

**JANUARY 2024**

**ENVIRONMENTAL IMPACT ASSESSMENT**

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

**FINAL SCOPING REPORT**

**CLIENT:**

City of Windhoek



**COMPILED BY:**

Health and Environment Services Division  
City of Windhoek

## PROJECT INFORMATION

<b>PROPONENT:</b>	City of Windhoek P.O Box 59 Windhoek
<b>PROJECT TITLE:</b>	Construction and Operation of a Waste Buy-back Centre on Erf 10713, Katutura, Windhoek, Khomas Region, Namibia
<b>PROJECT TYPE:</b>	Environmental Impact Assessment Study
<b>PROJECT LOCATION:</b>	Erf 10713, Katutura, Windhoek
<b>COMPETENT AUTHORITY:</b>	Office of the Environmental Commissioner (Ministry of Environment and Tourism)
<b>ENVIRONMENTAL ASSESSMENT PRACTITIONERS (EAPs)</b>	City of Windhoek (Health and Environment Services Division) <b>Contact person:</b> Mr. Olavi Makuti <b>Cell:</b> +264 811405033 <b>E-mail:</b> <a href="mailto:Olavi.Makuti@windhoekcc.org.na">Olavi.Makuti@windhoekcc.org.na</a>  <b>EAPs:</b> Mr. Olavi Makuti and Mr. Mekondjo Shanyengange
<b>DATE OF RELEASE</b>	January 2024

## EXECUTIVE SUMMARY

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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

As such, the City of Windhoek jointly with the Free Hanseatic City of Bremen in Germany 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 in Windhoek 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 Solid Waste Management 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 residents by making recycling a financially viable and sustainable business.

This EIA study is for the waste buyback center that 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 the figure below.

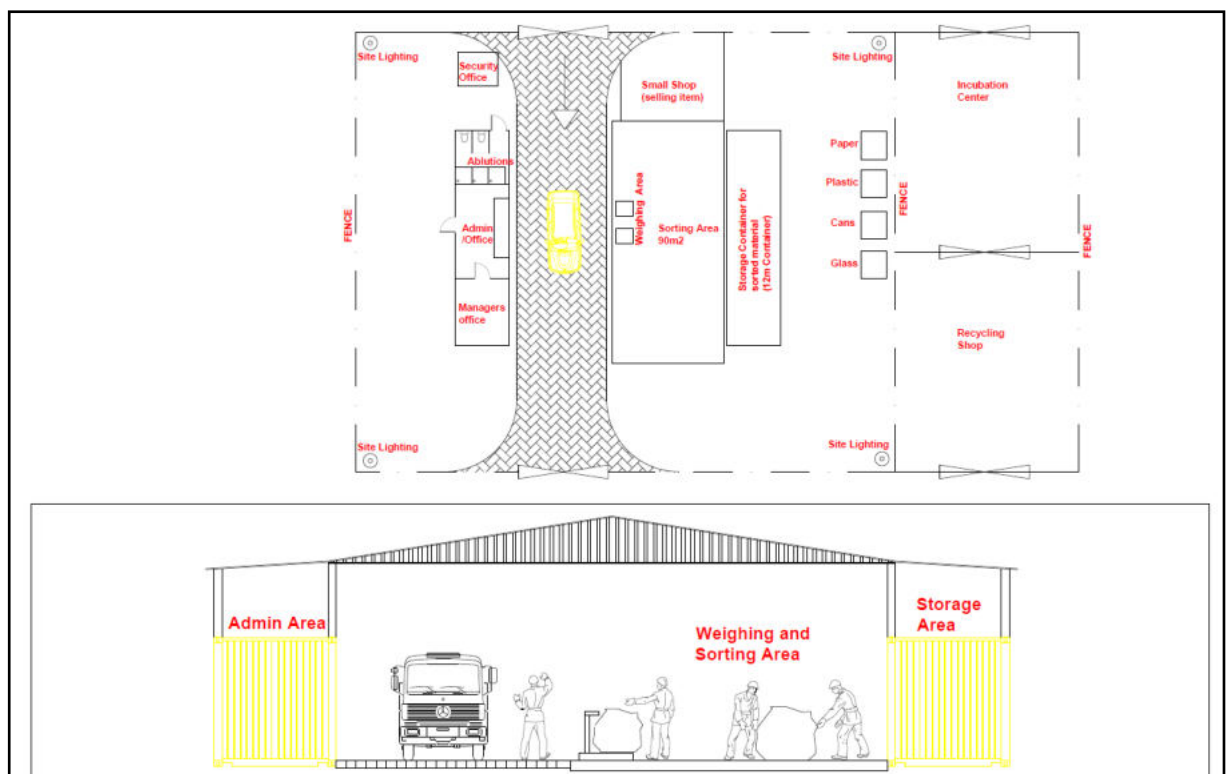


To satisfy the requirements of Namibia's *Environmental Management Act No.7 of 2007* and to ensure environmental sustainability, the Solid Waste Management Division has requested the City's Health and Environment Services Division to conduct this Environmental Impact Assessment (EIA) of the proposed waste buy-back centre and apply for Environmental Clearance.

The proposed erf where the envisaged buy-back centre will be constructed is currently zoned "undetermined" in the Windhoek structure plan. Undetermined zoning has no specified primary use. The Municipal Council of Windhoek has approved (**Resolution 166/06/2022**) the use of the erf for the construction of the waste buy-

back centre while the cadastral procedures and statutory approval are ongoing. There are no activities on this erf now.

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 waste 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 layout design of the envisioned waste buy-back centre is shown on the figure below.



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. This centre will play 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.

The significance of all the impacts identified and assessed for this project can be effectively mitigated through the implementation of mitigation measures recommended in the Environmental Management Plan (EMP). No impacts with a “*high*” significance rating are expected on this project. The few impacts that were rated “*medium*” before mitigation for both the construction and operational phase of the buy-back centre can be successfully reduced to “*low*” with the implementation of the recommended mitigation measures.

#### Impacts with a “medium” rating and their source.

IMPACT	SOURCE
<b>Noise</b>	Noise emanating from construction vehicles and equipment such as drillers, compactors and other machineries. Noise will also be generated during the operational phase of the project buy vehicles and waste processing machines.
<b>Pollution</b>	Various pollutants associated with construction activities such as chemical pollution from oil spills resulting from the handling of various machineries used during construction, building rubble and empty bags and containers.
<b>Dust</b>	Loosening of the substrate, excavation work and movements of construction vehicles.
<b>Odours</b>	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.
<b>Wind-blown debris</b>	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.
<b>Occupational Health and Safety Risks</b>	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.

