

Title: **WASTE MANAGEMENT**Unique Identifier: **240-29828394****GVLE 002**Document Type: **PROCEDURE**Revision: **4**Effective date: **JANUARY 2010**Total pages: **13**Revision date: **JANUARY 2012**Classification **CONTROLLED
DISCLOSURE**

COMPILED BY

FUNCTIONAL RESP.

AUTHORISED BY

**BH VD WALT
ASSISTANT
ENVIRONMENTAL OFFICER****F VAN JAARSVELD
BP&A MANAGER****JR HECTOR
POWER STATION MANAGER**

Date:

2010-01-26

Date:

2010-01-21

Date:

*22/1/2010***CONTROLLED DISCLOSURE**

When downloaded from the GDC database, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorised version on the database. Printed copy only valid for two weeks

Content	Page
Introduction	3
1. Scope	3
2. References	3
3. Definitions and Abbreviations.....	3
4. Responsibilities	4
5. IBI Tools	5
6. Procedure	6
7. Records	11
8. Distribution.....	11
9. Annexure	11
Annexure A: Colour Coding for Waste Disposal.....	12
10. Revision Information.....	13
11. Document Acceptance	13

CONTROLLED DISCLOSURE

When downloaded from the GDC database, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorised version on the database. Printed copy only valid for 2 weeks.

Introduction

1. Scope

This procedure is applicable to all employees at Grootvlei Power Station as defined below.

This procedure is applicable to all activities/projects that could have significant environmental impacts at Grootvlei Power Station.

1.1 Purpose

To identify waste management issues on site.

To ensure control through the correct handling, storage and disposal of hazardous and non-hazardous (domestic) waste at Grootvlei Power Station.

To stipulate the required waste management information to be recorded and reported on.

2. References

1. Environmental Conservation Act (Act 73 of 1989)
2. National Environmental Management Act (Act 107 of 1998)
3. National Environmental Management Waste Act (Act 59 of 2008)
4. Health Act (Act 63 of 1977)
5. Atmospheric Pollution Act (Act 45 of 1965)
6. Occupational Health and Safety Act No. 85 of 1993
7. Hazardous Substances Act (Act 15 of 1973)
8. Constitution of the Republic of South African (Act 108 of 1993)
9. Water Act (Act 54 of 1956)
10. National Water Act (Act 36 of 1998)
11. 32-245 Waste Reporting Directive
12. ESKADAAO3 Corporate directive for the management of polychlorinated Biphenyls (PCB's)
13. ESKPBAAC4 Waste Management Policy
14. ESKPBAAA4 Ozone Depleting Compounds Management and Phase Out
15. ESKASAAC2 Management of PCB's
16. ESKPVAAG5 Requirements for the safe processing, storing, removing and handling of asbestos or asbestos containing materials
17. ESKADAAI8 Safe processing, storing, removing and handling of asbestos and materials containing asbestos

3. Definitions and Abbreviations

3.1 Definitions

- 3.1.1 Employee – personnel in the full-time or part-time/occasional employ of Grootvlei Power Station, including contracted workers as per the OHSAct.
- 3.1.2 Domestic (general) waste – a generic term applied to waste that, because of its composition and characteristics, does not pose a significant threat to public health or the environment.
- 3.1.3 Hazardous waste - waste which has the potential, even in low concentrations, to have significant effect on public health and/or the environment. This would be on account of its inherent chemical and physical characteristics, such as toxic, ignitable, corrosive, and carcinogenic or other properties.

CONTROLLED DISCLOSURE

When downloaded from the GDC database, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorised version on the database. Printed copy only valid for 2 weeks.

3.1.4 Activity - Any action whether actual, planned or unplanned, that is performed by, or related to the functioning of Grootvlei Power Station.

3.1.5 Environment - The surrounding in which humans exist that is made up of:

- The earth's land, water and atmosphere,
- Micro-organisms, plant and animal life,
- Any part of combination of (a) and (b) and the interrelationship among and between them; and
- The physical, chemical, aesthetic and cultural properties and conditions of these surroundings that influence human health and well being.

3.1.6 Environmental Aspect - An element of an organisations' activity, product, or service: that can or may have a beneficial or adverse impact on the environment.

3.1.7 Environmental Impact - The degree of change in an environment resulting from the effect of an activity on the environment, whether desirable or undesirable.

