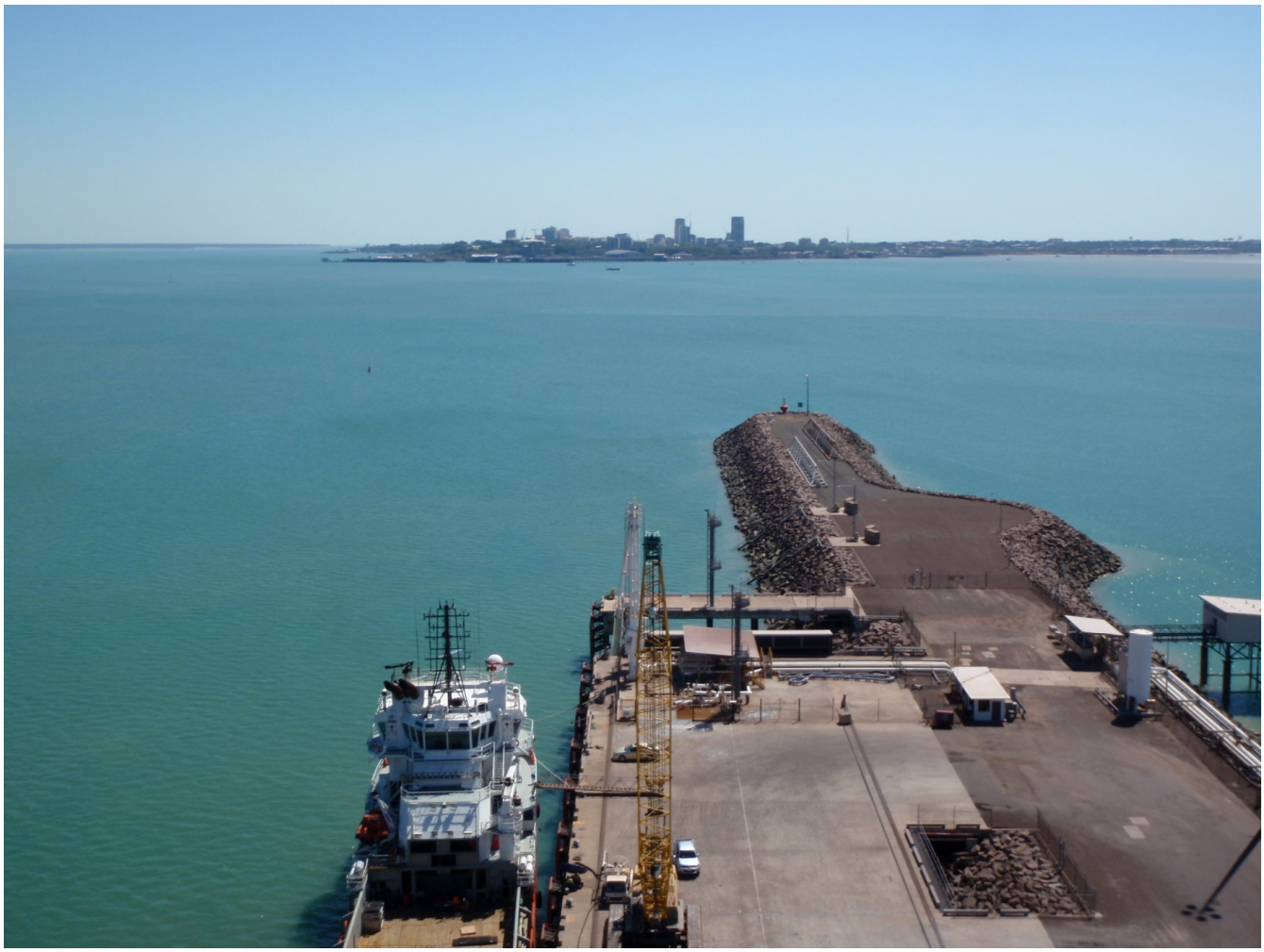
DARWIN PORT
LANDBRIDGE

CERTIFIED
ISO 14001:2015

ENVIRONMENTAL MANAGEMENT PLAN

Version 2.2 May 2020



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VERSION HISTORY

Document Revision Record

The EMP is a live document that is reviewed and updated regularly to reflect any significant changes in DP's environmental risks, impacts, management strategies or legislative requirements. This following table tracks the review and revision status of the document.

No	**Date**	**Description**	**Name**
1.0	April 2016	Draft Document	DP Environmental Manager David McMaster
1.1	May 2016	Final Draft Document	GM Corporate Services Melissa Reiter
1.2	May 2016	Final Draft Document	Port Management Group
2.0	May 2016	Updated Draft Document for DP Review ENAUDARW09137_11_v1.docx	Coffey Environments Pty Ltd
2.1	April 2018	Logo Update, Legislation Correction.	David McMaster, Environmental Manager
2.2	May 2020	Review	David McMaster, Environmental Manager

1. INTRODUCTION

1.1 Our Organisation

Darwin Port Operations Pty Ltd (DP) is part of the Landbridge Group and was appointed Port Operator in accordance with the Northern Territory *Ports Management Act* on 1 July 2015.

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1.2 Scope and Intent of the EMP

DP recognises the environmental, social and economic importance of operating in an environmentally sustainable and responsible manner and ensuring a high level of environmental performance and is committed to achieving this through continual improvement of its environmental management system (EMS). This EMP forms a part of DP's Environmental Management System (EMS) and should be read in conjunction with the DP "Port Safety Plan".

The EMP is also a requirement under the Port Operating Deed, and as such a copy of the EMP and EMP certification must be provided to the Northern Territory Government six months after commencement of Port lease and on or prior to 30 June 2020; and at least every five years after 30 June 2020.

This EMP sets out the high-level framework, objectives and targets for sound and responsible environmental management within DP areas of responsibility as defined under the *Ports Management Act*.

The key areas of responsibility are:

- East Arm Wharf.
- Fort Hill Wharf.
- Port of Darwin commercial shipping channels.

The EMP sets the framework for environmental management. This EMP is prepared for:

- DP employees and contractors engaged.
- Port Users including tenants, stevedores and their contractors. This is in addition to the Port Users' Environmental Management Plans and procedures.

The intent of the EMP is that it is a dynamic document that is subject to regular review and continual improvement. The EMP is to be used on an ongoing basis to guide and inform environmental planning and management. The EMP will be reviewed and updated to reflect any significant changes in DPs environmental risks, impacts, management strategies or legislative requirements. This EMP also provides an overview of the existing environment of Darwin Port and describes the roles and responsibilities of DP, Port Users and other organisations.

1.3 DP EMP Nominated Representative

The Chief Executive Officer of DP and the Port Management Group are responsible for the effective implementation of this EMP.

The administration of the EMP document is the responsibility of the Environmental Manager under the management of the Senior Manager, Work, Health Safety, Environment & Security, to ensure the document is regularly reviewed and updated.

1.4 Structure of this Document

This EMP has the following sections:

- Chapter 1: introduces the EMP.
- Chapter 2: describes the environmental management system, legislative and regulatory environment and roles and responsibilities.
- Chapter 3: includes information on the existing environment, including different Darwin Port precincts, services and facilities.
- Chapter 4: describes how issues are identified and risk ranked and the process of setting objectives and targets that will address these issues.
- Chapter 5: describes how the key environmental aspects relating to Darwin Port are to be managed, with reference to the objectives and targets and the management strategies.
- Chapter 6: describes emergency preparedness, response and recovery, incident management and corrective action process.
- Chapter 7: describes the monitoring, auditing and record keeping processes that are designed to check for compliance with the EMS.
- Chapter 8: describes the administration of environmental records and reports for the Darwin Port.
- Chapter 9: glossary and abbreviations.
- Chapter 10: references and bibliography.

2. ENVIRONMENTAL MANAGEMENT FRAMEWORK

2.1 Overview of the Environmental Management System

An Environmental Management System (EMS) is a mechanism to systematically manage an organisation's environmental issues.

DP's EMS achieved certification to the requirements of ISO14001:2015 (International Standard for Environmental Management Systems) on 11 December 2017.

There are 13 EMS procedures (EMSPs) that explain the operation of the EMS and are summarised as follows:

1. **Issues.** This procedure details the method by which DP identifies its environmental issues and the actual or potential impacts associated with those issues.
2. **Legal and Other Requirements.** This procedure enables relevant DP employees to interpret legislative and other statutory requirements and determine other requirements (e.g. operational conditions) applicable to the business.
3. **Objectives and Targets.** This procedure assists the Port Management Group set environmental objectives and targets, based on the impacts identified and the risk ranking assigned in the Aspects and Impacts Register to achieve the goals outlined in the Environmental Policy.
4. **Training, Awareness and Competence.** This procedure provides guidelines for environmental awareness training of relevant DP employees to ensure DP personnel have the specific skills, knowledge and competency levels in their roles to achieve the goals of the environmental policy; and that appropriate training is provided where gaps in skills, knowledge and/or competency are identified.
5. **Communication and Reporting.** This procedure ensures that there is clear communication on environmental issues within DP; and a system for receiving, documenting and responding to relevant communication from external interested parties.
6. **Document Control.** This procedure describes the procedure for the control of all documentation relating to the EMS.
7. **Emergency Preparedness and Response.** This procedure provides DP with a framework to establish and maintain procedures to identify the potential for and to respond to accidents and emergencies, and for preventing and mitigating the environmental impacts that may be associated with them.
8. **Monitoring and Measurement.** The purpose of this procedure is to ensure that effective monitoring and measurement of DP activities that may have a significant impact on the environment are undertaken on a regular basis.
9. **Non-conformance, Corrective and Preventative Action.** This procedure provides a guideline for DP to ensure that major technical non-conformances are identified and included on the Issues Register; and system non-conformances are identified and addressed prior to the finalisation of the audit report.
10. **Records.** This procedure provides guidelines for the identification, maintenance and disposal of environmental records.
11. **Management System Audit.** This procedure describes the methods and responsibilities for the planning, preparation, performance, reporting and follow up of the EMS Audits.

12. **Management Review.** This procedure provides a guideline for the Management Review of DP's Environmental Management System.

13. **Non-Conformance.** This procedure provides a guideline for managing non-conformance, corrective and preventative actions.