The proposed waste buy-back centre will result in many environmental and socio-economic benefits to the City of Windhoek and its residents at large. The main positive impacts of the project are summarized on the table below.

<b>IMPACT</b>	<b>SOURCE</b>
<b>INCREASED RECYCLING RATE</b>	The envisaged waste buy-back centre will therefore significantly contribute to the promotion and increase recycling activities in Windhoek. The increase of recycling will also contribute to the attainment of the City's environmental sustainability goals as littering and pollution will be reduced.
<b>DIVERSION OF WASTE FROM LANDFILL SITE</b>	The envisaged buy-back centre will significantly contribute to the reduction of waste that ends up at Kupferberg.
<b>REDUCTION IN DISPOSAL COSTS</b>	The City will also be saving in terms of disposal costs. This is because if many of the recyclables are removed from the waste stream, the city will spend less in terms of collection and transportation to waste disposal facility.
<b>INCOME GENERATION OPPORTUNITY FOR INFORMAL RECYCLERS</b>	The development of initiatives like this centre will help to provide the much-needed opportunity to earn an income for the informal recyclers.

This study concludes that this project does not pose any serious environmental concern, except those mentioned in this report, which can be satisfactorily addressed through the implementation of mitigation measures recommended in the Environmental Management Plan. The positive environmental and social impacts that the project will realize far out scales the negative ones.

Furthermore, this project upon completion will help to promote recycling in Windhoek and an overall improvement to the City's waste management system will be attained. The proposed construction of a municipal waste buy-back centre is the first project of this nature in Namibia and has a possibility to change the attitudes of the residents to view waste as a resource that they can use to make an income.

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## 1. INTRODUCTION

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### 1.1 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.

## **1.2 NEED AND DESIRABILITY**

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%).

Research have shown that developed economies have managed to reduce the problems associated with solid waste management by promoting recycling through a combination of legislation and setting-up of facilities such as the envisioned waste buyback centre. Similar models can be replicated in developing countries with a great level of success. Many waste buy-back centres are successfully operated in the City of Durban in South Africa. A team from the City of Windhoek have recently visited these centres and some of the lessons learned there have been incorporated in the designs of the proposed buyback centre.

### **1.3 TERMS OF REFERENCE**

The proponent required the Environmental Assessment Practitioner to carry out this study as per the requirements of the *Environmental Management Act No.7 of 2007* and the *Environmental Assessment Regulations* (February 2012).

The EIA process will investigate if there are any potential significant biophysical and socio-economic impacts associated with the intended construction and operation of the Waste Buyback Center. Public participation is the cornerstone of the EIA process as this is the stage where Interested and Affected Parties (I&APs) are considered and involved in the decision making process. The EIA process would therefore provide the I&APs an opportunity to raise issues of concern and suggestions for enhanced benefits as provided for in the EMA and Environmental Assessment Regulations.

### **1.4 ENVIRONMENTAL ASSESSMENT PRACTITIONERS (EAPs)**

- **Olavi Makuti (Lead Assessment Practitioner)**

Mr. Makuti's main area of expertise includes Urban Environmental Management, Biodiversity Conservation, Strategic Environmental Assessments (SEA), Environmental Impact Assessments (EIA), and Environmental Management

Systems (EMS). Olavi has 18 years' experience in the field of environmental management and has a Master's Degree in Environmental Management (University of the Free State, South Africa), B.Tech Degree in Natural Resources Management (Polytechnic of Namibia) and National Diploma in Nature Conservation (Polytechnic of Namibia). He has also done the MDP (Management Development Program) with the University of Stellenbosch and other short courses. He has successfully completed more than 15 EIAs as a Lead Environmental Assessment Practitioner. His CV is attached for further information on his educational qualifications and experience.

- **Mekondjo Shanyengange (Assessment Practitioner)**

Mr. Shanyengange has vast experience in the field of environmental management. He has worked as a fisheries biologist and in the mining sector before he joined the City of Windhoek's environmental management function. He has a broader understanding of the Namibian environmental management frameworks. His academic qualifications include, Masters Degree in Environmental Management from the University of Cape Town, Bachelor of Science with Honours majoring in Ichthyology and Marine Science from the University of Rhodes amongst other qualifications.

## 2. DESCRIPTION OF THE PROPOSED PROJECT

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### 2.1 LOCATION

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.

### 2.2 CURRENT STATUS OF THE ERF

The proposed erf where the envisaged buy-back centre will be constructed is currently zoned “undetermined” in the Windhoek structure plan. Undetermined zoning has no specified primary use. The Municipal Council of Windhoek has approved

