

**DEPARTMENT OF ENVIRONMENTAL
AFFAIRS AND TOURISM**

**PROGRAMME FOR THE IMPLEMENTATION OF THE
NATIONAL WASTE MANAGEMENT STRATEGY**

**Starter Document
for
Guidelines for the Compilation of
Integrated Waste Management Plans**

FINAL DRAFT

May 2000

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NATIONAL WASTE MANAGEMENT STRATEGY**

**Starter Document
for
Integrated Waste Management Planning in South
Africa**

Guideline Document

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1. INTRODUCTION

This document, *Guidelines for the Compilation of Integrated Waste Management Plans*, describes the framework within which waste management is to be carried out. The main goal of integrated waste management (IWM) planning is to optimise waste management by maximising efficiency, and minimising associated environmental impacts and financial costs. These *Guidelines* aim to assist responsible parties to draft IWM Plans, which comprise an optimum approach to IWM planning in terms of resource allocation, time scheduling and allocation of responsibilities.

These *Guidelines* are one product from a process that has taken place over the last three years. A national policy for integrated pollution and waste management was developed during 1997. This was followed by the development of a national waste management strategy (NWMS) and a series of action plans during 1998/9. The NWMS and action plans set out government's intentions (assisted by the private sector and the public at large) to move from policy to delivery on the ground.

The primary target audience for these *Guidelines* are Provincial and Local Government, and Industry (including mining and power generation), since these parties are responsible for drafting waste management plans. Other parties who are involved in waste management planning may also use these *Guidelines*. An additional aim is to raise public awareness of the waste management problems in the provinces, metropolitan areas, cities and towns, and in rural areas.

The integrated waste management (IWM) planning approach followed in these *Guidelines* is that adopted by the international community that of the waste hierarchy, which starts with waste prevention and minimisation, followed by recycling/reuse, finally treatment and disposal. This approach has been refined to take into account South African conditions and economic realities.

These *Guidelines* provide guidance in the compilation of IWM plans and have been developed with input from stakeholders and based on current knowledge and experience. Implementation of the *Guidelines* will highlight deficiencies and amendments for their improvement. This document is therefore a dynamic document that will be regularly reviewed and updated.

The intention with drafting these *Guidelines* is to produce a user-friendly tool that should complement those waste management planning tools that are already in place and in practical use. The *Guidelines* should be used in conjunction with their companion volume entitled – “*Integrated Waste Management Planning – Reference Document*”, which gives further background information.

2. OVERVIEW OF WASTE MANAGEMENT PLANNING

The primary objective of integrated waste management (IWM) planning is to integrate and optimise waste management, in order to maximise efficiency and minimise the associated environmental impacts and financial costs, and to improve the quality of life of all South Africans. The integration must be both horizontal and vertical within the government departments, as well as in other sectors and throughout the 'waste life-cycle'.

The integrated waste management planning process incorporates all the major stages of the environmental planning process, namely:

- Reviewing the existing baseline situation and legal environment;
- Making projections of future requirements;
- Setting objectives;
- Identifying system components;
- Identifying and evaluating alternative methods/approaches for meeting requirements;
- Developing and implementing an integrated waste management plan;
- Evaluating and reviewing the plan to ensure the respective objectives are being met.

The *Guidelines* provide guidance and instructions on the compilation of IWM plans according to the above stages.

2.1 **Policy Principles/Political Goals**

One of the first steps in the development and implementation of an effective IWM Plan is to ensure that there is clarity as to the overriding *policy/political goals* of the plan (refer to the *IWM Planning Reference Document, section 2.1*), including for example:

- Policy principles specified in NEMA, IP&WM and NWMS, e.g. accountability, cradle-to-grave, equity, full cost accounting, good governance, integration, open information, participation, and polluter pays;
- Job creation, focusing on previously disadvantaged communities;
- Waste management hierarchy (as appropriate noting LCA aspects);
- Waste minimisation aspects.

Some of the above goals may be supportive of each other, while others may involve making trade-offs. Resolving such trade-offs involves making a political decision, which ideally should be taken in consultation with appropriate stakeholders, and guided where possible by the earlier agreed principles.

In terms of integrated waste management planning for South Africa, the principal goals and priorities to guide the development and implementation of the plans are given by the requirements of the Environmental Management Policy for South Africa and the National Environmental Management Act (NEMA), as well as more specifically within the White Paper for Integrated Pollution & Waste Management for South Africa, and the National Waste Management Strategy and associated Action Plans.

2.2 IWM Planning Responsibilities

The National Waste Management Strategy allocated the following responsibilities for IWM plans (refer to the *IWM Planning Reference Document, section 2.32*):

- The *national Department of Environmental Affairs and Tourism (DEAT)* will draft and promulgate regulations and guideline documents for integrated waste management planning for all waste types.
- The *provincial environmental departments* will develop hazardous waste management plans and prepare provincial environmental and waste management plans that incorporate the integrated waste management plans submitted by local government and industry. These will be submitted to the CEC for approval, which will facilitate inter-provincial coordination, particularly in relation to planning for facilities for treatment and disposal of waste.
- *Local Government* will develop and submit plans for integrated general waste management to the respective provincial environmental departments.
- Waste management plans for *industrial waste* that is disposed of at private and/or dedicated disposal facilities, will be prepared by the *developers/owners* and submitted to the respective provincial environmental departments.

3. GATHERING BACKGROUND INFORMATION

Collecting reliable data and other information on the existing waste situation, for national, provincial or local government, or for a specific industry, is a critical first step in compiling an integrated waste management plan. The aim of gathering this background information is to provide a realistic and quantitative basis for the development of the plan, based on actual data and prioritised requirements and needs.

The following data and other information need to be collected: the policy and legislative environment; demographics; waste quantities and characteristics; descriptions of existing waste management systems and practices; financial data and economic information; and technical requirements and alternatives. The following sub-sections provide details and examples of the type of data and information that needs to be set out in the plan.

3.1 **Scope of the Plan**

The Scope of the Plan should comprise a description of the geographic, environmental and socio-economic scope to be covered by the plan, as well as the planning time horizon

3.2 **Policy and Legislation**

The relevant government policies and legislation should be identified and the specific requirements established

The tables below set out government policies, national Acts and regulations, provincial ordinances, local government by-laws, guidelines and other potentially useful documents which may be consulted in order to define the relevant policy and legislative aspects which the IWM Plan has to address.

