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Waste Management Plan

Mineralogy Pty Ltd Cape Preston Project

Mineralogy Pty Ltd

November 2004

AN AECOM COMPANY

Waste Management Plan

Prepared for

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November 2004

74300904.12

Quality Information

Document	Waste Management Plan
Ref	74300904.12 u:\pjh\austeel\cp comment re emp\marked up emp\clives comments\waste management plana.doc
Date	November 2004
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Reviewed by	Paul Holmes

Revision History

Revision	Revision Date	Details	Authorised	
			Name/Position	Signature
B	29/09/2004		Paul Holmes Principal Environmental Planner	

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1.0 Introduction

1.1 Background

Mineralogy Pty Ltd (the proponent), proposes the development of an iron ore mine and downstream processing facilities at Cape Preston, 80km south west of Karratha.

In response to project environmental impact assessment requirements as determined by the Environmental Protection Authority (EPA), a Public Environmental Review (PER) was submitted to the Authority in December 2000. The PER was supplemented with a Supplementary Environmental Review (SER) in February 2002 to address changes to the project design being sought by the proponent. Under the proposal assessed by the EPA pursuant to the PER and SER, and a subsequent successful application for a non-substantial change to the assessed project pursuant to Section 45(c) of the *Environmental Protection Act 1986,* the project would entail an annual mining rate of approximately 67.4 Mt and annual production of the following:

- concentrate – approximately 19.6 Mt
- pellets – approximately 13.8 Mt
- direct reduced/hot briquetted iron – approximately 4.7 Mt

1.2 Relevant Legislation and Application

State Government Legislation	Application
Environmental Protection Act 1986	PER assessment and Ministerial approval process, and Section 45 (C) non-substantial change.
Draft Code of Practice for Rural Landfills (DoE, 2000)	Correct protocol for design and management of putrescible waste landfill.
Mines Safety and Inspection Act 1994	Correct protocol for the disposal of wastes.
Landfill Waste Classification and Waste Definitions (DoE, 1996)	Classification of site waste.
Explosives and Dangerous Goods Act 1961 – • Explosive and Dangerous Goods (explosives) Regulation 1963 • Explosive and Dangerous Goods (Dangerous Goods Handling and Storage) Regulations 1992 • Dangerous goods (Transport road & rail) Regulation 1999	Correct procedures for transporting handling and storing explosive and dangerous goods such as explosives, hydrocarbons and chemicals.
Environmental Protection (Controlled Waste) Regulations 2001	Management of Contaminated Soil Bioremediation landfarm.
Health Act 1911 – Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste Regulations 1974	Correct procedures for the treatment and disposal of effluent waste.

1.3 Objectives of this Document

The objectives of this Waste Management Plan are to:

- minimise the impact of waste disposal on the local and regional environment and prevent pollution;
- maximise the recycling and reuse of waste wherever practicable; and
- ensure waste management practices comply with current legislature, industry standards and waste disposal guidelines.

The Ministerial Conditions set by the Minister for the Environment requires no establishment of a Waste Management Plan, but Mineralogy has identified the need to incorporate waste into their environmental management practices. Therefore, Mineralogy developed this Waste Management Plan as part of their objective of implementing sound environmental management practices.

1.4 Responsibilities and Reporting

Overall responsibility for ensuring that site environmental management requirements are met during the construction phase of the project will rest with the proponent's Construction Manager. The responsibilities pertaining to this Waste Management Plan include:

- ensuring that all construction personnel, both the proponent's workforce and contract personnel, conform with requirements pursuant to the Waste Management Plan;
- ensuring that contractor staff are fully inducted and aware of their environmental responsibilities and obligations; and
- ensuring that monitoring requirements are met.

Contracting companies undertaking construction will be required to appoint an environmental representative. The key responsibilities of this representative will be to:

- maintain routine contact with the proponent's Construction Manager to ensure that environmental objectives of this plan are being met;
- provide monthly reports to the proponent's Construction Manager on environmental issues and conduct regular audits; and`
- ensure that all management aims and monitoring requirements of this Waste Management Plan are met.