An EMS consists of five main elements: policy; plan; do; check; and review. The relationship between the policy, procedures, EMPs, and other documents is summarised in Figure 2.1.

This EMP describes the key elements of the EMS in relation to DP's areas of responsibility. As described in Section 1.2, the EMP is a high level document, which describes the general issues, objectives and targets. Sitting below the EMP there will be issue specific management plans (e.g., a stormwater management plan), standard operating procedures (e.g., procedure for clean up following cattle loading), training procedures and manuals, monitoring procedures and auditing procedures.

The DP's environmental policy is provided in Figure 2.2. The environmental policy outlines the overall intention and direction of the DP in relation to its environmental performance and is endorsed by the Chief Executive Officer and the Port Management Group. The environmental policy requires that the DP develops and maintains an EMS, provides sufficient resources to achieve its environmental targets and seeks to prevent pollution from its activities. Compliance with the policy is required by DP employees, contractors and those otherwise engaged.

Figure 2.1 Environmental management system structure

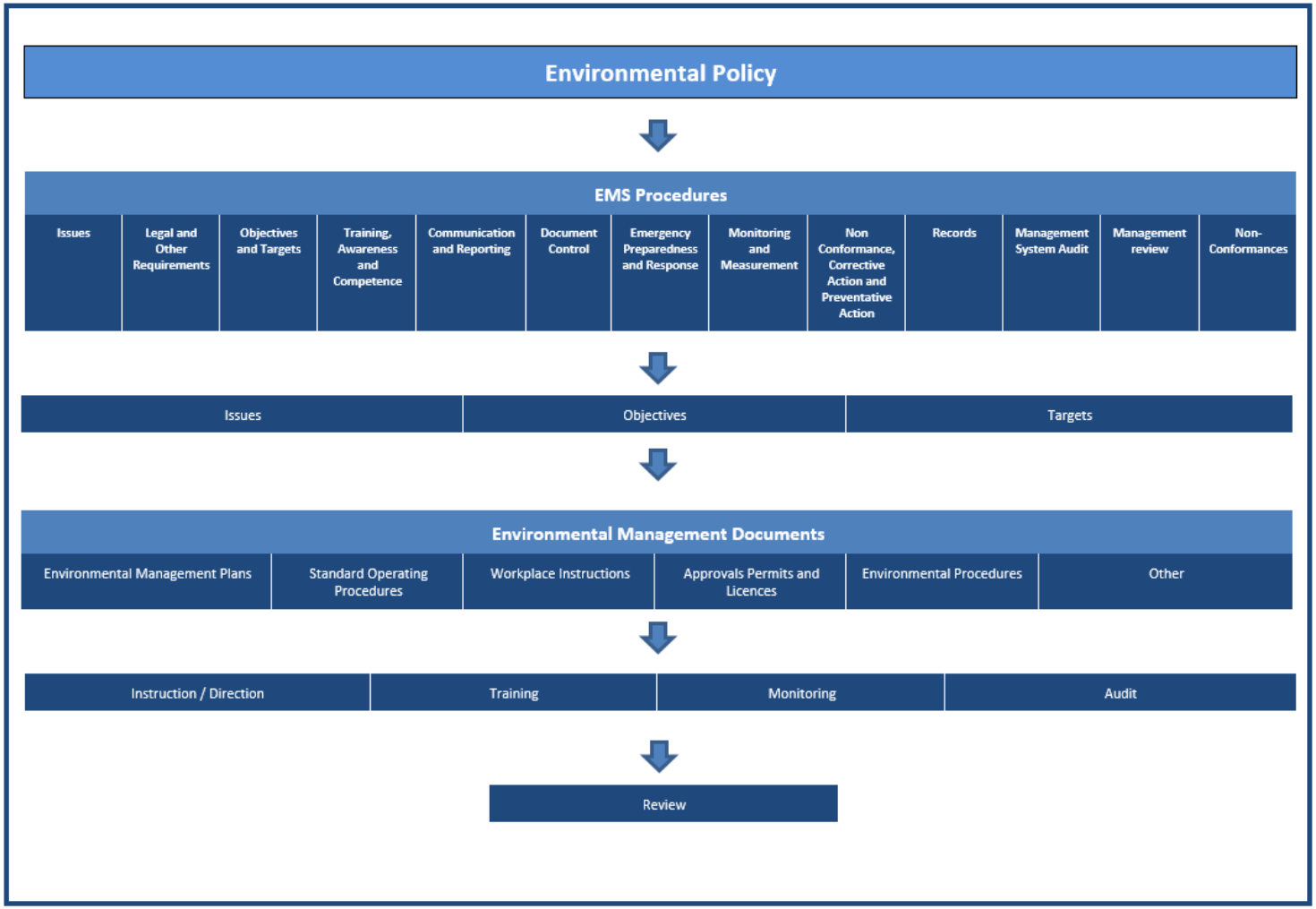

Figure 2.2 Environmental Policy

DARWIN PORT
LANDBRIDGE

ENVIRONMENTAL POLICY STATEMENT

Darwin Port (DP) manages aspects and operates within the Port of Darwin. DP recognises the environmental, social and economic importance of operating in an environmentally sustainable and responsible manner. We will ensure a high level of environmental performance is achieved and are committed to continual improvement.

To achieve environmental performance consistent with this Policy, DP will:

- Maintain an environmental management system, consistent with its activities, services and environmental impacts, that includes planning, setting objectives and targets, implementation and operation, monitoring performance, review and continuous improvement.
- Provide sufficient resources and training to achieve the targets defined in its environmental management system.
- Implement risk management techniques to assess impacts of DP's activities and to introduce appropriate mitigation measures.
- Comply with all applicable environmental laws, regulations, policies and standards which relate to its activities and services in a transparent manner.
- Seek to prevent pollution resulting from port activities and services.
- Communicate to employees and stakeholders this policy and DP's progress in meeting the objectives and targets defined in its environmental management system.
- Continually improve its environmental management and environmental performance.

The Chief Executive Officer and the Port Management Group are responsible for the effective implementation of this policy and all employees, tenants, licensees, service providers, other persons and those otherwise engaged at the workplace are expected to reasonably comply with requirements of this Policy.

Publicly available from: www.darwinport.com.au

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WHSES Manager

August 2019

Work Safe. Live Safe.

2.2 Legislative and Regulatory Framework

DP and all Port users are required to comply with Commonwealth and Northern Territory legislation. The primary legislation governing the activities at Port of Darwin is the *Ports Management Act* and the *Ports Management Regulations*.

From an environmental perspective, activities undertaken within the Port of Darwin are governed by a range of Commonwealth and Northern Territory legislation, policies and guidelines, the following are relevant to DP's operations:

- **Commonwealth legislation:**
  - *Aboriginal and Torres Strait Islander Heritage Protection Act 1984*
  - *Biosecurity Act 2015*
  - *Biosecurity Regulations 2016*
  - *Environment Protection and Biodiversity Conservation Act 1999*
  - *Environment Protection and Biodiversity Conservation Regulations 2000*
  - *Hazardous Waste (Regulation of Exports and Imports) Act 1989*
  - *National Greenhouse and Energy Reporting Act 2007*
  - *Ozone Protection and Synthetic Greenhouse Gas Management Act 1989*
  - *Ozone Protection and Synthetic Greenhouse Gas Management Regulations 1995*
- **Northern Territory legislation:**
  - *Dangerous Goods Act 1998*
  - *Dangerous Goods Regulations 1985*
  - *Environment Protection Act 2019*
  - *Environment Protection Regulations 2020*
  - *Environmental Offences and Penalties Act 1996*
  - *Environmental Offences and Penalties Regulations 2011*
  - *Fisheries Act 1988*
  - *Fisheries Regulations 1992*
  - *Heritage Act 2011*
  - *Heritage Regulations 2012*
  - *Litter Act 1972*
  - *Marine Pollution Act 1999*
  - *Marine Pollution Regulations 2003*
  - *Northern Territory Aboriginal Sacred Sites Act 1989*
  - *Northern Territory Aboriginal Sacred Sites Regulations 2004*
  - *Planning Act 1999*
  - *Planning Regulations 2000*
  - *Ports Management Act 2015*
  - *Ports Management Regulations 2015*
  - *Soil Conservation and Land Utilisation Act 1969*.
  - *Territory Parks and Wildlife Conservation Act 1976.*
  - *Territory Parks and Wildlife Conservation Regulations 2001*
  - *Territory Parks and Wildlife Conservation By Laws 1984*
  - *Waste Management and Pollution Control Act 1998.*
  - *Waste Management and Pollution Control (Administration) Regulations 1998*.
  - *Water Act 1992*.
  - *Weeds Management Act 2001.*
  - *Weeds Management Regulations 2006*.
  - *Work Health and Safety (National Uniform Legislation) Act 2011*
  - *Work Health and Safety (National Uniform Legislation) Regulations 2011.*

For further detail on legislative requirements refer to the DP EMS Legal Register.

The *Environment Protection Act 2019* and *Environment Protection Regulations 2020* came into force on 28th June 2020 and supersedes some of the existing legislation and make significant changes to environmental regulation.

2.3 Environmental Guidelines

A number of plans, strategies, standards and guidelines have been produced by Commonwealth, State and the Northern Territory Governments, which are to be used as a reference to guide operational activities. DP and Port Users are to consider these documents for determining good environmental practice. Some of these documents have legal compliance implications and include:

General

- ISO 14001:2015 Requirements for an Environmental Management System.
- AS/NZS ISO 31000-2018 Risk management - Principles and guidelines
- International Convention or the Prevention of Pollution from Ships (MARPOL).

Water

- A Stormwater Strategy for the Darwin Harbour Region, Northern Territory Environmental Protection Authority, May 2014.
- Anti-fouling and in-water cleaning guidelines April 2015 (Commonwealth Department of Agriculture / Department of Environment).
- Australian and New Zealand Guidelines for Fresh and Marine Water Quality - Water Quality Management Framework 2018
- Darwin Harbour Strategy (DHAC, 2010).
- Declaration of Beneficial Uses and Objectives, Darwin Harbour Region (Water Act).
- National Water Quality Management Strategy.
- Policy on the Protection of Darwin Harbour and its Coastline (TOPROC, 1999).
- Water Quality Objectives for the Darwin Harbour Region - Background Document (DNRETAS, 2010).

