



DEPARTMENT of
ENVIRONMENTAL AFFAIRS
& DEVELOPMENT PLANNING

Provincial Government of the Western Cape

INDUSTRY WASTE MANAGEMENT PLAN GUIDELINE

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INDUSTRY WASTE



The Department of Environmental Affairs and Development Planning in Partnership with Danida and WSP Environmental (Pty) Ltd



DANIDA



Acknowledgements

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Abbreviations

CFCS	Consumer – Formulated Chemical Sector
COD	Chemical Oxygen Demand
DEA&DP	Department of Environmental Affairs and Development Planning
DEA	Department of Environmental Affairs
DWA	Department of Water Affairs
ECA	Environmental Conservation Act: Act No. 73 of 1989.
EHS	Environmental Health and Safety
HCS	Hazardous Chemical Substances
Industry WMPs	Industry Waste Management Plans
IPWIS	Integrated Pollutant and Waste Information System
MEC	Member of the Executive Council
NEMA	National Environmental Management Act, Act 107 of 1998
NEM:AQA	National Environmental Management: Air Quality Act, Act No. 39 of 2004.
NEM:WA	National Environmental Management: Waste Act, Act No. 59 of 2008.
NWA	National Water Act, Act No. 36 of 1998
OHSA	Occupational Health and Safety Act, Act 88 of 1995
PGWC	Provincial Government of the Western Cape
PPE	Personal Protective Equipment
SANS	South African National Standard
SAWIS	South African Waste Information System
SPIs	Standard Practice Instructions
StatsSA	Statistics South Africa
WCMS	Waste Classification & Management System

1 INTRODUCTION

The National Environmental Management: Waste Act (NEM:WA), Act No. 59 of 2008 and in particular Part 7, includes a provision for the Minister or Member of the Executive Council (MEC) to, by means of a written notice in the Gazette, request an individual waste generator or entire industrial sector to prepare and submit an Industry Waste Management Plan (Industry WMP) to the Minister or MEC for approval. In response to this provision in the NEM:WA the Western Cape Department of Environment Affairs and Development Planning (DEA&DP) has embarked on a voluntary programme to assist the Consumer-Formulated Chemical Sector (CFCS) within the Province to develop Industry WMPs.

As part of the DEA&DP voluntary programme, an electronic Industry Waste Management Plan guideline has been developed for the CFCS and will be made available on the Western Cape Provincial Government website, <http://www.capegateway.gov.za> and the Integrated Pollutant and Waste Information System (IPWIS) website <http://ipwis.wcape.gov.za> for download. For enquiries please call the Waste Management Planning unit on 021-483 2712/8336.

The purpose of this guideline is to provide industry with assistance and guidance with respect to the development of their Industry WMPs using the Industry Waste Management Plan Guideline. Furthermore, the assessment checklist, that will be used by the DEA&DP for evaluation of the submitted Industry WMPs, is also attached for self-assessment by industry. This guideline should be read in conjunction with the Generic Integrated Waste Management Planning Guideline for the CFCS of the Western Cape which provides more detailed guidance on the principles of integrated waste management planning.

1.1 Guideline Structure

This guideline is divided into two main sections - Section 2 details the Industry WMP Guideline and Section 3 details the Industry WMP Assessment Checklist.

Section 2 is structured in accordance with the seven Chapters of the Industry WMP Guideline as detailed below:

- Section 2.1 – Chapter 1: Introduction
- Section 2.2 – Chapter 2: Site Description
- Section 2.3 – Chapter 3: Status Quo
- Section 2.4 – Chapter 4: Best Practical Environmental Options
- Section 2.5 – Chapter 5: Industry WMP Development
- Section 2.6 – Chapter 6: Industry WMP Implementation
- Section 2.7 – Chapter 7: Industry WMP Monitoring & Review

1.2 Scope of Industry WMP Guideline

The Industry WMP Guideline has been prepared in accordance with the requirements for Industry WMP reporting as detailed in Section 30 of NEM:WA. These requirements are listed below along with a brief description of various items for clarification purposes.

- The amount of waste that is generated – volumes and classification of all waste streams generated by an industry;

- Measures to prevent pollution or ecological degradation – details of steps taken to protect against impacts to environment;
- Targets for waste minimisation through waste reduction, re-use, recycling and recovery;
- Measures or programmes to minimise the generation of waste and the final disposal of waste;
- Measures or actions to be taken to manage waste;
- The phasing out of specified substances – identification of hazardous substances and identification of opportunities to reduced or phase out use of these substances from production processes and products;
- Opportunities for reduction of waste generation through changes to packaging, product design or production processes;
- Mechanisms for informing the public of the impact of the waste generating products or packaging on the environment – education programs, labelling and other mechanisms for addressing extended producer responsibility (EPR);
- The extent of any financial contribution to be made to support consumer-based waste reduction programmes;
- The period that is required for implementation of the plan – a program including target dates for implementation of the waste management plan;
- Methods for monitoring and reporting – details of how the waste implementation plan will be monitored and scope of reporting;
- Any other matter that may be necessary to give effect to the objects of the Act.

2 INDUSTRY WMP GUIDELINE (WITH TEMPLATE)

In this section guidance is provided on the completion of the Industry WMP. This Section is divided into eight sub-sections that follow the chapter structure of the Industry WMP. For each chapter, the scope and reporting structure of the section is detailed along with additional guidance notes where deemed necessary.

2.1 Chapter 1: Introduction

Scope

The introduction to an Industry WMP should outline the industry scope and objectives of the facilities or industry sectors Industry WMP.

By way of background, a brief overview of the purpose and objectives of integrated waste management planning is outlined in the guidance notes provided below.

Guidance

The aim of integrated waste management planning is to improve the overall waste management. This can be achieved by applying the statutory waste management hierarchical approach which has the following benefits:

- Waste reduction and improve resource efficiency;
- Better yields and efficiencies;
- Cost savings;
- Lowered environmental impacts;
- Greater safety for workers and minimising the impact on surrounding communities;
- Improve awareness through empowering workers and communities.

The integrated waste management planning process involves a series of sequential steps that ultimately culminate in the formalisation of an Industry WMP as outlined in the **Figure 1, page 8** below.

Note: It is important that the scope of the plan specify the areas within the facility which will be assessed. All satellite production areas must also be included within the plan even though they are situated off-site.

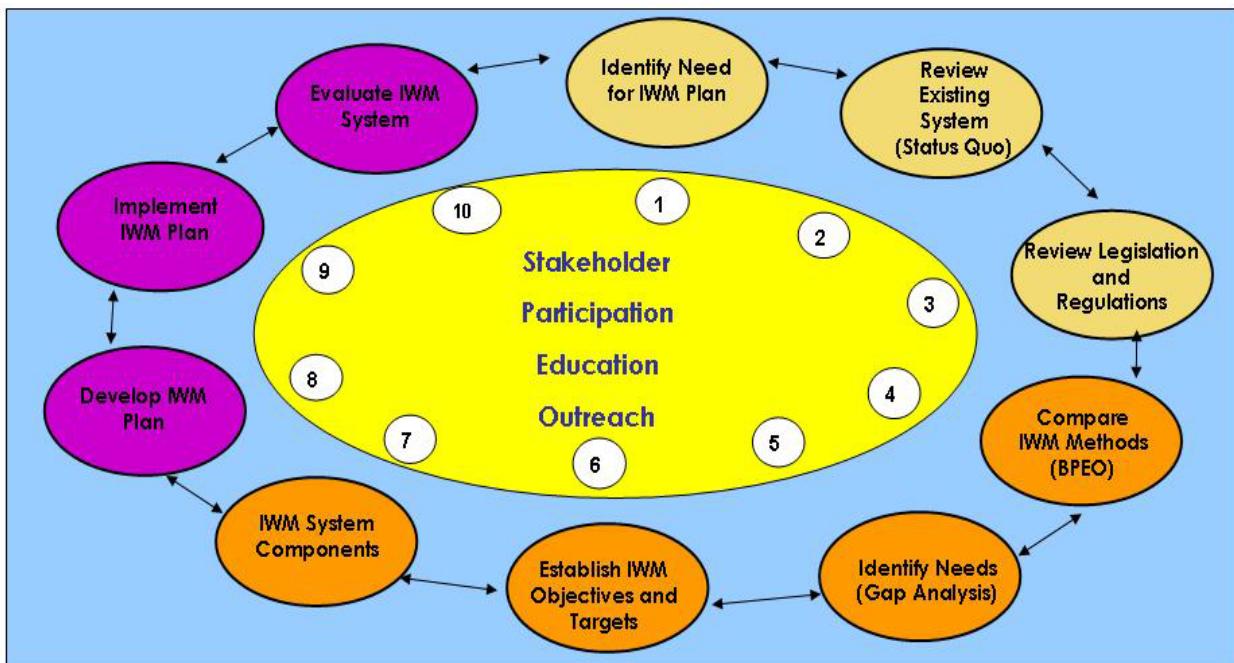


Figure 1: Brief outline of the development of an Industry WMP

2.2 Chapter 2: Site Description

Scope

In developing an Industry WMP, it is important to firstly establish a baseline of information on which the plan can be built. A basic site description should first be provided prior to defining process operations and existing waste management practices.

Guidance

The site description should include the following:

- Geographical location (including a site layout/diagram);
- Product/s being manufactured;
- Type and amount of raw materials being used;
- Type and number of operations / activities including those that generate waste; and
- A brief description of the surrounding environments (including an aerial view photograph of the site which can be readily obtained online from Google Earth).

Industry WMP Structure

The Industry WMP Guideline includes **Table 1** for compilation of the site description information.

Table 1: Site Description

Site Information	Company Name: Physical Address: Contact Person: Business Number: Cell Number: Fax:
Site Description	GPS Co-ordinates: (i.e. location to be defined through GPS coordinates for the site boundary). Use the following format e.g. 33° 58' 44.6" S (degrees°, minutes', seconds" and longitude (N or S) or latitude (E or W) Erf No: Size of the building (m ²): Zoning: (e.g. light or heavy industrial zoning)
Description of Site Surroundings	The description of site surroundings should make reference to an aerial photograph or a copy of the facility's building plan. Images sourced from online sources such as Google Earth are acceptable (NB: Not older than three (3) months).
Description of Site Operations and Activities	This should include a brief summary and overview of processes and core products manufactured, as well a process flow diagram (see Figure 2, page 10)

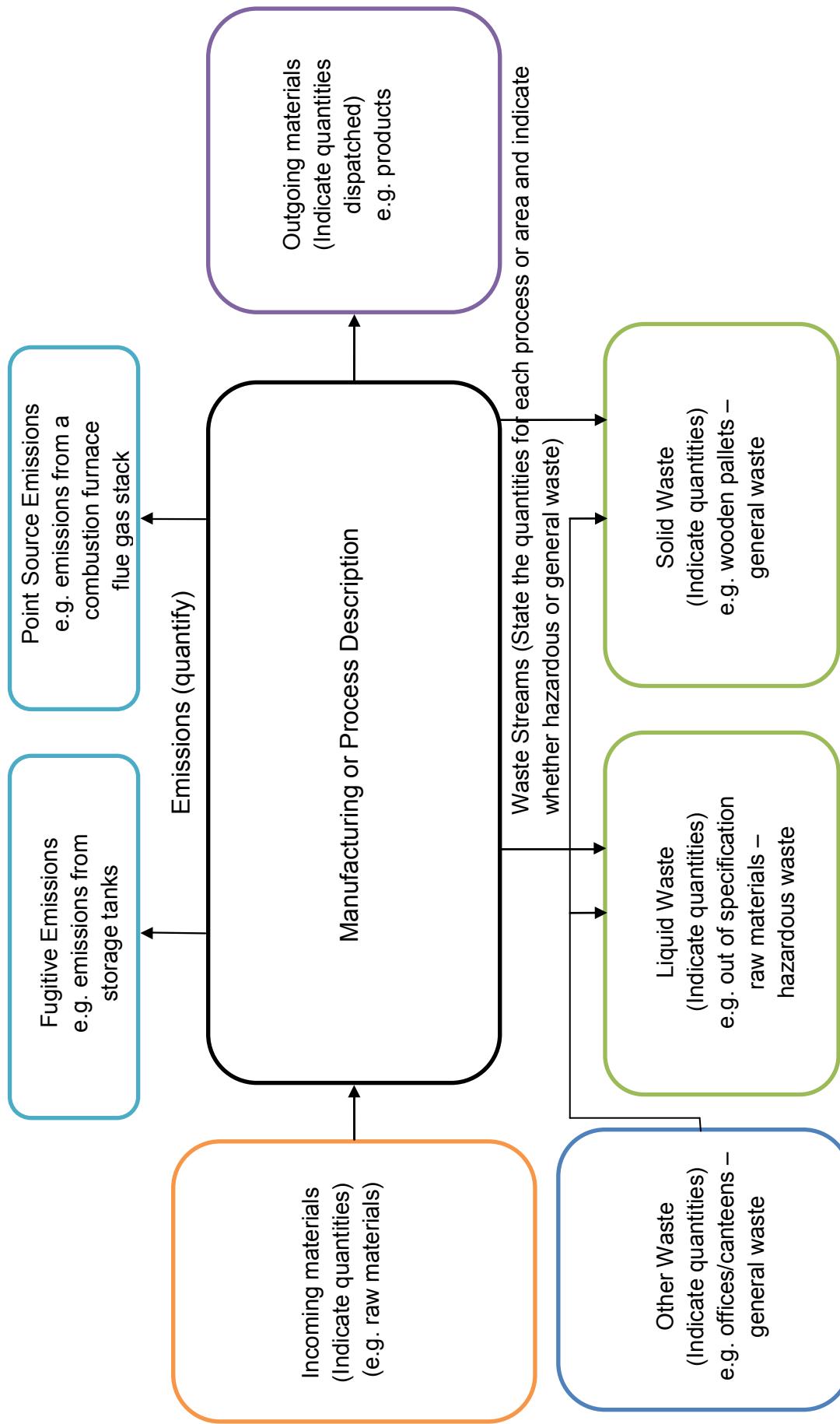


Figure 2. Example of a process flow diagram at a chemical manufacturing facility

2.3 Chapter 3: Status Quo

Scope

The purpose of the Status Quo is to assess the entire operational process of the facility in order to identify short comings, like raw materials procurement, infrastructure, employee training, health and safety, transportation, storage, compliance with legislative requirements, emergency preparedness and waste streams arising from an operation and its related activities, as well as the current waste management practices per waste stream. The Status Quo Assessment serves as the baseline against which any problem areas or gaps in waste management practices, process technology and environmental authorizations are identified and against which future performance goals, objectives, targets and activities can be set.

