Define PHPA's commitment to manage the construction and operations of the UPBP in an environmentally acceptable manner;
- Outline management and monitoring tasks to be completed;
- Identify roles and responsibilities for ensuring tasks are completed; and
- State the timing for critical management tasks.

1.2 How to use this Environmental Management Plan

This EMP provides a reference document with objectives, guidelines and minimum standards of environmental performance and management for the project. The development of this EMP has been based on a broad assessment of project environmental risks. As such, it is not intended that this EMP specify all daily activities and procedures but provide a framework for environmental management for the project.

It is anticipated all contractors and port proponents working at the UPBP site will be required to develop and implement their own approved contract-specific EMP. Contractor EMPs will be reviewed and signed off by PHPA prior to works commencing, with EMPs audited throughout construction and operational phases of the project.



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2. Environmental Policy

2.1 PHPA Environmental Policy

The PHPA Environmental Policy that will be adopted for the UPBP states:

Port Hedland Port Authority is committed to protect the environment of the port area and to minimise the impacts of the port activities on the environment.

Port Hedland Port Authority will:

- *comply with all applicable legislation and regulations, and aim for best practice;*
- *identify, assess and document aspects of its activities and services that have or may have an impact on the environment and minimise these impacts;*
- *develop, document and achieve environmental objectives and targets;*
- *integrate environmental consideration into all aspects of decision making, planning, design, construction and operational processes and aim for sustainability;*
- *use resources efficiently and minimize waste;*
- *ensure that all employees and other port users are made aware of the importance of achieving conformance with the environmental requirements of this policy;*
- *hold all employees, contractors and other port users accountable for their implementation of this Environmental Policy;*
- *develop and update an Environmental Management Plan and Incident Management Plan to be able to effectively protect the environment and respond to accidents and emergency situations associated with all activities and services;*
- *monitor, measure and report its overall environmental management performance in an effective way to measure progress towards the achievement of environmental goals and objectives as well as to recognize deficiencies and take the opportunity to improve;*
- *investigate non-conformances and take action to mitigate any impacts caused and initiate and complete corrective and preventive action;*
- *annually review the environmental performance and act on results to ensure continuing suitability, adequacy and effectiveness; and*
- *communicate openly and honestly on its environmental performance to port users, government and the general public.*

Contractors will be made aware of the PHPA Environmental Policy through their contract with PHPA and the site induction process and will be expected to align all activities to this policy.



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3. Environmental Management

3.1 Specific Environmental Aspects

Environmental issues that are deemed to be of particular relevance to the design, construction and operational phases have been identified through the Environmental Impact Assessment (EIA) process and include:

- Aboriginal heritage;
- Acid sulfate soils;
- Air quality;
- Contaminants;
- Greenhouse gas emissions;
- Mangroves;
- Marine water quality;
- Mosquitoes;
- Noise;
- Surface and groundwater;
- Turtles;
- Terrestrial fauna;
- Terrestrial flora and vegetation;
- Traffic; and
- Waste.

PHPA has developed individual framework management plans to address each of these environmental issues.

3.2 Management Plan Structure

Each of the individual framework management plans outlined above is structured with the following headings:

- **Background:** A brief background to the particular issue in relation to the UPBP and a summary of the potential impacts and issues that may arise.
- **Objectives:** Outlines key aims of the management plan.
- **Relevant Legislation:** Identifies relevant legislation and guidelines.
- **Management Tasks:** Outlines specific tasks to be undertaken to minimise environmental impacts and to achieve the objectives of both the specific plan and the overall EMP. This

section also includes the timing and delegated responsibility for the task and lists the relevant government bodies from which advice can be sought.

3.3 Responsible Persons for Environmental Management

It is intended that the framework EMP and individual management plans will be implemented by all employees and contractors for environmental objectives to be achieved. Where applicable, key management staff will have the responsibility for ensuring specific management tasks are undertaken and that environmental management procedures and protocols are adhered to. Key management will likely include:

- **PHPA Chief Executive Officer:** Responsible for the overall management of the Port.
- **PHPA Environmental Manager:** Responsible for managing the key environmental aspects of port operations, including monitoring and reporting of environmental factors. Also responsible for signing off UPBP Contractor's EMPs and for auditing compliance to the monitoring, control and reporting of environmental commitments.
- **PHPA Harbour Master:** Responsible for the management of shipping and port operations within the Port Hedland harbour.
- **PHPA Deputy Harbour Master:** Responsible for the management of all cargo handling operations at the Port.
- **PHPA Manager Technical Services:** Responsible for the maintenance and capital upgrade of all Port Authority owned infrastructure.
- **UPBP Project Manager:** Responsible for the overall development of the UPBP, including key communications and daily management of the project.
- **UPBP Construction Manager:** Reports to the Project Manager and is responsible for the overall construction management of the UPBP site works including managing all site contractors and ensuring compliance with their contracted responsibilities in respect of safety, OHS and the environment.
- **UPBP Engineering Manager:** Responsible for the engineering design of the UPBP and for the provision of engineering support including offsite fabrication, factory acceptance testing and site commissioning.
- **UPBP Environmental, Health and Safety Manager (Head Contractor):** Responsible for ensuring all activities undertaken onsite are carried out in accordance with the approved environmental, health and safety requirements and that all incidents are reported and appropriately addressed.
- **UPBP Facilities Manager:** Responsible for the management and security of the facility during operations and all operational sub-contractors.



3.4 Relevant Government Bodies for Advice

In undertaking management tasks and activities outlined in this framework EMP and in the individual management plans, it is recommended that advice is sought from relevant government bodies and organisations where appropriate including;

- Bureau of Meteorology (BOM);
- Department of Consumer and Employment Protection (DOCEP);
- Department of Environment and Conservation (DEC);
- Department of Environment, Water, Heritage and the Arts (Federal government) (DEWHA);
- Department of Fisheries (DOF);
- Department of Health (DOH);
- Department of Planning and Infrastructure (DPI)
- Department of Indigenous Affairs (DIA);
- Department of Industry and Resources (DOIR);
- Department of Transport and Regional Services (Federal government) (DOTARS);
- Department of Water (DOW);
- Fire and Emergency Services Authority (FESA);
- Main Roads Western Australia (MRWA);
- Office of Road Safety Western Australia (RSWA);
- Town of Port Hedland (ToPH); and
- WorkSafe Western Australia (WorkSafe).



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4. Outline Aboriginal Heritage Management Plan

4.1 Background

Within the port area of Port Hedland there are 36 known sites of Aboriginal heritage significance including rock engravings; stone artefacts that might have been engraving tools; and middens containing baler and pearl shell.

Within the UPBP development area, one site of aboriginal heritage significance to the Kariyarra and Marapikurrinya people has been identified, known as “Sounness Drive Camp”. Further investigations are currently being undertaken by the Marapikurrinya people, to provide further information on the location and significance of this site and other culturally important sites within and/or nearby the UPBP area.

4.2 Objectives

The objectives of this Aboriginal Heritage Management Plan (AHMP) are to:

- Avoid the unnecessary disturbance of sites of Aboriginal heritage significance;
- To comply with the requirements of the *Aboriginal Heritage Act 1972*, *Heritage of Western Australia Act 1990* and other relevant legislative requirements; and
- Require that changes to the biological and physical environment resulting from the project do not adversely affect cultural associations with the area.

4.3 Relevant Legislation

Applicable legislation and guidelines for the management of Aboriginal heritage include:

- *Aboriginal Affairs Planning Authority Act 1972*;
- *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*;
- *Aboriginal Heritage Act 1972*;
- Aboriginal Heritage Regulations 1974;
- EPA Guidance Statement No. 41: Assessment of Aboriginal Heritage 2004;
- *Heritage of Western Australia Act 1990*;
- *Heritage of Western Australia Regulations 1991*; and
- *Native Title (State Provisions) Act 1999*.

4.4 Management Tasks

Reference No.	Management Tasks	Responsibility	Timing	Advice
AHMP 1	Identification of all Aboriginal heritage sites within and nearby the UPBP development area through archaeological and anthropological heritage surveys with the assistance of PNTS and representatives from the Marapikurrinya community.	Environmental Manager	Prior to construction	DIA, PNTS and Marapikurrinya community
AHMP 2	Establishment and maintenance of a database register of heritage sites located within or nearby the UPBP development area.	Environmental Manager	Prior to construction and ongoing	DIA and PNTS
AHMP 3	Site assessment of Aboriginal heritage material with the assistance of PNTS and representatives from the Marapikurrinya community.	Project Manager	Prior to construction	PNTS and Marapikurrinya community
AHMP 4	Preparation of Section 18 Aboriginal Heritage Act approvals, to retrieve relocate and/or disturb heritage material as necessary.	Environmental Manager	Prior to construction	DIA, PNTS and Marapikurrinya community
AHMP 5	Relocation of Aboriginal Heritage material to designated conservation areas with the assistance of representatives from the Marapikurrinya community.	Construction Manager	Prior to Construction	PNTS and Marapikurrinya community
AHMP 6	Arrange monitoring of initial site works by representatives from the Marapikurrinya community.	Construction Manager	Construction	PNTS and Marapikurrinya community
AHMP 7	Reporting of any archaeological material that is discovered during construction in accordance with statutory regulations and community expectations.	Construction Manager	Construction	DIA and PNTS
AHMP 8	Sign posting, fencing and/or other protection of Aboriginal sites within the UPBP development area.	Construction Manager	Construction and operations	DIA, PNTS and Marapikurrinya community
AHMP 9	Cultural awareness training as part of induction training for employees and contractors – assisted by the Marapikurrinya community.	Environmental, Health and Safety Manager	Construction and operations	DIA, PNTS and Marapikurrinya community
AHMP 10	Ongoing communication and consultation with the Marapikurrinya people to discuss Aboriginal heritage and other culturally significant issues.	Chief Executive Officer	Construction, operations and ongoing	DIA, PNTS and Marapikurrinya community
AHMP 11	Consultation with the Marapikurrinya people to identify alternative fishing access areas within the PHPA boundary.	Chief Executive Officer	Construction, operations and ongoing	PNTS and Marapikurrinya community



5. Outline Acid Sulfate Soil Management Plan

5.1 Background

When exposed to air as a result of drainage or disturbance, Acid Sulfate Soils (ASS) produce Sulfuric acid and often release iron, aluminium and heavy metals. Potential impacts to the environment can include adverse changes to water quality and associated ecological communities.

Acid sulfate soils can be classified as Potential Acid Sulfate Soils (PASS) or Actual Acid Sulfate Soils (AASS).

Potential Acid Sulfate Soils (PASS) are defined as:

Soils or sediments which contain iron sulfides and/or other sulfidic minerals that have not been oxidised by exposure to air. The field pH of these soils in their undisturbed state is more than pH 4 and is commonly neutral to alkaline (pH 7 to pH 9). These soils or sediments are invariably saturated with water in their natural state. The waterlogged layer may be peat, clay, loam, silt, or sand and is usually dark grey and soft but may also be dark brown, or medium to pale grey to white.

Actual Acid Sulfate Soils (AASS) are defined as:

Soils or sediments which contain iron sulfides and/or other sulfidic minerals that have previously undergone some oxidation to produce sulfuric acid. This results in existing acidity (pH <4) and often a yellow and/or red mottling (jarosite/iron oxide) in the soil profile. AASS commonly also contain residual un-oxidised iron sulfides or potential acidity as well as existing acidity.