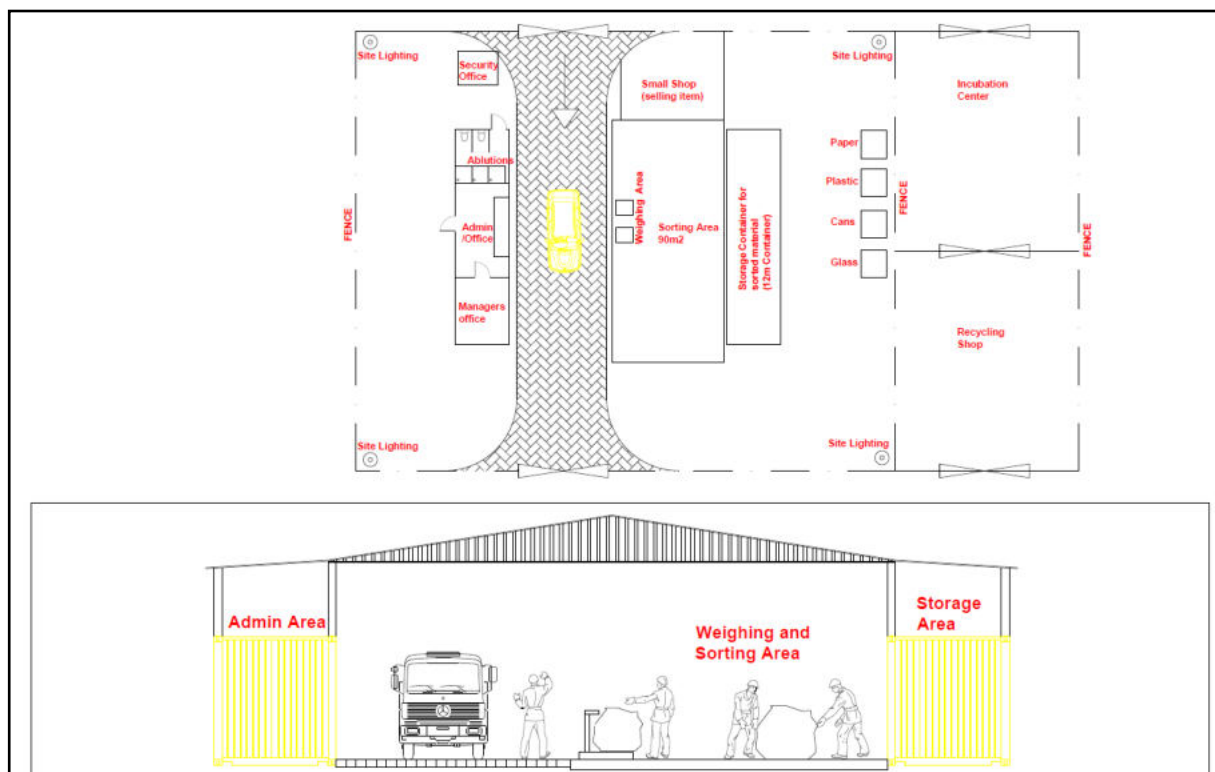


**(Resolution 166/06/2022)** the use of the erf for the construction of the waste buy-back centre while the cadastral procedures and statutory approval are ongoing.

There are no activities at the site now. The open area immediately north of the site is used to park trucks. Passersby has polluted the site with human waste as they use it to relieve themselves. To control this and other criminal activities the Parks Division of the City of Windhoek has pruned some of the plants on the site to increase visibility.

### **2.3 LAYOUT PLAN AND DESIGN OF BUYBACK CENTRES**

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

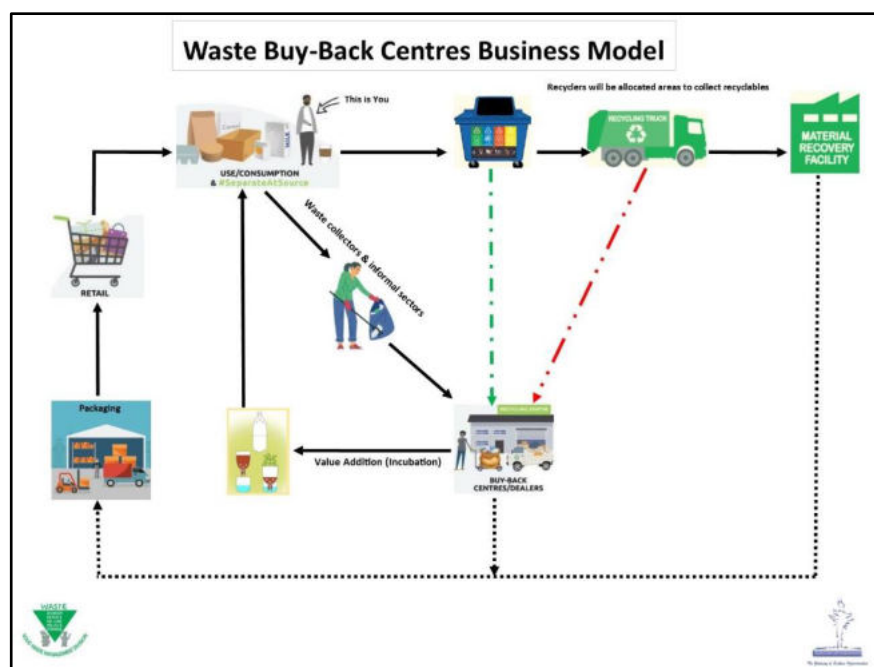
## 2.4 OPERATIONS OF THE BUYBACK CENTRES

### 2.4.1 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

## 2.4.2 Waste Handling Procedures

### a) Receiving of Waste

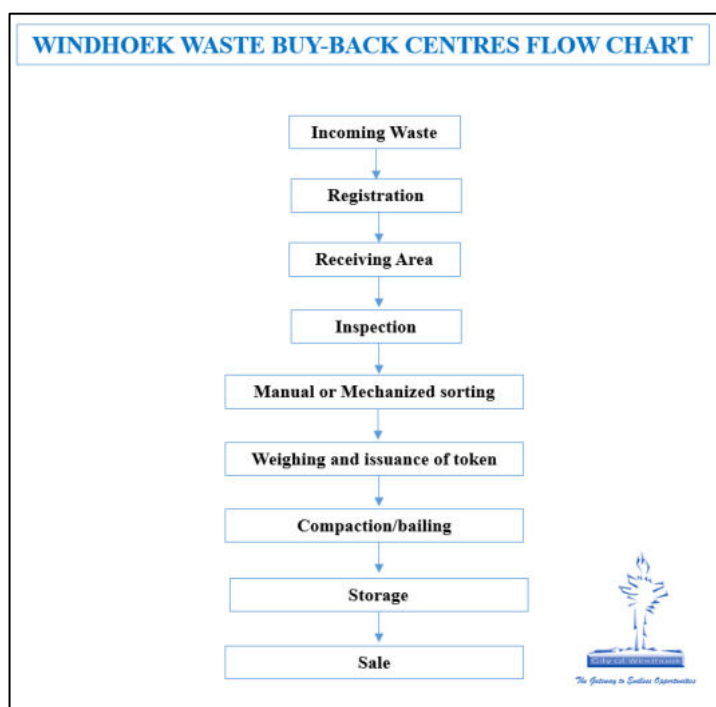
Selling of recyclables at the buy-back centre start with the inspection to ensure that it only contains the waste accepted at the facility. This will be done through visual inspection.

### 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

### 2.4.3 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.

#### **2.4.4 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.

### **2.5 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.

### **3. ANALYSIS OF PROJECT ALTERNATIVES**

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#### **3.1.1 No Action**

The No Action Alternative in respect to the proposed project implies that the status quo of conventional waste management is maintained. This means that all the challenges faced in terms of littering and waste management will persist. This is an undesirable option for the City of Windhoek, as it will affect its long-term financial and environmental sustainability.