Guidance

To ensure identification of all inputs and aspects together with the waste streams and emissions arising from your facility's operation, it is important to interrogate the full process cycle including all related and subsidiary activities associated with the process operations. Each step in the process should be considered and waste streams identified. A process flow diagram should be developed for each unique product e.g. solid production, liquid production etc. (see **Figure 2, page 10**).

As a general guide an outline of waste types that may be encountered in the CFCs is provided in **Figure 3 on page 12**. Waste streams should be divided into the two main categories namely general and hazardous waste and further divided into two sub-categories of solid or liquid waste.

For each waste stream identified, the following aspects should be evaluated and documented as part of the status quo assessment:

- Waste stream description, including type, quantities and quality of waste generated as well as point of origin within the facility processes.
- Description of any relevant environmental authorisations associated with the specific industry and waste stream, and linked to operational activities (The licensing authority for hazardous waste is the National Department of Environmental Affairs (DEA) and for general waste the DEA&DP).
- A full description of current waste management practices, systems and strategies including:
 - Waste prevention/avoidance initiatives;
 - Waste minimisation initiatives;
 - Internal re-use and recycling;
 - Separation, collection, removal and storage at the points of generation;
 - External re-use and recycling;
 - Recovery practices;
 - Treatment;
 - Transportation and safe disposal methods.

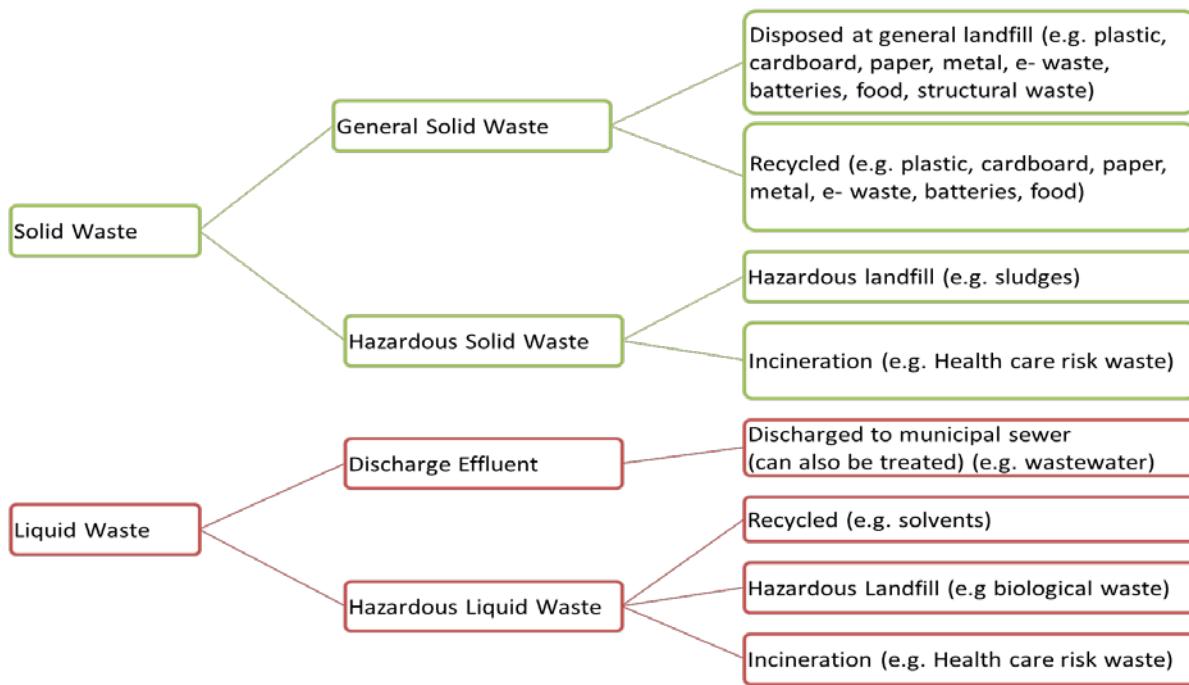


Figure 3: Waste Types arising from the Consumer–Formulated Chemical Sector

Reporting Structure

The Industry WMP Guideline includes three reporting tables for this section that cover waste stream identification and management practices, environmental authorisation and waste minimisation strategies.

Waste Stream Identification

Status quo reporting is best undertaken in tabulated format (see **Table 2, page 13**). The Industry WMP Guideline includes the table structure as illustrated on the next page. It is important that the scope of questions detailed in the guidance above is addressed under the two columns in the table, namely, ‘description of waste stream’ and ‘description of current waste management practice’.

A listing of waste streams identified within the CFCS is provided in Appendix C as a guide for comprehensive identification of waste streams in the Status Quo Assessment.

Table 2: Status Quo

Areas where waste are produced	Description of Waste Stream				Description of CURRENT Waste Management Practice
Key Question: <i>Indicate the types and quantities of waste generated within your facility?</i>					Key Question: <i>How is the waste stream generated in your facility managed in terms of reduction, re-use, recycling and disposal options?</i>
Incoming (e.g. raw materials receiving)	General Hazardous	Solid Liquid Solid Liquid	Solid Liquid Solid Liquid	Solid Liquid Solid Liquid	
Processing (e.g. manufacturing)	General Hazardous	Solid Liquid Solid Liquid	Solid Liquid Solid Liquid		
Outgoing (e.g. distribution/ dispatch)	General Hazardous	Solid Liquid Solid Liquid			
					Other Areas
Offices		General Hazardous	Solid Liquid	Solid Liquid	
Laboratories		General Hazardous	Solid Liquid	Solid Liquid	
Cleaning / Wash Bays		General Hazardous	Solid Liquid		

Environmental Authorisations

The status of environmental authorisations for listed activities requiring a license, permit or other form of authorisation which needs to be reported on as part of the Status Quo Assessment.

Table 3 below is provided in the Industry WMP Guideline for activities that require authorisation.

Table 3: Operational Activities Requiring Authorisation

Environmental Authorisation	Description of Listed Activity	Authorisation Reference	Date of Issue	Date of Expiry
Listed activities in terms of the NEM:WA	(e.g. Storage >100m ³ general waste , 35m ³ of hazardous waste, reuse, recycling recovery, treatment etc.)			
Listed activities in terms of the Air Quality Act				
Listed activities in terms NEMA				
Effluent Discharge in terms of Water Act or Municipal By-Laws (permit)				

Details of listed activities under NEMA and NEM:WA are provided on the DEA&DP website which can be accessed through the following site

http://www.capegateway.gov.za/eng/your_gov/406

Waste Minimisation Strategies

Table 4 is provided in the Industry WMP Guideline for detailing any formalised waste minimisation strategies that may be in place.

Do any of the following form part of your company's current systems or strategies	Yes/No	If yes, provide a detailed description of the current scope of initiative.
Waste reduction policy		
Waste prevention initiatives		
Waste minimisation		
Waste separation, internal re-use or recycling		
External re-use or recycling		
Recovery practices		
Chemical inventory control system		
Waste reduction or generation audits		
Housekeeping audits conducted?		
Replace toxic chemicals in order to reduce the amount or toxicity of wastes generated		
Change packaging/product design / manufacturing procedures to reduce the quantity of hazardous waste		

Table 4: Waste Minimisation Strategies

Do any of the following form part of your company's current systems or strategies	Yes/No	If yes, provide a detailed description of the current scope of initiative.
Purchase equipment that produces less waste		
Treatment of effluent or wastewater		
Staff training in integrated waste management		
Community/stakeholder participation in integrated waste management		

Waste Classification and Categorisation

It is important for companies to be aware of the revised **Waste Classification & Management System** for South Africa (WCMS). The WCMS includes regulations and standards for waste classification and management as well as a waste categorisation system for reporting to the Integrated Pollutant and Waste Information System (IPWIS – (<http://ipwis.wcape.gov.za>)) hosted by DEA&DP (PGWC). The DEA&DP will stipulate reporting requirements in waste licenses issued for certain waste listed activities. Included in the guideline is a few important regulations. A full list of the regulations and the complete WCMS can be found on the Department of Environmental Affairs Website (<http://www.environment.gov.za>).

Waste Classification

“Waste Classification” means establishing, in terms of SANS 10234, whether (i) a waste is hazardous based on the nature of its physical, health and environmental hazardous properties (hazard classes), as well as (ii) the degree or severity of hazard posed (hazard categories);

Pre-classified Waste

In terms of Regulation 4(2) of WCMS, the types of waste specified in Section 2 of this Schedule are pre-classified and do not require classification in terms of Regulation 4(1).

General Waste

- Domestic Waste;
- Building and Demolition Waste;
- Inert Waste;
- Waste Tyres.

Hazardous Waste

- Health Care Risk Waste (HCRW);
- Waste Electrical and Electronic Equipment (WEEE);
- Waste Batteries;
- Asbestos Waste.

Records of Waste Generation and Management

Waste generators must keep accurate and up to date records of waste they generate, which records must reflect:

- Specific types of waste generated, categorised in terms of Regulation 5(1);
- Quantity of each type of waste generated, expressed in tons per month; and

- Quantities of each type of waste that has either been re-used, recycled, recovered, treated or disposed of.

Waste Manifest System

The information specified in Section 2 of this Schedule must be reflected in the hazardous waste manifest document required in terms of Regulation 16 of WCMS.

Information to be supplied by the Waste Generator:

- Unique consignment identification number (bar code);
- Generator's contact details (contact person, physical & postal address, phone (land-line &/or cell phone), fax, email);
- Physical address of the site where the waste was generated (if different);
- Emergency contact number;
- Origin / source of the waste (process / activity);
- Description of the waste (waste classification and waste category; waste risk profile if relevant for disposal);
- Chemical composition of the waste;
- Physical nature / consistency of the waste (liquid, solid, sludge; pumpable, non-pumpable);
- Quantity of waste;
- Packaging (bulk, small containers, tank);
- Transport type (tanker, truck, container);
- Special handling instructions;
- Date of collection / dispatch;
- Intended receiver (facility / waste manager);
- Declaration (content of the consignment is fully and accurately described, classified, packed, marked and labelled, and in all respects in proper condition for transportation in accordance with the applicable laws and regulations).

Information to be supplied by the Waste Transporter:

- Name of transporter;
- Address of transporter;
- Vehicle registration number;
- Transport permit number;
- Safe disposal certificates;
- Declaration acknowledging receipt of the waste.

Information to be supplied by the Waste Manager:

- Name, address and contact details;
- Receiving waste management facility name, address and contact details (where different);
- Waste management facility licence number and issuing authority;
- Date of receipt;
- Quantity of waste received, recycled and disposed of;
- Waste management options applied (re-use, recycling, recovery, treatment, disposal);
- Any discrepancies in information (related to waste quantity, type, classification, physical and chemical properties);
- Waste management reporting description and code in terms of the Draft National Waste Information Regulations, 2010.
- Details, including quantity, on any waste diverted to another waste management facility, and details of the facility.
- Certification and declaration of receipt and final management of the waste.

Waste Risk Profiling

In terms of Regulation 12(1) of the Draft National Waste Classification and Management Regulations, 2010, the potential level of risk associated with disposal of hazardous wastes must be determined by analysing the total and leachable concentrations of contaminants in the waste, and the results assessed against three levels of threshold limits for Leachable and Total Concentrations, which in combination, determines the **Risk Profile** of the waste. The assessment must be done for all chemical substances known and reasonably expected to be present in the waste. Disposal is not allowed for hazardous waste with a risk profile indicating **extreme risk**. The waste must be treated first and then re-tested to determine **Waste Risk Profile** for disposal. Hazardous waste with a lower risk profile (high, moderate, very low) can be disposed of at specific landfill facilities i.e. HH, GLB +, GSB -, respectively.

Waste Categorisation:

“Waste Categorisation” means the grouping of waste into categories of major and specific general and hazardous waste types and the assignment of a corresponding category code in terms of the National Waste Information Regulations, 2010.

The main purposes for the categorisation of waste are as follows:

- To identify national categories for reporting on general and hazardous waste to the SAWIS and / or the provincial waste information system, where it exists. In the Western Cape industry needs to report to IPWIS. Industry will have to report waste quantities using level 3 waste types (see **Tables 5 & 6** below).
- To gather information on waste types to allow for the appropriate prioritisation and management of waste streams (e.g. batteries, e-waste) and facilitating the diversion of waste from landfill higher up the waste hierarchy;
- Allow for reporting on waste generation and waste management activities (e.g. for State of Environment reporting); and
- To provide information on waste generation and management statistics to StatsSA.

