ENVIRONMENTAL SCOPING AND IMPACT ASSESSMENT FOR THE PROPOSED

CONSTRUCTION AND OPERATION OF CHARCOAL PROCESSING, PACKAGING, AND STORAGE FACILITY ON ERF 3112, OTJIWARONGO INDUSTRIAL AREA

Otjozondjupa Region





TABLE OF CONTENTS

NO	NON-TECHNICAL SUMMARY			
1.	INTRODUCTION			
1.1.	Project	Activities		
	1.1.1.	Pre-Construction Activities:		
	1.1.2.	Construction Activities:		
	1.1.3.	Operational Activities:		
	1.1.4.	Decommissioning Activities:		
2.	PURPOS	e of the report		
3.	ENVIRO	NMENTAL CONSULTANTS		
4.		REQUIREMENTS		
4.1.	Key Reg	gulators / Competent Authorities		
4.2.	Permits.			
5.	PROJEC	T MOTIVATION/RATIONALE		
6.	ALTERN	ATIVES CONSIDERED		
6.1.	No-Go	Alternative		
6.2.	Site/loc	ation		
6.3.	Resourc	ces		
7.	TERMS C	DF REFERENCE		
8.	EIA APPROACH AND METHODOLOGY			
9.	BASELINE ENVIRONMENT/ STUDY AREA			
9.1.	Biophys	ical Environment		
	9.1.1.	Climate		
	9.1.2.	Wind/Air Quality		
	9.1.3.	Flora and Fauna		
	9.1.4.	Hydrogeology and Geology		
	9.1.5.	Soil		
9.2.	Socio-E	conomic setting		
	9.1.6.	Regional Profile		
	9.1.7.	Locality Profile		
10.	STAKEH	OLDER ENGAGEMENT		

OMUTI BIOMASS TRADING CC

10.1. Public participation			
10.1.1.	Adverts		
10.1.2.	Site notice		
10.1.3.	Stakeholder participation and recommendation		
11. EVALUATI	ON OF IMPACTS	36	
11.1. Assessme	ent procedure	36	
12. IMPACTS	ASSESSMENT	41	
12.1.Construc	tion Phase	41	
12.2.Operatio	on Phase	47	
13. CONCLUSION AND RECOMMENDATION			
REFERENCES		53	
APPENDIX A -	ENVIRONMENTAL CONSULTANTS CV	54	
APPENDIX B – AGREEMENT AND DRAWINGS			
APPENDIX C – ADVERTS			
APPENDIX D – SITE NOTICES AND CONSULTATIONS			
APPENDIX E – FLORA SPECIES LIST			

LIST OF FIGURES

Figure 1 - Process Flow of Operational Activities of Omuti Biomass	5
Figure 2 – Locality map and infrastructure of the proposed project	6
Figure 3 : Proposed site layout, provided as site 3112	7
Figure 4 – Site layout (erf 3112) in relation to surrounding infrastructure	8
Figure 5 - EIA Flow Chart by EES	23
Figure 6: Prevailing wind in the Otjiwarongo town	25
Figure 7: Vegetation cover surrounding the proposed project area	28
Figure 8 – Groundwater basin in the surrounding project area	30
Figure 9 - Geology of the proposed area	31
Figure 10 – Dominant soil type in the proposed project area	33

LIST OF TABLES

Table 1: List of applicable laws and legislations	. 11
Table 2: Agencies regulating environmental protection in Namibia	. 15
Table 3: Other applicable permits to the proposed project	. 16

NON-TECHNICAL SUMMARY

Earth Environmental Services CC (EES) has been engaged by Omuti Biomass Trading cc (herein referred to as Omuti or the proponent) to act on their behalf in obtaining an Environmental Clearance Certificate (ECC) for the proposed construction and operation of a charcoal processing, packaging, and storage facility. The project area is located on Erf 3112 in an industrial-zoned area west of the Otjiwarongo townlands. The site can be accessed via the C33 road that passes by the Otjiwarongo Natis to the west. The Erf covers an area of approximately 3.2 hectares. Figure 2 - 4 provides locality maps of the project site.

The proposed project activities include land clearing and preparation, transporting relevant building material, equipment, construction of associated buildings and other infrastructure, processing of charcoal of different grades including packaging, storage, and burning of unprocessed charcoal to a minimal extent.

Otjiwarongo has a semi-arid climate (BSh, according to the Köppen climate classification), with hot summers and mild winters. The average annual precipitation is 457 mm. Located at an elevation between 1460 – 1470 meters above sea level, Otjiwarongo has a Subtropical steppe climate. The district's yearly temperature is 25.12°C and it is 0.66% higher than Namibia's averages. Charcoal processing activities are associated with charcoal dust exposure, which may increase the risk of workers developing adverse respiratory complications and other community nuisances. Therefore, it is imperative to understand the wind in the area. According to IEM (2022), the area has a prevailing easterly wind, average wind speed is the is approximately 1.7 meters per second (mps), with 21.3% calm days.

The site falls within the Tree and shrub savanna biome, which is characterized by Thornbush shrubland type vegetation. The vegetation structure type is classified as Dense shrubland (Figure 7). In general, the plant diversity of Otjiwarongo varies between 300-399 and 400-499 with more than 500 species expected between Otjiwarongo and Tsumeb. The average maximum production of plant biomass ranges from high to very high (Mendelsohn et al., 2002). The proposed project area is dominated by typical xeromorphic Thornbush Savanna with dominant woody plants generally consisting of Acacia reficiens, Terminalia sericea, Boscia albitrunca, Grewia, Dichrostachys cinerea, Acacia mellifera, Acacia fleckii, Boscia

albitrunca, Lonchocarpus nelsii and Acacia erioloba (Mendelsohn et al, 2002, National Herbarium of Namibia (WIND). 2020, Mannheimer and Curtis 2009).

The identification of potential impacts included impacts that may occur during the construction, operational and decommissioning phases of the project. The assessment of impacts includes direct, indirect as well as cumulative impacts. In order to identify potential impacts (both positive and negative) it is important that the nature of the proposed projects is well understood so that the impacts associated with the projects can be assessed and the mitigations as detailed in the EMP Report are implemented and monitored by the Proponent.

The following potential impacts on the environment during construction and operation activities have been identified:

- Dust & Noise
- Health & Safety
- Visual
- Waste
- Ecological
- Groundwater and surface water
- Heritage & Socio-Economic

Due to the limited scope of the proposed activities and the use of a step-by-step approach in advancing construction and operations, the overall severity of potential environmental impacts of the proposed project activities on the receiving environment will be of low magnitude, temporally duration, localized extent, and low probability of occurrence. All impacts are provided with mitigation measures, minimized or avoided to acceptable degrees provided that the measures are put into consideration

Based on the conclusions of this EIA Report, it is thus recommended that an Environmental Clearance Certificate be provided for the planned project activities. When implementing the proposed program, the Proponent shall consider the following critical requirements:

- If applicable, the Proponent will negotiate Access Agreements with landowners/authorities.
- The Proponent is responsible for obtaining all additional permits that may be required.

