



Republic of Namibia
Ministry of Environment and Tourism

National Solid Waste Management Strategy for Namibia

Final Draft

3 July 2017



National Solid Waste Management Strategy

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Explanation of this Final Draft version

This document was prepared by AFROMACH Investments PTY (Ltd) on behalf of the Department of Environmental Affairs at the Ministry of Environment and Tourism. The contract for this work was administered by NACOMA (Namibian Coast Conservation and Management) project.

This version of the report is Final Draft for the national consultation workshop. Much consultation has already been carried out with stakeholders on the core directions of the Strategy.

The national consultation workshop will be held on 19 July 2017.

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1. Introduction

The Ministry of Environment and Tourism (MET) has recognised the urgent need to improve solid waste management in Namibia. This National Solid Waste Management Strategy is important to ensure that the future directions, regulations, funding and action plans to improve solid waste management are properly co-ordinated and consistent with national policy, and to facilitate co-operation between stakeholders.

Stakeholder consultation has been carried out throughout the development of the Strategy. The work started with a baseline assessment to identify and confirm the priorities for the Strategy to address (Box 1.1). The final draft Strategy was distributed in July 2017 to key stakeholders for their feedback, and they were invited to the national consultation workshop that was held on 19 July 2017.

Box 1.1 - Priorities for the Strategy to address (identified in the Baseline Assessment (May 2017)).

- Waste disposal is the main problem with the current solid waste management in Namibia. The top priority is to reduce risks to the environment and public health from current waste disposal sites and illegal dumping in many areas of Namibia.
- There are only two hazardous waste disposal sites in Namibia, at Windhoek and Walvis Bay, and improved hazardous waste management is needed on an urgent basis.
- The waste collection system at most municipalities is generally operating to an adequate standard compared to waste disposal. However, there is scope for improvement at all municipalities and there are particular shortfalls with waste collection from informal areas of housing.
- Dumping and litter in the areas under the administration of regional councils are a major problem. In many cases there is no formal waste collection system in these areas.
- In particular, local authorities need more resources (i.e. personnel) for organising solid waste management, monitoring waste generators and reducing the problems with illegal dumping.
- Solid waste management is an expensive function, both in terms of capital costs and operating costs. Capital costs include vehicles, containers, waste disposal facilities, etc. Operating costs include fuel, maintenance, personnel, etc. In general, budgets at local authorities are not planned to cover fully these costs.
- Solid waste management and particularly recycling in Namibia are constrained by the large transport distances and the high transport costs.
- However, there is significant scope for expansion of recycling in some large towns, building on the successful aspects of the current systems, and increasing participation of households through more awareness-raising activities.
- There is a lack of overall awareness and concern about solid waste in Namibia. For example, the concepts of waste minimisation are generally not considered.
- Only minimal data and information are available on solid waste quantities and practices. Improved data is important to facilitate better planning and to monitor that improvements are implemented.
- The legal framework for solid waste management is weak, and an approach for the step-by-step tightening of standards is needed. In particular, minimum standards for waste disposal need to be adopted and implemented.
- There is significant interest from the private sector in solid waste management services, but more support is needed from the Government to facilitate private sector participation.
- A major shortfall and constraint to improving solid waste management in Namibia at present is the lack of a co-ordinated approach between stakeholders and lack of national strategy. There is an urgent need for this national Solid Waste Management Strategy to be adopted to ensure that national and local action plans take improvements forward in consistent directions.
- Responsibilities for solid waste management cut across several national and local institutions, including ministries and municipalities. The roles of different national stakeholders, particularly in terms of funding, need to be clarified.

2. Objectives and Targets

The **Vision** of the Strategy is for Namibia to become the leading country in Africa in terms of standards of solid waste management by 2027.

The **Specific Objectives** of the Strategy are:

1. To strengthen the **institutional, organisational and legal framework** for solid waste management, including capacity development.
2. To install a widespread culture of **waste minimisation and to expand recycling systems**.
3. To implement formalised solid **waste collection** and management systems in all populated areas, including under the administration of Regional Councils.
4. To enforce improvements in municipal **waste disposal** standards.
5. To plan and implement feasible options for **hazardous waste** management; (includes healthcare waste management).

Targets

Targets are an important focus for implementation of the Strategy, although at this stage it is not possible to set many targets in terms of waste quantities (e.g. % reduction in waste; % of waste recycled) until data are available. Some targets can be selected and measured (for example "% local authorities with adopted SWM Plans"). The targets will involve a mix of specific time-bound milestones (e.g. the target for regulations to be adopted by March 2018) and some targets will relate to key performance indicators that are tracked over time.

The initial key performance indicators and targets for the Strategy are:

Key Performance Indicator	Target
% of municipalities with adopted SWM Plans.	<input type="checkbox"/> 100% by December 2018
% of Regional Councils with adopted SWM Plans.	<input type="checkbox"/> 100% by December 2018
% of municipalities (with population over 20,000 at 2011 census) achieving minimum waste disposal standards.	<input type="checkbox"/> 100% (i.e. 11 municipalities) by April 2019.
% of all municipalities achieving minimum waste disposal standards.	<input type="checkbox"/> 100% by December 2019.

Milestones (short-term):

- SWM advisory panel set up by December 2017.
- All local authorities notified of future required standards by January 2018 (for planning purposes).
- SWM regulations adopted by March 2018.
- SWM unit set up in MET by April 2018.
- Monitoring and reporting system rolled out from April 2018.
- Guidance materials on SWM planning developed and distributed by June 2018.
- Two pilot projects on recycling implemented by December 2018.
- Two pilot projects on waste management at Regional Councils implemented by December 2018.

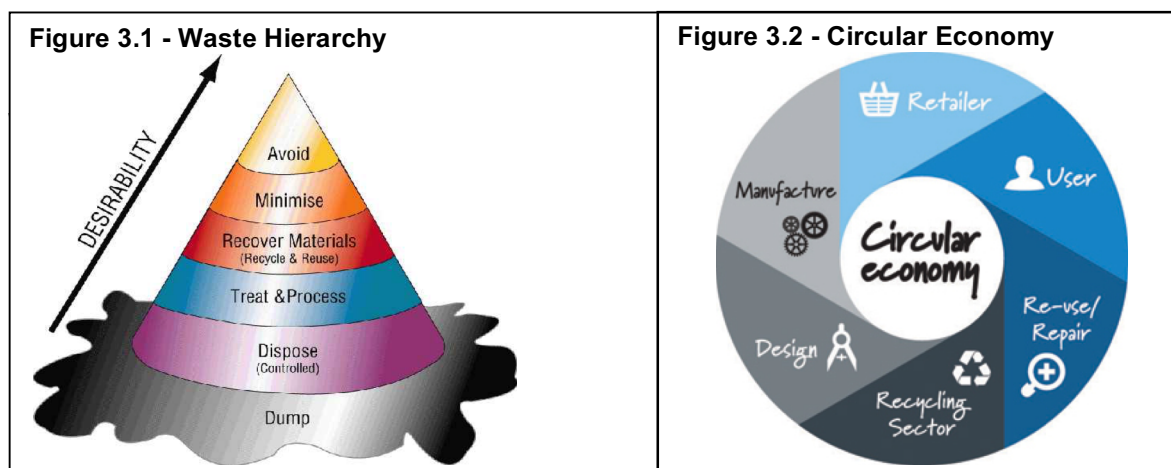
3. Strategic Principles

Types of waste

The National Solid Waste Management Strategy covers all types of solid waste excluding sludge from wastewater management, because sludge is covered by sanitation policies and functions; and also excluding radioactive waste, which is a very specific waste covered under other policies and functions. The main types therefore include: domestic, industrial, commercial, healthcare, construction wastes, etc. The Strategy will address solid waste only and does not cover liquid wastes.

Waste hierarchy and circular economy

Solid waste management in Namibia will be planned and improved in line with the principles of the Waste Hierarchy (Figure 3.1), where waste minimisation and recycling is preferred to waste treatment and disposal. In addition, the longer-term planning will integrate the Circular Economy into the various relevant policies of Namibia (Figure 3.2). The Circular Economy is an alternative to a traditional linear economy (i.e. make, use, dispose) in which resources are kept in use for as long as possible, extracting the maximum value from them whilst in use, then the products and materials are recovered and regenerated at the end of each service life.



Clear responsibilities and capacity for implementation

There are many stakeholders involved in solid waste management, for example it cuts across national policies and responsibilities related to many government functions, and different municipalities are responsible for their own solid waste management systems. The implementation of the Strategy will be carried out in line with the Polluter Pays Principle.

The consultation with stakeholders during the development of the Strategy was important to ensure that the Strategy addresses stakeholder priorities, and so that stakeholders understand and buy into the directions in the Strategy.

Overall responsibility will be clearly assigned and agreed for implementation of the strategy, and staff resources will be allocated for implementation. These important aspects are set out in Section 9. MET will be the Ministry with overall responsibility for implementation of the Strategy and will act as a focal point for the different institutions involved. An advisory panel will be set up with representatives from several national ministries and other key stakeholders.

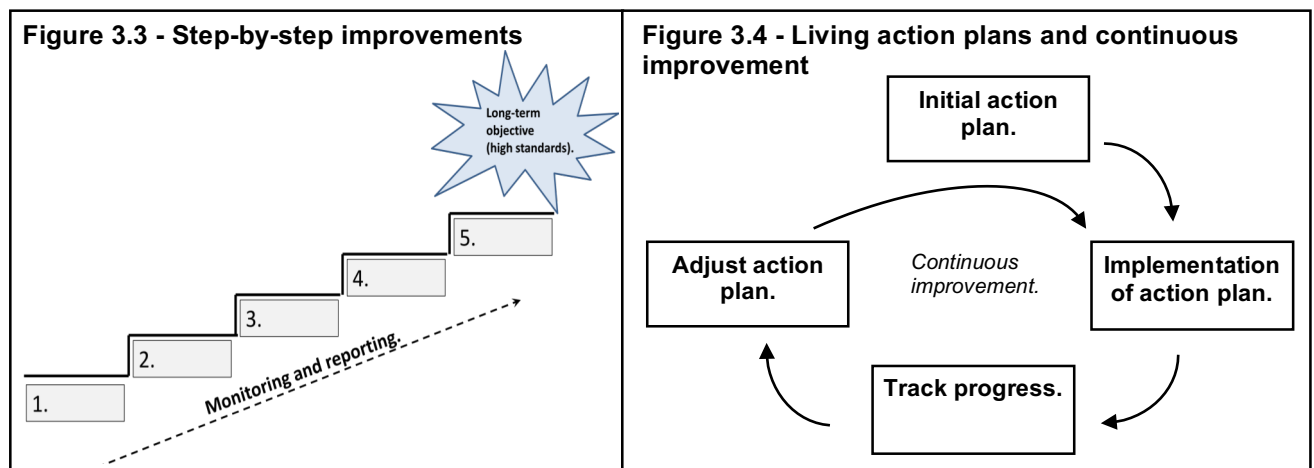
Senior management commitment at the relevant ministries and local authorities will be essential to the successful implementation of the Strategy. The Strategy will be formally adopted in Phase 1.

Covering the high costs of solid waste management

The Strategy takes into account that solid waste management is an expensive activity, and that improving standards will need significant budgets. The Strategy includes innovative approaches to raise revenues and manage funding. The Strategy also calls for the central government to make sound commitments towards solid waste management at all levels.

Local solutions to local problems.

