



## 3. The Proposal

The proposal involves the construction and operation of a high temperature incinerator located within an existing fenced area of approximately 2.5 hectares at East Arm Wharf within DPC boundaries. The facility will include the following structures, as shown in Figure 3.2 Proposed Incinerator Location:

- » Gatehouse;
- » Transit Shed;
- » Incinerator (within an incinerator building); and;
- » Two 30 kL above ground LPG storage tanks.

Of the above structures, the gatehouse and transit shed already exist and are functional within the day-to-day wharf operations (i.e. all that remains to be built are the incinerator and incinerator building, and the LPG storage tanks).

It is proposed that the facility receive quarantine material by truck and process such material on a 24 hour a day, seven days a week basis during an envisaged 20 year life.

The incinerator will be designed to accept between 300 – 450 kg/hr of waste although this will actually depend on the volume, bulk density and calorific value of the waste. The primary chamber is designed to operate between 750°C to 950°C and the secondary chamber at 1200°C.

### 3.1 Overview of Quarantine in Australia

Australia is free of many of the major agricultural pests, diseases and weeds that are present in other countries. Their introduction to Australia could devastate plant and animal industries and indigenous ecological systems. The work of both Australian Quarantine Inspection Service (AQIS) and Australian Customs Service (ACS) are vital in ensuring that Australia remains protected from the introduction of pests, diseases and weeds.

#### 3.1.1 Australian Quarantine Inspection Service

The AQIS is part of the Australian Government Department of Agriculture, Fisheries and Forestry. AQIS is the agency responsible for biosecurity, i.e. keeping exotic pests, diseases and weeds out of Australia. AQIS provides quarantine inspections for international passengers, cargo, mail, animals, plants and animal or plant products arriving in Australia, and inspection and certification for a range of agricultural products exported from Australia.

In the treatment and destruction of materials, wastes and goods that have the potential to introduce pests, diseases and weeds, AQIS must be satisfied that the treatment and/or destruction method can eliminate the risk potentially associated with the pathogens and pests. For some examples of pests, diseases and weeds that are of concern to Australia's environment and plant and animal industries see Appendix D.



### **3.1.2 Australian Customs Service**

The ACS is responsible for overseeing international movement of trade goods and people into Australia, for the collection of customs and excises, for undertaking border management activities, and for detecting drugs, other prohibited materials and contraband from coming into the country.

The ACS manages the security and integrity of Australia's borders by working closely with other government and international agencies (in particular the Australian Federal Police, AQIS, the Department of Immigration and Multicultural Affairs and the Department of Defence) to detect and deter unlawful movement of goods and people across the border. It has a fleet of ocean-going patrol vessels and contracts two aerial surveillance providers for civil maritime surveillance and response.

ACS collect waste through contraband confiscations, and the materials deposited in amnesty bins are subject to quarantine control either through direct AQIS supervision or through the use of AQIS approved operators.

### **3.1.3 Quarantine Waste in the Northern Territory**

To prevent the potential spread of pests and disease being introduced into Northern Territory through international air and sea traffic, a quarantine treatment facility is required to treat the waste and destroy potential harmful hazards. This facility must be capable of securely destroying any pathogens or organisms in the wastes generated by vessels and any materials seized by the ACS.

AQIS has developed the Northern Australia Quarantine Strategy (NAQS) in recognition of the unique quarantine situation presented by this part of the country. There is an international legal requirement for the Port of Darwin under MARPOL to provide quarantine and related waste disposal services to visiting vessels. Commonwealth and Northern Territory legislation requires that disposal services be undertaken in a safe and environmentally responsible manner.

The Northern Territory Government has made a commitment to decommission the existing incinerator at Fort Hill, in the former DPC area. The Northern Territory Government has proposed that a new incinerator facility be constructed at the East Arm Wharf to replace the existing facility at Fort Hill. The existing incinerator has reached the end of its economic life and it no longer complies with relevant emission control guidelines (pers comms, DPC).