- In accordance with all applicable national rules, the Proponent shall comply with all terms of the EMP and conditions of the Access Agreement to be signed into between the Proponent and the landowner/s.
- In cases where baseline information, national or international guidelines, or mitigation measures have not been supplied or do not adequately address the site-specific project effect, the Proponent must use the precautionary approach/principles.

1. INTRODUCTION

Earth Environmental Services CC (EES) has been engaged by Omuti Biomass Trading cc (herein referred to as Omuti or the proponent) to act on their behalf in obtaining an Environmental Clearance Certificate (ECC) for the proposed construction and operation of a charcoal processing, packaging, and storage facility. The project area is located on Erf 3112 in an industrial-zoned area west of the Otjiwarongo townlands. The site can be accessed via the C33 road that passes by the Otjiwarongo Natis to the west. The Erf covers an area of approximately 3.2 hectares. Figure 2 – 4 provides locality maps of the project site and proposed project activities flowchart.

Charcoal is a plant-based material that is produced as a method of combating bush encroachment and thereby increasing the carrying capacity for livestock on farms across Namibia. Charcoal/wood is known as a primary source of energy for many Namibian households used for cooking and other. The Namibian charcoal industry employs an estimated number of 4800 workers; although, the exact number of workers varies seasonally. Therefore, the proposed project will contribute to the country's GDP through export tax, value addition and consequently positively contribute to the high unemployment rates of the country.

1.1. Project Activities

Omuti Biomass cc. hereafter referred to as (The proponent) is of the intention to undertake the following development as outlined below:

- 1.1.1. Pre-Construction Activities:
 - Ensuring and maintaining environmental authorizations/permits/licenses i.e.
 Environmental Clearance Certificate.
 - Ensuring environmental awareness for all project personnel (i.e., contractors, subcontractors and suppliers).
- 1.1.2. Construction Activities:
 - Land clearing and preparation.
 - Transporting relevant building material and equipment.
 - Construction of associated buildings and other infrastructure.
 - Installation of associated electrical services (Generator)

- Installation of associated water pipelines, in conjunction with Otjiwarongo Municipality.
- Preparation of access roads, in conjunction with Otjiwarongo Municipality
- Installation of septic tank
- 1.1.3. Operational Activities:
 - Installation of a 200-liter diesel tank.
 - Processing of charcoal of different grades including packaging storage
 - Burning of unprocessed charcoal to a minimal extent
 - Maintenance of the development.
- 1.1.4. Decommissioning Activities:
 - Removal of all infrastructure not to be reused during future use of land;
 - Remove all waste and unwanted materials;
 - Rehabilitate all unwanted access roads created, and
 - Rehabilitation of the land.

OPERATIONS PROCESS FLOW CHART



Figure 1 - Process Flow of Operational Activities of Omuti Biomass





Figure 3 : Proposed site layout, provided as site 3112



Figure 4 – Site layout (erf 3112) in relation to surrounding infrastructure

2. PURPOSE OF THE REPORT

In terms of the Environmental Management Act No.7 of 2007 and the Environmental Impact Assessment (EIA) Regulations of 2012, the project triggers listed activities that cannot be undertaken without an Environmental Clearance Certificate (ECC). An environmental clearance application will be submitted to the Ministry of Environmental, Forestry, and Tourism (MEFT) for approval before the commencement of the anticipated project activities.

The provision of the listed activities are as follows:

ENERGY GENERATION, TRANSMISSION, AND STORAGE ACTIVITIES

1. The construction of facilities for –

(a) the generation of electricity;

WASTE MANAGEMENT, TREATMENT, HANDLING, AND DISPOSAL ACTIVITIES

2.2. Any activity entailing a scheduled process referred to in the Atmospheric Pollution Prevention Ordinance, 1976.

FORESTRY ACTIVITIES

4. The clearance of forest areas, deforestation, afforestation, timber harvesting or any other related activity that requires authorization in terms of the Forest Act, 2001 (Act No. 12 of 2001) or any other law. Other listed activities that are also associated with the mining activities triggered include:

WATER RESOURCE DEVELOPMENTS

8.1 The abstraction of ground or surface water for industrial or commercial purposes.

HAZARDOUS SUBSTANCE TREATMENT, HANDLING AND STORAGE

9.1 The manufacturing, storage, handling or processing of a hazardous substance defined in the Hazardous Substances Ordinance, 1974.

3. ENVIRONMENTAL CONSULTANTS

Earth Environmental Services CC (hereinafter referred to as EES) is an independent consultant developed to assist clients to meet environmental legislative requirements, relevant standards and uphold environmental safety throughout project developments and operation. We assess and monitor the social and environmental impacts of biomass, mining, energy, tourism, and other sectors.

Our wide range of capabilities, disciplines, and services are fundamentally based on proactively delivering advice and solutions with the outlook of sustainability. This is done by awarding our clients the responsibility and opportunity to make unique differences in their industries. The detailed CVs of the team is presented in Appendix A.

4. LEGAL REQUIREMENTS

A list of legislation that is applicable to the proposed project is presented in Table 1.

Table 1: List of applicable laws and legislations

LAW	SUMMARY DESCRIPTION	
	The Constitution is the supreme law in Namibia, providing for the	
	establishment of the main organs of state (the Executive, the Legislature,	
Constitution of the	and the Judiciary) as well as guaranteeing various fundamental rights and	
Republic of	freedoms. Provisions relating to the environment are contained in	
Namibia, 1990	Chapter 11, article 95, which is entitled "promotion of the Welfare of the	
	People". This article states that the Republic of Namibia shall –	
	"actively promote and maintain the welfare of the people by adopting,	
	inter alia, policies aimed at maintenance of ecosystems, essential	
	ecological processes and biological diversity of Namibia and utilization of	
	living natural resources on a sustainable basis for all Namibians, both	
	present and future. The Government shall provide measures against the	
	dumping or recycling of foreign nuclear waste on Namibian territory."	
	The purpose of the Act is to give effect to Article 95(I) and 91(c) of the	
	Namibian Constitution by establishing general principles for the	
Environmental	management of the environment and natural resources. to promote the	
Management Act	coordinated and integrated management of the environment to give	
(2007) - Ministry of	statutory effect to Namibia's Environmental Assessment Policy. to enable	
Environment,	the Minister of Environment and Tourism to give effect to Namibia's	
Forestry and	obligations under international conventions. In terms of the legislation, it	
Tourism (MEFT)	will be possible to exercise control over certain listed development	
	activities and activities within defined sensitive areas. The listed activities	
	in sensitive areas require an Environmental Assessment to be completed	
	before a decision to permit development can be taken. The legislation	
	describes the circumstances requiring environmental assessments.	
	Activities listed as per the provisions of the Act will require environmental	
	assessment unless the Ministry of Environment, Forestry and Tourism, in	
	consultation with the relevant Competent Authority, determines otherwise	
	and approves the exception.	
Water Act 54 of	This Act provides for the control, conservation and use of water for	
1956	domestic, agricultural, urban, and industrial purposes. In terms of Section	

