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**ENVIRONMENTAL MANAGEMENT PLAN (EMP)
FOR THE PROPOSED CONSTRUCTION AND OPERATION OF A WASTE BUY-BACK
CENTRE ON ERF 10713, KATUTURA IN WINDHOEK, KHOMAS REGION, NAMIBIA**

FINAL EMP

CLIENT:

City of Windhoek



COMPILED BY:

Health and Environment Services Division
City of Windhoek



The Gateway to Endless Opportunities

PROJECT INFORMATION

PROPONENT:	City of Windhoek P.O Box 59 Windhoek
PROJECT TITLE:	Construction and Operation of a Waste Buy-back Centre on Erf 10713, Katutura, Windhoek, Khomas Region, Namibia
PROJECT TYPE:	Environmental Management Plan
PROJECT LOCATION:	Erf 10713, Katutura, Windhoek
COMPETENT AUTHORITY:	Office of the Environmental Commissioner (Ministry of Environment and Tourism)
ENVIRONMENTAL ASSESSMENT PRACTITIONERS (EAPs)	City of Windhoek (Health and Environment Services Division) Contact person: Mr. Olavi Makuti Cell: +264 811405033 E-mail: Olavi.Makuti@windhoekcc.org.na EAPs: Mr. Olavi Makuti and Mr. Mekondjo Shanyengange
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1. INTRODUCTION AND BACKGROUND

The Sister Cities of Windhoek and the Free Hanseatic City of Bremen in Germany enjoy fraternal relations under a cooperation agreement signed in 2000.

The two cities jointly responded to an EU call for proposals, which was successfully awarded to the tune of EUR 2,125,952.00. The grand funding was awarded for the financing of Solid Waste Management Recycling (Zero Waste to Landfill) projects under the Local Authorities: Partnership for Sustainable Cities 2020 for a period of four years.

One of the elements that the project will focus on is the construction of Waste Buy-Back Centres. Two Waste Buy-Back Centres will be constructed and operated on a pilot basis for two years and thereafter Council can decide on the future of the initiative. These waste recycling initiatives are intended to play a very important role in implementing the SWM Waste Reduction Strategy, which aims to encourage the collection, re-use and recycling of recyclable materials that are discarded in the waste stream. The Waste Buy-Back Centres will support the City in the promotion of recycling and at the same time create employment opportunities for the youth and women by making recycling a financially viable and sustainable business.

In terms of legislations, the construction and operation of a waste handling facility is a listed activity as stated in *Government Notice No.29, List of activities that may not be undertaken without Environmental Clearance Certificate: Environmental Management Act, 2007; Government Gazette No. 4878*. This project must therefore be subjected to an Environmental Impact Assessment (EIA) and obtain Environmental Clearance Certificate (ECC) as per the Environmental Management Act No.7 of 2007 and Environmental Management Regulations of 2012 No. 4878.

The City of Windhoek is facing the simultaneous challenges of an increased generation of solid waste in the City, unemployment and the fast reduction in the lifespan of its main waste disposal facility (Kupferberg Landfill Site). The City of Windhoek spends a lot of money to collect and manage waste that is discarded in the waste stream. This is unsustainable for a city in a developing country. It is estimated that the Kupferberg Landfill Site receives about 7000 tonnes of waste per month and only a mere 5% is recovered from the site for recycling. The low recycling rates can be ascribed to a lack of City Owned Recycling Programs, lack of data from recyclers & need to regulate the recycling industry

The City of Windhoek was regarded as the cleanest city in Africa a few years ago. A status that it has since lost to the City of Kigali in Rwanda. In response, the City has developed its Waste Reduction Strategy to improve its waste management approaches, reduce waste generation and thus hopefully regain the status of cleanest city in Africa.

As such, the envisioned waste buyback centre aims to encourage the collection, re-use, and recycling of recyclable materials that are discarded in the waste stream. The centre will also assist to create a circular economy in the waste recycling space and will furthermore create opportunities to enhance the socio-economic status of Windhoek's residents by making recycling a financially viable and sustainable business. Household Waste Audits conducted by the City of Windhoek revealed that there is an increase in recyclables to landfill site (2008 -37%, 2013 - 51%, 2020 - 56%).