Preliminary site and field investigations and sampling by Coffey Geotechnics (2007) has determined that there are no AASS to be found across any of the sample sites within the UPBP site, although there are PASS across the northern portion of the stockyard site.

5.2 Objectives

The objective of this Acid Sulfate Soil Management Plan (ASSMP) is to:

- Avoid and/or minimise the disturbance of PASS;
- Manage PASS if they are disturbed during construction; and
- Monitor soils and groundwater at the UPBP site so that there are no impacts related to the disturbance of acid sulfate soils as part of the development.

5.3 Relevant Legislation

Applicable legislation and guidelines for the management of acid sulfate soils include:

- Acid Sulfate Soils Planning Bulletin No. 64 (WAPC 2003a –updated 2007);
- *Contaminated Sites Act 2003*;
- DEC Policy Position - Acid Sulfate Soils and the Contaminated Sites Act 2003;
- DEC Identification and Investigation of Acid Sulfate Soils (Draft), Acid Sulfate Soils Guideline Series (DEC 2006a) and references contained therein; and
- National Strategy for the Management of Coastal Acid Sulfate Soils (ANZECC/ ARMCANZ 2000).

5.4 Management Tasks

Reference No.	Management Tasks	Responsibility	Timing	Advice
ASSMP 1	Clearly identify previous sampling sites within the development area where PASS may exist.	Environmental Manager	Prior to construction	DEC
ASSMP 2	Induction training for employees and contractors, specifying the importance of not disturbing PASS.	Environmental, Health and Safety Manager	Prior to construction and ongoing	DEC
ASSMP 3	Avoidance or minimisation of disturbance of PASS during clearing and earthworks.	Construction Manager	Construction	DEC
ASSMP 4	Testing and further investigation of soils and groundwater if soil disturbance is deemed necessary.	Engineering Manager	Construction	DEC
ASSMP 5	Development of an Acid Sulfate soil management plan for approval by the DEC prior to any disturbance of soils.	Project Manager	Construction	DEC
ASSMP 6	Staged disturbance of PASS as necessary, with only small volumes/areas of soil disturbed in each stage.	Construction Manager	Construction	DEC
ASSMP 7	Testing and regular monitoring of disturbed soils.	Environmental Manager	Construction	DEC
ASSMP 8	Stockpiling of disturbed soils with pH<5 separately on a limestone pad.	Construction Manager	Construction	DEC and DOIR
ASSMP 9	Acid neutralisation treatment of soils with lime if soils become more acidic during stockpiling.	Construction Manager	Construction	DEC and DOIR
ASSMP 10	Backfilling of disturbed soils as soon as approval to do so is obtained.	Construction Manager	Construction	DEC
ASSMP 11	Ongoing monitoring of groundwater and surface water (collected in recirculation pond) for acidity and heavy metals.	Environmental Manager	Construction, operations and ongoing	DEC and DOW



6. Outline Air Quality Management Plan

6.1 Background

Air quality, in particular dust, is a key concern for residents in Port Hedland, primarily due to the proximity of residential areas and other sensitive receptors to port operations.

Potential impacts of high dust emissions include:

- Reduced visual amenity;
- Smothering of surrounding vegetation;
- Adverse impact and disturbance to fauna;
- Risk to human health; and
- Nuisance.

For the UPBP dust may be generated from the following construction and operational activities:

- Earthmoving activities including site levelling;
- Transport and unloading of material from trucks;
- Spillages of soil and/or other materials onto roads;
- Vehicle movement on unsealed tracks;
- Wind action on cleared/exposed areas and stockpiles;
- Wind action on elevated conveyors transporting ore;
- Wind action on ores discharging from the end of the shiploader boom; and
- Port activities including dumping, stockpiling and reclaiming.

6.2 Objectives

The objectives of this Air Quality Management Plan (AQMP) are to:

- Require that design and procurement activities incorporate requirements for dust management during construction and operation;
- Require that dust generated during construction and operations does not cause any environmental or human health problem or significantly impact on amenity; and
- Use all reasonable and practicable measures to minimise airborne dust.

6.3 Relevant Legislation

Applicable legislation and guidelines for the management of dust include:

- EPA Guidance Statement No. 18: Prevention of Air Quality Impacts from Land Development Sites 2000;
- Land Development Sites and Impacts on Air Quality. A Guideline for Prevention of Dust and Smoke Pollution from Land Development Sites in Western Australia (DEP 1996);
- National Environment Protection Measure (NEPM) for Ambient Air Quality 1998;
- *Occupational Health and Safety Act 1984*; and
- *Occupational Safety Regulations 1996*.

6.4 Management Tasks

Reference No.	Management Tasks	Responsibility	Timing	Advice
AQMP 1	Training and induction of all employees and contractors on the importance of minimising dust emissions and on dust mitigation methods.	Environmental, Health and Safety Manager	Prior to construction and ongoing	DEC, DOH and DOCEP
AQMP 2	Training of all employees responsible for operating water suppression equipment to specify correct watering to minimise dust emissions and water wastage.	Environmental, Health and Safety Manager	Prior to construction and ongoing	DEC, DEWHA, DOH and DOW
AQMP 3	Identification and maintenance of water sources and supplies for dust suppression.	Engineering Manager	Prior to construction and ongoing	DEC, DEWHA and DOW
AQMP 4	Restriction of clearing and site earthworks to the minimum area required for construction.	Construction Manager	Construction	DEC
AQMP 5	Sealing of roads and other applicable areas as soon as practicable during construction.	Construction Manager	Construction	DEC
AQMP 6	Topsoil spreading and revegetation of areas cleared for construction activities as soon as practicable.	Construction Manager	Construction	DEC
AQMP 7	Daily monitoring of weather / wind conditions to plan and assist in dust management activities.	Construction Manager and Facilities Manager	Construction and operations	BOM and DEC
AQMP 8	Daily watering (as required) of exposed surfaces and stockpiles using water cannons, water sprays and misting equipment.	Construction Manager and Facilities Manager	Construction and operations	DEC
AQMP 9	Daily inspection of site to confirm that dust control measures are	All personnel	Construction and operations	DEC, DOH, DOW and



Reference No.	Management Tasks	Responsibility	Timing	Advice
	implemented and are effective.			DOCEP
AQMP 10	Monitoring and regular maintenance of dust control equipment and/or dust control plant.	All personnel	Construction and operations	DEC, DOCEP, DOH and WorkSafe
AQMP 11	Adherence to site speed limits on access roads and within the development area to minimise dust emissions from vehicle movement.	All personnel	Construction and operations	DEC, DOCEP, MRWA, ToPH and WorkSafe
AQMP 12	Restriction of vehicle and equipment movement outside the designated areas for access, construction and operational activities.	All personnel	Construction and operations	DEC, DOCEP and WorkSafe
AQMP 13	Avoidance of unnecessary vehicle movement.	All personnel	Construction and operations	DEC, DOCEP and WorkSafe
AQMP 14	Coverage of road trains and materials being transported as applicable, such as fine ore materials.	Facilities Manager	Construction and operations	DEC, DOH, DOIR, DOTARS, MRWA and ToPH
AQMP 15	Use of environmentally safe dust suppressants in unsealed traffic areas.	Environmental, Health and Safety Manager	Construction and operations	DEC, DOH, MRWA and ToPH
AQMP 16	Regular grading/compaction of unpaved surfaces.	Construction Manager and Facilities Manager	Construction and operations	DEC, DOH, MRWA and ToPH
AQMP 17	All trucks to be cleaned at the washdown facility prior to exiting the stockyards.	Facilities Manager and Environmental Manager	Construction and operations	DEC, DOH and WorkSafe
AQMP 18	Ongoing recording and reporting of dust emissions for the identification of trends in dust concentrations and for the improvement of dust management procedures.	Environmental Manager	Construction, operations and ongoing	DEC and DOH
AQMP 19	Ongoing participation in the Port Hedland Air Quality Reference Group including in cumulative dust monitoring and in other activities where appropriate.	Environmental Manager	Construction, operations and ongoing	DEC and DOH
AQMP 20	Ongoing communication and consultation with other industries and/or developers within the Port Hedland with the aim of minimising cumulative dust emissions.	Environmental Manager	Construction, operations and ongoing	DEC, DOH, DOIR and ToPH
AQMP 21	Establish a complaints register to record and address community concerns regarding dust emissions.	Project Manager and Environmental Manager	Construction, operations and ongoing	DEC and DOH

7. Outline Contaminant Management Plan

7.1 Background

The construction and operations of UPBP have the potential to cause contamination of the UPBP area and surrounding environments and of ground, surface and marine waters as a result of:

- The accidental leakage and spillage of fuel, hazardous materials and other contaminants such as sewage and grey water; and
- The leaching and transport of materials being exported, in particular chromite and manganese ores.

7.2 Objectives

The objectives of this Contaminant Management Plan (CMP) are to:

- Prevent the contamination of groundwater, surface and marine waters and the surrounding environment as a result of accidental leakage and spillage of fuel, hazardous materials and other contaminants; and
- Minimise the potential for exported materials, in particular chromite and manganese ores from being leached and/or transported into groundwater, surface and marine waters or the surrounding environment.

7.3 Relevant Legislation

Applicable legislation and guidelines for the management of potential contaminants include:

- Australian Standard AS 1940-1993: The Storage and Handling of Flammable and Combustible Liquids 1993;
- Australian Standard AS 3780-1994: The Storage and Handling of Corrosive Substances 1994;
- Australia Standard AS 4326-1995: The Storage and Handling of Oxidising Agents 1995;
- *Contaminated Sites Act 2003*;
- Contaminated Sites Management Series 2001-2007;
- *Dangerous Goods Safety Act 2004*;
- *Dangerous Goods (Transport) Act 1998*;
- Dangerous Goods (Transport) (Dangerous Goods in Ports) Regulations 2001;
- Dangerous Goods (Transport) (General) Regulations 1999;
- Dangerous Goods (Transport) (Road and Rail) Regulations 1999;
- DEC Policy Position - Acid Sulfate Soils and the Contaminated Sites Act 2003;
- Environmental Protection (Controlled Waste) Regulations 2004;



- Environmental Protection (Unauthorised Discharges) Regulations 2004;
- EPA Guidance Statement No. 17: Remediation Hierarchy for Contaminated Land 2000;
- *Explosives and Dangerous Goods Act 1961*;
- Explosives and Dangerous Goods (Dangerous Goods Handling and Storage) Regulations 1992;
- National Environmental Protection (Assessment of Site Contamination) Measure 1999;
- *Pollution of Waters by Oil and Noxious Substances Act 1987*; and
- *Radiation Safety Act 1975*.

