

WASTE MANAGEMENT PLAN

1. PURPOSE

A Waste Management Plan (WMP) plays a key role in achieving sustainable waste management. This purpose of this plan is to ensure that effective procedures are implemented for the handling, storage, transportation and disposal of waste that is generated from the activities on site. The plan prescribes measures for the collection, temporary storage and safe disposal of the waste streams associated with the project and includes provisions for the recovery, re-use and recycling of waste.

This WMP has been compiled as part of the project Environmental Management Programme (EMPr) and includes waste stream information available at the time of compilation. Construction practices and operations must be measured and analysed in order to determine the efficacy of the plan and whether further revision of the plan is required. This plan should be further updated should further detail regarding waste quantities and categorisation become available, during the construction and/or operational stages.

2. RELEVANT ASPECTS OF THE SITE

Waste generated on site, originates from various sources including:

- » Concrete waste generated from foundations.
- » Contaminated water, soil and vegetation due to accidental hydrocarbon spills.
- » Hydrocarbon waste from vehicle, equipment and machinery parts (oil cans, filters, rags etc), and servicing.
- » Recyclable waste in the form of paper, cardboard, glass, metal offcuts, wood/ wood pallets and plastic.
- » Organic waste from food waste and alien vegetation removal.
- » Sewage from portable toilets.
- » Inert waste from excess rock and soil from site clearance and trenching works.

3. LEGISLATIVE REQUIREMENTS

Waste in South Africa is currently governed by means of a number of pieces of legislation, including:

- » National Environmental Management: Waste Act (NEM:WA), 2008 (Act 59 of 2008)
- » National Environmental Management: Waste Amendment Act, 2014 (Act 26 of 2014)

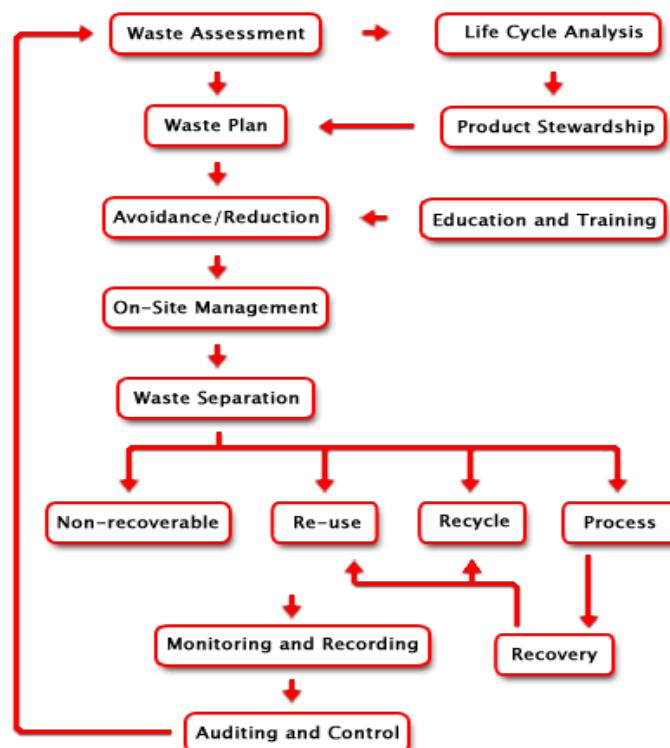
- » The South African Constitution (Act 108 of 1996)
- » Hazardous Substances Act (Act 5 of 1973)
- » Health Act (Act 63 of 1977)
- » Environment Conservation Act (Act 73 of 1989)
- » Occupational Health and Safety Act (Act 85 of 1993)
- » National Water Act (Act 36 of 1998)
- » The National Environmental Management Act (Act 107 of 1998)
- » Municipal Structures Act (Act 117 of 1998)
- » Municipal Systems Act (Act 32 of 2000)
- » Mineral and Petroleum Resources Development Act (Act 28 of 2002)
- » Air Quality Act (Act 39 of 2004)

Storage of waste must be undertaken in accordance with the National Norms and Standards for the Storage of Waste published in GN926.

4. WASTE MANAGEMENT PRINCIPLES

An integrated approach to waste management on site is needed. Such an approach is illustrated in the figure below.

The Integrated Waste Management Approach to Waste



Source: <http://www.enviroserv.co.za/pages/content.asp?SectionId=496>

It is important to ensure that waste is managed with the following objectives in mind during all phases of the project:

- » Reducing volumes of waste is a priority;
- » If reduction is not feasible, the maximum amount of waste is to be recycled; and
- » Waste that cannot be recycled is to be disposed of in the most environmentally responsible manner as possible.

4.1. Construction phase

A plan for the management of waste during construction waste is detailed below. As previously stated, construction practices must be measured and analysed in order to determine the efficacy of the plan and whether further revision of the plan is required. A Method Statement detailing specific waste management practices during construction should be prepared by the Contractor prior to the commencement of construction.

4.1.1. Waste Assessment / Inventory

- » The Environmental Officer must develop, implement and maintain a waste inventory reflecting all waste generated during construction for both general and hazardous waste streams.
- » Construction method and materials should be carefully considered in view of waste reduction, re-use, and recycling opportunities.
- » Once a waste inventory has been established, targets for recovery of waste (minimisation, re-use, recycling) should be set.
- » The Environmental Officer must conduct waste classification and rating in terms of SANS 10288 and Government Notice 634 published under the NEM: WA.