The proposed waste buyback center will be constructed on Erf 10713, Katutura in Windhoek, Khomas region. Erf 10713, Katutura is situated at the Corner of Hans Dietrich Genscher Street and Bondel Street (The coordinates of the site: -22.529772, 17.066970) as shown on figure 1 below.

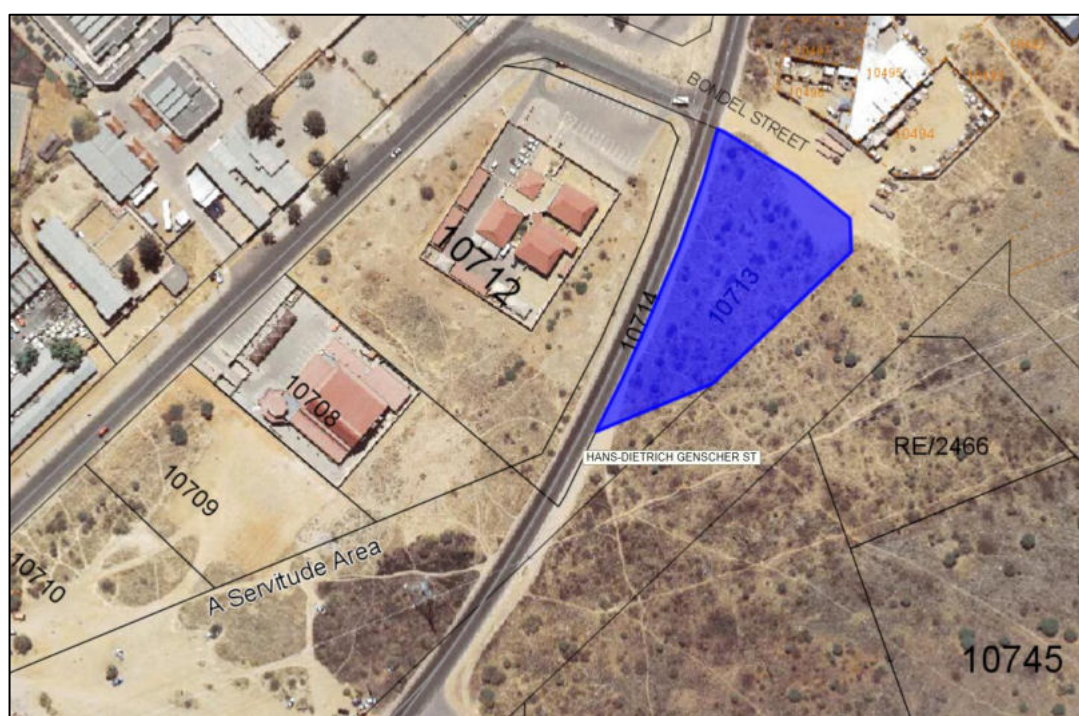


Figure 1: Location of Erf 10713, Katutura.

2. EMP OBJECTIVES

This Environmental Management Plan (EMP) describes the processes that the proponent (City of Windhoek) and contractors will follow to maximize compliance and minimize harm to the environment. This plan will also help the proponent map out progress toward achieving continual improvements. The EMP comprises of a list of actions needed to mitigate the potential negative environmental impacts identified in the EIA process.

The development of an EMP is a requirement for any EIA project as per Namibia's Environmental Management Act No.7 of 2007. Therefore, this EMP is a legal document that must accompany the EIA Report before an Environmental Clearance is issued.

3. PROJECT ACTIVITIES

The envisaged Waste Buy-back centre will operate as a clean or source separated facility. At this type of facility, the recyclables are segregated before they are brought to the facility. This implies your biodegradable waste such as food waste are removed before the can be accepted at the buy-back centre. Issues of leachate generation and emission of foul odor are lower at these type of facilities. The above has informed the layout design of the envisioned waste buy-back centre.

