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DRAFT ENVIRONMENTAL MANAGEMENT PLAN

Karibib Designated Disposal Site



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DRAFT ENVIRONMENTAL MANAGEMENT PLAN: KARIBIB DESIGNATED DISPOSAL SITE

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1. BRIEF INTRODUCTION

1.1. Karibib

Karibib is a town in the Erongo Region of western Namibia. It is situated, halfway between Windhoek and Swakopmund on the B2 Main Road, See **Figure 1** below for the locality map of Karibib. Karibib is the district capital of the Karibib Constituency, which includes the urban area of Usakos and surrounding private commercial farms. The town comprises of some 9,800 hectares of land and is governed by the Karibib Town Council while the surrounding rural areas (farm land) are governed by the Erongo Region Council.

The discovery of gold, marble and granite in the vicinity of Karibib has contributed positively to the local economic development of the town. The Navachab Gold Mine owned by QKR Namibia is located 10 km from Karibib and is the major employer in the town. Pressure on the town is caused by the increasing town population, the economic activities of the people and their social interactions. The town has a relatively small economic base which is very much reliant on the gold mine and the farming activities.



Figure 1: Location of Karibib

1.2. The Draft EMP Rationale

Public Notices were published early in February 2013 by the Department of Environmental Affairs within the Ministry of Environment, Forestry and Tourism Environmental (MEFT), and through the Office of the Environmental Commissioner requesting members public institutions who are operating waste disposal sites to comply with the Environmental Management Act (EMA) No.7 of 2007 by getting their respective waste disposal sites approved. Further correspondences between the permanent secretaries of MEFT and Ministry of Urban and Rural Development (MURD), during February – April 2015, encouraged all local authorities to embark upon improved waste management practices. Note **Appendix 1**. Equally, note to be taken of the development of the National Solid Waste Management Strategy that aims at enforcing improvements in municipal waste disposal standards.

The EMA empowers the MEFT Minister to declare a site to be a waste disposal site by notice in the *Gazette* or by *Regulation* where a waste disposal site already exists in terms of previous or existing laws. In terms of *Regulation*, a Draft Environmental Management Plan (Draft EMP) needs to be submitted to the Environmental Commissioner for existing waste disposal sites, whereas an Environmental Impact Assessment (EIA) is required for new waste disposal sites.

Furthermore legislation makes provision that any person who discard or cause to be discarded waste or dispose of it in any other manner except at a disposal site declared or approved by the Minister, or in a manner or by means of a facility or method and subject to such conditions as the Minister may prescribe commits an offence and is on conviction liable to a fine not exceeding N\$500 000 or to imprisonment for a period not exceeding 25 years or to both such fine and such imprisonment.

The Karibib Town Council operates an existing disposal site and has to comply to the EMA by obtaining an Environmental Clearance Certificate (ECC) and approval or declaration of its existing waste disposal site, hence this Draft EMP. The Karibib Town Council is in the process of identifying a new landfill site, which will be formalised

through an Environmental Impact Assessment and subsequent construction. The existing site will then be closed. It is Council's intention to finalise the processes culminating into the new landfill site during the period of validity of the ECC that is applied for.

1.3. Legal Requirements

The table below lists some of the main environmental and developmental legislations, policies, plans, programmes and clauses that are relevant to the operation of a waste disposal site.

Table 1: Policies, plans, programmes and legal framework relevant to the municipal waste dumpsite.

LEGISLATION/POLICY	APPLICABLE CLAUSE	COMMENTS
The Constitution of the Republic of Namibia	Article 91 calls for all to actively promote and maintain environmental welfare of all Namibians by promoting sustainable development.	The waste disposal site should not pose a threat to the natural and human environment.
Vision 2030	Promotes environmental sustainability as one of the principles that underpin the national development agenda.	The waste disposal site should contribute to Namibia's development plans of industrialization and social welfare by the responsible utilisation and disposal of waste.
Environmental Management Act (EMA) No. 7 (Act 7 of 2007)	Section 5 of the EMA Draft empowers the MEFT Minister to declare a site to be a waste disposal site.	The waste disposal site should be approved and declared by notice in the <i>Gazette</i> or by regulation as a waste disposal site.
Environmental Impact Assessment (EIA) Regulations	Provide guidelines for the EIA/Draft EMP process of listed activities that cannot be carried out without an ECC.	An approved Draft EMP should be implemented and progress reported on during the operation of waste disposal site as a listed activity.
Water Act 54 (Act 54 of 1956)	Controls the prevention of surface and groundwater pollution.	The adherence to the Draft EMP operational & maintenance recommendations will minimize the pollution risk of underground as well as surface water.
The Atmospheric Pollution Prevention Ordinance of 1976	This Ordinance generally provides for pollution prevention of the atmosphere.	The covering and burning of waste should be regulated to minimize air pollution.

LEGISLATION/POLICY	APPLICABLE CLAUSE	COMMENTS
Hazardous Substance Ordinance (No.14 of 1974)	Addresses the manufacture, sale, use, disposal, dumping, import and export of hazardous substances, and is administered by the Minister of Health and Social Services.	The disposal of hazardous waste at this waste disposal site should be conducted such as not to negatively impact on the health and safety of all stakeholders.
The Public Health Act 36 (Act 36 of 1919) and subsequent amendments	Prohibits the generation of a nuisance i.e. noise, fumes and odours.	The waste disposal site should operate during the day. The covering and burning of waste should be regulated to minimize odours, fumes and noise.
The Labour Act of 1992	Promotes the health and safety of employees.	The waste disposal site users' health and safety should be minimized through the provision of personal protective equipment (PPE) and erection of appropriate signboards.
National Solid Waste Management Strategy	Objective 4 of Phase 2 requires the proper management of municipal waste disposal.	Task 2.4.1 addresses the implementation of waste disposal standards at local authorities.
The Karibib Urban Structure Plan	"Our mission is to deliver high quality equitable, effective and efficient basic services to the residents of our town through sustainable socio-economic development"	One of the strategic priorities of the Council is to maintain, improve and develop public facilities and infrastructure.
IMAGINE KARIBIB 2030 Long Term Strategic Vision and Strategic Plan for 2020 - 2025	Strategic Initiative 5: Promote Public Health and Environmental Management Create awareness on Public and Environmental Health, while maintaining overall cleanliness of the town.	A properly designated and managed disposal facility will contribute immensely to public and environmental health of Karibib and its residents.