Hazardous and General Waste Types can be found in the **Tables 5 and 6** below:

Table 5: Hazardous Waste Types – Level 2 & 3 SAWIS Reporting

LEVEL 1	LEVEL 2		LEVEL 3	
	No	Name	No	Name
Hazardous Waste	HW01	Gaseous Waste	01	Gases (excluding Greenhouse gases)
			02	Obsolete ozone depleting gases
	HW02	Mercury Containing Waste	01	Liquid waste containing mercury
			02	Solid waste containing mercury
	HW03	Batteries	01	Lead Batteries
			02	Mercury Batteries
			03	Ni/Cd Batteries
			04	Manganese Dioxide and Alkali Batteries
			05	Lithium & Lithiumion Batteries
			06	Nickel-metal Hydride Batteries
			07	Mixed Batteries
HW04	Persistent Organic Pollutants (POP) Waste		01	Polychlorinated Biphenyls (PCB) Containing Waste (>50 mg/kg)
			02	Other POP-Containing Waste
HW05	Inorganic Chemical Waste		01	Liquid and Sludge Inorganic Waste

LEVEL 1	LEVEL 2		LEVEL 3	
	No	Name	No	Name
Hazardous Waste			02	Solid Inorganic Waste
			03	Spent pot lining (inorganic)
	HW06	Asbestos Containing Waste	01	Asbestos Containing Waste
	HW07	Waste Oils	01	Waste Oil
			02	Oil Contaminated Waste
	HW08	Organic halogenated and/or sulphur containing solvents	01	Solvents containing halogens and/or sulphur
	HW09	Organic halogenated solids and compounds with sulphur	01	Solids containing halogens and/or sulphur
	HW10	Organic solvents without halogens and sulphur	01	Solvents without halogens and sulphur
	HW11	Other organic waste without halogen or sulphur	01	Liquid and sludge organic chemical waste
			02	Solid organic chemical waste
			03	Spent pot lining (organic)
	HW12	Tarry and Bituminous Waste	01	Tarry Waste
			02	Bituminous Waste
	HW13	Brine	01	Brine
	HW14	Fly Ash and dust from miscellaneous filter sources	01	Fly Ash
	HW15	Bottom Ash	01	Bottom Ash
	HW16	Slag	01	Ferrous Metal Slag
			02	Non-ferrous Metal Slag
			03	Other
	HW17	Mineral Waste	01	Foundry Sand
			02	Refractory Waste
			03	Others
	HW18	Waste of Electric and Electronic Equipment (WEEE)	01	Large Household Appliances
			02	Small Household Appliances
			03	Office, Information & Communication Equipment
			04	Entertainment & Consumer Electronics, and Toys, Leisure, Sports & Recreational Equipment, and Automatic Issuing Machines
			05	Lighting Equipment
			06	Electric and Electronic Tools
			07	Security & health care equipment
			08	Mixed WEEE
	HW19	Metal Scrap	01	Contaminated Scrap Metal Waste
	HW20	Health Care Risk Waste	01	Pathological Waste
			02	Infectious Waste and Sharps
			03	Chemical Waste
	HW21	Sewage Sludge	01	Sewage Treatment Sludge
	HW99	Miscellaneous	01	Miscellaneous

Table 6: General Waste Types – Level 2 & 3 SAWIS Reporting

LEVEL 1	LEVEL 2		LEVEL 3	
	No	Name	No	Name
General Waste	GW01	Municipal Waste	01	
	GW10	Commercial and Industrial Waste	01	
	GW13	Brine	01	
	GW14	Fly ash and dust from miscellaneous filter sources	01	
	GW15	Bottom Ash	01	
	GW16	Slag	01	Ferrous Metal Slag
			02	Non-ferrous Metal Slag
			03	Others
	GW17	Mineral Waste	01	Foundry Sand
			02	Refractory Waste
			03	Others
	GW18	Waste of Electric and Electronic Equipment (WEEE)	01	
	GW20	Organic Waste	01	Garden Waste
			02	Food Waste
	GW21	Sewage Sludge	01	
	GW30	Construction and Demolition Waste	01	
	GW50	Paper	01	Newsprint and magazines
			02	Brown grades
			03	White grades
			04	Mixed grades
	GW51	Plastic	01	PETE
			02	Others
	GW52	Glass	01	
	GW53	Metals	01	Ferrous
			02	Non - ferrous
	GW54	Tyres	01	
	GW99	Other	01	

2.4 Chapter 4: Best Practical Environmental Option (BPEO)

Scope

Best Practical Environmental Option (BPEO) analysis is a structured evaluation of reduction, re-use, recycling, and disposal options for one or more waste stream so as to define best environmental options for management of the waste stream generated within your facility/plant/factory.

BPEO analysis defines the benchmark against which the current waste management practices (as detailed in the previous Status Quo analysis) can be compared and gaps and deficiencies identified.

Guidance

Waste management options for a particular waste are best considered according to the Waste Management Hierarchical approach (see **figure 4, page 12**) which reflects the relative sustainability (i.e. environmental friendliness) of each of the options. One of the key principles underlying the waste management hierarchy is to ensure that waste is dealt with *as high up the hierarchy as possible*. Since all waste management options have some impact on the environment, the only way to avoid impact is not to produce waste in the first place, and waste prevention/avoidance reduction is therefore at the top of the hierarchy. Minimisation of waste through re-use and recycling followed by recovery techniques (treatment, composting and generating energy from waste) follow, while disposal to landfill (the least favourable option) is at the bottom of the hierarchy.

Although the hierarchy holds true in general terms, there will be certain wastes for which the waste management options are limited or for which the BPEO (i.e. the option causing least environmental impact) lies towards the bottom of the hierarchy. In deciding on the most appropriate waste management/disposal option, both environmental and economic costs and benefits need to be considered. The decision to determine the best acceptable BPEO for a particular waste should be reached by taking into account all the costs and impacts associated from raw material input to waste disposal, including those associated with the movement of waste.

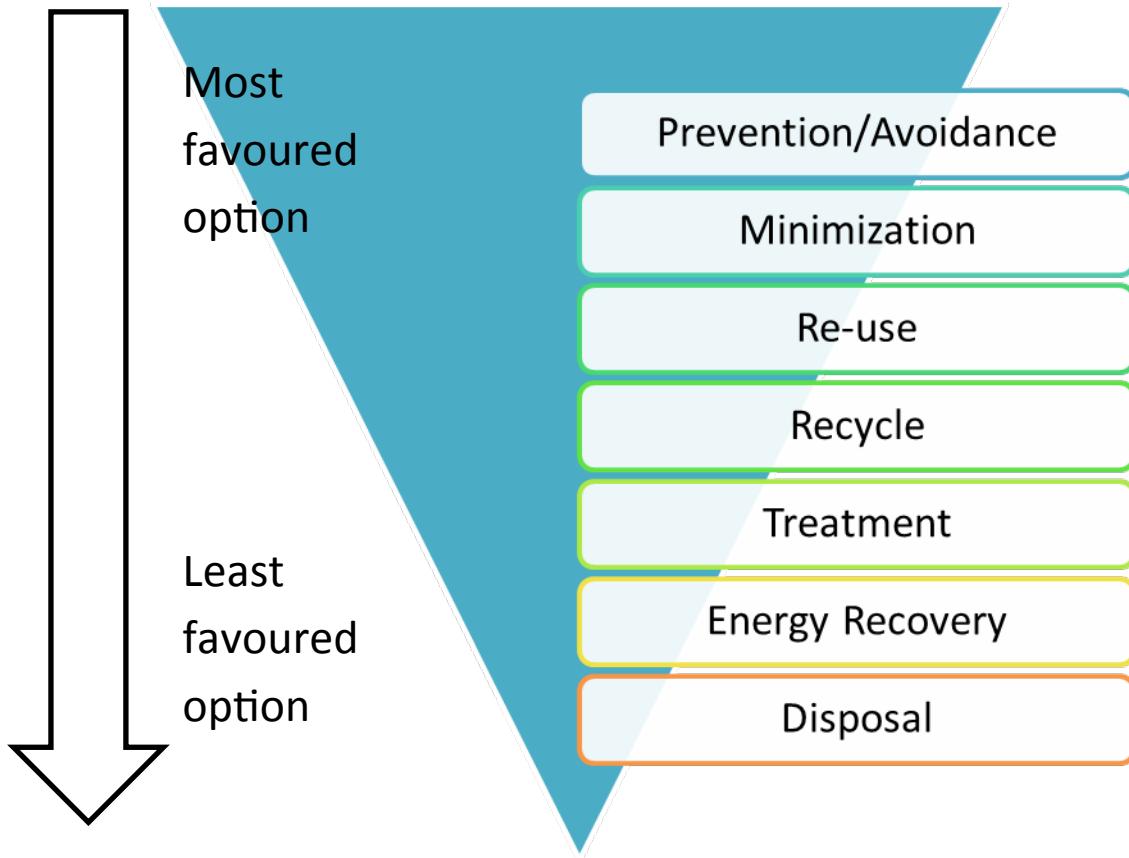


Figure 4: Waste Management Hierarchy

EPR is a legal obligation embodied in the NEM:WA of 2008, which is aimed at extending producers responsibility for their products to the post-consumer stage of their products life cycle. One of the key outcomes of an effective EPR programme is to move waste management up the waste hierarchy away from final disposal in favour of recycling, minimisation and prevention / avoidance.

Reporting Structure

The Industry WMP Guideline includes **Table 7** below for completion of the BPEO analysis. Each waste stream identified in the Status Quo Analysis must be individually analysed in the BPEO assessment.

Table 7: BPEO Analysis

Description		Origin	Waste Type	Prevention / Avoidance	Reduce	Re-use	Recycle	Disposal
Incoming Waste Streams (eg. Raw materials)	Plastic Packaging	Limiting packaging from raw material suppliers including supplier waste management practices through alternative product supply.	Identify products in supply chain with reduced plastic packaging.	Limited options exist for reuse of packaging plastics.	Plastic packaging should be collected for recycling unless contaminated with other waste materials that cannot be readily separated from the plastic waste stream.	Plastic packaging should be collected for recycling unless contaminated with other waste materials that cannot be readily separated from the plastic waste stream.	Plastic packaging should be collected for recycling unless contaminated with other waste materials that cannot be readily separated from the plastic waste stream.	Plastic packaging should be collected for recycling unless contaminated with other waste materials that cannot be readily separated from the plastic waste stream.
Other: Offices	Fluorescent Tubes		High quality, low mercury tubes will ensure extended product life and reduce volume of hazardous waste generation.	N/A	The preferred international option for managing fluorescent waste is to undertake mercury lamp recycling. The practice of recycling fluorescent tubes to recover mercury is, however, currently not undertaken in South Africa.	Large quantities of fluorescent tubes may only be disposed of at a hazardous waste landfill facility after treatment. The volume of fluorescent waste is reduced by carefully crushing prior to disposal in crushing drums at a hazardous waste landfill facility.	Solvents which cannot be recycled must be disposed of at a hazardous waste facility.	
Incident	Chlorinated Solvents	Identification of opportunities for non-chlorinated alternatives.	Reducing the volume of solvent required during processing	Grey solvents can be reused for cleaning purposes.	Solvents can be recycled through a distillation process to purify solvents.	Solvents which cannot be recycled must be disposed of at a hazardous waste facility.		

Table 8 below is an example of a simple method that can be used to analyse the different management options identified in the BPEO. This simple analysis can assist companies in prioritising a potential option to be implemented at the facility.

Table 8: BPEO Prioritising

Description	BPEO Management Options					
	Prevention / Avoidance		Reduce	Re-use	Recycle	Disposal
What options exist?						
BPEO Analysis:						
Estimated Cost	L	M	H	L	M	H
Environmental Effect	+	0	-	+	0	-
Practicability	E	N	D	E	N	D

Keys:

L = Low, M = Medium, H = High

+ = Positive, 0 = Neutral, - = Negative

E = Easy, N = Neutral, D = Difficult

NOTE:

Further information and guidance on BPEOs for various waste streams contact:
DEA&DP Directorate: Waste Management. Tel (021) 483 2705 / 2712 / 8336

For hazardous waste streams, the following quick reference guide is available from the same Department: BPEO Quick Cards, Assessment for Best Practicable Environmental Options for Managing Priority Hazardous Waste Streams for the Western Cape, DEA&DP, March 2006.

2.5 Chapter 5: Development of Industry Waste Management Plan

Scope

The development of the Industry WMP consists of two key components:

- Gap analysis
- Identification of goals, objectives, targets and activities

Gap Analysis

The objective of the gap analysis is to understand the difference between existing waste management practices (as detailed in the Status Quo Assessment) and what the company actually wishes to see happening (as benchmarked against the BPEO assessment) in terms of waste management.

The gap analysis is most readily completed by answering the following two questions for each and every waste stream that has been identified from the operations.

- *How does current waste management practice compare with the BPEO for the specific waste stream?*
- *What is the best management option for the specific waste stream?*

The Industry WMP Guideline includes **Table 9** on the next page for completion of the gap analysis.

Note: The gap analysis should also be based on the waste minimization table and the audit checklist and reports if your facility was audited by the DEA&DP. It is of crucial importance to realise that the gap analysis consist of the entire operational process within the facility.

Table 9: Gap Analysis

Origin of Waste		Description of Waste Stream (as per Status Quo Assessment)				Description of Gaps Identified	
						Key Questions: - How does the current practice compare with the BPEO?	
Incoming (e.g. raw materials receiving)	General	Solid	Liquid	Solid	Liquid	- What is the best management method for the specific waste stream?	
	Hazardous	Solid	Liquid	Solid	Liquid		
Processing (e.g. manufacturing)	General	Solid	Liquid	Solid	Liquid	- How does the current practice compare with the BPEO?	
	Hazardous	Solid	Liquid	Solid	Liquid		
Outgoing (e.g. distribution/dispatch)	General	Solid	Liquid	Solid	Liquid	- What is the best management method for the specific waste stream?	
	Hazardous	Solid	Liquid	Solid	Liquid		
						Other Areas	
Offices	General	Solid	Liquid	Solid	Liquid	- What is the best management method for the specific waste stream?	
	Hazardous	Solid	Liquid	Solid	Liquid		
Laboratories	General	Solid	Liquid	Solid	Liquid	- What is the best management method for the specific waste stream?	
	Hazardous	Solid	Liquid	Solid	Liquid		
Cleaning / Wash Bays	General	Solid	Liquid	Solid	Liquid	- What is the best management method for the specific waste stream?	
	Hazardous	Solid	Liquid	Solid	Liquid		

Goals, Objectives, Targets and Activities

The effective setting of goals, objectives, targets and activities is important to ensure attainment of a specific waste management goal or BPEO. The objectives of an Industry WMP should reflect compliance with principles as laid down in the Waste Management Hierarchy and these objectives and targets should be **SMART** i.e. specific, measurable, achievable, realistic and time bound. They may include intermediate targets which mark the progress towards the achievement of set goals.