LAW	SUMMARY DESCRIPTION		
Ministry of Agriculture, Water and Land reform (MAWLR)	6, there is no right of ownership in public water and its control and use is regulated and provided for in the Act. In accordance with the Act, the proposed project must ensure that mechanisms are implemented to prevent water pollution. water permits will also be required to abstract groundwater as well as for "water works".		
Forest Act 12 of 2001 - Minister of Environment, Forestry and	The Act provide for the establishment of a Forestry Council and the appointment of certain officials. to consolidate the laws relating to the management and use of forests and forest produce. to provide for the protection of the environment and the control and management of forest fires.		
Tourism (MEFT)	Under Part IV Protection of the environment, Section 22(1) of the Act, it is unlawful for any person to: cut, destroy, or remove:		
	(a) any vegetation which is on a sand dune or drifting sand or in a gully unless the cutting, destruction or removal is done for the purpose of stabilising the sand or gully or		
	(b) any living tree, bush or shrub growing within 100m of a river, stream, or watercourse.		
	Should either of the above be unavoidable, it will be necessary to obtain a permit from the Ministry. Protected tree species as listed in the Regulations shall not be cut, destroyed, or removed.		
Hazardous	Provisions for hazardous waste are amended in this act as it provides "for		
Substance	the control of substances which may cause injury or ill-health to or death		
Ordinance 14 of 1974	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 prohibition and control of the		
Ministry of Health	importation, sale, use, operation, application, modification, disposal or		
and Social Services (MoHSS)	dumping of such substance and to provide for matters connected therewith"		
Atmospheric	This regulation sets out principles for the prevention of the pollution of the		
Pollution Prevention	atmosphere and for matters incidental thereto. Part III of the Act sets out		
Ordinance 11 of	regulations pertaining to atmospheric pollution by smoke. While		
1976.	preventative measures for dust atmospheric pollution are outlined in Part		

LAW	SUMMARY DESCRIPTION		
Ministry of Health and Social Services (MoHSS)	IV and Part V outlines provisions for Atmospheric pollution by gases emitted by vehicles.		
The Nature Conservation Ordinance 4 of 1975, Ministry of Environment, Forestry and Tourism (MEFT)	Care must be taken to ensure that protected plant species and the eggs of protected, and game bird species are not disturbed or destroyed. If such destruction or disturbance is inevitable, a permit must be obtained in this regard from the Minister of Environment, Forestry and Tourism. Should the Proponent operate a nursery to propagate indigenous plant species for rehabilitation purposes, a permit will be required.		
Soil Conservation Act, No. 76 of 1969 and the Soil Conservation Amendment Act, No. 38 of 1971	The act makes provision for the prevention and control of soil erosion and the protection, improvement and conservation of soil and vegetation		
Labour Act, 1992, Act No. 6 of 1992 as amended in the Labour Act, 2007 (Act No. 11 of 2007 Ministry of Labour, Industrial Relations and Employment Creation (MLIREC)	The Labour Act gives effect to the constitutional commitment of Article 95 (11), to promote and maintain the welfare of the people. This Act is aimed at establishing a comprehensive labour law for all employees. to entrench fundamental labour rights and protections. to regulate basic terms and conditions of employment. To ensure the health, safety and welfare of employees under which provisions are made in chapter 4. Chapter 5 of the act improvises on the protection of employees from unfair labour practice.		
Petroleum Products and Energy Act 13 of 1990	Any consumer installation as envisaged in this Act must be licensed. Appropriate consumer installation certificate will need to be obtained from the Ministry for each fuel installation. The construction of the installation must be designed in such a manner as to prevent environmental contamination. Any certificate holder or other person in control of activities related to any petroleum product is obliged to report any major petroleum product spill (defined as a spill of more than 200% per spill) to the Minister. Such person		

LAW	SUMMARY DESCRIPTION		
Ministry of Mines and Energy (MME)	is also obliged to take all steps as may be necessary in accordance with good petroleum industry practices to clean up the spill. Should this obligation not be met, the Minister is empowered to take steps to clean up the spill and to recover the costs thereof from the person.		
National Heritage Act 27 of 2004 Ministry of Education, Arts and Culture (MEAC)	This Act provides provisions for the protection and conservation of places and objects of heritage significance and the registration of such places and objects. The proposed activities will ensure that if any archaeological or paleontological objects, as described in the Act, are found during the implementation of the activities, such a find shall be reported to the Ministry immediately. If necessary, the relevant permits must be obtained before disturbing or destroying any heritage		
National AgricultureThis policy recognizes multiple problems caused by bush end and strives to "establish mechanisms to support farmers in com encroachment effectively over the short and long term"			
The Namibia Forest Development	This policy is guided by the following documents: The Namibia Forestry Strategic Plan aims at the protection and sustainable utilization of natural forests, with the objectives to conserve ecosystems, increase agricultural productivity, conserve soil and water, alleviate poverty, protect biodiversity, and prevent climate change. The Namibia Forest Development Policy emphasizes biodiversity conservation by empowering farmers to manage forest resources sustainably. In commercial areas the policy encourages de-bushing for charcoal production to enhance rangeland productivity.		
National Rangeland Management Policy and Strategy (2012)	This document aims to enable farmers to manage their rangeland resources in such a way that animal production per hectare is sustainably improved, vulnerability is decreased, and biodiversity is improved so that rangelands can continue to provide essential ecosystem services.		

4.1. Key Regulators / Competent Authorities

The environmental regulatory authorities responsible for environmental protection and management in relation to the proposed project including their role in regulating environmental protection are listed in Table 2.

Table 2: Agencies regulating environmental protection in Namibia.