#### **3.1.2 Alternative Sites**

This option entails relocating the proposed project to a different site. This means that the City of Windhoek has to look for the land if relocation is proposed. It is worth noting that the EU Project that is funding the construction of the center has provided a timeframe within which the funds must be spend. The process of identifying and securing new sites will result in time delays and ultimately the funds will be lost. The identified site have also been selected because it is the most accessible to the target population in Windhoek's low-income areas. Therefore, relocating the project to different sites might lead to the failure of the initiative, as most people will struggle to access it. The selected site is big enough for the envisaged activities. Thus, no alternative sites are required.

## 4. 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
<b>The Constitution of the Republic of Namibia</b>	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.
<b>Environmental Management Act No.7 of 2007 and EIA Regulations (2012)</b>	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.
<b>Water Act 54 of 1956</b>	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.



<b>The Water Resources Act 24 of 2004</b>	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.
<b>Forestry Act No 27 of 2004</b>	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.
<b>Nature Conservation Ordinance no. 4 of 1975</b>	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.
<b>Soil Conservation Act No 76 of 1969</b>	Combating and prevention of soil erosion, the conservation, improvement and manner of use of the soil and vegetation and the protection of the water sources	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.
<b>Atmospheric Pollution Prevention Ordinance No 45 of 1965</b>	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.
<b>Hazardous Substance Ordinance 14 of 1974</b>	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	Ministry of Health and Social Services	The handling, usage and storage of hazardous substances on site should be carefully controlled according to this Ordinance.

	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.		
<b>Local Authorities Act No. 23 of 1992</b>	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.
<b>The Labour Act of 1992</b>	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.
<b>Public and Environmental Health Act of 2015</b>	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	Ministry of Health and Social Services	Contractors and users of the proposed centre are to comply with these legal requirements.

	Public Health Act 36 of 1919 (SA GG 979)		
<b>National Heritage Act, 2004 (Act N0.27 of 2004)</b>	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.
<b>Atmospheric Pollution Prevention Ordinance (1976)</b>	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.
<b>National Solid Waste Management Strategy, 2018</b>	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.
<b>City of Windhoek Solid Waste Management Policy (2010)</b>	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	City of Windhoek (Solid Waste Management Division)	The envisioned centre is in line with this policy, as it will promote recycling.

	Integrated Waste Management Hierarchy.		
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.

## 5. DESCRIPTION OF THE RECEIVING ENVIRONMENT

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### 5.1 CLIMATE

Rainfall in Windhoek follows the national trend and occurs mainly between November and April, but is described as unpredictable, sporadic and of high intensity. The mean annual rainfall is in the order of 350 to 400 mm per annum with an average evaporation in the region of 3400 mm per annum. The average daily maximum temperature in summer in Windhoek is approximately 32°C (December) and the minimum 4°C in winter (July). Wind in Windhoek is common throughout the year and is highly variable. Prevailing winds are generally from a southeasterly direction. (Mendelsohn, *et al* 2002).

### 5.2 GEOLOGY AND SOILS

Windhoek is underlain by biotite schist of the Kuiseb Formation, characteristic of the southern zone of the Damara Sequence. Biotite schist is a moderately coarse-grained foliated crystalline rock with monoclinic biotite minerals. It can be observed on the slopes of many of the road cuts in and around Windhoek and is known for its rather rapid rate of weathering, especially when exposed. Schists cover the largest part of the Khomas Hochland (Africon, 2004).

A north-south running band of sand calcrete gravel and alluvium, especially along rivers and defined drainage lines, intersects the biotite schist. Sand calcrete gravel is a highly permeable and unconsolidated surficial deposit consisting of sand and calcrete and acts as an infiltration medium for surface water. Alluvium, on the other hand, is a general term used to describe transported material such as riverine deposits (Africon, 2004).

Windhoek generally has poorly developed thin topsoil that is the product of alluvial and colluvial deposition of mainly fine sands and silts intermixed with residual quartz pebbles.

### 5.3 HYDROGEOLOGY

Groundwater is one of the most important sources of water in Windhoek and for this reason, the protection of ground water sources is of very high priority when considering any form of developments in Windhoek. Of even more importance in Windhoek is the fact that all pollutants are washed downstream by ephemeral river systems, into the Swakoppoort Dam that supplies the central towns including Windhoek with most of its portable water. Any effluent resulting from the waste buy-back centre is likely to affect the downstream resources in the long term.

A number of north-southerly striking faults and joints found in Windhoek form the major underground water conduits of the Windhoek Aquifer and hence determine the conditions of the aquifer. Secondary porosity giving rise to high aquifer transmissivity is best developed in faults with post-hydrothermal alteration brecciation in quartzitic environments.

### 5.4 BIODIVERSITY

The City of Windhoek is virtually surrounded by a band of *Acacia erubescens* savanna, with semi-open to closed, tall shrub lands and mountains of the Khomas Hochland that supports a moderate to high species diversity, including protected Aloe species and other endemics. Alluvial plains and *Acacia mellifera* dominated lowlands are prominent north and south of the city, especially along the major drainage lines and includes the main recharge area for the Windhoek aquifer to the south of the City (Africon, 2004).

Along the ephemeral rivers that run across the City, the vegetation is dominated by the woody species *Acacia karroo* (sweetthorn) and the associated species *Ziziphus mucronata* (buffalo thorn), *Rhus lancea* (Karee) and *Acacia hebeclada* subsp. *hebeclada* (candle-pod acacia). Typical herbaceous species are the grasses *Setaria verticilata*, *Eragrostis echionchloea*, *E. rotifer* as well as various other annual herbs.