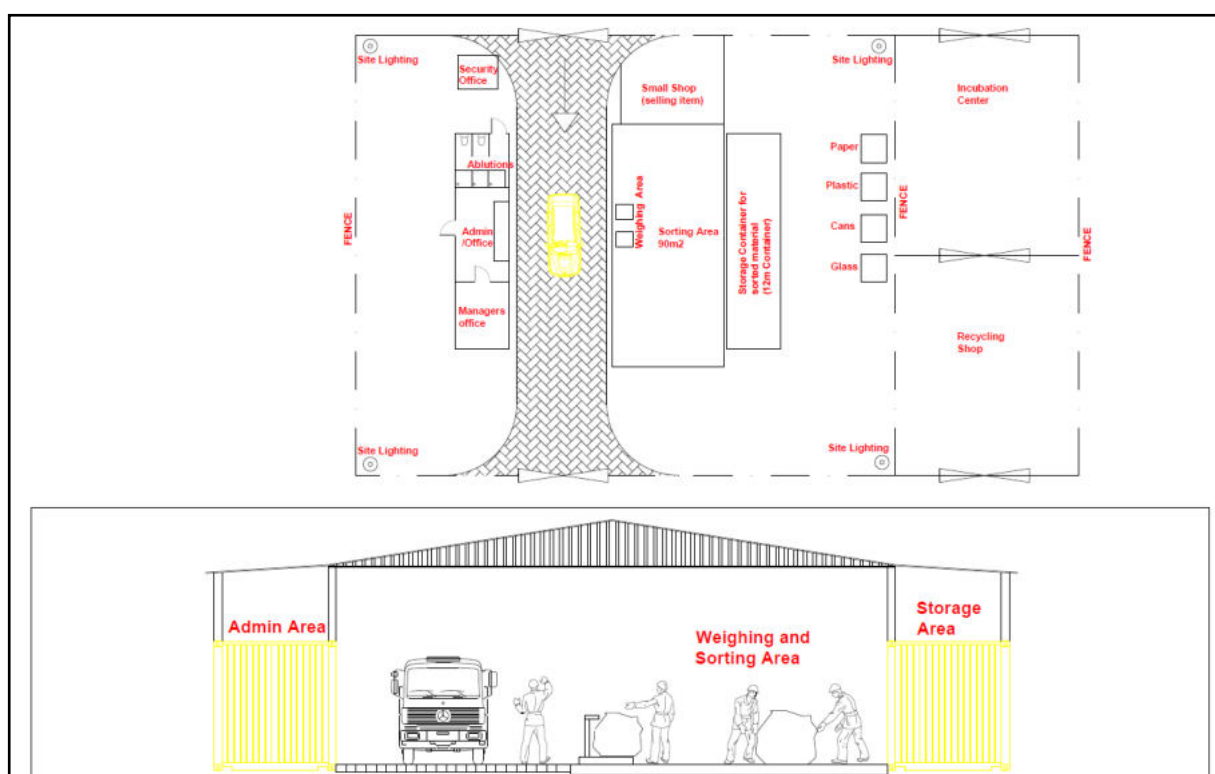


Figure 2: Layout plan of the Waste Buy-back Centres

3.1 Administration and business model

The envisioned solid waste buy-back centre will purchase the recyclable solid waste material from collectors of recyclable material, process them (sort, compact and bale) and then sell the recyclable solid waste materials to industries, such as the manufacturers of paper, plastics, cans and glass. The business model of the centre is further illustrated on figure 3 below. This centre will play a pivotal role within the waste recycling value chain by linking recyclers with the buyers of recyclables.

The centre will be managed by the City of Windhoek (Solid Waste Management Division) during the pilot phase (3-4 years) and there after a sustainable operational model will be developed to guide the future operations of the facility. The site will operate from 08:00 to 16h30 Monday to Saturday.