NOTE APPENDIX 1: THE MINISTERIAL CORRESPONDENCE CONCERNING WASTE MANAGEMENT IN LOCAL AUTHORITY.

1.4. The Draft EMP Objective

This Draft EMP describes the processes that the Karibib Town Council and associates are recommended to follow in order to maximise compliance and minimise harm and threat to human health and the environment as a result of the present waste disposal site operations. This plan will also help the Karibib Town Council to map out progress toward achieving the recommended objective through continual and incremental improvements as illustrated below (See **Figure 2** below).

The overall primary objective of this Draft EMP is to legalize the operations on the existing dumping site and to upgrade it from a “Designated Dump Site” to a “Temporary Designated Disposal Site”. The Karibib Town Council has already initiated plans to identify a new disposal site, and to have this operationalized in the next three years. This will lead to the eventual closure of the existing site.

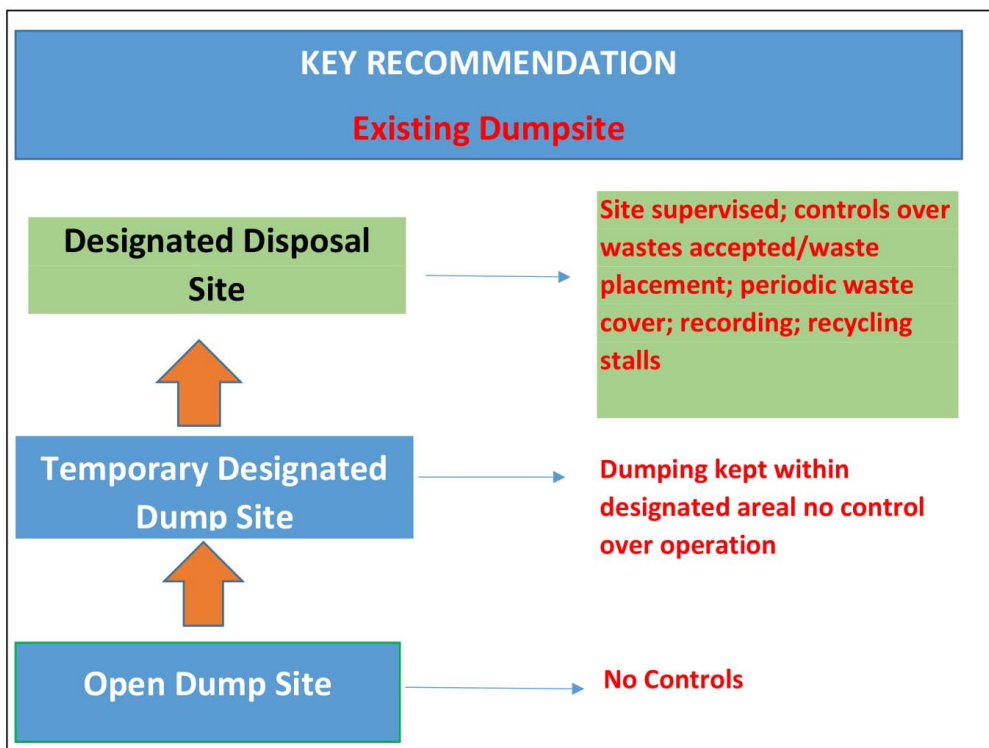


Figure 2: Waste disposal site improvement stages; adapted from (Nalao, 2020)

The Karibib Town Council can achieve this objective and minimize significant adverse activities that have the potential to impact negatively on the environment and public health. The Karibib Town Council will also be able to meet the requirements of relevant

national and local sustainable development plans, programs and policies by implementing the detailed operational and management guidelines as outlined and recommended in this Draft EMP.

2. THE KARIBIB MUNICIPAL DUMPSITE

2.1. General Background

The present municipal dump site in Karibib, measuring around 8 hectares in size, is owned and operated by the Karibib Town Council for the past approximately 25 years. The site is located in the north-eastern part of Karibib about 2.5km east of the town's Central Business District (CBD) on the following coordinates Lat: -21.924665°; Lon: 15.874560°. The site sits on what is planned as Usab Extension 3 (See **Figure 3** below).

