14. Waste Management

14.1 Introduction

This chapter outlines the proposed waste management measures to be adopted during construction, operation and closure of the Mount Peake Project, with the aim of protecting environmental values from the impacts of wastes. A Waste Management Plan has been prepared for the Project.

14.2 Waste Management Principles

14.2.1 Waste Management Legislation and Requirements

The regulatory requirements in the Northern Territory regarding waste management include:

- *Waste Management and Pollution Control Act 1998*;
- Waste Management and Pollution Control (Administration) Regulations 2001;
- Waste Management Guidelines for Small Communities in the Northern Territory 2009;
- *Public and Environmental Health Act 2011*;
- *Water Supply and Sewerage Services Act 2000*;
- *Water Act 2004*;
- *Mining Management Act 2009*;
- NT Department of Health - Environmental Health Fact Sheet #700 - Requirements for Mining and Construction Projects;
- Code of Practice for Small On-site Sewage and Sullage Treatment Systems and the Disposal or Reuse of Sewage Effluent (1996);
- AS 1940-2004: The storage and handling of flammable and combustible liquids; and
- Guidelines for the Siting, Design and Management of Solid Waste Disposal Sites in the Northern Territory (2013).

14.2.2 Definition of Waste

Under the Waste Management and Pollution Control Act, waste is defined as anything that is a solid, a liquid or a gas, or a mixture of such substances, that is left over, surplus or an unwanted by-product from any activity (whether or not the substance is of value) and includes a prescribed substance or class of substances.

A licence is required for collecting, transporting, storing, recycling, treating or disposing of listed waste.

14.2.3 Waste Categories

Hazardous waste

Hazardous wastes are wastes that pose a threat or risk to public health, safety or the environment. They include substances which may be toxic, infectious, mutagenic, carcinogenic, explosive, flammable, corrosive, oxidising or radioactive. Hazardous wastes include medical waste, excess or spent chemicals, contaminated scrap metals or drums, oily rags and absorbents, solvents, batteries, fluorescent tubes, oily sludge, paints and paint drums, oil filters, sewage and contaminated soil.

Non-hazardous waste

Non-hazardous wastes are wastes composed of, or containing, materials which are not harmful to humans and which would not have a serious impact on the environment. Non-hazardous wastes include putrescible solids and liquids, and inert solids, including paper, food waste, domestic waste, scrap metal, plastics, wood, glass, concrete and cardboard.

Recyclables

Recycle / recovery is the conversion of wastes into usable materials and / or extraction of energy or materials from wastes. Recyclable materials include paper and cardboard, plastics, glass, metal, wood, tyres, and vegetation and organic matter.

14.2.4 Project Waste Management Objectives

The waste management objectives established for the Project are provided in Table 14-1.

Table 14-1 Waste management objectives

Objective	Target	Indicator
Prevent environmental impact from waste generation.	Zero environmental incidents associated with the landfill and waste collection sites.	Number of incidents which occur in relation to the landfill and waste generation sites.
Prevent increased environmental risk by the removal of hazardous substances from storage at the landfill prior to the Wet Season.	Zero hazardous substances stored at the landfill at the commencement of November.	Number of hazardous substances stored at the landfill.

14.2.5 Project Waste Management Practices

Project waste management practices have been derived from a number of sources including the NT EPA who provide guidance on waste management through waste management principles and hierarchies. The principle of the waste management hierarchy states that waste should be managed in accordance with the following order of preference:

- avoidance;
- re-use;
- re-cycling and recovery of energy;
- treatment;
- containment; and
- disposal.

The performance requirements throughout the construction, operation and closure of the Project require that the waste hierarchy is considered, and aims to minimise waste generation through adoption of best practice waste avoidance, minimisation and disposal procedures.

14.2.6 Cleaner Production

The NT EPA requires that "cleaner production" should be considered in determining how waste is managed. A cleaner production program to identify and implement ways of improving a production process includes:

- using less energy, water or another input;
- generating less waste; or
- generating waste that is less environmentally harmful.

14.2.7 Environmental Values

During the Project construction, operation and closure phases, waste will be managed to avoid adverse impacts on the life, health and wellbeing of people and the diversity of ecological processes and associated ecosystems surrounding the Project site.

14.3 Existing Environment

The Mount Peake Project will be developed on a Pastoral lease that has not been exposed to previous industrial and mining activities. No industrial waste currently occurs on the Project site.

Existing waste disposal facilities in the region are limited to local landfills servicing small communities such as Ti Tree. Alice Springs has a number of operators that can recycle tyres, batteries, waste hydrocarbons, scrap metal, bottles and cans.