Objectives and targets should be identified with the intention of improving on all of the following:

- Legal compliance (where legal non-compliance issues are identified);
- Waste minimisation;
- Waste separation;
- Internal re-use and recycling;
- External re-use and recycling;
- Recovery practices;
- Effluent treatment;
- Improved inventory control and records kept of losses;
- Assessment of waste contractors;
- Records and quantities kept of all waste streams;
- Records kept of safety disposal certificates;
- Staff training in integrated waste management;
- Development and procedures for reporting environmental incidences;
- Reporting waste quantities to authorities;
- Moving towards cleaner production and phasing out of hazardous substances;
- Promotion of Extended, Education and Awareness around waste management;
- Promotion of Extended Producer Responsibility.

The Industry WMP Guideline includes **Table 10** for completion of goals, objectives, targets and activities. In all instances, objectives must have clearly defined activities and timeframes as per the examples below.

Table 10: Goals, Objectives and Activities

Goals	Objectives	Activities and Timeframes
Improved Housekeeping	By September 2010, all solid waste to be separated into clearly defined categories, stored and labelled.	<ul style="list-style-type: none">- Procure 210 litre bins by May 2010- Clearly label bins to indicate general waste, hazardous waste, scrap metal etc. by June 2010- Train or capacitate personnel on the correct use of bins by July 2010- Place bins at all areas that generate waste by June 2010
Improve quality of effluent disposed in municipal sewer	By end September 2010, reduce amount of effluent COD by 50%	<ul style="list-style-type: none">- By June 2010, employ 2 more floor sweeping personnel to prevent spillages into effluent drains- During a shutdown in September 2010, clean grease traps and improve efficiencies- Implement bimonthly COD monitoring by May 2010.

2.6 Chapter 6: Implementation

Scope

The development of an implementation or action plan is a critical part of the Industry WMP as it defines its success or failure. Once a preferred option has been agreed upon and accepted by all relevant parties, including management at the decision-making level, a plan must be developed to implement options. The plan will consist of a number of projects, aimed at achieving the identified goals, objectives, targets and activities with defined budget provisions and organisational responsibilities.

Guidance

The implementation plan may address, amongst others, the following issues:

- A list of all options, goals and objectives considered and agreed upon for implementation;
- A breakdown of all activities per objective with clear target dates by which such activities will have to be completed;
- A breakdown of financial requirements for each activity;
- Institutional and organisational arrangements. This may include clarity regarding responsibilities for the organisation, planning and implementation of activities to achieve objectives;
- A schedule for implementation;
- Highlights regarding uncertainties (i.e. risks and challenges) likely to affect the achievement of goals and objectives;
- Strategies to address potential risks;
- Indications of returns on investment;

Financing and Financial Provisions

Demonstration of adequate financial provision and commitment for implementation of the Industry WMP is a requirement in terms of the scope of an Industry WMP as detailed in Section 30 of the NEM:WA. The total capital and operating budget requirements associated with a proposed Industry WMP need to be established and clearly documented in the Industry WMP .

Where appropriate, calculations should be made in order to compare and aggregate the cost of numerous operations and to assess cost benefit of various waste management actions e.g. savings in disposal costs due to improved waste segregation and recycling.

Organisational Structure and Responsibilities

The different divisions within a company will each have different responsibilities with regard to the implementation of the Industry WMP . For instance, one could be responsible for identifying and ensuring that the required permits / licences / environmental authorisations are obtained for operations, while another division would have to upgrade the waste collection services in their areas etc. Responsibilities will have to be assigned for each task and an organizational structure developed to ensure that the plan is integrated successfully.

Questions that should be asked when considering restructuring are:

- How will the selected scenario and associated tasks influence the current structure?
- How can closer co-operation be achieved between various departments?
- Where is capacity building and training required?

- Is an independent waste management department or a sub-division of an existing department required?

Appointment of a “Champion” or “Responsible Person”

It is crucial that industry appoint a “champion or responsible person” who will be held responsible for the development of the plan. This person in conjunction with management must elect a project team who will assist the “champion or responsible person” with the development of the plan. It is suggested that the team consist of a variety of skills e.g. Production Manager, Laboratory Chemist or Pharmacist, Environment Health and Safety (EHS) Officer with the “champion or responsible person” providing feedback to the Chief Executive Officer (CEO), General Manager or Operational Manager etc.

Reporting Structure

The following reporting structure is provided in the Industry WMP Guideline for completion of this section. A simple example is provided in **Table 11** below.

Table 11: Implementation Plan

Goal	Objective	Activities	Section	Responsibilities	Funding Needs	Due Date	Checked By
1	A	A1	Production Plant	Operator	None	Daily	
		A2		Factory Manager	R 5,000	Monthly	
		A3		Section Manager	R 100,000	Dec 2010	
2	B	B1	Waste Storage Area	Operator	None	Daily	
		B2		Factory Manager	R 1,000	Monthly	
		B3		Section Manager	R 20,000	Dec 2010	

2.7 Chapter 7: Monitoring and Review

Scope

The Industry WMP should be a living document, with the review process being an ongoing activity. The plan must therefore be reviewed and revised periodically whenever new information on waste management practices, standards, legislation etc. or if there are any changes that must be made to the plan. The plan should be reviewed on a yearly basis and a 5 yearly basis.

A procedure to review and update the Industry WMP management plan should be established, and practices modified to reflect changing technologies and regulations and expansion of manufacturing processes or premises. Such procedures may stipulate for example, the interval at which waste management audits will be undertaken, as well as the interval at which reporting on waste issues will be carried out.

Guidance

Monitoring should focus on short-term objectives of the Industry WMP process to ensure that corrective measures are taken immediately to address any challenges. The following aspects in particular should be monitored:

- Whether the selected projects are still on schedule, are they meeting the target dates as set out in the project implementation plan?
- If projects are out of schedule, what are the reasons for delays and what corrective measures are necessary to address the delays?
- Are there any legislative developments or changes that need to be considered for incorporation into the plan?
- Are there new systems or policies that the company has implemented, and are the Industry WMP goals, objectives, targets and activities still in line with such changes?

Reporting Structure

The following reporting structure is provided in the Industry WMP Guideline for detailing monitoring and review responsibilities. **Table 12** indicates the monitoring of the implementation schedule. This is designed to ensure that objectives, targets and activities are still being implemented according to the implementation schedule. It is recommended that the monitoring of the implementation schedule is done frequently i.e. ideally monthly or bimonthly. In terms of the frequency of waste information reporting to the DEA&DP, this will be determined i.t.o waste management licences or facilities will be notified by the MEC in a government gazette or written notice.

Table 12: Monitoring Schedule

Monitoring of Implementation schedule	On Schedule	If not, why?	Actions / Activities	Responsible Person	Next Review
Objective A1					
Objective A2					
Objective A3					
Objective A4					

Table 13 indicates the review of the Industry WMP. This is to ensure that all aspects of the monitoring plan are still relevant or which aspects need to be renewed. These aspects should be reviewed as required, annually during implementation.

Table 13: Review Schedule

Review	Are these still relevant?	Amendments Required?	If Yes, provide details	Responsible Person	Next Review
Goals, Objectives, Targets and Activities					
Implementation Schedule					
Best Practical Environmental Options					
Legislative Developments					
Training of Personnel					

3 MANDATORY AND VOLUNTARY PLANS

The Act makes provisions for the preparation of Industry WMPs either by a person, category of persons or industry. Irrespective of who prepares the plan, the process to follow should take a similar pattern. Consultation between those who prepare the plan and the Minister or MEC is an initial step, followed by preparation of the plan, consultation with other stakeholders, submission of the plan to the Minister or MEC for evaluation and approval and finally, implementation and monitoring of the plan. Difference in processes may be due to the different types of plans being prepared. Unlike during the preparation of “mandatory” plans, situations where a plan is prepared “voluntarily” will allow a facility, company, industry or a sector to initiate the process of preparing and submitting the plans as opposed to waiting for authority’s directions to do so. This section provides a step by step process to be considered when preparing either mandatory or voluntary plans. The processes described exclude an organ of state.

3.1 Preparation of Mandatory Plans

3.1.1 Initial Consultation

Prior to a notice being issued or a gazette being published requiring a person, category of persons or industry to prepare an Industry WMP, the Act calls for an initial consultation between the Minister or MEC and representatives of a facility, company, industry or sector by whom the plan is to be prepared. This consultation will be regarding the Minister’s or MEC’s intention to require such institutions to prepare the plans. The company, industry or sector is expected to actively engage with the relevant department during this step. This is an activity to be initiated by relevant units within the departments the Minister or MECs are heading. The role that the company, industry or sector could play at this stage may be that of rendering input to help facilitate information requirements likely to be stipulated in the written notice or gazette discussed below.

3.1.2 Written Notification or a Gazette

Following the consultation exercise described above, the company may then receive written notification or a group of companies may receive such directions through the relevant gazettes. It is therefore advised that industry representatives keep track of notices in gazettes published from time to time. The following South African Government Information website may be considered for use, i.e. <http://www.info.gov.za>. The link to **documents**, then **notices** may be followed to locate the relevant notice.

3.1.3 Determination of Capacity

A decision can be made to either appoint an external and independent service provider, use in-house expertise or any other means to prepare the plan. This flexibility is however limited. The Minister or MEC reserves the right to exercise his or her power by giving instructions that the plan be prepared by an independent and external service provider. This would essentially be the case when a facility does not or cannot appoint a suitably experienced person / consultant themselves.

Should this be the case, details will be clearly spelled out in either a notification or a gazette referred to above. Where the external service provider is considered for use, it must be noted that, the Act does not prescribe the qualifications of the service provider. It will therefore be to the benefit of a facility, company, industry or a sector concerned to ensure that the best service provider is utilised. As an advice, it will be better to use a service provider with a good track record

and understanding of issues pertaining to industrial waste management, and perhaps one registered with a legitimate professional body within the Republic of South Africa.

Where internal expertise is considered for use, especially in the case of individual facilities, care must be made in ensuring that such personnel are clued up with industrial waste management issues and possess the necessary skills for the preparation of an Industry WMP. They need to have professional skills to engage in an unbiased consultation process with relevant stakeholders and be able to address stakeholder concerns, objectively.

In the case of a plan being prepared for a number of companies falling within a sector, it may make sense to utilise bodies / associations representing such companies. This is based on the belief that the representative bodies have broader understanding of issues prevalent within their member companies; but alternatively an external service provider may still be utilised under this situation.

3.1.4 Consultation with Other Stakeholders

The Act stipulates that appropriate steps must be taken to bring the contents of a proposed Industry WMP to the attention of relevant organs of state and interested and affected persons. A decision can be made to bring such contents at as early as conceptualisation stage or at the stage where the first draft has already been completed. What is crucial to note is the fact that the Act does not prescribe any consultation method with stakeholders. It also does not rule out consultation with authorising / decision making organ of state at this stage of the process. It must however be noted that the Minister or MEC reserve the right to make such prescription, and when made, it will appear as a written notification or promulgated in the gazette, which ever applies. What ever strategy the plan compiler decides to adopt, it is advised that all consultation process documentation be kept on record. As is described in subsection 3.1.7 below, it is only the copy of stakeholder comments and the manner such comments had been addressed that need to be attached to the final Industry WMP for submission to the authorities.

3.1.5 Minister's or MEC's Direction

Authorities may give direction on a number of issues. These may include direction on the type of consultation process with stakeholders, as well as stipulation that an independent service provider be used with the cost incurred by the company or companies for which the plan is being prepared. In the final Industry WMP the manner with which such directions have been complied with, need to be clearly demonstrated.

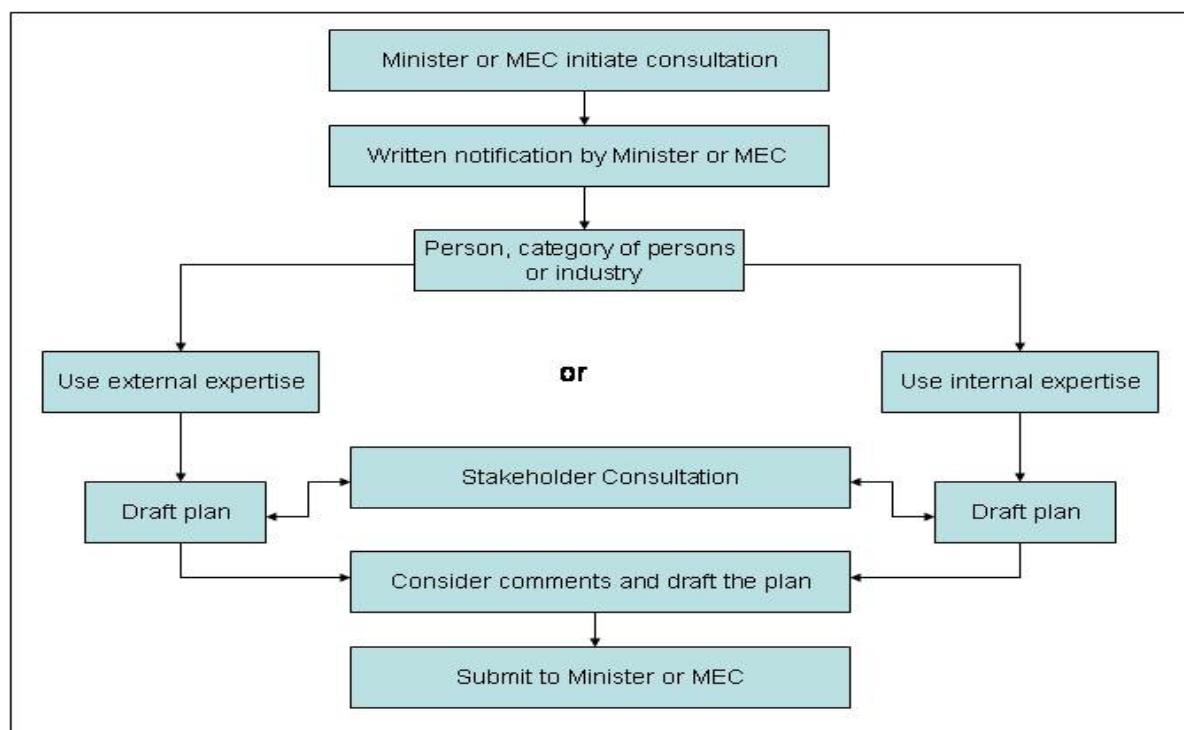
3.1.6 Consideration of Stakeholder Inputs

The Act stipulates that for an Industry WMP prepared, stakeholder inputs must be considered and addressed accordingly. The Act however does not prescribe the method for consideration of inputs. These inputs may be rendered in various forms from general queries, criticisms, appreciation, requests, instructions, general comments, etc. It is advised in this document that at least a register of all such inputs, as well as a response to such inputs be created and kept on file. Depending on the number, type and size of inputs, a method may be identified and used to decide on the level of significance of each input or expert knowledge can be used to arrive at such a decision.