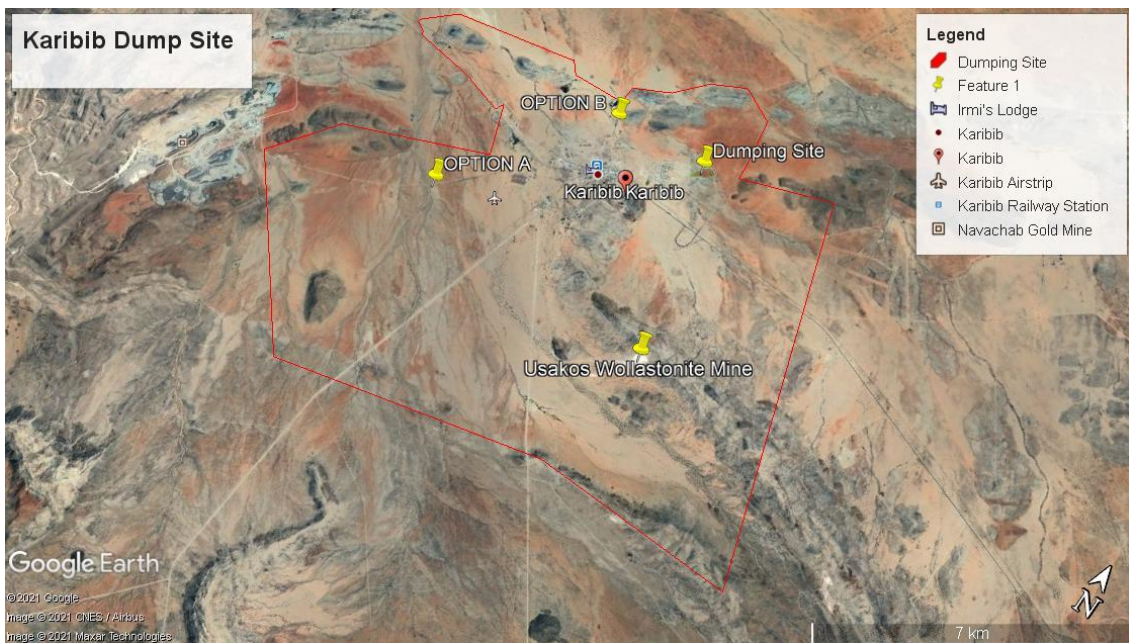


Figure 3: Location of the Karibib Municipal dumpsite (Google, 2021)

The municipal dumpsite, which accommodates all types of solid waste generated within the town of Karibib, was seemingly chosen on the then strategic distance from formal built-up residential areas and the CBD rather than on environmental, hydrological or related public health considerations as there is no background assessment information available on the establishment of the site. Illegal dumping is a challenge both in the residential areas as well as around the vicinity of the dumping site. Generally, residents start dumping along the path purposefully created to enter the dumping site. Kids and adults engage in scavenging and collection of recyclables, which is sold to a private

collector from Usakos area. However, there exist no official relationship between Council and recyclers.



Figure 4: Status Quo at the Karibib Dumpsite

From investigations the site was never fenced off. Access control is non-existent as scavengers scour the dumpsite for collection of discarded foodstuffs, materials for personal use and valuables such as recyclables and reusable items. Management and operations are minimal at this existing dumpsite as operating practices do not include coordinated waste placement or compaction or the application of daily cover, but is exposed to daily ad-hoc off loading, daily open illegal burning and exposure to disease vectors and safety risk conditions.

The Karibib Town Council waste disposal site is thus considered a designated **dumping site** rather than a designated **disposal site**, hence the objective of “*moving from a dump site to a temporary disposal site*” while identifying a new more suitable site. It is however worthwhile to mention the attempts that are made by the Karibib Town Council in

regulating and controlling the accumulation of indiscriminate disposal of waste into heaps as well as promoting recycling activities at this dumpsite, which activities can be improved upon.

2.2. The Receiving Environment

Climate: The town of Karibib is situated in a semi-desert climate, with low rainfall, high evaporation and high day time temperatures. Evaporation rates are between 2,330 and 2,440mm per year, with frost being extremely rare in this area. Karibib has very hot summers and milder winters. The average annual temperature for Karibib is more than 22.3°C, with an average maximum temperature of between 34 and 36°C, and an average winter month minimum of between 25°C and 28°C (SPC, 2016). Wind in Karibib dominantly blows from the EW with an average wind speed of about 8km/h.

Physical geography: Like most part of the country, Karibib and the Erongo Region area have no surface water and rely on underground water. The town of Karibib, and a large part of the Erongo Region, falls within the Erongo water basin. The Erongo basin has two important water catchment areas, that is the Omaruru catchment and the Swakop catchment area into which the three major rivers drain. These are the Omaruru, the Khan and the Swakop Rivers, they are major ephemeral rivers that only flow in high rainy seasons for a short duration. Karibib town falls within the Swakop catchment area (SPC, 2016).

The town of Karibib is located in an area which has a moderate productive aquifer. Water is supplied to Karibib by NamWater. Water is sourced from the Swakoppoort Dam and channeled with a pipeline to the water treatment plant at Karibib. The Swakoppoort Dam, situated approximately 50km west of Okahandja, has a capacity of 63.489Mm³ and has a surface area of 7.80km² when it is full. The Karibib water treatment plant has a capacity of 216m³/ h and was constructed in 1989. Accessibility to water for households for cooking and drinking in the Karibib Constituency is lower than the regional average, with 89% of the households having access to safe water compared to the 96.3% of regional households (SPC, 2016)..

Plant and animals: Karibib lies within the Tree-and-shrub Savanna Biome, the largest biome in Namibia characterised by large, open expanses of grasslands dotted with Acacia trees. It is specifically in the Acacia Tree-and-shrub Savanna sub-biome. The vegetation structure in the sub-biome consists of ‘large, open expanses of grasslands dotted with Acacia trees. The trees are tallest in areas of deeper sands in the east, with plant growth becoming progressively shrubby further west where the soils are shallower and the landscape is more hilly and rocky.

The vegetation structure of the area is sparse shrubland that stretches from the south-east to the north-west of Namibia (Mendelsohn, et al, 2002). The vegetation in the proposed development area consists mainly of Acacia species and grasslands. **Table 2** below delineate the animal species diversity of the Karibib area.

Table 2: Species diversity (Mendelsohn et al., 2003)

Fauna	No. of Species (Country Total)	No. of Species (Karibib Area)	Remarks
Bird	658	171-200	The diversity of habitats is important to bird diversity.
Frog	50	8-11	The diversity of frogs follows patterns of rainfall.
Mammal	217	61-75	
Reptile	258	71-80	Namibia has one of the richest lizard faunas in Africa
Scorpion	56	18-21	

2.3. Public Health, Safety and Nuisance

As per the description of the current operations of the dumpsite in Section 2.1 above, the key environmental and public health impacts emanating from the dumpsite are summarised below:

- **Public health and safety threats**

Current operations at the site can seriously affect the health of those residing at properties close to the site as well as people operating at the site such as personnel, recyclers and scavengers. There is currently no access control at the site and this implies that anyone can access the site. This can be dangerous as even children with no parental guidance were observed at the site and can be injured by sharp objects such as broken bottles and uncontrolled vehicular traffic. The health of recyclers and scavengers on the site are also at risk as they are able to collect and consume food products that could be trapped within general household wastes. The site can also lead to an outbreak of diseases as the current conditions on the site are conducive to the breeding of vectors such as rodents.