2.0 Waste Management

2.1 Waste Streams

The Mineralogy project will generate a number of waste streams during the construction and operational life of the project. These waste streams include:

- industrial waste – oil filters, hydraulic hose, workshop waste, waste oil, tyres, etc
- putrescible waste – general domestic waste
- inert waste – asphalt, concrete
- wastewater – sewage, grey water and washdown water
- hazardous waste – hydrocarbons, explosives and radiation
- recyclable waste – aluminium products, scrap metals, wire, etc.

2.2 Waste Procedures

Waste will be managed following the principles of reduce, reuse, recycle to minimise the volume of absolute wastes generated. Wastes will be properly handled and disposed of to ensure they are contained and isolated from the surrounding environment, and that treatment or collection does not result in long term adverse environmental impacts.

(i) Employees and contractors will adhere to this plan and comply with the following waste procedures:

- putrescible, general and some type 1 inert wastes will be deposited in an onsite landfill;
- work and campsite will be kept tidy;
- rubbish containers will be carried in all vehicles and provided at all work sites;
- covered receptacles will be used to contain discarded foodstuffs to exclude scavenging by animals;
- litter and debris will be regularly removed to designated disposal areas; and
- sanitary facilities will be maintained in a clean condition.

(ii) The landfill will be designed and located such that it can be operated in accordance with the Draft Code of Practice for Rural Landfill Management (DEP, 2000) and Landfill Waste Classification and Waste Definitions (DEP, 1996).

(iii) Recyclable waste (i.e steel, aluminium cans and batteries) will be stockpile at the designated locations within the project site and transported off-site for recycling.

(iv) Wastewater (sewage) will be processed through a package treatment plant for reuse (eg for land farming of hydrocarbon contaminated soil, and watering lawns and gardens) as practicable.

(v) Hazardous waste (hydrocarbons, radioactive materials and chemicals) will be safely contained on-site in a designated area and transported offsite for disposal in accordance with all relative guidelines

(vi) Washdown water will be processed through a collection and separation system where sediments and hydrocarbons will be retrieved for appropriate disposal.

(vii) Soil contaminated by hydrocarbons will be collected and transferred to a Contaminated Soil Bioremediation Landfarm.

(viii) Waste disposal areas will be documented so waste materials can easily be located if necessary.

2.3 Predicted Impacts

Mineralogy's accommodation village is predicted to generate a significant volume of waste at Cape Preston. A landfill site is planned to manage the putrescible waste produced. In addition, a waste transfer station and recycling area will be constructed, as well as areas for sewage, hydrocarbon and chemical storage and disposal.

This waste management plan is designed to minimise environmental impacts relating to Mineralogy's waste management practices. Mineralogy's predicted environmental impacts are as follows:

2.3.1 Flora

- clearing of land, resulting in loss of vegetation;
- risk of weed introduction or spread;
- dust generation;

2.3.2 Fauna

- loss of fauna habitat, food and shelter resources;
- reduced abundance of local fauna;
- death of non-mobile fauna;
- displacement of local fauna vegetations;
- reduced species diversity in areas;
- disturbance to fauna activity patterns;
- disturbance to fauna movement patterns through barrier and habitat fragmentation;
- contamination of habitat;

2.3.3 Surface Water Quality

- contamination through use of materials in surface operations such as waste oils or accidental spills;
- contamination through the operation of Contaminated Soil Bioremediation Landfarm;

2.3.4 Ground Water Quality

- contamination through use of materials in surface operations such as waste oils or accidental spills;
- contamination through the operation of Contaminated Soil Bioremediation Landfarm; and

2.3.5 Air Quality

- volatile emissions and odours from the operation of the Contaminated Soil Bioremediation Landfarm.