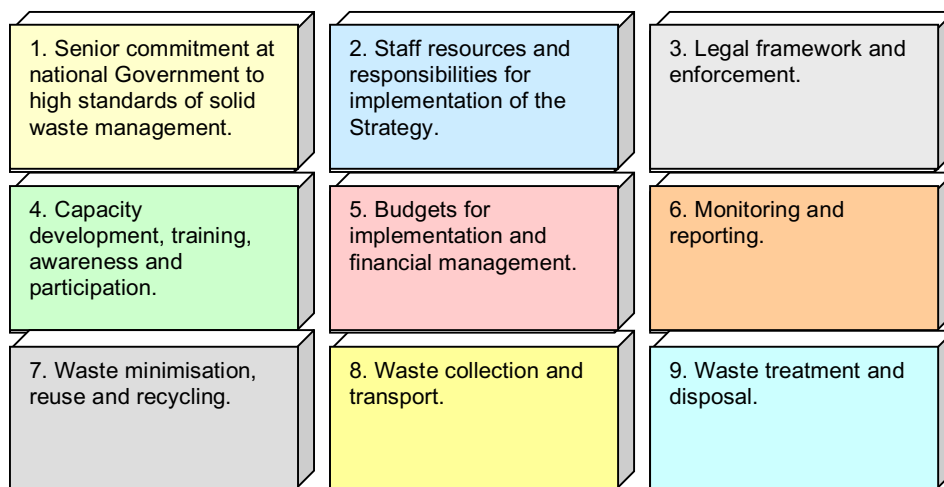
Namibia has unique constraints that affect the costs of solid waste management. The low population in most towns means that total waste management costs per person are relatively high because of the lack of opportunities to benefit from economies of scale. This is particularly the case for the recycling sector, for which the low quantity (relative to other countries) of recyclable materials generated and the large transport distances (and associated transport costs) mean that recycling activities have a major challenge to cover costs. The Strategy has been developed so that the actions to improve waste management will be practical, realistic and affordable. This will involve a step-by-step approach to strengthening the required standards (Figure 3.3), and solid waste management plans under the Strategy will be treated as living plans that are regularly updated, facilitating continuous improvement (Figure 3.4). The implementation of improvements will start with lower-cost practical measures in the short-term, and in parallel the planning of longer-term sustainable solutions.



Components of a Strategy on Solid Waste Management

The Strategy covers not only the technical aspects, such as recycling, treatment and disposal, but also other components such as enforcement of legislation, the institutional framework of responsibilities, stakeholder awareness and participation, and financial aspects. The inter-related components of the Solid Waste Management Strategy are illustrated in Figure 3.5.

Figure 3.5 - Components of a Solid Waste Management Strategy



Links to other development policies in Namibia

The implementation of the National Solid Waste Management Strategy will be compatible with other relevant national policies, strategies, action plans and laws, including the National Development Plan No.5 and Vision 2030. The implementation of the Strategy will provide a framework for the implementation of international commitments relevant to solid waste management (e.g. under the Basel Convention). The implementation of the National Solid Waste Management Strategy will prioritise creation of local employment and supporting local enterprises, including SMEs.

Directions on management of specific waste streams

Waste type	Strategic directions
Municipal solid waste (MSW).	<ul style="list-style-type: none"> The priority is to improve environmental standards at waste disposal sites, and the strategy will be to drive improvements through regulation. Another important strategic direction will be to focus on strengthening waste collection systems in informal housing areas, as well as settlements under the administration of regional councils.
Recyclable components of MSW.	<ul style="list-style-type: none"> The strategy will focus on pilot projects to test opportunities to expand recycling systems. This will initially rely on the voluntary co-operation of private sector companies (e.g. retailers and their supply chain), working with municipalities and other stakeholders. Regulations will be introduced if needed. In parallel, expanding existing recycling systems in the main towns, in particular Windhoek, Swakopmund, Walvis Bay, Oshakati, etc.
Specific types of MSW.	<ul style="list-style-type: none"> Plans will be developed, and consultation carried out, to address specific types of waste, for example: <ul style="list-style-type: none"> In the short-term to plan a charge on plastic bags in shops. In the long-term to assess the feasibility of technologies such as composting units for food waste. In the long-term to promote separation of domestic hazardous wastes (e.g. batteries).
Commercial waste.	<ul style="list-style-type: none"> Strengthening collection and transport systems (similar to municipal solid waste). Focus on increasing separation of recyclable fractions (e.g. paper, cardboard, plastic). Reducing illegal dumping by commercial enterprises through monitoring and enforcement.
Construction waste.	<ul style="list-style-type: none"> Separation of construction waste and use as cover material for disposal sites.
Garden waste.	<ul style="list-style-type: none"> Separation of garden waste and drop-off into a specific area at disposal sites; allowing natural composting and then use in rehabilitation of sites.
Industrial waste.	<ul style="list-style-type: none"> Ongoing implementation of environmental requirements in licences and specified in the environmental management plans of EIAs. Improved separation and storage of hazardous waste types, and in some cases longer-term safe storage until facilities for treatment/disposal are available. Development of an inventory of organisations that manage different types of hazardous waste management, so that waste generators are aware of the options. Also in the long-term, development of centralised facilities for hazardous waste (e.g. incinerators).
Healthcare waste.	<ul style="list-style-type: none"> Improved separation and storage of the hazardous fractions of healthcare waste. Improving the availability and performance of healthcare waste incinerators.

Timescales and updating the Strategy

The Strategy covers a time period up to 2023. By that time, solid waste management will have significantly improved in Namibia but there will still be potential for further improvements. It will be an appropriate time for the priorities to be re-assessed and for the Strategy to be updated.

4. Overview of phases of the Strategy

The Strategy is divided into four phases:

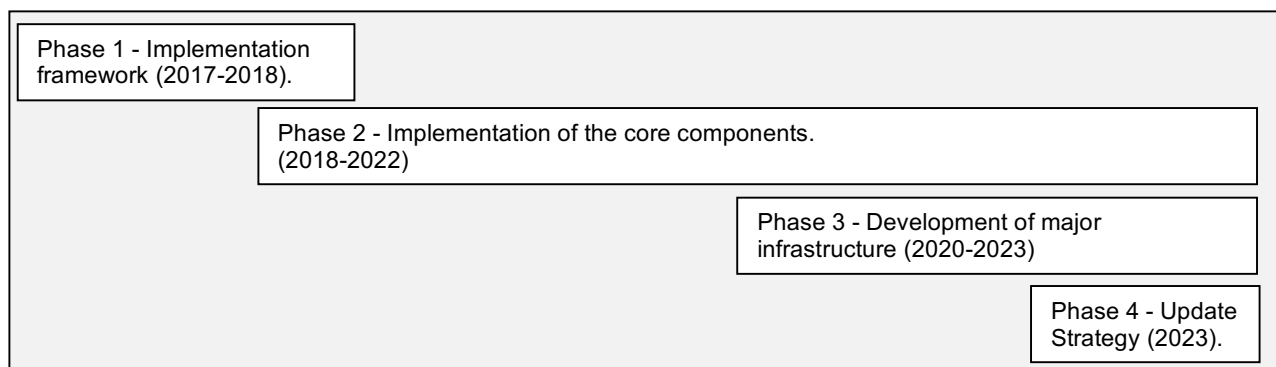
- Phase 1 - Implementation framework (2017-2018).
- Phase 2 - Implementation of the core components (2018-2022).
- Phase 3 - Development of major infrastructure (2020-2023).
- Phase 4 - Update the Strategy (2023).

It is important to strengthen the institutional and organisational framework in Phase 1, before detailed implementation of the core components in Phase 2. The actions in Phase 1 will include formal adoption of the Strategy, development and adoption of regulations, production of guidance materials, strengthening capacity for monitoring and enforcement, etc. In addition, specific pilot projects will be implemented in Phase 1 to test initiatives before wider roll-out.

Phase 1 will also provide municipalities with time to plan actions and in particular to plan and agree budgets on improving waste disposal, as will be required in regulations. Phase 2 will involve the main improvements (e.g. implementation of waste disposal standards, expansion of recycling, etc).

The major infrastructure projects (e.g. hazardous waste management facilities) will be implemented in Phase 3, but identifying locations and planning the facilities will start earlier. Phase 4 will involve the revision of the Strategy for a new time period going forward. The Strategy phases overlap in terms of timescales, as indicated in Figure 4.1. Wherever possible, if capacity and funding are available, then some investments might be brought forward and started earlier (e.g. major infrastructure).

Figure 4.1 - Overview of Strategy phases and timescales



The tasks under the Strategy are outlined in Sections 5 to 8 of this document. For Phases 1 and 2, the tasks have been designated under the Specific Objectives of the Strategy:

- **Objective 1 - Institutional, organisational and legal framework**
To strengthen the institutional, organisational and legal framework for solid waste management, including capacity development.
- **Objective 2 - Waste minimisation and recycling**
To install a widespread culture of waste minimisation and to expand recycling systems.
- **Objective 3 - Solid waste collection systems**
To implement formalised solid waste collection and management systems in all populated areas, including under the administration of Regional Councils.
- **Objective 4 - Municipal waste disposal**
To enforce improvements in municipal waste disposal standards.
- **Objective 5 - Hazardous waste management**
To plan and implement feasible options for hazardous waste management; (includes healthcare waste management).

5. Phase 1 - Implementation framework

Effective implementation of the Strategy requires a number of institutional and organisational structures in place before detailed implementation of the core components in Phase 2. These in particular include strengthening of resources for implementation of the Strategy, including capacity for monitoring and enforcement; development of regulations, development of guidance documents, etc. Phase 1 will therefore involve tasks to set up the implementation framework, as well as specific pilot projects to test initiatives. The phase will be implemented in 2017-2018. The tasks are illustrated and described below, and are organised under the Specific Objectives of the Strategy.

Objective 1 - Institutional, organisational and legal framework - main tasks

Task 1.1.1 - Formal **adoption of the Strategy** by the Government.

Task 1.1.2 - Set up **SWM Unit in MET** and strengthen resources.

Task 1.1.3 - Set up **SWM advisory panel** at national level.

Task 1.1.4 - Adopt waste management **regulations**.

Task 1.1.5 - Develop **guidance materials** on SWM planning.

Task 1.1.6 - Set up **monitoring and reporting** systems.

Objective 2 - Waste minimisation and recycling

Task 1.2.1 - **Consultation on plastic bag charge**.

Task 1.2.2 - **Engage private sector** (i.e. retailers and supply chain, tourism companies).

Task 1.2.3 - Implement **pilot projects** on recycling.

Objective 3 - Solid waste collection systems

Task 1.3.1 - Detailed planning of options for areas under **Regional Councils**.

Task 1.3.2 - **Guidance materials** on waste collection.

Task 1.3.3 - Implement **pilot projects** on waste collection in areas under Regional Councils.

Objective 4 - Municipal waste disposal

Task 1.4.1 - **Agree required standards** for waste disposal and timescales.

Task 1.4.2 - **Notify local authorities** in advance of regulations.

Task 1.4.3 - **Guidance materials** on waste disposal.

Objective 5 - Hazardous waste management

Task 1.5.1 - Develop inventory of hazardous waste organisations and facilities.

Task 1.5.2 - **Guidance materials** on hazardous waste management.

Phase 1, Objective 1 - Institutional, organisational and legal framework

Task 1.1.1 - Formal adoption of the Strategy by the Government.