- **Air pollution**

Currently waste at the site is burned indiscriminately and illegally by community members, scavengers as well as Council personnel. This smoke affects the air quality and well-being of nearby residents, site users and recyclers as well as scavengers. Numerous complaints continue to be received from residents in the surrounding areas. Organic waste usually produces bad rotting smells because waste is not systematically buried and covered.

- **Visual impacts**

The current operations at the dumpsite affect the aesthetic value of the surrounding area. This is mainly due to the unorganised manner in which the waste is dumped at the site. Another issue that is negatively contributing to the aesthetic value of the surrounding is the non-existence of the fence around the site resulting in waste such as papers and plastics being blown into the surrounding environment.

- **Pollution of underground water resources**

The dumpsite has a significant potential of polluting underground water resources in the same catchment area and downstream. The surface run-off water from the landfill site and its drainage path may pollute the area and this may pose significant risks and should be investigated further. Installation of monitoring borehole is therefore recommended.

- **Socio-economic impacts**

It is a common trend nowadays to promote economic activities at a disposal site. Such activities include the recycling of waste and creation of employment opportunities (e.g. security, caretakers, recyclers etc.) as a result. Currently there are informal small scale recycling activities taking place on site and thus not maximising the full potential economic benefits of recycling as detailed under Section 3.2.5 of the Draft EMP. In addition, formalised and controlled recycling at the site will ensure that the recyclers are not subjected to conditions that threaten their health and safety. The Karibib Town Council can also generate income from the site (e.g. establishment of waste disposal tariffs for businesses) which can help to sustain the Municipality's operational and maintenance measures.

3. RECOMMENDED MANAGEMENT ACTIONS

3.1. Disposal Site Infrastructure Layout Plan

The site infrastructure layout plan below is recommended in order to meet the Karibib Town Council's organizational effectiveness namely *suitability* of the layout to the current situation; *acceptability* of the layout by the majority of stakeholders and *feasibility* to the Karibib Town Council and its community economic-base. This recommended layout plan will serve as a major mitigation measure in addressing the negative environmental and public health impacts emanating from the dumpsite and in upgrading the status of the site to a temporary disposal site while identifying and establishing a new disposal site.

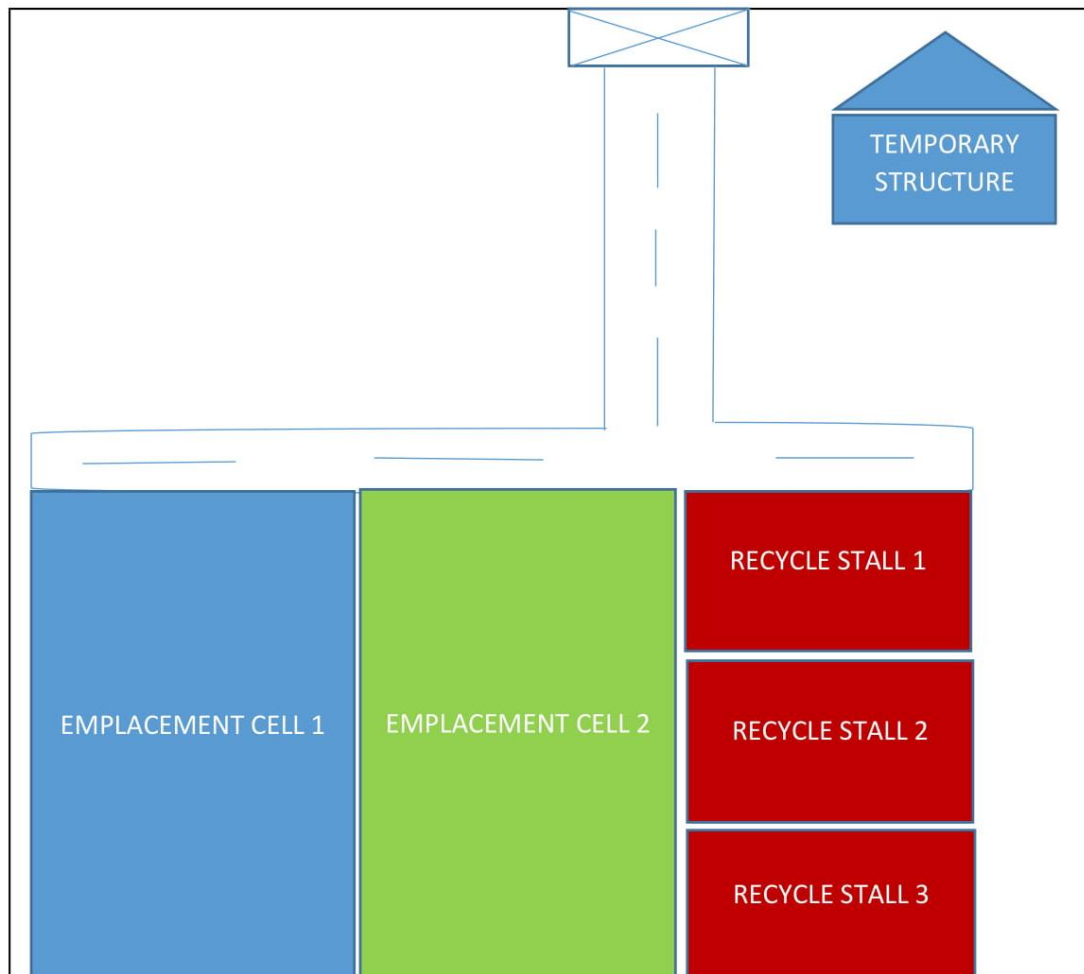


Figure 5: Simplified sketch of the temporary disposal site layout

3.1.1. Buffer and Access Road

Signage should be placed such as to provide direction to customers and the public to the public entrance of the disposal site. A *two-way access road* to the disposal site must be constructed and maintained through regular grading for all-weather conditions to ensure that waste trucks and site vehicles will drive over *hard-surfaced* roads to the working site. The ends of the internal roads must be constructed *relatively wide* to allow waste trucks and site vehicles enough maneuvering space when turning around. A *buffer zone* to the property boundary should be at least 15-50 meters of which the 5-15 meters closest to the property boundary must be reserved for natural or landscaped screening (berms or vegetative screens).

