



## 7. Project Environmental Management

### 7.1 General

The project's environmental management is structured as an Environmental Management System (EMS) prepared in accordance with the PER guidelines and standards specified in:

- » AS/NZS ISO 14000 – Environment Management System, Guidelines on Principles;
- » AS/NZS ISO 14001 – Environmental management System, Specifications for Use; and
- » BS 7750 – Specifications for Environmental Management Systems.

### 7.2 Environmental Management System

An Environmental Management System guides the:

- » Development and implementation of environmental management procedures;
- » Monitoring of environmental impacts;
- » Review of quality systems; and
- » Review of procedures to ensure continual improvement.

The key elements of the EMS for the proposed facility include:

- » Commitment – DPC's environmental policy demonstrates their commitment to the implementation of this EMS;
- » Resourcing, Policies and Implementation – DPC will ensure adequate resources are available to enable implementation of this EMS and DPC policies;
- » Compliance, Monitoring and Corrective Action – Regular inspections and auditing will be undertaken to ensure compliance with environmental management measures. Any issues raised are addressed in the form of Corrective Actions Reports that have specific compliance dates. These allow continual improvement for the environmental management of the incinerator;
- » Risk Assessment – A risk assessment was conducted to allow the Environmental Management Plans to be tailored to cater to the level of risk associated with each possible environmental concern; and
- » Environmental Management Plans – The Construction and Operational Environmental Management Plans developed for the quarantine incinerator are tailored to ensure that all possible environmental concerns have been addressed and are diligently monitored and corrected as necessary. The management plans are flexible to allow continual improvements to the management system as required.

Implementation of the EMS elements is outlined in the sections below.

### 7.3 Commitment

Environmental objectives and policies have been set by DPC and apply to particular departmental operations.



The policies are directed at achieving best practice management and reducing adverse environmental impacts from operations. The following corporate management systems and policies are applicable to the operations of the quarantine waste treatment facility.

DPC demonstrates its commitment to the environment through its Environmental Policy (September 2003) that includes the following undertakings:

- » In conjunction with other accountable parties, give due regard to environmental concerns in all facets of Port planning, development and operation in accordance with all applicable environmental laws, policies and regulations;
- » Develop and maintain systems to identify and minimise the risk of environmental harm from Port development and operation;
- » Minimise pollution resulting from Port development and operation;
- » Develop and maintain a framework which sets environmental objectives and targets consistent with the Corporation's activities and services;
- » Maintain a high level of environmental management through the development and implementation of environmental monitoring, and measuring of programs associated with Port development and operation;
- » Communicate to staff, community and interested parties, the Corporation's progress in meeting the targets defined in our EMS; and
- » Through continual improvement of the Corporations EMS, provide a platform for environmental sustainability in all facets of our activities and services.

## **7.4 Resourcing, Policies and Implementation**

### **7.4.1 Procedures**

Procedures on managing the environmental risks associated with operating the quarantine incinerator are to be incorporated into the Environmental Management Plan (EMP). Procedures will be developed in greater detail during the detailed design phase of the project and will incorporate instructions to employees on minimising unnecessary potential environmental impacts.

### **7.4.2 Responsibilities**

The project will be managed by DPC. The designated DPC Environmental Representative will be responsible for ensuring that all activities associated with the project are undertaken in accordance with all relevant regulations and policies.

All personnel are responsible for compliance with DPC's Environmental Management System.

The responsibilities of personnel involved in the project are outlined in Table 15 below.



**Table 15 Environmental Management Responsibilities**

<b>Personnel</b>	<b>Responsibility</b>
Darwin Port Corporation	Overall responsibility for the project.
Environmental Representative	Overall responsibility for site-specific implementation of environmental policy, systems and management measures.
Environmental Representative	<p>Ensures EMS is implemented uniformly, revised and maintained.</p> <p>Assess the suitability and effectiveness of the EMS.</p> <p>Ensure that contractors fulfil their contractual obligations.</p> <p>Implements induction procedures and appropriate training.</p> <p>Ensures compliance with licence conditions and company policy via the establishment and maintenance of appropriate reporting systems and database.</p> <p>Participates with personnel to improve work practices on-site.</p> <p>Undertakes internal site environmental audits.</p> <p>Provides advice as required to other personnel.</p> <p>Liaises with stakeholders.</p> <p>Ensures implementation and regular review of environmental management measures.</p>
Other Managers	<p>Ensure Implementation and regular review of relevant environmental management measures.</p> <p>Liaise with Environmental Manager as required.</p>
Contractors	Fulfil contractual obligations including adherence to the Construction Environmental Management Plan.

### 7.4.3 Inductions and Training

DPC require anyone entering East Arm Wharf to undertake a general induction which includes:

- » General site information;
- » Speed limits and rules which must be adhered to whilst on the wharf;
- » Site specific environmental guidelines; and
- » Emergency procedures for events within the wharf.

Separate inductions will be conducted for the quarantine incinerator. The contractor responsible for commissioning of the facility will provide the initial training to personnel (DPC to specify the number of employees to be trained after the detailed design). DPC will designate personnel to be responsible for the ongoing training of new staff.

The quarantine incineration training is to include, but is not limited to:

- » General incinerator operation;
- » Operation and maintenance of the pollution control equipment;



- » Storage and handling of the quarantine waste and hazardous materials;
- » Storage and handling of the waste ash;
- » Daily/weekly/monthly reporting requirements;
- » Adhering to the EMPs; and
- » Responding to emergencies.

Records will be kept of people who have undertaken inductions and other forms of training.

Training will also be provided on an as-need basis.

Hard copies of the EMS and EMPs will be available in the facility's site office.

#### **7.4.4 Consultation**

Consultation was undertaken prior to the project's environmental clearance phase. Input and information from major stakeholders was collated and addressed during this phase.

Further consultation throughout the construction period is not anticipated to be required as it will occur within the confines of East Arm Wharf. DPC will provide information to interested parties if requested.

### **7.5 Compliance and Corrective Action**

#### **7.5.1 Supervision and Inspection**

During construction of the quarantine incinerator the Environmental Representative will be responsible for undertaking regular inspections of the site. A minimum of two site audits will be conducted during the construction phase of the quarantine incinerator to ensure the compliance of Contractors with the Construction Environmental Management Plan. For any non-conformance a Corrective Action Report (CAR) will be raised which will be recorded in the Non-conformance Register and corrective action undertaken within the timeframe specified on the CAR.

During operation of the facility the Environmental Representative will undertake weekly reviews of the daily inspection sheets completed by the incinerator operators.

The Environmental Representative will be responsible for undertaking regular inspections of the facility to ensure that it is compliant with the Operational Environmental Management Plan (OEMP). Non-compliance with any of the Management Sub-Plans listed in the OEMP will result in issue of a CAR, which will be recorded in the Non-Conformance Register. The corrective action must be undertaken within the timeframe specified on the CAR.

#### **7.5.2 Compliance Audits**

Audits will be conducted on a minimum of two occasions during the construction phase of the project.

The OEMP for the quarantine incinerator will be reviewed every 12 months during the operation of the incinerator. Any site investigations and audit reports should be incorporated to ensure that improvements in environmental management are reflected for the upcoming year.



### **7.5.3 Incidents**

It is a requirement of DPC to complete an environmental incident report within 24 hours of an event. Completed forms are to be signed and forwarded to the Harbourmaster and Environmental Representative for review and storage.

The format of the incident form is as follows:

- » Incident date;
- » Incident type;
- » Area/location;
- » Incident description;
- » Action taken;
- » Date action closed;
- » Form completed by;
- » Date reviewed by Harbourmaster/Environmental Representative; and
- » Harbourmaster/Environmental Representative signature.