Air

- National Environment Protection (Ambient Air Quality) Measure 1999.
- National Environment Protection Measure for Ambient Air Quality – Monitoring Plan for the Northern Territory (LPE, 2001).

Land

- National Environment Protection (Assessment of Site Contamination) Measure.

Waste

- Environmental Protection (National Pollution Inventory) Objective (NT).

Pests

- Guidelines for Preventing Mosquito Breeding Associated with Construction Practice Near Tidal Areas in the NT (DHF, 2005).

Noise

- Noise guidelines for development sites In the Northern Territory January 2014.
- NT Noise Management Framework Guidelines.

Energy and Greenhouse

- National Environment Protection (National Pollutant Inventory) Measure 1998.
- National Greenhouse and Energy Reporting (Measurement) Determination 2008.

Oil Spill and Emergency

- NT Marine Pollution Contingency Plan (which supports the National Plan to Combat Pollution of the sea by Oil and other Noxious and Hazardous Substances).
- Northern Territory Oil Spill Contingency Plan.

Dredging

- Guidelines for the Environmental Assessment of Marine Dredging in the Northern Territory
- National Assessment Guidelines for Dredging 2009.

2.3 Relevant Documents to this EMP

Other plans relevant to this EMP are listed in Table 2.1, along with the party responsible for ensuring compliance with the plan.

Table 2.1 Relevant Documents to this EMP

Plan	Context	Responsible Party
Darwin Port Oil Spill Contingency Plan	Oil spills	DP
Northern Territory Oil Spill Contingency Plan	Large oil spills	Northern Territory Government – Department of Infrastructure, Planning and Logistics / NTEPA
Emergency and Crisis Management Plan	Port emergency	DP
National Plan for Maritime Environmental Emergencies	National emergencies	AMSA
Northern Territory Emergency Plan	Northern Territory Emergency Structure	Northern Territory Government – Northern Territory Emergency Services
NT Planning Scheme	Planning	Northern Territory Government – Department of Lands, Planning and the Environment. Development Consent Authority
Port Environment Protection Plan	East Arm Wharf EPBC Act Approval – Harbour Controls	DP
Dredging and Dredge Spoil Placement Management Plan	East Arm Wharf EPBC Act Approval / Darwin Port Projects – Dredging	DP
Migratory Bird Management Plan	East Arm Wharf EPBC Act Approval – Pond D protection, Migratory birds	DP

Table 2.1 Relevant Documents to this EMP

Plan	Context	Responsible Party
Biodiversity Impact Mitigation and Offsets Strategy	East Arm Wharf EPBC Act Approval – biodiversity offset strategy	DP
Coastal Offsets Plan	East Arm Wharf EPBC Act Approval – coastal offsets	Northern Territory Government – Department of Lands, Planning and the Environment
Environmental Management Plan – Refrigerated Container Park	Development Permit requirement.	DP
Port Safety Plan	In accordance with Ports Management Act.	DP

2.3 Roles and Responsibilities

2.3.1 Darwin Port Operations Pty Ltd

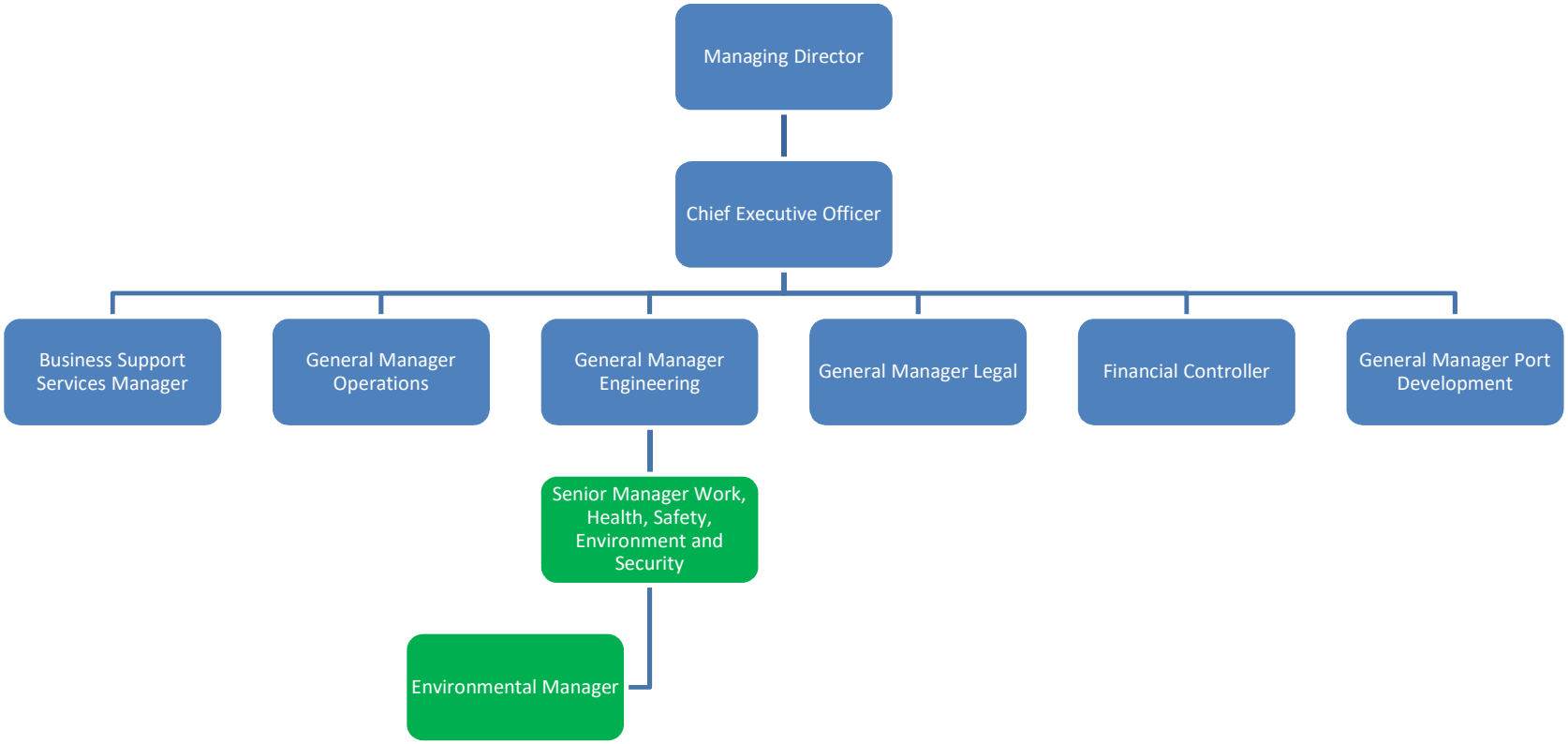
DP is ultimately responsible for the control and management of its facilities. The *Ports Management Act* defines the general roles, responsibilities and powers of DP and places of additional responsibility in relation to the declared Port of Darwin. The EMS describes roles and responsibilities in relation to the environmental management system.

DP's Chief Executive Officer is ultimately responsible for DP's environmental performance. The organisational structure of DP is shown in Figure 2.3.

The Work, Health, Safety Environment and Security team's role includes overseeing and monitoring environmental performance and provides a number of functions including:

- Overseeing all aspects of the Environmental Management System
- Providing environmental technical advice and information.
- Facilitating environmental risk assessments.
- Contributing to, assessing and commenting on environmental aspects of proposed developments.
- Facilitating regular environmental inspections and audits.
- Maintaining the Incident Register.

Figure 2.3 Darwin Port organisational structure



- Ensuring all of DP's environmental issues and impacts are identified, documented and reviewed regularly.
- Proactively work towards environmental improvements.
- Advising the CEO that the necessary systems are in place to achieve environmental compliance.
- Conducting and reporting the findings of DPs monitoring programmes.
- Ensuring the management review of DP's EMS is undertaken.

2.3.2 Port Users

Port Users who propose to develop a new site at DP's facilities which is of a size or nature that may have an impact on the environment from construction or operational activities are to prepare an Environmental Management Plan (or equivalent documentation) to address the identified risks.

Port Users including lessees (see Table 2.2), licensees, stevedores and others that conduct activities within areas under DP's responsibility are to comply with:

- Conditions in their lease, licence and other approvals.
- The Port Users environmental management plans and procedures.
- DP's Environmental Management Plan and procedures.
- Commonwealth and Northern Territory legislative requirements.

Table 2.2 Current lessees / occupiers

Lessee / Occupier	Description of area
LINX Stevedores	Stevedore and Leased/Licenced container storage areas.
QUBE Stevedores	Sub Lease of container storage areafrom One Rail Australia.
ASCO - Baker Hughes (sublease from Asco)	Marine Supply Base
OM Manganese	Manganese Ore Stockpile at East Arm Wharf Precinct.
Australian Ilmenite Resources	Minerals Shed - Ilmenite
TOLL Remote Logistics	Berth at end of East Arm Wharf for Australian Border Force vessels. Licence for use of are for demountable offices
VOPAK	Fuel and acid pipeline and terminal
One Rail Australia	Railway line
Monson Shipping	Ship Agent
Bhagwan Marine	Use of Pontoon at Fort Hill Wharf
Coastal Tug & Barge and Svitzer	Berths and Storage Containers at Fort Hill Wharf
Hall Contracting	Storage of Equipment at East Arm Wharf

2.3.3 Health, Safety, Environment and Security Operations Group

This internal group is tasked with ensuring DP's commitment to providing and maintaining a safe, healthy, secure and environmentally responsible worksite.

The group meets weekly and comprises of representatives from the DP's senior management, together with staff experienced in the fields of environmental management, work place health and safety and security.

This meeting is to ensure issues and incidents are discussed and resolved in a timely manner and that operations are planned and considered from a safety, security and environmental perspective.

2.3.4 Port User Group

The Port User Group is a forum for communication and discussion between DP and all users of the Port and its facilities. The Port User Group can be used to discuss a variety of topics including operations, safety and environment.

2.3.5 Commonwealth Government Agencies

Australian Maritime Safety Authority (AMSA) (Commonwealth)

The *Australian Maritime Safety Authority Act 1990* (Commonwealth) sets out the functions of the AMSA. Responsibilities include the protection of the marine environment from ship sourced pollution within their jurisdiction. The AMSA also has responsibilities under a variety of legislation relating to protection of the marine environment including the *Protection of the Sea (Prevention of Pollution from Ships) Act 1983* (Commonwealth).