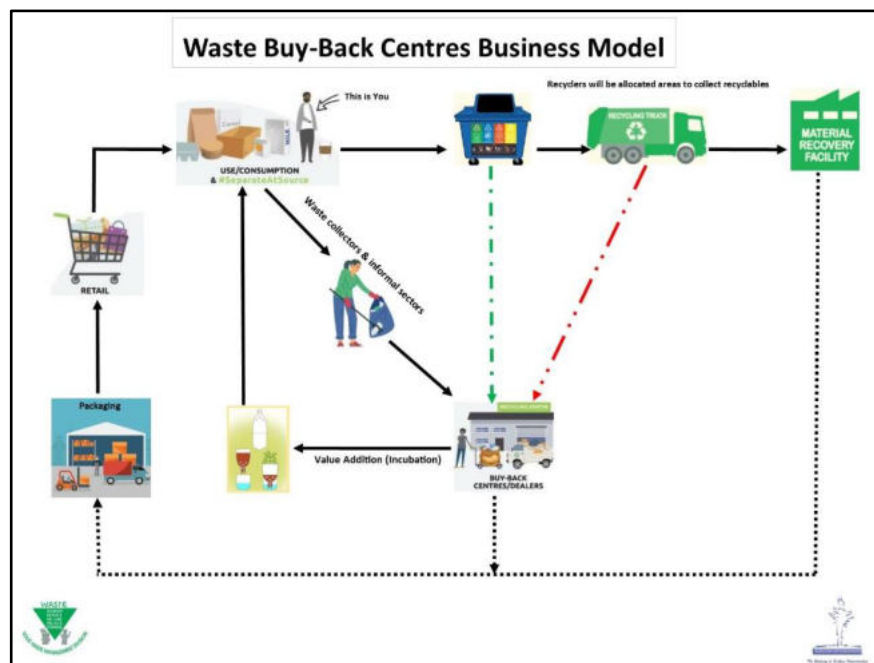


Figure 3: Waste Buy-back Centre Business Model

3.2 Waste Handling Procedures

a) Receiving of Waste

Selling of recyclables at the buy-back centre start with the inspection to ensure that it only contains the waste accepted at the facility. This will be done through visual inspection.

b) Sorting and Handling

Records of the amount of incoming and outgoing waste must be kept for monitoring purposes and for regular validation of the facility mass balance.

c) Storage

The recovered recyclables are weighed and temporarily stored in designated bins. When sufficient quantities have been accumulated, tin cans are compacted and baled; plastic bottles are pierced, flattened, and baled; paper is stacked; and glass is broken, then bulked up.

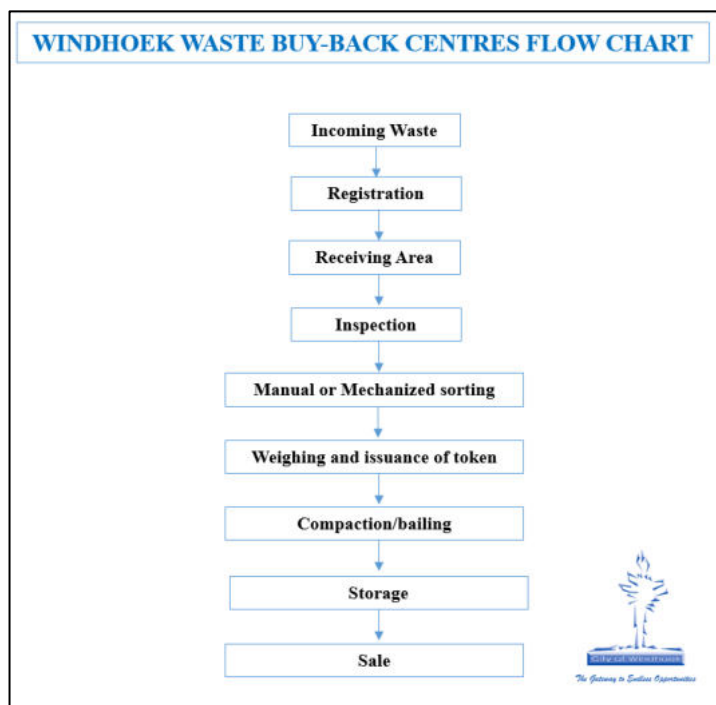


Figure 4: Windhoek Waste Buy-back Centre Flow Chart

3.3 Incubation Centre and Recycling Shop

A circular economy incubator will be established at the waste buy-back centre to enable young unemployed people to develop and test business models geared towards the goal of creating a waste free city and increase prosperity within the local population. Six individuals will be selected to participate in the incubation program. They will then have the opportunity to develop and test their business ideas over a period of 12 months as members of the incubator. The project will provide them with financial and material support for the duration of the incubation program. Lessons-learnt and best practices will be shared with other Namibian municipalities and circular economy companies within the Namibia Zero Waste Network.