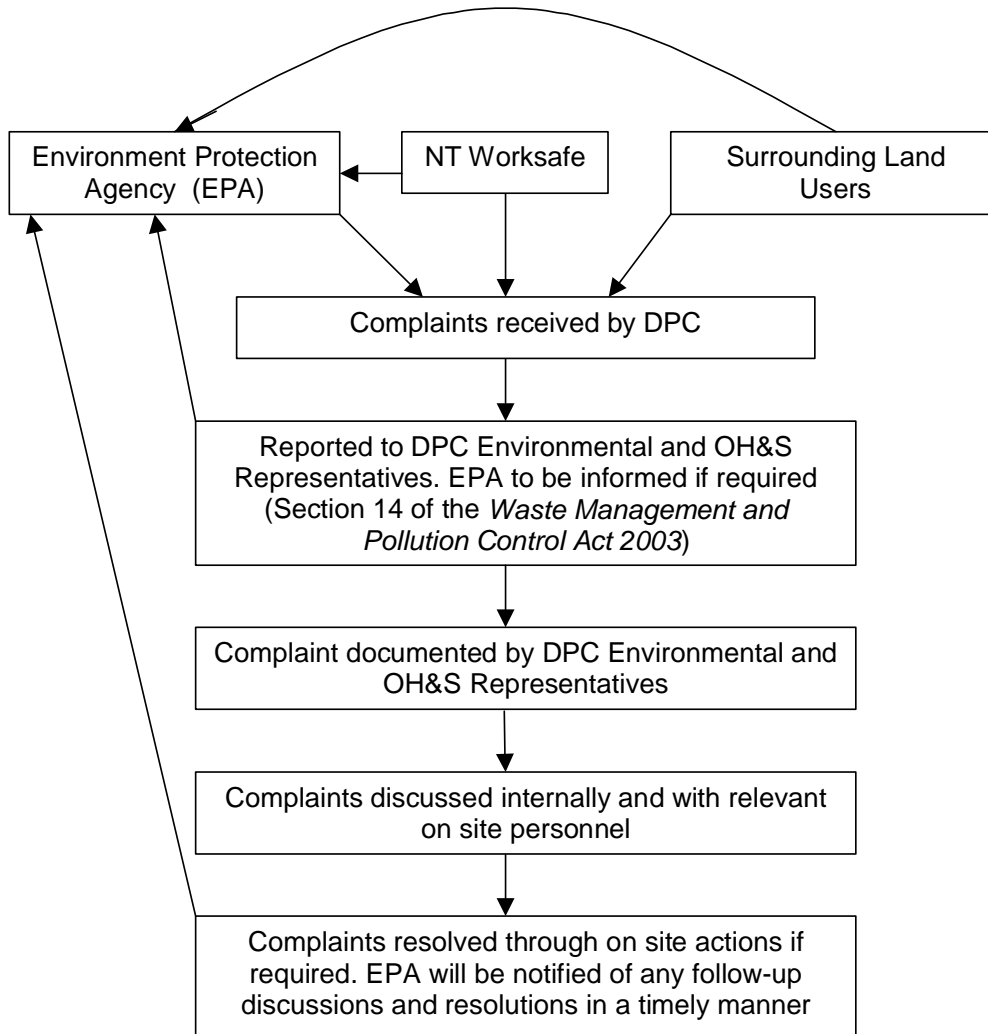
Where an incident causes, or is threatening or may threaten to cause pollution resulting in material environmental harm or serious environmental harm, the EPA must be informed within the first 24 hours of DPC first becoming aware of the incident, as per the requirements of the *Waste Management and Pollution Control Act*.

The incident will be reported and registered.

### **7.5.4 Complaints Management**

The Industrial Services Manager will handle complaints management according to the following flowchart (Figure 7-1).

**Figure 7-1 Complaints Management Flowchart**



This structure allows for the complaint (issue) to be discussed with on-site personnel to distinguish the cause and timing of the impact and develop reasonable solutions to prevent the incident recurring (URSb 2005).

Details to be captured when responding to a complaint include:

- » Time and date;
- » Name, address and telephone number of the complainant;
- » Details of the person receiving the complaint;
- » Details of the initial response;
- » Record or document follow-up with the complainant, recording time, date and record any outstanding concerns;
- » Further action as result of a follow-up; and
- » Assessment of the effectiveness of the solution.



The complaint will be recorded on a Complaints Register.

### **7.5.5 Reporting**

All incidents and accidents will be documented in an environmental incident report form and appropriate actions taken as required by the Corrective Action Request (CAR). Apart from internal reporting requirements, notification will be made in accordance with relevant Government legislation as identified in Section 2 of this report.

Additionally, any complaints will be documented and investigated.

## **7.6 Risk Assessment**

### **7.6.1 Impact Evaluation Methodology**

A qualitative evaluation of environmental impacts of the proposed incinerator has been carried out by URS (2005) based on Australian Standard AS/NZS 4360:1999 Risk Management. This model evaluates environmental risks based on the likelihood and consequences of a particular impact occurring and compares the results to a qualitative matrix to ascertain significance.

URS (2005) undertook an initial literature review, audited the site, reviewed design layout; and analysed the impacts of the proposed facility. In order to assess the significance of impacts the following questions were posed:

- » What impacts can occur?
- » What is the likelihood of these events?
- » What are the consequences of the event?
- » What are the overall risks (likelihood × consequence)?

Likelihood and consequence ratings applied in the risk assessment process were measured on five point scales. Consequence was assessed on a scale of 1 to 5 and likelihood was assessed on a scale from A to E. Likelihood and consequence categories were specifically tailored to relate to the activities proposed. The types of risks considered are described in Table 16 and Table 17. Environmental, health and safety impacts and consequences were considered (URSb 2005).

Environmental risks were assessed separately for construction and operation as it was considered that these represented two distinct project stages (URS 2005). As such an Operational EMP and a Construction EMP has been developed.



**Table 16 Risk Assessment Criteria for Consequence**

Insignificant (1)	Minor (2)	Moderate (3)	Major (4)	Critical (5)
Injury and Disease (incorporates workers and community) (S)				
Minor injury. No medical treatment. Eg: cuts, bruises, no measurable physical effects.	Significant injury. Medically treated injuries from which recovery is likely. Eg: burns, broken bones, severe bruises, cuts.	Serious injury. Moderate permanent effects from injury or exposure. Eg: serious burns, serious internal and/or head injuries, gassings that require hospitalisation.	Single fatality. Severe permanent injury, paralysis, brain damage, life threatening exposure to a health risk.	A multiple fatality. Significant irreversible exposure to a health risk that effects greater than 10 people.
Environmental Impacts (E)				
Low pollution. No observable effect to plants or animals. No requirements to inform authorities. No visible discharges observed offsite.	Minor pollution. Minor effects on plants and animals. Required to inform authorities. May involve a cleanup. Visible discharge observed offsite.	Moderate pollution. Moderate effects on plants and animals. Physical impact on the public. Required to report to authorities. Extensive cleanup may be required.	Major release. Major effects on plants and animals. Substantial cleanup costs. Personal and business prosecution possible.	Extreme event. Permanent effects on the environment. Potential loss of licence to operate. Prosecution of company and directors possible.

**Table 17 Criteria for Likelihood of Events**

A – Almost Certain	Event is <u>expected</u> to occur in most circumstances
B – Likely	Event will <u>probably</u> occur in most circumstances
C – Moderate	Event <u>should</u> occur at some time
D – Unlikely	Event <u>could</u> occur at some stage
E – Rare	Event <u>may</u> only occur in exceptional circumstances

The combination of the likelihood and consequence ratings was compared to the qualitative risk analysis matrix, providing an indication of the magnitude or significance of the impact (ranging from low to priority) (URSb 2005).

The adopted risk level matrix presented in Table 18.





**Table 18 Risk Matrix**

LIKELIHOOD	CONSEQUENCE				
	1 – Insignificant	2 – Minor	3 – Moderate	4 – Major	5 – Critical
A – Almost Certain	M	M	P	P	P
B – Likely	M	M	H	P	P
C – Moderate	L	M	M	H	P
D – Unlikely	L	L	M	H	P
E – Rare	L	L	M	H	H

**Legend**

**P = Priority risk:** detailed research and management planning required at senior levels. Immediate action required.

**H = High risk:** senior management attention required.

**M = Moderate risk:** management attention and integration needed.

**L = Low risk:** managed by routine procedures.

A summary of the operational risk rating for the QWTF is presented in Table 19 below.

**Table 19 Operational Risk Rating of Incinerator Facility\***

Environmental Aspect	Environmental / Health Impact	Likelihood	Consequence	Overall Risk Rating
Quarantine and Clinical Waste Management	Operation: Storage and Handling of Quarantine and Clinical Materials	Almost Certain	Major	Priority Risk
Dangerous Goods Management	Construction: Storage and Handling of Hazardous Materials	Likely	Moderate	High
	Construction: Spill Management	Unlikely	Moderate	Moderate
	Operation: Storage and Handling of Hazardous Materials	Almost Certain	Insignificant	Moderate
	Operation: Spill Management	Unlikely	Moderate	Moderate
Waste Handling and Storage	Construction: Storage and Handling of Hazardous Wastes	Likely	Moderate	High
	Operation: Storage and Handling of Hazardous Wastes	Likely	Moderate	High



<b>Environmental Aspect</b>	<b>Environmental / Health Impact</b>	<b>Likelihood</b>	<b>Consequence</b>	<b>Overall Risk Rating</b>
Waste Management	Construction: Storage and Handling of General Wastes	Likely	Insignificant	Moderate
Noise and Vibration Management	Construction: Noise Emission Control	Almost Certain	Moderate	Moderate
	Operation: Noise and Vibration Emission	Moderate	Insignificant	Low
Traffic Management	Construction: Increased Traffic	Almost Certain	Minor	Moderate
	Operation: Increased Traffic	Almost Certain	Insignificant	Moderate
Soil and Water Management	Construction: Erosion and Sediment Control	Moderate	Minor	Moderate
Air Quality Management	Construction: Dust Generation	Almost Certain	Minor	Moderate
	Construction: Vehicle Emissions	Almost Certain	Insignificant	Moderate
	Operation: Emission Generation	Almost Certain	Moderate	High
Biting Insects	Construction: Adverse Impact on Human Health	Unlikely	Moderate	Moderate
Weed Management	Construction: Weed Control	Unlikely	Minor	Low
Visual Amenity	Construction: Visual Impact/Amenity	Rare	Insignificant	Low
Visual Amenity	Operation: Visual Impact/Amenity	Almost Certain	Minor	Moderate

\*URSb 2005

All of the aspects considered in the risk assessment are incorporated into the Emergency Management Plans for both the construction and operation of the quarantine waste treatment facility.