3.1.2. Entrance Control Facilities

Controlled access should be constructed together with new *fence, security gate and lifting barrier as well as a “non-authorized entrance” signage*. The name and contact *details of the disposal site operator* as well as *operation hours* should be *displayed* at the site entrance. A site temporary/mobile site office for the site operator/security should be positioned such that vehicles approaching, leaving and using the site allows communication between the vehicle drivers and operator/security. The operator/security should *control traffic* entering for example by means of a lifting barrier. It is also recommended that *water and electricity* be available to the operator/security’s office and all other site facilities were possible.

3.1.3. Weighbridge

An accurate record of waste inputs is essential for effective waste management and the installation of an on-site weighbridge, as a long-term option, will be the best means of providing such data. Construction of a weighbridge is only applicable at the new site to be identified. However, due to the importance of waste quantification, it is recommended that the “*Typical Daily Waste Composition Recording Sheet*” – **note Appendix 2** - be used as a template for completion by site operator/security at the access control point/site office. Further note **Section 3.2.3** below on *Measuring and Recordkeeping*.

3.1.4. Emplacement Cells

Two emplacement cell types are recommended for logistical and practical emplacement, compaction and possible daily covering of waste namely:

- Creating an elevated *ramp cell* of all the existing old waste, where this waste is stockpiled and compacted into a one 2-3 meters high cell for and coverage.

Signage within the facility should provide the public direction to respective offloading working areas.

THE KARIBIB TOWN COUNCIL IS ADVISED TO UNDERTAKE ONE MAJOR EARTH MOVING EXERCISE TO EFFECT THE RECOMMENDED DISPOSAL SITE LAYOUT, MORE SPECIFICALLY THE EMPLACEMENT CELLS.

3.1.5. Recycling Stalls

Three to four (3-4) shaded temporary recycling stalls should be erected to enable litter pickers/recyclers to sort through the waste without interfering with the waste offloading operation in a more safe and hygienic set-up. In lieu of leasing the stalls out to the recyclers, an agreement may be entered into where the recyclers have the responsibility to guard the site. *Signage* within the facility will provide direction for public to the *reuse - recycling stalls*. This will have a positive spin-off in that the Council will be contributing to the socio-economic well-being of its community as well as to the health of the environment.

3.2. Daily Operations and Maintenance

Again, *suitability*, *acceptability* and *feasibility* were the main guiding principles that were considered in order for the Karibib Town Council to meet its organisational effectiveness in implementing this Draft EMP. The recommended human resources organogram depicted below; respective responsibilities; and the daily operational and maintenance plan will serve as mitigation measures in addressing negative environmental and public health impacts emanating from the dumpsite and in upgrading the status of the site.

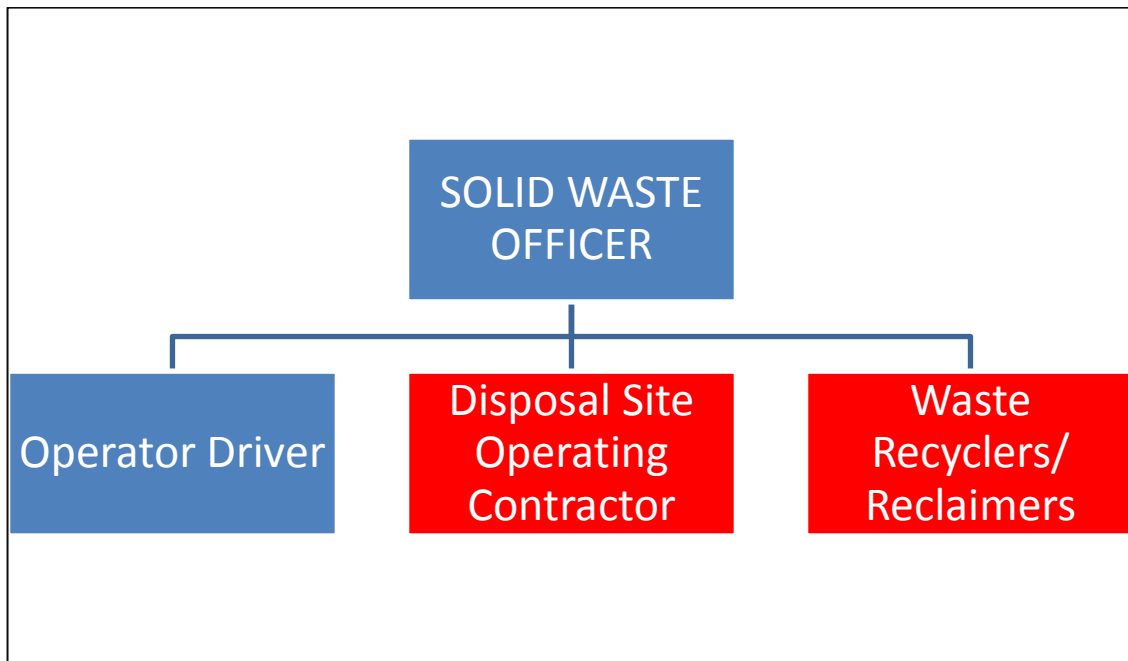


Figure 6: Minimum recommended human resource requirement

3.2.1. Manpower and Key Performance Areas

The minimum manpower recommended for a well-managed site is:

Solid Waste Officer (SWO) - The present municipal employed SWO will have the overall responsibility in ensuring the implementation and adherence to this Draft EMP and in accordance with the required legal requirements and relevant national policies, plans and programmes. The SWO will thus be accountable to the Council, through

established reporting lines, for the effective and efficient management and operation of the site in terms of the SWO job description.