7.4 Management Tasks

Reference No.	Management Tasks	Responsibility	Timing	Advice
CMP 1	Induction training for employees and contractors on the appropriate storage, handling and transport procedures for potential contaminants and the importance of preventing / minimising site contamination.	Environmental, Health and Safety Manager	Prior to construction and ongoing	DEC, DEWHA, DOCEP, DOH, DOIR, DOW and WorkSafe
CMP 2	Training of employees and contractors in safety procedures and spill / contaminant management.	Environmental, Health and Safety Manager	Prior to construction and ongoing	DEC, DOCEP and WorkSafe
CMP 3	Establish and maintain a detailed list of all chemicals to be used on site during construction and port operations.	Environmental, Health and Safety Manager	Prior to construction and ongoing	DEC, DOCEP and WorkSafe
CMP 4	Require that all chemicals have been approved for usage at the UPBP.	Environmental, Health and Safety Manager	Prior to construction and ongoing	DEC, DOCEP and WorkSafe
CMP 5	Establish and maintain a detailed list of all materials imported and exported from the UPBP site and their characteristics.	Environmental, Health and Safety Manager	Prior to construction and ongoing	DEC, DOCEP and WorkSafe
CMP 6	Establish and maintain a register of Material Safety Data Sheets (MSDS) for all chemicals used at the site and for all materials imported and exported as applicable.	Environmental, Health and Safety Manager	Prior to construction and ongoing	DEC, DOCEP and WorkSafe
CMP 7	Provide easy access to MSDS for all contractors and employees.	Environmental, Health and Safety Manager	Prior to construction and ongoing	DEC, DOCEP and WorkSafe
CMP 8	Require and specify appropriate labelling of all chemicals used at the UPBP site.	Environmental, Health and Safety Manager	Prior to construction and ongoing	DEC, DOCEP and WorkSafe
CMP 9	Require and specify sufficient availability and supply of chemical	Construction Manager	Prior to construction	DEC, DEWHA,

Reference No.	Management Tasks	Responsibility	Timing	Advice
	safety facilities and equipment, spill kits and other clean-up tools.		and ongoing	DOCEP and WorkSafe
CMP 10	Require that bunding is installed around fuel storage and vehicle wash stations to contain the spread of contaminants.	Environmental, Health and Safety Manager	Construction	DEC, DOCEP and WorkSafe, Fuel Supplier
CMP 11	Require that all spill kits and other clean-up tools are specifically suited to chemicals and materials located on site.	Environmental, Health and Safety Manager	Prior to construction and ongoing	DEC, DEWHA, DOCEP, DOIR and WorkSafe
CMP 12	Require that all exportable material is allowed to be stored at the stockyard, with appropriate testing prior to being approved for export.	Environmental, Health and Safety Manager	Construction and operations	DEC, DEWHA, DOH, and DOW
CMP 13	Provide easy access to chemical safety facilities and equipment, spill kits and other clean-up tools.	Environmental, Health and Safety Manager	Construction and operations	DEC, DOCEP and WorkSafe
CMP 14	Minimise the quantity of chemicals stored onsite to the minimum amount practicable during construction and operations.	Construction Manager	Construction and operations	DEC, DOCEP and WorkSafe
CMP 15	Require that all fuel, lubricants and oil are stored in the appropriate facilities in accordance with Australian Standards.	Environmental, Health and Safety Manager	Construction and operations	DEC, DEWHA, DOCEP, DOH, DOIR, DOW and WorkSafe
CMP 16	Require that contractors and/or persons that may use pesticides onsite are appropriately trained, hold a current license and are employed by a Registered Commercial Pest Firm.	Environmental, Health and Safety Manager	Construction and operations	DEC, DOCEP, DOH, DOW and WorkSafe.
CMP 17	Require that the use of pesticides will be carried out in accordance with Health (Pesticide) Regulations 1956.	Environmental, Health and Safety Manager	Construction and operations	DEC, DOCEP, DOH, DOW and WorkSafe.
CMP 18	Regular monitoring and servicing of vehicles and equipment to minimise the potential for leaks.	All personnel	Construction and operations	DEC, DOCEP and WorkSafe
CMP 19	Daily inspection of vehicle and equipment lay down and/or storage areas for leaks and spills.	All personnel	Construction and operations	DEC, DOCEP and WorkSafe
CMP 20	Reporting of all leaks / spills and of potential incidents where contamination could occur.	All personnel	Construction and operations	DEC, DOCEP, DOH, DOW and WorkSafe
CMP 21	Containment and clean-up of any	Environmental,	Construction	DEC,



Reference No.	Management Tasks	Responsibility	Timing	Advice
	contaminated areas quickly and efficiently.	Health and Safety Manager	and operations	DOCEP, DOH, DOW and WorkSafe
CMP 22	Monitoring of surface runoff collected in sumps, recirculation pond and settlement ponds as part of water treatment and management and use of oil/water interceptors where necessary.	Environmental Manager	Construction, operations and ongoing	DEC, DEWHA, DOH and DOW
CMP 23	Appropriate disposal of contaminating sediments collected in sumps, recirculation pond and settlement ponds and regular inspection and maintenance of such facilities.	Environmental Manager	Construction, operations and ongoing	DEC, DEWHA, DOH, and DOW
CMP 24	Monitoring of groundwater and regular reporting of findings as detailed in the Groundwater Management Plan.	Environmental Manager	Construction, operations and ongoing	DEC, DEWHA, DOH, and DOW

8. Outline Greenhouse Gas Management Plan

8.1 Background

The UPBP could result in increased greenhouse gas emissions being released into the atmosphere and could further contribute to the greenhouse effect and global warming.

Additional greenhouse gas emissions could result from:

- Land clearing for the project;
- Combustion of fuel by machinery; vehicles and other equipment;
- Use of electricity;
- Sewage produced; and
- Solid waste produced.

8.2 Objectives

The objectives of this Greenhouse Gas Management Plan (GGMP) are to:

- Promote energy efficiency in construction activities and in port operations; and
- Minimise greenhouse gas emissions during construction and operations of the UPBP.

8.3 Relevant Legislation

Applicable legislation and guidelines for the management of greenhouse gas emissions include:

- EPA Position Statement No. 6: Towards Sustainability 2004;
- EPA Guidance Statement No. 12: Minimising Greenhouse Gas Emissions 2002;
- EPA Guidance Statement No. 19: Environmental Offsets (Draft) 2007;
- National Greenhouse Strategy 1998; and
- Western Australian State Greenhouse Strategy 2004.



8.4 Management Tasks

Reference No.	Management Tasks	Responsibility	Timing	Advice
GGMP 1	Training and induction of all employees and contractors on the importance of energy efficiency and minimising greenhouse gas emissions.	Environmental, Health and Safety Manager	Prior to construction and ongoing	DEC and DEWHA
GGMP 2	Restriction of clearing and site earthworks to the minimum area required for construction.	Construction Manager	Construction	DEC
GGMP 3	Revegetation of areas cleared for construction activities as soon as practicable.	Construction Manager and Environmental Manager	Construction	DEC
GGMP 4	Careful placement of lights to optimise site lighting and minimise energy usage.	Engineering Manager	Construction and operations	DEC, DOCEP, DOIR, MRWA and WorkSafe
GGMP 5	Avoidance of daytime use of lights where practicable, especially in office buildings.	All personnel	Construction and operations	DEC, DOCEP, DOIR and WorkSafe
GGMP 6	Purchase and use of energy efficient equipment and/or equipment with low emissions.	Engineering Manager	Construction and operations	DEC, DEWHA and DOIR
GGMP 7	Use of low wattage lights in preference to high wattage lights where practical.	Engineering Manager	Construction and operations	DEC, DEWHA, DOIR and WorkSafe
GGMP 8	Regular monitoring and servicing of vehicles and equipment to maintain optimum efficiency.	All personnel	Construction and operations	DEC, DEWHA, DOIR, DOCEP and WorkSafe
GGMP 9	Regular monitoring and/or reporting of energy and fuel usage.	Environmental Manager	Construction, operations and ongoing	DEC, DEWHA, and DOIR
GGMP 10	Ongoing investigation of methods to improve energy efficiency in construction activities and port operations.	Environmental Manager	Construction, operations and ongoing	DEC, DEWHA, and DOIR
GGMP 11	Ongoing investigation into the use of alternative fuel and energy sources.	Environmental Manager	Construction, operations and ongoing	DEC, DEWHA, and DOIR
GGMP 12	Offset of carbon emissions from mobile plant through continued participation in the Carbon Neutral Program.	Environmental Manager	Construction, operations and ongoing	DEC, DEWHA and DOIR

9. Outline Mangrove Management Plan

9.1 Background

Port Hedland harbour is surrounded by a large area of arid zone mangroves associated with the creek systems running into the harbour. The mangrove species present within the Port Hedland harbour include *Aegiceras corniculatum*; *Aegialitis annulata*; *Avicennia marina*; *Bruguiera exaristata*; *Ceriops tagal*; and *Rhizophora stylosa*. Within the UPBP development area, *Avicennia marina* and *Rhizophora stylosa* are the dominant mangrove species followed by *Bruguiera exaristata*, *Ceriops tagal*, *Aegialitis annulata* and *Aegiceras corniculatum*.

As part of the UPBP approximately 18.7 ha of mangroves will be cleared, however, only 1.8 ha of closed canopy, highly productive mangroves will be cleared.

9.2 Objectives

The objectives of this Mangrove Management Plan (MMP) are to:

- Minimise the loss of mangroves, resulting from development of the UPBP; and
- Minimise indirect impacts to mangroves from site construction activities and operations. (i.e. from dust emissions and contaminated water runoff).

9.3 Relevant Legislation

Applicable legislation and guidelines for the management of mangroves include:

- ANZECC Guidelines for Fresh and Marine Water Quality 2000;
- EPA Guidance Statement No. 1: Protection of Tropical Arid Zone Mangroves along the Pilbara Coastline 2001;
- EPA Guidance Statement No. 29: Benthic Primary Producer Habitat Protection for Western Australia's Marine Environment 2004; and
- Pilbara Coastal Water Quality Consultation: Environmental Values and Environmental Quality Objectives (DOE 2006).



9.4 Management Tasks

Reference No.	Management Tasks	Responsibility	Timing	Advice
MMP 1	Induction training for employees and contractors on the importance of minimising mangrove clearance.	Environmental, Health and Safety Manager	Prior to construction and ongoing	DEC
MMP 2	Induction training of all employees and contractors on the importance of minimising dust emissions and on dust mitigation methods.	Environmental, Health and Safety Manager	Prior to construction and ongoing	DEC, DOH and DOCEP
MMP 3	Induction training for employees and contractors on the appropriate storage, handling and transport procedures for potential contaminants and the importance of preventing contamination of marine waters.	Environmental, Health and Safety Manager	Prior to construction and ongoing	DEC, DEWHA, DOCEP, DOF, DOH, DOW and WorkSafe
MMP 4	Require that employees, contractors and shipping crews are trained on the management procedures and protocols to minimise the potential for spills and to effectively respond to accidental spillage of chemicals and/or other materials.	Environmental, Health and Safety Manager	Prior to construction and ongoing	DEC, DEWHA, DOCEP, DOF, DOH, DOW and WorkSafe
MMP 5	Develop a weed hygiene and management plan in consultation with the DEC prior to commencing construction activities.	Environmental Manager	Prior to construction	DEC
MMP 6	Clearly identify and mark out areas to be cleared for the development.	Construction Manager	Prior to construction	DEC
MMP 7	Restriction of clearing and site earthworks to the minimum area required for construction.	Construction Manager	Construction	DEC
MMP 8	Monitor clearing activities so there is no over-clearing.	Construction Manager	Construction	DEC
MMP 9	Temporarily fence areas that are not to be disturbed, where practical.	Construction Manager	Construction	DEC, DOCEP and WorkSafe
MMP 10	Revegetation of areas cleared for construction activities as soon as practicable.	Construction Manager and Environmental Manager	Construction	DEC
MMP 11	Monitor revegetation success and assist rehabilitation efforts as appropriate.	Environmental Manager	Construction and ongoing	DEC
MMP 12	Avoid disturbance of PASS during clearing and earthworks.	Construction Manager	Construction	DEC
MMP 13	Establish temporary drainage systems during construction to prevent contaminated water runoff outside the UPBP site and to contain water for treatment if necessary.	Construction Manager	Construction	DEC, DEWHA, DOIR and DOW
MMP 14	Restriction of vehicle and equipment	All personnel	Construction	DEC, DOIR,