The formal adoption is important to demonstrate full commitment at senior level in government. The formal adoption will help to ensure that the different ministries that have a role in solid waste management are committed to the implementation of the Strategy.

Task 1.1.2 - Set up Solid Waste Management Unit in MET and strengthen resources.

The implementation of the Strategy will require a major step up in activity on solid waste management at the national level. It will therefore be important to strengthen resources and capacity at national level in MET to implement the Strategy, including strengthening resources for monitoring and enforcement. A Solid Waste Management Unit (i.e. team) will be set up in MET and will be responsible for implementation of the National Solid Waste Management Strategy. Assigning the role of implementation to one "unit" will ensure accountability for its implementation. Section 9 of this Strategy provides more details on responsibilities for implementation of the Strategy and on the roles of the Solid Waste Management Unit. MET will include a budget line for such a unit in the Ministry's overall budget.

Task 1.1.3 - Set up solid waste management advisory panel at national level.

The policy and funding aspects of solid waste management cut across several ministries and it will be important that all ministries and other national level institutions are working in a consistent direction in solid waste management, and are committed to implementation of the Strategy. A solid waste management advisory panel will be set up. It will include representatives from several national ministries and other key national level stakeholders (e.g. Namibia Recycling Forum). The advisory panel will meet monthly during the first year of implementation of the Strategy, and meetings will become quarterly at an agreed time after that. The advisory panel will provide advice to the Solid Waste Management Unit, discuss key challenges and develop action plans for solutions at national level, and it will be a mechanism to ensure co-operation in Strategy implementation.

Task 1.1.4 - Adopt waste management regulations.

Waste management regulations will be developed and adopted early in Phase 1. The regulations will be developed in line with the Environmental Management Act (No.7 of 2007) and in line with the directions of this National Solid Waste Management Strategy. The regulations will include:

- Waste Management Framework Regulations - these regulations will include definitions and waste classifications; set the framework for implementation of the Strategy; include standards for waste disposal, including environmental monitoring at waste disposal sites; clarify roles of stakeholders (e.g. municipalities, regional councils, etc); clarify licensing requirements; clarify enforcement mechanisms and responsibilities (particularly at local level); etc.
- Hazardous Waste Management Regulations - these will define types of hazardous waste, clearly define the types of waste generators that must comply, and set standards / actions that must be taken for waste separation, storage, transport, treatment, disposal.

Consultation will be carried out so that the draft regulations are discussed with stakeholders, including the private sector waste generators. This is important to ensure that the regulations are implementable. The regulations will be developed in line with the waste hierarchy and other strategic principles described in Section 3 of this Strategy.

Task 1.1.5 - Develop guidance materials on SWM planning.

MET will develop several guidance documents on good practices in solid waste management, including guidance on the development of SWM Plans at local authorities. This will also include guidance on reporting requirements for local authorities (Task 1.1.6).

Task 1.1.6 - Set up monitoring and reporting systems.

MET will set up monitoring and reporting systems on solid waste management so that better information and data can be used in planning. Local authorities will be required by the regulations to report to MET on a few key performance indicators on solid waste management, and on progress in implementation of their SWM plans. This will also help MET to prioritise monitoring and enforcement activities. MET will set up a database of information and publish annual reports on solid waste management. The database will include an inventory of waste disposal sites in Namibia and their state of environmental protection. This will enable MET to develop and maintain a map of all waste treatment and disposal facilities in the country.

Phase 1, Objective 2 - Waste minimisation and recycling

Task 1.2.1 - Consultation on plastic bag charge.

The Government of Namibia is considering options for reducing the use of plastic bags, which are impacting the environment because of littering. MET will first consult on a potential policy of a plastic bag charge, before the policy is rolled out on a wider scale in Phase 2. Consultation will particularly focus on dialogue with the retailers and the plastic bag manufacturers.

Task 1.2.2 - Engage private sector.

As well as several potential policy directions, there are several different projects that could be implemented to improve solid waste management, involving voluntary support from private companies (i.e. retailers and supply chain, tourism companies). For example, there is particular potential to make use of the many supply trucks that return empty to Windhoek to bring back clean recyclable materials. These are logistical solutions that require co-operation of supply companies, transport companies and local authorities. MET will work to facilitate such co-operation through participatory planning of pilot projects involving "working groups" of companies and local authorities. MET will seek funding of small-scale infrastructure for such pilot projects (e.g. containers for recyclable materials). MET will pursue this co-operative and voluntary approach before adoption of comprehensive regulations specific to recycling if needed.

Task 1.2.3 - Implement pilot projects on recycling.

MET will facilitate the implementation of pilot projects through the working groups formed under Task 1.2.2. The pilot projects will test initiatives, before they are then rolled out on a wider scale in Phase 2 (e.g. test systems for back-hauling recyclable materials, test systems for drop-off areas, etc).

Phase 1, Objective 3 - Solid waste collection systems**Task 1.3.1 - Detailed planning of options for areas under Regional Councils.**

The main area for improvement in waste collection will be to set up collection systems in areas under the administration of Regional Councils. In most cases there are few formal waste collection systems in these areas, but an assessment of any existing initiatives will be carried out so that good practices can be identified and included in guidance materials. This assessment will involve the Ministry of Urban and Rural Development, and identifying the most effective methods to improve waste collection. These are likely to involve:

- Introducing charges to shops and businesses for waste collection, and in some cases charges for households.
- Investing in skips for households to drop off waste.
- Contracting a private company to collect the skips.
- Use of the nearest municipal disposal site (if agreed) or allocating a disposal site location(s) in an area under the administration of Regional Councils, operated at least to minimum standards (explained under Objective 4).

These improvements could be co-ordinated by the Regional Council, but responsibilities will be clarified in the framework regulations (Task 1.1.4). It is important for the Regional Council must have the capacity to monitor the private collection company. Guidelines and training will be needed for Regional Councils.

Task 1.3.2 - Guidance materials on waste collection.

Linked to the more general guidance on SWM planning under Task 1.1.5, MET will work with the Ministry of Urban and Rural Development, Windhoek Municipality and several local authorities to develop of guidance materials on waste collection. These will include guidance on best practices for waste collection systems, including fee collection, and guidance on private sector participation in waste collection (including model contracts that can be adapted by local authorities). The guidance materials will include some focus on methods to improve waste collection in informal housing areas of towns (which is a common challenge for many local authorities).

Task 1.3.3 - Implement pilot projects on waste collection in areas under Regional Councils.

During the planning of options for waste collection in areas under Regional Councils in Task 1.3.1, two or three pilot projects will be planned and implemented, and monitored to identify lessons learned and good practices.

Phase 1, Objective 4 - Municipal waste disposal

Task 1.4.1 - Agree required standards for waste disposal and timescales.

One of the key aspects of the development of the waste management regulations (Task 1.1.4) will be the detail of the requirements on waste disposal standards, and the timescales required for implementation. It has been widely agreed by all stakeholders consulted during development of this Strategy that standards are needed, but that they should be improved on a step-by-step basis. Requirements must be affordable and realistic if they are to be implemented, and include aspects such as operational management, fencing, cover material, access, security, management of waste pickers, and environmental monitoring (e.g. groundwater monitoring). Timescales will be varied for different types of local authorities. Extensive consultation will be carried out on the regulations, which will be adopted in Phase 1, and the standards will be implemented in Phase 2. More details on the standards are provided in Appendix 1 of this Strategy.

Task 1.4.2 - Notify local authorities in advance of regulations.

MET will notify local authorities in advance about the requirements of the regulations (including timescales for achieving minimum standards), so that they can start to develop SWM Plans, including planning budgets for improved waste disposal. In addition, this will help municipalities to plan the strengthening of their resources and capacity to improve solid waste management.

Task 1.4.3 - Guidance materials on waste disposal.

MET will work with the Ministry of Urban and Rural Development and several local authorities to develop guidance materials on waste disposal. These will include guidance on best practices for achieving the required waste disposal standards in the regulations. The guidance will include points on private sector participation in waste disposal (including model contracts). Specifically, the guidance will include operational management, data collection and management, engagement and management of waste pickers, etc. It will also cover guidance on selection of locations for waste disposal sites. MET will also work with the Ministry of Agriculture, Water and Forestry to develop maps of locations of aquifers, which will help the identification of locations of new sites. The guidance will be linked to the more general guidance on SWM planning under Task 1.1.5.

Phase 1, Objective 5 - Hazardous waste management**Task 1.5.1 - Develop inventory of hazardous waste organisations and facilities.**

The improvement of hazardous waste management will be a step-by-step process, taking into account affordability (including transport distances and costs to take waste to hazardous waste facilities). The longer-term aim will be to provide more access to a range of hazardous waste management facilities and to require and enforce their use through the regulations. In parallel, healthcare waste management will be improved. At the start of the process, more information is needed for planning, for example to ensure hazardous waste generators are aware of the current organisations and facilities that are available to manage different types of waste. An inventory of such organisations and facilities will be developed as a first step. This inventory will also include organisations that manage other specific wastes (e.g. scrap tyres), as well as specific hazardous wastes (e.g. waste oil).

Task 1.5.2 - Guidance materials on hazardous waste management.

Guidance on management of types of hazardous and healthcare waste will be developed, including separation, handling, storage, labelling, transport, etc. Such guidance will include information on hazardous waste management organisations and facilities (from the inventory developed under Task 1.5.1). The guidance will be updated as more options for hazardous waste treatment and disposal become available during implementation of the Strategy.

6. Phase 2 - Implementation of the core components

Once the institutional and organisational framework has been strengthened in Phase 1, and some pilot projects implemented to test methods, the detailed implementation of the core components of the Strategy will be carried out in Phase 2. Most of the tasks in Phase 2 will be carried out after those in Phase 1, but some will be implemented in parallel. For example, at an early stage the local authorities will prepare SWM plans and develop budgets to cover the costs of waste disposal improvements. Phase 2 will be implemented from 2018 to 2023. The tasks are illustrated and described below, and are organised under the Specific Objectives of the Strategy.

Objective 1 - Institutional, organisational and legal framework

Task 2.1.1 - Development of **SWM Plans by local authorities**.

Task 2.1.2 - **Training programme on SWM planning**.

Task 2.1.3 - Continue to strengthen resources in **SWM team in MET**.

Task 2.1.4 - Continue to manage inputs from **SWM advisory panel** at national level.

Task 2.1.5 - Continue **monitoring and reporting** system.

Task 2.1.6 - Strengthen **enforcement** capacity and system.

Objective 2 - Waste minimisation and recycling

Task 2.2.1 - Roll out major recycling initiatives having learned lessons from pilot projects.

Task 2.2.2 - Implement policies to **support SMEs** in recycling.

Task 2.2.3 - **Implement plastic bag charge**.

Objective 3 - Solid waste collection systems

Task 2.3.1 - Monitor and support collection systems at Regional Councils.

Objective 4 - Municipal waste disposal

Task 2.4.1 - Monitor implementation of **waste disposal standards** at local authorities.

Task 2.4.2 - Clean-up and rehabilitation of **illegal dump sites**.

Task 2.4.3 - Identify other **waste disposal infrastructure needs**.

Objective 5 - Hazardous waste management

Task 2.5.1 - Develop **specific plans** to address priorities on hazardous and healthcare waste management.

Task 2.5.2 - Plan **major infrastructure projects** (e.g. hazardous waste mgt facilities).

Phase 2, Objective 1 - Institutional, organisational and legal framework

Task 2.1.1 - Development of SWM Plans by local authorities.