A recycling shop will also be hosted at the centre where recyclers can sell their crafts and show case their products. The recycling shop will also sell a wide range of previously loved items at a discounted price.

3.4 Quality Assurance

In order to ensure quality service and prevent occupation health safety risks during the operations of the facility, all City of Windhoek Occupational Health and Safety Regulations, Policies and Guidelines will apply at the center. All employees will also be provided with appropriate Personal Protective Equipment (PPE). Furthermore, operational guidelines will be developed to ensure that the centres operation at a high best practice standards.

4. ASSOCIATED INFRASTRUCTURE AND SERVICES

- **Water & Electricity Supply**

Water and electricity to the center will be provided by the City of Windhoek by connecting to the existing bulk services that runs along the road reserves of the two main streets that will be used to access the sites.

- **Refuse and Waste Management**

- **Construction Phase:**

The waste to be generated from construction activities will be stored in skip containers. Once the containers are full, they will be transported to the Kupferberg Landfill Site. Construction workers will also be encouraged to refrain from littering. Hazardous waste generated from construction activities such as used oil and paint containers will be stored in specialized containers and thereafter disposed of responsibly at the Hazardous Waste Cell at Kupferberg.

- **Operational Phase:**

During the operations of the buyback center, the main waste stream will be the rejects from the waste brought by recyclers, normal office waste and potential waste from the handling of recyclables. Waste containers will be provided at both centers to cater for the waste generated during the operational phase. In addition, to ensure the cleanliness of the facility on a long-term basis, operational guidelines will be developed. Furthermore, the buyback centers will be connected to the existing municipal sewer network to remove wastewater from bathrooms and toilets.

- **Accessibility**

The buyback center on Erf 10713, Katutura will be accessed from Hans Dietrich Genscher arterial road. The access arterial road is paved with tarmac and the small stretch to the buyback center will be paved with interlocks to avoid dust.

5. LEGAL REQUIREMENTS

This section provides an analysis of the policies and legislations that are relevant to the proposed construction and operation of the waste buyback centre in Windhoek. This section aims to inform the proponent about the requirements to be fulfilled in undertaking the proposed project.

The table below lists the various environmental and developmental policies and legislations that have relevance to the project.

Table 1: Legal framework of the project.

LEGISLATION	PROVISION	REGULATORY AUTHORITY	APPLICATION TO THE PROJECT
The Constitution of the Republic of Namibia	Article 91 (c) and 95 (i) which commit the state to actively promote and maintain environmental welfare of all Namibians by promoting sustainable development	Government of the Republic of Namibia	The project should not pose a threat to the natural and human environment.
Environmental Management Act No.7 of 2007 and EIA Regulations (2012)	Provides a list of listed activities that may not be undertaken without environmental clearance	Ministry of Environment, Forestry and Tourism (Office of the Environmental Commissioner)	An Environmental Clearance will be required before project Commences.
Water Act 54 of 1956	Control of disposal of sewage, the purification of effluent, the prevention of surface and groundwater pollution, and the sustainable use of water resources.	Ministry of Agriculture, Water and Forestry (Department of Water Affairs)	The disposal of wastewater from the centre must adhere to the provisions of this Act.
The Water Resources Act 24 of 2004	Control of disposal of sewage, the purification of effluent, the prevention of surface and groundwater pollution, and the sustainable use of water resources.	Ministry of Agriculture, Water and Forestry (Department of Water Affairs)	The centre should not cause pollution by allowing leachate to run into river courses.
Forestry Act No 27 of 2004	The Act affords protection to certain indigenous plant species.	Ministry of Environment, Forestry and Tourism (Directorate of Forestry)	A permit is required before any protected plants are removed.
Nature Conservation Ordinance no. 4 of 1975	Chapter 6 provides for legislation regarding the protection of indigenous plants	Ministry of Environment, Forestry and Tourism	Indigenous and protected plants have to be managed within the legal confines.
Soil Conservation Act No 76 of 1969	Combating and prevention of soil erosion, the conservation, improvement and manner of use of the soil and vegetation	Ministry of Agriculture, Water and Land Reform	The proponent should ensure that soil erosion and soil pollution is avoided during construction and operation of the waste buy-back centre.