AMSA administers the National Plan to Combat Pollution of the Sea by Oil and Other Noxious and Hazardous Substances and is responsible for coordinating, investigating and cleaning up oil spills of national significance.

Department of Agriculture - Biosecurity (Commonwealth)

Department of Agriculture - Biosecurity is the federal government agency providing biosecurity services for the arrival of international passengers, cargo, mail, animals and plants into Australia.

Biosecurity is responsible for the management of ballast water issues, including monitoring of compliance of shipping with the Australian Ballast Water Management Requirements (AQIS) 2001 at each first port of call in Australia. These requirements are designed to reduce the risk of introduced harmful aquatic organisms into Australia's marine environment through ship's ballast water.

Biosecurity also inspects and certifies a range of animal and plant products exported from Australia.

Australian Border Force (Commonwealth)

The Australian Border Force manages the security and integrity of Australia's borders. They undertake a number of activities within the Darwin Port including security checks of International vessels.

2.3.6 Northern Territory Government Agencies

NT Environment Protection Authority (NT EPA)

The NT EPA is the main environmental regulator with regard to approvals, pollution incidents and waste management. The key legislation they administer is the *Waste Management and Pollution Control Act*, *Water Act*, *Environmental Assessment Act* and the *Marine Pollution Act*. This includes Environmental Impact Assessment's, Public Environmental Reports, Incident Notification, Pollution Incident enforcement, Waste Discharge Licencing and Environmental Protection Licencing. Significant change is planned with Environment Protection

Department of Infrastructure, Planning and Logistics

The planning function of this department is responsible for the *Planning Act* which includes development consent approval for projects which may have environmental conditions. Port facilities are also subject to planning schemes and other planning controls.

Department of Tourism, Sport and Culture

The heritage section of the department is responsible for protecting historically significant areas under the Heritage Act, which includes shipwrecks. The Northern Territory Heritage Register can be used to identify heritage significant sites.

Aboriginal Area's Protection Authority

This Authority administers the *Northern Territory Aboriginal Sacred Sites Act* to protect such sites from damage and interference. Assessments will be conducted on land proposed to be developed to identify any significant sites, and where permitted a certificate issued with any necessary conditions.

Department of Primary Industry and Resources

The aquatic biosecurity section is responsible for the monitoring and response to marine pest incursions. Specific monitoring activities (settlement plates and low tide inspections) occur at East Arm Wharf and Fort Hill Wharf. The department also has other functions to protect the biosecurity of the Northern Territory from land based pests and diseases.

This department is also responsible for issuing permits for activities that may impact on fish and other marine life. These permits may be required for dredging projects.

3. DESCRIPTION OF THE PORT OF DARWIN

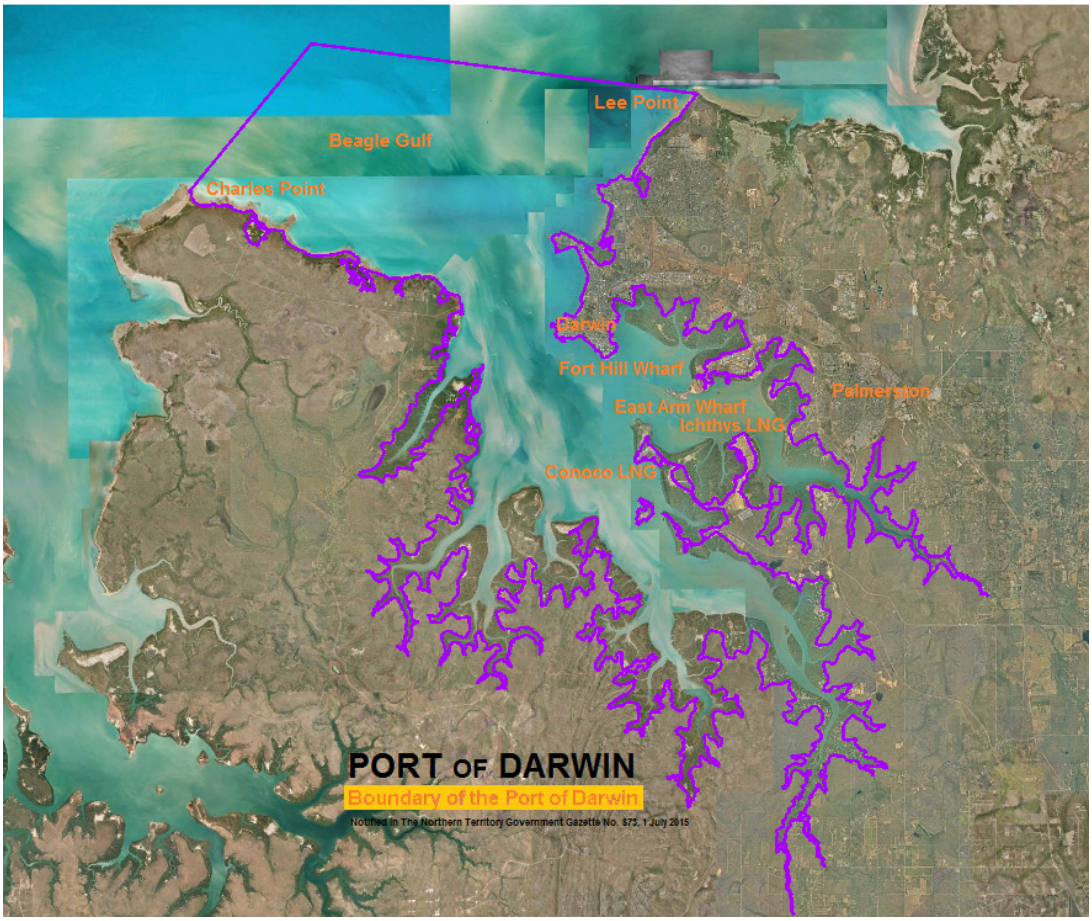
3.1 Overview

The Port of Darwin is a deep sea port located on the southern shore of the Beagle Gulf in the Timor Sea, and encompasses an area of approximately 1,000 km². The Port of Darwin's strategic geographical location is often referred to as 'Australia's Northern Gateway to Asia' (Figure 3.1) and the port's proximity to the oil and gas fields in the Timor and Arafura seas is fundamental to the nation's planned growth.

Figure 3.1 Port of Darwin – Australia's Northern Gateway to Asia

The Port of Darwin boundaries declared by the Minister for Transport under section 7 of the *Ports Management Act*. This is declared in the Northern Territory Government Gazette No. S73, 30 July 2015. The northern boundary is defined by a line from Charles Point to Lee Point via a point at 12° 18' 11" S, 130° 41' 3.5" E (WGS 84). It includes the land and water components within these boundaries, as indicated on Figure 3.2.

Figure 3.2 Port of Darwin Boundaries



The Port of Darwin has many industrial, commercial, recreational and environmental uses. Infrastructure in and around the Port of Darwin is owned and operated by various government and private entities as summarised in Table 3.1. The Port of Darwin contains the following vessel and shipping infrastructure (Figure 3.3):

Table 3.1 Port of Darwin infrastructure

DP facilities	
East Arm Wharf (Figure 3.4)	General cargo, containers, bulk liquids, bulk minerals, cement clinker, livestock, new vehicles, oil and gas rig supply.
Fort Hill Wharf (Figure 3.5)	Cruise ships, navy vessels, tug boat, pilot boat.
Harbour anchorages	Large vessel anchoring.
Shipping channels, navigational aids	Natural and dredged channels for large vessels.
NT Government and council facilities	
Frances Bay Mooring Basin	Fishing and other commercial vessels mooring.
Fisherman's Wharf	Fishing and other commercial vessels, refuelling.

Table 3.1 Port of Darwin infrastructure

Hornibrooks Wharf	Vessel repair.
Stokes Hill Wharf	Public, eateries, harbour cruises.
Nightcliff Jetty	Public recreation.
Mandorah Jetty	Ferry services, public recreation.
Boat ramps for small recreational vessels.	Recreational vessels.
Defence Facilities (Commonwealth Government)	
Coonawarra Navy Base	Defence
Private facilities	
Gas Plant - Bladin Point (INPEX)	Liquified natural gas, liquified petroleum gas and condensate processing.
LNG Plant – Wickham Point (Santos)	Liquified natural gas processing.
LPG Unloading - Channel Island (Kleenheat)	Liquified petroleum gas unloading.
Cullen Bay Marina	Marina - pleasure craft / commercial.
Tipperary Waters Marina	Marina - pleasure craft.
Bay View Marina	Marina - pleasure craft.
Hudson Creek	Barge ramps and berth.
Pontoon (Fort Hill Wharf)	Mooring, crew transfers.
Frances Bay Container Facility	Barge and containers.
Australian Border Force Pontoons	ABF patrol vessels

Figure 3.3 Port of Darwin Infrastructure

Figure 3.4 East Arm Wharf Precinct

The East Arm Wharf precinct covers an area of approximately 50 ha and includes the wharf, administration area, cargo storage, workshop, ponds and stockpiles. The East Arm Wharf is a 24 hours a day facility incorporating 754 m of continuous berth face; 600 m of land-backed berth and 154 m of bulk liquids berth. A dry bulk materials handling facility features a ship loader designed to load panamax size vessels. A multi-user berth caters for vessels handling general cargo, live cattle exports, liquid and dry bulk imports, containerised, breakbulk,specialised heavy lift cargoes and offshore rig tender service vessels.

Figure 3.5 Fort Hill Wharf Precinct

Fort Hill Wharf is DP's cruise ship and defence vessel facility, it also provides berthage for tugs and pilot boats. A purpose built cruise ship terminal provides for changeovers for smaller cruise vessels and transiting lounge areas for larger international cruise ships.

3.2 Land Tenure and Zoning

The East Arm Wharf and surrounding infrastructure is designated the 'East Arm Port Development Zone' and is Zoned DV. Zone DV allows for development of major strategic industries. Fort Hill Wharf is zoned as CB (Central Business) along with the majority of Darwin City central business district. Developments and activities can only proceed in accordance with these planning controls.