It is noted that GHD believe that risk of visual impact amenity in both construction and operational cases is low.



## **7.6.2 Management and Mitigation Methodology**

Having conducted the risk assessment and identified the types of impacts and their relative priority, the next step utilised the findings to develop appropriate management and monitoring measures that may be implemented to minimise or mitigate risks (URSb 2005).

### **Construction Activities**

This includes the construction and installation of the incinerator facility, accompanying shed and infrastructure required for the storage of waste materials (URSb 2005).

The mitigation and management measures for the following environmental impacts were assessed in Table 20 for the construction stage (URSb 2005):

- » Dangerous Goods Management;
- » Waste Handling and Storage Management;
- » Waste Management;
- » Noise and Vibration Management;
- » Traffic Management;
- » Soil and Water Management (Sediment and Erosion Control);
- » Air Quality Management;
- » Biting Insect Management;
- » Weed Management; and
- » Visual Amenity Management.

### **Operational Activities**

This includes on and off-site road transport, fuel storage and refuelling, dangerous goods storage, storage of skips and tanks, incinerator operation, and waste storage and disposal (URSb 2005).

The mitigation and management measures for the following environmental impacts are assessed in Table 20 for the operational stage (URSb 2005):

- » Quarantine and Clinical Waste Management;
- » Waste Handling and Storage Management;
- » Air Quality Management;
- » Dangerous Goods Management;
- » Traffic Management;
- » Visual Amenity Management; and
- » Noise and Vibration Management.

Table 20 below summarises the mitigation and management measures for the environmental impacts identified in Table 19 for both the operational and construction phases.



**Table 20 Mitigation and Management Measures**

<b>Environmental Impact</b>	<b>Environmental / Health Impact</b>	<b>Overall Risk Rating</b>	<b>Mitigation / Management Measures</b>
Quarantine and Clinical Waste Management	Operation: Storage and Handling of Quarantine and Clinical Materials	Priority Risk	<p>Waste appropriately segregated and stored by waste type.</p> <p>Procedures will be developed for handling quarantined material that is consistent with the appropriate legislation.</p> <p>Responsible officers will enforce quarantine waste management procedures.</p>
Dangerous Goods Management	Construction: Storage and Handling of Hazardous Materials	High	<p>An inventory of dangerous goods on-site for the purposes of construction will be maintained, complete with Material Safety Data Sheets, and on display for all of site personnel to access.</p> <p>Dangerous goods should be stored in marked, suitable containers within bunded areas, with adequate separation for incompatible chemicals.</p> <p>Flammable and combustible liquids should be stored in suitably vented containment with adequate temperature control.</p>
	Construction: Spill Management	Moderate	<p>Spill kits will be located adjacent to dangerous goods storage areas.</p> <p>Spills and leaks will be immediately cleaned up, stored with suitable containers and disposed of to a suitable waste management facility.</p> <p>Fire fighting chemicals and water supply will be available in the vicinity of the dangerous goods store.</p>
	Operation: Storage and Handling of Hazardous Materials	Moderate	<p>An inventory of dangerous goods on-site for the purposes of operations will be maintained, complete with Material Safety Data Sheets, and on display for all of site personnel to access.</p> <p>Dangerous goods should be stored in marked, suitable containers within bunded areas, with adequate separation for incompatible chemicals.</p> <p>Flammable and combustible liquids should be stored in suitably vented containment with adequate temperature control.</p>



Environmental Impact	Environmental / Health Impact	Overall Risk Rating	Mitigation / Management Measures
	Operation: Spill Management	Moderate	<p>Spill kits will be located adjacent to dangerous goods storage areas.</p> <p>Spills and leaks will be immediately cleaned up, stored with suitable containers and disposed of to a suitable waste management facility.</p> <p>Fire fighting chemicals and water supply will be available in the vicinity of the dangerous goods store.</p>
Waste Handling and Storage Management	Construction: Storage and Handling of Hazardous Wastes	High	<p>Waste will be appropriately segregated and stored by waste type where appropriate.</p> <p>Any spillages will be cleaned according to the spill management procedure established for the incinerator.</p>
	Operation: Storage and Handling of Hazardous Wastes	High	<p>Waste will be appropriately segregated and stored by waste type where appropriate.</p> <p>Any spillages will be cleaned according to the spill management procedure established for the incinerator.</p>
Waste Management	Construction: Storage and Handling of General Wastes	Moderate	<p>As far as possible all soil and organic material generated on site shall be re-used on site.</p> <p>Other wastes resulting from the construction works such a construction material wastes, contaminated soils, wash waters, waste oil and fuel products will be temporarily stored on site and disposed of to a suitably licensed waste disposal site.</p> <p>The destination, date, volume and waste type will be recorded.</p> <p>General litter is to be appropriately segregated and disposed of via the local waste collection system.</p> <p>Sewage is to be transported off site and disposed of to sewer.</p> <p>Waste packaging will be removed from site and recycled or reused where possible.</p>



Environmental Impact	Environmental / Health Impact	Overall Risk Rating	Mitigation / Management Measures
Noise and Vibration Management	Construction: Noise Emission Control	Moderate	<p>Restriction of operating hours for rock breakers and drills.</p> <p>Truck noise levels are to satisfy the Australian Design Rules (ADR/01).</p> <p>Selection of plant and equipment on acoustic performance where practical.</p> <p>Appropriate use of plant and equipment to minimise noise impacts.</p> <p>Implement an information program to inform local residents of the construction.</p> <p>Implement a monitoring and auditing program to ensure the construction noise is controlled.</p> <p>A site noise training and awareness program for all staff and contractors engaged during the construction period is to be undertaken.</p> <p>All construction contractors are to be made aware of the problems associated with noise and how to change their work practices to minimise noise emissions and to adopt best practice procedures.</p> <p>All plant, machinery and vehicles used during construction will be in good working order and adequately maintained to avoid unnecessary noise.</p> <p>Silencers will be used on equipment where possible.</p> <p>Trucks transporting material will have a route, which keeps the use of reversing alarms to a minimum.</p>



Environmental Impact	Environmental / Health Impact	Overall Risk Rating	Mitigation / Management Measures
	Operation: Noise and Vibration Emission	Low	<p>Employees will be briefed regularly on noise issues associated with operations to ensure that best practice is adopted.</p> <p>All plant and equipment will be in good working order and regularly maintained in accordance with manufacturers' instructions to avoid generation of unnecessary noise.</p> <p>Vehicle engines (specifically trucks) will be turned off and not left idling when not in use.</p> <p>Silencers will be used on equipment where possible.</p> <p>Surrounding land users will be advised of the duration and extent of foreseeable activities that may generate noise in the event operation is required outside proposed operating hours.</p>
Traffic Management	Construction: Increased Traffic	Moderate	<p>Local residents will be notified of potential disruptions to access and traffic flows during the transportation period;</p> <p>All loads hauled on the public road network will comply with the regulations set down for the transport of various materials such as covering loads of loose material;</p> <p>All aspects of access roads will have the capacity to accommodate the sweep path of all vehicles expected to travel the roads;</p> <p>The access roads will be capable of accommodating two way traffic flow; and</p> <p>The need to seal transport routes to minimise dust, noise and to support the heavy vehicles will be considered during detailed design.</p>
	Operation: Increased Traffic	Moderate	<p>Comply with the East Arm Wharf road rules and existing traffic management plans.</p> <p>Adhere to the sign posted speed limits within the port.</p> <p>Cautionary signage relevant to the material being transported should be placed on vehicles to inform the public.</p> <p>Signage will be placed in areas where heavy vehicle access will be increased.</p>
Soil and Water Management	Construction: Erosion and Sediment Control	Moderate	<p>Construction Contractor will minimise stockpiling and ground disturbance activities during peak wet/storm season.</p> <p>Ground disturbance work will be conducted in</p>