AGENCY RESPONSIBILITY		
	Issue of Environmental Clearance Certificate (ECC) based on the review and	
	approval of the Environmental Assessments (EA) reports comprising	
	Environmental Scoping, Environmental Impact Assessment (EIA) and	
	Environmental Management Plan (EMP) prepared in accordance with the	
	Environmental Management Act (2007) and the Environmental Impact	
	Assessment Regulations, 2012	
Environment,		
Forestry and	The National Botanical Research Institute's (NBRI) mandate is to study the flora	
Iourism (MEFI)	and vegetation of Namibia, in order to promote the understanding,	
	conservation and sustainable use of Namibia's plants for the benefit of all. The	
	Directorate of Forestry (DOF) is responsible for issuing of forestry permits with	
	respect to harvest, transport, and export or market forest resources.	
	The Department of Water Affairs (DWA) within the Directorate of Water Resource	
Ministry of	Management at the MAWLR is responsible for management of surface and	
Agriculture, Water	groundwater utilisation through the issuing of abstraction permits and	
and Land Reform	wastewater disposal permits. DWA is also accountable for water quality	
(MAWLR)	monitoring and reporting.	
Namibian Charcoal	Formerly known as the Namibia Charcoal Producers Association (NCPA), the	
Association	Namibia Charcoal Association (NCA) is a non-profit voluntary membership	
	Association for the Namibian charcoal industry from producers and processors	
	to suppliers and all other stakeholders.	
	Charcoal production is an important activity for managing bush encroachment.	
	Thus, the purpose of the NCA is to strengthen the charcoal industry in a	

4.2. Permits

Some permits related to charcoal processing and production are listed in Table 3.

Table 3: Other applicable permits to the proposed project

PERMITS/CERTIFICATES	ACTIVITY	VALIDITY
Harvesting permit	Required from the Directorate of Forestry for any tree cutting and/or harvesting of wood in an area greater than 15 hectares per year. The area to be harvested will be inspected before the permit is issued	Valid for three months for commercial purposes, seven days for communal purposes, and three days for own use.
Transport permit	Required from the Directorate of Forestry to convey any wood or wood products in Namibia	Valid for seven days for commercial purposes, three days for own use
Export permit	Required from the Directorate of Forestry to send any wood or wood products outside Namibia	Valid for seven days
Marketing permit	Required from the Directorate of Forestry to enable the producer to sell wood or wood products to any other party.	Valid for three months in commercial areas and one month in communal areas.

5. PROJECT MOTIVATION/RATIONALE

Omuti Biomass Trading cc is a wholly Namibian-owned company that operates in the biomass industry. The objectives of Omuti are to source charcoal in bulk and produce retail ready charcoal that is packed according to the specifications of their clientele both locally and internationally.

Charcoal is a plant-based material that is produced as a method of combating bush encroachment and thereby increasing the carrying capacity for livestock on farms across Namibia. Charcoal/wood is known as a primary source of energy for many Namibian households used for cooking and others.

The Namibian charcoal industry employs an estimated number of 4800 workers; although, the exact number of workers varies seasonally. The proposed project will therefore positively contribute to:

- Employment: It is estimated that approximately 25 jobs will be created. This will generally enhance the quality of life in Otjiwarongo and the surrounding areas;
- Skills development: As the construction and operation of the development requires specialized work and skills it can be expected that experts will be training locals in certain skills during development and operation;
- Contribution to economic development (e.g., supply of materials and goods for construction purposes; new businesses, employment etc.); and
- \checkmark Expansion of trade and industrial activity in the area.

6. ALTERNATIVES CONSIDERED

In terms of the Environmental Management Act, No. 7 of 2007 and EIA Regulations, alternatives considered should be analyzed. This is to ensure that during the design evolution and decision-making process, potential environmental impacts, costs, and technical feasibility have been considered, which leads to the best option(s) being identified.

6.1. No-Go Alternative

The no-go alternative is undesired which would entail maintaining the current situation, whereby the subject area would remain vacant and undeveloped. Currently, the earmarked land for industrial development is vacant, with also falls part of it previously disturbed with indications of farming footprints, human walkways, and sand mining. Should the site remain in this state, the possibility and threat of illegal land invasions may persist.

Should the proposed charcoal packaging and storage facility not take place, bush encroachment will be prominent, leaving less feed for the farming industry in the area. Similarly, there will be no contribution to the Namibian Economy. The No-go option will not be a viable alternative at this stage.

6.2. Site/location

The proponent considered the current location because it is in an industrial area on the outskirts of the town, far away from residents. The current site is suitable for operations due to its location and easier mobility of trucks.

The proposed land is situated northwest of the Otjiwarongo CBD, within the Otjiwarongo industrial area. The land is currently utilized as a for industrial activities alongside, brick making sites (BMS), NaTis on the far southeast, Nampower substation etc., the land was strategically allocated to the OMUTI BIOMASS by the Otjiwarongo municipality as the site is ideally suited for this type of development. A copy of the agreement between the Otjiwarongo Municipality and the proponent, and the site plan is presented Appendix B.

6.3. Resources

Water - The erven is proposed to be connected to the existing water resource connection for the town. Should it be found that the water supply of the town is not sufficient, alternative water sources would have to be investigated.

Waste - Domestic waste will be removed to the municipal landfill site by the proponent or an appointed contractor.

Energy - The proposed project will use diesels with a generator for day-to-day activities, approx. 2001 of diesel will be stored and bunded on site.

Access Roads – The Proponent will use the already existing external and internal road networks during the first phases of the project, should any new access be created, it will be done with the permission of landowners/Municipality.

7. TERMS OF REFERENCE

The scope of this assessment is to identify and evaluate potential environmental impacts emanating from the construction, operations, and possible decommissioning of the development. Data has been compiled by making use of literature, the information provided by the proponent, and from the project sites visit.

The Potential environmental and social impacts will be identified and mitigation measures and recommendations provided for in the Environmental Management Plan.

The environmental scoping assessment report aims to address the following:

- i. Identification of potential positive and negative environmental impacts.
- ii. Evaluation of the nature and extent of potential environmental impacts
- iii. Identify a range of management actions that could mitigate the potential adverse impacts to required levels.
- iv. Consult relevant stakeholders (i.e., Municipality etc.) regarding the proposed development.
- v. Provide sufficient information to the Ministry of Environment to make an informed decision regarding the proposed project.

8. EIA APPROACH AND METHODOLOGY

The EIA and EMP methodology applied for this project will take into account the provisions of the Environmental Impact Assessment (EIA) Regulations, 2012, and the Environmental Management Act (EMA) Act No. 7 of 2007. The process followed is detailed below and in Figure 5.

PHASE 1 – ENVIRONMENTAL SCREENING

Project initiation and registration with the Competent Authority

- This involves meeting with the client and discussing timeframes, logistics and project descriptions.
- Basic desktop site Baseline analysis and compilation of a Background Information Document (BID)
- Project registration with Department of Environmental Affairs (DEA) to be done on the EIA online portal system.
- After the project is registered, the environmental Commissioner will advise whether a full EIA or Scoping assessment is required for the project.