Land associated with East Arm Wharf and Fort Hill Wharf consists of parcels of freehold title which is leased from the Northern Territory Government. Areas are then either used exclusively by DP, subleased to other entities or are "Common User" for various entities to use from time to time. The remaining Port of Darwin harbour area consists of land and sea that is either privately owned freehold, leased from the Northern Territory Government, owned and managed by the Northern Territory Government, Unoccupied Crown land, Commonwealth land or other land ownership and occupancy arrangements.

3.3 Existing Environment

3.3.1 Climate

The Darwin region has a monsoonal climate, with a wet season lasting from October to April and the remainder of the year referred to as the dry season. During the transition from the dry season and throughout the wet season Darwin and surrounding areas experience many isolated, intense, electrical and high rainfall storms.

Darwin's mean annual rainfall of 1722.8 mm (Bureau of Meteorology data from Darwin Airport weather station (Station # 014015)) is highly seasonal varying from 1.1 mm in July to 429.1 mm in January.

Temperatures tend to remain within a relatively narrow range throughout the year. The annual mean minimum temperature is 23.2 °C and the annual mean maximum temperature is 32.0 °C. Lowest temperatures and least rainfall occur in June and July, whereas the highest temperatures occur in the months of October and November. The annual mean daily evaporation is 6.7 mm and monthly figures range from 5.7 mm a day to 7.9 mm a day.

Wind direction during the wet season is predominantly from the west and northwest and during the dry season the wind direction is predominantly from the east and southeast.

Tropical cyclones (low pressure systems) commonly form during the wet season. The timing of cyclones can link with high tides to develop storm surges along the coastline. Much of the coastline is within the storm surge zone for Darwin, including wharf facilities.

3.3.2 Cultural Heritage

Many areas within the Port of Darwin region have cultural and spiritual significance. Of particular indigenous significance are the undisturbed mangrove forests and mudflats surrounding the harbour and Catalina Island and the associated sandbar.

East Arm was previously used as a quarantine station and a World War II base in the 1940's. There are also a number of military aircraft and shipwrecks in Darwin Harbour that are of historical significance. Including the Kelat shipwreck and WWII Catalina flying boats which are located close to East Arm Wharf. A number of ship wrecks also resulted from Cyclone Tracy in 1974. Many of these wrecks receive heritage protection. Details of shipwrecks can be found on the Commonwealths Governments Australian National Shipwrecks Database. Other wrecks are listed on the Northern Territory Government websites.

Other nearby areas of cultural and natural significance include Charles Darwin National Park, Channel Island Coastal Reserve and Channel Island reefs.

Figure 3.6 Shipwrecks and significant sites (selected sites)

3.3.3 Soils and Landform

In the vicinity of the East Arm Wharf there are two landforms, the bustard and littoral land systems. These systems are generally aligned with the topography. The coastal zone, which is largely intertidal is made up of the littoral landform and is comprised of clay materials and quartz silts. The coastal zone may also contain acid sulphate soils. The hinterland and low rolling hills are part of the bustard landform, the lower slopes of which are comprised of laterites and the upper slopes lithosols.

East Arm Wharf is a solid fill wharf and is constructed over North Shell Island and surrounding waters on fill that has been sourced from the local land area and from dredging the sea bed. The piled section of East Arm Wharf sits over the sea. Fort Hill Wharf is a pile wharf that sits over the sea.

3.3.4 Surface Water

The Port of Darwin receives fresh water from three rivers – the Darwin, Blackmore and Elizabeth rivers. The bulk of flow occurs during the wet season with very little flows during the drier months. There are also inflows from smaller creeks and drains. Additionally, run-off potentially containing

suspended particulate matter, inorganic and organic nutrients and a wide range of other components enter the estuary from the surrounding developed and undeveloped sections of the catchment area.

3.3.5 Marine Waters

Water quality in the Port of Darwin is dependent on tides, seasons and location within the harbour. The marine waters around East Arm Wharf, in common with most other estuarine systems, are subject to significant seasonal fluctuations in salinity and temperature. Water quality objectives for various parameters are set in the "Water Quality Objectives for the Darwin Harbour Region - Background Document". Marine waters at all DP facilities tend to attract marine life due to structures creating suitable habitat.

Darwin Harbour has a high tidal range with a maximum tidal range of around 8 m. The large tidal movement produces strong currents. Two high tides and two low tides are experienced daily and the tidal range fluctuates over a lunar cycle. The following average tide data occurs in the Darwin Harbour area:

- Mean spring tide: 6.9 m (high) and 1.3 m (low).
- Mean neap tide: 5.0 m (high) and 3.2 m (low).

3.3.6 Groundwater

Groundwater immediately surrounding the Port of Darwin are heavily influenced by sea water ingress. Groundwater in these areas is not used for domestic or industrial purposes.

3.3.7 Flora and Fauna

The closest national park to the East Arm Wharf is Charles Darwin National Park, which is located on the coastline between the Central Business District of Darwin and East Arm Wharf.

Marine and Mangrove Environment

Much of the Port of Darwin is characterised by mangrove forest lining the tidal boundaries and growing in fine sediments, with 36 species of mangrove covering more than 26,000 ha. Seagrass beds are known to occur near Casuarina Beach, Talc Head and Gunn Point but there is little knowledge of their composition or extent. Seagrass beds have not been identified in the East Arm area.

It is estimated that hard surfaces cover less than 20% of the inter-tidal and sub-tidal area of the Port of Darwin . Soft surfaces consisting of muds and fine sand are estimated to cover approximately 80% of the sea floor of the harbour. Coral dominated rocky reefs are located in the lower inter-tidal to high sub-tidal areas within depths of 5 to 10 m.

Marine Fauna

Three species of dolphin (Australian Snubfin - Orcaella heinsohni, Australian Humpback - Sousa sahulensis and the Indo-Pacific Bottlenose - Tursiops aduncus) along with the Dugong (Dugong dugon) are commonly encountered within the Port of Darwin.

Six species of sea turtle occur within the Port of Darwin including the Flatback Turtle (Natator depressus) and Olive Ridley Turtle (Lepidochelys olivacea). The Saltwater Crocodile (Crocodylus porosus) also inhabits the harbour, though is actively removed from the harbour as part of a crocodile management program.

The Port of Darwin is home to approximately 415 species of fish, sharks and rays from 95 families.

The extent of marine invertebrate fauna in the Darwin Harbour region is not well known and is still being described. It is estimated that in excess of 3,000 marine invertebrate species exist within the harbour.

Fauna

The harbour supports endemic and migratory bird species, including raptors, egrets, herons, gulls and terns. Many of the shorebirds that visit the mudflats are migratory species protected by the Japan Australia Migratory Bird Agreement (JAMBA) and the China Australia Migratory Bird Agreement (CAMBA). The critically endangered Eastern Curlew is a significant visitor to East Arm Wharf. An area known as “Pond D” has been protected for migratory bird habitat. A list of migratory birds that have been observed at East Arm Wharf are listed below.

Latham's snipe
Pin-tailed snipe
Swinhoe's snipe
Black-tailed godwit
Bar-tailed godwit
Little curlew
Whimbrel
Eastern curlew
Common redshank
Marsh sandpiper
Common greenshank
Wood sandpiper
Terek sandpiper
Common sandpiper
Grey-tailed tattler
Wandering tattler
Ruddy turnstone
Asian dowitcher
Great knot
Red knot
Sanderling
Red-necked stint
Long-toed stint
Pectoral sandpiper
Sharp-tailed sandpiper
Curlew sandpiper
Broad-billed sandpiper
Ruff
Red-necked phalarope
Golden plover
Grey plover
Double-banded plover
Lesser sand plover
Greater sand plover
Oriental plover
Oriental pratincole

Terrestrial Environment

There are no established vegetation communities at East Arm Wharf or Fort Hill Wharf.

4. RISK MANAGEMENT APPROACH

4.1 Identification of Issues

An Aspects and Impacts Register has been prepared that includes issues and impacts related to the Port of Darwin. Environmental issues are those elements of an organisation's activities, products or services that can interact with the environment. For example, they could involve a discharge, an emission, waste, consumption or reuse of a material. They could also involve noise, odour, light or vibration. The Aspects and Impacts Register is a live register that is continually updated and revised.

An impact refers to any change to the built or physical environment, whether adverse or beneficial, wholly or partially resulting from an issue. Examples of impacts might include contamination of water or depletion of a natural resource.

The relationship between issues and impacts is one of cause and effect.

The Aspects and Impacts Register was compiled by undertaking an initial environmental risk assessment to identify issues and impacts of past and present activities. The assessment took into account issues and impact raised by:

- Consultant reports.
- Issue specific reviews/audits/reports.
- Internal and external audit reports.
- Other appropriate reports/documentation.
- Port Management Group.
- DP Environmental Manager.

The Aspects and Impacts Register is a live document and any previously unidentified or new issues will be captured in this register. The Aspects and Impacts Register will identify the individual aspect, environmental impact, raw risk assessment, management measures, residual risk assessment, planned management actions, the significance of the aspect and other information.

4.2 Assessment of Risk

Environmental risks can be grouped into the following two categories:

- Risk to the environment – this type of risk recognizes that activities undertaken by an organisation can cause some form of environmental change. Environmental risks can relate to flora and fauna, human health and wellbeing, human social and cultural welfare, earth, air and water resources, and energy and climate. The scope of each particular study needs to be defined.
- Risk to an organisation from environment-related issues – this type of risk includes the risk of not complying with existing (or future) legislation and criteria. Other risks include business losses an organisation may suffer as a result of poor management, such as loss of reputation, fines, costs of litigation, and from failure to secure and maintain a social licence to operate or appropriate approvals.

Each issue that is entered into the register is subject to a risk assessment using the risk matrix presented in Table 4.1. The risk ranking is a function of likelihood and consequence of the risk.