3.0 Waste Management Procedures

The waste streams generated by Mineralogy's construction and operational activities require the implementation of different waste management practices. The following waste management practices to be employed by Mineralogy are:

- landfill site – putrescible, general and inert waste;
- contaminated soil bioremediation landfarm;
- waste transfer and recycling area – hazardous and recyclable material; and
- sewage treatment plant – wastewater.

3.1 Landfill

3.1.1 Site Selection

When deciding upon the appropriate location to establish the Mineralogy landfill site, the following criteria must be identified:

- visual impact – site situated behind vegetation or terrain screens away from campsite;
- flood prone areas – site can not be prone to flooding;
- aboriginal sites – sites with aboriginal heritage will not be disturbed;
- vegetated areas – vegetated sites of significance will not be disturbed;
- soil types – soils ability to tolerate solid or liquid disposal practices;
- drainage – drainage networks tolerating solid or liquid disposal practices;
- the landfill will be designed and located so that it can operate in accordance with the Draft Code of Practice for Rural Landfills (DEP, 2000); and
- obtain Works Approval under Part V of the *Environmental Protection* Act *1986* from the DoE to construct a landfill area.

3.1.2 Landfill Design

The landfill site will include the following features:

- excavated cell (trench) method of operation, using a working tip face up to 100 m in length, 2 – 5 m in depth and 3 – 5 m in width;
- a 10 m firebreak around the landfill site;
- safe access to the working face of the cell, (trench) directions to the tip face demarcated with bunding;
- a 1.8 m (minimum) high cyclone mesh litter control fence with gates around the perimeter of the landfill site;
- drainage control measures;
- progressive rehabilitation of each completed cell (trench) section; and
- the cells (trench) will be ramped at one end to allow fauna egress.

3.1.3 Landfill Operation

The Mineralogy landfill site will be used to dispose of all domestic (including non-recyclable and organic) and putrescible wastes. Plastic and type 1 inert waste (building and construction material) generated from construction activities will also be deposited at the landfill site. The waste streams generated at Mineralogy Cape Preston emphasises the importance of an effectively operated landfill that mitigates the environmental and health impacts. The following operational procedures will be implemented to reduce the effects related to poorly managed landfill sites.

Fill Method

The filling method implemented at the Cape Preston Mineralogy site is known as the trench method. This style is suited to areas where a sufficient groundwater clearance level can be maintained and where adequate cover material is available. The trench size utilised by Mineralogy may vary in size from 2 – 5 m deep, 3 – 5 m wide and 50 – 100 m long. The excavated material from the cell (tench) is stockpiled and then used as cover material.

Compaction and Waste Deposition

The waste disposal cell (trench) will be operated by ensuring the deposited wastes are compressed into a consolidated face at least twice a week. The waste placement process will ensure that the deposited materials are compacted in layers not exceeding 500 mm. This will facilitate improved compaction rates and save valuable landfill space, therefore extending the life of the landfill.

Tipping Face Length

The Mineralogy landfill will not exceed a tipping face greater than 30 metres. There are several advantages involved in reducing the tipping face these include:

- the reduction in time to achieve the desired compaction rate, therefore reducing machinery costs;
- better supervision of waste entering the site;
- less exposure of waste to rain, assisting in the reduction of leachate generation;
- reduced availability of food for pests; and
- reduced exposure of waste to wind, thereby reducing potential for windblown litter.

Waste Cover

Layers of intermediate soil cover will be placed upon landfill to a minimum depth of 230 mm. This cover will be applied on a monthly basis unless the landfill receives more than 500 tonnes per annum, in which case the cover material will be applied weekly. The frequency and depth of soil cover is important for the following reasons:

- reducing fire risk;

- minimising water infiltration into waste;
- reducing accessibility to pests;
- minimising odours and wind blown litter; and
- controlling fly breeding.

Fire Control

The following fire control regimes will be implemented:

- no burning of materials within the landfill is to occur;
- a 10 m wide fire break will be maintained around the landfill site; and
- fire fighting equipment is to be readily available.