Government Policy

Policies	Authority
Environmental Management Policy	DEAT
Integrated Pollution and Waste Management Policy	DEAT
A Minerals and Mining Policy for South Africa	DME
KwaZulu-Natal Draft Policy on Waste Management	KwaZulu-Natal Draft

National Acts

Acts	Sections	Authority
Environment Conservation Act (Act 73 of 1989)	19, 20, 21, 22, 24, 26	DEAT
Sea-Shore Act (Act 21 of 1935)	10	DEAT
National Water Act (Act 36 of 1998)	20, 21	DWAF
Forest Act (Act 122 of 1984)	75	DWAF
Minerals Act (Act 50 of 1991)	39, 40	DME
Mine, Health and Safety Act (Act 29 of 1996)	5, 6, 12, 23, 98	DME
Electricity Act (Act 41 of 1987)	25	DME
Nuclear Energy Act (Act 131 of 1993)		DME
Atmospheric Pollution Prevention Act (Act 45 of 1965)	24	DoH
Hazardous Substances Act (Act 15 of 1973)	2, 3, 19, 29	DoH
Health Act (Act 63 of 1977)	20, 27, 30, 31, 33, 34, 36, 38	DoH
Human Tissue Act (Act 65 of 1983)	37	DoH
Development Facilitation Act (Act 67 of 1995)		DLA
Physical Planning Act (Act 125 of 1991)		DoLG
Organised Local Government Act (Act 52 of 1997)		DoLG
Local Government Transition Act (Act 209 of 1993)		DoLG
National Building Regulations and Building Standards Act (Act 103 of 1977)	10, 11, 12, 17	DTI
National Roads Act (Act 54 of 1971)	16	DoT
Road Traffic Act (Act 29 of 1989)	101, 103, 132	DoT
South African National Roads Agency Limited and National Roads Act (Act 7 of 1998)		DoT
Animal Protection Act (Act 71 of 1962)	2, 5	DoA
Animal Diseases Act (Act 35 of 1984)	17, 31	DoA
Abattoir Hygiene Act (Act 121 of 1992)	17, 24	DoA
Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act (Act 36 of 1947)	<i>7bis</i>	DoA
Sectional Titles Act (Act 95 of 1986)	28	DPW
Regulations in terms of the Sectional Titles Act	Annexure 9 Section 2, 7	DPW
Housing Act (Act 107 of 1997)	9	Dept of Housing

National Regulations

Regulations	Authority
Hazardous Substances Act <ul style="list-style-type: none"> • Government Notice R453 GG 5467 of 25/3/77 • Government Notice R73 of 11/1/85 • Government Notice R2920 of 23/10/92 • Government Notice R247 of 26/2/93 	DME
Environment Conservation Act <ul style="list-style-type: none"> • Government Notice R1182 GG18261 of 5/9/97 • Government Notice R1183 of 5/9/97 • Government Notice R1184 of 5/9/97 	DEAT
Sectional Titles Act <ul style="list-style-type: none"> • Regulations (Annexure 9: Conduct Rules) 	DPW
Minerals Act <ul style="list-style-type: none"> • Government Notice R801 of 25/6/99 	DME
Development Facilitation Act <ul style="list-style-type: none"> • Provincial Notice 89 of 16/5/97 (Free State) • Provincial Notice 246 of 14/11/97 (Free State) • Provincial Gazette 329 (Northern Cape) 	DLA

Provincial and Local Government Legislation

Provincial Ordinances
Local Government Ordinance
Town Planning and Township Ordinance
Cape Land Use Ordinance, 1985
KwaZulu-Natal Planning and Development Act (Act 5 of 1998)
Natal Town Planning Ordinance, 1949
Examples of Local Government By-Laws
Builder's Refuse
Special Industrial, Hazardous, Medical and Infectious Refuse
Disposal Sites
Littering, Dumping and Ancillary Matters
Free State Standard Bylaws on Public Health

Guidelines

Guidelines	Source
<i>National Guidelines</i>	
Minimum Requirements for Landfill, 2 nd edition, 1998	DWAF
Minimum Requirements for the Handling and Deposit of Hazardous Waste, 2 nd Edition, 1998	DWAF
Minimum Requirements for Monitoring at Waste Management Facilities, 2 nd edition, 1998	DWAF
The identification and classification of dangerous substances and goods	SABS
Integrated Environmental Management Series: Checklists for Environmental Characteristics, 1992	DEAT
Aide-Mémoire for the Preparation of Environmental Management Programme Reports for Prospecting and Mining Operations, 1992	DME
Mining Environmental Management Guideline for planning and Authorisation (revised Aide-Mémoire)	DME
Mining Environmental Management Guideline for the Implementation of EMPs	DME
EIA Regulations: Implementation of Sections 21, 22 and 26 of the Environment Conservation Act, 1998	DEAT
Agenda 21: An agenda for Sustainable Development into the 21 st Century, 1998	DEAT
Sludge Disposal Guidelines	DoA
<i>Other Guidelines</i>	
Code of Practice for the Bulk Handling and Storage of Hazardous Chemicals	Chamber of Mines
Management of Gold Residue Deposits, a code of practice	Mine Metallurgical Managers Association

Other Documents

Document	Authority
Guide Plans	Provincial Government
Structure Plans	Local Government
Land Development Objectives	Local Government

3.3 **Demographics**

Appropriate demographic data should be collected

Demographic data is required to develop projections of future waste quantities. This information is required to:

- Ensure that previously unaccounted areas, such as informal settlements are considered;
- Form the basis for projected waste volumes and types;
- Evaluate of financial recovery;
- Assess the requirement for waste management services and infrastructure.

Base Population: The quantification of the base population is necessary in order to calculate population growth rates. This can be obtained from the most recent censuses figures for the area under consideration.

Existing Population Distribution: For purposes of determining current waste generation rates, future waste quantities and an estimate of recoverable materials, the socio-economic distribution needs to be identified. Typical categories are:

- High income, low density;
- Middle income, middle density;
- Low income, high density;
- Informal settlements.

Population distribution can be established by first estimating the percentages of each socio-economic category in the area under consideration using the income indices given in the census data and then applying this to the total population in the area.

Population Growth Estimates: The population growth rate for the planning period can be estimated by for example, using historical trends (i.e. birth rates, death rates and migration), as well as any other socio-economic factors that may impact on the population growth rate.

Future Population Distribution: Projections of the population distribution within the different socio-economic categories is subjective. Many factors will influence how changes occur, such as the strength of the economy, opportunities for employment, the construction of permanent housing, and emigration. Significant upward or downward shifts in standard of living typically require long lead times. It is likely that the current socio-economic patterns will not change significantly for at least a generation.