Table 4.1 Risk ranking matrix

Likelihood						
	Almost Certain	Medium	Medium	High	Extremely High	Extremely High
	Likely	Low	Medium	High	Extremely High	Extremely High
	Possible	Low	Medium	Medium	High	Extremely High
	Rare	Low	Low	Medium	High	High
		Insignificant	**Minor**	**Moderate**	**Major**	**Catastrophic**
		Consequence				

Likelihood reflects the chance of risk, or an unwarranted outcome, actually occurring. It can be based on historical data or on an estimate arising from an assessment by a group of persons familiar with the business process being analysed. Likelihood should be reflected in the following categories:

- Almost Certain
- Likely
- Possible
- Rare

Consequence reflects the degree of impact of an unwarranted event. Owing to the diversity of the nature of risks faced by the Port of Darwin , the following factors are considered in determining the level of consequence as described in Table 4.2:

- Political impact.
- Financial impact.
- Employee and public safety impact.
- Business continuity impact.
- Environmental impact.
- Publicity impact and should be based on the following categories.

Table 4.2 Consequence assessment table

Consequence Severity Level	**Consequence Factors**					
	Political	**Financial**	**Safety**	**Business Continuity**	**Environment**	**Media**
Catastrophic	Coronial inquiry/ royal commission	> $5 M	Death	Outage weeks	Major damage	Sustained coverage
Major	Ministerial inquiry	< $5M	Multiple major injuries	Outage days	Some damage	Headlines and follow up reports
Moderate	Parliamentary mention	< $500K	Major injury	Outage day	Little damage	Front page
Minor	No impact	< $50 K	Minor injuries	Outage hours	No damage	Mentioned
Insignificant	No impact	< $5 K	No injury	No outage	No damage	No impact

The risk assessments will result in DP having an understanding of the following:

- Previous environmental incidents and non-conformances.
- Existing policies and procedures dealing with procurement, transport, storage, use, disposal and contracting activities.
- Existing environmental management practices and procedures.
- Evaluation of performance compared with relevant internal performance criteria, external standards, regulations, codes of practice and guidelines.
- Identification of environmental issues of its activities, products or services so as to determine those that have or can have significant impacts and liabilities.
- Identification of legislative and regulatory requirements.
- Perceptions of management and employees.
- View of interested parties including local communities.
- Functions or activities of other DP systems that can enable or impede environmental performance.

5. ENVIRONMENTAL MANAGEMENT AND IMPLEMENTATION

5.1 Overview

Potential impacts on the environment from activities within DP's area of responsibility are to be identified, managed and monitored in accordance with the Environmental Management System that complies with "ISO14001:2015 Requirements for an Environmental Management System".

This management and implementation section is presented by environmental attribute or aspect. The following attributes or aspects have been identified as being associated with the environmental performance of DP controlled areas:

- Management Systems.
- Regulatory compliance.
- Planning.
- Communication.
- Sustainability (energy, greenhouse gases and resources).
- Air quality.
- Land and soils.
- Water and marine sediments.
- Flora and fauna.
- Marine pests.
- Hydrocarbons and hazardous materials.
- Waste management.
- Cargo handling.
- Bunkering and other liquid transfers.
- Dredging.
- Per- and poly-fluoroalkyl substances (PFAS) (Firefighting Foam).

Objectives are set in this section, for each of these attributes or aspects and management strategies described.

5.2 Management Systems

5.2.1 Objective

To ensure that port development and operations are undertaken in an environmentally sustainable and responsible manner and that the DP operates with a high level of environmental performance through continual improvement of its environmental management system.

5.2.2 Management Strategies

- Develop, maintain and continually improve the Environmental Management System to ISO14001:2015 standard.
- Assess developments and activities to allow a high level of environmental performance.
- Activities that present an environmental risk are to have documented management procedures (Workplace Instructions, Standard Operating Procedures and Management Plans) that are communicated and implemented.
- Use legislation, guidelines, standards, and other documents to set environmental standards.

5.3 Regulatory Compliance

5.3.1 Objective

To ensure that DP complies fully with all relevant environmental laws, regulations and enforceable guidelines in a transparent manner.

5.3.2 Management Strategies

- Develop and maintain a comprehensive legislative register and have this accessible on the DP intranet.
- Develop and maintain a licence, approval and permit register for all environmental requirements. The register will detail the: licensing body, approval type, licence number, issue and expiry date, reference numbers, fees, applicable department.
- Identify any regulatory non-compliances and ensure that these are reflected in the Aspects and Impacts Register and action is taken to achieve compliance.
- Zero non-compliances with legal and other regulatory requirements in each year.
- Regularly conduct environmental audits and inspections for regulatory compliance.
- Update this EMP and other aspects of the EMS in response to regular reviews of relevant legislation and guidelines.

5.4 Planning

5.4.1 Objective

To ensure environmentally sustainable development.

5.4.2 Management Strategies

- All proposed significant infrastructure and alterations are considered and assessed for environmental impact during construction, operation and decommissioning.
- Environmental impact assessments, risk assessments and management plans are to be developed as part of project planning (scope of documents are to be commensurate with potential impacts/risks) and in accordance with relevant regulatory requirements (e.g., EPBC Act, Environmental Assessment Act, Planning Act).
- Plan for continuous environmental improvements of existing infrastructure.
- This EMP is reviewed on an annual basis and updated as required to ensure it accurately reflects planning related objectives, targets and management strategies.
- Planning issues to be captured in Aspect and Impacts Register and addressed.
- Ensure DP procurement process requires the inclusion of environmentally responsible practices in the terms of reference and tender assessment criteria for all tenders including environmental management and site rehabilitation requirements.
- Consultation with relevant stakeholders (e.g., HSES Committee, Port User Group, regulators, Port Management Group) in relation to port infrastructure development and new port activities.

5.5 Communication

5.5.1 Objective

To ensure that all appropriate environmental information is available, accessible and communicated as appropriate to employees and stakeholders.

5.5.2 Management Strategies

- DP Environmental policy to be publicly available via the DP website.
- Communicate the environmental objectives and targets for the Port of Darwin to all stakeholders.
- Communicate progress on meeting objectives and targets for the Port of Darwin to all stakeholders.
- Use a variety of mediums to communicate information internally and externally, including the website, internal meetings, Port User meetings, port induction program, the intranet and stakeholder briefings.

5.6 Sustainability (Energy, Greenhouse Gases and Resources)

5.6.1 Objective

Promote sustainable development and operations that efficiently use energy and resources.

5.6.2 Management Strategies

- All new developments (building and industrial facilities) are to be assessed and incorporate energy efficiency design.
- Monitor use and ensure efficient use of energy (i.e., electricity and fuel) to minimise greenhouse gas emissions and resource consumption.
- Monitor use and ensure efficient use of resources (e.g., water, consumables (paper etc.)) to minimise resource consumption.
- Report in accordance with the *National Greenhouse and Energy Reporting Act 2007* when reporting thresholds are exceeded.

5.7 Air Quality

5.7.1 Objectives

To ensure that the development and operation of the Port of Darwin does not adversely impact on air quality.

5.7.2 Management Strategies

- To comply with relevant regulatory and policy guidelines including:
  - National Environment Protection (Ambient Air Quality) Measure (NEPM).
  - National Environment Protection (Air Toxics) Measure (NEPM).
  - Workplace Exposure Standards for Airborne Contaminants (Safework Australia).
  - Other State and Northern Territory guidelines that DP determines are relevant.
- To conduct air quality monitoring.

- To consider potential air quality issues for proposed developments.
- Address air quality issues in the aspects and impacts register and implement management actions (such as dust suppression).
- Enclosure of dust generating activities where operationally practical and efficient and implementation of appropriate dust suppression or capture technology where enclosure is not practical.
- Efficient operation of machinery, equipment and vehicles to minimise exhaust emissions.
- Clean up of residues and spills in a timely manner.
- Regular review of the efficiency of air quality management measures to ensure implementation of continuous improvement.

5.8 Land and Soils

5.8.1 Objectives

To ensure that port operations do not contaminate or pollute land and soils and to comply with the *Waste Management and Pollution Control Act*.

5.8.2 Management Strategies

- Comply with relevant guidelines including the National Environmental Protection Council (Assessment of Site Contamination) Measure and the *Waste Management and Pollution Control Act*.
- Consider potential land and soil contamination issues for proposed developments.
- Focus on the prevention and management of wastes and discharges to land to prevent land contamination.
- Monitor soil for contaminants.
- Address land and soil contamination quality issues in the aspects and impacts register and implement management actions (such as clean up spills).
- Prevent contaminated fill and soil from being used.
- Assess and manage sediments that may be disturbed that are potentially acid sulphate soils (PASS).
- Land that is contaminated shall be cleaned up or actively managed to mitigate environmental harm.
- Where land has been cleared and is no longer required, stabilisation of surface soils will be undertaken through methods such as rehabilitation.

5.9 Water and Marine Sediments

5.9.1 Objectives

To ensure that port operations minimise consumption of fresh water and prevent pollution of surrounding waters (marine and surface water) and marine sediments and comply with relevant guidelines.

5.9.2 Management Strategies

- Comply with relevant regulations and adopted guidelines including:

  - *Marine Pollution Act*.
  - *Waste Management and Pollution Control Act*.
  - *Water Act*.
  - Australian and New Zealand Guidelines for Fresh and Marine Water Quality.
  - Water Quality Objectives for the Darwin Harbour Region - Background Document, Declaration of Beneficial Uses and Objectives, Darwin Harbour Region.
  - Darwin Harbour Strategy (Darwin Harbour Advisory Committee) (2019).

- Avoid contamination on the wharf and clean up any spills should they occur, to prevent contamination entering the stormwater runoff.
- East Arm Wharf stormwater is managed in the following ways:
  - The bulk liquids area has a bunded area and a spills tank to contain leaks or spillage.
  - The container storage areas and the north western part of the wharf does not have a stormwater collection or treatment system and therefore requires activities to minimise emissions and have enhanced cleaning.
  - The remainder of the wharf around the bulk minerals loading area, storage shed and the new refrigerated container area has a stormwater drainage system that was modified to divert stormwater to nearby Pond F.
  - Pond F overflows to Pond L, which can then be pumped into Pond E.
  - The Marine Supply Base diverts stormwater through a Gross Pollutant Trap (GPT), which removes sediments, hydrocarbons, debris and litter prior to discharge to the harbour.
  - Stormwater in the stockpile area passes through the series of ponds prior to entering Pond E and finally migrates through the pond wall to the harbour.
- Fort Hill Wharf was not designed with a stormwater collection system. Most activities conducted there are low risk to the stormwater, however measures are in place to avoid spills and residual emissions during bunkering and waste management activities.
- Implementation of appropriate spill clean-up procedures and plans.
- In addition to clean up of spills, implement procedures to ensure general clean ups are undertaken and that catchment areas are kept free of contaminants.
- Where land has been cleared and is no longer required, stabilisation of surface soils will be undertaken through methods such as rehabilitation.
- Monitor water for pollutants.
- Consider potential water contamination issues for proposed developments.
- Practice appropriate disposal of wastes.
- Clean up spills and residual emissions.
- Reporting all environmental incidents.
- Regular review of potable water use efficiency and implementation of water saving initiatives where practical.
- Regular review of the efficiency of water management measures to ensure implementation of continuous improvement.