3.1.4 Environmental Management

The following environmental management procedures will be implemented to ensure the waste disposal operation achieves an acceptable level of environmental performance

Stormwater and Leachate Management

It is expected minimal volumes of leachate will be generated from the waste disposal operations. The risk of leachate generation and consequent impact will be further minimised by configuring the cell and landfill facility to enable effective management of stormwater.

In this regard, landfill design will incorporate the following stormwater management features:

- Surface runoff will be and diverted around the active waste disposal cell.

- The cell base will be contoured to create a low point into which incidental rainfall will collect within the trench. Waste will initially be deposited within the low point to absorb incident rainfall.

- Once the low point has been filled, waste will be progressively placed over the entire cell base to create a 2 metre deep layer of absorbent material throughout the cell and minimise the occurrence of any exposed water therein.

- Water infiltration into waste will be minimised through the final configuration of the emplaced waste (a low ridge will be created to promote surface runoff), and placement of a capping layer of cover material.

Groundwater

An adequate separation distance will be maintained between the base of the landfill and the water table, thereby ensuring leachate migrates slowly from the landfill and the undisturbed soil beneath the landfill acts as a medium to filter pollutants through physical, chemical and biological processes.

In this regard, the following minimum separation distances will be adopted:

Table 4.1 Separation distance from base of landfill to groundwater level

SOIL TYPE	DEPTH TO GROUNDWATER
Clay	>2 metres
Sand	>3 metres

Draft Codes of Practice for Rural Landfill Management (DEP, 2000)

The separation distance will be measured from the cell base to the highest seasonal groundwater level.

Windblown Litter

The primary management strategy for windblown litter is regular cover of the waste materials. However, the following management procedures will be applied as necessary:

- the use of wind breaks, such as, earth bunds or portable windbreaks where prevailing wind direction is consistent; and
- the use of mobile litter screens where prevailing wind direction is inconsistent.

Where portable litter screens are used, they will be erected on three sides, and within two metres, of the tipping area. Litter will be removed from the screen regularly to ensure their effectiveness.

Site Fencing

Mineralogy will install a 1.8 metre cyclone metal wire fence encompassing the waste disposal area with access through gates. Fencing will facilitate site access management and act as a secondary litter fence.

Dust Control

The application of water to access roads and areas of exposed cover material will be undertaken where necessary to control dust, and areas required for the excavation of waste cells will not be cleared until needed. In addition, measures to minimise dust lift from completed waste cells will be implemented. This will include the establishment of vegetation cover and placement of mulch covering as an alternate surface treatment.

Waste Disposal in Wet Weather

In a period of intense or prolonged rainfall, access to the waste disposal landfill site may be constrained by flooding or unstable access conditions.

To facilitate this requirement an area of each cell will be left accessible by vehicle to allow direct tipping of waste into the cell. A small bund will be positioned along the top excavation batter slope to prevent vehicles from overtopping the edge.

Tipped waste will be pushed into the operating tip face from the point of deposition as soon as machinery access is available.

3.2 Contaminated Soil (Class III) Bioremediation

3.2.1 Location and Description

Appropriate precautions will be implemented to minimise hydrocarbon spills. However, if warranted, a landfarm (Class III) for the bioremediation of hydrocarbon contaminated soils will be established. A landfarm functions as a biological remediation process whereby micro-organisms (bacteria and fungi), which occur naturally in the soil, break down contaminants (i.e. hydrocarbons and chemicals) into non-hazardous by products.

The location of the landfarm will be selected on the basis of the following site characteristics:

- flat or gently sloping site;
- appropriate separation from surface drainage features (DoE recommends that treatment sites should be at least 50 m from surface water bodies);
- appropriate vertical separation above groundwater, typically where water table exceeds 15 m below ground level;
- sufficient distance from potential discharge pathways such as drains, soak wells, service trenches; and
- minimum separation of 50 m from odour sensitive receptors, e.g. any occupied (full or part-time) premises.