Reference No.	Management Tasks	Responsibility	Timing	Advice
	movement outside the designated areas for access, construction and operational activities.		and operations	MRWA and ToPH
MMP 15	Provide easy access to chemical safety facilities and equipment, spill kits and other clean-up tools.	Environmental, Health and Safety Manager	Construction and operations	DEC, DEWHA, DOCEP, DOW and WorkSafe
MMP 16	Contain and clean-up of any contaminated areas quickly and efficiently.	Environmental, Health and Safety Manager	Construction and operations	DEC, DEWHA, DOCEP, DOF, DOH, DOW and WorkSafe
MMP 17	Daily inspection of site to confirm that dust control measures are implemented and are effective.	All personnel	Construction and operations	DEC, DOH, DOW and DOCEP
MMP 18	Regular monitoring and inspection of site and surrounds so that there is no litter transferred to mangrove areas as a result of construction activities and port operations.	Construction Manager	Construction and operations	DEC, DEWHA, DOCEP, DOF, DOH, DOW and WorkSafe
MMP 19	Report any environmental issues promptly to the DEC.	Environmental Manager	Construction, operations and ongoing	DEC
MMP 20	Monitor the health of mangroves within the Port Hedland harbour area.	Environmental Manager	Ongoing	DEC
MMP 21	Continue to update relevant stakeholders and community members on marine monitoring and other environmental aspects.	Environmental Manager	Ongoing	DEC, DEWHA, DOF and DOW



10. Outline Marine Water Quality Management Plan

10.1 Background

The Port Hedland harbour has been considerably altered by recent and historical port developments and activities. However, the harbour lies at the southern edge of the great biogeographical region of the tropical Indo-West Pacific which is regarded as the most diverse biogeographical region on earth for marine species and the harbour is considered to be of significant environmental value. Consequently, marine waters of the Port Hedland require a moderate to high level of ecological protection.

Potential impacts on marine water quality that could result from the UPBP include:

- Chromite and manganese toxicity in mangrove communities due to the leaching and/or transport of chromite and manganese into the surrounding environment; and
- Contamination of marine waters due to accidental spillage of materials, hydrocarbons and other chemical contaminants.

10.2 Objectives

The key objective of this Marine Water Quality Management Plan is to:

- Maintain and/or improve the quality of marine waters consistent with ANZECC Water Quality Guidelines.

10.3 Relevant Legislation

Applicable legislation and guidelines for the management of the marine environment include:

- ANZECC Code of Practice for Anti-fouling and In-Water Hull Cleaning and Maintenance 2000;
- ANZECC Guidelines for Fresh and Marine Water Quality 2000;
- Australian Ballast Water Management Requirements 2001;
- *Environmental Protection (Sea Dumping) Act 1981*;
- International Convention for the Prevention of Pollution from Ships (MARPOL Convention) 1973 / 1978;
- Pilbara Coastal Water Quality Consultation: Environmental Values and Environmental Quality Objectives (DOE 2006);
- *Pollution of Waters by Oil and Noxious Substances Act 1987*; and
- *Western Australian Marine (Sea Dumping) Act 1981*.

10.4 Management Tasks

Reference No.	Management Tasks	Responsibility	Timing	Advice
MWQMP 1	Induction training for employees and contractors on the appropriate storage, handling and transport procedures for potential contaminants and the importance of preventing contamination of marine waters.	Environmental, Health and Safety Manager	Prior to construction and ongoing	DEC, DEWHA, DOCEP, DOF, DOH, DOW and WorkSafe
MWQMP 2	Require that employees, contractors and shipping crews are trained on the management procedures and protocols to minimise the potential for spills and to effectively respond to accidental spillage of chemicals and/or other materials.	Environmental, Health and Safety Manager	Prior to construction and ongoing	DEC, DEWHA, DOCEP, DOF, DOH, DOW and WorkSafe
MWQMP 3	Avoid disturbance of PASS during clearing and earthworks.	Construction Manager	Construction	DEC
MWQMP 4	Establish temporary drainage systems during construction to prevent contaminated water runoff outside the UPBP site and to contain water for treatment if necessary.	Construction Manager	Construction	DEC, DEWHA, DOIR and DOW
MWQMP 5	Provide easy access to chemical safety facilities and equipment, spill kits and other clean-up tools.	Environmental, Health and Safety Manager	Construction and operations	DEC, DEWHA, DOCEP, DOW and WorkSafe
MWQMP 6	Contain and clean-up of any contaminated areas quickly and efficiently.	Environmental, Health and Safety Manager	Construction and operations	DEC, DEWHA, DOCEP, DOF, DOH, DOW and WorkSafe
MWQMP 7	Require that fuel, chemicals and other potentially hazardous materials are stored appropriately.	Environmental, Health and Safety Manager	Construction and operations	DEC, DEWHA, DOCEP, DOIR and WorkSafe
MWQMP 8	Require that no equipment and machinery are washed in areas where runoff may enter the marine environment.	Construction Manager	Construction and operations	DEC, DEWHA, DOF and DOW
MWQMP 9	Regular monitoring and maintenance of vehicles, equipment and shipping vessels to minimise the likelihood of spills and leakage.	All personnel	Construction and operations	DEC, DOCEP, DOIR, DOW and WorkSafe
MWQMP 10	Reporting of all leaks / spills and of potential incidents where contamination could occur.	All personnel	Construction and operations	DEC, DOCEP, DOIR, DOW and WorkSafe
MWQMP 11	Regular monitoring and inspection of site and surrounds so that there is no litter transferred to the marine environment as a result of construction activities and port operations.	Construction Manager	Construction and operations	DEC, DEWHA, DOCEP, DOF, DOH, DOW and WorkSafe
MWQMP 12	Report and record all marine fauna deaths as appropriate.	All personnel	Construction and	DEC, DEWHA, DOCEP, DOF,



Reference No.	Management Tasks	Responsibility	Timing	Advice
			operations	DOH, DOW and WorkSafe
MWQMP 13	Report any environmental issues promptly to the DEC.	Environmental Manager	Construction, operations and ongoing	DEC
MWQMP 14	Require and specify that all shipping activities comply with Mandatory Ballast Water Management Requirements.	Harbour Master and Deputy Harbour Master	Operations	DEC, DEWHA and DOF
MWQMP 15	Refuse entry of vessels into the port which are found to be in contravention of AQIS requirements.	Harbour Master and Deputy Harbour Master	Operations	DEC, DEWHA and DOF
MWQMP 16	Develop a hydrodynamic model for all port operations within the Port Hedland harbour.	Environmental Manager	Ongoing	BOM, DEC, DEWHA and DOW
MWQMP 17	Establish a marine water quality monitoring programme.	Environmental Manager	Ongoing	DEC, DEWHA, DOF and DOW
MWQMP 18	Continue to monitor sediments within the Port Hedland harbour area as part of dredging maintenance activities.	Environmental Manager	Ongoing	DEC, DEWHA, DOF and DOW
MWQMP 19	Continue to update relevant stakeholders and community members on marine monitoring and other environmental aspects.	Environmental Manager	Ongoing	DEC, DEWHA, DOF and DOW

11. Outline Mosquito Management Plan

11.1 Background

Tidal creek mangrove swamplands which surround the Port Hedland area provide natural breeding grounds for mosquitoes. Mosquito borne diseases such as Murray Valley Encephalitis, Ross River Virus and Barmah Forrest Virus are prevalent in the Pilbara region especially during the wet season. These mosquito borne diseases are notifiable diseases under the *Health Act 1911* and incidences of these diseases need to be reported.

Murray Valley Encephalitis (also known as Australian Encephalitis) can cause fever, irritability, drowsiness, floppiness, fits, bad headaches, nausea, vomiting, muscle tremors and dizziness. Severe forms of the disease can lead to brain damage, paralysis and even death. Ross River Virus and Barmah Forrest Virus are not fatal but can cause prolonged joint pains and swellings, aching tendons, sore muscles, skin rashes, fever, fatigue, headaches and swollen lymph nodes.

The Town of Port Hedland (ToPH) conduct routine mosquito surveillance of breeding sites throughout the Port Hedland area and in conjunction with State Health Authorities maintain sentinel chicken flocks to provide a means for the early detection of mosquito borne diseases in the area. Trapping of adult mosquitoes in targeted breeding sites in Port Hedland, South Hedland and Wedgefield is also undertaken on a regular basis, especially following heavy rainfall.

PHPA work in co-operation with ToPH, the Department of Health (DOH) and the Australian Quarantine and Inspection Service (AQIS) to manage mosquitoes and reduce the incidence of mosquito-borne diseases.

11.2 Objectives

The objectives of this Mosquito Management Plan (MQMP) are to:

- Prevent the artificial creation of mosquito breeding habitats during construction and operations of the UPBP;
- Protect employees and contractors working at the UPBP site; and
- Minimise the incidence of mosquito-borne diseases within the Port Hedland area.

11.3 Relevant Legislation

Applicable legislation and guidelines for the management of mosquitoes include:

- Australian Mosquito Control Manual (Mosquito Control Association of Australia 2002);
- EPA Guidance Statement No. 40: Management of Mosquitoes by Land Developers 2000;
- *Health Act 1911*;



- Health (Pesticide) Regulations 1956;
- Mosquito Management Manual (DOH 2006);
- *Occupational Health and Safety Act 1984*;
- Occupational Safety Regulations 1996;
- Planning a Mosquito Management Program Guidelines (DOH 2006); and
- Stormwater Management Manual for Western Australia (DOW 2004-2007).