3.2 Abbreviations

PCB	-	Polychlorinated Biphenyls
SANS	-	South African National Standard
KPI	-	Key Performance Indicator
AWR	-	Ash Water Return
WIS	-	Waste Information System
GEM	-	Generation Environmental Management
B,P&A	-	Business Processes and Assurance
e.g.	-	for example

4. Responsibilities

4.1 Power Station Manager:

The Power Station Manager is accountable for:

- Appointing in writing competent persons to manage all identified waste management activities
- Providing all the resources necessary to sustain the waste management process
- Supporting initiatives that will ensure continual improvement

4.2 B, P & A Manager:

The B, P & A Manager is responsible for:

- Providing all the resources necessary to sustain the waste management process
- Supporting initiatives that will ensure continual improvement

4.2 Environmental Section:

The Environmental Section is responsible for:

- Ensuring reputable contractors for the collection and disposal/recycling of waste are used
- Communicating waste management related issues to the rest of the personnel
- Managing the resources necessary to sustain the waste management process
- Keeping certificates of manifests and safe disposal of all waste
- Keeping records of all hazardous and non hazardous waste disposed of
- Routine waste reporting to GEM as required for the WIS and as defined in procedure

CONTROLLED DISCLOSURE

-
- Annually updating the list of all waste handled/handlers
 - Ensuring waste management conforms to legal and other requirements
 - Participate in local environmental waste forums.

4.3 Occupational Hygiene Officer:

The Occupational Hygiene Officer is responsible for ensuring that:

- Asbestos stripping, handling and disposal on site complies with legal and other requirements.
- Asbestos shall be stripped and reported upon in accordance with an approved plan as accepted by the Department of Labour.
- Any material suspected of asbestos fibre contamination is disposed off as asbestos material on site.
- The on site asbestos waste disposal site conforms to the required legal/licence requirements.

5. IBI Tools

- This procedure must be strictly adhered to in order to achieve the following main objective:
 - ✓ To ensure that the right action are performed in the right sequence
 - ✓ To avoid repeating the mistakes of other
 - ✓ To minimise the potential for making mistakes
- Read the whole procedure and ensure that all the resources required for the activity to be carried out are available
- Use correct PPE for personal safety for each and every specific job
- For each job, each and every shift must have a pre-job brief and if the job is held over to another shift the pre-job shall be repeated before work starts again
- Risk Assessment shall be agreed upon by the involved parties or departments before the activity is carried out on the plant in order to outline the possible consequences of the task
- Before taking action use a STAR principle to ensure you do the right thing to the right thing that is:
 - STOP everything you are doing: take two minutes and observe two meters around you to eliminate any current or potential distractions
 - THINK through what you are going to do and what you want to
 - ACT – Take the action safely by doing the following:
 - ✓ Read each individual step before taking any action
 - ✓ Use appropriate place-keeping during and after performance of each step
 - ✓ (circle/slash/tick)
- REVIEW – After your action, review what happened and verify if the desired indication / response / outcome is achieved
- Three way communication must be adhered to in the following sequence:
 - The sender provides clear and concise direction / information
 - The receiver repeats back the message to the sender
 - The sender confirms that the receiver understand the message (usually by saying “that is correct”)

CONTROLLED DISCLOSURE

When downloaded from the GDC database, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorised version on the database. Printed copy only valid for 2 weeks.

-
- Post-job discussions shall take place after every job. If there are lessons to be learnt, they must be documented and shared to all involved persons or departments.

6. Procedure

6.1 On-site Waste Management (Handling, Storage and Disposal):

6.1.1 Water plant clarifier blow down:

- i. Clarifier blow downs are part of the normal operating of the water plant. Blow downs enter the Station's closed loop effluent drainage system via the effluent plant where, if the effluent water is too acidic, it is neutralised.

6.1.2 Water plant sand filter backwash:

- i. Sand filter backwash is part of the normal operating of the water plant. Backwash is recovered and retained in the closed raw water system, until unable to recover any longer, and then the backwash water will be treated as waste water and removed to the Station's closed loop effluent drainage system via the effluent plant where, if the effluent water is too acidic, it is neutralised.

6.1.3 Domestic waste:

- i. Satellite collection bins/drums and skips shall be placed strategically throughout the station.
- ii. The cleaning services contractor/s are to collect waste from the satellite bins and place this waste into skips.
- iii. The waste disposal contractor transports the skips to the permitted landfill site.
- iv. Records of all waste disposed of as well as of the current licence for the waste handler/s and disposal site/s, will be kept by the Environmental Section for reporting purposes.
- v. Domestic waste is generally mixed waste comprising paper, wood, plastic, glass, garden refuse, perishable food-stuff refuse and other non-hazardous materials.
- vi. However, waste paper shall as far as possible, be recovered for recycling and kept separate from other waste types.
- vii. Confidential documents shall be shredded before disposal. When a truck load of waste paper is available, it will be transported to the waste recycling contractor.
- viii. Garden refuse will also, as far as possible, be removed by the horticulture contractor and disposed of at the designated Municipal disposal site.
- ix. Plastic bottles will, as far as possible, be recovered for recycling and kept separate from other waste, provided the bottles did not originally contain any hazardous substance.