3.2.2 Design and Operation

Landfarm site design and operation will include:

- two cells, one active (in use) and the other remediating. The cells will be alternated as required and bunded to restrict water ingress and define the landfarm area;
- appropriately sized to accommodate the operations of a grader and water cart;
- utilisation only for the remediation of soils contaminated by hydrocarbons and biodegradable chemical spills and leaks;
- spreading of contaminated material within the active cell to a maximum depth of 200 mm, with appropriate control of moisture levels and **tillage** to facilitate micro-organism activity; and
- appropriate control of operation of the landfarm throughout the operational and decommissioning phases of the project.

3.2.3 Environmental Management

Environmental management actions of the Landfarm will incorporate the following considerations:

- Licensing of the landfarm under the *Environmental Protection Act 1986* in the event that the quantity of contaminated soil exceeds the anticipated 1000 tonnes per year.
- Recording the details of contaminated soil deposited at the landfarm (including date deposited, type of material deposited and volume (cubic metres) of material) in a Landfarm Register.
- Regular aeration and spreading of the contaminated soil to facilitate remediation.
- Fortnightly watering of the emplaced contaminated soil with clean or approved waste water to minimise dust lift and maintain moisture content to sustain active micro-organisms. Necessarily the watering regime will accommodate rainfall events as appropriate.
- Bi-annual sampling to assess the level of contamination within the emplaced soils. Soil will be considered remediated when hydrocarbon concentration falls below 200mg/kg. This remediated soil will then be disposed at the onsite putrescible (Class II) landfill.

3.3 Waste Transfer and Recycling Area

3.3.1 Location and Description

A waste transfer and recycling area will be established to facilitate waste minimisation initiatives.

3.3.2 Design and Operation

The waste transfer and recycling area will incorporate the following:

- cleared area of 50m x 50m (0.5 ha), with a 10m perimeter firebreak
- laydown bays for materials with the potential for reuse, recycling or sale such as:
  - high grade metals to be stored in skip bins
  - low grade metals to be stored in drums
  - batteries on bunded pallets
  - waste oil and fuel will be stored in bunded tanks
  - aluminium cans
  - recyclable plastics

3.3.3 Hydrocarbons and Chemicals

The Cape Preston project will comply with current regulatory requirements relating to the management disposal of hydrocarbons and chemicals. In circumstances, where employees and contractors deal with hydrocarbons and chemicals the following procedures will be followed:

- Where practicable, refuelling will be undertaken in designated areas fitted with internal drainage systems and oil/water interceptors.
- Transport of hydrocarbons and chemicals by road or rail will be in accordance with the *Dangerous Goods (Transport) (Road & Rail) Regulations 1999*.
- The storage of chemicals will adhere to the DoIR Dangerous Goods requirements.
- Regular inspections of the storage and handling of hydrocarbons and chemicals, including inspecting storage areas for leaking bunds, drums or containers.
- Restriction of vehicle and machinery maintenance to designated areas.
- Utilisation of above ground pipework for chemicals and hydrocarbons as practicable to facilitate leak detection.
- Adequately labelling and storage of used hydrocarbon drums and store for future use or removal.
- Implementation of Minor Hydrocarbon and Chemical Spills procedures, and Emergency Response and Preparedness Plan (contained within the Construction EMS) to ensure a swift and effective clean up in the event of contamination of surface and groundwater.
- In the event of a significant hydrocarbon or contaminant spill monitoring of groundwater quality in locations near the spill to identify any changes to physical and chemical parameters.
- Disposal of waste chemicals, hydrocarbons or contaminated materials (soil and containers) in an approved manner, including treatment of any contaminated soil at the landfarm facility.

3.3.4 Industrial Waste and Recyclable Material

All industrial waste will be removed from the project site to a registered landfill or recycling facility, using appropriately certified contractors. These industrial wastes include:

- Workshop type waste – batteries, drums of hydrocarbon products (grease, waste oil and oil filters), solvent paints and other chemicals.