Local authorities (including regional councils) will be required under the regulations to develop and adopt solid waste management (SWM) plans during 2018. The aim will be for these plans to be simple, but to include actions to address the priorities (e.g. achieving the waste disposal standards), and for the plans to set out the budgets, responsibilities, etc. Guidance on planning will be developed by MET (Task 1.1.5) and training programmes will be available (Task 2.1.2). Local authorities will be encouraged to assign clear responsibilities for implementation of the plans, create separate budget lines, and expand capacity in terms of personnel on waste management (e.g. for local monitoring activities). MET will review and comment on the SWM Plans from local authorities (although ultimate approvals will be required from the local councils and the Ministry of Urban and Rural Development (for budget approval as applicable). The SWM plans will cover actions that have much wider coverage than just waste disposal (e.g. including collection systems, recycling, awareness, responsibilities, budgets, etc). MET will provide comments on the plans, and maintain its role related to approval of the Environmental Management Plans of the disposal sites in relation to Environmental Clearance Certificates.

Task 2.1.2 - Training programme on SWM planning.

MET will organise a training programme on SWM planning, available for local authorities. MET will seek donor funding for such a programme, which will be implemented in parallel to Phase 1, assisting the local authorities in developing applicable SWM Plans.

Task 2.1.3 - Continue to strengthen resources in SWM team in MET.

On an ongoing basis, MET will continue to strengthen capacity for organisation of solid waste management in terms of resources in the Solid Waste Management Unit, which will be responsible for implementation. Resources will be particularly strengthened for monitoring of performance, including at waste disposal sites.

Task 2.1.4 - Continue to manage inputs from SWM advisory panel at national level.

The SWM advisory panel will continue to function to ensure stakeholders are co-operating and moving in consistent directions.

Task 2.1.5 - Continue monitoring and reporting system.

The SWM plans to be adopted by the relevant Municipal or Regional Councils must include the setting up of data management systems for monitoring of the quantity of waste collected/ disposed at local levels (in terms of recording the number of trucks and estimates of quantities of waste). As part of the implementation of the monitoring and reporting system, MET will track the adoption and implementation of SWM Plans at local authorities. MET will continue during Phase 2 to maintain databases and strengthen information on solid waste management, including the inventory of waste disposal sites. MET will continue to publish annual reports summarising overall performance in waste management. Where necessary and possible, MET will make use of other resources such as consultants, universities, as well as other stakeholders such as other line ministries to monitor the implementation of SWM regulations and plans.

Task 2.1.6 - Strengthen enforcement capacity and system.

The development of regulations (Task 1.1.4) will include clarification of the enforcement mechanisms, including increasing penalties (if needed) and ensuring the roles of local enforcement officers include control of illegal dumping and littering. The regulations will ensure that the mechanisms for issuing penalties are clear, quick and fair. In addition, enforcement capacity in MET will need to be strengthened (Task 2.1.3) in relation to monitoring and approval of Environmental Management Plans at disposal sites. In parallel, as well as clarifying the roles of local enforcement officers, policy and management roles at local authorities need to be designated, including in some cases the establishment of new positions in the local institutional structures.

Phase 2, Objective 2 - Waste minimisation and recycling

Task 2.2.1 - Roll out major recycling initiatives having learned lessons from pilot projects.

Based on the results of the pilot projects implemented in Phase 1 under Tasks 1.2.2 and 1.2.3, the Solid Waste Management Unit at MET will co-ordinate working groups (e.g. of local authorities and private companies) to roll-out systems for collecting larger quantities of recyclable materials. These will depend on voluntary agreements involving private companies (e.g. retailers, transport companies, etc.). Such projects would start with pilot projects and might include, as examples:

- Working with Windhoek Municipality and private waste management companies to set up drop-off areas for recyclable materials in the city as pilot projects (to test systems that might be implemented in other towns).
- Assessment of the potential for deposit schemes on glass bottles, plastic bottles, etc, working with the food and drink sector, the retailers and their supply chain.
- Rolling out initiatives with the private sector (e.g. retailers and supply chain) and transport companies on systems of back-hauling recyclable materials using empty delivery trucks that are returning to Windhoek, based on results of pilot projects in Phase 1. As part of these systems, monitoring mechanisms will be included to track and ensure a duty of care in terms of transport of waste (e.g. consignment documents to track that waste that is collected is delivered to the required locations).
- Working with the tourist sector on potential recycling initiatives, again based on back-hauling using supply vehicles, and also drop-off areas for self-drive tourists and tour groups.
- In parallel to pilot projects and the roll out of wider activities, targeted awareness programmes will be implemented to engage the public and other stakeholders to participate in the systems.

Although these initiatives will be based initially on voluntary agreements, MET will adopt specific regulations on recycling if the relevant private sector organisations do not participate properly in these activities.

Task 2.2.2 - Implement policies to support SMEs in recycling.

A study will be carried out to review potential mechanisms to support small and medium-sized enterprises (SMEs) in waste collection and recycling activities. Such support is likely to require co-operative initiatives with several ministries, and therefore the advisory panel will be engaged in this task. Specific policies will be developed and implemented for supporting SMEs.

Task 2.2.3 - Implement plastic bag charge.

Based on the results of consultation with the private sector in Phase 1 (Task 1.2.1), MET will work with the advisory panel to plan and implement a plastic bag charge. The revenue collected will be spent on environmental projects, with open reporting of the total amounts collected, expenditure on projects and on the results of the projects. This policy is likely to reduce greatly the quantity of plastic bags used (e.g. a reduction of up to 80% is forecast).

Phase 2, Objective 3 - Solid waste collection systems

Task 2.3.1 - Monitor and support collection systems at Regional Councils.

Waste collection systems will have been tested through pilot projects at some regional councils, and the systems will be rolled out to other areas. Guidance and training will be provided. The Solid Waste Management Unit at MET will monitor the implementation of the SWM Plans of local authorities, particularly waste collection at areas under regional councils. MET will update the guidance on waste collection (produced under Task 1.3.2) as needed, based on lessons learned during implementation.

Phase 2, Objective 4 - Municipal waste disposal

Task 2.4.1 - Monitor implementation of waste disposal standards at local authorities.

The priority for improvements in municipal waste disposal standards will be implemented in Phase 2. The waste disposal standards will be specified in the regulations. More details on the standards are provided in Appendix 1. Different local authorities will have to reach different levels of standards in different timescales, depending on the size of the local authorities (in terms of population). MET will monitor the implementation of the waste disposal standards required at local authorities in the legislation, and the local authorities will be required to report on waste disposal (and environmental

protection activities at the disposal sites) in the quarterly reports. MET will update the guidance on waste disposal methods (produced under Task 1.4.3) as needed, based on lessons learned during implementation.

Task 2.4.2 - Clean-up and rehabilitation of illegal dump sites.

As part of their SWM Plans, local authorities will register and prioritise illegal dump sites, and clean-up and rehabilitate the sites. In parallel, awareness-raising activities will be implemented by the local authorities to demonstrate the impacts of illegal dumping and raise the knowledge of the alternative waste management options available.

Task 2.4.3 - Identify other waste disposal infrastructure needs.

Linked to Task 2.5.1, MET will work with the Ministry of Urban and Rural Development (and other stakeholders) to identify needs for infrastructure and major projects on municipal waste disposal. This might include, for example, development of a regional landfill site in the longer-term that is shared between local authorities (e.g. Oshakati and Ondangwa).

Phase 2, Objective 5 - Hazardous waste management

Task 2.5.1 - Develop specific plans to address priorities on hazardous and healthcare waste management.

Based on the data gathering and inventories of hazardous and healthcare waste management organisations and facilities (carried out in Phase 1 (Task 1.5.1)), MET will work with the Ministry of Industrialisation and SME Development and the Ministry of Health to identify priorities for improvements and plan investments in hazardous and healthcare waste facilities.

Task 2.5.2 - Plan major infrastructure projects.

In the long-term, Namibia is likely to need up to 5 new hazardous waste facilities, in different regions of Namibia, as well as several smaller facilities for other specific wastes. Sources of international development funding will be identified for these infrastructure projects. It will also be important to ensure institutional and financial structures are in place so that the facilities are properly used, and detailed feasibility studies will be carried out. In parallel, hazardous and healthcare transport requirements will be included in updated regulations. Guidance on hazardous and healthcare waste management will be updated as needed.

7. Phase 3 - Development of major infrastructure

Phase 3 will be implemented in parallel to Phase 2. The infrastructure will take much planning, and might not be implemented until 2020. The main components include:

- Based on the data gathering and inventories of hazardous and healthcare waste management organisations and facilities (Phase 1), priorities for improvements will be identified and investments planned in Phase 2 (Tasks 2.4.2 on municipal waste disposal facilities and Tasks 2.5.1 and 2.5.2 on hazardous waste disposal facilities).
- This is likely to include up to 5 new hazardous waste facilities, in different regions of Namibia.
- MET will ensure hazardous and healthcare waste transport requirements are included in regulations so that the facilities will be properly utilised. Monitoring mechanisms will be included to track and the transport of waste (e.g. consignment documents to track that waste that is collected is delivered to the required locations).

Sources of international development funding will be identified for these infrastructure projects and detailed feasibility studies will be carried out.

The infrastructure will include healthcare waste management. It also might include a regional municipal landfill in the north (i.e. Oshakati / Ondangwa), depending on results of feasibility studies.

MET will review opportunities for small-scale infrastructure that might be applicable for isolated settlements or enterprises (e.g. in the long-term composting units for food waste from hotels/lodges).

It should be noted that the concept of energy from municipal waste is not applicable in Namibia at this time. This is because of the relatively low quantities of waste generated and the large transport costs per tonne of waste, meaning that the current technology for energy from waste is not suitable for municipal solid waste, and these plants are not economically feasible in Namibia.

8. Phase 4 - Update the Strategy

The Strategy will need updating in 2023 because many of the current priorities will have been addressed, and new priorities and directions will need to be managed. This is likely to include a step up in focus on waste minimisation at that time. In addition, the development of the new Strategy will include potential policies on landfill tax, which will drive waste minimisation and recycling, although this is only applicable if enforcement is strong so that illegal dumping is prevented.

The policy of producer responsibility will be assessed, and the potential for regulations that require producers (or importers) to take responsibility for associated wastes will be planned. This might be in the new Strategy after 2023 or possibly during implementation of this current Strategy, depending on the effectiveness of the voluntary approach with the private sector.

9. Responsibilities for implementation of the Strategy

The need for a Solid Waste Management Unit in MET

The implementation of the National Solid Waste Management Strategy will require a major step up in activity at national level. The Solid Waste Management Unit in MET will be created and will be responsible for implementation of the Strategy. Assigning the role of implementation to one "unit" or team would ensure accountability for its implementation.

Other national level institutions will be involved in the implementation of the Strategy, because solid waste management is a function that cuts across many ministries and institutions. The Solid Waste Management Unit in MET will serve as a secretariat and be responsible for co-ordinating the National advisory panel that will be formed and will include representatives from the most relevant national institutions and organisations.

The leadership of MET in the implementation of the Strategy, through the Solid Waste Management Unit, will raise the profile of the need to improve solid waste management. The Solid Waste Management Unit in MET will act as a single focal point for regional councils and local authorities on solid waste management, providing support and guidance. In addition, the Unit will co-ordinate monitoring and reporting activities, and collate data for overall reporting at national level, on solid waste management.

Objectives of the Solid Waste Management Unit in MET

To manage the effective implementation of the National Solid Waste Management Strategy so that sustainable improvements in solid waste management will be achieved in Namibia.