Environmental Impact	Environmental / Health Impact	Overall Risk Rating	Mitigation / Management Measures
			<p>stages, where possible.</p> <p>Construction materials and chemicals will be covered and stored or stockpiled away from stormwater drainage runoff areas and waterways.</p> <p>Temporary sediment traps and sediment fencing will be used where required to prevent sediment entering the stormwater system or leaving the work area.</p> <p>Vehicle movement will be limited to designated tracks, where possible.</p> <p>Maintain drainage systems in the truck loading areas (especially after first-flush periods/heavy periods of rain).</p> <p>Clean up spillages of chemicals and oils (using an oil and spill response kit) as quickly as practicable. Spillages are to be dry cleaned where possible.</p> <p>Maintain an oil and spill response kit, provided by Darwin Port Corporation.</p> <p>Any material, which enters Darwin Harbour, will be removed immediately.</p>
Air Quality Management	Construction: Dust Generation	Moderate	<p>Minimise the area disturbed at any one time.</p> <p>Construction activities are to be managed and programmed so that the generation of dust is minimised eg. minimise the stockpiling of soils by installing works progressively.</p> <p>Limit speeds on access road.</p> <p>Avoid the use of unsealed roads where possible.</p> <p>All traffic areas on the site would be clearly defined. Vehicle movements would be restricted to defined tracks.</p> <p>Areas of surface disturbance will be minimised to that extent which is necessary for construction.</p> <p>Working areas will be stabilised as soon as practical to prevent or minimise wind blown dust.</p> <p>Cover or use water spray on material stockpiles where required.</p> <p>Use water sprays on work areas to reduce the potential for dust generation.</p> <p>The loads of all trucks transporting material to and from the site will be covered.</p>





Environmental Impact	Environmental / Health Impact	Overall Risk Rating	Mitigation / Management Measures
	Construction: Vehicle Emissions	Moderate	<p>Construction equipment would be regularly inspected to ensure that it is operating in a satisfactory manner to reduce greenhouse gas emissions.</p> <p>If a complaint is received, it shall be dealt with promptly to ensure that the likelihood of further emissions and complaints are minimised.</p>
	Operation: Emission Generation	High	<p>All waste will be stored in sealed containment within quarantine waste designated bins.</p> <p>Ships disposing of waste will unload onto the wharf deck in the designated bins and established quarantine waste areas.</p> <p>Waste must not be unloaded from a ship onto the premises other than into the storage bins provided.</p> <p>Trucks carrying quarantine waste will be covered/sealed at all times, with the exception of unloading.</p> <p>Trucks will only be unloaded within the designated area directly next to the incinerator.</p> <p>Visually inspect surrounding environment and surfaces for particulate matter, dust and odour every week.</p> <p>Keep storage bins closed at all times when not loading or unloading.</p> <p>Clean roadways in the vicinity of the truck loading facility at regular intervals (such as following loading).</p>
Biting Insect Management	Construction: Adverse Impact on Human Health	Moderate	<p>In order to avoid the creation of potential breeding sites for biting insects, construction practises will follow the "<i>Guidelines to Prevent Mosquito Breeding</i>", Department of Health and Community Services, June 1988.</p> <p>The implementation of control measures is the responsibility of the Project Superintendent or his representative.</p> <p>Inspections, incident investigation and improvement measure implementation are the responsibility of the Project Superintendent or his representative.</p> <p>Complaint management and response is the responsibility of the Project Superintendent or his representative.</p>



<b>Environmental Impact</b>	<b>Environmental / Health Impact</b>	<b>Overall Risk Rating</b>	<b>Mitigation / Management Measures</b>
Weed Management	Construction: Weed Control	Low	All plant and equipment is to be clean of vegetative material prior to entry to site during construction.  If fill is required to be imported onto site it must be assessed as being free of pest plant species prior to importation.
Visual Amenity Management	Construction: Visual Impact/Amenity	Low	Other management process e.g. sediment and erosion control.
	Operation: Visual Impact/Amenity	Moderate	Other management processes e.g. complaint management, air quality.

### 7.6.3 Contingency Plans

Appropriate contingency plans will be developed by DPC to manage the following circumstances (URSb 2005):

- » Temporary shut-downs due to equipment failure or a large volume of waste;
- » Temporary storage of wastes prior to treatment;
- » Extended hours of operation for the facility;
- » Abnormal stack emissions that do not meet the approved emission standards; and
- » Temporary wastewater discharge storage.

This would augment existing contingency plans (fire, cyclone etc.) for the East Arm Wharf site.

## 7.7 Environmental Management Plans

An EMP has been developed for both the construction and operation of the incinerator and raises potential issues that may be encountered during these phases. The Operational and Construction EMP's both contain sub plans which detail mitigative actions, and monitoring and reporting requirements, as shown in Figure 7-2.





Ongoing review of the EMS will ensure that any additional management measures that may arise are incorporated and that the environmental management of the facility is adhering to the required standards and procedures. The ongoing EMS review will be reflected in the EMPs as necessary.

Both the Construction and Operational EMP include:

- » Contact Register with an incident emergency response plan;
- » Legislative requirements;
- » A brief description of the facility;
- » A brief description of the receiving environment;
- » Environmental risks;
- » Environmental management sub plans;
- » Procedure for implementing the specific EMP;
- » Environmental monitoring requirements; and
- » EMP auditing and reporting.

The Construction and Operational Environmental Management Plans are located in Appendix J and Appendix K respectively.

#### **7.7.1 Emergency Response Sub Plan**

The emergency response plan is common to both the Construction EMP and Operational EMP and is as follows:

In the event of an emergency, personnel are to follow the Darwin Port Corporation East Arm Wharf emergency procedures:

1. Check for danger. Do not enter an unsafe area;
2. Alert other people in the vicinity;
3. Raise the alarm with your Supervisor;
4. Carefully describe:
  - a. your name or call sign;
  - b. the type of emergency – illness, accident, fire, chemical spill suspicious object; and
  - c. the location of the emergency.
5. Await instructions assisting ill person or accident victim and follow Evacuation Procedures; and
6. All employees have a responsibility to familiarise themselves with their work area and be aware of the most direct means of exit from the site or building.

The signal for general evacuation is an intermittent sounding of the siren (tested every Thursday at 10.30am).

The *Waste Management and Pollution Control (WMPC) Act 2003* requires that the Environmental Protection Agency (EPA) be notified when certain types of pollution incidents occur. The types of incidents that require notification depend on the extent of harm or the potential damage to the environment. To ensure that there is a consistent approach to incident reporting, site personnel must



contact the Harbour Master as soon as practicable to report all pollution incidents. The Harbour Master will take responsibility for deciding if EPA notification is required.

Therefore, after a person causes, or becomes aware of a pollution incident, they should:

<b>1 Ensure the site is safe</b>	<b>First, consider personnel safety;</b> and <i>if safe to do so</i> , prevent any further pollution for occurring.
<b>2 Notify</b>	<b>Harbour Master, Darwin Port Corporation</b> <b>Bruce Wilson</b> <b>Phone: 08 8947 7201</b> <b>Mobile: 0419 840 041</b>  and other services as required (see Table 21)
<b>3 Follow procedure</b>	Follow East Arm Wharf <b>Emergency Response Procedure</b>

If a pollution event goes unreported the individual or corporation is liable under the *WMPC Act*. Penalties for not reporting environmental offences range from an environmental offence Level 1 (imprisonment and monetary fine) through to environmental offence Level 4 (infringement notice and monetary fine). The environmental offence level is determined by the seriousness of the pollution offence.

**Notification to the EPA** is made by telephoning the EPA's Pollution Hotline services on **1800 064 567**.

The DPC will provide written details of the notification to the EPA within 7 days of the dates on which the incident occurred.

In the event an incident or emergency occurs at the site, the East Arm wharf Emergency procedures are to be followed i.e. contact will be made with the key emergency services, and the Harbour Master, as identified in the following table.

**Table 21 Incident/Emergency Contact Register**

<b>Organisation</b>	<b>Title</b>	<b>Telephone Number</b>
<b>Darwin Port Corporation</b>	Harbour Master Emergency	<b>08 8947 7201</b>
<b>Environmental Protection Agency</b>	Pollution Hotline (Pollution incidents and nuisance issues including air, water, noise and waste)	<b>1800 064 567</b>
<b>Fire Brigade</b> <b>Police</b> <b>Ambulance</b>	Emergency	<b>000</b>
<b>Royal Darwin Hospital</b>	Emergency	<b>000</b>



**7.7.2 Quarantine Waste Management Sub Plan**

A management sub plan for quarantine waste has only been developed for the operation of the facility. No quarantine waste will be present during the construction of the incinerator.