3.1.7 Industry WMP Submission

Once Industry WMPs has been completed, it will have to be submitted to the Minister or MEC, as the case may be. A copy of comments made on the plan, will also need to be attached to the submitted plan. Depending on the type, number and size of input rendered, it may be necessary to have such inputs captured in a summarised form with the comments / response detailed document being kept as background information and only a summary of key issues or comments that have a significant bearing attached. Of importance, however, is indication of the manner of how inputs were addressed, as described above. Submission can be made to the offices as will be stipulated in the written notices or in the relevant gazette. **Figure 5** below provides a diagram which depicts the process described in the section.

Figure 5: Mandatory plans: a process diagram for a person, category of persons or industry



3.2 Preparation of Voluntary Plans

Subsection 28(7) of NEM:WA makes provision for the preparation of voluntary plans. It is essential to note that; the plans once prepared need to be submitted to the Minister or MEC for approval. Even though the preparation process will be a voluntary one on the industry side, the Act still allows the Minister or MEC to exercise any of their powers in respect of the voluntary plans, once they have been submitted for approval. It therefore becomes crucial during the preparation stage to have considerations made on the requirements of subsection 28(4) of NEM:WA. While it is not a requirement of the Act for the Industry WMP compiler to consult with relevant sections of the Department dealing with waste management prior to the preparation and submission of a voluntary plan, this guideline foresees benefits of such an initiative and hence encourages it when deemed necessary. This initiative, it is believed, will help address any potential confusion at any early stage as possible and ensure smooth process in the administration of a submitted voluntary plan. As a general approach however, this guideline document recommends the process that follows.

3.2.1 Analysis of current or potential waste generation impact

Through Section 28 (7) (b) (i), NEM:WA requires that, when making such a decision, the following factors be taken into consideration.

- **The impact or potential impact of the waste on health and the environment that is generated by the applicable person, category of persons or industry.**

Information on the potential impact on health and the environment may be obtained from risk registers from previous and current risk assessments. The hazard ratings should be able to give an idea on the type of measures to be undertaken on a particular type of waste. Results from previous environmental impact assessments, aspects registers from existing environmental management systems may also give an indication of significance level of waste related environmental aspects within an individual company level.

For hazardous wastes, reference may also be made on the existing Waste Classification Systems, e.g. the *Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste*, Pretoria, 1998, a document compiled by the former Department of Water Affairs and Forestry. Reference may also be made on the Hazardous Waste Classification System: a project currently being undertaken within the DEA. While focus of the document by the former Department of Water Affairs and Forestry was in the area of end of pipe management of waste, i.e. treatment and disposal; the latter document by the now Department of Environmental Affairs will expand to include issues pertaining to waste minimisation, re-use and recycling.

- **The environmentally sensitive nature of a natural resource or the amount of natural resources that is consumed in the manufacturing or production processes that result in the waste.**

Whether waste generated is from high environmentally sensitive natural resource, and the volumes of waste are large, in the Act, there is no quantification or criteria to determine the circumstances under which a plan may need to be considered. This discretion is hence left to the company or a group of companies to make. Some natural resources like fossil fuels are non-renewable. Caution therefore needs to be exercised to minimise their depletion. In the generation of power, for example, a mammoth amount of boiler ash is generated and in the absence of re-use and recycling initiatives, the ash ends up on disposal facilities.

- **The manner in which an Industry WMP may contribute to the avoidance or minimisation of the generation of waste; the reduction of negative impacts on health and the environment; and the conserving of natural resources.**

While this factor talks to the two factors described above, the issue of cleaner production, embedded in the words avoidance or minimisation of the generation of waste are crucial. This is described further in subsection 4.3.2 below.

3.2.2 Prior Consultation with Authorities

Neither the Industry WMP compiler nor authorities are obliged under this Act to initiate any consultation prior to the preparation and submission of voluntary plans. This guideline however holds the view that such an initiative may be to the best advantage of both parties. Should it be considered necessary to consult prior to the preparation of plans, the Industry WMP compiler may

approach authorities for clarity on any issues regarding, e.g. contents of the plan, process, or anything regarding this guideline or requirements of the Act. The purpose of this communication will only be to ensure smooth progression from the preparation, submission, evaluation and decision making on the voluntary plans. It is recommended that such communication be addressed to those offices at the national department or provincial departments dealing with waste management. Contact details are included at the end of this guideline document.

3.2.3 Determination of Capacity

(see 3.1.3 under mandatory plans)

3.2.4 Industry WMP Preparation and Submission

Once a decision has been made within a facility, company, industry or sector to voluntarily prepare the plans, such plans should be submitted to the Minister or MEC. They can be addressed directly for the attention of the Directorate: Waste Management within provinces or the national department. Contact details of such section heads may be obtained via the contact numbers listed in Section 7 of this document. It must however be noted that, a voluntary plan may only be submitted at anytime following the Minister's decision to bring subsection 28 (7) into effect. This sub-section of the Act and other sections (as it may be remembered) were put on hold following the coming into effect of the Act in July 2009.

Once a plan has been received, and prior to making a final decision, the Minister or MEC may decide to engage other stakeholders, and hence a need for further work on the submitted plan as detailed in the subsections 3.2.5 - 3.2.7 below. If no further work is called for by the Minister or MEC, then a final decision may be made as detailed in Section 5 below.

For details on the contents of voluntary plans, reference can be made to Section 4 of this guideline document. The contents described in that section however apply mainly to mandatory plans as may be required by the Minister or MEC. Since the Act does not prescribe the contents of plans prepared voluntarily, it is recommended that this list be also used as a guide to the contents of plans being compiled voluntarily.

3.2.5 Stakeholder Consultation

The Act does not prescribe the type of consultation process on the preparation of voluntary plans. It must however be noted that, such prescription may be made following submission for approval of such a plan to the Minister or MEC as they reserve the right to exercise any of their powers set out in Part 7 of the Act. It is therefore recommended that a public participation process is followed.

As per the discussion in the preceding sub-section 3.2.2, this guideline recommends communication with authorities prior to the preparation and submission of voluntary plans. This may be the case in situations where the Industry WMP compiler requires clarity on certain aspects of the plan preparation and submission process. While this is not a requirement of the Act, it is however believed that it may facilitate smooth evolution from the preparation through to decision making.

If it happens that the Minister or MEC prescribe a consultation process following submission of a plan for approval, it is advised that all consultation process documentation be kept on record. As is described in sub-section 3.2.7 below, the copy of comments made and the manner such comments had been addressed should be attached to the final Industry WMP for submission to the authorities.

3.2.6 Minister or MEC's Direction

While no obligation is placed on the Minister or MEC to prescribe any process prior to the preparation and submission of voluntary plans, such prescription may be made after the plan has been submitted for approval. These may include directions on for example, the type of consultation process with stakeholders on the submitted plan, if deemed necessary. In the final Industry WMP, the manner with which such directions (if any) have been complied with, need to be clearly demonstrated.

3.2.7 Consideration of Stakeholder Inputs and Resubmission

If it happens that the Minister or MEC prescribe a consultation process following submission of a plan for approval, stakeholder inputs must be considered and addressed accordingly. These inputs will have been rendered in various forms, from general queries, criticisms, appreciation, requests for more information, instructions, general comments, etc. It is advised in this guideline document that at least a register of all such inputs, as well as a response to such inputs be created and kept on file. Depending on the number, type and size of inputs, a method may be identified and used to decide on the level of significance of each input. As is explained in the preceding sub-section 3.2.5, the copy of comments made and the manner such comments had been addressed should be attached to the final Industry WMP for submission to the DEA&DP or DEA.

4 MINIMUM REQUIREMENTS OF INDUSTRY WASTE MANAGEMENT PLANS (SECTION 30 OF NEM:WA)

In issuing a notice or a gazette in terms of Sections 28 and 29 of the Act, the Minister or MEC may provide specifications regarding the actual information that must be included in an Industry WMP. In this case, the preparation and submission of plans will become a mandatory process. The contents as listed in Section 30 of the Act, and / or even more information requirements may therefore be stipulated. As for those plans prepared and submitted voluntarily, however the Act does not prescribe the contents of such plans. It is therefore recommended in this guideline that, the list in Section 30 of the Act (as elaborated in this section) be used as a framework to guide the contents of such voluntary plans. Voluntary Industry WMP compilers may however go beyond the list in Section 30 of the Act.

The Act does not prescribe the structure of the Industry WMP document prepared and submitted to the Minister or MEC. This guideline however proposes a structure as detailed in Section 2 and it is recommended that this structure is followed at all times. Its use will be beneficial to both the department and the person, category of persons or industry. This section expands on how the list of contents in Section 30 of the Act may be incorporated into the plans prepared by different role players (persons, category of persons or industry and organs of state). The contents are the minimum requirements of an Industry WMP.

Minimum requirements as listed in Section 30 of the Act

- the amount of waste that is generated;
- measures to prevent pollution or ecological degradation;
- targets for waste minimisation through waste reduction, re-use, recycling and recovery;
- measures or programmes to minimise the generation of waste and the final disposal of waste;
- measures or actions to be taken to manage waste;
- the phasing out of the use of specified substances;
- opportunities for the reduction of waste generation through changes to packaging, product design or production processes;
- mechanisms for informing the public of the impact of the waste-generating products or packaging on the environment;
- the extent of any financial contribution to be made to support consumer -based waste reduction programmes;
- the period that is required for implementation of the plan;
- methods for monitoring and reporting; and
- any other matter that may be necessary to give effect to the objects of this Act.

4.1 Amount of Waste Generated (Status Quo)

While the Minister or MEC as the case may be, specify that the amount of waste generated be included in an Industry WMP, this however may not be limited to only the total volumes generated. The call may extend to a requirement to include an inventory of all waste streams, including a brief description of sources; type and current waste management practices on storage, collection, recycling, re-use, recovery, treatment and disposal within or outside the parameters of the generator/s. In other words, a detailed Status Quo Analysis may be required, where the overall review of the current waste management system is undertaken. This may also require an exercise of analysing waste management strengths, weaknesses, opportunities, and threats through the application of SWOT analysis techniques.

For the Industry WMPs prepared voluntarily, it is encouraged that this route of doing the entire waste Status Quo and SWOT analysis be followed. The analysis of the entire waste management system is considered to be an important exercise as it will help during the prioritisation of interventions and setting of targets as discussed below. The exercise is also considered important as the Industry WMP is in no way an authority's document. It is a generator/s document, which will be implemented, revisited, reviewed and amended from time to time by the generator/s.

The manner with which information on the Status Quo Analysis is gathered and recorded in an Industry WMP may vary, depending on whether the plan is being prepared for an individual facility, industry or for a sector respectively. In other words, the plans may differ depending on the scale at which the plan is being prepared at.

Where the plan is being prepared for single generating facility, the following factors may be considered when recording in an Industry WMP the amount of waste generated:

- The different sources contributing to the waste stream within the company setting;
- The type and amount of waste generated within the company setting (with a breakdown in a table format, of waste streams per source);
- Brief discussion on reasons for the selection of certain waste streams (in case where focus is only on specific streams).

Where a plan is being prepared for a number of facilities falling within a particular sector, the following may be considered:

- The number of persons / individual facilities for which the plan is being prepared for;
- The type and aggregate volume of waste generated within the sector, or by a select number of companies the plans are drafted based on;
- Brief discussion on reasons for the selection of certain waste streams and specific companies falling within that industry (in case where focus is only on specific streams).

For some generators, the waste data may be readily available or recorded in an existing inventory, but only requiring updating. The collection of such data for other generators may however require extensive work. For such participants in the Industry WMP preparation process, it is therefore advisable to consider starting the development of data collection systems as soon as possible in the planning process, e.g.

- Conducting of waste audits to determine and record existing waste management practices;
- Collation of manifest reports, where such exist;
- Where contractors are used to collect and dispose of waste, data can be extracted from invoices to determine volumes removed and paid for, hence leading to the development of databases on waste removed from sites;
- Information reported to the industry representative bodies;
- Information from the South African Waste Information Centre website;
- Information reported (through provisions of by-laws) to the relevant municipal departments;
- Weighbridge data from municipal operated and privately operated landfill sites.

At the start of the process, it may be difficult to get reliable figures. In this case, estimates can be made, but at least a method used for estimation should be clearly described in the Industry WMP.