3.4 **Waste Quantities and Characteristics**

Establish current quantities of waste generated, collected, recycled, treated and disposed

The establishment of waste quantities and characteristics is a critical first step in the development of an integrated waste management plan, and is also important for making projections of future waste quantities.

Data for historical waste quantities can be obtained from existing records. This activity should include collecting verified data and other information from waste generators, collectors, transporters and disposers, as well as reviewing reports and other relevant documentation. Information on the waste stream must be reported in either tonnes or cubic metres.

DEAT, in partnership with provinces and local authorities, is currently developing a waste manifest system and a waste information system (WIS), which will be valuable sources of information on waste quantities and characteristics.

In instances where waste quantities have not been measured they can be estimated by a variety of techniques (see Box 3.1). For example, it may be necessary survey and sample a waste site. Sometimes the exact location of the waste may be unknown and the “Grandfather” approach could be used, i.e. where old employees are invited back to the organisation to identify areas where waste was disposed of, as well as identify records of waste quantities that may have been archived or stored.

Box 3.1: Techniques for Waste Estimation

Modelling techniques

- Generic weight generation data
- Generation rates for specific waste types
- Landfill volume estimates

Generally inexpensive but provide only a general idea of waste volumes and types

Physical Sampling Techniques

- Quartering
- Block
- Grid

More accurate, but more expensive and time-consuming

Direct Measurement Techniques

- Pilot studies
- Weighing and characterising stream as collected (note e.g. a bar-coding scheme)

More expensive

Determine Waste Category and Characteristics

Waste is categorised as either general or hazardous (Figure 3.1). Within these two categories, waste is categorised according to its source, namely domestic, commercial and industrial. General waste is sub-divided into paper, metals, glass, plastic, organic, and inert materials (which includes builder’s rubble). Due to its composition and characteristics, general waste does not pose a significant threat to public health or the environment, if managed properly. Hazardous waste is waste that has the potential, even in low concentrations, to have a significant adverse effect on public health or the environment. It is categorised according to the nine classes and hazard ratings, as described in the DWAF Minimum Requirements documents (DWAF, 1998).

The waste characteristics may vary with season or location, which can impact on the determination of the quantities of individual components. This information is important for evaluating the potential for material recovery and reuse.

Source	Domestic	Commercial	Industrial
General:			
Paper	General Domestic Waste	General Commercial Waste	General Industrial Waste
Metals			
Glass			
Plastic			
Organic			
Inerts and Builders Rubble			
Hazardous:			
Class 1 Explosives	Hazardous Domestic Waste	Hazardous Commercial Waste	Hazardous Industrial Waste
Class 2 Gases			
Class 3 Flammable liquids			
Class 4 Flammable solids/substances			
Class 5 Oxidising substances			
Class 6 Poisonous & Infectious Substances			
Class 7 Radioactive Substances			
Class 8 Corrosive Substances			
Class 9 Miscellaneous Substances			

Figure 3.1: Waste Categorisation

Map the Geographic Waste Management Area

A map should be constructed that indicates where the waste is generated. This should include collection and transportation routes, recycling and treatment facility locations, and the location of the disposal facilities or site(s). This information will identify the need for transfer stations and optimise the sites for recycling, treatment and disposal facilities. The map could be a conventional drawing or generated by geographic information system (GIS) software.

Estimate Future Waste Generation Rates, Quantities and Characteristics

Future waste trends, in terms of quantities, qualities and characteristics, for the planning period, should be estimated using the information collected on the domestic waste generation rates per capita for each socio-economic category, the population, population distribution, and commercial and industrial waste generation rates.

3.5 **Existing Waste Management Strategies, Systems and Practices**

Establish and describe what waste management strategies, practices and systems are currently in place in the area or for the industry for which the plan is being developed

Describe the waste prevention strategies, systems and practices in place. These may include for example the implementation of a system within an organisation that effects a behavioural change or the banning of certain hazardous products for specific uses

Describe waste minimisation strategies, systems and practices: This may include for example:

- Garden waste is not accepted for kerb side collection;
- Residents are encouraged to undertake home composting;
- Waste minimisation clubs established for specific industries;
- Implementation of cleaner production programmes for industries;
- Research programmes on waste minimisation and cleaner production;
- Awareness programmes and training courses.

Describe the collection and transportation method for each type of waste: The waste collection and transportation system selected for implementation should be appropriate for the area under consideration, as this can comprise 50 to 80 percent of the total waste management costs. Collection of can be undertaken by a number of methods, including:

- Kerb side collection;
- Waste contractors;
- Commercial waste transporters;
- Drop-off at transfer stations or disposal sites by waste generators;
- Entrepreneurial collection in informal areas;
- Skips for waste collection;
- Specialised containers for medical and/or hazardous waste.

The following information should be included for both general and hazardous waste collection and transportation systems:

- Number and location of collection points and collection routes;
- Percentage of households covered by an existing collection system, as well as the percentage unserved;
- Frequency of collection;
- Inventory of collection and transportation vehicles;

- Quantities and type of waste collected and transported;
- Names of waste transportation companies; a register of hazardous waste transportation companies exists that is being extended to general waste transporters;
- Accidents that have caused environmental pollution.

For hazardous waste collection and transportation, the following additional items must be described:

- A waste manifest system in place;
- Packaging/containerisation of hazardous waste (SABS Code 0228);
- Labelling of containers;
- Vehicle specification and licensing;
- Diver training, licensing and responsibilities;
- Vehicle loading procedures and securing the load;
- Vehicle markings to identify it as a hazardous waste vehicle;
- Where transfer stations are used, the size and type of transfer station, the amount of waste that is collected, weighing systems used, and any other information related to transfer stations.

Establish the quantity, type and quality of materials being recycled and describe the operating recycling facilities. Established recycling facilities should be described for each factory/industry, local authority, region or province, as follows:

- Commodities recycled (e.g. waste paper, metal cans and glass);
- Existing recycling facilities (location, capacity, treatment, age, etc.);
- Organised collection of reusable materials (area served, waste type, quantity, collection method, frequency of collection);
- Informal collection of reusable materials (e.g. landfill pickers);
- Processing of collected material (at source or at the recycling company);
- Market for recycled materials;
- Market for compost;
- Recycling costs;
- Recycling companies (such as Mondi, SAPPI, Collect-a-Can).

Where no recycling is taking place an estimate should be made of the potential for recycling to provide a basis for the evaluation of the economic viability for recovery.