6.1.4 Asbestos:

- i. Asbestos stripping, handling and disposal on site will be the responsibility of the site Occupational Hygiene Officer.
- ii. Asbestos waste must be disposed of in double impermeable sealed and labelled plastic bags or in a leak proof container, capable of sealing properly in order to prevent spillage.
- iii. Asbestos shall be stripped in accordance with an approved plan as accepted by the Department of Labour.
- iv. The company, responsible for removing and disposing of the waste, must comply with Eskom's safety and health regulations on site and must provide safety equipment for the safe handling of the waste. He must also provide and Emergency Response procedure of the action to be taken in the event of spillage during loading and transportation.
- v. Disposal of asbestos at the Station's Asbestos Disposal Site (Registration No.16/2/7/C123/B20/1/1 P492 of 2005/11/26) will be done according to an approved plan.

CONTROLLED DISCLOSURE

6.1.5 Building rubble:

- i. All building rubble is reclaimed for back filling and soil erosion control provided the quality and quantity of the waste has been verified by the Environmental Section as conforming to legal requirements.
- ii. The Environmental Section will indicate where building rubble can be disposed.

6.1.6. Medical/sanitary waste:

- i. Medical waste is generated in the clinic at the Station, which caters for the basic medical requirements of the workers/contractors and which provide assistance in emergencies. The medical waste stream would normally contain used bandages, needles, syringes, dressings, medicine containers, tissues and similar items. Medical waste is classified as a hazardous waste as it can cause infections.
- ii. Medical and sanitary waste will be collected and accumulated in dedicated containers on a monthly and weekly basis, as required.
- iii. Waste will be removed according to contracted agreement and records will be kept by the Medical Centre and Environmental Section.
- iv. Medical and sanitary waste will be removed by an appropriately licensed waste contractor and incinerated by a licensed hazardous waste incinerator service provider.

6.1.7 Ferrous and non-ferrous metals:

- i. All scrap metal will be reclaimed for recycling.
- ii. Normal ferrous metals will be deposited in the scrap metal enclosure at the waste transit area from where it will be removed by the approved contractor.
- iii. Non-ferrous metals such as brass and copper will be kept in a place of safe storage until sold, according to national contract.
- iv. Records of scrap metals sales will be kept by the Stores and Environmental Sections for reporting purposes.

6.1.8 Oils:

- i. Waste oils and greases are considered hazardous, as they can, if not correctly disposed of, cause hydrocarbon pollution of soils and water resources. Hydrocarbons do not degrade easily and are difficult to treat.
- ii. Old oils and greases are placed in 210 litre drums, specifically for this purpose, from where it is collected by a contractor for recycling and submission of safe disposal certificates.

6.1.9 Oily sludge:

- i. Oily sludge is treated as hazardous and cannot be recycled due to contamination with material other than oil.
- ii. Oily sludge will be disposed of as hazardous waste.

6.1.10 Oil filters:

- i. No vehicle oil filters will be catered for on site and must be replaced off-site as per the vehicle/fleet maintenance contract.
- ii. All other oil air filters will be disposed of as hazardous waste.

6.1.11 Chemical and laboratory waste:

- i. Waste chemicals are hazardous waste and must be disposed of in labelled sealed, leak proof containers and disposed of accordingly.
- ii. Spent chemicals from the laboratory will be diluted/neutralised before they form part of the Station's closed loop effluent drainage system.

CONTROLLED DISCLOSURE

- iii. Any containers containing chemicals must be rinsed/neutralised before they are disposed of as
- iv. domestic/general waste, otherwise the containers must be disposal of as hazardous waste.

6.1.12 Fluorescent tubes and sodium lamps:

- i. Used fluorescent tubes and sodium lamps will be crushed and placed in a red 210 litre drum.
- ii. When filled these drums must be sealed and transported to the on-site hazardous waste temporary storage yard for collection and disposal at a registered hazardous waste site.