**Table 22 Quarantine Waste Management Sub Plan**

<b>Standard</b>	<b>Management Criteria</b>
<b>Policy</b>	To protect the environment and personnel from quarantine waste and ensure that it is handled following DPC procedures.
<b>Performance Objective</b>	Protect employees and minimise the potential to impact on humans and the environment from quarantine waste. Protect the biodiversity of the Northern Territory.
<b>Implementation Strategy/ Mitigation Measures</b>	Waste should be appropriately segregated and stored by waste type when appropriate. Procedures will be developed for handling quarantined material that are consistent with the appropriate legislation. Responsible Officers will enforce quarantine waste management procedures.
<b>Monitoring</b>	Daily inspections will be carried out during operational activities to confirm waste management requirements are complied with. All spills and leaks will be reported and an Environmental Incident Report Form will be completed.
<b>Identification of Incident or Compliance Failure</b>	Receipt of a complaint regarding quarantine waste related matters impacting on adjacent properties or the local amenity; Failure to comply with correct procedures for handling quarantine waste; and Non-conformance with this OEMP.
<b>Corrective Action</b>	The implementation of control measures is the responsibility of the DPC Environmental and OHS Representatives. Inspections, incident investigation and improvement measure implementation is the responsibility of the DPC Environmental and OHS Representatives. Complaint management and response is the responsibility of the DPC Environmental and OHS Representatives.
<b>Reporting</b>	Where an incident causes, or is threatening or may threaten to cause pollution resulting in material or serious environmental harm, the EPA must be informed within 24 hours of first becoming aware of the incident as per the requirements of the <i>WMPC</i> Act. Corrective actions will be undertaken to the satisfaction of the EPA.



### 7.7.3 Waste Handling and Storage Management Sub Plan

#### Construction

The following activities may generate waste during construction:

- » Soil excavation;
- » Minor amounts of construction waste materials such as excess concrete, concrete off-cuts, used shoring and other similar materials;
- » General litter from field staff; and
- » Staff amenities will generate sewerage and wastewater.

A waste management plan for the construction of the incinerator is provided in Table 23.

**Table 23 Construction Waste Management Sub Plan**

<b>Standard</b>	<b>Management Criteria</b>
<b>Policy</b>	To minimise the generation of waste, maximise material reuse and manage in accordance with EPA guidelines and relevant legislation.
<b>Performance Objective</b>	All wastes, arising from the construction of the Quarantine Waste Treatment Facility, that require off site disposal will be managed in accordance with EPA Environmental Guidelines: Assessment, Classification and Management of liquid and Non-liquid Wastes.
<b>Legislation</b>	<i>Waste Management and Pollution Control Act 1998.</i>
<b>Implementation Strategy/ Mitigation Measures</b>	<p>As far as possible all soil and organic material generated on site shall be re-used on site.</p> <p>Other wastes resulting from the construction works such as construction material wastes, contaminated soils, wash waters, waste oil and fuel products will be temporarily stored on site and disposed of to a suitably licensed waste disposal site.</p> <p>The destination, date, volume and waste type will be recorded</p> <p>General litter is to be appropriately segregated and disposed of via the local waste collection system.</p> <p>Sewage is to be transported off site and disposed of to sewer.</p> <p>Waste packaging will be removed from site and recycled or reused where possible.</p>
<b>Monitoring</b>	<p>Daily inspections will be carried out during construction to confirm waste management requirements are complied with.</p> <p>Non-compliance, incidents or accidents and complaints related to waste disposal should be investigated and improvement suggestions implemented and documented.</p> <p>Where an incident causes, or is threatening or may threaten to cause, pollution or environmental nuisance resulting in material or serious environmental harm, EPA must be informed within 24 hours of first becoming aware of the incident as per the requirements of the <i>Waste Management and Pollution Control Act</i>. Corrective actions will be undertaken to the satisfaction of the EPA.</p>



<b>Identification of Incident or Compliance Failure</b>	Receipt of a complaint regarding construction related waste impacting adjacent properties or the local amenity; and Non-conformance with this CEMP.
<b>Corrective Action</b>	Upon being informed of a complaint the Contractor will clean up waste generated by the construction activities to the satisfaction of the Superintendent. Corrective actions will be undertaken to the satisfaction of the EPA.
<b>Reporting</b>	The Contractor is to document all non-conformances, incidents, corrective actions and complaints. The Contractor is to keep a register of all non-conformances, corrective actions, incidents, and complaints.  The Contractor is to report all non-conformances, incidents, corrective actions and complaints to the Superintendent.

**Operation**

DPC will only allow quarantine waste to be received at the premises for storage, treatment and disposal during the operation of the quarantine incinerator.

Waste generated from the site, such as domestic waste, will be disposed of in the incinerator to prevent any cross-contamination of waste. The working environment is treated as a quarantine area.

The Operational Waste Handling and Storage Sub Plan is provided in Table 24.

**Table 24 Waste Handling and Storage Sub Plan**

<b>Standard</b>	<b>Management Criteria</b>
<b>Policy</b>	To minimise the generation of waste, maximise material reuse and manage in accordance with the <i>Waste Management and Pollution Control Act 2003</i> .
<b>Performance Objective</b>	All wastes, arising from operation of the quarantine waste incinerator, including ash, that require off site disposal will be managed in accordance with the <i>Waste Management and Pollution Control Act 2003</i> .
<b>Implementation Strategy/ Mitigation Measures</b>	Waste will be appropriately segregated and stored by waste type where appropriate.  Disposal of ash to Shoal Bay landfill.  General litter generated within the working area will be treated as quarantine waste and disposed of in the incinerator to prevent cross contamination.  Any spillages will be cleaned according to the spill management procedure established for the incinerator.
<b>Monitoring</b>	Daily inspections will be carried out to confirm compliance with waste management requirements.  Non-compliance, incidents or accidents and complaints related to waste disposal should be investigated and improvement suggestions implemented and documented.  Where an incident causes, or is threatening or may threaten to cause pollution or environmental nuisance resulting in material or serious environmental harm,





	EPA must be informed within 24 hours of first becoming aware of the incident as per the requirements of the <i>Waste Management and Pollution Control Act</i> .
<b>Identification of Incident or Compliance Failure</b>	Receipt of a complaint regarding operational related waste impacting adjacent properties or the local amenity; and Non-conformance with this OEMP.
<b>Corrective Action</b>	Upon being informed of a complaint the operator will clean up waste generated by the operation's activities to the satisfaction of operational procedures and any directives from the EPA.
<b>Reporting</b>	The operator is to document all non-conformances, incidents, corrective actions and complaints.

#### 7.7.4 Dangerous Goods Management Sub Plan

Procedures for management of dangerous goods are applicable during both the construction and operation of the quarantine incinerator. Table 25 outlines the Dangerous Goods Management Sub Plan.

**Table 25 Dangerous Goods Management Sub Plan**

<b>Standard</b>	<b>Management Criteria</b>
<b>Policy</b>	To minimise adverse impacts on humans from dangerous goods.
<b>Performance Objective</b>	Protect employees and the environment from spills, leaks and accidents involving dangerous substances that can cause soil, surface water and ground water contamination and can be a health and safety hazard.
<b>Implementation Strategy/ Mitigation Measures</b>	An inventory of dangerous goods on-site for the purposes of Operations, complete with Material Safety Data Sheets, will be maintained and displayed for all on-site personnel to access.  Dangerous goods should be stored in marked, suitable containers within bunded areas, with adequate separation for incompatible chemicals.  Flammable and combustible liquids should be stored in suitably vented containment with adequate temperature control.  Spill kits will be located adjacent to dangerous goods storage areas.  Spills and leaks will be immediately cleaned up, stored with suitable containers and disposed of to a suitable waste management facility.  Fire fighting chemicals and water supply will be available in the vicinity of the dangerous goods store.
<b>Monitoring</b>	Weekly inspections will be carried out of dangerous goods storage and handling facilities.  Monthly reviews should be carried out for dangerous goods procedures.
<b>Identification of Incident or Compliance Failure</b>	Non-compliance, incidents or accidents related to waste disposal should be investigated and improvement suggestions implemented and documented.  Non-conformance with the OEMP or CEMP.



<b>Standard</b>	<b>Management Criteria</b>
<b>Corrective Action</b>	<p>The implementation of control measures is the responsibility of the DPC Environmental and OHS Representatives.</p> <p>Inspections, incident investigation and improvement measure implementation is the responsibility of the DPC Environmental and OHS Representatives.</p> <p>Complaint management and response are the responsibility of the DPC Environmental and OHS Representatives.</p> <p>Where appropriate corrective actions will be undertaken to the satisfaction of the EPA.</p>
<b>Reporting</b>	Where an incident causes, or is threatening or may threaten to cause pollution resulting in material or serious harm, the EPA must be informed

### 7.7.5 Air Quality Management Sub Plan

Separate air quality management plans have been developed for the construction and operational phases of the incinerator. The phases are associated with very different air quality issues.

#### **Construction**

The generation of dust and construction vehicle exhaust emissions have the potential to impact ambient air quality during the construction of the project.

Dust may be generated by the following activities:

- » Construction vehicle movements to and from site and within the site;
- » Excavation, reworking and backfilling of soils;
- » Exposure of any stockpiles of soil to wind; and
- » Exposure of disturbed soils and cleared areas to wind.

Excessive exhaust emissions may be generated by the operation of inefficiently operating construction vehicles.

The construction air quality management sub plan is provided in Table 26.