	and the protection of the water sources		
Atmospheric Pollution Prevention Ordinance No 45 of 1965	Part II - control of noxious or offensive gases, Part III - atmospheric pollution by smoke, Part IV - dust control, and Part V - air pollution by fumes emitted by vehicles.	Ministry of Health and Social Services	The development should consider the provisions outlined in the ordinance. The main issue that the centre has to guard against is the emission of offensive odors.
Hazardous Substance Ordinance 14 of 1974	To provide for the control of substances which may cause injury or ill-health to or death of human beings by reason of their toxic, corrosive, irritant, strongly sensitizing or flammable nature or the generation of pressure thereby in certain circumstances; to provide for the division of such substances into groups in relation to the degree of danger; to provide for the prohibition and control of the importation, manufacture, sale, use, operation, application, modification, disposal or dumping of such substances; and to provide for matters connected therewith.	Ministry of Health and Social Services	The handling, usage and storage of hazardous substances on site should be carefully controlled according to this Ordinance.
Local Authorities Act No. 23 of 1992	The Local Authorities Act prescribes the manner in which a town or municipality should be managed by the Town or Municipal Council.	Ministry of Urban and Rural Development	The development has to comply with provisions of the Local Authorities Act.
The Labour Act of 1992	Employees are subject to the terms of the Labour Act. The act also contains the Health and Safety Regulations.	Ministry of Labour, Industrial Relation and Employment Creation.	Given the employment opportunities presented by the construction of the centre infrastructure and operations of the centre, compliance with the labour law is essential.
Public and Environmental Health Act of 2015	This Act (GG 5740) provides a framework for a structured uniform public and environmental health system in Namibia. It covers notification, prevention and control of diseases and sexually transmitted infections; water and food supplies; waste management; health nuisances; public and environmental health planning and reporting. It repeals the Public Health Act 36 of 1919 (SA GG 979)	Ministry of Health and Social Services	Contractors and users of the proposed centre are to comply with these legal requirements.

National Heritage Act, 2004 (Act N0.27 of 2004)	This Act calls for the protection, conservation and registration of places and objects of heritage significance.	National Heritage Council of Namibia	Even though the scoping exercise did not discover any archaeological material on the site, should there be any such discovery (e.g. graves) the National Heritage Council should be informed immediately.
Atmospheric Pollution Prevention Ordinance (1976)	This Ordinance generally provides for the prevention of the pollution of the atmosphere. Part IV of this ordinance deals with dust control.	Ministry of Environment, Forestry and Tourism.	This Ordinance requires that any person carrying out industrial activities which is liable to cause a nuisance to persons residing in the vicinity or to cause dust pollution to the atmosphere, shall adopt the best practicable means to prevent such dust from becoming dispersed and causing a nuisance. Activities at the centre construction site such as excavation and land clearing need to properly controlled to ensure dust is not a nuisance.
National Solid Waste Management Strategy, 2018	Provide for coordinated funding, regulations, action plan for proper solid waste management and facilitate stakeholder collaboration.	Ministry of Environment, Forestry and Tourism.	Provisions of the strategy should be adhered to.
City of Windhoek Solid Waste Management Policy (2010)	This policy encompasses the concepts of integrating all required waste management activities based on the minimization of pollution and waste across various sectors, as well as the management of waste activities in accordance with the Principles of the Integrated Waste Management Hierarchy.	City of Windhoek (Solid Waste Management Division)	The envisioned centre is in line with this policy, as it will promote recycling.
Windhoek Municipality: Waste Management Regulations (2011)	These Regulations empowers Council to ensure that all waste generated, stored, collected, transported, treated and disposed of within the municipal area is managed properly and in a manner not posing a threat to human health or the environment.	City of Windhoek (Solid Waste Management Division)	The centre must adhere to the provisions of these regulations.