PHASE 2: ENVIRONMENTAL SCOPING ASSESSMENT INCLUDING PUBLIC PARTICIPATION PROCESS (PPP)

- An extensive desktop baseline study and review for the area will be undertaken using remote sensing to identify and describe potential sites that are likely to be impacted by the project before on ground site verification.
- EES will conduct a site visit during this stage to form a basis for the assessment and determine the real sensitivity of the surrounding biophysical and socio-economic environment.
- The information obtained during the site visit will be supplemented by a literature review and will be used by the environmental consultant to: (a) Determine the actual/real risks associated with the project activities, (b) Provide practical mitigation measures to minimize the risks; and (c) Make recommendations for further studies, should it be required.

Public Consultation Process and stakeholder engagement (21 Days)

- Public consultation is an important stage of the EIA process as it ensures full consultation and public involvement. The public consultation process begins with usually newspaper advertisement (Minimum two (2) local newspapers twice for two consecutive weeks), site notices to be placed and easily accessible places around the project area/town, radio announcements, when necessary, through respective constituency offices (especially in remote areas where newspapers might not reach on time) and then public meetings. This is done to provide the public a chance of getting involved in the process, provide their views and input regarding to the proposed activities in the area.
- During this stage, potential stakeholders (local governments, constituency offices, farmers etc.) are identified and made aware of the project. All Interested and Affected Parties (I&APs) contact details will be collected for future communications related to the project progress.
- The Background Information Document (BID) prepared in phase 1 will be shared with all identified and registered I&Aps during this period. The BID usually contains summarized project information such as the project description of activities, project motivation, potential impacts, and EIA process followed. This document will be shared via emails or delivered in hardcopy to the relevant/applicable parties Other social media platforms such as WhatsApp will also be utilized in this case.
- All comments, inputs, issues and/ or concerns raised by I&APs during the process will be recorded for consideration in the environmental assessment report and development of the EMP.

PHASE 3: ENVIRONMENTAL REPORTING – ENVIRONMENTAL SCOPING ASSESSMENT REPORT (ESAR) AND ENVIRONMENTAL MANAGEMENT PLAN (EMP)

- This stage will include data reduction and analysis using appropriate techniques to produce suitable project results for interpretation and discussion. This stage will entail consolidation of the findings in the form of a report that can be presented to the client for review and comments. An EMP will be drafted to mitigate and manage all impacts identified in the scoping report.

- After approval of the documents by the Client, the draft ESAR and EMP will be prepared for circulation to the public (I&APs) for comments over a period of 7 days.
- All comments are consolidated and included in the reports and the ESAR and EMP are finalized for submission to the competent authority (Ministry of Mines and Energy) and issuing authority (MEFT).
- The registered and identified I&Aps will be informed that the final documents have been submitted to the authorities for decision making and that for any further comments, they can directly contact the DEA. Furthermore, the DEA provides another 14 days period for public participation on the online portal in this regard.

PHASE 4: FOLLOW-UP WITH THE COMPETENT AUTHORITY UNTIL FEEDBACK IS GRANTED

FIGURE 5 BELOW PROVIDES A SIMPLIFIED EIA PROCESS FLOWCHART BY EES



Figure 5 - EIA Flow Chart by EES

9. BASELINE ENVIRONMENT/ STUDY AREA

9.1. Biophysical Environment

9.1.1. Climate

Otjiwarongo has a semi-arid climate (BSh, according to the Köppen climate classification), with hot summers and mild winters. The average annual precipitation is 457 mm. Located at an elevation between 1460 – 1470 meters above sea level, Otjiwarongo has a Subtropical steppe climate. The district's yearly temperature is 25.12°C and it is 0.66% higher than Namibia's averages. Otjiwarongo typically receives about 129.09 millimeters of precipitation and has 128.35 rainy days (35.16% of the time) annually (accuweather, 2022).

9.1.2. Wind/Air Quality

Charcoal processing activities are associated with charcoal dust exposure, which may increase the risk of workers developing adverse respiratory complications and other community nuisances. Therefore, it is imperative to understand the wind in the area. According to IEM (2022), the area has a prevailing easterly wind, average wind speed is the is approximately 1.7 meters per second (mps), with 21.3% calm days (Figure 6) (Iowa State University, 2022).



Figure 6: Prevailing wind in the Otjiwarongo town

9.1.3. Flora and Fauna

Trees/Shrubs

The site falls within the Tree and shrub savanna biome, which is characterized by Thornbush shrubland type vegetation. The vegetation structure type is classified as Dense shrubland (Figure 7). In general, the plant diversity of Otjiwarongo between 300-399 and 400-499 with more than 500 species expected between Otjiwarongo and Tsumeb. The average maximum production of plant biomass ranging from high to very high (Mendelsohn et al., 2002). The proposed project area is dominated by typical xeromorphic Thornbush Savanna with dominant woody plants generally consisting of Acacia reficiens, Terminalia sericea, Boscia albitrunca, Grewia, Dichrostachys cinerea, Acacia mellifera, Acacia fleckii, Boscia albitrunca, Lonchocarpus nelsii and Acacia erioloba (Mendelsohn et al., 2002, National Herbarium of Namibia (WIND). 2020, Mannheimer and Curtis 2009) some images below.

Protected Species and Sensitive Habitats

Acacia erioloba and Boscia albitrunca are two protected species that are considered to be the most significant trees and shrubs in the area. These species, on the other hand, are found throughout broad regions of Namibia. Furthermore, the national herbarium provides a list of protected species, and it is advised that these trees be maintained as much as possible (Appendix E).

In the broad Otiwarongo region, at least 77 reptile, 9 amphibian, 84 mammal, 208 bird species (breeding residents), at least 79-110 bigger trees and shrubs, and up to 111 grasses are known to or predicted to occur, with a significant number of endemics (e.g., 35.1 percent endemic reptiles). The overall terrestrial ranges from moderate to high (all terrestrial species) diversity and endemism (Mendelsohn et al. 2002). Bird diversity is recorded to be between 201-230 species, mammal diversity between 91-105 species and reptile diversity between 81-85 species (Mendelsohn et al., 2002).

Vertebrate Fauna

Central Namibia possesses between 161-200 endemic vertebrates, according to Simmons (1998b) (all vertebrates included). Large herbivorous mammals (big game) have a "high"

diversity and abundance, with 7-8 species, whereas large carnivorous mammals (large predators) have a "low" diversity and abundance, with leopard and cheetah being the most important with "high" densities, followed by brown hyena with "medium" densities (Mendelsohn et al. 2002).

Drainage lines, while transitory, are lifelines in the drier portions of Namibia, attracting and/or interacting with a range of vertebrate wildlife. Despite not being as essential as permanent rivers, well-vegetated ephemeral drainage channels are nonetheless considered vital habitat for a range of vertebrate animals in the surrounding area. It is advised that development avoid these drainage routes, which are related to the local Ephemeral River channels, as much as possible. Additionally, areas with mountains and rocky terrain: Endemism and biotic richness might be factors (Risk -Based Solutions, 2021).