4.1.2. Waste collection, handling and storage

- » Each subcontractor must implement their own waste recycling system, i.e. separate bins for food waste, plastics, paper, wood, glass cardboard, metals, etc.
- » Portable toilets must be monitored and maintained daily.
- » Below ground storage of septic tanks, if installed, must withstand the external forces of the surrounding environment. The area above the tank must be demarcated to prevent any vehicles or heavy machinery from driving around the area.
- » Waste collection bins and hazardous waste containers must be provided by the principal contractor and placed at various areas around site for the storage of organic, recyclable and hazardous waste.
- » A dedicated waste area must be established on site for the storage of all waste streams, before removal from site.

- » Signage/ colour coding must be used to differentiate disposal areas for the various waste streams (i.e. paper, cardboard, metals, food waste, glass etc.).
- » Hazardous waste must be stored within a bunded area constructed according to SABS requirements. The volume of waste stored in the bunds must not exceed 110% of the bund capacity.
- » The location of all temporary waste storage areas must aim to minimise the potential for impact on the surrounding environment, including prevention of contaminated runoff, seepage, and vermin control.
- » Waste storage shall be in accordance with all Regulations and best-practice guidelines and under no circumstances may waste be burnt on site.
- » A dedicated waste management team must be appointed by the principal contractors' EO, whom will be responsible for ensuring the continuous sorting of waste and maintenance of the area. The waste management team must be trained in all areas of waste management and monitored by the EO.
- » All waste removed from site must be done so by a registered/ licensed subcontractor, whom must supply information regarding how waste recycling/ disposal will be achieved. The registered subcontractor must provide waste manifests for all removals at least once a month.

4.1.3. Management of waste storage areas

- » The position of all waste storage areas must be located away from water courses and ensure minimal degradation to the environment. The main waste storage area must have a suitable storm water system separating clean and dirty storm water.
- » Collection bins placed around site and at subcontractors' camps must be maintained and emptied on a regular basis by the principal contractor.
- » Inspections and maintenance of the main waste storage area must be undertaken daily. Skips and storage containers must be clearly marked or colour coded and well-maintained, not allowing access to vermin or other rodents. Shade cloth should ideally be used to ensure avifauna does not have access to waste.
- » Waste must be stored in designated containers and not on the ground.
- » Inspections and maintenance of bunds must be undertaken daily. Bunds must be inspected for leaks or cracks in the foundation and walls.
- » It is assumed that any rainwater collected inside the bund is contaminated and must be removed and stored as hazardous waste, and not released into the environment. If any leaks occur in the bund, these must be removed immediately.

4.1.4. Disposal

- » Waste generated on site must be removed on a regular basis, as determined by the Environmental Officer. This frequency may change during construction

depending on waste volumes generated at different stages of the construction process.

- » Waste must be removed by a suitably qualified contractor and disposed at an appropriately licensed landfill site. Proof of appropriate disposal must be provided by the contractor.

4.1.5. Record keeping

The success of the waste management plan is determined by measuring criteria such as waste volumes, cost recovery from recycling, cost of disposal. Recorded data can indicate the effect of training and education, or the need for education. It will provide trends and benchmarks for setting goals and standards. It will provide clear evidence of the success or otherwise of the plan.

- » Documentation (waste manifest, certificate of issue or safe disposal) must be kept detailing the quantity, nature, and fate of any regulated waste for audit purposes.
- » Waste management must form part of the monthly reporting requirements in terms of volumes generated, types, storage and final disposal.

4.1.6. Training

Training and awareness regarding waste management shall be provided to all employees and contractors as part of the toolbox talks or on-site awareness sessions

5. Operational phase

It is expected that the operational phase will result in the production of general waste consisting mostly of cardboard, paper, plastic, tins, metals and a variety of synthetic compounds. Limited hazardous wastes (grease, oils) may also be generated during maintenance activities. All waste generated will be required to be temporarily stored at the facility in appropriate sealed containers prior to disposal at a permitted landfill site.

The following waste management principles apply during the operational phase:

- » The Environmental Manager must develop, implement and maintain a waste inventory reflecting all waste generated during construction for both general and hazardous waste streams.
- » Adequate waste collection bins at site must be supplied. Separate bins should be provided for general and hazardous waste.
- » Recyclable waste must be removed from the waste stream and stored separately.

- » All waste must be stored in appropriate temporary storage containers (separated between different construction wastes, and contaminated or wet waste) at each construction area prior to being taken to the construction camp for final sorting (if required) and further temporary storage. Waste storage shall be in accordance with all best-practice guidelines and under no circumstances may waste be burnt on site.
- » Waste generated on site must be removed on a regular basis throughout the operational phase.
- » Waste must be removed by a suitably qualified contractor and disposed at an appropriately licensed landfill site. Proof of appropriate disposal must be provided by the contractor.

6. Monitoring of Waste Management Activities

Records must be kept of the volumes/ mass of the different waste streams that are collected from the site throughout the life of the project. The appointed waste contractor is to provide monthly reports to the operator containing the following information:

- » Monthly volumes/ mass of the different waste streams collected;
- » Monthly volumes/ mass of the waste that is disposed of at a landfill site;
- » Monthly volumes/ mass of the waste that is recycled;
- » Data illustrating progress compared to previous months.

This report will aid in monitoring the progress and relevance of the waste management procedures that are in place. If it is found that the implemented procedures are not as effective as required, this WMP is to be reviewed and amended accordingly.