- Scrap metal that has resale value – aluminium cans, metal offcuts, etc.

Waste oils will be stored on site in above ground tanks located within impervious bunded enclosures. Oil filters, paints, solvents, grease cartridges and other chemicals will be disposed off site in suitably registered landfill facilities, or liquid waste disposal facility.

Workshops design and the design of associated facilities (eg vehicle/machinery washdown sites) will incorporate measures to control drainage and contain potentially contaminated runoff. Any runoff from workshop areas and other areas likely to contain hydrocarbon products or solvents will be directed to sumps and oil-water separators that will remove contaminants from the water. These facilities will be maintained as necessary and waste oils and solvents will be removed for recycling, or disposal at an approved waste facility.

3.4 Acid Mine Drainage and Asbestos

Pyritic black shales (which can give rise to acid mine drainage) and asbestos forming minerals have not been encountered during extensive drilling conducted over the orebody and it is anticipated these materials are unlikely to occur.

In the event that pyritic shales or asbestiform minerals are identified the appropriate method for managing the materials will be determined through consultation with relevant regulatory authorities. The proponent recognises that to undertake appropriate measures to manage such materials it will be necessary, and could include:

- grade control and bench mapping to identify areas in advance that may contain pyritic shales or asbestiform mineralisation;

- use of protective equipment in areas where asbestos is encountered;

- use of water to wet down potentially affected areas;

- inject water during drilling to suppress dust liberation in areas where asbestos has been identified;

- wetting of affected areas during blasting; and

- sealing the pyritic shales or asbestiform materials within waste stockpiles.

3.5 Sewage Treatment Plant

Human sewage will be generated from the accommodation village, administration buildings and workshops. The wastewater from on-site ablution facilities will be treated via a package plant prior to discharge to contained evaporative lagoons or use in landfarming or irrigation.
The proponent will ensure that the sewage treatment process will conform to the following requirements:

- compliance with DoE *Environmental Protection Act 1986* license conditions;
- exclusion of uncontaminated runoff from the treatment plant;
- seepage of minimisation from the treatment plant;
- exclusion of vegetation within the systems; and
- disposal of resultant sludges in accordance with Western Australian Guidelines for Direct Land Application of Biosolids and Biosolids Products (DoE) or by methods approved by the Minister for the Environment and Heritage.

4.0 Monitoring

4.1 Performance Indicators

The proponent will ensure that all realistic measures to prevent or minimise the impact from waste from project related activities will be implemented. The success of these measures will be monitored against the following indicators:

- Works Approval and operating license conditions from the DoE;
- suitable location for the landfill determined;
- compliance with landfill license;
- compliance with DoE landfarm license;
- compliance with this plan including waste procedures outlined in management actions;
- sewage waste treated and disposed of in accordance with statutory requirements;
- regular housekeeping inspections;
- storage of waste hydrocarbons in accordance with Australian standards for the *Storage and Handling of Flammable and Combustible Liquids (AS 1940 – 1993);*
- the transport of all hazardous waste materials is in accordance with the license conditions;
- completion of incident sheets for accidental spills of fuels and contaminants on site;
- monitoring of groundwater quality following any of significant contaminant spills; and
- implementation and participation of work force environmental training and induction programmes.

4.2 Education and Training

The induction programme for new employees, contractors and subcontractors will include an environmental component. This will include waste management procedures, handling and storage of hydrocarbons and chemicals, and necessary spill response procedures.

Education and training of all project personnel, including, contractors and subcontractors will take place on or prior to arrival at site and prior to undertaking any activities within the project area.

The proponent will maintain an awareness of developments in waste management, and will ensure that all site personnel are aware of all applicable requirements relating to waste management.

4.3 Monitoring Programme

Periodic inspections will be conducted to ensure waste management procedures are being maintained and in this regard, the following strategies will be implemented:

- systematic monitoring; and
- incident reporting.