11.4 Management Tasks

Reference No.	Management Tasks	Responsibility	Timing	Advice
MQMP 1	Training and induction of all employees and contractors on minimising mosquito impacts and on safety requirements addressing mosquito management.	Environmental, Health and Safety Manager	Prior to construction and ongoing	DEC, DOCEP, DOH and WorkSafe
MQMP 2	Require that all persons onsite wear long, loose fitting, preferably light-coloured clothing and apply insect repellent as necessary to prevent mosquito bites.	Environmental, Health and Safety Manager	Prior to construction and ongoing	DOCEP, DOH and WorkSafe
MQMP 3	Training of all employees responsible for operating water suppression equipment so that there is correct watering to minimise dust emissions and to prevent prolonged ponding of water.	Environmental, Health and Safety Manager	Prior to construction and ongoing	DEC, DOCEP, DOH and WorkSafe
MQMP 4	Regularly monitor surface drainage collected in sumps and in the recirculation pond for mosquitoes.	All personnel	Construction and operations	DEC, DOCEP, DOH and WorkSafe
MQMP 5	Regularly monitor facilities and equipment onsite to identify potential mosquito breeding habitats.	All personnel	Construction and operations	DEC, DOCEP, DOH and WorkSafe
MQMP 6	Cover equipment and pits where practical to prevent ponding of water in creation of mosquito habitat.	All personnel	Construction and operations	DEC, DOCEP, DOH and WorkSafe
MQMP 7	Cover any waste material and/or storage containers containing waste.	All personnel	Construction and operations	DEC, DOCEP, DOH and WorkSafe
MQMP 8	Daily monitoring of weather, including monitoring of rainfall, storms and cyclone events, to plan and assist in site water management.	Facilities Manager	Construction and operations	BOM, DEC, DOCEP, DOH and DOW
MQMP 9	Include provisions in Cyclone Procedures for the preparation of water drainage and capture areas for	Facilities Manager, Harbour Master,	Construction, operations and ongoing	BOM, DEC, DOCEP, DOH and

Reference No.	Management Tasks	Responsibility	Timing	Advice
	significant rainfall.	Deputy Harbour Master and Environmental Manager		DOW
MQMP 10	Undertake site inspections with AQIS on an annual basis to identify potential mosquito breeding areas and implement changes as required for mosquito management.	Environmental Manager	Construction, operations and ongoing	AQIS, DEC, DOCEP, DOH and WorkSafe
MQMP 11	Continue to work with AQIS, ToPH and DOH in monitoring and management of mosquitoes.	Environmental Manager	Construction, operations and ongoing	AQIS, DEC, DOH and ToPH
MQMP 12	Undertake onsite surveys of larval and adult mosquitoes as necessary.	Environmental Manager	Construction, operations and ongoing	AQIS, DEC, DOH, DOW, ToPH and WorkSafe
MQMP 13	Advise employees, contractors and the public as necessary if any mosquito control activities are to be undertaken.	Environmental Manager	Construction, operations and ongoing	AQIS, DEC, DOCEP, DOH, ToPH and WorkSafe
MQMP 14	Require that contractors and persons that may use mosquito pesticides and/or other control methods are appropriately trained, hold a current license and/or are employed by a Registered Commercial Pest Firm.	Environmental, Health and Safety Manager	Construction and operations	DEC, DOCEP, DOH, DOW and WorkSafe.
MQMP 15	Require that any pesticide use onsite is carried out in accordance with Health (Pesticide) Regulations 1956.	Environmental, Health and Safety Manager	Construction and operations	DEC, DOCEP, DOH, DOW and WorkSafe.
MQMP 16	Report and/or record diagnosed cases of mosquito borne diseases contracted by employees and/or contractors.	All personnel and Environmental, Health and Safety Manager.	Construction and operations	AQIS, DEC, DOCEP, DOH, ToPH and WorkSafe



12. Outline Noise Management Plan

12.1 Background

Port operations at Port Hedland have historically given rise to community concerns regarding noise impacts, particularly for those community members living in close proximity to port facilities. Noise impacts from the UPBP may result from construction activities, port operations and traffic movement.

Noisy construction activities may include construction traffic; earthworks; the creation of temporary laydown areas; the laying of site drainage and internal roads; and piling (for wharf construction).

Key sources of noise for port operations include low speed truck movements; front end loaders; hoppers; conveyors and drives; and shiploaders.

12.2 Objectives

The objectives of this Noise Management Plan (NMP) are to:

- Require that design and procurement activities incorporate requirements for noise management during construction and operations;
- Require that all reasonable and practicable measures are undertaken during construction and operations to minimise noise emissions; and
- Require that noise impacts of construction and commissioning activities comply with statutory requirements specified in the Environmental Protection (Noise) Regulations 1997.

12.3 Relevant Legislation

Applicable legislation and guidelines for the management of noise include:

- Australian Standard AS 2436-1981: Guide to Noise Control on Construction, Maintenance and Demolition Sites 1981;
- Environmental Protection (Noise) Regulations 1997;
- EPA Guidance Statement No. 8: Environmental Noise (Draft) 2007; and
- EPA Guidance Statement No. 14: Road and Rail Transportation Noise (Preliminary Draft - Version 3) 2000.

12.4 Management Tasks

Reference No.	Management Tasks	Responsibility	Timing	Advice
NMP 1	Notify all nearby residents of the construction schedule, including typical construction hours and expected timeframe for completion of construction and commencement of operations.	Construction Manager	Prior to construction	DEC
NMP 2	Scheduling of noisy activities and/or the use of high noise equipment to occur simultaneously or during times that will cause the least annoyance.	Construction Manager	Prior to construction	DEC
NMP 3	Preparation of a Noise Management Plan for approval by the EPA / DEC if construction activities need to take place outside normal working hours (i.e. during the night-time (1900-0700), on Sundays or on public holidays).	Environmental Manager	Prior to construction	DEC
NMP 4	Advance notice to residents if construction activities need to take place outside normal working hours (i.e. during the night-time (1900-0700), on Sundays or on public holidays).	Construction Manager	Prior to construction and ongoing	DEC
NMP 5	Training and induction of all employees and contractors on the importance of minimising noise emissions and on noise mitigation methods.	Environmental, Health and Safety Manager	Prior to construction and ongoing	DEC, DOCEP, DOH and WorkSafe
NMP 6	Purchase and use of equipment for construction works and operations that is the quietest reasonably available.	Engineering Manager	Construction and operations	DEC, DOCEP, DOH, DOIR and WorkSafe
NMP 7	Checking of equipment so that noise control mechanisms are correctly fitted and that equipment are operating to manufacturer's specifications and design performance.	Construction Manager	Construction and operations	DEC, DOCEP, DOH, DOIR and WorkSafe
NMP 8	Regular monitoring and maintenance of equipment so that equipment remains in good working condition and noise emissions are kept to a minimum.	All personnel	Construction and operations	DEC, DOCEP, DOH, DOIR and WorkSafe
NMP 9	Regular monitoring and servicing of vehicles, including road trains.	All personnel	Construction and operations	DEC, DOCEP, DOIR and WorkSafe
NMP 10	Regular monitoring and reporting of noise emissions so that noise emissions meet design criteria	Environmental Manager	Construction, operations and ongoing	DEC, DOCEP, DOH, DOIR



Reference No.	Management Tasks	Responsibility	Timing	Advice
	and/or statutory requirements.			and WorkSafe
NMP 11	Ongoing communication and consultation with other industries and/or developers within the Port Hedland with the aim of minimising cumulative noise emissions.	Chief Executive Officer	Construction, operations and ongoing	DEC, DOCEP, DOH, DOIR and WorkSafe
NMP 12	Establishment of a complaints register to record and address community concerns regarding noise emissions.	Project Manager	Construction, operations and ongoing	DEC, DOCEP, DOH, DOIR and WorkSafe

13. Outline Surface and Groundwater Management Plan

13.1 Background

Activities undertaken during construction and operations of the UPBP could potentially impact on water quality, particularly groundwater quality.

Key factors which may have adverse impacts on water quality include:

- Disturbance of Potential Acid Sulfate Soils (PASS);
- Disturbance and/or clearing of vegetation, particularly mangroves and soil during construction;
- Increased, concentrated surface runoff;
- Alteration of surface drainage lines and groundwater flow pathways;
- Sedimentation of drainage lines from erosion;
- Contamination as a result of accidental leakage and spillage of fuel, hazardous materials, ballast water and other contaminants such as sewage and grey water; and
- Contamination as a result of leaching and transport of materials being exported, namely chromite and manganese ores.

Water usage for construction and operations at the UPBP site could also result in increased pressure on existing groundwater resources.

13.2 Objectives

The objectives of this Surface and Groundwater Management Plan (SGWMP) are to:

- Maintain surface and groundwater quality consistent with ANZECC Water Quality Guidelines or existing background quality;
- Minimise the potential for surface and groundwater contamination;
- Minimise the potential for erosion resulting from construction, port operations and from concentrated stormwater flow; and
- Minimise pressure on existing water resources.

13.3 Relevant Legislation

Applicable legislation and guidelines for the management of surface and groundwater quality include:

- ANZECC Guidelines for Fresh and Marine Water Quality 2000;
- *Contaminated Sites Act 2003*;



- National Health and Medical Research Council (NHMRC) Australian Drinking Water Guidelines 2004;
- *Pollution of Waters by Oil and Noxious Substances Act 1987*;
- Stormwater Management Manual for Western Australia (DOW 2004-2007); and
- *Waterways Conservation Act 1976*.

13.4 Management Tasks

Reference No.	Management Tasks	Responsibility	Timing	Advice
SGWMP 1	Training and induction of all employees and contractors on appropriate surface and groundwater management, including the importance of avoiding contamination of waters and maintaining water quality.	Environmental, Health and Safety Manager	Prior to construction and ongoing	DEC, DEWHA, DOH and DOW
SGWMP 2	Training of all employees responsible for operating water suppression equipment so that correct watering to minimise dust emissions and water wastage is maintained.	Environmental, Health and Safety Manager	Prior to construction and ongoing	DEC, DEWHA, DOH, DOIR and DOW
SGWMP 3	Encourage employees and contractors to minimise water usage where possible.	Environmental, Health and Safety Manager	Prior to construction and ongoing	DEC, DEWHA and DOW
SGWMP 4	Training of employees and contractors in safety procedures and spill / contaminant management.	Environmental, Health and Safety Manager	Prior to construction and ongoing	DEC, DOCEP, DOH, DOW and WorkSafe
SGWMP 5	Restriction of clearing and site earthworks to the minimum area required for construction.	Construction Manager	Construction	DEC
SGWMP 6	Revegetation of areas cleared for construction activities as soon as practicable.	Construction Manager and Environmental Manager	Construction	DEC
SGWMP 7	Avoidance of disturbance of PASS during clearing and earthworks.	Construction Manager	Construction	DEC
SGWMP 8	Development of an Acid Sulfate soil management plan for approval by the DEC prior to any disturbance of soils.	Environmental Manager	Construction	DEC
SGWMP 9	Testing and regular monitoring of disturbed soils (if soils are disturbed).	Engineering Manager	Construction	DEC and DOIR
SGWMP 10	Require and specify a minimum depth of 2 m (above the existing land surface) of compacted "clean" fill material is used on which to develop the UPBP stockyard site.	Engineering Manager	Construction	DEC and DOIR
SGWMP 11	Restriction of vehicle and equipment	Construction	Construction	DEC, MRWA,