4.2 Setting Targets on Reduction, Re-Use, Recycling and Recovery

The Status Quo Analysis exercise discussed above, will have achieved preliminary identification of waste management gaps that exist within the facility, the industry or the sector. During the process, possible interventions will also have been identified. Setting of targets should therefore be seen as a way towards addressing such gaps. It is the determination of the desired amount of change over a given time interval and is a critical step towards the development of an Industry WMP. The Minister or MEC may require that such targets be set, but targets may also be set as part of an Industry WMP prepared voluntarily. What ever the case, the important aspects are setting of targets and objectives which are **SMART** (i.e. simple, measurable, attainable, realistic and can be time bound). The focus may be placed on the reduction, re-use, recycling or recovery of either general or hazardous waste.

Targets will differ depending on the scale at which the Industry WMP is being prepared at, i.e. whether it is prepared for a person / individual company, or a category of persons or industry. Where the plan is being prepared for a person / individual company, targets will be set taking into consideration issues at different operations within the individual company level. Where the plan is being prepared for a sector, targets will be broader than individual company targets. They will be set at a higher level scale, taking into consideration issues across the entire industry sector. Depending on the number of individual companies forming a sector as well as existing capacity within such industries to have records of waste generated, and how organised the sector is,

tangible targets based on the analysis of such data, are possible. Where the sector is not well organised, a method used to arrive at aggregated targets for the entire sectors should be described in the Industry WMP. Where applicable, targets may be set and benchmarked against international best practice. As part of Status Quo Analysis discussed in sub-section 4.1 above, information would have been collected to give a broader picture on how the industry is performing in terms of waste management. Evaluation of such data will have given the Industry WMP developer general understanding of waste management issues the industry is faced with.

The following may need to be elaborated on and considered for inclusion in

- Description of a procedure/ method used to the setting of targets for waste minimisation through reduction, re-use, recycling and recovery;
- How much of reduction, re-use, recycling or recovery is planned for a specific period of time; and
- Of the waste streams in **Appendix C**, which waste streams are targeted for reduction, re-use, re-cycling and or recovery and over what period of time are targets set.

The results of the Status Quo will form a significant basis for defining such targets. Overall, the objective should be identifying initiatives that contribute to the minimisation of waste generated, increasing recycling, re-use and recovery. Objectives and quantitative targets may be set for priority waste streams, which must still be promulgated by the Minister or MEC, and for waste management options. If previous waste management objectives or targets exist, the determination of new targets should take account of whether or not the previous ones have been achieved, or whether there are indications that targets can be achieved in the period in question. It may therefore make sense in some cases to adjust or maintain previous objectives / targets. Measures may need to be considered for implementation to make the achievement of such objectives realistic.

Following the setting of objectives / targets, it may be difficult or impossible to implement all of them simultaneously. It is discussed in Section 4.6 below that a decision may therefore be made to split the Industry WMP into various implementation stages, short, medium and long-term. A rational and systematic approach to prioritisation therefore may help to distinguish between those targets which need to be implemented in the short-term and those that need to be implemented in the medium to long-term. This will also ensure that not only the legislative requirements, the facility's or industry's or sector's goals are met, but also that the available resources (including finance and personnel) are used as effectively as possible.

Questions may be asked, does it really make sense to continue with the current practice of, e.g. external recycling, in the form of giving waste to other users who use it as raw materials? What if we focus on efforts to minimize the generation during the production processes? There are many different criteria that can, in principle be used to select and prioritize the most acceptable initiative. In any prioritisation exercise however, only a few most relevant criteria may be used, with other criteria being relevant only in certain circumstances. Some of the criteria may include the following:

- Environmental Criteria, what environmental costs and benefits will the preferred project / initiative address? Will it lead to improved compliance with environmental regulatory requirements?
- Economic and Financial Criteria, how much expenditure will be required and what income will the initiative bring and what will be the payback time. Will the generator/s afford the initiative?
- Technical Criteria, is there a technical know how? This must also address the what, how, when and by who type of questions about the activity.
- Social & Political Criteria, particularly in relation to support for or opposition to a proposed activity;
- Commercial & Institutional Criteria that may impact on the timing or success of a proposed activity.

A number of prioritisation techniques exist and include amongst others the following:

- Multi-criteria Techniques;
- Relations Diagram;
- Affinity Diagram;
- Tree Diagram;
- Matrix Diagram;
- Prioritisation matrix (Matrix Data Analysis Chart) ;
- Process Decision Program Chart;
- Activity Network, etc

A simple example of a prioritisation method appears in **Chapter 4, Table 8** of this document. For details on other techniques listed above, reference can be made to the web site address <http://syque.com>.

4.3 Developing Measures / Activities

To achieve the targets set, management actions for each prioritized waste stream need to be clearly defined. These may involve actions on waste minimisation, re-use, recycling, recovery and disposal. Of importance to note is the fact that one can start with waste reduction measures that are inexpensive and easy to implement. The measures may be initiated and implemented in a specific order to ensure that the best results are achieved. Key personnel or other resources and scheduling issues may be resolved such that management is aware of the timing and scope of the actions. The activities may have short, medium to long-term target dates that have to be met in line with the set goals and objectives. Section 30 of the Act identifies the following as measures that may be required in an Industry WMP.

4.3.1 Measures to Prevent Pollution or Ecological Degradation

The measures to be required here are based on the NEMA prevention and precautionary principles which stipulate that:

- To secure a reduction of impacts from waste on human health and the environment especially to reduce the hazardous substances in waste,

In this case, the Industry WMP needs to state exactly what preventative measures will be employed. A variety of tools can be considered to assist towards decisions on possible preventative measures. These may include the use of results of previous environmental risk assessments, environmental audits conducted as part of environmental management systems, with ratings focusing on waste related aspects, etc. The levels of rating of such waste related environmental aspects may range from low, medium to high significance. A decision may therefore be made to first embark in designing measures where the level of significance is considered to be high. Depending on the level of significance of a waste related aspect, the following are some of the possible measures to minimise or prevent pollution or ecological degradation:

- Regular awareness raising campaigns within the company or across the targeting not only staff members at floor level, but also management at senior levels. These may include inductions on new employees, scheduled environmental trainings, speeches, conducting of emergency mock drills, etc;
- Allocation of capital expenditure on e.g. treatment methods for hazardous waste. Disposal of such waste to be in line with permit requirements, including disposal at landfills with proper lining, leachate collection systems, etc;
- Development of emergency response procedures, for example, on chemical spillages;
- Development of Standard Practice Instructions (SPIs) for the operation of specific activities within an individual plant, e.g. offloading chemicals from tankers to the storage tanks;
- Employment and continued capacity building of professional environmental scientists;
- Implementation of relevant environmental management systems, which will allow significance rating of waste related aspects, setting of objectives and targets and development of environmental management plans;
- Economic incentives, e.g. performance bonuses linked to environmental cleanliness within different sections of the company.

4.3.2 Measures or Programmes to Minimise the Generation and Final Disposal of Waste

The requirement calls for initiatives aimed at generating lesser amounts of waste, and of such waste generated, to further reduce the amount taken for disposal to landfills. This therefore means that some innovative efforts may be required to improve efficiency on such activities as production processes, product designs and raw material consumption to minimize the amount of waste generated. For those companies that already have some kind of environmental management systems in place, waste minimisation (including some sort of cleaner production) programmes may be in existence already to help achieve this requirement. It is recognized that, some waste minimisation activities do not necessarily require large amounts of financial investments, as companies can start embarking on small initiatives to achieve this. This calls for persons, category of persons or industry to come up with pro-active and innovative measures as opposed to only embarking on measures to manage large quantities of waste once generated.

Where waste has been generated, the waste may still have value within the company / industry context, and can be re-used or recycled internally. Where waste involves packaging material, such material can be given back to the product supplier. The waste can also be given to other users who may use it as raw material / resource in their production processes. The ultimate goal here should be the minimisation of waste going out for land filling.

Whether the company plans to engage on measures to reduce waste prior to its generation or plans to engage on minimisation programmes within or outside its perimeters through waste reuse and recycling; these programmes / measures need to be clearly defined in an Industry WMP. The programme needs to clearly demonstrate the following:

- Clear description of goals, objectives, targets and activities;
- Breakdown of activities to be undertaken;
- The availability of finances;
- Approval of top management;
- Time frame for the completion of activities;
- A measure to be used to check progress towards the achievement of targets.

4.3.3 Measures or Actions to be taken to Manage Waste

It is recognized that, even after vigorous waste minimisation efforts, there might still be quantities of wastes that will require the adoption of “end of pipe” practices. In addition, proper waste management prevents pollution or ecological degradation, improves aesthetics and brings about reduction in environmental liabilities. No matter what the quantities of waste generated are, the waste needs to be managed in one way or the other. This requirement calls for measures to manage the waste within the boundaries as well as outside the boundaries of a company / companies involved.

The Waste Management Hierarchy prioritises waste management options by how environmentally friendly they are, giving preferred methods at the top. The best option, both for the business and the environment, may be to produce as little waste as possible. For waste that can not be avoided, there are a range of options (with what is generally the least desirable at the bottom) as follows:

- Waste Prevention / Avoidance;
- Re-use the waste internally or giving it to somebody else to use as a resource;
- Recycling and Composting internally or giving it to somebody else;
- Waste Recovery through energy generation;
- Waste Treatment;
- Waste Disposal.

For each waste stream prioritized, the Industry WMP should describe measures that will be undertaken for internal collection, separation, removal, storage, re-use, recycling, recovery, treatment and disposal. The choice that is made will depend on a number of factors including the type of facilities available close to the business and the type of waste streams involved. For example, the only option for some hazardous wastes is to incinerate them. What ever measure is selected, this must be clearly described in an Industry WMP.

4.4 The Phasing Out of the Use of Specified Substances

Should the waste being generated or used by a person, category of persons or industry be declared as priority waste as detailed in Part 1 of the Act, measures as they may be required by the Minister or MEC must be complied with. As part of the Industry WMP preparation process, measures for the phasing out of such waste may need to be considered and presented in the Industry WMP document submitted to the authorities for approval.

4.5 Requirements linked to the Extended Producer Responsibility clause

The following possible requirements of an Industry WMP relate to the extended producer responsibility clause as detailed in Part 3, Section 18 of the Act. While Section 18 provides details of measures to be followed, the following three measures may be required in an Industry WMP independent of the process described in Section 18 of the Act. For those plans prepared and submitted voluntarily, it is however still recommended in this guideline and these three requirements be considered for inclusion in an Industry WMP.

4.5.1 Mechanisms for informing the public of the impact of the waste-generating products or packaging on the environment

This is an EPR requirement which can also be linked to Section 18 of the Act. Despite Section 18 of the Act, the Minister or MEC may however still require the person, category of persons or industry as part of Industry WMP preparation (in terms of Section 28) to devise mechanisms for informing the public, relevant organs of state and interested and affected persons (Section 31(1)) on this matter. This can be done or promoted as part of sustainability reporting or explored as part of any existing social responsibility programme of a company or industry concerned. Where this requirement has been specified in a notice or in a gazette issued in terms of Section 28, such mechanisms will have to be described and provided as part of the final Industry WMP to be submitted to the DEA&DP or DEA for assessment and approval.

4.5.2 The extent of any financial contribution to be made to support consumer-based waste reduction programmes

There may be social responsibility programmes already in place around this issue hence making it easy to provide details on progress, challenges and any plans to improve / spread and sustain the initiative. Where none of such initiatives exist, but in a notice or in a gazette, the Minister or MEC stipulate that they be explored, any steps taken to initiate such programmes will have to be described in an Industry WMP.

4.5.3 Opportunities for the reduction of waste generation through changes to packaging, product design or production processes

Despite the EPR process that may be required in terms of Section 18 of the Act, the Minister or MEC may still require the person, category of persons or industry as part of Industry WMP preparation (in terms of Section 28) to explore these waste reduction opportunities.

This requirement also links with sub-sections 4.5.1 and 4.5.2 above. As part of arriving at a waste minimisation programme described in sub-section 4.3.2, investigations may need to be initiated to come up with conclusions on the operations / behaviours that lead to waste generation in the first place. Such causes may be due to excessive packaging, inefficient use of raw materials during the production processes, product designs that consume more raw materials than they are needed.

This requirement calls for the investigation of cleaner production opportunities as opposed to only the “end of pipe” or management of waste once it has been generated. In an Industry WMP, steps taken to conduct investigations and measures taken on such opportunities will need to be described, should the Minister or MEC include this requirement in a written notice or gazette. On consultation with the Minister or MEC regarding voluntary plans, any directions by the Minister or MEC will need to be complied with regarding this requirement.

4.6 Implementation of the Plan

The plan once approved can be implemented according to a schedule to be designed and attached as part of the Industry WMP for submission to the relevant departments for approval. The Act does not prescribe the period for the implementation of the plan. The Minister or MEC however reserve the right to do this prescription, during the authorisation of a plan submitted for approval.

This guideline acknowledges the fact that the time requirement for implementation will depend on a number of factors. The plan may consist of more than one part with some parts capable of being implemented within a short period of time and the other parts needed for implementation over a long period of time. Depending on a situation at hand, one reason for a long term implementation of a plan may be due to some possible difficulties with the identification of suitable sites for waste treatment facilities or landfills within, or close to the area of generation. Furthermore, it may be necessary to put considerable effort into site selection, environmental impact assessments, and public consultation in order to obtain permission for new sites, where needed. Finally, waste treatment facilities may also represent large investments that need to be recovered over a longer period. From a practical point of view, the time horizon of a plan should also be long enough to make it possible to evaluate whether targets in the plan are reached or not.

A time schedule for the implementation of all the activities necessary for achieving the objectives set should be considered as an important part of the Industry WMP. Milestone indicators may be useful, as they allow for deviations from the time schedule to be identified in time to introduce corrective measures.