6. ENVIRONMENTAL MANAGEMENT PLAN

6.1 EMP Administration

There is a strong need to clearly outline the roles and responsibilities of all stakeholders in the Environmental Management Plan. There is also a need for the proponent and project managers/contractors to appoint an overall responsible person (Environmental Compliance Officer) to ensure the successful implementation of the EMP. The Environmental Compliance Officer (ECO) needs to be someone who has a basic understanding of EMP administration. Under the management actions, each action is allocated to a responsible entity to ensure that the specific action is managed and documented properly.

The City of Windhoek's Environmental Management Officers will fulfil the role of ECO. They already have an existing program of monitoring the implementation of EMPs of various listed activities in the City of Windhoek. They will regularly visit the buyback center to ensure that all the stakeholders are aware of the contents of the EMP and are implementing the recommended mitigation measures satisfactorily.

Furthermore, all key role players such as contractors who will be involved during the construction of the centre must be informed about the contents of this EMP and activities to be undertaken to mitigate the potential impacts identified.

The reports of the ECO in the implementation of this EMP will form part of the Environmental Monitoring Report that will be submitted to the Office of the Environmental Commissioner.

6.2 Training

All key Stakeholders who will be involved during the construction and operations of the center must be informed about the contents of this EMP. The ECO in collaboration with the Solid Waste Management Division of the City of Windhoek will organize structured training programs to ensure that the operators of the buyback center are familiar with the EMP and adhere to the provisions. The contractors who will be involved in construction will ensure that the EMP discussions form part of their regular site meetings. It is recommended that the EMP form part of the Terms of Reference to all contractors to be involved in the project.

6.3 Enforcements: Non-compliance and Penalties

The EMP is considered a legally binding document upon the issuance of an Environmental Clearance Certificate to the project. In cases of transgressions and non-compliance to the EMP, the transgressor should be liable to a penalty. The City

of Windhoek staff members who are guilty of an offence in terms of this EMP should be subjected to the City's disciplinary processes and punished accordingly.

Transgressions should be recorded in a dedicated register and should be submitted with the biannual reports to the Ministry of Environment, Forestry and Tourism. The Proponent shall issue the penalties in terms of the severity of the environmental damages.

6.4 Environmental Records and Reports

The City of Windhoek should initiate and maintain an updated filing system for the project whereby environmental incident reports, training records and audit reports should be kept. These records should form part of the biannual reports to the Ministry of Environment, Forestry and Tourism.

6.5 Management Actions of Environmental Aspects

- **NOISE FROM CONSTRUCTION AND OPERATIONS**

DESCRIPTION	<p>Construction vehicles and equipment such as drillers, compactors and other machineries used to install services during the construction phase can be a nuisance and disturbance.</p> <p>During the operations of the buy-back centre noise will mainly emanate from the vehicular movements when people brings their recyclables to the centre and from the machines that will be used in the processing of the recyclables such as bailers and machines used to compact cans. The site is however far from residential areas and only the nearby businesses might be affected.</p>
MITIGATION MEASURES	<ul style="list-style-type: none"> • All workers on site must be equipped with earplugs to be used when the noise becomes unbearable. • Switch off machines that are not used. • Construction activities must not start before 08h00 and not exceed 17h00 to avoid disturbing the residents of the nearby residential areas.
MONITORING	<ul style="list-style-type: none"> • Inspect all workers on a daily basis for PPE compliance. • Ensure that a safety training session is held once a month.