4.3.1 Systematic Monitoring

The adequacy of procedures will be reviewed on an annual basis. The waste management facilities procedures will be regularly inspected, including the onsite accommodation village, the landfill, landfarm, waste transfer station and recycling area.

Annual monitoring will help identify deficiencies in current waste management procedures or implementation. Monitoring will be carried out by the Site Environmental Coordinator.

Table 5.1 illustrates the monitoring and inspection schedule implemented at the Cape Preston Mineralogy site. The Mineralogy Environmental Coordinator will be responsible for undertaking and recording the results.

Table 5.1 Monitoring and Inspection Schedule

As	Inspection Item	Responsibility	Timing
Landfill	Collection of waste disposal records	Mineralogy Environmental Co-ordinator	Monthly
	Segregation of recyclable materials	Mineralogy Environmental Co-ordinator	Weekly
	Visual inspection of surrounding environment for evidence of accumulated wastes	Mineralogy Environmental Co-ordinator	Weekly
Waste transfer station	Collection of hazardous waste disposal register	Mineralogy Environmental Co-ordinator	Weekly
	Visual inspection of hydrocarbon and chemical storage bunded areas	Mineralogy Environmental Co-ordinator	Weekly
	Visual inspection of waste oil traps	Mineralogy Environmental Co-ordinator	Weekly and after heavy rainfall events
Wastewater	Visual Inspection of sewage treatment plant	Mineralogy Environmental Co-ordinator	Weekly and after heavy rainfall events
	Visual inspection of site runoff treatment facilities	Mineralogy Environmental Co-ordinator	Weekly and after heavy rainfall events
Landfarm	Visual inspection of bunded areas	Mineralogy Environmental Co-ordinator	Weekly
	Collection of landfarm soil disposal records	Mineralogy Environmental Co-ordinator	Monthly

Groundwater monitoring will be taken bi-annually in locations around the landfill site to determine whether there is any movement of leachate into the surrounding environment.

The following Waste Disposal Registers will be maintained to monitor and record the quantity and location of wastes:

- Recycled Material Register;
- Waste Disposal Register;
- Landfarm Register;
- Wastewater Register; and
- Hazardous Disposal Register

4.3.2 Incident Reporting

Incidents involving waste management including contamination through spills, leaks and inappropriate disposal will be reported using the DIN – 19 Procedure for Emergency Preparedness and Response (Environmental Incident Form).

Information from the incident report will be collected and collated in DIN – 22 Register for Corrective and Preventative Action to provide for review and modification of waste management procedures as appropriate.

5.0 Reference

Department of Environment (2002) *WA Guidelines for Direct Land Application of Biosolids and Biosolids Products – February 2002.* Department of Environmental Protection, Perth, WA. www.environ.wa.gov.au/downloads/1630_Biosolids.pdf

Department of Environment (2000). *Draft Code of Practice Rural Landfill Management.* . Department of Environmental Protection, Perth, WA.

Department of Environment (1996a). *Landfill Waste Classification and Waste Definitions.* . Department of Environmental Protection, Perth, WA.

Department of Industry and Resources (various). *Guidelines – Dangerous Goods Transport and Storage.* Department of Minerals and Energy, Perth, Western Australia.

Environmental Protection Authority (1990). *Oil Farmng for Oily Waste – A guide for Users.* Technical Series No.37. Environmental Protection Authority, Perth, Western Australia

Standards Australia (1993). *The Storage and Handling of Flammable and Combustible Liquids (AS 1940 – 1993).* Standards Australia, Homebush, New South Wales.

Halpern Glick Maunsell Pty Ltd (2002) *Iron Ore Mine and Downstream Processing, Cape Preston, WA, Supplementary Environmental Review, February 2002*, Unpublished report prepared for Austeel Pty Ltd

Halpern Glick Maunsell Pty Ltd (2000) Iron Ore Mine and Downstream Processing, Cape Preston, WA, Public Environmental Review, December 2000 Unpublished report prepared for Austeel Pty Ltd