The current handling and disposal of untreated quarantine waste to landfill in Darwin is not considered to be satisfactory with the current infrastructure, and consequently the incineration of Darwin's total quarantine waste load by a new quarantine waste incinerator facility is considered to be the most appropriate method to treat the waste.

## **3.2 Project Need and Objectives**

The primary objective of the DPC is to develop and operate a quarantine waste treatment facility that meets legislative requirements and allows for the continued operation of sea and airports.

To realise this objective the proposal will aim to:

- » Minimise the risk of introducing international biohazards into Australia;
- » Provide a quarantine waste treatment facility using the best available technology and best environment practice at a reasonable cost;



- » Provide a facility to treat current and future quantities of quarantine waste entering through Darwin ports;
- » Improve the environmental and public health conditions associated with the existing facility;
- » Ensure that Australia's unique environment, including plant and animal industries, are preserved;
- » Ensure that AQIS and ACS legal requirements and responsibilities are met;
- » Ensure that the requirements of the MARPOL Convention are met; and
- » If feasible, provide a service to treat/dispose of other wastes such as medical waste and confidential records.

### **3.2.1 Darwin Port Corporation Environmental Commitment**

The business principles of the DPC ensure that all operations are committed to the highest standards of health, safety and environmental performance. The construction and operation of the quarantine waste treatment facility will meet corporate and Northern Territory Government policies including the Environmental Policy.

The Environmental Policy (September 2003) states that the DPC will:

- » 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 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 Environmental Management System (EMS); and,
- » Through continual improvement of the Corporations EMS, provide a platform for environmental sustainability in all facets of our activities and services.

### **3.3 Project Benefits**

Numerous potential benefits associated with the development of the proposed facility include:

- » Infrastructure expansion support;
- » Technology to allow increased sea traffic;
- » Allow continued international sea and air traffic into Darwin;
- » Economics associated with increased sea and air traffic; and
- » Continued environmental protection to the biodiversity of the Northern Territory.



## **3.4 Project Schedule**

### **3.4.1 Construction Timeline**

The timing of the construction phase of the project is anticipated to commence within three months of DPC being granted approval to begin construction.

The construction phase will occur for an estimated eight to ten months with the bulk of activities occurring in the dry season.

During construction an interim facility will continue to operate until the commencement of operation of the permanent facility. The interim facility will not be decommissioned as it will serve the purpose of a 'backup' facility.

### **3.4.2 Prior to Construction**

Following the approval of the development, the following activities would need to be undertaken prior to construction of the facility:

- » The required legislation approvals and required permits obtained;
- » The Construction Tenders let;
- » Finalisation of the detailed design;
- » Prefabrication of any required equipment (likely to occur off-site);
- » Confirmation of the availability of services to be provided to the contractors (water, electricity, gas, etc.);
- » Site arrangement agreements implemented (including transport plans, safety and security, health, temporary storage locations etc); and
- » The sequence of construction events would need to be prepared by the contracted civil engineer.

### **3.4.3 Construction Phase**

#### ***Methodology***

The construction phase will include the following tasks (in order):

- » Site preliminaries, including site preparation (removal of the existing bitumen, laying of a concrete slab and ensuring that drainage and environmental controls are in place as per the construction EMP), fencing, site office and erosion control;
- » Civil earthworks and services connection, incorporating power, water, sewer and telephone services and construction of access roads and surfacing;
- » Concrete works, including footings and floor slabs and liquid petroleum gas (LPG) tank base;
- » Building construction, including shed frame erection, roofing, cladding and internal power, water, sewer and telephone services;
- » Installation of incinerator and LPG gas tank; and
- » Testing and commissioning of incinerator and necessary certification.



It is expected that the air pollution control device will be assembled external to the building and fitted after the incinerator is installed.

#### ***Hours of Operation and Movement of Trucks***

Due to the nature of the surrounding working environment, construction activities are proposed to occur seven days per week. A restriction of operating hours will be enforced for activities requiring rock breakers or drills.

During the construction phase, there would typically be three to four truck movements per day. The peak would be during the pouring of the slab for the building and complementary equipment, which may incorporate six to eight trucks per day for a three-day period.