6.1.13 Used rags:

- i. Drums will be available at all workshops and strategical dedicated areas for used rags.
- ii. When filled, these drums must be sealed and transported to the on-site hazardous waste temporary storage yard for collection and disposal at a registered hazardous waste site.

6.1.14 Conveyer belts and rubber:

- i. Conyever belts and rubber entering the waste stream at the Station are from the plant.
- ii. No fleet/pool car vehicles are maintained on site. Should a vehicle breakdown occur on site, the relevant service provider is called to site to undertake the emergency repair and is responsible to remove all associated waste off site.
- iii. Conveyer belts and rubber will be resold (if possible) via the salvage yard, or (provided the rubber is not contaminated with a hazardous substance) disposed of as domestic waste.
- iv. If the conveyor belts/rubber are contaminated with hazardous substances such as greases, oils or chemicals, then it will be dispoed of as hazardous waste.

6.1.15 Contaminated soil:

- i. Soil contaminted due to oil spills can cause hydrocarbon polution. Hydrocarbons do not degrade easily and are difficult to treat.
- ii. Contaminated soil must be removed and transported to a registered hazardous waste disposal site by a registered waste removal company
- iii. Contaminated soil could also be bio-remediated *in situ* if the Environmental Section deems it a beeter clean-up option.
- iv. Soil which has undergone bio-remediation must be assessed a period intervals to ensure that the bio-remediation has been successful in removing all hydrocarbon contamination.

6.1.16 Oil absorbing fibre, booms and cushions:

- i. Oil absorbing material (e.g. Drizit) will be used when an oil leak/spillage occurs as per procedure GVLE 003 (Environmental Spillage Management Procedure). Once used, this material is hazardous and must be disposed of as hazardous waste.
- ii. In an emergency, ash may also be used to absorb spilled oil and the oil contaminated ash must be disposed of a hazardous waste.
- iii. The Environmental Section will arrange correct disposal of any hazardous waste generated by the Station related to oil leaks/spillages.

6.1.17 Silica Gel:

- i. Silica gel (containing cobalt chloride) is used as a moisture indicator in transformer respirators.
- ii. If possible moisture rich silica gel should be baked and re-used on site.

CONTROLLED DISCLOSURE

-
- iii. When contaminated completely, silica gel is to be placed in a hazardous waste drum labelled 'silica gel' and adequately controlled so that the container is not used for any other waste.
 - iv. Once sufficiently full, the drum is to be sealed and disposed of at a registered hazardous waste disposal site.

6.1.18 Batteries:

- i. **All** used batteries are to be treated as hazardous waste and placed in hazardous waste drums labelled 'batteries'.
- ii. The drums for spent batteries are located in the stations units control rooms and must be adequately controlled so that they are not used for any other waste.
- iii. Once sufficiently full, the drums are to be sealed and sent to the Station's hazardous waste temporary storage yard for collection and disposal at a registered hazardous waste disposal site.

6.1.19 Paint/hazardous waste containers:

- i. Empty paint/hazardous waste containers are generated by various contractors/Eskom employees.
- ii. Spent hazardous waste containers are to be compacted (if possible) and placed in hazardous waste drums.
- iii. Once sufficiently full, the drums are to be sealed and sent to the Station's hazardous waste temporary storage yard for collection and disposal at a registered hazardous waste disposal site.

6.1.20 Used de-greasers/solvents:

- i. Used degreasers and solvents are mostly used by contractors for cleaning purposes.
- ii. Spent (used) degreasers and solvents will be poured into appropriately labelled hazardous waste drums.
- iii. When sufficiently (not more than $\frac{3}{4}$) full, the drums are to be sealed and sent to the Station's hazardous waste temporary storage yard for collection and disposal at a registered hazardous waste disposal site.

Hydraulic hoses/pipes:

- i. All hydraulic hoses and pipes used on equipment will be disposed as hazardous waste and placed in hazardous waste drums.
- ii. Once sufficiently full, the drums are to be sealed and sent to the Station's hazardous waste temporary storage yard for collection and disposal at a registered hazardous waste disposal site.

Boiler/precipitator ash:

- i. Ash is produced as part of the normal operating of a coal fired boiler and flue gas cleaning plant.
- ii. Ash is pumped from the Station via concreted trenches and ash pipelines towards the registered Ash Dam on site.
- iii. In emergency conditions, if ash is emptied directly onto the concreted station floor from the boiler/flue gas cleaning plants, it must be manually picked up (e.g. using shovels) and put into the production waste skips within 24 hours.

Sandblasting grit:

- i. Sandblasting grit is usually itself not hazardous but the material safety data sheet must be available to verify that the constituents of the grit are not hazardous.