4.7 Methods for Monitoring and Reporting

Once the plan has been adopted and implemented, activities must be monitored to check progress against set objectives and targets. While the Minister or MEC may require monitoring and reporting to form part of contents of an industry WMP, the Act does not prescribe any monitoring and reporting methods. The MEC will specify the reporting requirement when issuing a notice or government gazette in terms of Sections 28 and 29 of the NEM:WA. The Act however does require that a mandatory plan be reviewed, and the review period will be specified in the approval or at intervals specified by notice in writing or in the relevant Gazette. While this does not apply to the plans prepared and submitted voluntarily, this should be considered as a good practice and practiced wherever possible. In other words, irrespective of whether the plan is mandatory or voluntary, the recommendation is that some form of monitoring and reviewing of the plans should be considered and conducted.

With regards to monitoring and reporting, it is proposed in this guideline that existing internal monitoring and reporting mechanisms be utilised and where they do not exist, be established. For best monitoring to take place, any objectives which are qualitative in nature, may need to be transformed into quantitative targets to make them operational and measurable. In order to monitor the achievement of such objectives, preconditions may be identified and these can be used as a control system against which progress can be measured. The idea is to use the measurable indicator(s) to monitor if the objectives are met.

Records and / or reports should be kept for submission to the authorities, when the need arises or on request by the departments. These records will also assist during the compulsory review of an Industry WMP, to be done within the period to be determined by the Minister or MEC during approval of the Industry WMP. Possible monitoring and reporting methods may include amongst others the following:

- Regular internal environmental audits, with Industry WMP compliance included in the audit schedule;
- External surveillance audits (with Industry WMP compliance included in the schedule) especially in those industries with accredited environmental management systems are in place;
- Group reporting of key performance indicators where the company is a member of a larger group of companies;
- Reporting in sustainability reports;
- Conforming to the reporting requirements as may be detailed in waste management licenses (permits) or as prescribed by the Minister or MEC. Industry WMP compliance, may be included in the legal register.

As for the review of an Industry WMP, progress on the implementation of the current plan may need to be assessed against objectives and targets initially set. Special questions of interest may include: which objectives or targets have been met? Which activities were not implemented or did not have the desired effect? And, did any of the initiatives have an unexpected impact? Against this background, new status or other requirements, if any, the next generation Industry WMP will be prepared. Gaps in the current plan will therefore need to be recorded and addressed during the preparation of the next generation plan. It is also advisable to keep records of what was not achieved, for reporting to the departments, when the need arises.

Monitoring and reporting for a plan prepared at sector level may be undertaken through the internal reporting systems established between the member companies and their associations.

4.8 Any other matter that may be necessary to give effect to the objects of this act

On issuing a written notice to the person or a gazette to a category of persons or industry in terms of Section 28 (1) and (2) of the Act, the Minister or the MEC will stipulate other matters (where applicable) that the person, category of persons or industry need to consider. On preparing the plans, such matters will have to be taken into consideration and addressed in the Industry WMP accordingly. Since no requirements will have been stipulated on the preparation of voluntary plans, this guideline still advises that, voluntary plan compilers also consider going beyond the list in Section 30 of the Act.

5 DECISION-MAKING ON OF INDUSTRY WASTE MANAGEMENT PLANS (SECTION 32, 33 & 34 OF NEM:WA)

This applies to both mandatory and voluntary plans submitted either by a person, category of persons or industry or by the organ of state. On receipt of an industry waste management plan, the Minister or the MEC may take the following steps as discussed below.

5.1 Acknowledge Receipt of the Plan/s

While the Act does not prescribe that this activity be done, and does not stipulate timeframes, this guideline advises that receipt of such plans by Minister's or MEC's offices should be acknowledged. This should be regarded as a best practice approach, which also adheres to the Batho Pele principles.

5.2 Assess the Plan/s

The assessment process on submitted plans will differ depending on whether the plan was prepared on a voluntary or mandatory basis. In assessing mandatory plans, utmost care should be exercised to ensure that the review does not go beyond the requirements of the Act. Additional requirements stipulated in written notices issued to a person; category of persons or industry or to an organ of state should however be checked as well. A checklist to assist the Minister or MEC with such a review is attached in **Appendix B**. This checklist only serves as a guiding tool. Specific sections of the Act should therefore be referred to from time to time, where confusion arises regarding areas to focus on during the assessment process.

While the list on Section 30 of the Act is not compulsory in the preparation of voluntary plans, it is however recommended that such list be used as a guide when assessing voluntary plans. Also, the presence of any other additional information which the Minister or MEC would have required following initial submission of a voluntary plan, should be checked. Any other waste management related information provided beyond the list in Section 30 of the Act should be regarded as good demonstration of commitment towards a better waste management programme within the facility, company or sector.

For both plans (mandatory and voluntary), the assessment should look at both process and contents issues of the plans, i.e. has the relevant process been followed? Has the contents been adhered to? Reference is again made to a checklist in **Appendix B** of this guideline document.

5.3 Approve or Reject the Plan/s

Depending on the outcome of the assessment process, a decision may be made to approve/reject the plan. When this is done, the decision should be in writing issued to a company representative in the case of an individual company. The representative referred to here is not an independent external service provider who compiled the plan for the company, but either a Manager, CEO, or who ever has been identified by the company as its representative.

As for the plans issued to a category of persons or industry or sector, written approval should also be issued to a representative chosen / elected by a category of persons or industry to represent them. Where a plan has been prepared by an organ of state or a person, category of persons or industry or sector, the decision may be issued to the head of the organ of state. Written decision described above, should clearly spell out conditions and directions on how the plan must be implemented. Timeframes for monitoring, reporting, reviewing and amendment of the plan should be spelled out clearly, including the period for which approval is issued, e.g. 3 years, 5 years, etc. It is believed that a general consensus exists in that, once a plan has been submitted and approved, it can be reviewed and amended within a period of less than 5 years.

Furthermore, on approval of a plan, the Minister or MEC, as the case may be is expected to give notice in the relevant Gazette that an Industry WMP has been prepared in terms of Section 28 and that the plan has been approved. This applies to both voluntary and mandatory plans submitted and approved.

Regarding rejection of the plans, this can not happen immediately following first time submission to the Minister or MEC. It is advised that, such rejection should only be considered following consultation with the plan compiler, if the plan was not complying with the requirements of the Act (in the case of mandatory plans). This means that prior to the rejection; additional information or amendment of the plan may be required first as described in sub-section 5.4 below. Where the weaknesses of the original plan can not be addressed, then the plan may be considered for rejection. The Act allows a maximum of not more than two times to reject the plan, after which a waste management measure may be required. Where rejection is deemed necessary, this should be done in writing to the Industry WMP compiler. Again, the Act does not prescribe timeframes, but reference can be made to the document: Criteria for the review of Industry WMPs, which recommends timeframes. The rejection letter should provide clarity on reasons for rejection and the process to be followed thereafter.

For plans submitted voluntarily, the Act does not stipulate that such plans may be subjected to rejection. It is however advised in this guideline that, such route may still need to be undertaken if the plans are deemed to be inadequate in terms of addressing key waste management issues.

5.4 Request Additional Information or Amendment of a Plan

The plan may contain information still considered inadequate to allow the Minister or MEC to make a decision on it. To help determine adequacy of information in a plan, checklists in **Appendix B** of the guideline may be used. Also, reference can be made to the model Industry WMP structure in Section 1.1 of this document. In a letter to the Industry WMP compiler, all additional information required should be clearly listed to avoid confusion. Such information may be requested separately to assist towards completion of the Industry WMP review process, or the entire plan may need to be amended. Which ever is deemed relevant, this should be communicated in writing to the person, category of persons or industry or the organ of state. Where a revised plan is required, timeframes should be specified within which the plan needs to be amended and resubmitted. The Act however does not specify such timeframes, hence this should be to the discretion of the office of the Minister or MEC delegated to assess and make a decision on the Industry WMPs submitted. For plans submitted voluntarily, the Act does not stipulate that such plans may be subjected to either requests for additional information or requests for amendments. It is however advised in this guideline that, such routes may still need to be undertaken if the plans are deemed to be inadequate in terms of addressing key waste management issues.

5.5 Waste Management Measures

Where there has been failure to prepare a plan in terms of Section 28 of the Act, revise or amend such a plan, provide additional information and / or resubmit a plan rejected more than twice, the Act makes provision for the Minister or MEC to issue written notice without any criminal proceedings being effected, giving specific measures to be undertaken. The Act however does not stipulate the type of written notice that may be issued, i.e. whether it should be a written notice in the form of just a letter, or it should be a compliance notice in terms of Section 31L of the NEMA, 1998. The critical thing to note however is that the measures discussed here are not at this stage expected to follow any formal legal route but just to promote compliance. It may only be after failure to comply with the waste management measures required that a more formal “stick” approach may be considered and adopted through the use of compliance and enforcement within the Minister’s or MEC’s departments. It is therefore suggested that at this stage, personnel within waste management units in these departments be utilised in a way that promotes compliance in a “non-stick” manner. The Act requires that any measures pursued in terms of the above be considered and aligned with any measures stipulated on any existing approved similar Industry

WMP. This therefore calls for the Minister or MEC to keep records of all Industry WMPs submitted and approved in order to achieve this consistency.

It is also important to note that, the notice referred to above may only be issued where mandatory plans had been required. It does not apply to the plans prepared voluntarily. There is no provision for measures to be taken against any failure to amend the plans or provide additional information where the plans had been prepared and submitted voluntarily. It is however advised that, where voluntary plans submitted do not contain sufficient information to allow informed decisions, such plans may still be referred back and the compiler requested to amend, provide additional information and resubmit, as would normally be done with those plans prepared and submitted obligatory.

5.6 Criminal Measures against Non - Compliance

When comparing the past and present institutional arrangements within the Minister's and MEC's departments, it makes sense to argue that such departments are now better off in terms of compliance enforcement capacity. While the Act makes provision for the process described in sub-section 5.5 above, circumstances may arise where stricter measures will be more suitable. The stricter measures referred to here may involve criminal proceedings against transgressors. This action may be considered following failure to comply with the measures stipulated in a written notice discussed in sub-section 5.5 above. While the Act does not draw a line between the application of lenient measures discussed in sub-section 5.5 and the stricter actions which are discussed here, what is clear in the Act however is provision for penalties on failing to comply with the following:

- To submit or to prepare an Industry WMP when required to do so in terms of Section 28;
- Contravening or failing to comply with an industry waste management plan; or
- Contravening or failing to comply with a waste management measure specified in terms of Section 14(4) or 33(1) of NEM:WA; discussed in the section above.

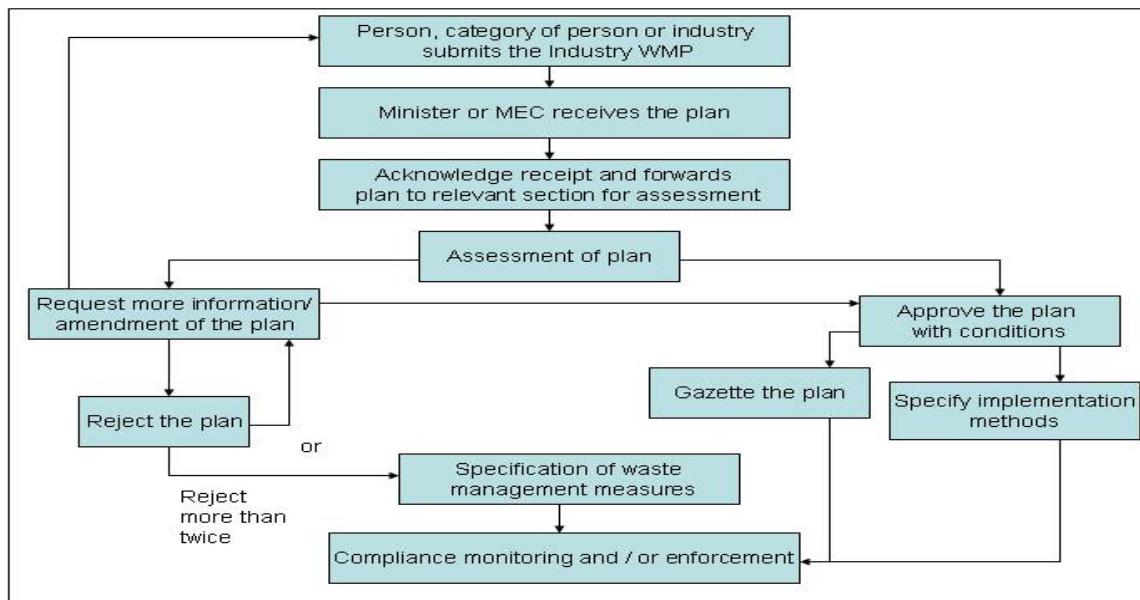
These are regarded as offences and the details of possible penalties are provided in Section 68 (2) of the Act. Note bullet point number 2 above, as it may still be applied to those voluntary plans prepared, submitted and approved by the Minister or MEC. This means that failing to comply with the approved plan, whether prepared voluntary or mandatory (including conditions of authorisation), constitute an offence. As detailed in the Act, fines may be up to R5 000 000 or imprisonment for a period not exceeding five years or to both a fine and imprisonment. These may be in addition to any other penalty/ies that may be imposed or made in terms of the NEMA.

It is therefore recommended in this guideline that once the plans have been prepared, submitted and approved in terms of Section 28 of the Act, the plans should be considered for inclusion in the compliance monitoring schedules of the Minister's or MEC's departments. Plans prepared by an organ of state for a person, category of persons or industry that had failed to prepare such plans, should also be considered for inclusion in the compliance monitoring schedules.

The entire decision making process discussed in the preceding section, is highlighted in **Figure 6** below. While this applies mainly to the Industry WMPs prepared and submitted following a notice or a gazette issued in terms of Sections 28 and 29 of the Act, it is recommended in this guideline that the same decision making process be followed for those plans prepared voluntarily. One of the considerations is that, the Act does not dictate that such plans be referred back to the compiler for reviewing, amending or provision of additional information. The requirement for the undertaking of waste management measures is also specific to the mandatory plans.