5.10 Flora and Fauna

5.10.1 Objectives

To ensure that port operations do not have an adverse impact on native flora and fauna and to prevent the introduction or spread of exotic, declared noxious, and pest species, and to comply with relevant guidelines.

5.10.2 Management Strategies

- Flora and fauna (native and pest species) will be managed in accordance with the requirements of the:
    - *Environmental Protection and Biodiversity Conservation Act*.
    - *Fisheries Act* and *Fisheries Regulations* - aquatic pests.
    - *Weeds Management Act 2001* and *Weeds Management Regulations*.
- Implementation of appropriate air quality, noise and vibration, land and soils and water management measures.
- Consider potential flora and fauna issues for proposed developments.
- Address flora and fauna issues in the aspects and impacts register and implement management actions.
- Conduct flora and fauna pest management (i.e., weed spraying program, feral animal trapping and general pest control).
- Maintain robust biosecurity and quarantine management in compliance with relevant legislation and approvals.
- Maintain adequate biosecurity infrastructure (i.e., wash bay, fumigation area and inspection area).
- Assist biosecurity agencies where required (i.e., marine pest monitoring).
- Comply with the *Port Environment Protection Plan* to minimise injury to marine fauna.
- Manage the East Arm Wharf Migratory Bird Protected area in accordance with the *Environmental Protection and Biodiversity Conservation Act* approval.

5.11 Hydrocarbons and Hazardous Materials

5.11.1 Objectives

To minimise the risk of a spill or emission of hydrocarbons (fuel, oils) or hazardous materials (dangerous goods, non-dangerous goods that are environmentally hazards substances), and to comply with relevant guidelines.

5.11.2 Management Strategies

- To comply with the requirements of the *Marine Pollution Act (NT)* and the *Waste Management and Pollution Control Act*.
- Spills of oil, other hydrocarbons, dangerous goods and other hazardous materials are to be reported (in accordance with Incident Reporting requirements) and cleaned up immediately.
- Risk of spills of oil, other hydrocarbons and hazardous materials are to minimised to the maximum extent practicably.

- Ensure adequate oil spill response equipment and preparedness for the oil spill potential that exists for port operations.
- Marine oil spills are to be reported and managed in accordance with the Northern Territory Oil Spill Contingency Plan, which supports the National Marine Oil Spill Contingency Plan developed by the Commonwealth agency Australian Maritime Safety Authority (AMSA).
- Hydrocarbons, dangerous goods and other hazardous materials are to be stored in appropriately designed facilities, which are bunded or have secondary containment.
- Maintain and integrity test fuel pipelines and storage vessels in accordance with the maintenance schedule.
- Address hydrocarbons, dangerous goods and hazardous materials in the aspects and impacts register and implement management actions.
- Maintain safe vessel navigation to minimise the risk of marine oil spill incident.

5.12 Waste Management

5.12.1 Objective

To minimise the amount of waste produced and to ensure that all types of waste generated are managed in an environmentally responsible manner, and to comply with relevant guidelines.

5.12.2 Management Strategies

- To comply with the requirements of the *Waste Management and Pollution Control Act, Marine Pollution Act (NT)* and the *Biosecurity Act*.
- Manage waste in accordance with the waste hierarchy of Avoidance, Reuse, Recycling, Recovery of Energy, Treatment, Containment and Disposal. Where feasible wastes such as paper, cardboard, plastics, glass, aluminium, lead acid batteries and scrap metal should be recycled. Recycling services can be located on www.recyclingnearyou.com.au and www.businessrecycling.com.au.
- Ensure biosecurity waste from international vessels is managed in accordance with biosecurity requirements.
- Manage general waste to prevent litter, odour and pest infestations (i.e., provide accessible, enclosed waste bins and regularly remove wastes).
- Listed wastes are only to be handled and transported offsite for disposal by licensed waste companies.
- No waste (solid or liquid) is to be discharged to land or water except in accordance with the relevant approval or licence.
- Implementation of responsible handling and storage procedures for wastes such as waste oil until collected by a licensed waste transporter for removal and recycling.
- Implementation of appropriate management of the sewage treatment plant and discharge of treated sewage.
- Monitoring and reporting.
- Regular review of the efficiency of waste management measures to ensure implementation of continuous improvement.

5.13 Cargo Handling

5.13.1 Objective

The handling (import/export) of cargo is to be conducted in a manner to prevent spills, emissions and discharges that may adversely impact the environment.

5.13.2 Management Strategies

- Handling of cargo to be conducted in accordance with this EMP, relevant individual Environment Management Plans, relevant operating procedures, legislative requirements, operating agreements, applicable guidelines and Darwin Port requirements.
- Loading and unloading infrastructure and equipment must be fit for purpose and properly maintained.
- Adequate monitoring and checks to be in place to detect spills, emissions and discharges.
- Appropriate control measures are implemented to minimise spills, emissions and discharges.
- Clean up throughout and at the conclusion of loading.
- Appropriate disposal of all residues and wastes.

5.14 Bunkering and other Liquid Transfers

5.14.1 Objective

The bunkering or otherwise refuelling of vessels is to be conducted to prevent fuel spills on the wharf and into the harbour.

5.14.2 Management Strategies

- Bunkering and refuelling of vessels is to be conducted in accordance with this EMP, relevant individual Environment Management Plans, relevant operating procedures, legislative requirements, operating agreements, applicable guidelines and Darwin Port requirements.
- Only diesel fuel is available for supply (there is no heavy fuel oil available), bunkering can be conducted by fixed pipeline from the fuel terminal at East Arm Wharf, or by tanker truck or by fuel barge.
- Bunkering of vessels is managed and controlled by service providers with the relevant skills and experience. DP owns and maintains the wharf bunker fuel lines and valves. The fuel terminal supplies fuel to the bunker fuel lines and the delivery of fuel to the vessel is managed by a service provider specialising in this area.
- Bunkering and other liquid transfers are to be conducted in accordance with the bunkering and other liquid transfers International Safety Guide for Oil Tankers & Terminals (ISGOTT), Bunkering and Non Cargo Liquid Transfers at East Arm Wharf and Fort Hill Wharf Port Notice.
- Adequate monitoring and checks to be in place to detect spills and leaks.

5.15 Dredging

5.15.1 Objective

Dredging as part of port operations is to be conducted in an environmentally responsible manner in accordance with relevant guidelines and permit conditions.

5.15.2 Management Strategies

- Environmental management for dredging commences with the design of the program which takes into account the footprint to be dredged, type and volume of material to be dredged (rock, sediments), method of dredging (cutter suction, excavator, etc.), contaminants (including naturally occurring), the environmental, cultural and heritage significance of the area, hydrodynamic and dredge sediment modelling and the dredge material disposal.
- Dredging projects are to be developed in accordance with the Guidelines for the Environmental Assessment of Marine Dredging in the Northern Territory and the National Assessment Guidelines for Dredging 2009.
- Dredging proposals may be subject to a number of environmental assessment and approval processes including EPBC Act (Commonwealth) Referral, Environmental Impact Assessment, Waste Discharge License, Aboriginal Area Protection Authority certificate, Fisheries Act Permit and Development Permit.
- Projects will then be implemented in accordance with approval conditions.

5.16 Per- and poly-fluoroalkyl substances (PFAS) (Firefighting Foam)

5.16.1 Objective

To minimise the risk of environmental contamination of Per- and poly-fluoroalkyl substances from the storage and use of firefighting foam containing fluorinated compounds.

5.16.2 Management Strategies

- Implement a process for the phasing out of foams containing fluorinated compounds and replacement with fluorine free foams.
- Firefighting foam of any type is not to be discharged to the environment during testing or training except with appropriate approvals.
- Firefighting foam concentrate is to be stored in a manner that any spills can be contained (e.g. bunded).
- Operate in accordance with *PFAS National Environmental Management Plan (PFAS NEMP)* where applicable.

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6. MANAGING RESIDUAL RISK

6.1 Emergency Preparedness, Response and Recovery

Some environmental incidents are significant enough to become an emergency and some emergency situations (that are not related to environmental incidents) have potential to result in environmental impacts. Personnel health and safety is the primary concern in all incidents. Emergencies (including those related to environmental aspects) at the port level are responded to in accordance with the DP Emergency and Crisis Management Plan (accessible at www.darwinport.com.au).

Environmental related emergencies may include oil spills, fuel spills, chemical spills and other large pollution events, but can also include fauna deaths and pest incursions (land, marine). Emergencies that are significant enough to be on the Territory level which trigger a Northern Territory Government response are managed in accordance with the *Northern Territory All Hazards Emergency Management Arrangements*.

Significant marine oil spills trigger a Northern Territory Government response in accordance with the Northern Territory Oil Spill Contingency Plan. DP assists in the response and clean up as required.

The nature of the situations and substances that will be encountered in certain emergency events (i.e., spill events) will require personnel to be aware of potential hazards and risks.

All relevant documents need to incorporate an environmental component where an emergency situation may result in an environmental impact.

The relevant plans/manuals will:

- Detail requirements for co-ordination of resources to ensure effective control and clean-up after accident or emergency situations.
- Establish a framework to be used for the co-ordination of DP personnel, Government departments and other appropriate organisations during and after an emergency situation.
- Direct personnel to emergency management plans for the management of site operations and the external environment from the effects of an emergency situation.
- Provide defined processes and accountabilities for DP's emergency response.
- Ensure the process incorporates periodic testing, review, revision and improvement of the specific response plans according to the training schedule.

6.2 Environmental Incident Reporting

An environmental incident includes any spill, emission, discharge, pest incursion or any other event that may have an adverse impact on the environment or cause a breach of environmental legislation. Incidents also include those that 'may threaten' to cause an adverse impact on the environment though are yet to have occurred.