14.4 Potential Impacts

The Project will generate a variety of waste types during the construction, operation and closure phases.

14.4.1 Construction and Operation

Waste generated during the construction and operations phases include:

- waste rock and tailings;
- solid wastes from the water treatment plant;
- sewage;
- packaging materials (e.g. cardboard, paper, plastics, wood);
- scrap material, timber, geotextiles and electrical off-cuts;
- concrete;
- waste batteries, fuels, oils and chemicals;
- tyres;
- green waste from clearing; and
- general domestic waste including food waste from the accommodation facility.

14.4.2 Closure

Waste types arising from decommissioning and closure activities include:

- waste rock;
- wastewater / effluent;
- waste fuels, oils and chemicals;
- tyres;
- vegetation;
- food waste from the employee accommodation; and
- steel, concrete and timber from the Beneficiation Plant, power station and other structures.

14.5 Waste Management

14.5.1 Reuse and Recycling

Wherever practical and economically viable, all waste materials will be recycled. Metals such as steel and copper wire will be collected in designated areas prior to removal from site for recycling. Plastic pipe will be reused wherever possible. Used tyres will be collected and periodically dispatched to off-site recyclers or a re-tread facility.

Recyclable waste will be periodically delivered to various recycling facilities or end users as back loads on regular truck schedules, therefore not impacting traffic volumes.

Green waste, topsoil, packaging waste (including cardboard, timber, plastics and polystyrene foam), scrap metal and general maintenance wastes will be appropriately managed to prevent degradation of amenity, blocking of drainage lines, and avoiding impediments to revegetation efforts.

These wastes represent resources that, if not recovered through reuse or recycling, are lost once placed in a landfill. TNG will seek to maximise the use of existing recycling services wherever possible through contractual arrangements.

To maximise the reuse of on-site material over imported material for reclamation, a site-wide inventory will be prepared for reclamation materials.

14.5.2 Process Wastes

Waste Rock

Waste rock will be stored in a Waste Rock Dump. Up to 70 Mt of waste rock will be stored over the life of the Project.

The ore body does not contain any significant acid forming materials and therefore selective handling of waste rock will not be required.

A description of the waste rock dump is provided in Section 2.7.1.

Tailings

Tailings will be disposed of to a TSF. Up to 63 Mt of tailings will be stored over the life of the Project.

A description of the waste rock dump is provided in Section 2.7.2.

14.5.3 Disposal

Storage

As part of the site's general waste management, all wastes will be collected and stored in waste management areas until removed from the site to avoid any amenity concerns or other issues arising from wastes lying around the site.

Chemicals, fuels and oils will be stored and contained inside a bunded area with spill protection according to Australian Standards and Regulations.

Inert Waste

Concrete and other non-reactive, non-combustive, non-corrosive and non-hazardous demolition waste will be broken up and either:

- placed in the WRD; or
- buried in-place.

Solid waste disposal facilities will be maintained in a manner that would not attract wildlife.

Where inert industrial wastes cannot be practically or economically disposed of off-site they will be co-disposed with other inert waste being disposed on-site. Burial will be at least 2 m below the final surface. Any empty drums will be cleaned and flattened prior to burial.

General Waste

Putrescible and domestic waste will be buried in an on-site landfill. The landfill will be fenced to prevent access from vermin.

Hazardous Waste

The anticipated hazardous waste types likely to arise include:

- waste oil;
- waste lubricants; and
- batteries.

All hazardous waste material will be collected and stored on-site in designated and bunded areas prior to being transported off-site by a licenced carrier for disposal / treatment at an appropriate facility.

Sewage

Sewage treatment at the mine site / accommodation village will be via a packaged treatment plant. The plant will cater for the requirements of up to 225 construction personnel and 170 operations personnel.

Treated effluent from the Sewage Treatment Plant will be used around the site for landscaping purposes.

The untreatable solids will be collected and disposed of offsite by a licensed waste transporter.

Sewage at the Adnera Loadout Facility will be treated by septic tank and leach drains.

Sewage treatment facilities will be licenced by the Department of Health and a Waste Discharge Licence will be applied for to cover the on-site reuse of treated effluent.

14.5.4 Monitoring

Monitoring the activities and outcomes related to waste management include:

- recording of waste types and volumes generated on-site and being transported off-site;
- assessing actual waste volumes against forecasted waste volumes; and
- monitoring for potential environmental impacts including water quality monitoring.

14.5.5 Waste Commitments and Targets

Waste commitments and targets will be developed to assist in effective waste management to:

- reduce the level of waste produced and any associated environmental impact;
- recover and recycle where practicable;
- create awareness of the waste management strategy and waste commitments / targets; and
- optimise re-use and recycling systems.