**Table 26 Air Quality Management Sub Plan**

<b>Standard</b>	<b>Management Criteria</b>
<b>Policy</b>	<p>Conduct construction activities so that dust generation is minimised.</p> <p>Construction activities shall not cause unreasonable disruption to the ambient air quality of the local area.</p>
<b>Performance Objective</b>	<p>Activities on site will minimise or prevent particulate matter emissions and odour from the premises.</p> <p>If a complaint is received, it will be dealt with promptly to ensure that the likelihood of further emissions and complaints are minimised.</p>
<b>Implementation</b>	Minimise the area disturbed at any one time;



<b>Strategy/ Mitigation Measures</b>	<p>Construction activities are to be managed and programmed so that the generation of dust is minimised eg. minimise the stockpiling of soils by installing works progressively;</p> <p>Limit speeds on the access road and around the site;</p> <p>Avoid the use of unsealed roads where possible;</p> <p>All traffic areas on the site will be clearly defined. Vehicle movements would be restricted to defined tracks;</p> <p>Areas of surface disturbance will be minimised to the extent that is necessary for construction;</p> <p>Working areas will be stabilised as soon as practical to prevent or minimise wind blown dust;</p> <p>Cover or use water spray on material stockpiles where required;</p> <p>Use water sprays on work areas to reduce the potential for dust generation;</p> <p>The loads of all trucks transporting material to and from the site will be covered;</p> <p>Construction equipment would be regularly inspected to ensure that it is operating in a satisfactory manner to reduce greenhouse gas emissions; and</p> <p>If a complaint is received, it shall be dealt with promptly to ensure that the likelihood of further emissions and complaints are minimised.</p>
<b>Monitoring</b>	<p>If a complaint is received, it shall be dealt with promptly to ensure that the likelihood of further emissions and complaints are minimised.</p> <p>Monitor all plant and equipment to check that they are in good working order to minimise exhaust emissions (and therefore reduce greenhouse gas emissions) and noise from exhausts and all other working parts.</p> <p>Visually assess the generation of dust on an ongoing basis throughout the construction of the project.</p>
<b>Identification of Incident or Compliance Failure</b>	<p>Receipt of a complaint relating to ambient air quality;</p> <p>Visual contamination of the air; and</p> <p>Non-conformance with this CEMP</p>
<b>Corrective Action</b>	<p>Upon identification of an incident or non-conformance, the following is to be undertaken:</p> <p>If a complaint is received, activities and sources of dust generation are to be reviewed and dust mitigation measures are to be implemented/ expanded.</p> <p>Should further complaints be received, a dust monitoring program at sensitive residential receiver/s is to be implemented. Based on the results of the monitoring program, additional dust mitigation measures are to be undertaken to ensure EPA limits are not exceeded.</p> <p>Non-conformance with this plan shall be documented and a CAR issued. All CARs shall be included in the Non-conformance register.</p>
<b>Reporting</b>	<p>The Contractor is to document all non-conformances, incidents, corrective actions and complaints.</p> <p>The Contractor is to keep a register of all non-conformances, corrective actions, incidents, and complaints.</p>




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The Contractor is to report all non-conformances, incidents, corrective actions and complaints to the Superintendent.

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**Operation**

The most significant environmental aspect of the quarantine incinerator will be emissions from the stack. The following Air Quality Management Sub Plan relates to the operation of the incinerator.

**Table 27 Air Quality Management Sub Plan**

Standard	Management Criteria
<b>Policy</b>	To minimise the impact of the operation of the incinerator on air quality.
<b>Performance Objective</b>	<p>Activities on site will minimise or prevent particulate matter emissions and odour from the premises.</p> <p>If a complaint is received, it will be dealt with promptly to ensure that the likelihood of further emissions and complaints are minimised.</p>
<b>Implementation Strategy/ Mitigation Measures</b>	<p>All waste will be stored in sealed containment within quarantine waste designated bins.</p> <p>Ships disposing of waste will unload onto the wharf deck in the designated bins and established quarantine waste areas.</p> <p>Waste must not be unloaded from a ship onto the premises other than into the storage bins provided.</p> <p>Storage bins are to remain covered/sealed at all times during transport, with the exception of unloading.</p> <p>Trucks will only be loaded/unloaded within the designated area directly next to the incinerator.</p> <p>Inspect surrounding environment and surfaces for particulate matter, dust and odour every week.</p> <p>Keep storage bins closed at all times when not loading or unloading.</p> <p>All ash will be stored in covered bins which are to remain sealed during transport.</p> <p>Clean roadways in the vicinity of the truck loading facility at regular intervals (such as following loading) and treat any resultant waste as quarantine.</p>
<b>Monitoring</b>	<p>Conduct regular visual inspection of the stack plume to ensure the incinerator is burning correctly.</p> <p>Conduct an odour inspection, and a visual inspection of surrounding surfaces for particulate matter, dust every week.</p> <p>Monitor all plant equipment and vehicles to check that they are in good working order to minimise exhaust emissions and noise from exhausts and all other working parts.</p> <p>Develop periodic stack monitoring procedures that specify monitoring and reporting requirement frequencies.</p> <p>Where an incident causes, or is threatening or may threaten to cause environmental nuisance or pollution resulting in material or serious</p>



	environmental harm, EPA must be informed within 24 hours of first becoming aware of the incident as per the requirements of the Waste Management and Pollution Control Act.
<b>Identification of Incident or Compliance Failure</b>	<p>Community feedback received by DPC and/or EPA on air quality related issues.</p> <p>A visible plume that is not clear or white.</p> <p>Visible particulate matter.</p> <p>Equipment not operating efficiently.</p> <p>Higher than normal dust particulates are visible in the air and on site.</p>
<b>Corrective Action</b>	<p>Non-conformance with this plan shall be documented and a CAR issued. All CARs shall be included in the Non-conformance register.</p> <p>The Environmental Representative shall implement the corrective action as required within the agreed time frame noted on the CAR.</p> <p>The Environmental Representative will advise DPC upon completion of the corrective action.</p> <p>Where appropriate, corrective actions will be undertaken to the satisfaction of the EPA.</p>
<b>Reporting</b>	In the event community feedback is received, the EMR is to record the Community Feedback/Incident Procedure and record the outcome of investigations.

### 7.7.6 Noise and Vibration Management Sub Plan

#### **Construction**

Noise will be generated during the construction phase of the project. Noise will primarily be generated by the operation of construction equipment such as a backhoe, crane, cement mixer, welder and a grinder.

Noise mitigation measures outlined in the Noise Management Sub Plan shall be undertaken to minimise the acoustic impacts.

**Table 28 Noise Management Sub Plan**

<b>Standard</b>	<b>Management Criteria</b>
<b>Policy</b>	To minimise noise emissions to acceptable levels during the construction phase of the project.
<b>Performance Objective</b>	Minimise potential noise impacts on the surrounding area particularly on residences.
<b>Legislation</b>	<i>Waste Management and Pollution Control Act 1998.</i>
<b>Implementation Strategy/ Mitigation Measures</b>	<p>Restriction of operating hours for rock breakers and drills;</p> <p>Truck noise levels are to satisfy the Australian Design Rules (ADR/01);</p> <p>Selection of plant and equipment on acoustic performance where practical;</p> <p>Appropriate use of plant and equipment to minimise noise impacts;</p>



	<p>Implement an information program to inform local residents of the construction;</p> <p>Implement a monitoring and auditing program to ensure the construction noise is controlled;</p> <p>A site noise training and awareness program for all staff and contractors engaged during the construction period is to be undertaken;</p> <p>All construction contractors are to be made aware of the problems associated with noise and how to change their work practices to minimise noise emissions and to adopt best practice procedures;</p> <p>All plant, machinery and vehicles used during construction will be in good working order and adequately maintained to avoid unnecessary noise;</p> <p>Silencers will be used on equipment where possible; and</p> <p>Trucks transporting material will have a route, which keeps the use of reversing alarms to a minimum.</p>
<b>Identification of Incident or Compliance Failure</b>	<p>Noise complaints received.</p> <p>Noise monitoring indicates noise emissions above the construction noise criterion; and</p> <p>Non-conformance with this CEMP.</p>
<b>Corrective Action</b>	<p>Should a noise complaint be received, the Contractor will take preventative action to minimise noise generation at the earliest possible opportunity;</p> <p>Should a further noise complaint be received following the implementation of preventative action by the Contractor, the Contractor will arrange for noise monitoring to be undertaken by an accredited acoustic consultant to determine the noise levels at the premises concerned; and</p> <p>Should monitoring indicate noise emissions regularly exceed the construction noise criterion, physical noise mitigation measures (such as the construction of earthen noise barriers) shall be installed as appropriate until noise levels are reduced to an acceptable level.</p>
<b>Reporting</b>	<p>The Contractor is to document all non-conformances, incidents, corrective actions and complaints;</p> <p>The Contractor is to keep a register of all non-conformances, corrective actions, incidents, and complaints; and</p> <p>The Contractor is to report all non-conformances, incidents, corrective actions and complaints to the Superintendent.</p>

**Operation**

A Noise Management Sub Plan was developed to minimise the acoustic impact of the operation of the quarantine incinerator.