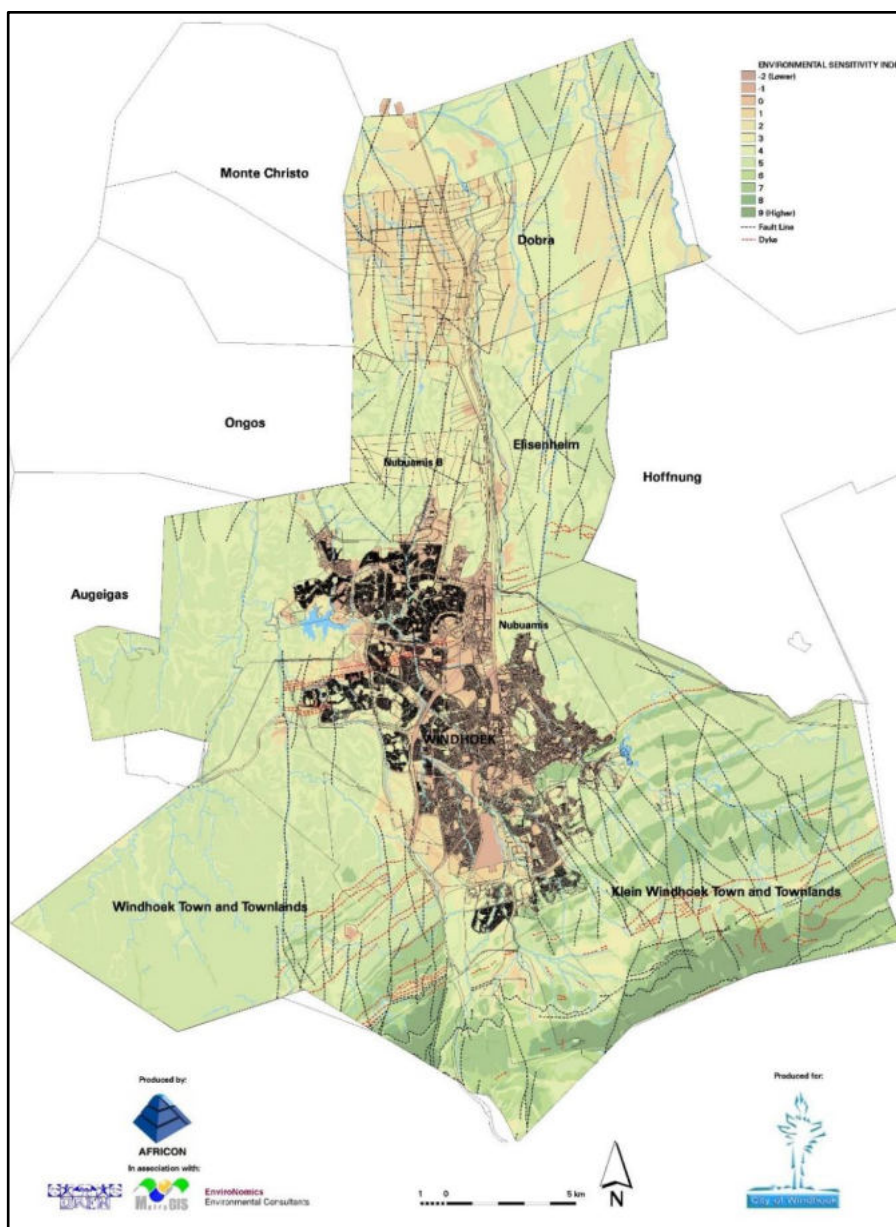
The project site is covered with a few grass species and bushes. Two protected species namely *Boscia albitrunca* and *Albizia anthelmintica* were observed on the project site. The site is also polluted with human excreta. The site holds less ecological and conservation value. The picture below depicts the current state of the environment of the site.



**Picture 1:** Environmental status of the proposed buyback centre site in Katutura

## 5.5 ENVIRONMENTAL SENSITIVITY

The site for the proposed buy-back centre falls within low environmental sensitivity zone in term of water, landscaping, and vegetation sensitivity zone and the area environmental sensitivity index is 1 (one) for this site. This means that the environmental consequences of the proposed development of a waste buy-back centre in this area is insignificant.



**Figure 5:** Environmental sensitivity index of the City of Windhoek



## 5.6 SOCIO-ECONOMIC SETTING

The City of Windhoek is the capital city of Namibia and it is the hub for all economic activities in the Khomas Region. It is linked to Namibia's air, rail and road network, making it well situated to service Zambia, Zimbabwe, Botswana, Southern Angola and South Africa.

The Namibian population is fast moving from a rural-based population to an urban-based one. This is resulting in the rapid proliferation of informal settlements in most major urban centers of the country (Weber & Mendelsohn, 2017). Thus far, it is conservatively estimated that about 51.04% of Namibia's population lives in cities and urban areas, and about 48.96% lives in rural areas. This is a significant increase in the urban population since 2009 when 40.6% of the population was urban.

Informal settlements experience most of the growth in urban areas. According to Weber & Mendelsohn, 2017, the number of urban shacks grew each year by 11.2% between 1991 and 2001, and by 10.1% between 2001 and 2011. Urban formal housing only grew by 3.7% each between 1991 and 2001, and by 4.4% from 2001 to 2011.

The driving factor for the high rural to urban migration includes amongst others the quest for jobs and money, rural poverty and education. When they arrive in cities, many people settle in informal settlements, as they cannot afford the high prices of accommodation in cities. Informal structures are mainly constructed with corrugated iron and lack basic municipal services such as water and electricity.

Namibia has a high incidence rate of HIV/AIDS, which has a strong and adverse socio-economic impact on livelihoods of people in the region. The HIV prevalence rate for the age group 15 to 49 is estimated at 21.3% for Namibia (UNDP, 2005).

This increase in urban population has put pressure on the City of Windhoek's ability to manage waste sustainably resulting in an increase in littering and high cost of waste management. With very little recycling activities in Windhoek, most waste ends up at the Kupferberg Landfill Site.

## **5.7 ARCHAEOLOGY**

The scoping exercise did not discover any archaeological material on the site of the buy-back centre. Should there be any such discovery during the course of the construction phase, the National Heritage Council of Namibia should be informed immediately and all construction activities must be halted. The National Heritage Council will assess the discovery and based on the findings of their assessment they will advise on the way forward.

## 6. PUBLIC CONSULTATION

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### 6.1 OBJECTIVES OF PUBLIC CONSULTATION

Public participation is the cornerstone of the EIA process as this is the stage where Interested and Affected Parties are considered and involved in the decision making process. Its key objective is to assist stakeholders to raise issues of concern and suggestions for enhanced benefits, and to comment on the findings of the EIA. *Namibia's Environmental Management Act No.7 of 2007* and its regulations require that the Interested and Affected Parties be adequately consulted during the EIA process.

### 6.2 PUBLIC PARTICIPATION DURING THE SCOPING PHASE

Interested and Affected Parties (I&APs) during the scoping exercise were given an opportunity to get background information on the proposed development and raise their concerns through newspaper advertisements that called for stakeholders to register as I&AP. Information on the project was provided to Interested and Affected Parties upon request.