Reference No.	Management Tasks	Responsibility	Timing	Advice
	movement outside the designated areas for access, construction and operational activities.	Manager		ToPH and WorkSafe
SGWMP 12	Sealing of roads and other applicable areas as soon as practicable during construction.	Construction Manager	Construction	DEC
SGWMP 13	Establish temporary drainage systems during construction to prevent contaminated water runoff outside the UPBP site and to contain water for treatment if necessary.	Construction Manager	Construction	DEC, DEWHA and DOW
SGWMP 14	Establish permanent water drainage and treatment facilities, including sumps, the recirculation pond, settlement ponds and truck wash facilities, as soon as practical.	Construction Manager	Construction	DEC, DOIR and DOW
SGWMP 15	Require and specify that sufficient availability and supply of chemical safety facilities and equipment, spill kits and other clean-up tools.	Environmental, Health and Safety Manager	Design, Construction and operations	DEC, DOCEP, DOW and WorkSafe
SGWMP 16	Provide easy access to chemical safety facilities and equipment, spill kits and other clean-up tools.	Environmental, Health and Safety Manager	Construction and operations	DEC, DOCEP, DOW and WorkSafe
SGWMP 17	Require that contractors and/or persons that may use pesticides onsite are appropriately trained, hold a current license and are employed by a Registered Commercial Pest Firm.	Environmental, Health and Safety Manager	Construction and operations	DEC, DOCEP, DOH, DOW and WorkSafe.
SGWMP 18	Require that the use of pesticides will be carried out in accordance with Health (Pesticide) Regulations 1956.	Environmental, Health and Safety Manager	Construction and operations	DEC, DOCEP, DOH, DOW and WorkSafe.
SGWMP 19	Contain and clean-up any contaminated areas quickly and efficiently.	Environmental, Health and Safety Manager	Construction and operations	DEC, DOCEP, DOW and WorkSafe
SGWMP 20	Daily inspection of vehicle and equipment lay down and/or storage areas for leaks and spills.	All personnel	Construction and operations	DEC, DOCEP, DOW and WorkSafe
SGWMP 21	Regular monitoring and servicing of vehicles and equipment to minimise the potential for leaks.	All personnel	Construction and operations	DEC, DOCEP, DOW and WorkSafe
SGWMP 22	Regular inspection of waste management onsite so that waste is being handled correctly and disposed of appropriately.	Construction Manager and Facilities Manager	Construction and operations	DEC, DOCEP, DOH, DOIR, DOW and



Reference No.	Management Tasks	Responsibility	Timing	Advice
				WorkSafe
SGWMP 23	Reporting of all leaks / spills and of potential incidents where contamination could occur.	All personnel	Construction and operations	DEC, DOCEP, DOH, DOW and WorkSafe
SGWMP 24	Daily monitoring of weather, including monitoring of rainfall, storms and cyclone events, to plan and assist in water management.	Facilities Manager	Construction and operations	BOM, DEC, DEWHA and DOW
SGWMP 25	Daily recording of rainfall received on site and of surface runoff collected in the recirculation pond and settlement ponds as applicable.	Facilities Manager	Construction and operations	BOM, DEC, DEWHA and DOW
SGWMP 26	Ongoing monitoring of groundwater bores and surface water collected in the recirculation pond for acidity, heavy metals and the presence of other contaminants. Groundwater monitoring to include monitoring water quality and of depths to groundwater. Groundwater monitoring to be undertaken prior to construction, on a monthly basis during construction and bi-annually during port operations.	Environmental Manager	Prior to construction and ongoing	DEC, DEWHA, DOH and DOW
SGWMP 27	Ongoing reporting of groundwater monitoring and analysis. Groundwater data and reporting to be submitted to the DEC on completion of construction and on an annual basis during port operations for the life of the project.	Environmental Manager	Construction, operations and ongoing	DEC, DEWHA, DOH and DOW
SGWMP 28	Establishment of additional bores if deemed necessary and monitoring of groundwater.	Environmental Manager	Construction, operations and ongoing	DEC, DEWHA, DOH and DOW
SGWMP 29	Ongoing participation in the Water Corporation's Water Wise Program.	Environmental Manager	Construction, operations and ongoing	DEC, DEWHA, DOH and DOW
SGWMP 30	Annual review and updating of Groundwater Management Plan and submission to DEC as appropriate.	Environmental Manager	Construction, operations and ongoing	DEC and DOW

14. Outline Terrestrial Fauna Management Plan

14.1 Background

The UPBP may potentially impact on terrestrial fauna due to:

- Habitat disturbance and fragmentation;
- Incidental faunal casualties and death as a result of construction and operational activities;
- Indirect disturbance of fauna due to noise and lighting generated during construction and operations; and
- Indirect impact on fauna as a result of alterations to surface and groundwater regimes.

Within the UPBP development area three Priority and six Migratory listed fauna species may occur, including:

- Little North-western Mastiff Bat (*Mormopterus loriae cobourgensis*) (Priority 1);
- Australian Bustard (*Ardeotis australis*) (Priority 4);
- Eastern Curlew (*Numenius madagascariensis*) (Priority 4 / Migratory);
- Common Sandpiper (*Tringa hypoleucos*) (Migratory);
- Grey-tailed Tattler (*Tringa brevipes*) (Migratory);
- Little Curlew (*Numenius minutus*) (Migratory);
- Oriental Plover (*Charadrius veredus*) (Migratory);
- Oriental Pratincole (*Glareola maldivarum*) (Migratory); and
- Whimbrel (*Numenius phaeopus variegates*) (Migratory).

14.2 Objectives

The objectives of this Terrestrial Fauna Management Plan (TFMP) are to:

- Minimise potential impacts on fauna, including habitat disturbance;
- Minimise faunal casualties and death; and
- Minimise the disturbance and loss of significant fauna.

14.3 Relevant Legislation

Applicable legislation and guidelines for the management of terrestrial fauna include:

- *Bush Fires Act 1954*;
- *Environment Protection and Biodiversity Conservation Act 1999*;
- *Wildlife Conservation Act 1950*; and
- *Wildlife Conservations Regulations 1970*.



14.4 Management Tasks

Reference No.	Management Tasks	Responsibility	Timing	Advice
TFMP 1	Training and induction of all employees and contractors on the importance of minimising impacts on terrestrial fauna and the procedures and protocols for terrestrial fauna management.	Environmental, Health and Safety Manager	Prior to construction and ongoing	DEC, DOCEP and WorkSafe
TFMP 2	Site walkover to identify any specific faunal habitats, such as bird nests, and fauna that maybe cleared or disturbed during construction activities.	Construction Manager and Environmental Manager	Prior to construction	DEC, DOCEP and WorkSafe
TFMP 3	Relocate fauna prior to clearing (if possible).	Construction Manager and Environmental Manager	Prior to construction	DEC, DOCEP and WorkSafe
TFMP 4	Restriction of clearing and site earthworks to the minimum area required for construction.	Construction Manager	Construction	DEC
TFMP 5	Revegetation of areas cleared for construction activities as soon as practicable.	Construction Manager and Environmental Manager	Construction	DEC
TFMP 6	Inspect work areas daily during construction, prior to commencing construction activities, for fauna onsite – such as fauna that maybe trapped in pits.	All personnel	Construction	DEC, DOCEP and WorkSafe
TFMP 7	Cover pits and equipment when not in use to reduce the chance of fauna entrapment / entanglement.	All personnel	Construction and operations	DEC, DOCEP and WorkSafe
TFMP 8	Restriction of vehicle and equipment movement outside the designated areas for access, construction and operational activities.	All personnel	Construction and operations	DEC, DOCEP, MRWA, ToPH and WorkSafe
TFMP 9	Avoidance of unnecessary vehicle movement.	All personnel	Construction and operations	MRWA, ToPH and WorkSafe
TFMP 10	Adherence to site speed limits on access roads and within the development area.	All personnel	Construction and operations	DOCEP, MRWA, ToPH and WorkSafe
TFMP 11	Careful placement of lights to optimise site lighting and minimise light impacts on fauna.	Engineering Manager	Construction and operations	DEC, DOCEP, MRWA, ToPH and WorkSafe
TFMP 12	Require that no domestic animals or pets are permitted onsite, including in site offices.	Construction Manager and Facilities Manager	Construction and operations	DEC, DOCEP and WorkSafe

Reference No.	Management Tasks	Responsibility	Timing	Advice
TFMP 13	Require that facilities are kept tidy and waste materials covered and disposed regularly to prevent attracting pests and feral animals.	All personnel	Construction and operations	DEC, DOCEP, DOH and WorkSafe
TFMP 14	Regular monitoring and inspection of site and surrounds so that there is no litter transferred to the environment as a result of construction activities and operations.	Construction Manager and Facilities Manager	Construction, operations and ongoing	DEC, DOCEP, DOF and WorkSafe
TFMP 15	Require that contractors and/or persons that may use pesticides onsite are appropriately trained, hold a current license and are employed by a Registered Commercial Pest Firm.	Environmental, Health and Safety Manager	Construction and operations	DEC, DOCEP, DOH, DOW and WorkSafe.
TFMP 16	Require that the use of pesticides will be carried out in accordance with Health (Pesticide) Regulations 1956.	Environmental, Health and Safety Manager	Construction and operations	DEC, DOCEP, DOH, DOW and WorkSafe.
TFMP 17	Specify and require appropriate fire management – including maintenance of fire breaks and easy access to fire control equipment.	Construction Manager and Facilities Manager	Construction, operations and ongoing	DEC, DOCEP, FESA, ToPH and WorkSafe
TFMP 18	Report and record all fauna deaths as appropriate.	All personnel	Construction, operations and ongoing	DEC, DOCEP, DOF, MRWA and WorkSafe
TFMP 19	Report and record all sightings of significant fauna or feral animals as appropriate.	All personnel	Construction, operations and ongoing	DEC and DOF
TFMP 20	To perform regular site inspections of the recirculation pond and settlement ponds to monitor any impacts to wildlife, particularly avifauna.	Environmental, Health and Safety Manager	Construction, operations and ongoing	DEC



15. Outline Terrestrial Flora and Vegetation Management Plan

15.1 Background

Approximately 21.6 ha of terrestrial vegetation will be cleared as part of UPBP development, including 4.6 ha of hummock grassland (*Triodia epactia* and *Triodia secunda*) and 17 ha of scattered low shrubs (*Halosarcia indica* subsp. *leiostachya*, *H. halocnemoides* subsp. *tenuis* (samphire) and *Muellerolimon salicorniaceum*). A large majority of the clearing will occur parallel to the existing access road. Whilst it is expected that the majority of imported fill material will be obtained from dredged spoil, borrow pit areas may also be required on PHPA land if future dredge spoil material is unavailable at the time of construction. The construction of the borrow pit area will result in an additional 24.7 ha of *Triodia* hummock grassland clearance.

The *Triodia secunda* hummock grasslands are considered to be of moderate conservation significance, as this species has a relatively limited distribution in the Pilbara. The samphire shrublands are considered to be of moderate conservation significance, as they are restricted to the narrow saline mudflat habitats along the coast, and are susceptible to disturbance.

Five species of introduced flora have been recorded in the UPBP area including:

- Birdwood Grass (*Cenchrus setiger*);
- Buffel Grass (*Cenchrus ciliaris*);
- Feathertop Rhodes Grass (*Chloris virgata*);
- Kapok (*Aerva javanica*); and
- Verano Stylo (*Stylosanthes hamata*).

15.2 Objectives

The objectives of this Terrestrial Flora and Vegetation Management Plan (TVMP) are to:

- Minimise removal of native and screening vegetation;
- Minimise the amount of vegetation that is permanently cleared;
- Minimise the introduction and spread of weeds; and
- Prevent disturbance of vegetation and flora in adjacent areas.