**Table 29 Noise Management Sub Plan**

<b>Standard</b>	<b>Management Criteria</b>
<b>Policy</b>	To minimise the impact of the incinerator operations on noise sensitive receivers.
<b>Performance</b>	Minimise potential noise impacts on the surrounding area particularly on



<b>Objective</b>	residences and receive no complaints from neighbours outside of reasonable work hours.
<b>Implementation Strategy/ Mitigation Measures</b>	<p>Employees will be briefed regularly on noise issues associated with operations to ensure that best practice is adopted.</p> <p>All plant and equipment will be in good working order and regularly maintained in accordance with manufacturers' instructions to avoid generation of unnecessary noise.</p> <p>Vehicle engines (specifically trucks) will be turned off and not left idling when not in use.</p> <p>Silencers will be used on equipment where possible.</p> <p>Surrounding land users will be advised of the duration and extent of foreseeable activities that may generate noise in the event operation is required outside proposed operating hours.</p>
<b>Monitoring</b>	Complaints received regarding noise and mitigation actions taken in response to the complaints are to be recorded and kept by the Contractor.
<b>Identification of Incident or Compliance Failure</b>	Community and/or employee feedback reported to Darwin Port Corporation and/or the EPA on noise from operation of the incinerator.
<b>Corrective Action</b>	<p>Non-conformance with this plan will be documented and a corrective action request (CAR) issued. All CARs will be included in the Non-conformance register.</p> <p>The Environmental Management Representative (EMR) will implement the corrective action as required within the agreed time frame noted on the CAR.</p> <p>The EMR shall advise EPA upon completion of the corrective action.</p> <p>Following discussions with the EPA, if required, a noise investigation will be undertaken to determine the levels at the source of the community feedback.</p> <p>Management strategies for the control of noise emissions that exceed requirements will be investigated and implemented as soon as practicable.</p>
<b>Reporting</b>	<p>Reporting will be undertaken in accordance with the requirements of the EPA (as outlined Section 6).</p> <p>Where an incident causes, or is threatening to or may threaten to cause, environmental nuisance or pollution resulting in material or serious environmental harm, EPA must be informed within 24 hours of first becoming aware of the incident as per the requirements of the Waste Management and Pollution Control Act.</p> <p>The acoustic consultant undertaking noise monitoring will prepare a report:</p> <ul style="list-style-type: none"> <li>– that details the monitoring undertaken; and</li> <li>– an analysis of the monitoring results in respect to the NSW DEC noise guidelines.</li> </ul> <p>DPC will submit a copy of the noise monitoring report to the EPA within 30 days of completion of the monitoring.</p> <p>In the event community feedback is received, the EMR will record the Community Feedback/Incident Procedure and record the outcome of investigations.</p>



### 7.7.7 Water Quality Management Sub Plan

There is potential for stormwater runoff to cause soil erosion and to transport sediment and contaminants off site to existing water channels and water bodies.

Potentially adverse impacts from contamination of water from the storage, transfer and use of fuels and chemicals can include:

- » Discharge of toxic substances to waterways impacting on the flora and fauna; and
- » Increased nutrient levels leading to algal growth.

The Water Quality Management Sub Plan is outlined in Table 30.

**Table 30 Water Quality Management Sub Plan**

<b>Standard</b>	<b>Management Criteria</b>
<b>Policy</b>	To conform to the requirements of the <i>Water Act</i> and the <i>WMPC Act</i> , in particular the declared Beneficial Uses for Darwin Harbour water i.e. aquatic ecosystem protection and recreational water quality and aesthetics.
<b>Performance Objective</b>	No contaminated water leaving the site during construction and no contaminant remaining that might contaminate water in future.  No contamination of Darwin Harbour from the operation of the incinerator.
<b>Implementation Strategy/ Mitigation Measures</b>	Maintain drainage systems in the truck loading areas (especially after first-flush periods/heavy periods of rain).  Clean up spillages of chemicals and oils (using an oil and spill response kit) as quickly as practicable. Spillages are to be dry cleaned where possible.  Maintain an oil and spill response kit, provided by Darwin Port Corporation.  Any material, which enters Darwin Harbour, will be removed immediately.
<b>Monitoring</b>	Daily visual monitoring of Darwin Harbour shall be undertaken to identify visible pollution or plumes.  Weekly visual inspections of the settling pit, and inspections immediately after heavy rainfall.  Weekly inspections of the facility in relation to water quality.  Monitoring will be undertaken in accordance with the conditions outlined in section 7.
<b>Identification of Incident or Compliance Failure</b>	Visual decline in water quality.  Visual evidence of oil slicks and chemicals.  Non-compliance indicated by the results of any monitoring undertaken.





<b>Corrective Action</b>	<p>Non-conformance with this plan shall be documented, a corrective action request (CAR) issued and all CARs shall be included in the non-conformance register.</p> <p>The Environmental Management Representative (EMR) shall implement the corrective action as required within the agreed time frame noted on the CAR.</p> <p>The EMR shall advise Darwin Port Corporation upon completion of the corrective action.</p> <p>Where appropriate, corrective actions will be undertaken to the satisfaction of the EPA.</p>
<b>Reporting</b>	<p>In the event community feedback is received, the EMR is to record the Community Feedback/Incident Procedure and record the outcome of investigations.</p> <p>The EMR is to record conditions of inspections on the inspection checklist for reporting purposes to EPA.</p> <p>Any non-compliance shall be recorded by the EMR and reported.</p> <p>Reporting on the results of monitoring will be undertaken in accordance with the requirements of the EPA.</p>

### 7.7.8 Traffic Management Sub Plan

The predicted traffic levels during the construction and operational periods are within the capacity of the transport route. The percentage traffic increase into East Arm Wharf and along Berrimah Road will be linked to the activities within the Wharf Precinct and the Darwin Business Park. No delays or issues are expected along any of the carriageways leading into the Wharf as a result of this project. A traffic management plan has been developed to minimise the impact of construction and operational traffic on normal site traffic conditions.

**Table 31 Traffic Management Sub Plan**

<b>Standard</b>	<b>Management Criteria</b>
<b>Policy</b>	To minimise the impact of construction traffic on normal site traffic movements
<b>Performance Objective</b>	<p>Construction related traffic will not cause any disruption to normal site traffic.</p> <p>Construction and Operational related traffic will not cause any noticeable increase in traffic on the surrounding road network.</p>
<b>Implementation Strategy/ Mitigation Measures</b>	<p>Local residents will be notified if any potential disruptions are to occur to access and traffic flows during the transportation period;</p> <p>All loads hauled on the public road network will comply with the regulations set down for the transport of various materials such as covering loads of loose material;</p> <p>All aspects of access roads will have the capacity to accommodate the sweep path of all vehicles expected to travel the roads;</p> <p>The access roads will be capable of accommodating two way traffic flow; and</p> <p>The need to seal transport routes to minimise dust, noise and to support the heavy vehicles will be considered during detailed design.</p>



<b>Standard</b>	<b>Management Criteria</b>
<b>Monitoring</b>	None.
<b>Identification of Incident or Compliance Failure</b>	Receipt of a complaint regarding construction related vehicles interfering with normal site traffic.
<b>Corrective Action</b>	<p>Upon identification of an incident or non-conformance, the following is to be undertaken:</p> <p>An investigation into the incident or non-conformance is to be immediately undertaken. The identified cause/s are to be made good to prevent further incident or non-conformance;</p> <p>Upon receipt of a complaint the Contractor shall liaise with the Principal to resolve the traffic issue.</p>
<b>Reporting</b>	<p>The Contractor is to document all non-conformances, incidents, corrective actions and complaints.</p> <p>The Contractor is to keep a register of all non-conformances, corrective actions, incidents, and complaints.</p> <p>The Contractor is to report all non-conformances, incidents, corrective actions and complaints to the Superintendent.</p>

### 7.7.9 Biting Insects Management Sub Plan

The biting insects management plan is common to the construction and operation of the quarantine incinerator. The biting insects management sub plan is outlined in Table 32.

**Table 32 Biting Insects Management Sub Plan**

<b>Standard</b>	<b>Management Criteria</b>
<b>Policy</b>	To minimise the adverse impacts on humans from biting insects.
<b>Performance Objective</b>	Protect employees and minimise the potential to impact on humans from biting insects.
<b>Implementation Strategy/ Mitigation Measures</b>	<p>In order to avoid the creation of potential breeding sites for biting insects, construction practises will follow the <i>"Guidelines to Prevent Mosquito Breeding"</i>, Department of Health and Community Services, June 1988.</p> <p>The implementation of control measures is the responsibility of the Project Superintendent or his representative.</p> <p>Inspections, incident investigation and improvement measure implementation are the responsibility of the Project Superintendent or his representative.</p> <p>Complaint management and response is the responsibility of the Project Superintendent or his representative.</p>



Standard	Management Criteria
<b>Monitoring</b>	Regular inspections will be undertaken of existing and potential ponding areas and if problem areas are encountered appropriate action will be taken.
<b>Identification of Incident or Compliance Failure</b>	Presence of biting insects in avoidable areas; Detrimental effects to human health; and Non-conformance with this OEMP.
<b>Corrective Action</b>	Upon identification of an incident or non-conformance, the following is to be undertaken:  An investigation into the incident or non-conformance is to be immediately undertaken. The identified cause/s are to be made good to prevent further incident or non-conformance;  If a biting insect is found to be carrying a health threatening disease this must be reported to the Department Of Health and Community Services.
<b>Reporting</b>	The Contractor is to document:  Details of the periodic visual inspections undertaken for ponding areas; and All non-conformances, incidents, corrective actions and complaints.  The Contractor is to keep a register of all non-conformances, corrective actions, incidents, and complaints.  The Contractor is to report all non-conformances, incidents, corrective actions and complaints to the Superintendent.