Describe the treatment systems currently in use: Treatment systems are broadly categorised as follows:

- Chemical treatment;
- Biological treatment;
- Physical treatment;
- Thermal treatment, including incineration, pyrolysis and gasification.

For each treatment facility the following information should be provided:

- Name of treatment facility;
- Area, region, province or factory/industry serviced;
- Type of treatment. The technology used for the treatment of hazardous waste should also be given, e.g. chemical detoxification, neutralisation, incineration;
- Geographic location of facility;
- Year of construction (and any extensions);
- Capacity of each the facility;
- Daily/weekly/annual throughput for facility;
- Hours of operation (per day, week, year);
- Flowchart for input and output of waste from facility;
- Characteristic for residual waste from treatment process;
- Production of compost, recoverable materials from facility;
- Equipment for cleaning of gaseous and liquid emissions;
- Environmental monitoring programme for facility;
- Number of persons employed;
- Environmental impacts due to operation of the treatment facility;
- License/permit/registration certificate.

Describe systems currently in use for disposal of waste: Waste and waste residues that cannot be recycled or further treated need to be disposed of in an environmentally, hygienically and safe manner. Guidelines for waste disposal have been prepared by the DWAF, which should be consulted for determining requirements for disposal systems (DWAF, 1998). Although the most common form of disposal is landfilling, other disposal systems include:

- Garden refuse disposal facilities, including composting and wood chipping facilities;
- Building rubble disposal facilities, where it is reprocessed as fill or cover material;

- Hazardous waste disposal facilities, including neutralisation, detoxification and incineration.

The following information should be provided (a more comprehensive list is given in the DWAF Minimum Requirements Documents):

- Name of disposal site;
- Geographic location of landfill;
- Area covered by disposal site;
- Year of construction/extension;
- Resources (e.g. infrastructure, plant and equipment and staff);
- Registration/Permit certificate;
- Type and quantity of waste (historical, current and projected future);
- Description of neighbouring areas;
- Signposting and road access;
- Disposal site type (i.e. general or hazardous);
- Access control;
- Collection of disposal tariffs;
- Landfill operation (e.g. compaction, daily cover);
- Method of landfilling (e.g. trench system or wet weather cell for general waste; delisting of hazardous wastes or co-disposal for hazardous waste);
- Co-disposal (e.g. general and hazardous waste, or liquid and solid waste);
- Disposal of health care wastes;
- Excavation for cover;
- Drainage;
- Control of nuisances (e.g. burning of waste, litter, odours, noise, vermin and dust);
- Waste reclamation;
- Leachate and gas management;
- Rehabilitation;
- Final cover;
- Public participation;
- Hazardous waste lagoons;
- Plans for extending/closing the disposal site.

Illegal landfilling or dumping taking place in the area under consideration should be identified, as well as the specific problems experienced with this form of waste disposal. Mechanisms for controlling illegal dumping should be described.

3.6 *Economics and Financing of Waste Management*

Determine the economic and financing situation of waste management

The financial and economic situation is critical in the selection and adoption of the various elements of integrated waste management.

At present, most domestic waste management comprises waste collection and disposal, and limited recycling. The focus of integrated waste management is moving from disposal to waste prevention/minimisation and recycling. An assessment should be made of the financial viability of waste minimisation, recycling and treatment.

Establish the current costs for each of the existing waste management systems

The annual investment and operating costs for collection, transport, treatment and disposal (over the last five years) should be established. These include costs for:

- Personnel (wages, salaries);
- Transport (fuel, repair);
- Operating and maintenance (electricity, coal and water);
- Administration and staff training;
- Environmental impact abatement and penalties;
- Interest and depreciation.

Establish waste charges currently being levied

Financing of the existing waste system and practices should be described as follows:

- Funding mechanism for collection, treatment and disposal, for example: user charges, local authority taxes, income from the sale of recovered materials, subsidies from provincial and or national government, loans and other financing sources
- Current unit fees/user charge for collection, treatment and disposal of waste
- Process for the determination of fees/charges
- Current major problems experienced in the financing of the waste management services, such as non-payment; cross-subsidisation, the need for national government to develop a pricing strategy to assist local government with the introduction of appropriate user charges; money raised for waste management is used cover shortfalls in other services.

Regionalisation of Waste Management

An indication of the extent of regionalisation of waste management facilities should be described. Cross-border movement of waste as governed by the Basel Convention should be identified.

3.7 Organisational Structure

Describe the organisational structure that will implement and manage the IWM plan

The organisational structure (within the local authority, province or industry), which will implement and manage the plan must be described, including the following aspects:

- Organisational charts that describe the current and future organisational structure
- Responsibilities defined for: policy formulation, waste management planning, implementation of plans, operation and maintenance of waste collection, recycling, treatment and disposal, supervision of solid waste operations. Specify if the relevant posts are filled.
- Cooperation between authorities (national, provincial and local).

3.8 Key Stakeholders

The key stakeholders that need to be consulted in the drafting of the specific integrated waste management plans should be identified. Refer to the *Reference Document* regarding potential stakeholders.

3.9 Identification and Prioritisation of Needs

Utilising the base data and information collected in sections 3.1 to 3.8, the needs of the organisation/institution should be identified and prioritised.

Before embarking on the implementation of a specific integrated waste management plan, it is essential that the needs are identified and prioritised.

Waste prevention and minimisation: Possible needs could include:

- Increased awareness and understanding of benefits and methodology of waste minimisation;
- Lack of appropriate incentives or legislation;
- Additional waste data;
- Training and educational courses in waste minimisation;
- Waste prevention and minimisation centres and clubs to be established.

Waste collection and transportation systems: These may include:

- Additional legislation implemented and enforcement;
- Funding for additional resources;
- Service providers do not have support of stakeholders and do not provide acceptable services;
- Capacity building and public awareness programmes;
- Appropriate waste collection services and assessment of different collection systems, from entrepreneurial to conventional municipal collection systems;
- Estimation of service charges and promotion of payment for service.

Waste recycling: These may include:

- Evaluation of source separation versus mixed-waste collection;
- Collection of recyclables from commercial, institutional and industrial establishments;
- Material drop-off and buy-back centres;
- Organic waste composting programs and facilities;
- Establishment of waste recycling centres and clubs.

Waste treatment facilities: These may include:

- Improved management of treatment facilities;
- Revised legislation and enforcement of existing standards;
- Revision of current classification system and emission standards for incinerators;
- Regionalisation of waste treatment facilities;
- Improved public awareness and public participation process.