15.3 Relevant Legislation

Applicable legislation and guidelines for the management of terrestrial flora and vegetation include:

- *Bush Fires Act 1954;*
- *Conservation and Land Management Act 1984;*
- *Environment Protection and Biodiversity Conservation Act 1999;*
- *Environmental Protection (Clearing of Native Vegetation) Regulations 2004;*
- EPA Position Statement No. 2: Environmental Protection of Native Vegetation in Western Australia 2000; and
- *Soil and Land Conservation Act 1945.*

15.4 Management Tasks

Reference No.	Management Tasks	Responsibility	Timing	Advice
TVMP 1	Training and induction of all employees and contractors on the importance of minimising impacts on terrestrial flora and vegetation and on the procedures and protocols for vegetation management.	Construction Manager	Prior to construction and ongoing	DEC, DOCEP, FESA and WorkSafe
TVMP 2	Develop a weed hygiene and management plan in consultation with the DEC prior to commencing construction activities.	Environmental Manager	Prior to construction	DEC
TVMP 3	Clearly identify and mark out areas to be cleared for the development.	Construction Manager	Prior to construction	DEC
TVMP 4	Restriction of clearing and site earthworks to the minimum area required for construction.	Construction Manager	Construction	DEC
TVMP 5	Monitor clearing activities so that there is no over-clearing.	Construction Manager	Construction	DEC
TVMP 6	Limit vegetation clearance in the vicinity of the Priority 3 species <i>Bulbostylis burbridgeae</i> and fence to protect identified populations.	Construction Manager and Environmental Manager	Prior to construction and Construction	DEC
TVMP 7	Temporarily fence areas that are not to be disturbed, where practical.	Construction Manager	Construction	DEC, DOCEP and WorkSafe
TVMP 8	Salvage and stockpile topsoil and re-spread over disturbed areas to maximise germination of prominent species from soil seedbank.	Construction Manager	Construction	DEC
TVMP 9	Revegetate areas cleared for construction activities with local provenance species as soon as practicable.	Construction Manager	Construction	DEC
TVMP 10	Specify and require that fill material used for the development of the stockyards and topsoil used for revegetation is weed free, where practical.	Construction Manager	Construction	DEC



Reference No.	Management Tasks	Responsibility	Timing	Advice
TVMP 11	Clean vehicles and equipment prior to entry/exit of the site and/or prior to exiting areas onsite where there are weeds.	All personnel	Construction	DEC
TVMP 12	Require that contractors and/or persons that may use pesticides onsite are appropriately trained, hold a current license and are employed by a Registered Commercial Pest Firm.	Environmental, Health and Safety Manager	Construction and operations	DEC, DOCEP, DOH, DOW and WorkSafe.
TVMP 13	Require that the use of pesticides will be carried out in accordance with Health (Pesticide) Regulations 1956.	Environmental, Health and Safety Manager	Construction and operations	DEC, DOCEP, DOH, DOW and WorkSafe.
TVMP 14	Restriction of vehicle and equipment movement outside the designated areas for access, construction and operational activities.	All personnel	Construction and operations	DOCEP, MRWA, ToPH and WorkSafe
TVMP 15	Avoidance of unnecessary vehicle movement.	All personnel	Construction and operations	DEC, DOCEP and WorkSafe
TVMP 16	Adherence to site speed limits on access roads and within the development area.	All personnel	Construction and operations	DOCEP, MRWA, ToPH and WorkSafe
TVMP 17	Specify and require that appropriate fire management – including maintenance of fire breaks and easy access to fire control equipment.	Facilities Manager	Construction, operations and ongoing	DEC, DOCEP, FESA and WorkSafe
TVMP 18	Monitor revegetation success and assist rehabilitation efforts as appropriate.	Environmental Manager	Construction, operations and ongoing	DEC
TVMP 19	Monitor the distribution of weed species onsite and implement a weed control strategy, if deemed necessary.	Environmental Manager	Construction, operations and ongoing	DEC

16. Outline Traffic Management Plan

16.1 Background

The development of the UPBP has the potential to increase traffic volumes and congestion along the proposed haulage route for the project, impacting on community traffic safety and amenity values.

The proposed haulage route for the UPBP consists of two main roads: Great Northern Highway and Port Hedland Road / Wilson Street; and three local roads: Pinga Street, Cajarina Road and Finucane Road. All of these roads currently provide the only route to Utah Point and are approved for road train use by Main Roads Western Australia (MRWA).

Existing traffic concerns along this road network include:

- The current alignment and/ or configuration of the road network, which intersects with access roads for the South Hedland residential area, Wedgefield industrial zone, port areas and railway crossings, exacerbating the conflict between heavy vehicles, ore trains and local traffic;
- The need for parts of the road network to be reconstructed in the longer term, due to the narrowness of some roads and poor pavement quality.

Potential traffic impacts that may arise from the UPBP include:

- Traffic delays and road closures during construction of the access road and the delivery of materials and equipment to site;
- Increased traffic volumes during construction and operations;
- Traffic congestion during port operations, particularly during peak times; and
- Structural damage to roads from heavy vehicle movements.

16.2 Objectives

The objectives of this Traffic Management Plan (TRMP) are to:

- Require that traffic associated with the UPBP is managed in such a way so as to minimise adverse impacts on the community, other road users, road safety, road infrastructure, surrounding land uses and sensitive habitats; and
- Facilitate safe and efficient access along the proposed access route and general haulage route.

16.3 Relevant Legislation

Applicable legislation and guidelines for the management of traffic include:



- Australian Standard AS 1742.1:2003: Manual of Uniform Traffic Control Devices - General Introduction and Index of Signs 2003;
- Australian Standard AS 1742.3:2002: Manual of Uniform Traffic Control Devices - Traffic Control Devices for Works on Roads 2002;
- Australian Standard AS 1742.4:2002: Manual of Uniform Traffic Control Devices - Speed Controls 1999;
- Australian Standard AS 1743:2001: Road Signs Specifications 2001;
- Australian Standard AS 1906.1:2007: Retro Reflective Materials and Devices for Road Traffic Control Purposes - Retroreflective Sheeting 2007;
- Australian Standard AS 1906.2:2007: Retro Reflective Materials and Devices for Road Traffic Control Purposes - Retroreflective Devices (Non-Pavement Application) 2007;
- Australian Standard AS 1906.3:1992: Retro Reflective Materials and Devices for Road Traffic Control Purposes - Raised Pavement Markers (Retroreflective and Non-Retroreflective) 1992;
- Australian Standard AS 1906.4:1997: Retro Reflective Materials and Devices for Road Traffic Control Purposes - High Visibility Materials for Safety Garments 1997;
- Australian Standard AS 3845:1999: Road Safety Barrier Systems 1999;
- Australian Standard AS 4360:1999: Risk Management 1999;
- Australian Standard AS 4602:1999: High Visibility Safety Garments 1999;
- Austroads Guide to Traffic Engineering Practice, Part 13: Pedestrians 1995;
- Austroads Guide to Traffic Engineering Practice, Part 14: Bicycles 1999;
- *Dangerous Goods (Transport) Act 1998*;
- *Main Roads Act 1930*;
- MRWA Traffic Management for Works on Roads Code of Practice 2006;
- MRWA Utility Providers Code of Practice for Western Australia 2006;
- Road Traffic Code 2000;
- *Road Traffic Act 1974*; and
- Traffic Controllers Handbook – Fifth Edition, J L. Pline (ed.), Criterion Press, 2004.

16.4 Management Tasks

Reference No.	Management Tasks	Responsibility	Timing	Advice
TRMP 1	Undertake risk assessment in accordance with AS/NZS 4360:1999 to identify all traffic related risks and appropriate remedial measures.	Engineering Manager	Prior to construction	DOTARS, DOCEP, FESA, MRWA, ToPH, RSWA and WorkSafe
TRMP 2	Prepare a detailed Traffic Management Plan in accordance with the requirements of the MRWA Code of Practice and Australian Standards.	Engineering Manager	Prior to construction	DOCEP, MRWA, DPI, ToPH, RSWA and WorkSafe
TRMP 3	Clearly define and mark out the designated access road/s for construction and operations.	Construction Manager	Prior to construction	DOCEP, MRWA, ToPH and WorkSafe
TRMP 4	Require scheduling of construction activities and the transport of materials to site that minimises impacts on other road users, particularly at peak times.	Construction Manager	Prior to construction and ongoing	DOCEP, MRWA, ToPH and WorkSafe
TRMP 5	Inform the community of likely delays and road closures in advance, and keep community updated on these occurrences.	Project Manager	Construction and operations	MRWA and ToPH
TRMP 6	Specify and require induction training for employees and contractors on road safety and traffic management procedures and protocols.	Environmental, Health and Safety Manager	Prior to construction and ongoing	DOCEP, FESA, MRWA, ToPH, RSWA and WorkSafe
TRMP 7	Specify and require MRWA accredited training for all employees and contractors that may be involved in road construction and traffic management.	Environmental, Health and Safety Manager	Prior to construction and ongoing	DOCEP, FESA, MRWA, ToPH, RSWA and WorkSafe
TRMP 8	Specify and require training for all employees and contractors that may be involved in transporting materials and equipment to site, including of appropriate procedures for the management of potential contaminants in the event of accidents and spills.	Environmental, Health and Safety Manager	Prior to construction and ongoing	DEC, DOTARS, DOCEP, FESA, MRWA, ToPH, RSWA and WorkSafe
TRMP 9	Require that emergency access be maintained at all times.	All personnel	Construction, operations and ongoing	DOCEP, FESA, RSWA and WorkSafe
TRMP 10	Require careful placement of lights to optimise traffic safety.	Engineering Manager	Construction	DOCEP, MRWA, ToPH, RSWA and WorkSafe
TRMP 11	Require that sealing of roads and other applicable areas be undertaken as soon as practicable.	Construction Manager	Construction	DOCEP, MRWA, ToPH and WorkSafe
TRMP 12	Restrict vehicular movement outside	All personnel	Construction	DOCEP,



Reference No.	Management Tasks	Responsibility	Timing	Advice
	the designated areas.		and operations	MRWA, ToPH and WorkSafe
TRMP 13	Require enforcement measures for speed limits on access roads and within the development area.	All personnel	Construction and operations	DOCEP, MRWA, ToPH, RSWA and WorkSafe
TRMP 14	Require regular inspection, servicing and approval of vehicles and equipment to optimise traffic safety.	All personnel	Construction and operations	DOCEP, MRWA, ToPH and WorkSafe
TRMP 15	Require reporting of all vehicle and equipment safety concerns and faults.	All personnel	Construction and operations	DOCEP, MRWA, ToPH and WorkSafe
TRMP 16	Require reporting of all traffic incidents, including near misses, and prompt assessment and response to traffic safety concerns.	All personnel	Construction and operations	DOCEP, MRWA, ToPH, RSWA and WorkSafe
TRMP 17	Require adherence to any curfew on road train movements through key intersections during the afternoon peak period (~2:30-5:30pm), as applicable.	Facility Manager	Operations	DOCEP, MRWA, DPI, ToPH and WorkSafe
TRMP 18	Require ongoing consultation and co-ordination of road transport activities and planned road improvements with MRWA, DPI, ToPH and other industry groups, including BHPBIO and FMG.	Chief Executive Officer	Construction, operations and ongoing	DOCEP, MRWA, DPI, ToPH, RSWA and WorkSafe

17. Outline Turtle Management Plan

17.1 Background

Three turtle species may occur within the Port Hedland region including the flatback turtle (*Natator depressus*), green turtle (*Chelonia mydas*) and hawksbill turtle (*Eretmochelys imbricate*).

Juvenile green turtles routinely use the waters of the harbour and the surrounding mangrove creeks for foraging. They utilise the seaward fringes of the mangrove habitat, remaining on the periphery of the root system, presumably to avoid the risk of entanglement and drowning in the densely tangled mangrove root systems.