*Information to I&APs regarding the proposed development and operation of the waste Buy-back Centre was disseminated through the following means:*

- **Newspaper Notices**

Newspaper notices were placed in two daily newspapers (*New Era and Namibian*). The notices were placed once a week for two weeks as required by the EIA Regulations. The newspaper notices of the environmental clearance application for the proposed construction of the Waste Buy-back Centre are attached as **Appendix E**. The newspaper notices stated that an

application for an Environmental Clearance is to be submitted to the Environmental Commissioner, provided information on the nature of the activity and location, invited I&AP to register as such and provided contact details, details about the two public meetings and where further information on the application or activity can be obtained.

- **Background Information Document (BID)**

A BID was prepared for the proposed project (**Appendix D**). The BID was intended to provide information about the EIA being undertaken for the proposed construction of the Waste Buy-back Centre and provided: an overview of the project; a description of the manner in which the EIA was undertaken, an indication of how Interested and Affected Parties (I&AP) may become involved in the EIA process; and provided contact details of the person to whom I&APs may submit their comments. The BID was circulated to all that registered as I&AP.

- **Public Meetings**

Two public meetings were held on September 10, 2022, at an Open Space near the project site in Otjomuise (8ste Laan area) and on September 11, 2022, at the Katutura Community Hall respectively.

The public meetings generally agreed that the proposed project would assist the City of Windhoek to address problems it is facing with its current waste management system and will contribute to the creation of much needed jobs. The table below provides a summary of the main issues that came out of the meetings.



**Picture 2:** Interested and Affected Parties attending public meetings

**Table 2:** Main issues raised at the public meetings

ISSUES RAISED	RESPONSE FROM CITY OFFICIALS
<p><b>Employment opportunities:</b></p> <p>Will the project provide jobs to the members of the community?</p>	<ul style="list-style-type: none"> <li>- Residents of the nearby communities should be considered for all nonskilled work during the construction of the buy-back centres.</li> <li>- The emphasis of the project is to empower residents so that they can generate their own source of income through recycling.</li> </ul>
<p><b>Support to recyclers:</b></p> <p>Will the project buy equipment for the small-scale recyclers such as gloves, bags and containers to keep recyclables?</p>	<ul style="list-style-type: none"> <li>- The project targets all residents that are able to collect recyclables. It would therefore not be feasible to provide equipment to all residents in affected communities.</li> </ul>
<p><b>Pricing of recyclables:</b></p> <ul style="list-style-type: none"> <li>- The success of the project will be dependent on how good the pricing model is. The price that will be paid to recyclers should be good to provide incentive for people to collect recyclables.</li> </ul>	<ul style="list-style-type: none"> <li>- This concern is noted and will be taken into consideration during the setting of prices.</li> </ul>

<p>- One resident complained that the private companies that are currently involved in the buying of recyclables manipulate their scales to rob the recyclers.</p>	<p>- We want to assure you that this practice will not happen at the envisaged buyback centres as it will be owned and managed by the City of Windhoek (indirectly owned by the residents). Unlike the private operators, the City of Windhoek is not driven by profits but by the need to keep Windhoek clean and provide income opportunities to our residents.</p>
<p><b>Involvement of People with disability:</b> The people living with disability has not been specifically mentioned in background documents of the project, will they also be considered?</p>	<p>It is just an oversight, people with disability, all other vulnerable members of our society always enjoy preference in all City of Windhoek projects, and programs and this project will not be an exception.</p>
<p><b>Sustainability of the project:</b> It has been noted with concern that projects of this nature will always start well but once the project funding ends they become white elephants.</p>	<p>The sustainability of the buy-back centres has already been considered at the inception phase of the project. As such, a study will be commissioned by the project to look at the most sustainable operational model beyond the project lifespan.</p>
<p><b>Payment options:</b> Is there an option for residents to sell their recyclables to the centre and their payment to be diverted to cover their municipal bills?</p>	<p>This has been noted and the project team will evaluate the feasibility of this option.</p>
<p><b>Future of ward contractors:</b> Will this project lead to the cancellation of contracts of the people currently employed by the City of Windhoek as Ward Contractors?</p>	<p>This project is independent from the current waste management arrangements and it's not meant to replace what the city is currently doing but to complement it.</p>

## 7. ENVIRONMENTAL IMPACT ASSESSMENT

### 7.1 METHOD OF ASSESSMENT

The significance of the identified impacts of the proposed construction of the Waste Buyback Centre in Katutura was assessed using the criteria discussed on table 3 below.

**Table 3:** Criteria used to determine the significance of impacts and their definitions.

CRITERIA	DESCRIPTION
<b>NATURE</b>	This criteria indicates whether the proposed activity has a <b>positive</b> or <b>negative</b> impact on the environment (environment comprises both socio-economic and biophysical aspects).
<b>EXTENT</b>	This criteria measures whether the impact will be site specific; local (limited to within 15 km of the area); regional (limited to about 100 km radius); national (limited to within the borders of Namibia) or international (beyond Namibia's borders).
<b>DURATION</b>	This criteria looks at the lifetime of the impact, as being short (days, less than a month), medium (months, less than a year), long (years, less than 10 years), or permanent (more than 10 years).
<b>INTENSITY</b>	This criteria is used to determine whether the magnitude of the impact is destructive and whether it exceeds set standards, and is described as none (no impact); low (where the environmental functions are negligible affected); medium (where the environment continues to function but in a noticeably modified manner); or high (where environmental functions and processes are altered such that they temporarily or permanently cease).
<b>PROBABILITY</b>	Considers the likelihood of the impact occurring and is described as improbable (low likelihood), probable (distinct possibility), highly probable (most likely) or definite (impact will happen regardless of prevention measures).
<b>DEGREE OF CONFIDENCE IN PREDICTION</b>	This is based on the availability of information and knowledge used to assess the impacts.

The significance of the potential impacts identified for this project is determined using a combination of the criteria discussed on the above table. The significance rating of impacts is described on the table below.

**Table 4:** Definition of the various significance ratings

SIGNIFICANCE RATING	CRITERIA
<b>Low</b>	Where the impact will have a negligible influence on the environment and no mitigations are required.
<b>Medium</b>	Where the impact could have an influence on the environment, which require some modifications on the proposed project design and/or alternative mitigation.
<b>High</b>	Where the impact could have a significant influence on the environment and, in the case of a negative impact, the activity causing it, should not be permitted.