Waste disposal facilities: These may include:

- Increased capacity building education and public awareness;
- Evaluation of the impacts of waste disposal facilities on physical and social environments;
- Manage and reduce waste picking at landfill sites, phase out completely in long term;
- Prevention of illegal dumping of health care waste, hazardous waste and sewage sludge at disposal facilities;
- Phasing out of informal salvaging at landfills and co-disposal of hazardous waste;

- Assessment of available landfill air space and identification of additional suitable sites;
- Regionalisation of waste disposal sites.

3.10 Summary Situation Analysis

Prepare a summary situation analysis based on the collected background information

The problems, needs and requirements should be prioritised and any deficiencies in the present waste management system identified, and various alternatives given, where appropriate. The information should be critically analysed in order to establish the basis for the preparation of waste management strategic objectives and the compilation of IWM plans.

4. DEVELOP IWM STRATEGIC OBJECTIVES

Using the baseline information collected on the historical and present waste management situation, strategic objectives for the provincial and local government and industrial waste management plans should be developed

In developing strategic objectives for an integrated waste management plan, due cognisance must be taken of the appropriate IP&WM policy objectives, as well as the NWMS and Action Plans objectives (Refer to the *Reference Document, section 2.1*). The strategic objectives should be divided into short-term objectives, 1 to 5 years, and long-term objectives, i.e. 5 to 12 years. A brief summary of the NWMS and Action Plans strategic objectives for each stage in the waste management hierarchy, are set out below.

4.1 Waste Prevention, Minimisation and Recycling

The long-term objective for waste prevention, minimisation and recycling is to ensure that minimisation and recycling procedures and practices are adopted by all sectors of society as part of a broader initiative focusing on cleaner production. Salvaging at landfills must be phased out completely.

The main short-term objectives are:

- Introduction and enforcement of appropriate regulatory instruments;
- Development and implementation of appropriate economic instruments and other financial incentives;
- Adoption of measures aimed at facilitating and coordinating the implementation of existing successful waste minimisation and recycling initiatives;
- Development and implementation of a programme for the dissemination of information by DEAT (in consultation with provincial and local authorities) concerning the techniques, opportunities and benefits associated with cleaner production, waste minimisation and recycling.

4.2 Collection and Transportation

The long-term objective for general waste collection is to provide an appropriate, affordable and sustainable waste collection service to all people of South Africa. The key will be to empower communities that are responsible for the provision of collection services, and to facilitate the implementation of acceptable and affordable waste collection systems.

The main short-term objective is to initiate and implement appropriate, sustainable and environmentally acceptable waste collection services by local government. There will be a focus on high-density, unserved areas in South Africa by local government.

4.3 Waste Treatment

The long-term objective for waste treatment is to ensure that all current and new legislation, regulations, guidelines and standards for the total waste stream, from generation to final disposal, and all waste treatment facilities, are enforced.

The main short-term objectives are the following:

- All waste treatment facilities will be controlled by means of a regulatory framework based on a waste classification system;
- A system will be developed and implemented to ensure safe handling, collection and transportation of hazardous waste;
- Air emission standards for all waste incineration facilities to be reviewed, revised and enforced;
- Plans for a system of health care waste treatment plants will be developed;
- Guidelines for safe management of health care waste will be developed;
- Desirability and feasibility of regional/quasi-provincial waste treatment facilities will be investigated.

4.4 Waste Disposal

The long-term objective for waste disposal is to ensure that all unavoidable wastes are safely collected, transported and disposed of at waste disposal facilities developed and operated in accordance with the DWAF Minimum Requirements and/or other appropriate standards.

The main short-term objectives are the following:

- All waste disposal facilities must be registered;
- Disposal facility plans must be developed in conformance with the DWAF Minimum Requirements;
- Permit conditions, applicable regulations and the DWAF Minimum Requirements will be enforced;
- A regulatory framework, integrated with the EMPR process and based on a waste classification system must be developed for all mining and coal combustion waste disposal facilities;
- All provinces must be adequately serviced by hazardous disposal facilities.

4.5 General Strategic Objectives

The following general strategic objective should also be considered when compiling an IWM plan:

- Establish the organisational structure for management of the different activities;

- Develop and launch an IWM awareness campaign and staff training courses;
- Conducting surveys for collecting data and information on identified gaps in information;
- Develop a waste information system (WIS) which meets the requirement set out in the NWMS and WIS Action Plan;
- Identify opportunities for more effectively managing waste, e.g. at Industrial Development Zone (IDZ), there are opportunity for a regional waste planning;
- Be vigilant against negative opportunism, e.g. unscrupulous entrepreneurs who may wish exploit opportunities for short-term gain;
- Co-operate with other authorities to bring about an institutional integrated approach to IWM, e.g. investigation and joint implementation of regional treatment and disposal facilities;
- Develop private-public partnership to address complex and difficult IWM problems, e.g. joint hazardous waste treatment and disposal facilities;
- Consider and address, where appropriate, requirements of international conventions on waste, e.g. the Basel and Bomako Conventions.

5. ESTABLISH INSTRUMENTS FOR IMPLEMENTING IWM PLANS

The policy instruments, partnerships, legislative instruments, economic instruments and a financial plan appropriate to the IWM plan will be established in consultation with stakeholders

5.1 Policy Instruments

The policy environment appropriate to the IWM plan being developed should be identified and assessed. Where necessary, this should be adapted and amended to support the attainment of the strategic objectives

The successful implementation of a strategic objective often depends upon the existence of an appropriate policy framework. The various governmental and provincial policies for IWM have been reviewed (*Reference Document, Section 2.1*) and in this *Guideline Document, section 2.1*. The policy environment relevant to the specific IWM plan being developed should be identified and assessed to ascertain whether it supports and enables the integrated waste management strategic objectives developed under section 4. Where necessary, existing policies may need to be amended to create an enabling environment for the implementation of these strategic objectives.

5.2 Partnerships

The development of partnerships as a mechanism for providing the services and facilities required for Integrated Waste Management should be considered

The development of partnerships has been identified as an important mechanism for providing services and facilities required for Integrated Waste Management. The categories of partnerships that should be considered include:

- Public-public partnerships;
- Public-private partnerships;
- NGO/CBO partnerships;
- Private-public partnerships.

A number of different types of partnerships can be developed, including:

- Co-operation;
- Contracting out of management and/or service functions;
- Leases;
- Concessions, including e.g. BOT (Built, Operate and Transfer);
- Privatisation / transfer of ownership;
- Management / Employee buyout or concession;

- Joint ventures.