To act as a focal point for ministries, institutions and particularly local authorities in relation to information on solid waste management and sharing of good practices.

Roles of the Solid Waste Management Unit

The roles of the Solid Waste Management Unit in MET will largely be organisational in scope, involving the co-ordination of activities at central level. In practice, the solid waste management operations are carried out at local levels. Table 9.1 lists the main roles of the Solid Waste Management Unit in MET, demonstrating the major step change in activity and the need for increased resources.

Table 9.1 - Main roles of the Solid Waste Management Unit in MET

Phases of implementation:	Main roles of the Solid Waste Management Unit in MET
Phase 1 - Implementation framework (2017-2018).	<ul style="list-style-type: none"> • Co-ordination of tasks to ensure the formal adoption of the Strategy. • Set up and organise the SWM advisory panel at national level (including organisation of meetings, minutes, co-ordinating implementation of agreed actions, etc). • Develop and ensure adoption of SWM regulations. • Communication with local authorities about the requirements of regulations. • Develop and distribute guidance materials. • Plan and set up monitoring and reporting systems on SWM. • Manage information and data (e.g. inventory of solid waste disposal sites). • Detailed planning of options for solid waste management in areas under the administration of Regional Councils. • Manage the consultation on a plastic bag charge. • Engage with private sector companies (e.g. retailers and their supply chain) in planning and implementing pilot projects to enhance recycling.
Phase 2 - Implementation of the core components (2018-2022).	<ul style="list-style-type: none"> • Monitoring and enforcement of the requirements of the SWM regulations. • Review of SWM Plans from local authorities, providing comments to local authorities and follow-up with those that have not developed a SWM Plan.

Responsibilities for implementation

	<ul style="list-style-type: none"> • Continue to review and approve Environmental Management Plans for waste disposal sites as part of the environmental clearance process. • Implement the system of reporting by local authorities on SWM. • Prioritise and implement monitoring and enforcement activities, tracking whether local authorities are implementing their SWM Plans, and particularly whether they are implementing the requirements of the regulations on waste disposal in the timescales specified. • Continue to organise the SWM advisory panel; and in particular work closely with the Ministry of Urban and Rural Development on co-ordinating and monitoring SWM practices at local authorities. • Manage different "working groups" to plan and implement initiatives on recycling (based on results of pilot projects in Phase 1). • Manage the implementation of the plastic bag charge, including associated communication and public relations. • Monitor Regional Councils in implementation of new waste collection systems, working with the Ministry of Urban and Rural Development. • Identify waste management infrastructure needs (e.g. hazardous waste facilities), develop concept plans and identify funding sources. • Co-ordinate the implementation of initiatives to support SME development in waste management. • Implement national awareness campaigns. • Raise the profile of solid waste management across the teams at MET. • Continue to build resources and capacity in the Solid Waste Management Unit in MET. • Implement tasks required through relevant international conventions (e.g. Basel Convention).
Phase 3 - Development of major infrastructure (2020-2023).	<ul style="list-style-type: none"> • Detailed feasibility studies, planning and consultation for major infrastructure projects. • Work closely with international finance institutions (for example) on planning and implementation of the projects. • (Continue above tasks under Phase 2 in parallel).
Phase 4 - Update the Strategy (2023).	<ul style="list-style-type: none"> • Identify priorities (as of 2023) and update the National Solid Waste Management Strategy to cover at least 5 subsequent years going forward.

Roles of other institutions and organisations

The roles of the national advisory panel on Solid Waste Management include:

- To support the SWM Unit in MET on implementation of the Strategy.
- Provision of strategic advice and steering the direction of solid waste management policies and activities at national level.
- To monitor and review progress of the SWM Unit.
- To inform the SWM Unit of other national policies and relevant programmes.

The actual solid waste management operations on the ground will remain the responsibilities of the local authorities and other waste generators in line with the polluter pays principle. Other ministries, have important roles, including:

- Ministry of Urban and Rural Development - in terms of the management and funding at local authorities.
- Ministry of Health - on management of healthcare waste.
- Ministry of Industrialisation and SME Development - in terms of supporting SMEs in recycling and other waste management activities.

In addition, organisations such as the Namibia Recycling Forum, waste management companies, NGOs, etc, will play important roles in supporting the implementation of components of the Strategy. Municipalities that have more advanced SWM systems (e.g. Windhoek, Walvis Bay, Swakopmund) will also play an important role in sharing lessons and good practices.

The Solid Waste Management Unit in MET will co-ordinate the implementation of the activities of other institutions and ensure consistent directions are being taken. The co-ordination of the advisory panel will be an important role for the Unit.

Structure and resources for the Solid Waste Management Unit

The proposed function in MET is called a "Unit" for now, but can be changed to use other terminology when the structure is approved. The important point is the need for a separate team to implement the Strategy and ensure accountability. Figure 9.1 indicates that the Unit will be within DEA in MET. As well as the permanent advisory panel, the Unit will co-ordinate working groups on pilot projects, and these working groups will only be in place for the timescale of the pilot projects. Figure 9.2 indicates options for the structure of the Unit.

Figure 9.1 - Overview of implementation structure

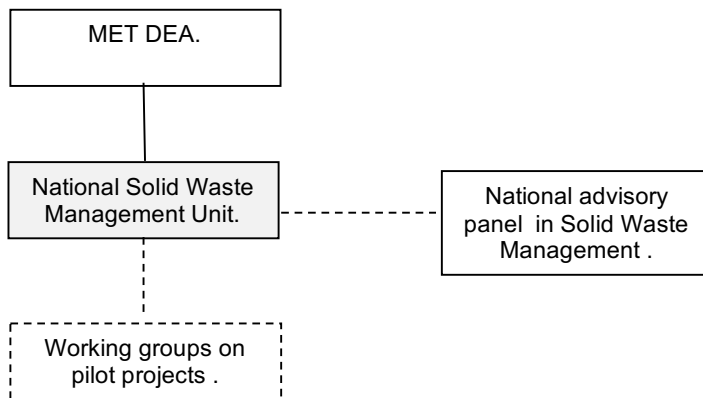
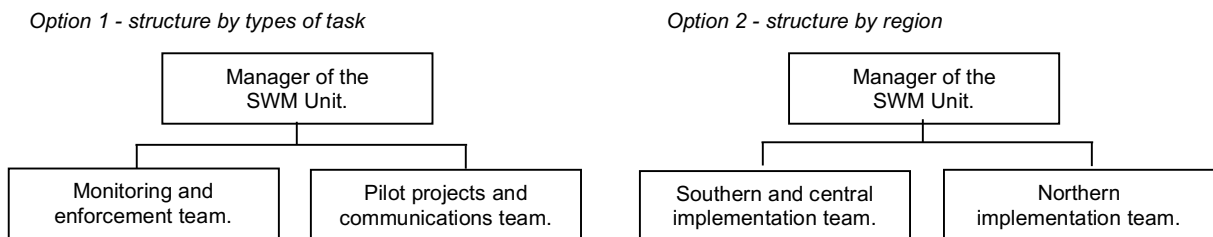


Figure 9.2 - Example options for the structure of the SWM Unit



The Unit will require a team of seven persons (for example a manager, three persons responsible for monitoring and enforcement, two persons managing pilot projects, and one person managing consultation and communications). However, this number of resources is unlikely to be possible in the short-term, but a team of three persons will be set up at the start of implementation, and this will be strengthened over time.

These personnel will require organisational, communication and logistical skills, rather than technical skills. As in many countries, the use of consultants for several tasks will be considered where this increases efficiency.

Key Point
 Although in practice the actual operations for solid waste management (e.g. waste collection, transport, disposal, etc.) are carried out at local level (e.g. at local authorities), there will be a major co-ordination role for MET in implementation of the Strategy. This will require a significant increase in resources (i.e. personnel).

Abbreviations

DEA	Department of Environmental Affairs (in MET).
EfW	Energy from Waste.
EIA	Environmental Impact Assessment.
MET	Ministry of Environment and Tourism.
MRF	Materials Recovery Facility.
NDP	National Development Plan.
PPE	Personal Protective Equipment.
RDF	Refuse-derived fuel.
SEA	Strategic Environmental Assessment.
SME	Small and Medium sized Enterprises.
SWM	Solid Waste Management.

Appendix 1 - Waste disposal standards

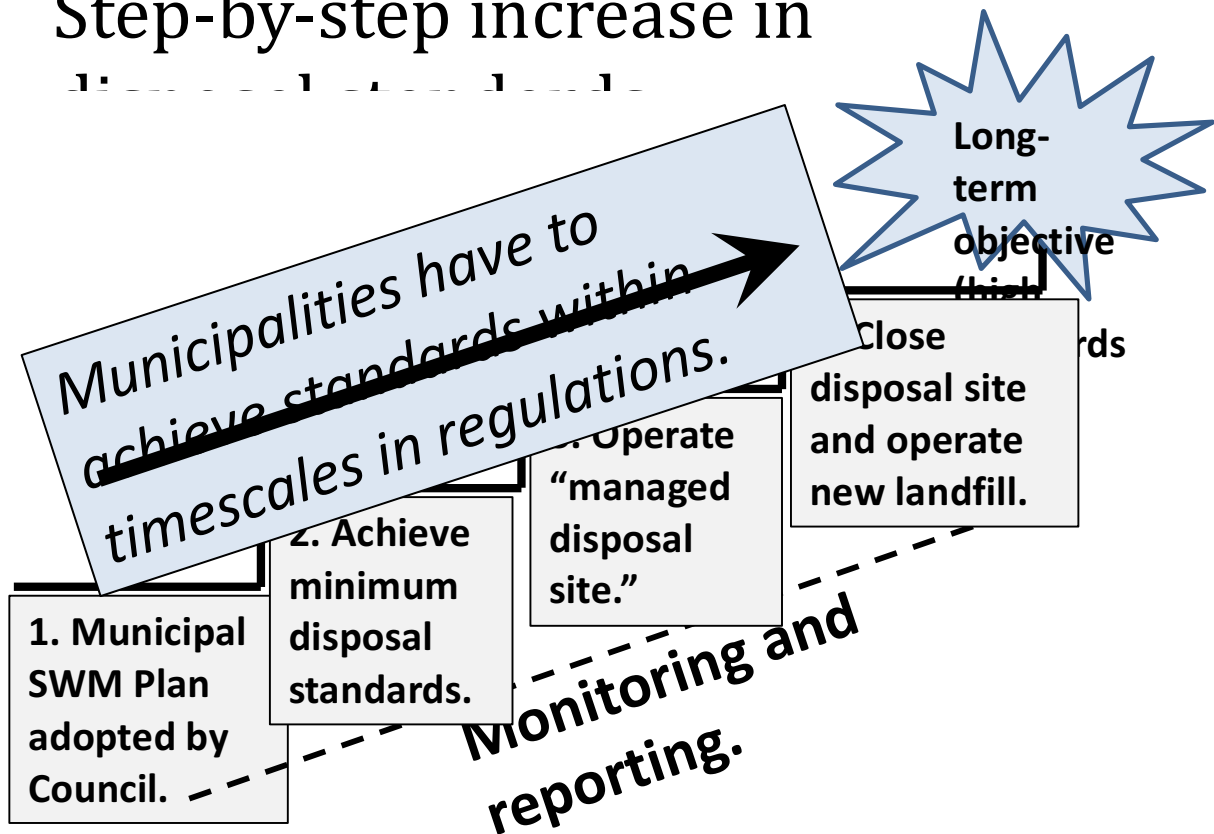
One of the key decisions during finalisation of the Strategy (and regulations) will be defining the detail of the requirements on waste disposal standards, and the timescales required for implementation. This section provides initial proposals on the standards, for discussion.