Any person (DP staff and Port Users) who causes or becomes aware of an environmental incident that has occurred on or within DP facilities must report it immediately to Darwin Port. Environmental Incident Report Forms are available from the DP webpage. Port users should also have their own incident procedures.

All people within the Northern Territory are subject to the mandatory reporting requirements of Section 14 of the *Waste Management and Pollution Control Act*. Where this applies reporting must be made to the Northern Territory Environment Protection Authority in accordance with this

section and the time requirements specified. A 24 hr Pollution Hotline **1800 064 567** is available to make such reports to NT EPA. Further details on incident reporting requirements can be found at www.ntepa.nt.gov.au/waste-pollution/hotline.

DP must also report environmental incidents in accordance with the *Ports Management Act* and the Ports Management Regulations (Part 5) to the Regional Harbourmaster.

Biosecurity Incidents must be reported to the Department of Agriculture in accordance with the *Biosecurity Act* via the 'See. Secure. Report.' hotline on 1800 798 636. Further details on incident reporting requirements can be found at Department of Agriculture's website www.agriculture.gov.au/pests-diseases-weeds/report.

6.3 Incident Investigation

Environmental Incidents shall be investigated to determine the facts of what occurred and to confirm that appropriate action has initially been taken to stop (leak, spill) and clean up the incident. Further investigation is to ensure the root causes of the incident are determined and appropriate actions are implemented to prevent a reoccurrence.

All incidents will be reported and investigated in accordance with within the DP incident reporting procedures.

DP Managers are responsible for ensuring that environmental incidents are reported to the Health Safety Environment and Security team. DP Managers are also responsible for ensuring corrective actions are implemented.

6.4 Environmental Incident Register

DP will maintain an Environmental Incident Register to ensure that all environmental incidents are properly notified, investigated, documented, assessed and that corrective actions are implemented. The register can also be used to identify trends, to determine whether corrective actions have been successful and to determine what priorities need to be addressed.

6.5 Corrective Action for Non-Conformances

Environmental non-conformances can arise from incidents/accidents, monitoring, technical audits, and deviations from the policy and objectives and targets.

Corrective action to re-establish compliance should be taken as soon as possible. The steps to corrective action will usually involve:

- Review of the technical and system audit reports by the appropriate General Manager in consultation with the Environmental Manager.
- An investigation to identify and analyse the root cause of the technical non-conformance if it results in an emergency response.
- Development of objectives, targets and resource plans to correct or prevent the non-conformance.

The solution may involve remedial actions and:

- Changes to this EMP, standard operating procedures (SOPs), emergency response plan and other EMS documentation.
- Identification and implementation of specific training.

7. REVIEW AND REVISION

7.1 Darwin Port Environmental Monitoring

DP shall undertake an environmental sampling and analysis program to monitor the environmental performance of DP against its objectives and management strategies. Early detection of emerging issues will enable actions to be implemented and environmental impact to be avoided or minimised. Environmental aspects that may be monitored for physical, chemical or biological properties include:

- Sea water.
- Stormwater.
- Groundwater.
- Soil.
- Marine sediment.
- Noise.
- Air quality.
- Fauna and flora.
- Trade waste / sewage.
- Energy consumption / greenhouse emissions.

7.2 Port User Environmental Monitoring

Port users who conduct activities that may have an impact on the environment should conduct their own sampling and analysis program to monitor their risks.

7.3 Auditing

Auditing of this EMP will be undertaken annually.

Audits will be undertaken to ensure:

- Compliance with ISO 14001.
- Compliance with the EMP.
- New issues are covered within the EMP.

All actions identified during the auditing process must be addressed in a timely manner. These addressed actions must then be reviewed to ensure effective implementation before being 'closed out'. Additionally reports to the Northern Territory Government will be made based on audit findings in accordance with the Port Operating Deed.

DP must provide a report to the Northern Territory Government within 30 days after each anniversary of 30 June 2016 describing the Port Manager and Port Lessee's compliance with the Environmental Management Plan; and the extent (if any) to which Port Manager or Port Lessee has failed to comply with the Environmental Management Plan and how any non-compliances have been or are proposed to be addressed.

7.4 EMP Certification

As a requirement of the Port Operating Deed, this EMP requires certification on or prior to 30 June 2020; and at least every five years after 30 June 2020.

7.5 Recording

All records associated with environmental management with DP are to be maintained in a manner that ensures they are:

- In a suitably marked or identified locations so as to be readily retrievable.
- Correctly stored (i.e., electronically in the records management system).
- All electronic records are to be backed up in accordance with DP Information Technology (IT) policies.

8. DOCUMENT CONTROL AND AVAILABILITY

8.1 Document Control

This EMP will have document control information identifying its revision details. Where there is more than one revision of a document, the most current revision will be the controlled electronic copy. Documents will be reviewed as required or where otherwise stipulated.

All hard copy documents are considered to be uncontrolled and users of uncontrolled documents are accountable for ensuring that they are using the current revision.

All employees will have 'read only' access to relevant EMS documentation on the internet. The Environmental Manager will have full access to all relevant documentation and document registers for maintenance and updating purposes.

8.2 Publication and Availability

The Environmental Manager is responsible for ensuring that the latest version of this EMP documentation is made available to all relevant personnel. Document recipients are responsible for ensuring that the hard copy they have is the latest version.

Electronic versions of this EMP will be stored in the DP's electronic document management system where version control is actively managed.

The latest version of this EMP is also to be made public on the DP's internet site – www.darwinport.com.au.

9. ABBREVIATIONS AND GLOSSARY

Units and Symbols

%	Percent
^{o}C	Degrees celsius
ha	Hectare
km	Kilometre
km^2	Square kilometre
m	Metre
mm	Millimetre

Abbreviations

AAQ NEPM	National Environment Protection (ambient air quality) Measure
AMSA	Australian Marine Safety Authority
AQIS	Australian Quarantine and Inspection Service
CAMBA	China Australia Migratory Bird Agreement
Coffey	Coffey Environments Pty Ltd
Customs	Australian Customs and Border Protection Service
DHAC	Darwin Harbour Advisory Committee
DP	Darwin Port Operations
EAW	East Arm Wharf
EMP	Environmental Management Plan
EMS	Environmental Management System
EPBC Act	Environmental Protection and Biodiversity Conservation Act
JAMBA	Japan Australia Migratory Bird Agreement
MARPOL	Marine Pollution (the International Convention for the Prevention of Pollution from Ships)
NEPM	National Environment Protection Measure
NTES	Northern Territory Emergency Services
NTFRS	Northern Territory Fire and Rescue Service
OH&S	Occupational Health and Safety
SOP	Standard Operating Procedure
WW II	World War 2

Words

A

Aboriginal: Of or pertaining to members of the Indigenous people of Australia.

Audit: An official examination and verification of accounts and records.

B

Biosecurity: A system of measures maintained for preventing the introduction or spread of invasive plants, animals or disease.

Bund: Containment around an area or object to prevent the inflow or outflow of liquids.

C

Cargo: The goods carried on a ship.

Catchment: The entire land area from which water (e.g., rainfall) drains to a specific water course or waterbody.

Causeway: A raised road or path, as across low or wet ground.

Contaminate: To render impure by contact or mixture.

Contractor: Someone who performs work at a certain price or rate.

Cultural heritage: The cultural history of a region or of a people; the engagement of people with their customary practices (particularly through specific sites) in the past and in the present.

D

Disturbed ground: An area of ground that has been disturbed by construction or operations activities for the project.

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E

Emission: A discharge of a substance (e.g., dust) into the environment.

F

G

Groundwater: Water naturally stored beneath the surface of the earth, which saturates the pores and fractures of sand, gravel and rock formations.

H

Hardstand: An area of ground levelled, compacted and possibly sealed to enable it to support vehicles and heavy machinery.

Hazard: An agent or situation capable of potentially injuring or compromising the health and safety of a person or causing damage to plant or premises.

Hydrocarbon: Any of a class of compounds containing only hydrogen and carbon, such as methane, petroleum and oils.

I

Incident: An event on site that has the potential to cause an adverse effect on:

- The safety or health of a person.
- The environment.
- The plant or equipment.

Indigenous: Persons of Australian Aboriginal and Torres Strait Islander origin.

J

K

L

Legislation: A law or a body of laws enacted.

M

Monitoring: Systematic sampling and, if appropriate, sample analysis to record changes over time caused by impacts associated with operations.

N

O

P

Particulate matter (PM10): Material 10 microns or less in size and capable of being breathed deep into the lungs, the amount of particulate matter in the air is used as an indicator of health risk.

Q

Quarantine: Now known as 'Biosecurity' a system of measures maintained for preventing the introduction or spread of invasive plants, animals or disease.

R

Rehabilitation: The measures taken to stabilise disturbed land, such as recontouring, drainage and topsoil respreading.

Risk: Exposure to the chance of injury or loss.

Runoff: That portion of precipitation (rain, hail and snow) that flows from a specific area as water.

S

Stakeholder: Someone who has a pecuniary interest in an enterprise.

Stevedore: A firm or individual engaged in the loading or unloading of a vessel.

Stockpile: A pile used to store material (such as low-grade ore) for future use.

Stormwater: A sudden, excessive run-off of water following a storm.

Surface Water: All water flowing over, or contained on, a landscape (e.g., runoff, streams, lakes).

Sustainable: Able to be sustained.

T

Tenant: Someone who holds land for the owner for a period of time, as a lessee or occupant for rent.

Terrestrial: Of or relating to the land, as distinguished from the water.

U

V

W

X

Y

Z

10. REFERENCES AND BIBLIOGRAPHY

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ntepa Northern Territory Environment Protection Authority

*SECTION 14 INCIDENT REPORT (*Waste Management and Pollution Control Act*)*

Date and Time of Notification:	
Person / Company:	
Incident:	

(a) the incident causing or threatening to cause pollution	
(b) the place where the incident occurred	
(c) the date and time of the incident	
(d) how the pollution has occurred, is occurring or may occur	
(e) the attempts made to prevent, reduce, control, rectify or clean up the pollution or resultant environmental harm caused or threatening to be caused by the incident	
(f) the identity of the person notifying the NT EPA	