Partnerships in waste management planning should be encouraged. The formation of public-private partnerships for the implementation of IWM plans should be investigated. Public-public partnerships for smaller local authorities could greatly reduce the cost of equipment and salaries and should be encouraged. Partnerships in waste collection can prove very beneficial for small local authorities and should be considered for public-public as well as for public-private partnerships.

5.3 Legislative Instruments

The introduction of legislative instrument in order to achieve the strategic objectives set for the IWM plan should be considered

Critical to the development and implementation of integrated waste management plans at national, provincial and local government levels, is the promulgation of appropriate legislation. It is particularly important that the IWM planning legislation (being reviewed within the DEAT Law Reform Process *Reference Document, section 2.16*) is integrated with the process of implementing LDOs in terms of the Development Facilitation Act (Act 67 of 1995). In addition, any other changes in planning legislation will need to be identified and addressed. Legislation requirements may include

- The allocation of the planning responsibilities;
- The definition of the procedures to be followed in the planning process;
- The time frames for the development of IWMPs;
- The public participation procedures.

Provincial ordinances could be stricter than national guidelines; but the national guidelines should set the minimum requirements. Provincial ordinances should be objective-based and should allow for on-going improvement especially in the short-term, based on practical experience. Provincial government should enforce ordinances by ensuring the regular monitoring of waste services by the local governments in their province. Co-ordination between provinces will take place through the MINTECH Workgroup 3.

Local government may establish by-laws, which augment national and provincial regulatory requirements. Local government may enforce these by-laws either through local or regional authorities.

The reader is referred to the *Proposed Legislative Framework for Integrated Waste Management Planning* for additional information on recommendations to amend or augment current legislation.

5.4 Economic Instruments

Appropriate economic instruments should be evaluated and implemented.

A critical precondition for the successful implementation of Integrated Waste Management Plans is the access to sufficient funding to carry out the plan. Funding will be required for *inter alia*: building capacity within national, provincial and local government; the development and implementation of new legislation; development and implementation of IWM plans; operating and maintenance cost of waste management facilities; and the design and commissioning of new waste management facilities.

Due to the contentious nature of the development and implementation of economic instruments, it is important that provision is made for appropriate stakeholder participation in this process.

Below are given some examples economic instruments that could be considered for funding the various aspects of waste management.

5.4.1 Funding Mechanisms for Integrated Waste Management Plans

The principal sources of funds for the development of integrated waste management plans are:

- Allocations from the budgets of national and/or provincial government (where appropriate);
- Allocations from local government budgets.

5.4.2 Funding Mechanisms for Waste Prevention, Minimisation and Recycling

The primary sources of initial funding for the waste prevention, minimisation and recycling activities may be from the national, provincial or local government budgets, with supplementary funding from donors and funding agencies. There are a number of existing ongoing privately funded programmes relating to waste prevention, minimisation and recycling, which should be promoted and extended where possible. A socio-economic environmental impact assessment of waste recycling has been proposed in the document 'Waste Recycling Background Document' that has been compiled as part of the DEAT NWMS Implementation Programme.

5.4.3 Funding Mechanisms for Waste Collection and Transportation

Possible sources of funding for waste collection and transportation include:

- Payment for services;
- Local government budgetary allocations;
- Donor funding for specific projects;
- Use of public-private partnerships.

To facilitate in the funding of waste collection and transportation, a pricing strategy on the payment-for-services methodology should be developed. This strategy should include consideration of issues such as cross-subsidisation, and reviewing the possibility international donor and development financing bodies for funding administrative and technical systems.

5.4.4 Funding Mechanisms for Waste Treatment and Disposal

The cost associated with general waste disposal will be mainly funded by user fees or as part of waste charges for local authority general waste disposal sites. The introduction of waste disposal tariffs at all landfills, reflecting the real cost of waste disposal, should be encouraged.

The treatment and disposal of industrial waste should be covered by the industry itself, or by fees paid to contracting companies to undertake these activities on their behalf. Due to the high costs associated with hazardous waste treatment and disposal, these facilities are usually regionally based to benefit from an economy of scale. The establishment, operation and monitoring of regional treatment facilities are funded by the users.

5.4.5 Comparative Economic Analysis

A comparative economic analysis describes the costs of current waste management systems and practices compared to an alternative waste management system/practice.

A comparative economic analysis of the alternative technologies available should be undertaken.

Examples of alternative systems or practices include:

- Road-based versus rail based waste transportation;
- Compaction versus non-compaction of waste;
- Cost versus size of transfer stations;
- Transfer station versus direct transport to landfill;
- Increasing recycling versus maintaining status quo of recycling;
- One man community collection system versus standard municipal collection system;
- Waste transport in bales versus containers.

Currently, general waste management comprises collection and landfill disposal with co-disposal of hazardous waste. There are alternative technologies, e.g. incineration, gasification and pyrolysis, available from international companies, which should be critically assessed for their suitability for local conditions, including a life cycle analysis and comparative cost assessment.

5.5 **Financial Management**

Develop a financial plan for the implementation of the IWM plan.

A financial plan should be developed for the implementation of an integrated waste management plan. An example of the content of a typical financial plan is set out below:

1. Objectives
2. Scope of the plan
3. Components of financial plan to be develop (see box below)
4. Definition of types of financing sources:
 - Domestic sources could include: Development Bank of South Africa, Municipal Infrastructure Investment Unit, IDC, South Africa Infrastructure Fund, Black empowerment groups, DTI, and Merchant Banks
 - International sources could include: Southern Africa Enterprise Development Fund, New African Advisors (US based), The OPIC Global Environment Fund, International Finance Corporation, Private investment funds with an interest in South African infrastructure projects.
5. Financing risks analysis, including - construction risk, operational risk, market risk, regulatory risk and political risk
6. Recommendations.