Recent investigation of turtles and turtle habitats within the Port Hedland area undertaken by Pendoley Environmental Pty Ltd have identified Cemetery Beach, Pretty Pool and Cooke Point as flatback turtle nesting habitats within the area. These nesting habitats are located over 3 km away from the UPBP site (to the east of the Port Hedland harbour) and are separated from the proposed development by existing industrial and urban development and by the spoil bank.

These nesting areas are currently exposed to substantial artificial lighting. For this reason, lighting impacts on these habitats (and flatback turtle hatchlings) that can be attributed to the UPBP are considered to be minimal in comparison to the existing light environment. However, increased lighting for the proposal may add to cumulative light emissions from all urban and industrial sources in the Port Hedland region.

17.2 Objectives

The objectives of this Turtle Management Plan are to:

- Minimise potential light impacts on turtle hatchlings from construction and operational lighting; and
- Minimise potential impacts on juvenile turtles from increased shipping movements within the harbour.

17.3 Relevant Legislation

Applicable legislation and guidelines for the management of the turtles include:

- ANZECC Guidelines for Fresh and Marine Water Quality 2000;
- *Pollution of Waters by Oil and Noxious Substances Act 1987*;
- *Western Australian Marine Act 1982*;
- *Wildlife Conservation Act 1950*; and
- Wildlife Conservations Regulations 1970.



17.4 Management Tasks

Reference No.	Management Tasks	Responsibility	Timing	Advice
TMP 1	Induction training for employees and contractors on the importance of minimising impacts to turtles and other marine fauna and on onsite management measures to reduce impacts.	Environmental, Health and Safety Manager	Prior to construction and ongoing	DEC, DOCEP and WorkSafe
TMP 2	Site walkover to identify any specific turtle habitats, such as on the seaward fringe of mangrove areas, and to identify turtles or other fauna that maybe disturbed during construction activities.	Construction Manager	Prior to construction	DEC, DOCEP and WorkSafe
TMP 3	Relocation of turtles and other marine fauna prior to clearing, if found within area to be disturbed (if possible).	Construction Manager and Environmental Manager	Prior to construction	DEC, DOCEP and WorkSafe
TMP 4	Restriction of clearing and site earthworks to the minimum area required for construction.	Construction Manager	Construction	DEC
TMP 5	Inspect work areas daily during construction, prior to commencing construction activities, for fauna onsite – such as fauna that maybe trapped in pits.	All personnel	Construction	DEC, DOCEP and WorkSafe
TMP 6	Cover pits and equipment when not in use to reduce the chance of fauna entrapment / entanglement.	All personnel	Construction and operations	DEC, DOCEP and WorkSafe
TMP 7	Restriction of vehicle and equipment movement outside the designated areas for access, construction and operational activities.	Construction Manager	Construction and operations	DEC, MRWA, ToPH and WorkSafe
TMP 8	Require that no domestic animals or pets are permitted onsite, including in site offices.	Construction Manager and Facilities Manager	Construction and operations	DEC, DOCEP and WorkSafe
TMP 9	Careful placement of lights to optimise site lighting and minimise light impacts on turtles, i.e. keeping lights as low to the ground as possible and ensuring light is directed downwards and/or onto work areas.	Engineering Manager and Construction Manager	Construction and operations	DEC, DOCEP, MRWA, ToPH and WorkSafe
TMP 10	Shielding of lights, where practical to prevent upward light spillage and additional glow.	Engineering Manager	Construction and operations	DEC, DOCEP, MRWA, ToPH and WorkSafe
TMP 11	Use of high and low pressure sodium lights, where practical with respect to maintaining safe working conditions.	Engineering Manager	Construction and operations	DEC, DOCEP, MRWA, ToPH and WorkSafe
TMP 12	Use of low wattage lights in preference to high wattage lights	Engineering Manager	Construction and	DEC, DOCEP, MRWA, ToPH

Reference No.	Management Tasks	Responsibility	Timing	Advice
	where practical.		operations	and WorkSafe
TMP 13	Use of motion sensors and/or timers for lighting where practical.	Engineering Manager	Construction and operations	DEC, DOCEP and WorkSafe
TMP 14	Switching off of lights in unused areas, such as offices, where practical.	All personnel	Construction and operations	DEC, DOCEP and WorkSafe
TMP 15	Regular monitoring and inspection of site and surrounds so that there is no litter transferred to mangrove areas or marine waters as a result of construction activities and port operations.	Construction Manager	Construction and operations	DEC, DEWHA, DOCEP, DOF, DOH and WorkSafe
TMP 16	Monitor the behaviour of turtles near the UPBP site.	Environmental Manager	Construction, operations and ongoing	DEC, DEWHA and DOF
TMP 17	Report and record all turtle strandings observed within the Port Hedland harbour to the DEC Strandings Database.	Environmental Manager	Construction, operations and ongoing	DEC, DEWHA and DOF
TMP 18	Report and record all marine fauna deaths as appropriate, including any turtle deaths.	All personnel	Construction, operations and ongoing	DEC, DEWHA, DOF, DOH, and WorkSafe
TMP 19	Report and record all sightings of significant fauna or feral animals as appropriate.	All personnel	Construction, operations and ongoing	DEC, DEWHA and DOF
TMP 20	Report any environmental issues promptly to the DEC.	Environmental Manager	Construction, operations and ongoing	DEC
TMP 21	Monitor the harbour so that no marine pest species are introduced.	Environmental Manager	Ongoing	DEC, DEWHA and DOF
TMP 22	Continue to update relevant stakeholders and community members on turtle monitoring and other environmental aspects.	Environmental Manager	Ongoing	DEC, DEWHA, DOF and DOW
TMP 23	Implement and/or support an ongoing turtle monitoring programme to identify the number and species of juvenile turtles that utilise the Port Hedland harbour as habitat.	Environmental Manager	Construction, operations and ongoing	DEC, DEWHA and DOF
TMP 24	Implement and/or support ongoing research and monitoring of turtle nesting areas within the Port Hedland area, including Cemetery Beach, Cooke Point and Pretty Pool, and within the wider region, including nesting sites between Port Hedland and 80 Mile Beach and Mundabullangan Station.	Environmental Manager	Construction, operations and ongoing	DEC, DEWHA and DOF
TMP 25	Implement and/or support a hatchling orientation monitoring research	Environmental	Construction, operations	DEC, DEWHA



Reference No.	Management Tasks	Responsibility	Timing	Advice
	project to assist in establishing baseline information on hatchling emergence behaviour and movement from nests to the ocean.	Manager	and ongoing	and DOF
TMP 26	Implement and/or support a flatback turtle flipper tagging (long term) monitoring programme, to assist in gathering information about nesting beaches, population sizes, migrations, growth rates and movement between nesting beaches.	Environmental Manager	Construction, operations and ongoing	DEC, DEWHA and DOF

18. Outline Waste Management Plan

18.1 Background

The inappropriate storage, handling and disposal of waste from construction and operations of the UPBP have the potential to impact on the environment in the following ways:

- Potential contamination of surface, ground and marine waters;
- Potential impacts on visual amenity (i.e. the presence of litter);
- Possible entanglement or ingestion of waste by local wildlife;
- Attraction of vermin and generation of odours; and
- Possible creation of fire hazards.

The solid and liquid wastes which may be generated during construction and operation include:

- Packaging materials (plastic, cardboard, paper and pallets);
- Scrap metal;
- Electrical off-cuts;
- Concrete;
- Office wastes;
- Food scraps; and
- Domestic sewage.

18.2 Objectives

The objectives of this Waste Management Plan (WMP) are to:

- Minimise the amount of liquid and solid waste generated during construction and operations;
- Reuse and recycle waste materials where possible; and
- Require that all waste is handled and disposed in an acceptable manner.

18.3 Relevant Legislation

Applicable legislation and guidelines for the management of waste include:

- Environmental Protection (Controlled Waste) Regulations 2004;
- *Environmental Protection (Landfill) Levy Act 1998*;
- *Health Act 1911*;
- *Litter Act 1979*; and
- Litter Regulations 1981.



18.4 Management Tasks

Reference No.	Management Tasks	Responsibility	Timing	Advice
WMP 1	Induction training for contractors and employees on waste management procedures and protocols.	Construction Manager	Prior to construction and ongoing	DEC, DOCEP and WorkSafe
WMP 2	Encourage contractors and employees to follow waste hierarchy – reduce, reuse, recycle and recover.	Construction Manager	Prior to construction and ongoing	DEC, DOCEP and WorkSafe
WMP 3	Contractors and port proponents to define likely wastes to be generated during construction and operations, including type and quantity.	Project Manager	Prior to construction and ongoing	DEC, DOCEP and WorkSafe
WMP 4	Contractors and port proponents to define how various wastes will be reused, recycled or disposed of during construction and operations.	Project Manager	Prior to construction and ongoing	DEC, DOCEP and WorkSafe
WMP 5	Require that there are facilities and equipment for collecting and segregating wastes onsite, so that these facilities and equipment are easily accessible and consider fire safety, pest and odour control, and the protection of water and soil resources.	Construction Manager	Prior to construction and ongoing	DEC, DOCEP, FESA and WorkSafe
WMP 6	Require and specify that hazardous waste is disposed of correctly, so that any disposal of chemicals is in accordance with requirements detailed in MSDS and relevant legislation.	Construction Manager	Construction and operations	DEC, DOCEP and WorkSafe
WMP 7	Cover any waste material and/or storage containers containing waste so that waste doesn't blow away or isn't accessible to vermin, birds or other fauna.	All personnel	Construction and operations	DEC, DOCEP, DOH and WorkSafe
WMP 8	Regular removal of waste material from the UPBP site, ensuring bins and other facilities and equipment do not overflow.	Construction Manager	Construction and operations	DEC, DOCEP, DOH and WorkSafe
WMP 9	Require that waste is disposed to the correct landfill sites and/or external waste management facilities.	Project Manager	Construction and operations	DEC, DOCEP, DOH and WorkSafe
WMP 10	Regular inspection of waste management onsite so that waste is being handled correctly and disposed of appropriately.	Construction Manager, Facilities Manager	Construction and operations	DEC, DOCEP and WorkSafe
WMP 11	Regular monitoring and inspection of site and surrounds so that no litter is transferred to the environment as a result of construction activities and operations.	All personnel	Construction and operations	DEC, DOCEP and WorkSafe



Reference No.	Management Tasks	Responsibility	Timing	Advice
WMP 12	Order construction materials and other resources and equipment in bulk to minimise the amount of packaging materials.	Engineering Manager	Construction and operations	DOCEP, DOIR and WorkSafe
WMP 13	Require that waste metal is recycled through Simsmetal.	Construction Manager, Facilities Manager	Construction and operations	DEC and ToPH
WMP 14	Require that old oil and/or oil contaminated waste is recycled through Oil Energy Corporation.	Construction Manager, Facilities Manager	Construction and operations	DEC and ToPH
WMP 15	Regular monitoring and reporting of waste quantities disposed to landfill, reused, or recycled.	Environmental Manager	Construction, operations and ongoing	DEC
WMP 16	Investigate the potential implementation of a recycling program for all port operations and for the Town of Port Hedland.	Environmental Manager	Construction, operations and ongoing	DEC and ToPH
WMP 17	Investigate the potential collection & use of green waste.	Environmental Manager	Construction, operations and ongoing	DEC and ToPH