It has been widely agreed by all stakeholders consulted that standards need to be improved on a step-by-step basis. Requirements must be affordable and realistic if they are to be successfully implemented. Clear timescales for implementation need to be specified alongside the required standards in the regulations to enable municipalities to focus resources appropriately. Timescales might be varied for different types of municipalities, to reflect their size and capacity, and the urgency of the situation related to potential impacts of the existing disposal sites.

The regulations will be adopted in Phase 1 (e.g. late 2017) and the standards will be implemented in Phase 2.

The step-by-step approach to the increase in disposal standards is illustrated below, with each of the steps described in detail in the following tables, and more explanation then provided on Steps 2 and 3, and on the requirements related to protection of water resources. It is recognised that each municipality will be at a different stage in the implementation process; although many will be at the stage of working to implement Step 1 in 2017-2018.

Step-by-step increase in



Waste planning and waste disposal standards

Step 1 - SWM Plans have to be adopted by Municipal Councils and Regional Councils.	
<p>Example timescales:</p> <ul style="list-style-type: none"> Local authorities required to adopt SWM plans by December 2018 and include costs in next budget. 	<p>Notes:</p> <ul style="list-style-type: none"> Guidance on SWM Planning will be provided to local authorities. The SWM Plan covers all aspects of solid waste management, including collection, recycling, disposal, awareness, budgets and responsibilities for implementation. The tasks to develop the SWM Plan must include a qualitative desk-based screening assessment of potential impacts on surface water and groundwater resources from existing and planned waste disposal areas. Municipalities should send the plans to MET for comments, but MET does not need to approve the plan unless the municipality is applying for an extension to relax the deadline for implementation of standards. MET will continue to have a role of approval of the Environmental Management Plans of the disposal sites in relation to Environmental Clearance Certificates.
Step 2 - Achieve minimum disposal standards.	
<p>Example timescales:</p> <ul style="list-style-type: none"> All municipalities with population over 20,000 at previous census (2011) required to achieve minimum standards by April 2019. All other municipalities (i.e. less than 20,000 at 2011 census) required to achieve minimum standards by December 2019. All populated areas under Regional Councils (i.e. specify a population?) required to achieve minimum standards by December 2020. 	<p>Minimum standards:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Rehabilitation of large area of disposal site with cover material and bunds constructed (possible private company works contract). <input type="checkbox"/> Operator present at site during day to direct trucks to point of waste tipping. <input type="checkbox"/> One small working area of exposed waste at site. <input type="checkbox"/> Construction waste stored at separate area. <input type="checkbox"/> Garden waste stored at separate area. <input type="checkbox"/> Bulldozer then used at least once per month. <input type="checkbox"/> If unavoidable, controlled burning at pre-set times (also dependent on wind). <input type="checkbox"/> Implementation of specific actions identified by the desk-based assessment of potential impacts on water resources (in Step 1). <input type="checkbox"/> Consultation started (with records) with waste pickers. <input type="checkbox"/> Reporting on solid waste management by the municipality to MET.
Step 3 - Operate "managed disposal site"	
<p>Example timescales:</p> <ul style="list-style-type: none"> All municipalities with population over 20,000 at previous census (2011) required to achieve standards of "management disposal site" by April 2020. All other municipalities (i.e. less than 20,000 at 2011 census) required to achieve standards of "management disposal site" by December 2020. All populated areas under Regional Councils (i.e. specify a population?) required to achieve standards of "management disposal site" by December 2022. 	<p>Standards for "managed disposal site":</p> <ul style="list-style-type: none"> <input type="checkbox"/> No open burning of waste. <input type="checkbox"/> Cover material applied weekly (i.e. weekly use of bulldozer). <input type="checkbox"/> Operator present at site during day. <input type="checkbox"/> Site fenced. <input type="checkbox"/> Security at site at night. <input type="checkbox"/> Waste pickers organised (e.g. into groups with financial incentives). <input type="checkbox"/> Internal fenced area for trenching selected hazardous waste (if approved by MET). <input type="checkbox"/> Ongoing implementation of specific actions identified by the desk-based assessment of potential impacts on water resources (in Step 1). <input type="checkbox"/> Reporting on solid waste management by the municipality to MET.

Step 4 - Close disposal site and operate new landfill.	
<p>Example timescales:</p> <ul style="list-style-type: none"> • Timescales for Step 4 will depend on the size of local authority, location of existing disposal sites (and urgency of closure), available funding, etc. • It should be noted that the step up to operate sanitary landfills can only realistically be a long-term objective in most areas of Namibia. 	<p>Standards for selecting locations of new landfill sites:</p> <ul style="list-style-type: none"> <input type="checkbox"/> At least 500m from nearest potential sources of groundwater abstraction for drinking water (e.g. shallow aquifers). <input type="checkbox"/> At least 500m from surface water sources (e.g. rivers). <input type="checkbox"/> Away from any areas at risk of flooding. <input type="checkbox"/> At least 500m from existing or planned housing areas, schools, hospitals, etc. <input type="checkbox"/> At least 1km from national parks and other protected areas. <input type="checkbox"/> At least 3km from airports. <p>More detail on selection of sites for landfills will be included in the guidance materials on waste disposal, including stakeholder consultation during the selection process.</p>

Explanation of Minimum Disposal Standards (Step 2)

Minimum standards:	Explanation and further notes:
<input type="checkbox"/> Rehabilitation of large area of site with cover material and bunds constructed (possible private company works contract).	Working with a smaller exposed area of waste has many advantages in terms of reducing risks to people at the site, reducing wind-blown waste, reducing odours, etc. Bunds will also help reduce wind-blown waste and the bund material can later be used to cover the site at closure.
<input type="checkbox"/> Operator present at site during day to direct trucks to point of waste tipping.	This operational control will reduce the widespread problems at current sites with waste becoming spread out over a large area.
<input type="checkbox"/> One small working area of exposed waste at site.	Reduces environmental and health impacts as mentioned above.
<input type="checkbox"/> Construction waste stored at separate area.	Construction waste can be used later as cover material.
<input type="checkbox"/> Garden waste stored at separate area.	The garden waste will naturally decompose / become compost, which can be used to help rehabilitate some areas of the site.
<input type="checkbox"/> Bulldozer then used at least once per month.	Regular use of dozer to cover areas and maintain the small exposed operational part of site.
<input type="checkbox"/> Controlled burning at pre-set times (also dependent on wind).	It is preferable to have no burning because of impacts on air quality and human health, but at some sites this is likely to continue in order to reduce volumes. The burning should be phased out. If it is carried out, then it should be only at fixed times, and postponed when there are strong winds, which might lead to uncontrolled fires.
<input type="checkbox"/> Implementation of specific actions identified by the desk-based assessment of potential impacts on water resources (in Step 1).	Protection of water resources is critical and this is covered in more detail below.
<input type="checkbox"/> Consultation started (with records) with waste pickers.	It is useful to organise waste pickers into formal teams and provide some incentives. The Baseline Assessment identified cases where this has worked effectively, and the waste pickers also help with security at the site. However, such initiatives require much time and dialogue with the waste pickers to gain their cooperation and define appropriate incentives.
<input type="checkbox"/> Reporting on solid waste management by the municipality to MET.	This will be simple quarterly reporting and the report template will be provided by MET.

Explanation of Standards on "Managed Disposal Site" (Step 3)

Minimum standards:	Explanation and further notes:
<input type="checkbox"/> No open burning of waste.	Open burning can cause serious impacts on air quality and public health. The burning should be phased out, and no open burning carried out under the standards for a "managed disposal site".
<input type="checkbox"/> Cover material applied weekly (i.e. weekly use of bulldozer).	Application of cover material reduces environmental and health problems and nuisances (including odours, flies, etc).
<input type="checkbox"/> Operator present at site during day.	This will ensure a much better organised site operation, including reducing the problems with waste becoming spread out over a large area.
<input type="checkbox"/> Site fenced.	Fencing of sites is important to prevent access (e.g. by new waste pickers), and the associated risks to health.
<input type="checkbox"/> Security at site at night.	Fencing is only worthwhile if security is provided to stop the damage or theft of fences.
<input type="checkbox"/> Waste pickers organised (e.g. into groups with financial incentives).	It is useful to organise waste pickers into formal teams and provide some incentives, including provision of protective gloves, skips for waste sorting, etc. Waste pickers can also act as a method for security.
<input type="checkbox"/> Internal fenced area for trenching selected hazardous waste (if approved by MET).	A separate and secure area for specified types hazardous waste could be developed, if needed, to reduce risks of exposure to hazardous waste.
<input type="checkbox"/> Ongoing implementation of specific actions identified by the desk-based assessment of potential impacts on water resources (in Step 1).	Protection of water resources is critical and this is covered in more detail below.
<input type="checkbox"/> Reporting on solid waste management by the municipality to MET.	This will be simple quarterly reporting and the report template will be provided by MET.

Explanation of approach to protect water resources through the Waste Disposal Standards

Objective of the assessments

To identify and prioritise those disposal sites with the highest need for actions to protect water resources (e.g. closure of the sites and/or wells, and/or other actions to reduce the risks of impacts).

Background

Many disposal sites in Namibia have been operating for many years, and a large proportion did not have an Environmental Impact Assessment (EIA) carried out before they started operation. Even for those that might have had an EIA, the visits to disposal sites during the Baseline Assessment indicated that most sites do not appear to be properly implementing Environmental Management Plans. In addition, at many sites, there have been changes in the local setting, and therefore changes in the potential receptors that could be impacted, since the disposal site started operation (e.g. new housing constructed, and/or new groundwater boreholes installed).

The Baseline Assessment of solid waste management in Namibia identified the inadequate waste disposal practices as a major concern. This includes the potential for serious impacts on local groundwater and surface water resources, and therefore potential impact on public health through contamination of water that might be used for drinking, cooking or washing.

Although significant quantities of leachate are unlikely to be generated at most disposal sites in Namibia, particularly because of the low rainfall and dry nature of the wastes, there are still potential impacts on water resources near disposal sites (e.g. drinking water boreholes), and a precautionary approach is needed. In many cases, pollutants from the sites are unlikely to be passing into deep aquifers, but could be impacting shallow aquifers down-gradient of the disposal sites (in the direction of groundwater flow).

At nearly all sites there has been no environmental monitoring of the groundwater to assess levels of pollutants. However, it is appreciated that often this is impracticable due to the costs associated (monitoring and/or installing monitoring boreholes), and the difficulties in quick transfer of samples under cool conditions to an accredited laboratory (e.g. in Windhoek), especially from remote areas.

Given the likely high costs and practical difficulties with monitoring, the requirement within Step 1 is to adopt a precautionary screening approach and for local authorities to carry out a qualitative desk-based assessment of potential impacts on water resources. This will form part of the development of the SWM Plan, which will include specific actions to reduce the risks of impacts on water resources, current or future water users.

The assessment will be simple and based on existing information, with site visits as necessary. It will not include monitoring of pollutants in water resources at this step, unless there is considered to be an immediate and potentially significant health risk.