The steps can be summarised as follows:

Activity	Description	Purpose
Project Definition	Identify components of the plan requiring financing	Provides the basis for basis for Financial Plan development
Implementation Models	Identify practical models for ownership and operation of plan components	Confirms the public and/or private parties which will be seeking project financing
Risk Analysis	Identify the risks from a financing/investment perspective	Confirms the primary risks which lenders and investors will face
Financing Sources	Identify the domestic and international sources of financing, considering lending, insurance and equity involvement	Provides a long list of sources which can then be interviewed in detail
Financing Potential	Evaluate the financial viability of the individual components of the plan based on the sources identified in the 4 steps above	Clarifies the likelihood of obtaining financing from each of the financing sources
Pro-forma Analyses	Analyse the financial performance of the component over the planning period	Provides the projected rate of return, debt to equity ratio, and revenue stream requirements
Economic Impact	Analyse the economic cost on a user basis	Clarifies the cost on a user basis, such as per person, per household, and per ton

6. ENVIRONMENTAL COMMUNICATION AND PUBLIC PARTICIPATION

The mechanism by which environmental impact assessments, public awareness campaigns, information releases to the public, and public participation will be undertaken should be described

6.1 Environmental Impact Assessment Process

The waste management facilities that require an environmental impact assessment should be identified

The following infrastructure for waste management is subject to compliance with the EIA Regulations (R1182, R1183 and R1184) in terms of sections 21, 22 and 26 of the Environment Conservation Act (Act 73 of 1989):

1. The construction of:
 - Nuclear reactors and installations for the production, enrichment, reprocessing, and disposal of nuclear wastes;
 - Transportation routes and structures, and manufacturing, storage, handling or processing facilities for any substance which is considered as dangerous or hazardous and is controlled by national legislation;
 - Sewage treatment plants and associated infrastructure;
 - Buildings and structures for industrial and military manufacturing and storage of explosives or ammunitions or for testing or disposal of such explosives or ammunition.
2. The disposal of waste as required in terms of section 20 of the Environment Conservation Act. The disposal of waste means the discarding or disposal of any matter whether solid, gaseous or liquid. It excludes the private disposal of domestic waste.

The process to be followed in the EIA Regulations is described in the Guideline Document on the EIA Regulations (DEAT, 1998). The basic process is summarised as follows:

- Application for authorisation to undertake the activity;
- Pre-application consultation with the relevant authority;
- Submission of a Plan of Study for Scoping/EIA (including public participation);
- Submission of a Scoping/EIA Report;
- Review of Scoping EIA Report by relevant authority;
- Consideration of the application by the relevant authority;

- Appeal.

The waste facilities in the area included in the IWM plan that are subject to the EIA Regulations should be identified.

6.2 Public Awareness and Communication

The communication actions that will be undertaken to raise public awareness about integrated waste management planning should be described.

Raising public awareness is an important function of the IWM plan. Communication between the government and the public about the proposed IWM planning process and the development of the plan needs to take place within an informed environment. Communication with the public usually takes two forms - awareness campaigns about specific waste problems, and regular ongoing dissemination of information to the public to keep them informed.

The following approaches can be used:

- Informing and exposing stakeholders about waste management, particularly waste prevention, minimisation, recycling, treatment and disposal;
- Including aspects of integrated waste management within formal education curricula;
- Promoting cooperation with research institutes to develop and implement effective waste management, specifically waste minimisation, recycling and treatment technologies;
- Undertaking waste minimisation and recycling demonstration projects.

Formalised, organised feedback from the public on the IWM plan will be important to explain the necessity for implementing waste management plans.

6.3 Public Information

A description of how the public will be kept informed about the progress with the implementation of the IWM plan should be given.

When awareness is raised and the first communication contact has been established, the next step is to inform the public about waste management decisions, e.g. the technical and economic solutions, or the ordinances or by-laws whose implementation will directly affect the daily life of the public. The waste management planning process can be used as a tool to raise awareness and support for these decisions. A number of initiatives can be undertaken, including:

- Publishing all ordinances and/or by-laws;
- Publishing all codes of practice or other informative summaries;
- Offering special conferences, seminar, training courses and exhibitions;

- Initiating pilot projects;
- Preparing audio-visual and other documentary materials of successful projects for local, provincial or national audiences.

6.4 Public Participation

The public participation process that was followed in developing the IWM plan should be given

Certain aspects of the IWM plan development (such as waste separation at source, recycling initiatives, and the design and construction of new waste treatment plants and disposal sites) will require a process of public participation to be initiated. This could demonstrate the authority or industry's willingness to discuss points of concern from the public and related organisations.

The Department of Water Affairs and Forestry and Gauteng's Department of Agriculture Conservation and Environment have developed guidelines for planning and implementing public participation processes.

7. IMPLEMENTATION, MONITORING AND REVIEW

The processes developed for the implementation, monitoring and the review for IWM plans should be described.

7.1 Implementation Programme

The programme for the compilation and implementation for the IWM plans should be given.

Based on the collected background information (section 3), strategic objectives (section 4), the instruments for implementing the IWM plan (section 5), the EIA, the public awareness campaign and public participation (section 6) an IWM implementation programme can be developed. This should comprise:

- An economic analysis of all aspects of the IWM plan;
- An infrastructure or capital investment plan;
- An institutional plan;
- A communication plan (awareness, information transfer and public participation);
- A financial plan.

The *economic analysis* should include an estimation of a medium-term (five year) projection of capital and operational expenditure. The analysis should give budget estimates for achieving the strategic objectives of the IWM plan. Based on these projections, a *capital investment plan* should be formulated, which will set out how the necessary capital for infrastructure will be raised from public and private funding sources.

An *institutional and organisational plan* should be formulated, that is intended to guide institutional transformation and re-organisation of support structures for carrying out the IWM plan and delivering on the waste management strategic objectives. This plan should include for human resource development, and the additional staff required. Alternative options such as partnerships and out-sourcing should also be considered.

The *communication and public participation plan* should detail the communication and public participation process to ensure that the necessary arrangements are in place for stakeholders to be informed about progress and to feed back into the process for the implementation of the IWM plan.

The *financial plan* should reflect the waste management priorities identified in the development of the IWM plan. The annual budget should be based on the medium-term financial and institutional plans in order to direct and manage resources in a focused way, to achieve the goals of the planning process. A plan for raising the revenue to support the implementation should be developed.

The *waste management implementation programme* should detail the activities to be undertaken, delivery targets and delivery milestones. It will also provide information on project management, responsibilities of senior staff and schedules for project implementation.

7.2 Monitoring of IWM Plans

A description of how the implementation of the IWM plan will be monitored will be given

A monitoring plan for the implementation of the IWMP should be developed. Monitoring should be an ongoing activity that constitutes an essential and integral part of the planning process. Performance and development indicators should be developed during the course of the planning process in consultation with the stakeholders. The indicators should be used to monitor the performance of both government institutions (to ensure a transparent and accountable government), as well as the private sector.

Monitoring focuses on the short-term objectives of the IWM planning process and ensures that corrective action can be taken where necessary to the IWM plan and implementation programme. Monitoring activities that should be considered, include:

General Issues

- Resource situation;
- Staff appointments, allocation of functions and training;
- Payment for services;
- Rates of generation of waste, verified by the waste information system;
- Reporting to the WIS;
- Illegal dumping and littering;
- Improvement in environmental and health conditions;
- Reporting to provincial environmental departments and DEAT;
- Legislation, regulations, ordinances and/or by-laws are in place;
- Complaints regarding poor waste management.