For the purposes of better administration of voluntary plans, and informed decisions on the plans, circumstances may arise where more repeated liaison may be needed between the approving department and the plan compiler. The goal is to have plans which (whether prepared voluntary or mandatory), will ultimately be able to be easily implemented, monitored and that are capable of achieving intended results.

Figure 6: A process diagram for the decision maker (Minister or MEC)



6 INDUSTRY WMP ASSESSMENT CHECKLIST

The DEA&DP Directorate: Waste Management Planning will undertake an initial evaluation of WMPs submitted for review and approval following a standardised checklist approach. The checklist that will be used by the Department is provided in **Appendix B** and should be used as a self-assessment tool by Industry WMP proponents to evaluate completeness and adequacy of documentation prior to submission to the Department.

7 INDUSTRY WMP TECHNICAL SUPPORT

For further technical support and assistance with development Waste Management Planning please contact:

Department of Environmental Affairs and Development Planning
 Directorate: Waste Management
 5th Floor Property Centre
 1 Dorp Street, Cape Town, 8001
 Private Bag X 9086, Cape Town, 8000
Tel: (021) 483 2705 / 2712 / 8336
Fax: (021) 483 4425 / 2979
EMAIL: HWMP@pgwc.gov.za

8 APPENDIX A

SUMMARY OF REGULATORY FRAMEWORK

A summary of key legislation relevant to the consumer-formulated chemical industry in respect of waste management is outlined below.

Hazardous Substances Act (Act No. 15 of 1973)

- The Hazardous Substances Act (15 of 1973) is regulated by the Department of Health. The Act and its regulations regulate the transportation of defined hazardous substances (including hazardous waste) and also the disposal of containers of Group 1.

Occupational Health and Safety Act (Act No. 85 of 1993)

- The Occupational Health and Safety Act (OHSA) (85 of 1993) is regulated by the Department of Labour. Sections under the act which are applicable to the industry include:
- The amendment GN 1179 of 25 August 1995 - regulations for hazardous chemical substances (HCS)
- R15: Provisions for the recycling, safe handling and disposal of HCS waste, as well as Personal Protective Equipment (PPE) requirements and requirements for contracts with waste management service providers
- Industries need to ensure that waste activities and waste management procedures consider the requirements of this regulation as far as is reasonable practicable
- Industries also need to ensure that if bulk storage tanks are stored on site, and the materials are of a hazardous nature, that they are compliant in terms of the Major Hazardous Installations Regulations within the OHS Act of 1993.

National Environmental Management: Waste Act (Act No. 59 of 2008) NEM: WA

- The NEM:WA gives effect to the White Paper on Integrated Pollution Control and Waste Management. The act is regulated by the DEA and provincial environmental departments (such as DEADP, Western Cape). Waste management provisions include:
- The licensing of waste management activities.
- The act contains definitions of waste that will replace existing legislation incl. ECA.
- The waste management activities will be published by the MEC that will require a waste management license.
- Standards will be published for the separation, treatment, processing transformation and disposal.
- The MEC may require any person/industry to prepare and submit an industry waste management plan.
- Aims to provide better regulation of contaminated land matters:
- Provides definitions of contaminated land - Relates to background concentrations, unlike the 'Minimum Requirements', and does not refer to 'acceptable exposure'
- Contaminated sites may be declared by the MEC as Investigation Areas and may issue remediation orders.
- Transfer of contaminated land may require authorisation - person to whom the land is being transferred would have to be willing and able to take responsibility for the remediation of the contamination.
- Section 30 – the contents of Industry WMPs, the information may include:
 - The amount of waste that is generated
 - Measures to prevent pollution or ecological degradation

- Targets for waste minimisation through waste reduction, re-use, recycling and recovery,
- Measures or programmes to minimise the generation of waste and the final disposal of waste
- Measures or actions to be taken to manage waste
- The phasing out of specified substances
- Opportunities for reduction of waste generation through changes to packaging, product design or production processes
- Mechanisms for informing the public of the impact of the waste generating products or packaging on the environment
- The extent of any financial contribution to be made to support consumer-based waste reduction programmes
- The period that is required for implementation of the plan
- Methods for monitoring and reporting
- Any other matter that may be necessary to give effect to the objects of the Act.

National Environmental Management Act (2004) NEMA

The National Environmental Management Act is regulated by DEA. Sections under the act which are applicable to the industry include:

- Section 2:
 - National Environmental Management Principles
- Section 28:
 - Duty of care and remediation of environmental damage
- Section 30:
 - Control of emergency incidents
- The amendment GN R. 385 (2006) which describes the process to obtain a waste management licence

Minimum Requirements for the Handling Classification and Disposal of Hazardous Waste (1998 / 2004)

Although currently under revision, this guideline is still in use pending finalisation of new guidance under the NEM: WA. Pertinent sections of the existing guidance include:

- Section 3:
 - Guidelines for waste minimisation (reduce, re-use and recycle principles)
- Section 6:
 - The safe disposal of waste so that it will not pollute the environment or cause health hazards.
- Section 7:
 - The treatment of waste to reduce volumes or level of toxicity
- Section 8:
 - In terms of the minimum requirements hazardous wastes are grouped into four (4) hazard ratings. The ratings differentiate between a hazard waste that is fairly or moderately hazardous and one that is very or extremely hazardous. The hazard rating further indicates the class of hazardous waste landfill at which the waste may be disposed.
 - Hazard rating 1 - Extreme Risk and Hazard Rating 2 - High Risk wastes must be disposed of at a H:H landfill site
 - Provision is made for 'delisting' of some hazardous waste enabling the class of landfill to be reduced to H:H, H:h or general.

9 APPENDIX B

INDUSTRY WMP ASSESSMENT CHECKLIST

Company Name: _____

Name of company representative: _____

Contact detail: Tel: _____ Fax: _____
Cell: _____ Email: _____

Address: _____

Sector: _____

Assessed by: _____

Date of submission: _____

Date of previous submission (if applicable): _____

Sections of Industry WMP Template	Yes/No	Comments*
<u>Site Description</u>		
Has the site information been adequately provided?		
Has the site description been adequately provided?		
Is a Google earth photograph or copy of the building plan present?		
Have site GPS co-ordinates been provided		
Has an adequate description of operations and activities been provided?		
Has an adequate process flow diagram been provided?		
<u>Status Quo</u>		
<i>Is a description of waste streams and current management practices adequately described - for the following:</i>		
<i>Guidance on all possible waste streams is attached in the appendix.</i>		
Processing Waste:		
Incoming (raw materials) waste streams		
Processing waste streams		
Outgoing waste streams		
Other Areas:		
Offices		
Laboratories		
Cleaning/Wash bays		

Sections of Industry WMP Template	Yes/No	Comments*
Status Quo		
<i>Have activities been adequately described for environmental authorisation - for the following:</i>		
Listed activities in terms of the NEM:WA		
Listed activities in terms of the NEM:AQA		
Listed activities in terms of the National Water Act (NWA) or Municipal By-laws		
<i>Have activities been adequately described for current environmental systems or strategies - for the following:</i>		
Waste prevention initiatives		
Waste minimisation initiatives		
Waste separation, internal re-use and recycling initiatives		
External re-use and recycling initiatives		
Recovery practices		
Treatment of effluent or wastewater		
Staff training in waste management (list training)		
Community/stakeholder participation in waste management initiatives		
Extended Producer Responsibility (EPR)		
Best Practical Environmental Option (BPEO)		
<i>Have the waste management options (as identified in the status quo) been adequately considered and described for the following:</i>		
Solid Waste		
Prevention / Avoidance		
Reduce		
Reuse		
Recycle		
Disposal		
Liquid Waste		
Prevention / Avoidance		
Reduce		
Reuse		
Recycle		
Disposal		
Development of Industry WMP		
<i>Have gaps been adequately identified for the following:</i>		
Processing Waste:		
Incoming raw materials and related waste streams		
Processing waste streams		
Outgoing waste streams		
Other Areas:		
Offices		
Laboratories		
Cleaning/Wash bays		

Sections of Industry WMP Template	Yes/No	Comments*
Development of Industry WMP		
<i>Have goals, objectives, activities and timeframes been adequately described into the following:</i>		
Legal compliance		
Waste minimisation initiatives		
Waste separation initiatives		
Internal re-use and recycling		
External re-use and recycling		
Recovery practices		
Effluent treatment		
Improved inventory control and records kept of losses		
Assessment of waste contractors		
Records and quantities kept of all waste		
Records kept of safety disposal certificates (Is there a Waste Manifest System? This is not a requirement, but may become one in future)		
Staff training in waste management		
Development and procedures for reporting environmental incidences		
Reporting waste quantities to authorities (this is also not a requirement yet, but may become one in future)		
Moving towards cleaner production and phasing out of hazardous substances		
Promotion of EPR, education and awareness around waste management		
Health and safety plan for the facility		
Database of stakeholders targeted in the development of the Industry WMP		
Record of stakeholder concerns and how stakeholder concerns were addressed.		
Budget for public participation		
Communication strategy with stakeholders (e.g. language usage conveying scientific data etc.)		
Implementation Schedule		
<i>Does the implementation schedule include the following information:</i>		
Appointment of responsible persons		
All objectives, activities and targets identified		
Adherence to implementation schedule		
Identification of Funding Needs		

Sections of Industry WMP Template	Yes/No	Comments*
<u>Monitoring and Review</u>		
<i>Does a monitoring plan exist and comply with the following:</i>		
a) <u>Implementation Schedule</u>		
Indicator of objectives, activities, tasks and targets being timeously implemented		
Indicator of corrective actions in terms of short-term objectives		
Indicator of volumes and types of waste generated, re-used, recovered, recycled and disposed		
Compliance with legislative requirements and by-laws as per the environmental authorisations issued		
Compliance with the company's formal performance assessment system		
Compliance with written notices, directives, etc		
Others		
<u>Review Period</u>		
Indicator of review of objectives, activities, tasks and targets in terms of performance levels		
Indicator of review of implementation schedule		
Indicator of review of BPEO		
Indicator of review of Legislative Developments		
Indicator of review of Training of Personnel		
Next review period		

If No, Please comment on amendments necessary to meet requirements of WMP.

10 APPENDIX C

POTENTIAL WASTE STREAMS FROM THE CONSUMER-FORMULATED CHEMICAL SECTOR

Please note that this is not a complete and comprehensive list, but merely provides as guidance on the level of detail required for waste streams arising from chemical manufacturing facilities.

Processing Waste	
<u>Incoming Waste (e.g. raw materials receiving)</u>	<u>Description</u>
Solid Waste	
General Waste	Metal drums
	Plastic drums
	Paper bags
	Plastic bags
	Woven bags
	Fibre drums
	Flow bins
	Wooden/ plastic pallets
	Cling wrap
	Off-specification raw materials
	Expired raw materials
	Other
Hazardous Waste	Off-specification raw materials
	Expired raw materials
	Other
Liquid Waste	
General Waste	Spillages
	Off-specification raw materials
	Expired raw materials
	Other
Hazardous Waste	Solvent spillages
	Off-specification raw materials
	Expired raw materials
	Other
Air Emissions	Fugitive emissions from use of solvents
	Dust
	Other
Processing Waste	
<u>Processing (e.g. manufacturing)</u>	<u>Description</u>
Solid Waste	
General Waste	Metal drums
	Plastic drums
	Paper bags
	Plastic bags
	Woven bags
	Fibre drums
	Flow bins
	Cling wrap
	Other

Processing Waste	
Processing (e.g. manufacturing)	Description
Solid Waste	
Hazardous Waste	Off-specification product
	Expired product
	Pharmaceutical waste
Liquid Waste	Other
General Waste	Spillages
	Sludge
	Product residue
	Other
Hazardous Waste	Solvent spillages
	Sludge
	Product residue
	Grease
	Engineering waste
	Other
Air Emissions	Fugitive emissions from use of solvents
	Dust
	Other
Outgoing Waste	
Description	
Solid Waste	
General Waste	Damaged packaging containers
	Plastic containers
	Paper bags
	Plastic bags
	Woven bags
	Fibre drums
	Wooden/ plastic pallets
	Cling wrap
	Off-specification products
	Expired products
	Other
Hazardous Waste	Off-specification products
	Expired products
	Other
Liquid Waste	
General Waste	Spillages
	Off-specification products
	Expired products
	Other
Hazardous Waste	Spillages
	Off-specification products
	Expired products
	Other
Air Emissions	Vehicle emissions
	Other

<u>Processing (e.g. manufacturing)</u>	<u>Description</u>
	Other
Offices	Description
	Solid Waste
	Paper
General Waste	Plastic
	Other
	Batteries
Hazardous Waste	Fluorescent tubes
	Ink/Print cartridges
	Health Care Risk Waste (clinics)
	Other
	Q/C Laboratory Testing
	Solid Waste
	Sample bottles (plastic/glass/cans)
General Waste	Paper towels
	Rags
	Paper
	Cardboard
	Glass
	Broken laboratory equipment
	Other
Hazardous Waste	Contaminated rags
	Contaminated paper towels
	Expired chemicals
	Biological Waste
	Vials
	GC/HPLC columns
	Thermometers
	Other
	Liquid Waste
General Waste	Samples of product
	Wastewater effluent
	Spillages
	Other
Hazardous Waste	Solvents/chemicals
	Spillages
	Other
Air Emissions	Fugitive emissions from use of solvents
	Other
	Wash Bays/Cleaning
	Solid Waste
General Waste	Paper towels
	Rags
	Spillages
	Other
Hazardous Waste	Contaminated rags
	Contaminated paper towels
	Spillages
	Other

Processing (e.g. manufacturing)	Description
<u>Liquid Waste</u>	
General Waste	Wastewater effluent
	Spillages
	Other
Hazardous Waste	Solvents
	Spillages
	Other
Air Emissions	Fugitive emissions from use of solvents
	Other
<u>Canteens</u>	
<u>Solid Waste</u>	
General Waste	Food
	Food packaging (paper, foil, plastic)
	Other
<u>Liquid Waste</u>	
General Waste	Wastewater effluent discharge
	Other

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