RESPONSIBLE PARTY	Project Manager and ECO
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- **POLLUTION**

DESCRIPTION	<p>There are various types of pollution associated with construction and operation of the waste buyback center. The most important one is probably chemical pollution from oil spills resulting from the handling of various machineries used during the construction phase. Other sources of pollution include building rubble and empty bags and containers.</p> <p>During the operational phase, the area of receiving and unloading of recyclables and processing operations can potentially generate litter, dust and wind-blown debris if such nuisances are not contained and controlled. The wind-blown debris can pollute the surrounding environs if it is not managed properly.</p>
MITIGATION MEASURES	<ul style="list-style-type: none"> • Keep waste in closed containers. • Regular inspections of the perimeter fence to remove waste. • All waste generated at the center should be safely disposed of at the Kupferberg Landfill Site.
MONITORING	Regular visual inspection by Project Manager.
RESPONSIBLE PARTY	Project Manager and ECO

- **DUST**

DESCRIPTION	Construction activities are generally associated with dust as the substrate is loosened during construction. Activities such as the clearing and levelling of land will slightly affect the air quality. This will especially be an issue during windy days.
MITIGATION MEASURES	<ul style="list-style-type: none"> • Equip all the workers exposed to dust with dust masks. • Spray the areas that are most affected with water to minimize dust. • Minimize activities that can generate dust during windy days. • Limit the speed at construction site to a maximum of 40 km/h

MONITORING	<ul style="list-style-type: none"> • Monitor dust accumulation and visibility on a daily basis and institute corrective measures when dust levels are too high.
RESPONSIBLE PARTY	Project Manager and ECO

- **VISUAL AND SENSE OF PLACE IMPACTS**

DESCRIPTION	The construction of infrastructure such as the waste buy-back centre can have an effect on the aesthetic quality of the area. Waste can look messy even when it is compacted and stacked properly. It is therefore important to ensure that the inside of the centre should not be in clear view from the main roads.
MITIGATION MEASURES	<ul style="list-style-type: none"> • Blending the built structures with the natural surrounding will maintain the natural aesthetic value of the area. • The front of the centre should have a boundary fence/wall that is not see through.
MONITORING	Monitor compliance to recommendations.
RESPONSIBLE PARTY	Project Manager and ECO

- **ODOURS**

DESCRIPTION	The primary source of nuisance odors would be the incidental putrescible matter, which can be mixed up in the recyclables. This can for instance be small volumes of residual liquids in some beverage bottles and residual food in some paper packaging containers.
MITIGATION MEASURES	<ul style="list-style-type: none"> • Ensure that all the waste accepted at the centre are clean. • Develop guidelines for recyclers on the type waste that will be accepted at the centre. • Disinfect areas were waste is processed to avoid odors.
MONITORING	Monitor compliance to recommendations.
RESPONSIBLE PARTY	Project Manager and ECO

• **OCCUPATIONAL HEALTH AND SAFETY RISKS**

DESCRIPTION	The direct handling of waste can expose employees to various health risks such as injuries due to the handling of machines and infections from the waste.
MITIGATION MEASURES	<ul style="list-style-type: none"> • Train the employees of the buy-back centre on the handling dangerous goods. • Ensure compliance with health and safety standards. • Ensure that the workers are equipped with appropriate safety wear. • Extend the City of Windhoek organizational Occupational Health and Safety Program to the center.
MONITORING	<ul style="list-style-type: none"> • Monitor compliance to recommendations. • Keep record of all incidents at the center.
RESPONSIBLE PARTY	Project Manager and ECO

7. CONCLUSIONS

The City of Windhoek takes pride in its waste management efforts over the years. It is for this reason that the City was regarded as the cleanest city in Africa for many years. As such, we believe that the proposed waste buyback centre will further complement these efforts. The positive impacts of the proposed center will far outweigh the few generic negative impacts associated with operations of such a centre. We believe that with the implementation of this EMP, the negative impact will be satisfactorily mitigated.

EAPs believes that a comprehensive assessment of the proposed project has been achieved and that this EMP covers all pertinent components of the project that need to be mitigated. It is therefore recommended that an Environmental Clearance can be awarded to the project.

8. REFERENCES

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