Outputs of the assessments

- Simple map showing locations of the disposal sites and key features (e.g. drinking water boreholes), and slope of the land (which would indicate the likely groundwater flow direction).
- Short descriptive assessment of the potential impacts (if any).
- Risk mitigation actions included in the SWM Plan, with timescales for their implementation.

Tasks to be undertaken for the water resources assessment

Task 1. Collection of relevant information

Collection of available existing data and information in relation to groundwater and surface water resources, for example:

- hydro-geological maps or other maps showing locations of aquifers;
- topographical maps (based on which assumptions can be made on the direction of groundwater flow);
- maps of the existing and planned housing areas;
- maps of the locations of groundwater (i.e. drinking water) boreholes and surface water resources;
- information on depths of aquifers and depths of boreholes;
- previous groundwater and surface water monitoring data (if any).

Also, identify available information on the types of waste that have been disposed at the sites (e.g. municipal waste, industrial waste, abattoir waste, etc).

Task 2. Preparation of maps to facilitate the assessment

- Prepare a simple map showing the locations of disposal sites, housing areas, aquifers, boreholes, surface water sources (e.g. rivers), other relevant sites (e.g. schools), and including topography.
- Include in the map any illegal dump sites that are greater than 20m diameter and have been present for more than one year, as well as the locations of the main disposal sites.

Task 3. Assessment of potential impacts

- Use the topographical maps and other hydro-geological information to make assumptions on the flow direction of groundwater from the disposal sites, and indicate the direction on the map(s).
- Identify any groundwater boreholes that are in use and are within 500m of the edge of the disposal site.
- Assess whether the boreholes within 500m are likely to be impacted by potential contamination of groundwater from the disposal site. For example, shallow boreholes downstream of the disposal site, and particularly those nearer the site, are likely to be impacted.
- Take into account factors in relation to the use of the boreholes (e.g. drinking water, other uses, number of households using the borehole, etc).
- Also take into account the types of waste that have been disposed at the site.
- In addition, assess the proximity of the disposal sites to surface water sources.

Task 4. Plan actions

During development of the SWM Plans, adopt a precautionary approach to management of potential impacts on groundwater. Ultimately, the closure of the disposal sites might be needed (and opening a new site in a new location away from water resources). Closing the disposal site will not have significant effect the potential impacts on groundwater from the waste that has already been disposed, but will stop cumulative effects from future disposal that would have been carried out at the site.

Unless there are significant reasons otherwise, disposal sites within 500m of major surface water resources (e.g. rivers) should be closed, and planned new sites must not be located within 500m of major surface water resources.

Drinking water boreholes within 500m downstream of disposal sites in terms of groundwater flow should be assessed for closure, and new boreholes drilled to provide safe drinking water, unless there is a strong rationale for ongoing use of the boreholes.

If the SWM Plan includes the planning of the location of a new disposal site, then monitoring of drinking water quality from boreholes within 500m of the proposed site should be carried out as part of the EIA. This baseline monitoring should include boreholes upstream and downstream of the site. The monitoring should include:

- pH;
- Electrical conductivity (indicates the presence of salts);
- Major ions (i.e. cations and anions such as sodium, calcium, chlorides, sulphates, etc.);
- Heavy metals.

Why do we not require compulsory monitoring?

Monitoring of pollutants in water resources is important to protect public health. In some cases, the results of monitoring can indicate the likely sources of contamination so that actions can be taken.

However, monitoring is expensive:

- For example, drilling of a set of monitoring boreholes costs several thousand USD, and heavy equipment needs to be transported. Monitoring of samples from existing drinking water boreholes is more cost-effective.
- Analysis of a set samples costs a few hundred USD each time, and monitoring might be needed every 3 to 6 months.

In addition, on a practical basis, samples need to be transported long distances in Namibia to accredited laboratories in cool boxes at a set temperature otherwise the sample degrades, and there is a significant risk that analytical results might then not be credible or repeatable. These are not insurmountable constraints, but need careful planning.

Also, any monitoring would need to consider the background natural levels of minerals in groundwater. Given the complex geology in Namibia, there is the potential that drinking water is already impacted by elevated levels of some contaminants, and without good background baseline data this can complicate the assessment of the results. If the results do indicate that the disposal site is a cause of pollution of water resources, then those drinking water boreholes would need to be closed, and new boreholes opened in a different area where there are fewer risks of contamination. Using the desk based screening approach, it is likely that such actions would be taken anyway under the precautionary approach, even without monitoring.

The sampling of surface water can be problematic, particularly as rivers have strong season flows and many are ephemeral, and therefore the concentrations of chemicals tend to vary greatly depending on the time of year. To appreciate the seasonal variations in pollutant levels there would need to be a significant sampling effort, and therefore it is more sensible to take a precautionary approach and include within the standard the requirement that disposal sites should be greater than 500m from surface water resources. This distance can be increased if the water body is considered particularly sensitive.

In summary, while monitoring is recommended if feasible in terms of funding and practicalities, it is not required on a compulsory basis.

Reference documents

WHO (2011). Guidelines for Drinking Water Quality (fourth edition).
http://www.who.int/water_sanitation_health/publications/2011/dwq_guidelines/en/

Appendix 2 - Implementation Plan for MET (Year 1)

	Action	Description	Responsibility for completion of action.	Time of start of action.	Time of completion of action.	Indicator of task completion.	Other notes
1	Waste disposal standards.	Internal MET discussion on waste disposal standards for municipal waste.	MET	June 2017.	August 2017.	Standards agreed within MET for draft regulations.	
2	Develop draft SWM regulations.	Develop draft SWM regulations.	MET	June 2017.	August 2017.	Draft regulations circulated for consultation.	Regulations to include municipal waste disposal and hazardous waste management.
3	Consult on draft SWM regulations.	Consult with ministries, local authorities, private companies that generate waste, etc.	MET	August 2017.	September 2017.	Consultation completed.	Consultation through circulation of draft regulations electronically; and some consultation meetings.
4	Adoption of Strategy.	Organise final approvals and formal adoption of the Strategy.	Environmental Commissioner.	August 2017.	September 2017.	Approval of the Strategy by the Minister.	Strategy can be legally adopted through the regulations.
5	Agreement to set up SWM Unit in MET.	Agree scope, roles, etc.	Environmental Commissioner.	August 2017.	December 2017.	Approval of the SWM Unit by the Minister.	
6	Agreement to set up SWM advisory panel .	Agree scope, organisations represented as members, mode of working.	Environmental Commissioner.	August 2017.	December 2017.	MoU signed by the key ministries on the advisory panel .	First meeting by December 2017.
7	Set up database on SWM at local authorities.	Set up database of information, in particular inventory of waste disposal sites.	MET	September 2017.	January 2018.	Database designed and use started.	
8	Plan SWM systems in Regional Councils.	Review of existing systems, best practices, and detailed planning.	MET.	September 2017.	January 2018.	Best practices identified, strategy for regional councils agreed.	
9	Develop inventory of SWM organisations.	Develop inventory of organisations that treat / dispose different types of waste.	SWM Unit	September 2017.	June 2018	First inventory distributed to waste generators / local authorities.	Inventory regularly updated and re-distributed.
10	Adopt regulations.		Minister for Environment and Tourism.	October 2017.	March 2018.	Regulations formally adopted into law.	
11	Consultation on plastic bag charge.	Consult with retailers, suppliers, and plastic packaging sector.	Environmental Commissioner.	November 2017.	March 2018.	Consultation completed and policy agreed.	
12	Notify local authorities of waste disposal standards.	All local authorities formally notified of required waste disposal standards.	Environmental Commissioner.	December 2017.	January 2018.	Formal correspondence completed.	Aim is to ensure local authorities will include expenditure on solid waste disposal in budgets for 2018-2019.

Appendix 2 - Implementation Plan (Year 1)

13	Notify local authorities of reporting requirements.	All local authorities formally notified of required reporting and report template.	Environmental Commissioner.	December 2017.	January 2018.	Formal correspondence completed.	Reporting would start from April 2018.
14	Training programme.	Training in SWM planning to local authorities.	MET	January 2018.	March 2018	Training programme completed.	
15	Appoint staff to SWM Unit.	Initial number of staff at start-up to be appointed.	Environmental Commissioner.	January 2018.	April 2018.		Size of Unit likely to grow in Year 2.
16	Plan two pilot projects for regional councils.	Plan two pilot projects at regional councils to test simple SWM systems.	MET.	January 2018.	April 2018.	Two pilot projects started.	
17	Plan two pilot projects on recycling.	Engage with private sector and Namibia Recycling Forum on two recycling pilot projects.	MET.	January 2018.	April 2018.	Two pilot projects started.	
18	Guidance on SWM planning.	Guidance materials on SWM planning for local authorities.	SWM Unit	January 2018.	June 2018.	Guidance materials completed and distributed.	
19	Guidance on SWM collection.	Guidance materials on SWM collection for local authorities.	SWM Unit	January 2018.	June 2018.	Guidance materials completed and distributed.	
20	Guidance on SWM disposal.	Guidance materials on SWM disposal for local authorities.	SWM Unit	January 2018.	June 2018.	Guidance materials completed and distributed.	
21	Guidance on hazardous waste management.	Guidance materials on hazardous waste management.	SWM Unit	June 2018.	December 2018.	Guidance materials completed and distributed.	

Appendix 3 - Monitoring and reporting system for solid waste management

Introduction to the monitoring and report system

A robust monitoring and reporting system is needed to track implementation of the National Solid Waste Management Strategy and the SWM Plans at municipalities. The benefits of such a monitoring system include:

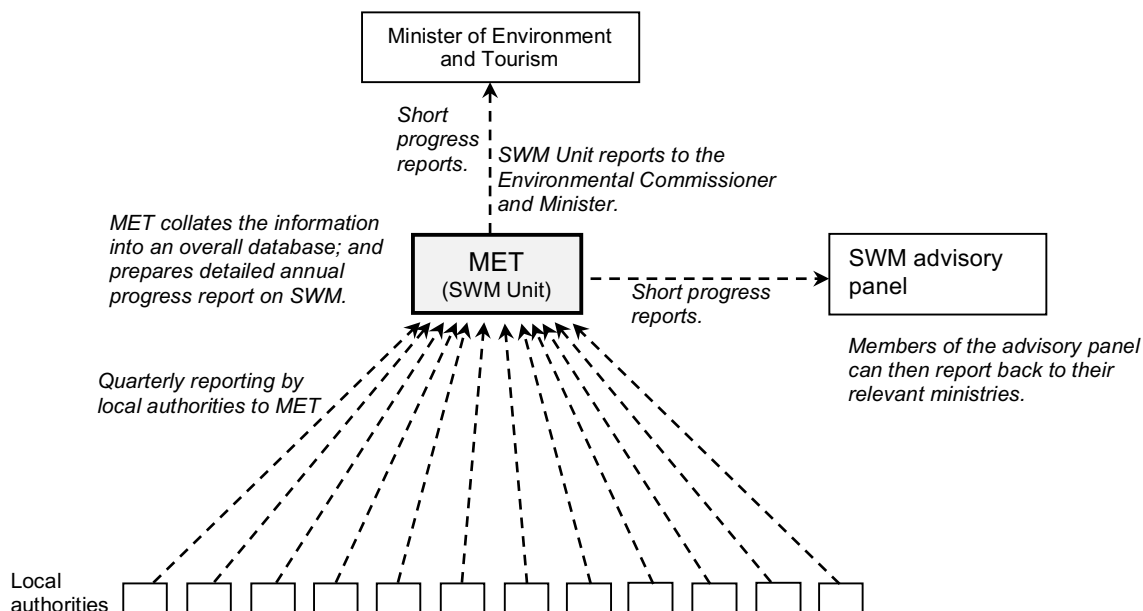
- Progress will be tracked in implementation at all levels, meaning that plans can quickly be adjusted and resources re-assigned if progress is not on track.
- Data from reporting by local authorities can be collated into overall reporting of progress at national level. This will help raise senior commitment to improvement and overall awareness on solid waste management.
- The reporting at local level will also be made to municipal and regional councils, and this will be useful so that they can track progress in implementation of the relevant SWM plans.
- The data will help MET to prioritise its monitoring and enforcement activities and make efficient use of resources (i.e. carrying out monitoring visits only to the priority local authorities that have not reported or that need support because their standards are weaker).