#### ***Equipment and Materials***

The equipment to be used in the normal construction of the incinerator will include:

- » A backhoe;
- » A crane;
- » A cement mixer;
- » A welder; and
- » A grinder.

Construction materials will include prefabricated machinery and process equipment, building materials, and any required imported materials.

#### **3.4.4 Operation Phase**

An incinerator with a maximum capacity of 450 kg/hour is proposed. An incinerator with a design life of 20 years and an air quality control system (to be revisited at 10 to 12 years) will be employed for this project. This incinerator will begin operation following eight to ten months of construction, testing and commissioning and licensing of the unit.

The hours of operation for the quarantine incinerator will be 24 hours a day, seven days per week, operating at an incineration rate of 300 kg/hour. The incinerator will require minor maintenance to be undertaken every few months requiring a brief shutdown period. Once a year major servicing maintenance will be undertaken over a period of one to two weeks. The incinerator would then operate at design capacity until any backlog from the shutdown period has been treated.

A provisional review of the air quality control system (at the 10 year mark) will be carried out to reconsider emission standards and emission control systems to comply with standards applicable at that time. This would also be an opportunity to review the quarantine waste management strategy in general.

Full details of the operational processes have been provided in Section 3.7, and details of the management, maintenance and administrative requirements are discussed in Section 3.8. A breakdown of the waste to be incinerated is provided in Section 5.9.



## **3.5 Land Requirements**

### **3.5.1 Location**

The proposed quarantine waste treatment facility will be located at East Arm Wharf within the confines of the DPC boundaries (see Figure 3-1). No acquisition of land is required. The incinerator will be established approximately 80 m south of the existing transit shed (refer to Figure 3-2 for the proposed incinerator location). The transit shed is approximately 98 m by 42 m (Acer Forester cited in URSb 2005). The incinerator, including the loading bay and bin washing area, will be approximately 30 m by 18 m (refer to Figure 3-3 for the layout of the incinerator building).

A detailed discussion on land use has been provided in Section 5.2 of this report.

### **3.5.2 Traffic Access**

Traffic access will be provided on the existing land surrounding the proposed incinerator location and the transit shed.

A 'U' shaped one-way, single lane, bitumen access road is proposed for the site. The proposed access road will enter the site off the existing internal road (extension of Berrimah Road) at the eastern site entry. The access road will run south along the eastern boundary of the site, past the transit shed, turn west and run past the northern side of the proposed incinerator building, turn north and run along the western side of the site and exit back onto the existing internal road (URSb 2005).

### **3.5.3 Zoning**

As mentioned in Section 2.4.1, the project site is currently owned by the DPC and is located in the Development Zone "DV" under the East Arm Control Plan, 1998. The preparation of this proposal is consistent with the zone objectives of the Northern Territory Planning Scheme, which states that development can only be undertaken with consent.

### **3.5.4 Limitations Imposed by the Site**

GHD considered the possible limitations imposed by the proposed site at East Arm Wharf as follows:

- » Geo-technical issues, such as this being a development on reclaimed land;
- » Cyclone and storm surge potentials; and
- » Climatic concerns, eg. wet season rainfalls.