Some images from the site





Plate <u>3: Vegetation on the proposed site (EES,2022)</u>



Plate 1: Vegetation on the proposed site (EES, 2022) Plate 1: Vegetation on the proposed site (EES, 2022)





Plate 5: Already disturbed footprint (sand mining) in Plate 6: Existing routes to the proposed site area (EES, the area near the proposed site (EES, 2022).

Plate 4: Vegetation on the proposed site (EES, 2022).



2022).



Figure 7: Vegetation cover surrounding the proposed project area.

9.1.4. Hydrogeology and Geology

Otjiwarongo is part of the Brandberg, Erongo, and Waterberg groundwater areas which have only moderately productive aquifers and where ground water potential is generally low with moderate water potential (Mendelsohn et al, 2002). The area is surrounded by the Kunene South groundwater basin (Figure 8). The marble aquifer north-east of Otjiwarongo is the most significant aquifer in the area, with multiple boreholes drilled to accommodate demand.

Rainfall, evapotranspiration, and the amount of water that percolate to the groundwater aquifers all determine the amount of surface water in the area. The Omatjenne Dam is located 15km northwest of Otjiwarongo and dams the Omatjenne River, which has been recorded to hold water in 2018/2019 (Geological Survey of Namibia, 1999).

About half of the country (48%) is covered by porous unconsolidated superficial deposits, largely the Namib desert and Kalahari deposits. The remainder of the country is directly underlain by consolidated rocks that have various degrees of fracturing, including karstification in some calcareous rocks. Otjiwarongo's geology is part of the Damara Supergroup and Gariep Complex, with schists and dolomites (Figure 9) (Miller, 2008). There are other reports of rocky outcroppings in the area. Schists dominate the underlying geology, which is recognized for having limited groundwater potential.



Figure 8 – Groundwater basin in the surrounding project area.



Figure 9 - Geology of the proposed area

9.1.5. Soil

The project area soil is dominated by Regosols which are medium- or fine-textured soils of actively eroding landscapes, the thin layers lying directly above the rock surfaces from which they formed (Figure 10) (Mendelsohn et al, 2002). Although not as shallow as the leptosols, these soils never reach depths of more than 50 cm. The central regions of the country are dominated by regosols, which are especially susceptible to erosion where there is any degree of slope. Vegetation cover on these thin soils is generally sparse because they cannot provide most plants with sufficient water or nutrients. Areas with regosols can support low-density stock farming or wildlife (Mendelsohn et al, 2002).



Figure 10 – Dominant soil type in the proposed project area
9.2. Socio-Economic setting

9.1.6. Regional Profile

The Otjozondjupa Region is one of Namibia's fourteen regions and is known for outstanding landmarks such as the Waterberg Plateau Park. The region's capital and largest town is Otjiwarongo. The Region is also known for its farming activity, and cattle farming are particularly common in the Okahandja and Otjiwarongo areas.

The region comprises seven constituencies: Grootfontein, Otavi, Okakarara, Otjiwarongo, Okahandja, and Omatako (Otiwarongo Municipality, 2022).

The 2011 Namibia Population and Housing Census results show that Otjozondjupa had a population of 143 903 people of which 70 001 were women and 73 902 were men. The population grew at an average annual rate of 0.6 percent between 2001 and 2011. The majority of the population of the region - about 54 percent - lived in rural areas. There were 33 192 households, with an average size of 4.2 persons per household (NSA,2001 -2011).

9.1.7. Locality Profile

At the constituency level, Otjiwarongo housed slightly more than 22% of the total population (31 813 persons), up from 17.3% (23 412) ten years ago. The proportion of females in the Otjiwarongo constituency was higher (51.25) than the regional average of 48.6 percent. Okahandja and Otjiwarongo had the greatest proportion of people with birth certificates (about 97 percent each). The greatest growth rate was observed in Otjiwarongo (3.1 percent), while Omatako had a negative growth rate of 4.2 percent.

The road network in Otjiwarongo is well-developed. It is located at the intersection of the B1 national highway, which runs north-south across Namibia, the C38 to Outjo and further into the Kunene Region in Namibia's north-west, and the C33 to Karibib, which connects the coastal towns of Namibia's north and south coast (Swakopmund and Walvis Bay). Roads in town are likewise well-maintained, making Otjiwarongo one of the few Namibian towns that has tarred roads even in the townships (Otiwarongo Municipality, 2022).

The B2Gold mine, an open-pit gold mine that opened in 2014, lies around 70 kilometers northwest of town. The Okorusu fluorspar mine, 48 kilometers (30 miles) to the north, is a well-

known source of fluorite specimens for mineral collectors. The mine is a potential resource for rare-earth element supply. Mining accounts for around 20% of the town's total revenue. The closeness of Otjiwarongo to the Waterberg Plateau Park is the major attraction for tourists. The Cheetah Conservation Fund, based in Otjiwarongo, is a globally known organization committed to safeguarding the cheetah's long-term existence via research, conservation, and education. Additionally, approximately 80km south of Otjiwarongo, is Okonjima a home to the Africat Foundation, a cheetah and leopard rehabilitation center (Otiwarongo Municipality, 2022).

10. STAKEHOLDER ENGAGEMENT

10.1. Public participation

Public participation is the cornerstone of the Environmental Impact Assessment process. These include the ongoing provision of sufficient information (in a transparent manner) to Interested and Affected Parties (I&APs). During the public participation process, I&APs will be given the opportunity to comment on the findings of the reports, during the specified comment periods.

10.1.1. Adverts

Public notices were placed in the following newspapers for two consecutive weeks on the (23 February 2022 – 03 March 2022): Appendix C provides Tear sheets of the adverts.

- The Republikein newspaper on the 23 February 2022 and 03 March 2022
- The Namibian sun newspaper on the 23 February 2022 and 03 March 2022
- The Allgemeine Zeitung newspaper on the 23 February 2022 and 03 March 2022

10.1.2. Site notice

Site notices were also place on the following locations also presented in Appendix D:

- BMS Adjacent to the proposed site location, and
- The Otjiwarongo Municipality offices.

10.1.3. Stakeholder participation and recommendation

No input / comments have been received during this consultation period apart from a neighbor who requested to be registered as an I&AP. In the event that the ECC is granted the proponent shall ensure ongoing consultation with all relevant affected parties for access to land and other resources.

11. EVALUATION OF IMPACTS

11.1. Assessment procedure

The purpose of this section is to assess and identify the most pertinent environmental impacts by describing certain quantifiable aspects of these impacts and to provide possible mitigation measures to minimize the magnitude of the impacts that are possibly deriving from the various activities that constitute the proposed construction and operation of a charcoal processing, packaging, and storage facility by the proponent.