Disposal Site Operating Contractor (DSOC) - The DSOC will be coordinating and supervising the overall operations at the disposal site. This will include activities such as regulating and controlling gate access into and out of site; recording and keeping records of waste types and quantities entering and leaving the disposal site; cleaning, inspecting and reporting defects and conditions of the disposal site fence; reporting non-compliances and making improvement suggestions to the SWO. The DSOC will directly be accounting and reporting to the SWO. *Currently there are no formal arrangement in existence between Council and any entity for this activities. It is recommended that caretaking arrangements with an identified service provider be considered and utilised adding the above mentioned DSOC requirements as part of a contract agreement with such service provider.*

Security Guard and Traffic Controller (SGTC) - The SGTC will be controlling legal and illegal access/entries to the disposal site; patrolling the disposal site and fence; directing and guiding vehicles to respective disposal areas and cells; prevention (and were possible regulation) of waste burning, and reporting any non-conformities or defects to the DSOC but mainly to the SWO. The SGTC will directly be accounting and reporting to the SWO. *It is recommended that security services arrangements with the Waste Recyclers/Reclaimers be considered and utilized.*

Operator Driver (OD) - The establishment, maintenance and covering of emplacement cells will be performed by the OD on instructions of the SWO as per present arrangements and OD job description. The OD will thus directly be accounting and reporting to the SWO.

Waste Recyclers/Reclaimers (WR) – It is recommended that the Karibib Town Council assist the present scavengers on site to organize themselves into recognized Waste Recyclers/Reclaimers and to create a conducive environment for these WR to trade with

recycling companies in town. The WR will aid Council in guarding, controlling and reporting irregularities in order to safeguard their socio-economic interests. The WR will be performing recycling activities on site on instructions of the SWO and will thus directly be accounting and reporting to the SWO. **Note 3.2.5.** on “*Reuse and Recycling*” below.

3.2.2. Access Control and Maintenance

Access should be controlled to minimize unauthorised human and animal presence, and vehicular traffic as well as unauthorised and illegal dumping and burning within the disposal site by:

- Preventing unauthorized entrance. The site should have dedicated and trained staff on-site during and after operating hours. The gates are to be locked to prevent unauthorised access during non-operating hours. Properly designed and maintained public waste disposal and/or recyclable material bins situated outside the main gate may be provided for after-hours use.
- Visually inspecting and recording types and quantities of waste loads entering and leaving the site.
- Directing vehicles to respective emplacement and offloading areas.
- Inspecting perimeter fence and gates for damages. Reporting and or making repairs were necessary.
- Inspecting access roads, entrance areas and perimeter fence for loose trash, and weekly clean-ups as necessary.
- Inspecting site access road for damage from vehicular traffic, erosion, or excessive mud accumulation. Maintaining entrance and internal roads as needed by grading at least on a monthly basis.
- Scavenging of food waste is to be prevented. The salvaging/reclaiming of recyclable or re-usable wastes should be encouraged by providing areas and facilities for separation of recyclable or reusable materials.
- Open burning of typical domestic garbage and waste at the disposal site is strictly prohibited. Open burning of other combustibles should generally be discouraged. Controlled burning may be allowed in consultation and approval by the SWO.

3.2.3. Measuring and Recordkeeping

It is good practice to record both on *entry and exit* waste from the site. An accurate record of waste inputs is essential for effective waste management. It should be noted that quantities of waste being generated in any developing town such as Karibib is expected to grow. It is thus important to measure daily and seasonal waste streams data variations as well as the generation rate of municipal solid waste at varying points in the chain through representative surveys of households and at any transfer, recycling, treatment and *disposal sites*. This will enable the Karibib Town Council's solid waste management services to cope with all situations and to feed data into the current municipal Integrated Solid Waste Management Policy.

Records of waste deliveries to the site should be kept, showing who delivered the waste, of *what type, how much, when and by whom*. These records are particularly important if the Town Council decides to charge waste generators for their waste services and such records will equally be vital for the design of the new landfill site when identified. Manual waste estimations and recording is recommended (**note Appendix 2** for a typical daily waste recording sheet for appropriate editing and usage) while a decision on the construction of the weighbridge is being considered and planned for accordingly as a long-term option on the new site to be identified.

3.2.4. Emplacement and Co-Disposal

It is recommended that operations at the working face be conducted in a manner that allows the prompt and efficient emplacement and or offloading of waste through measures such as:

- Vehicles transporting solid waste arriving at the waste disposal working face will be directed to an offloading area by on-site personnel and or signage.
- The approach to the offloading area will be wide enough to safely offload at least two vehicles side-by-side.
- Two emplacements cells will be utilized daily – one for offloading and collection of recyclables while the second cell is being maintained for proper placement, thickness compaction and coverage.

- Waste should be disposed off and compacted at the end of the cell.
- Compacted waste should be covered with excavated soil or similar inert material (alternatives such as construction and demolition material and ash) to deter flies and other insects from breeding in waste; to reduce the attraction of birds to wastes; to suppress odours and dust as well as reducing wind-blown waste and improving the surface roads for waste vehicles.
- Inspection of all site signs for damage, general location, and accuracy of posted information and correcting on date of discovery were possible.
- Inspecting for proper placement, thickness, slope, settlement, erosion and compaction. Emplacement cells' maintenance will be ongoing throughout the site rehabilitation period.
- Deliberate and controlled co-disposal of a range of industrial/general waste and municipal/household waste is recommended.

3.2.5. Reuse and Recycling

Waste burning should not be permitted. In General fires can cause hollows in the waste, encouraging instability, and could ignite pockets of landfill gas, causing explosions. If not quickly extinguished, fires can become deep seated and smolder for many years. It is thus recommended to reuse or recycle waste instead of burning.