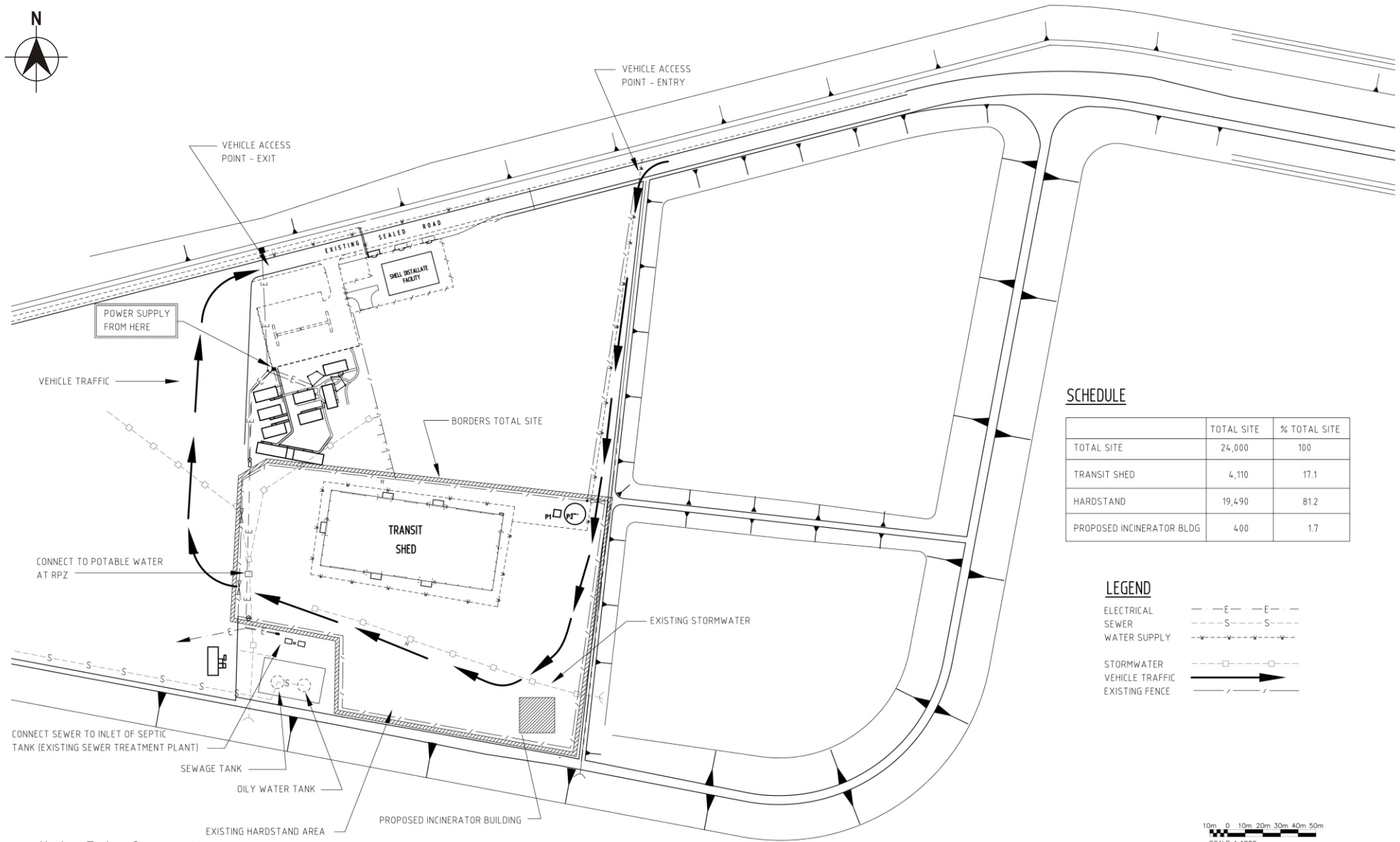
These were all considered to be minor limitations to the development of the proposed incinerator.

Monitoring of the settling rates for the reclaimed land was undertaken by DPC (refer to section 5.4). The site was reclaimed over eight years ago with an engineered pavement and as such it is highly unlikely to have any geo-technical issues. Cyclones and corresponding storm surges and climatic conditions are common to the region and alternate siting of the incinerator within the harbour area would not lessen the impact of these events.





Source: Aerial Photograph Northern Territory Government.



**SCHEDULE**

	TOTAL SITE	% TOTAL SITE
TOTAL SITE	24,000	100
TRANSIT SHED	4,110	17.1
HARDSTAND	19,490	81.2
PROPOSED INCINERATOR BLDG	400	1.7

**LEGEND**

- ELECTRICAL
- SEWER
- WATER SUPPLY
- STORMWATER
- VEHICLE TRAFFIC
- EXISTING FENCE

Source: Northern Territory Government



Quarantine Waste Treatment Facility Public Environmental Report

**Proposed Incinerator Location**

scale | as shown | date | 11 August 2006

job no | 43-20914  
file ref | 43209142\_LTN\_08.cdr

**Figure 3.2**