The identification of potential impacts included impacts that may occur during the construction, operational and decommissioning phases of the project. The assessment of impacts includes direct, indirect as well as cumulative impacts. In order to identify potential impacts (both positive and negative) it is important that the nature of the proposed projects is well understood so that the impacts associated with the projects can be assessed.

The process of identification and assessment of impacts includes:

- Determining the current environmental conditions in sufficient detail to establish a baseline against which impacts can be identified and measured;
- Determining future changes to the environment that will occur in a case where the activity does not proceed;
- Develop an understanding of the activity in great detail to understand its consequences; and
- The identification of significant impacts which are likely to occur if the activity is undertaken.

The following potential impacts on the environment during construction and operation activities have been identified:

- Dust & Noise
- Health & Safety
- Visual
- Waste
- Ecological
- Groundwater and surface water
- Heritage & Socio-Economic

The following methodology is applied to the predication and assessment of impacts and risks. Potential impacts and risks have been rated in terms of the direct, indirect, and cumulative where:

	Whether the impact/risk on the overall environment will be
Status	 Positive - Environment overall will benefit from the impact/risk;
510105	• Negative - Environment overall will be adversely affected by the impact/risk;
	• Neutral - Environment overall not be affected.

Direct impacts	Impacts are directly caused by the activity and usually occur at the same time and place of the activity. These impacts are often related to the construction, operation or maintenance of an operation and are often obvious and quantifiable.
Indirect impacts	These types of impacts include all the potential impacts that are not evident immediately when the activity is carried out, or which occur at a different place due to the activity.
Cumulative impacts	Impacts that result from the incremental impact of the proposed activity on a common resource when added to the impacts of other past, present, or reasonably foreseeable future activities.

In addition to the above, the impact assessment methodology includes the following aspects:

Ines	size of the area that will be affected by the impact:
Site s	specific - Only within the site boundaries
Spatial Extent Loca	al - limited to within 15 km of the area
Regi	jional - limited to ~100 km radius
Natio	ional - limited to within the borders of Namibia
Inter	rnational - extending beyond Namibia's borders

	The anticipated consequence of the impact:								
	• Extreme - Environmental functions and processes are altered such that they permanently								
	cease);								
	• <u>Severe</u> - Environmental functions and processes are altered such that they temporarily or								
Consequence	permanently cease);								
	• <u>Substantial</u> - environmental functions and processes are altered such that they								
	temporarily or permanently cease);								
	• Moderate - Environment continues to function but in a modified manner); or								
	• <u>Slight</u> - No natural systems/environmental functions, patterns, or processes are affected.								

Duration	The timeframe during which the impact/risk will be experienced
	Very short term - instantaneous;
	Short term - less than 1 year;
	Medium term - 1 to 10 years;
	Long term - The impact will occur for the project duration
	• Permanent - The impact will occur beyond the project decommissioning.

Reversibility of the	The extent to which the impacts/risks are reversible assuming that the project has reached							
	the end of its life cycle (decommissioning phase)							
	• Yes - High reversibility of impacts (impact is highly reversible at end of project life);							
Inpucis	• Partially - Moderate reversibility of impacts; or							
	• No - Impacts are non-reversible (impact is permanent).							

Using the criteria above, the impacts will further be assessed in terms of the following:

Probability	The probability of the impact/risk occurring
	Very likely;
	• Likely;
	• Unlikely;
	Very unlikely; and
	Extremely unlikely.

To determine the significance of the identified impact/risk, the consequence is multiplied by probability. This approach incorporates internationally recognized methods from the IPCC (2014) assessment of the effects of climate change and is based on an interpretation of existing information in relation to the proposed activity. The significance is then rated qualitatively as follows against a predefined set of criteria (i.e., probability and consequence) as indicated below:

	IMPACT = CONSEQUENCE X PROBABILITY											
	Very Likely					Very High Impact						
	Likely				High Impact							
ABILITY	Unlikely			Moderate Impact								
PROB	Very Unlikely		Low Impact									
	Extremely Unlikely	Very Low Impact										
		Slight	Moderate	Substantial	Severe	Extreme						

Where:

	Will the impact cause a notable alteration of the environment
	• Very low (5) - The risk/impact may result in very minor alterations of the environment and can
	be easily avoided by implementing appropriate mitigation measures and will not have an
	influence on decision-making.
	• Low (4) - The risk/impact may result in minor alterations of the environment and can be easily
	avoided by implementing appropriate mitigation measures, and will not have an influence
	on decision making;
Impact Significance	• Moderate (3) - The risk/impact will result in moderate alteration of the environment and can
	be reduced or avoided by implementing the appropriate mitigation measures, and will only
	have an influence on the decision-making if not mitigated;
	• High (2) - The risk/impact will result in major alteration to the environment even with the
	implementation on the appropriate mitigation measures and will have an influence on
	decision making); and
	• Very high (1) - The risk/impact will result in very major alteration to the environment even with
	the implementation on the appropriate mitigation measures and will have an influence on
	decision making.

	The degree of confidence in predictions based on available information and					
	;pecialist knowledge					
Confidence	Low - Based on the availability of specialist knowledge and other information					
	• Medium - Based on the availability of specialist knowledge and other information					
	• High - Based on the availability of specialist knowledge and other information					

Impacts are evaluated for the construction and operation phases of the development. The assessment of impacts for the decommissioning phase is not presented in this document, as there is limited understanding at this stage of what this might entail. Impacts have been evaluated with and without mitigation in order to determine the effectiveness of mitigation measures on reducing the significance of a particular impact. The Assessment is presented in the following section and further in the Environmental Management Plan (EMP).