Marketable recyclables: A waste recycler from Usakos is currently involved in the collection of recyclables such as *plastic bottles, glass bottles and tins*. It is thus recommended for the Karibib Town Council to consider entering into a formal arrangement/agreement with this company and or other recycling companies with unemployed individuals or groups of waste pickers to provide formal collection services in search for the recovery of such recyclables at source and at the disposal site as a job creation venture. The present unemployed waste recyclers/reclaimers should be organized into specialized groups with a permit to operate at the disposal site. They can sell their bottles, plastics, cardboard, and paper to the company (and other recycling companies) at their assigned recycling stalls - at the disposal site and or other council

allocated areas. The extent to which these transactions occur will depend on the availability of marketable end uses for the materials.

Special waste: such as *tyres* should be recycled as retreads, for use on carts, to make shoes, flower pots, gardening, road demarcation, playground equipment, animal feeding troughs and for a number of other domestic, farming, agricultural and industrial articles. **Construction and Demolition Debris (CDD)** should be reused as covering material during waste emplacement, and for the filling of low-lying areas subject to regular flooding. **Wood, nails, bricks, and other materials of direct use** should also be reclaimed from CDD for use in a number of minor DIY construction projects. The rate of recycling of CDD, especially bricks and wood (for the manufacturing of furniture and as firewood), has already been established country-wide. Similarly, to the marketable recyclables, unemployed community members should be organized into “tyres” and “CDD” specialized groups with a permit to operate at the disposal site as job creation ventures. **Used oil and grease** should be recycled as an industrial lubricant or fuel through the establishment of a deposit system to increase the rate of oil recycling.

It is suggested to identify companies, within the Erongo Region such as Wesco Group, a factory for the regeneration of used oil operating in Walvis Bay, that are collecting used oil for refining and reuse purposes. Again the establishment of agreements with such companies will promote the recycling of used oil across and within the entire Karibib district. It is worth considering to provide waste reclaimers with rag-pulling equipment to shred, clean, and re-knit *fabrics and textiles* as all-purpose utility clothes for resale. This is equally applicable to *repairable waste items* such as electrical equipment, utensils, bicycles, radios and many other items at designated recycling centers/stations.

Composting: Urban demand for compost has not been established. Additionally, the technology works better with a well-segregated MSW stream, which may be the case with garden refuse in Karibib. In general, even though the organic content of the MSW in Karibib may exceed 40% (wet basis), centralized composting is encouraged in the short to medium term consideration.

Incineration: The construction of an incinerator by Council should remain a non-option at the existing site, for the short to medium term taking into consideration the availability of the Usakos State Hospital incinerator, which Council should be able to utilize when the need arise. In addition, high costs relative to other municipal solid waste management options, a limited infrastructure, human, mechanical and institutional resources, and the composition of the waste stream itself, suggest that incineration is an inappropriate technology for Council for the short to medium term. However, we propose that an organisation with the right know-how such as the *African Expert Federation* should be approached to assess the feasibility of establishing a *Waste-to-Energy facility* in Karibib in respect of the new disposal site to be identified by Council.

3.2.6. Continuous Site Rehabilitation

Monthly cover application is essential and required in every disposal site operation. The weekly cover application will minimize negative effects of the site operation such as odours, nuisance, wind-blown waste and vector populations. It might also avoid landfill fires, minimize contamination of surface runoff, and improve aesthetics of the site. The availability of soil or other inert matter as cover material is of importance for the weekly coverage of the waste. Instead of transporting soil or other inert material to the disposal site over longer distances (which is expensive), unutilized compost or demolition waste should be used as alternative daily cover material. This can be considered as “*best available practice*” to operate the site, especially when insufficient soil cover material or lack of financial resources is experienced.

Post-closure care: The waste at the existing site will be excavated and re-disposed at the newly identified landfill site or be bailed as waste to energy feed.

3.2.7. Draft EMP Database System and Review Process

The database system is a critical component of this Draft EMP, as the management plan refers to any operational records and reports, design information and monitoring reports, which are the site records for the disposal site. The site records should be referenced on a regular basis. The format of the database system should facilitate ease of reference to

the site records and incorporate a process for identifying documents, and should include the provision for document identification numbers and provision for issue dates and authors as a minimum. Daily recording sheets and monthly site inspection reporting and reports will be included in the database system to identify the process to be used in reviewing the Draft EMP. The system should be used to clearly demonstrate that the site development stage, identified actions required and outcomes are met or not met.

The review period for the Draft EMP for this disposal site shall be each year or as otherwise specified in the Environmental Clearance Certificate (ECC). Given the ongoing records keeping, monitoring and reporting associated with the disposal site, the review of the Draft EMP should demonstrate that the sufficiency of the operational, layout design and daily monitoring and reporting systems for the current development stage of the site has been addressed. The review process should be established to ensure continual improvement in the management and operation of the disposal site. The Draft EMP review process (for example, a checklist system) will assist in identifying the outcomes for the new site investigations, operational reporting and/or monitoring programs etc., for incorporation in upcoming management plans as appropriate. As a result, the outcome of the Draft EMP review process is that only specific sections of the management plan (here mainly Chapter 3 of this Plan) may be subject to revision and submission to the Environmental Commissioner for approval in terms of *Part VI of the Environmental Management Act*, No 7 of 2007.

4. CONCLUSION

The Karibib Town Council should take the overall responsibility to ensure that all recommended actions within this Draft EMP are properly implemented, monitored, evaluated, recorded and accordingly reported. All key role players such as the Council staff involved in the day to day operations of the waste disposal site; all waste contractors and service providers, and recyclers on site should be informed about the content of this Draft EMP and activities to be undertaken.

The Karibib Town Council should ensure compliance to Section 5 and Part VI of the EMA that deals with Waste and Environmental Plans respectively. Apart from legal compliance, adherence to this Draft EMP will result in a well-managed temporary designated disposal site, which in turn will minimize operational costs and future potential negative impacts and threats to the environment and public.

5. REFERENCES

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Appendix 1: Ministerial Correspondence Re-Waste Management Concerns



REPUBLIC OF NAMIBIA
Ministry of Environment and Tourism
Department of Environmental Affairs

PUBLIC NOTICE

The public is hereby informed that all waste disposal site needs to be approved and declared as such, as per the Environmental Management Act. No.7 of 2007, Section 5 (2) and (3).