## 7.2 POTENTIAL IMPACTS IDENTIFIED AND ASSESSED

### 7.2.1 CONSTRUCTION RELATED IMPACTS

#### NEGATIVE IMPACTS:

- **NOISE**

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.



**Table 5:** Assessment of impacts associated with noise.

IMPACT	NATURE	EXTENT	DURATION	INTENSITY	PROBABILITY	DEGREE OF CONFIDENCE	SIGNIFICANCE		
							PRE MITIGATION	PRESCRIBED MITIGATION	POST MITIGATION
Increased noise levels	Negative effect on construction workers and residents	Local	Medium	Low	Probable	Medium	Medium	All workers on site must be equipped with earplugs to be used when the noise becomes unbearable.	Low
							Medium	Switch off machines that are not used.	Low
							Medium	Construction activities must not start before 08h00 and not exceed 17h00 to avoid disturbing the residents of the nearby residential areas.	Low

- POLLUTION**

There are various types of pollution associated with the construction phase. 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. Construction workers can also pollute the surrounding environs if they are not provided with adequate toilet facilities. If the waste is not handled properly, it can have a detrimental effect on the surrounding environs.

**Table 6:** Assessment of impacts associated with pollution.

IMPACT	NATURE	EXTENT	DURATION	INTENSITY	PROBABILITY	DEGREE OF CONFIDENCE	SIGNIFICANCE		
							PRE MITIGATION	PRESCRIBED MITIGATION	POST MITIGATION
Pollution	Negative effect on the environment when waste emanating from construction activities is not managed.	Local	Medium	Low	Probable	Medium	Medium	Ensure that all waste from construction activities is stored and contained in designated containers and transported to Kupferberg Waste Disposal Site for proper disposal.	Low

- DUST**

Construction activities are generally associated with dust as the substrate is loosened during construction. Activities such as the clearing of vegetation and levelling of land will slightly affect the air quality. This will especially be an issue during windy days. Dust can affect the health of the construction workers and residents of the nearby Katutura townships.

**Table 7:** Assessment of impacts associated with dust emission.

IMPACT	NATURE	EXTENT	DURATION	INTENSITY	PROBABILITY	DEGREE OF CONFIDENCE	SIGNIFICANCE		
							PRE MITIGATION	PRESCRIBED MITIGATION	POST MITIGATION
Health effect of dust on the construction workers and Katutura residents	Respiratory sicknesses can result from prolonged exposure to dust	Local	Medium	Low	Probable	Medium	Medium	- Equip all the workers exposed to dust with dust masks  -Spray the areas that are most affected to minimize dust and minimize activities that can generate dust during windy days.	Low

- **VISUAL AND SENSE OF PLACE IMPACTS**

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.

**Table 8:** Assessment of visual impacts of the project.

IMPACT	NATURE	EXTENT	DURATION	INTENSITY	PROBABILITY	DEGREE OF CONFIDENCE	SIGNIFICANCE		
							PRE MITIGATION	PRESCRIBED MITIGATION	POST MITIGATION
Impact on visual properties of the area	The waste buyback centres can have an impact on the visual quality of the area.	Local	Permanent	Low	Probable	Medium	Low	- 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.	Low

### POSITIVE IMPACTS:

- **EMPLOYMENT OPPORTUNITIES**

The project will provide a few temporary jobs during the construction phase. This will be a welcomed relief considering the high rate of unemployment in Windhoek and in Namibia as a whole.

**Table 9:** Assessment of impacts associated with employment opportunities.

IMPACT	NATURE	EXTENT	DURATION	INTENSITY	PROBABILITY	DEGREE OF CONFIDENCE	SIGNIFICANCE		
							PRE MITIGATION	PRESCRIBED MITIGATION	POST MITIGATION
Employment opportunities during the construction of wastewater treatment plant	The construction of the plant will create a few temporary jobs and this will have a positive economic impact on the city.	Local	Medium	Low	Probable	Medium	Low	To further enhance the socio-economic benefits from the development of the plant, the Project Manager should make it mandatory to all contractors that all unskilled work should be given to the residents of Katutura.	Low

## 7.2.2 OPERATION RELATED IMPACTS

### NEGATIVE IMPACTS:

- ODOURS**

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.

**Table 10:** Assessment of impacts associated with odours

IMPACT	NATURE	EXTENT	DURATION	INTENSITY	PROBABILITY	DEGREE OF CONFIDENCE	SIGNIFICANCE		
							PRE MITIGATION	PRESCRIBED MITIGATION	POST MITIGATION
Bad odours.	Odours can affect the quality of life of the nearby residential areas.	Local	Long	Low	Probable	Medium	medium	Ensure that all the waste accepted at the centre are clean.  Develop guidelines for	Low

								recyclers on the type waste that will be accepted at the centre.	
								Disinfect areas where waste is processed to avoid odors.	

- **WIND-BLOWN DEBRIS**

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.

**Table 11:** Assessment of impacts associated with wind-blown debris

IMPACT	NATURE	EXTENT	DURATION	INTENSITY	PROBABILITY	DEGREE OF CONFIDENCE	SIGNIFICANCE		
							PRE MITIGATION	PRESCRIBED MITIGATION	POST MITIGATION
Wind-blown debris	The waste blown by the wind from the waste buy-back centre can cause pollution if managed properly.	Local	Long	Low	Probable	Medium	medium	Keep waste in closed containers.  Regular inspections of the perimeter fence to remove waste.	Low

- **NOISE FROM OPERATIONS**

During the operations of the buy-back centre noise will mainly emanate from the vehicular movements when people bring 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.

**Table 12:** Assessment of impacts associated with noise from operations.

IMPACT	NATURE	EXTENT	DURATION	INTENSITY	PROBABILITY	DEGREE OF CONFIDENCE	SIGNIFICANCE		
							PRE MITIGATION	PRESCRIBED MITIGATION	POST MITIGATION
Increased noise levels	Negative effect on nearby businesses.	Local	Long	Low	Probable	Medium	Medium	All workers on site must be equipped with earplugs to be used when the noise becomes unbearable.	Low
							Medium	Switch off machines that are not used.	Low
							Medium	The operations of the centre should be restricted to normal working hours e.g. 08h00-17h00.	Low

- OCCUPATIONAL HEALTH AND SAFETY RISKS**

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. The City of Windhoek has an effective Occupational Health and Safety Program that have protected its employees that are exposed to dangerous working environments (e.g. workers at the City's wastewater treatment facilities and waste disposal sites) for many years. Such a program will also be extended to envisaged facility.