Local authorities (including regional councils) will be required by regulations to develop solid waste management (SWM) plans (for which guidance on planning will be provided by MET). Much of the reporting by local authorities therefore can be on progress on implementation of the plans. In addition, they will be required to report on several key performance indicators (KPIs) that relate to the waste disposal standards in the regulations. The guidance on SWM planning, provided by MET, will propose KPIs so that local authorities are measuring and reporting KPIs in a consistent manner, and tracking them within the implementation of their SWM plans.

Reporting can be a time-consuming process, and it is important to keep reporting and data management systems as simple as possible.

This document provides an overview of the reporting process, the structure of the database and inventories of information at MET, and the draft formats of reports.

Figure A3.1 - The reporting process



Inventory on solid waste management at local authorities

The SWM Unit at MET will manage the reporting process, including chasing late reports from local authorities, supporting and explaining reporting requirements, checking reports and following-up on any gaps or inconsistencies with local authorities, etc. MET will also collate the data and manage a central inventory of information, with a particular focus on waste disposal. This database will be designed to be simple and in Excel software. The database will have two main sections:

- Background information on local authorities and reports received - this will be the basic information, such as contact details, plus tracking whether reports are submitted.
- Inventory of waste disposal sites - this will enable monitoring of whether the required waste disposal standards are being achieved.

The inventory will be designed to facilitate efficient collation of data by MET for overall reporting. The main structure of the database of collated information on waste disposal is provided in the table below. Feeding into this summary table of the inventory will be information received from local authorities in quarterly reports.

Table A3.1 provides structure of the summary part of the inventory, and Table A3.2 provides the main part of the format for the quarterly report from local authorities to MET. Note that there will be a second page to the quarterly report that will allow for a description of progress in implementation of the SWM plans and for other comments.

Table A3.1 - Structure of collated summary table in the inventory

Background information	2018 Q2	2018 Q3	2018 Q4	2019 Q1	2019 Q2	2019 Q3	2019 Q4	2020 Q1	2020 Q2	2020 Q3	2020 Q4
Total No. of municipalities.											
Total No. of municipalities (population* >20,000).											
Total No. of regional councils											
SWM Plans	2018 Q2	2018 Q3	2018 Q4	2019 Q1	2019 Q2	2019 Q3	2019 Q4	2020 Q1	2020 Q2	2020 Q3	2020 Q4
No. of municipalities (total) with adopted SWM plans.											
No. of municipalities (population* >20,000) with adopted SWM plans.											
No. of regional councils with adopted SWM plans.											
Quarterly reporting	2018 Q2	2018 Q3	2018 Q4	2019 Q1	2019 Q2	2019 Q3	2019 Q4	2020 Q1	2020 Q2	2020 Q3	2020 Q4
No. of municipalities (total) that submitted quarterly report.											
No. of municipalities (population* >20,000) that submitted quarterly report.											
No. of regional councils that submitted quarterly report.											
Waste disposal - minimum standards	2018 Q2	2018 Q3	2018 Q4	2019 Q1	2019 Q2	2019 Q3	2019 Q4	2020 Q1	2020 Q2	2020 Q3	2020 Q4
No. of municipalities (total) achieving minimum standards (or better) for waste disposal.											
No. of municipalities (population* >20,000) achieving minimum standards (or better) for waste disposal.											
No. of regional councils achieving minimum standards (or better) for waste disposal.											
Waste disposal - "managed disposal site" standards	2018 Q2	2018 Q3	2018 Q4	2019 Q1	2019 Q2	2019 Q3	2019 Q4	2020 Q1	2020 Q2	2020 Q3	2020 Q4
No. of municipalities (total) achieving "managed disposal site" standards (or better) for waste disposal.											
No. of municipalities (population* >20,000) achieving "managed disposal site" standards (or better) for waste disposal.											
No. of regional councils achieving "managed disposal site" standards (or better) for waste disposal.											

* population as of 2011 census.

Table A3.2 - Format of quarterly report from local authorities

Background				
Quarter covered by report: (e.g. Q2 2018)	Quarter:		Year:	
Name of local authority:				
Main contact related to SWM:				
Phone number of main contact:	Phone No.:	Email:		
Date report submitted:				
SWM Plan				
SWM Plan adopted by Council?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Date adopted:	
SWM Plan includes capital and operating costs?	<input type="checkbox"/> Yes	<input type="checkbox"/> No		
Responsibility assigned for implementation of SWM Plan?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Number of people in SWM team:	
Separate budget line on SWM included in accounts?	<input type="checkbox"/> Yes	<input type="checkbox"/> No		
Monitoring and estimation carried out of quantity of waste disposed?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Method of monitoring /estimation:	
Estimated quantity of waste disposed (tonnes/month).	Month 1:	Month 2:	Month 3:	
Waste disposal				
Number of disposal sites used by local authority:			Additional information:	
Operator of disposal site(s):	<input type="checkbox"/> Local authority.	<input type="checkbox"/> Private company.	<input type="checkbox"/> No operator.	
Rehabilitated large area of site with cover material?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Additional information / date of works:	
Operator present at site during day to direct trucks to point of waste tipping?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Additional information:	
Disposal operation involves use of one small working area of exposed waste at site?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Additional information:	
Cover material applied (use of bulldozer)?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Frequency:	
Construction waste stored at separate area?	<input type="checkbox"/> Yes	<input type="checkbox"/> No		
Garden waste stored at separate area?	<input type="checkbox"/> Yes	<input type="checkbox"/> No		
Open burning of waste carried out?	<input type="checkbox"/> No burning carried out.	<input type="checkbox"/> Controlled burning only carried out at pre-set times.	<input type="checkbox"/> Burning continues uncontrolled.	Additional information/ date of last burning:
Site fenced?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Additional information:	
Security at site at night?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Additional information:	
Typical number of waste pickers at site per day?			Additional information:	
Consultation started with waste pickers?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Additional information:	
Waste pickers organised (e.g. into groups with financial incentives)?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Additional information:	
Internal fenced area for trenching selected hazardous waste (if approved by MET)?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	Additional information:	

Other KPIs at local authorities

Most of the information and KPIs listed above, for collation by MET at national level, relate to waste disposal. In the guidance on SWM planning, other KPIs will be suggested that will be useful for local authorities to monitor and track their performance, but they will not be required to report these to MET. These other KPIs include:

- Quantity of waste collected.
- Quantity of waste disposed.
- Quantity of waste recycled.
- Total number of households that exist in the local authority.
- Number of households receiving a waste collection service.
- Number of households paying waste management fees.
- Total number of commercial enterprises that exist in the local authority.
- Number of commercial enterprises receiving a waste collection service.
- Number of commercial enterprises paying waste management fees.
- Costs of waste management services.

Annual report by MET

MET will develop short progress reports for each advisory panel meeting, for example summarising results of pilot projects so that potential wider roll out of similar initiatives can be discussed. In addition, MET will develop a more detailed report on an annual basis. This will provide detail on progress in implementation of the Solid Waste Management Strategy, and include collated KPIs from the reports from local authorities.

Format of inventory of organisations

MET will develop an inventory of waste management companies and facilities. This will be useful for waste generators (local authorities and private companies) as it will give them details of organisations that can manage different types of waste. For example, it will provide information on names, addresses and contact details on companies that have licences to manage hazardous waste types, household recyclable materials, scrap tyres, electronic waste, etc; as well as a list of healthcare waste incinerators. The inventory will be regularly updated and published. It will not include information on fees for treatment and disposal of the wastes at the facilities, because such information might be commercially sensitive and prices regularly change. The information in the inventory will include:

- Name of organisation.
- Address.
- Name of main contact.
- Contact details.
- Locations of facilities.
- Types of facilities.
- Types of waste treated.

Appendix 4 - Example pilot projects

Pilot project:	Back-hauling systems to transport recyclable materials from towns to Windhoek.
Rationale:	There are many supply vehicles returning empty to Windhoek, and they could be used to transport clean recyclable materials. There have been positive indications from the Namibia Recycling Forum that some companies would participate.
Main tasks:	<ul style="list-style-type: none"> • Planning meetings with Namibia Recycling Forum. • Identify suppliers and transport companies. • Consult with suppliers, transport companies, municipalities, etc. • Identify potential town for pilot project. • Identify investment needs. • Identify recycling company in Windhoek and potential for investment by that company. • Develop and agree plan, including responsibilities.
Investment:	<ul style="list-style-type: none"> • Main capital investment would be containers for separation of recyclable materials in the selected town(s). • Potential operating cost would be contribution to fuel costs of transport company. • Another operating cost will be the salary of a co-ordinator, which would initially be needed.
Responsibilities:	<ul style="list-style-type: none"> • Municipality - organisation of the separation of clean recyclable materials into containers at agreed places (e.g. central business areas); and clean-up of litter from around these areas. • Transport company - transport of recyclable materials to Windhoek. • MET - co-ordination and monitoring role. • Namibia Recycling Forum - planning role. • Recycling company in Windhoek - potential investment in containers.
Timescales:	Start planning by January 2018 latest. Set up pilot project and start operation by April 2018.
Key points:	This is an organisational / logistical pilot project with low costs except much time will be needed for co-ordination and monitoring.

Pilot project:	Participation of tourists in recycling.
Rationale:	Many tourists are concerned about the impacts of waste in remote areas. Many self-drive tourists and probably many tour group companies would be willing to bring recyclable materials back to drop off areas in the main towns.
Main tasks:	<ul style="list-style-type: none"> • Planning meetings with Namibia Recycling Forum and tourist sector. • Set up drop-off areas in main towns for tourists to drop-off recyclable materials. • Develop clear A4 maps of locations of drop-off areas. • Provision of clear bags and the maps to tourists by car rental companies and guesthouses. • Organise for a selected recycling company to collect the recyclable materials from the drop-off areas. • Make sure that the relevant municipalities keep the drop-off areas tidy and clean-up litter.
Investment:	<ul style="list-style-type: none"> • Containers for drop-off areas. • Plastic bags. • Awareness materials. • Another operating cost might be the salary of a co-ordinator, which would initially be needed.
Responsibilities:	<ul style="list-style-type: none"> • MET - co-ordination and monitoring role. • Municipality (e.g. Swakopmund, Windhoek) - agreement on locations of drop-off areas and clean-up of litter from around these areas. • Recycling company - potential investment in containers. • Tourist sector - planning role. • Namibia Recycling Forum - planning role. • Car rental companies, guesthouses - handing out bags and maps to tourists. • Tourist group companies - use of bags.
Timescales:	Start planning by January 2018 latest. Set up pilot project and start operation by April 2018.
Key points:	This is an organisational / logistical pilot project with low costs except much time will be needed for co-ordination and monitoring.