CONTROLLED DISCLOSURE

-
- ii. Spent sandblasting grit will be treated as hazardous unless proven otherwise by means of chemical analysis results from an accredited laboratory and disposed of at a registered hazardous waste disposal site.

Electronic waste:

- i. Electronic waste is also referred to as 'E-waste' and includes all discarded electronic devices such as computers, telephones, cables, air-conditioners and hand held electrical equipment, as well as photocopying machine and printer cartridges which have an intelligent electronic device/chip as a component.
- ii. Copper and cable waste must be placed in the correctly labelled/colour-coded skips or bins.
- iii. The Environmental Section must be informed of other electronic waste for disposal and will ensure that appropriate recycling takes place.

Hazardous waste collected in satellite bins on site must conform to procedure GVLE 007 (Temporary Hazardous Waste Storage Yard Operation).

Spillage waste material must be handled as per Procedure GVLE 003 (Environmental Spillage Management Procedure).

- 6.2 Domestic/general and hazardous waste on site must adhere to the Station's colour code system for waste separation as depicted in Annexure A and as listed below:

Domestic waste/litter	-	white skips or drums
Building rubble (e.g. concrete, cement, gravel)	-	yellow skips or drums
Copper wire/electrical cables	-	blue skips or drums
Hazardous waste/contaminated material	-	red skips or drums
Scrap metal	-	green skips or drums
Production waste (e.g. coal, coal dust, ash)	-	black skips or drums
Plastic bottles	-	marked plastic recycling boxes
Paper	-	marked paper recycling boxes
Printer cartridges	-	marked printer cartridge recycling drums

6.3 Waste Management Reporting

In order to manage waste responsibly, to reduce waste generation and conserve resources, it is essential that waste is tracked (recorded) and reported. The Corporate Waste Reporting Directive 32-245 controls waste reporting.

The Station shall report on a six monthly basis on the waste KPI's as described below:

- Number of people trained in waste related issues
- Volumes of waste recycled, reused and scrapped
- Percentage of transformers labeled for PCB status
- PCB disposal
- Reduction in number of oil spills
- Clean-up of spills
- Kilograms of asbestos and asbestos containing material disposed of
- Use of environmentally friendly solvents (change from other solvents)
- Number of waste sites permitted
- Disposal at external permitted sites
- Use of approved waste handler/transporters

Until the requirement of the Waste Information System has been defined, the following additional figures shall be reported on a monthly/six monthly basis:

CONTROLLED DISCLOSURE

-
- Inventory of brand names, active ingredients and litres solvent purchased
 - Kilograms of SF6 disposed of
 - Kilograms of medical waste disposed of
 - Number of 210 litre drums of compacted fluorescent tubes disposed of
 - Tons of domestic waste disposed of
 - Tons of building rubble disposed of

7. Records

N/A

8. Distribution

All Department Heads.
G-Drive

9. Annexure

Annexure A – Colour Coding for Waste Disposal

Annexure A: Colour Coding for Waste Disposal

COLOUR CODING FOR WASTE Eskom

-  **Copper & Cable Waste**
-  **General Waste / Domestic Waste**
-  **Building Rubble / Ash**
-  **Hazardous Waste / Oil Rags / Used Drizit**
-  **Scrap Metals**
-  **Production Waste / Ash / Coal Waste**

CONTROLLED DISCLOSURE

When downloaded from the GDC database, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorised version on the database. Printed copy only valid for 2 weeks.

10. Revision Information

Date	Rev.	Remarks
	2	Procedural change, Procedure no change from GVL032 – GVLE 002
2008	3	5.2 Revision date changed, Change of bullets 2 and 4 by Environmental Officer. Add additional bullet 8 8 – References, Add new bullet 10, Change 10-16 to read 11-17 9 – Distribution Add to G Drive, Updated Waste List
Jan 2010	4	Re-defined entire purpose statement Numbering changed on procedure Procedure number changed to Hyperwave number (240-29828394) Added B, P&A and e.g. to abbreviations Changed Environmental Officer to Environmental Section throughout Procedure Added point 4.3 to section 4 Added points 6.1, 6.2, 6.3, 6.4 to section 6 Re-numbered point to be 6.5 Deleted old section 7 Added point 3 to references in section 2 Added section 9 (Annexure)

11. Document Acceptance

This document has been seen and accepted by the following people:

CONTROLLED DISCLOSURE

When downloaded from the GDC database, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorised version on the database. Printed copy only valid for 2 weeks.