The grace period for this will expire on the 06 February 2013. Therefore, members of the public who are operating waste disposal sites are kindly requested to comply with the Environmental Management Act by getting the waste disposal sites approved.

For existing waste disposal sites an Environmental Management Plan (EMP) needs to be submitted to the Environmental Commissioner.

For new waste disposal sites an Environmental Impact Assessment (EIA) needs to be submitted.

For all enquiries contact:
Office of the Environmental Commissioner
6th Floor Capital Center Building, Levinson Arcade
Tel : +264 284 2701

THE NAMIBIAN FRIDAY 01 FEB 2013



Republic of Namibia

Ministry of Urban and Rural Development

Tel: (+264 61) 297-5111
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Website: www.mrigh.gov.na

Government Office Park
Luther Street

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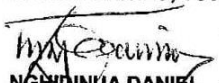
Enquiries: Tuyakula Iyambo
Tel: (+264+61) 297-5175
Fax: (+264+61) 297-5305

Our Ref.: 11/1/19P
Your Ref.: 8/2/9/2

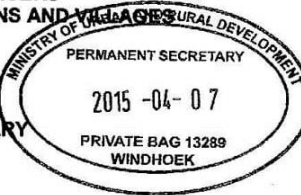
Date: 7 April 2015

CIRCULAR

TO : CHIEF EXECUTIVE OFFICERS
MUNICIPALITIES, TOWNS AND VILLAGES

FROM : 
NGHIDINUA DANIEL
PERMANENT SECRETARY

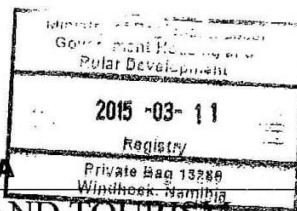
SUBJECT : SOLID WASTE MANAGEMENT IN LOCAL AUTHORITIES



Please find herewith a self-explanatory communication to our office from the Ministry of Environment and Tourism. Your Councils are hereby requested to adhere to the provisions as stipulated in the attached copy of the Environmental Management Act No 7. of 2007.

Regards.

All official correspondence must be addressed to the Permanent Secretary



REPUBLIC OF NAMIBIA

MINISTRY OF ENVIRONMENT AND TOURISM

Tel: +264 61 2842701
Fax: +264 61 240339
Email: saima@met.na

CNR of Dr. Kenneth David Kaunda Street
& Robert Mugabe Avenue
Private Bag 13306
Windhoek

Enquiry: Ms. Saima Angula

23rd February 2015

OFFICE OF THE PERMANENT SECRETARY

The Permanent Secretary
Ministry of Regional and Local Government, Housing and Rural Development
Private Bag 13289
Windhoek

Dear Colleague

SUBJECT: SOLID WASTE MANAGEMENT IN LOCAL AUTHORITIES

Since independence in 1990, our country has done fairly well in most economic areas. However, waste management is still a matter of serious concern in most local authorities. It is against this background that I am at this stage pleased to share with you the principles of environmental management, particularly section 3 (i-ii) of the Environmental Management Act No. 7 of 2007.

On the basis of the above, may your esteemed office kindly extend the waste management related provisions of the EMA to all Regional and Local Authorities in our country. It is my conviction that doing so will enable our Regional and Local Authorities to manage their waste in an environmentally friendly manner.

Please find attached a copy of the EMA for your attention.

Yours Sincerely,

Office of the PERMANENT SECRETARY
REPUBLIC OF NAMIBIA
Simeon N. Ngunjiri
Permanent Secretary

All official correspondence must be addressed to the Permanent Secretary

Appendix 2: A Typical Daily Waste Composition Recording Sheet

WASTE COMPOSITION	DATE	LOAD 1	LOAD 2	LOAD 3	LOAD 4	LOAD 5	TOTAL
GENERAL HOUSEHOLD WASTE in m ³							
GLASS BOTTLES in m ³							
PLASTIC BOTTLES in m ³							
PLASTICS in m ³							
WHITEPAPER in m ³							
NEWS PAPER in m ³							
BOXES/CARTONS in m ³							
CANS in m ³							
STEEL/METALS in m ³							
GARDEN/PUTRESCIBLE in m ³							
TYRES in numbers or m ³							
OILS/SLUDGES in m ³							
BUILDING RUBBLE in m ³							
INDUSTRIAL/HAZARDOUS in m ³							
OTHER WASTE in m ³							

Computation:

* Estimated Load in m³

* Depending on the open pick-up truck load-box capacity: L X B X H = m³

In **RED** – Not compulsory- ONLY IF IN SIGNIFICANT QUANTITIES

Electronic version of this recording and inspection sheets will be made available to the Karibib Town Council for appropriate amendments and usage purposes accordingly.

Appendix 3: A Typical Site Inspection Report Structure for Ensuring Best Practice

SITE INSPECTION REPORT							
Site Name							
Ref No							
Date of Inspection Time in							
Inspector's Name							
Reason for Inspection Time out							
Weather							
Site: Open/Closed							
Status at Time of Inspection	Satisfactory = S Partial Satisfactory = PS Unsatisfactory = US		S	PS	UP	Not Checked Inapplicable	Comments
Environ. Man. Plan Compliance							
Types of Waste							
Layering/Compaction of Waste							
Covering of Waste							
Litter Screens & Litter Control							
Liner/Protective Layer							
Condition of Site Roads							
Condition of Site Entrance							
Access Road Cleaning							
Site Tidiness							
Fires and smoke							
Insects/Vermin/Birds							
Surface Water							
Leachate (on-site)							
Landfill Gas							
Odours							
Noise							
Dust							
Gate/Fencing/Security							
Office/Site Notice Board							
Manning & Supervision							
Site Record Keeping							
Cover Stockpile							
Site	Litter						
Environs	Leachate						
Other Observations/Actions Required:							
IMMEDIATE ACTION IS REQUIRED ON:							
Site Operator's Comments:							
Samples Taken: Yes/No	Inspector's Signature:			Received by& When:			
Photographs Taken: Yes/No							