#### 7.7.10 Heritage Management

The proposed incinerator will be located on reclaimed land in an area with existing port operations. It will not disturb any Indigenous or non-Indigenous heritage site, object or place.

In the event Indigenous or non-Indigenous relics are found during the construction or operation of the quarantine incinerator, work must cease and the Department of Natural Resources, Environment and the Arts (NRETA) must be contacted to inspect the finds.

### 7.8 Monitoring Program

The primary objective of the monitoring program is to highlight potential concerns prior to the development of a safety or environmental issue. The monitoring measures for specific environmental impacts are described in more detail in the Construction and Operational EMPs.

#### 7.8.1 Monitoring

##### ***Fuels, Dangerous Goods and Quarantine***

Weekly inspections will be carried out of fuels, dangerous goods and quarantine material storage and handling facilities and procedures (URSb 2005).



### **Waste**

Daily inspections will be carried out during construction and operation to confirm waste management requirements are complied with (URSb 2005).

### **Noise**

Daily inspections will be conducted to ensure that acoustic anomalies are reported.

### **Soil**

During construction daily visual inspections will be conducted to ensure implementation of sediment controls. The inspection is to include erosion and sediment build up and visual assessment of sediment in Darwin Harbour directly adjacent to the site.

### **Air Quality**

The most significant emissions aspect of the quarantine incinerator will be air emissions from the stack. A formal air emission monitoring program will be implemented in conjunction with regular inspections of the plume from the stack and dust at site boundaries.

A consultation program will be undertaken to inform neighbours of the duration and nature of construction activities prior to construction. During construction daily visual inspections will be undertaken to ensure dust generation is minimised and no dust is visible at site boundaries.

Neighbours will be informed of the days, duration, timing and normal hours for the operation of the incinerator.

Regular inspections of the air emissions from the stack and level of debris surrounding the building will be undertaken during the operation.

A regular stack emission monitoring program will be developed to record various stack emission parameters.

The proposed incinerator will be fitted with a Continuous Emissions Monitoring System (CEMS) and data acquisition system (DAS) to collect and record various stack emission parameters as required by the NT draft monitoring guidelines.

Emissions will be released from a single stack at a minimum height of 20 m with a minimum efflux velocity of 12 m/s. Stack emission samples will be taken as required by the Australian Standard AS4323.1-1995.

A stack emissions monitoring program will be developed for the quarantine incinerator as per the requirements *Draft Monitoring and Reporting Protocols for the Proposed Incinerator at East Arm Port*, developed by the Northern Territory Government Waste and Pollution Management Branch of the Office of Environment and Heritage DIPE, 2004. These requirements are summarised below.

A specialist Air Quality Monitoring expert will be engaged to undertake stack monitoring and report the results on a periodic basis, as per the air emissions monitoring requirement (URSb 2005).

A person or body registered by the National Association of Testing Authorities (NATA) or a person or body possessing appropriate experience and qualifications to perform the required determinations will make all determinations.

The specific parameters to be monitored and the required monitoring frequency are specified in Table 33.



During the sampling period the following information will also be gathered:

- » Time, date and duration of the sampling;
- » Quantity and composition of waste feed during sampling for 30 minutes prior to and during sampling period;
- » Average temperature of primary and secondary chambers; and
- » Measurement of average volume airflow velocity to allow an estimate of secondary chamber residence time.

**Table 33 Required Determinations and Frequencies for Stack Emissions\***

Release Point	Determination Required	Frequency
1	Gaseous temperature in primary chamber	Continuous
1	Gaseous temperature at the exit of the secondary chamber	
NA	Fan speed	
1	Mass rate and concentration of Total Solid Particles at standard temperature and pressure	Either: 1. Within one month after 50 tonnes of Clinical and related waste have been combusted; or 2. After two operational combustion events following relining of the secondary chamber; or 3. Every three years if no tests have been required under the two previous grounds, which ever is the soonest.
1	Stack gas velocity	
1	Volume flow rate	
1	Mass rate and concentration of Nitrogen oxides (as NO <sub>2</sub> ) at a 7% oxygen level	
1	Mass rate and concentration of Fluorides (HF)	
1	Mass rate and concentration of Heavy metals	
1	Mass rate and concentration of Mercury	
1	Mass rate and concentration of Lead	
1	Mass rate and concentration of Cadmium	
1	Mass rate and concentration of Hydrogen sulphide	
1	Mass rate and concentration of Sulphur trioxide and sulphur dioxide	
1	Mass rate and concentration of polycyclic aromatic hydrocarbons	
1	Mass rate and concentration of dioxins and furans	

\*Information from URSb 2005.

The recording of the composition of waste feed requires the identification of wastes according to those categories set out in Waste Types allowed for Incineration, and not the sub-components of those waste types (URSb 2005). The waste types allowed for incineration are as follows:

- » Quarantine wastes;



- » Clinical and related wastes;
- » Confiscated plant material;
- » Illicit drugs; and
- » Confidential documents.

Instruments with daily automatic zero and span adjustments are to be in operation for the continuous measurement and continuous recording of a fan speed setting, gaseous temperature in the primary chamber, gaseous temperature at the exit of the secondary chamber, and gaseous temperature in the stack.

The records of containment releases to the atmosphere will contain the information specified for a Test Report as described in Australian Standard AS 4323.2-1995, or similar recognised sampling procedures. Monitoring results will be recorded and kept with the monitoring program results.

Additionally, on an annual basis acid gases load based averages will be calculated and recorded as specified in Table 34 (URSb 2005).

**Table 34 Annual Acid Gas Load Based Stack Emissions**

Release Point	Contaminant	Release Limit	Release Limit Units
1	Acid Gases (expressed as HCl)	100	mg/sec load based annualised average HCl emission limit

For each determination of acid gases the following tests will also be performed:

- » Gas velocity and volume flow rate;
- » Temperature; and
- » Water vapour concentration.

Results from the monitoring program will be compared against the release limits for stack emissions with due consideration given to the confidence levels that apply to the sampling and analysis for each parameter. Evaluation of compliance with these units for Dioxins and Furans is to be based upon the Toxic Equivalent Factors (TEQ) concentrations from the most recent tests (URSb 2005). Table 35 outlines the release limits for stack emissions.

**Table 35 Release Limits for Stack Emissions\***

Release Point	Contaminant	Maximum Release Limit	Release Limit Units
1	Total Solid Particles	0.10	g/Nm <sup>3</sup>
1	Carbon Monoxide	0.15	g/Nm <sup>3</sup>
1	Nitrogen Oxides (expressed as NO <sub>2</sub> )	0.35	g/Nm <sup>3</sup>
1	Fluorides (expressed as HF)	0.025	g/Nm <sup>3</sup>
1	Total Organic Compounds	0.075	g/Nm <sup>3</sup>



Release Point	Contaminant	Maximum Release Limit	Release Limit Units
	(expressed as TOC)		
1	Heavy Metals	0.01	g/Nm <sup>3</sup>
1	Mercury	0.002	g/Nm <sup>3</sup>
1	Lead	0.003	g/Nm <sup>3</sup>
1	Cadmium	0.001	g/Nm <sup>3</sup>
1	Hydrogen Sulphide	0.005	g/Nm <sup>3</sup>
1	Sulphur Dioxide and Sulphur Trioxide	0.1	g/Nm <sup>3</sup>
1	Dioxins and Furans	TEQ 0.1	ng WHO <sub>98</sub> - TEQ <sub>DF</sub> /Nm <sup>3</sup>
1	Acid Gases (expressed as HCl)	100	mg/sec load base annualised average HCl emission limit

\*Information from URSb 2005.

### ***Biting Insects***

Daily inspections should be undertaken during the construction and operational phases of the project to note any pooling of water that remains for a period greater than 5 days.

### ***Other Inspections***

Weekly inspections will be carried out on incoming loads, vehicles and equipment to confirm they are weed and seed free. Inspection and spraying as appropriate will be carried out prior to construction to confirm the site is weed free.

Other housekeeping inspections will include the condition of landscaping, and identification of rubbish and other material that may impact on the appearance of the site.