Waste prevention and minimisation

- Annual reports of waste minimisation programmes and projects;
- Annual environmental reports on emissions to air, water and land;
- Achievement of targets for prioritised waste streams and pollutants;
- Information exchange and the establishment of waste minimisation clubs.

Collection and transportation

- Annual reports on the implementation of collection and transportation services;
- Payment received for waste collection and transportation services as against the actual cost for provision of these services.

Recycling

- Annual reports on waste recycling programmes and projects;
- Information exchange between stakeholders;
- Stakeholder forums coordinating new recycling activities;
- Social and environmental impacts of the implementation of new recycling initiatives.

Treatment

- Registration and licensing of waste treatment facilities;
- Auditing of waste incineration facilities by provincial authorities;
- Environmental performance and impact;
- Provision of adequate hazardous waste treatment facilities.

Disposal

- Registration and licensing of waste disposal facilities;
- Auditing of general waste disposal facilities by provincial departments;
- Environmental performance and impact;
- Provision of adequate hazardous waste disposal facilities;
- Management and control of salvaging at landfill sites.

Monitoring Reports

The results of the monitoring activities will be compiled into monitoring report. The responsibilities for the compilation and approval of the report are as follows:

- *Local authorities* shall compile a report on the implementation of general waste IWM plans on an annual basis and submit it for consideration by the provincial environmental departments.
- *Industries* who manage and dispose of their own waste shall compile a report on the implementation of their IWM plans on an annual basis and submit it for consideration by the provincial environmental departments.
- *Provincial authorities* shall compile a report on the implementation of IWM plans (including hazardous wastes IWM plans) on an annual basis and submit these reports to DEAT for consideration.

- *DEAT* in consultation with other national departments shall publish a national report on progress with the implementation of local authority, provincial and industrial IWM plans.

7.3 Evaluation and Review of IWM Plans

A description of the evaluation and review process to be instituted for the IWM plan should be given

A critical evaluation and review of the monitoring reports will provide information for assessing the achievement of the IWM plan's goals and strategic objectives. This process will ensure the reappraisal of the IWM plan and assess the appropriateness of policies, goals and strategic objectives, and whether they need to be amended and adjusted. Formal evaluation and review by the relevant authorities, in consultation with stakeholders, will be undertaken in five yearly cycles.

8. APPROVAL OF THE IWM PLAN

The responsibility for approval of IWM plans is defined in NEMA, as well as on responsibilities that are vested in various levels of government in terms of the Constitution. Provincial government is responsible for monitoring the activities at local government level and national government is responsible for monitoring provincial government activities. This allocation of responsibilities is extended to the environmental management implementation (EIP) plans (sections 16(2) and (4) of NEMA) and includes all aspects of environmental management, including pollution and waste issues. In terms of the Constitution, if a specific level of government cannot fulfil its responsibility, then this responsibility becomes the responsibility of the next higher level of government. This stipulation has important implications for resource management within the various levels of government.

Within the above context, the approval IWM plans, will generally be as follows (also refer to the *Reference Document, section 2.2.*):

- *Local government* will receive information and data directly from industry, will be responsible for monitoring the waste management activities within its area of jurisdiction, and will compile its own integrated waste management plans (including a waste management implementation plan) to submit to provincial government for consideration and approval.
- *Provincial government* will receive all information and general waste data (including household hazardous waste) from local government. Hazardous waste information will be submitted directly to provincial government by industry. Provincial government will receive and approve the integrated waste management plans from those industries that have their own waste treatment and disposal facilities. Provincial government is responsible for monitoring the implementation of waste management plans by local government and for undertaking those responsibilities that cannot be fulfilled by local government. Provincial government must compile and submit environmental and waste management plans to DEAT, for consideration and approval by the Committee for Environmental Co-ordination (CEC). These plans will comprise an overview of the general waste IWM plans submitted to them by local government, a hazardous waste IWM plan prepared by the province, as well as the waste management plans submitted by industry.
- *The national government*, through the Department of Environmental Affairs and Tourism (DEAT), will receive aggregated information and data on waste generation, transportation and disposal from the provincial governments. DEAT will receive the provincial environmental and waste management plans for approval by the Committee for Environmental Co-ordination (CEC). National government is responsible for monitoring the implementation of the IWM plans by provincial and local governments, as well as industry, and for undertaking those responsibilities that cannot be fulfilled by provincial government.

9. GENERAL OUTLINE IWM PLANS

The Box 9.1 provides a general outline for Integrated Waste Management Plans.

Box 9.1: Outline of Integrated Waste Management Plan

1. **SCOPE OF PLAN**
 - 1.1 Overall Aim and Goals
 - 1.2 Geographic Area and Activities to be Addressed
2. **BACKGROUND INFORMATION (Section 3)**
 - 2.1. Policy and Legislation
 - 2.2. Demographics
 - 2.3. Waste Quantities and Characteristics
 - 2.4. Existing Waste Management Strategies, Systems and Practices
 - 2.5. Economics and Financing of Waste Management
 - 2.6. Organisation Structure
 - 2.7. Key Stakeholders
 - 2.8. Evaluation of Needs and Alternatives
 - 2.9. Summary Analysis of Present Situation
3. **STRATEGIC OBJECTIVES (Section 4)**
 - 3.1 General
 - 3.2 Waste Prevention, Minimisation and Recycling
 - 3.3 Waste Collection and Transportation
 - 3.4 Waste Treatment and Disposal
4. **INSTRUMENTS FOR IMPLEMENTING IWM PLANS (Section 5)**
 - 4.1. Policy Instruments
 - 4.2. Partnerships
 - 4.3. Legislative Instruments
 - 4.4. Economic Instruments
 - 4.5. Financial Management
5. **ENVIRONMENT, COMMUNICATION AND PUBLIC PARTICIPATION (Section 6)**
 - 5.1 Environmental Impact Assessment Process
 - 5.2 Public Awareness and Communication
 - 5.3 Public Information
 - 5.4 Public Participation
6. **IMPLEMENTATION, MONITORING AND REVIEW (Section 7)**
 - 6.1 Implementation Programme
 - 6.2 Monitoring of the Implementation of the IWM Plan
 - 6.3 Evaluation and Review of IWM Plan
7. **APPROVAL PROCESS FOR IWM PLAN (Section 8)**

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