**Table 13: Occupational health and safety risks**

IMPACT	NATURE	EXTENT	DURATION	INTENSITY	PROBABILITY	DEGREE OF CONFIDENCE	SIGNIFICANCE		
							PRE MITIGATION	PRESCRIBED MITIGATION	POST MITIGATION
Occupational Health and Safety Risks	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.	Local	Long	Low	Probable	Medium	medium	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.	Low

**POSITIVE IMPACTS:**

The proposed waste buy-back centre will result in many environmental and socio-economic benefits to the City of Windhoek and its residents at large. The main positive impacts of the project are assessed on the table below.

**Table 14: Positive impacts of the project**

POTENTIAL IMPACTS	EXTENT	DURATION	INTENSITY	PROBABILITY	SIGNIFICANCE
<b>1. INCREASED RECYCLING RATE</b>  The integrated waste management hierarchy concept adopted in the City of Windhoek's Solid Waste Management Policy advocates for the promotion of recycling in Windhoek. Now, the recycling rate in Windhoek is very low. For instance, out of the 7000 tonnes of waste that is disposed at the Kupferberg Waste Disposal Site only a mere 5% is recycled. The envisaged waste buy-back centre will therefore significantly contribute to the promotion and increase recycling activities in Windhoek. The increase of	Local	Long	Medium	Probable	Medium

recycling will also contribute to the attainment of the City's environmental sustainability goals as littering and pollution will be reduced.					
<p><b>2. DIVERSION OF WASTE FROM LANDFILL SITE</b></p> <p>Kupferberg Landfill Site is the City of Windhoek main waste disposal facility. Latest Airspace survey predicts that Kupferberg only has a life span of about 2-3 years on current airspace utilization rate. The Kupferberg expansion project to provide additional airspace is currently hamstrung at the construction phase due to a lack of funding (the expansion is estimated to cost around 180 million N\$). This implies that once this reaches its capacity, the City of Windhoek needs to invest millions of dollars to develop another engineered waste disposal facility money that the institution does not have. It is therefore important to ensure that the life span of the facility is increased by reducing the quantity of waste that ends there. This can be done by reducing waste generation in Windhoek or by diverting the waste from the site through recycling. The latter seems to be the most logical option and the envisaged centre will significantly contribute to the reduction of waste that ends at Kupferberg.</p>	Local	Long	Medium	Probable	Medium
<p><b>3. REDUCE DISPOSAL COSTS</b></p> <p>Besides saving landfill airspace, the City will also be saving in terms of disposal costs. This is because if many of the recyclables are removed from the waste stream, the city will spend less in terms of collection and transportation to waste disposal facility.</p>	Local	Long	Low	Probable	Medium
<p><b>4. INCOME GENERATION OPPORTUNITY FOR INFORMAL RECYCLERS</b></p> <p>Namibia is grappling with the issue of high unemployment. The development of initiatives like this centre will help to provide the much-needed opportunity to earn an income for the informal recyclers. This will in turn contribute to the improvement of the socio-economic situation of the residents.</p>	Local	Long	Medium	Probable	Medium



## **8. DECOMMISSIONING AND REHABILITATION**

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The Proponent does not plan to decommission the centre within the validity period of the Environmental Clearance or within the near future. Should this be a possibility in future it will entail the removal of all infrastructure erected on the site.

During the decommissioning, the main impacts that will be anticipated will include noise, dust, minor earth works, generation of building rubble and other waste. As mitigation during the decommissioning phase, all contaminated items should be disposed as hazardous waste, any pollution present on the site must be remediated and contaminated sand/soil should be collected and disposed of as hazardous waste at Kupferberg Hazardous Waste Cell.

Rehabilitation will only commence once all the infrastructure has been removed from the site and all pollution cleaned to the satisfaction of the Project Environmentalists. During rehabilitation, the site will be levelled to blend in with the natural landscapes and will thereafter be covered with fresh topsoil to promote vegetation succession.

The decommissioning and rehabilitation process should be coordinated with the local authority (the Proponent in this case) to ensure that municipal services to the site (water, electricity and sewer services) are disconnected without causing disruptions to the network.

## 9. CONCLUSIONS AND RECOMMENDATIONS

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### 9.1 Conclusions

This project upon completion will help to promote recycling in Windhoek and an overall improvement to the City's waste management system will be attained. The proposed construction of a municipal waste buy-back centre is the first project of this nature in Namibia and has a possibility to change the attitudes of the residents to view waste as a resource that they can use to make an income. This will have far-reaching implications to the City's waste management operations and might lead to a reduction in operational expenditure. There might be no need to spend money to clean public open spaces in future as waste collectors might fill this gap.

This project does not pose any serious environmental concern, except those mentioned in this report, which can be satisfactorily addressed through the implementation of mitigation measures recommended in the Environmental Management Plan. The positive environmental and social impacts that the project will realize far out scales the negative ones.

### 9.2 Recommendations

Having considered the information collected, collated and analyzed for this study, the following recommendations were arrived at:

5. The proponent (City of Windhoek) should immediately commence with the project once this report is approved;
6. The project site should be properly fenced off and secured to ensure that unauthorized entry is avoided;
7. Ensure that the occupational health and safety of workers during both the construction and operational phase of the project is maintained and enforced;

8. The waste to accepted at the centre should be in a fairly clean state and the waste processing area should be cleaned and disinfected on a regular basis to avoid offensive odors;
9. The City of Windhoek's Health and Environment Service Division should carry out regular environmental audits to ensure that the waste buy-back centre complies to all relevant standards and the Environmental Management Plan;
10. The Environmental Management Plan developed for this project should form part of any contracts to be entered into with any service provider during both the construction and operational phase of the centre.

## 10. REFERENCES

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## **APPENDICES**

### **APPENDIX A: ENVIRONMENTAL MANAGEMENT PLAN**

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**APPENDIX B: CV OF ENVIRONMENTAL ASSESSMENT  
PRACTITIONERS**

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## **APPENDIX C: INTERESTED AND AFFECTED PARTIES REGISTER**

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## **APPENDIX D: BACKGROUND INFORMATION DOCUMENT**

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## **APPENDIX E: PRESS NOTICES**

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## **APPENDIX F: DRAWINGS OF THE BUY-BACK CENTRE**

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**APPENDIX G: CONSENT FROM THE CITY OF WINDHOEK**

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