12. IMPACTS ASSESSMENT

12.1. Construction Phase

t Pathway	of impact	Status Spatial Extent	ration	equence	oability	ersibility	n Measures	Significance of Impact = Consequence x Probability		Ranking of	Confidence	
Impac	Nature		Spati	Du	Conse	Prok	Reve	Mitigatio	Without Mitigation	With Mitigation	Impact	Lever
CONSTRUCTION PHASE												
Clearing of 3 ha of land	Loss of Habitat and Species	Negative	Local	Long term	Substantial	Very Likely	Partially	Undertake Plant Search and Rescue prior to the commencement of construction (refer to the plant species list in appendix E for the species found in the area and which should be avoided	Moderate (3)	Low (4)	3	Medium
	Exposure to soil erosion on exposed surfaces	Negative	Local	Medium term	Moderate	Likely	Yes	Implement an Erosion Management Plan throughout the construction Phase	Moderate (3)	Low (4)	4	High

Impact Pathway	Nature of impact	Status	Spatial Extent	Duration	Consequence	Probability	Reversibility	Mitigation Measures	Signific Imp = Consec Probe Without Mitigation	ance of pact quence x ability With Mitigation	Ranking of Impact	Confidence Level
	1			1		CO	NZIKUCIIO	N PHASE		1		
Noise cause by construction activities (Machineries and vehicular movements)	Hearing problems to operators if noise generation is prolonged and not managed	Negative	Local	Permanent	Severe	Very likely	Partially	 Machineries and vehicles (moving and stationed) should be serviced regularly. A noise management standard operating procedure (SOP) for the activities happening on-site should be developed Avoid generating unnecessary noise by making sure that equipment that are not in used are always turned off and by avoiding operations during odd hours Any complaints regarding noise should be recorded in the bi-annual reports/arievance form 	Very high (1)	Moderate (3)	2	Medium

Impact Pathway	Nature of impact	Status	Spatial Extent	Duration	Consequence	Probability	Reversibility	Mitigation Measures	Signific Imp = Consec Probo Without Mitigation	ance of pact quence x ability With Mitigation	Ranking of Impact	Confidence Level
						CONST	RUCTION	PHASE				
Dust generation during construction activities (e.g., vehicular movement)	Tempering of the ambient air quality in the surrounding	Negative	Local	Medium term	Substantial	Likely	Partially	 Dust suppression techniques should be employed if the specific construction activity is likely to create dusty atmospheric conditions in excess of the periodic extremes. Avoid activities that create excessive dust on extremely windy days. Personnel are required to wear personal protection equipment if excessive dust is created for prolonged working periods. Employees should be made aware of negative effects of dust inhalation. 	Moderate (3)	Low (4)	3	Medium

Pathway	of impact	atus	il Extent	ation	duence	ability	rsibility) Measures	Significo Imp = Consec Probo	ance of act quence x ability	Ranking	Confidence
Impact	Nature	Sto	Spatio	DUr	Conse	Prob	Reve	Mitigation	Without Mitigation	With Mitigation	Impact	Level
						CONST	RUCTION F	PHASE				
Generation of waste during construction activities	Domestic waste and waste from maintenance work performed on the machinery can potentially cause unpleasant odor, sight for the people in the surrounding as well as disturbance to surface water	Negative	Local	Short term	Moderate	Likely	Partially	 The domestic waste, which is separated from all paper and organic materials, is taken to the nearest official dumpsite. Oil from the servicing of the vehicles and machines is collected in drums and is taken together with all other industrial waste that is generated on site to the nearest hazardous waste site. A certificate of disposal needs to be kept on file. Good housekeeping Training and awareness to contractors. Practice reusing, recycling of products. 	Moderate (3)	Very low (5)	4	Medium

Pathway	f impact	tus	Extent	ation	anence	ability	sibility	Measures	Signific Imp = Consec Probo	ance of pact quence x ability	Ranking	Confidence
Impact	Nature o	Sta	Spatia	Duro	Consec	Probe	Rever	Mitigation	Without Mitigation	With Mitigation	Impact	Level
						CONS	TRUCTI	ON PHASE				
Construction activities related to the project	Employment creation	Positive	National	Long term	Slight	Very likely	Yes	 Where possible, local persons should be employed depending on the level of skills they have. Employment will result should the project be permitted. Promote local procurement of goods and services. 	Low + (4)	Very low + (5)	5	Medium

Impact Pathway	Nature of impact	Status	Spatial Extent	Durațion	Consequence	Probability	Reversibility	Mitigation Measures	Significa Imp = Consec Probo Without Mitigation	ance of pact quence x ability With Mitigation	Ranking of Impact	Confidence Level
					<u> </u>	CON	STRUCTION	PHASE				
Heritage sites destruction during construction activities	Possible destruction to heritage sites	Neutral	Local	Long term	Substantial	Very unlikely	Partially	A 'chance find' of any potential heritage site should be communicated to the police and the National Heritage Council of Namibia. If activities occur at the location where a 'chance find' has been made, then the activities should cease until the necessary authorities have visited the site and provided the go ahead to proceed with activities.	Moderate (3)	Low (4)	4	Medium

12.2. Operation Phase

Impact Pathway	Nature of impact	Status	Spatial Extent	Duration	Consequence	Probability	Reversibility	Aitigation Measures	Signific Imp = Consec Probe Without Mitigation	ance of pact quence x ability With Mitigation	Ranking of Impact	Confidence Level
						OPEF	ATION PH	ASE Sector				
Noise caused by operation activities (Handling and processing of charcoal, machineries and vehicular movements)	Hearing problems to operators if noise generation is prolonged and not managed as well as disturbance to neighbors	Negative	Local	Permanent	Extreme	Very likely	Partially	 Machineries and vehicles (moving and stationed) should be serviced regularly. Avoid creating unnecessary noise by making sure that equipment that are not in used are always turned off and by avoiding operations during odd hours. Fit sound mufflers on all machinery where applicable. Equip employees with proper PPE (noise reduction earmuffs) 	Very high (1)	Moderate (3)	I	Medium

Impact Pathway	Nature of impact	Status	Spatial Extent	Duration	Consequence	Probability	Keversipility PERATION	Mitigation Measures	Signific Imp = Consec Probe Without Mitigation	ance of pact quence x ability With Mitigation	Ranking of Impact	Confidence Level
Dust generation during operation activities (e.g., vehicular movement, charcoal handling and processing)	Tempering of the ambient air quality in the surrounding as well as health and safety hazard to employees	Negative	Local	Long term	Extreme	Very likely	Partially	 Dust suppression techniques should be employed if the specific construction activity is likely to create dusty atmospheric conditions in excess of the periodic extremes. Avoid activities that create excessive dust on extremely windy days. Personnel are required to wear personal protection equipment if excessive dust is created for prolonged working periods. Employees should work in shifts to avoid prolonged hours of exposure to dust Employees should be made aware of negative effects of dust inhalation. 	Very high (1)	Low (4)	1	Medium

Impact Pathway	Nature of impact	Status	Spatial Extent	Duration	Consequence	Probability	Reversibility Mitigation Measures		Signific Imp = Consec Probo Without Mitigation	ance of pact quence x ability With Mitigation	Ranking of Impact	Confidence Level
						OP	ERATION F	PHASE				
Generation of waste during operation activities	Domestic waste and waste from maintenance work performed on the machinery can potentially cause unpleasant odor, sight for the people in the surrounding as well as contamination to surface and ground water from hazardous waste	Negative	Local	Long term	Severe	Likely	Partially	 The domestic waste, which is separated from all paper and organic materials, is taken to the nearest official dumpsite. Oil from the servicing of the vehicles and machines is collected in drums and is taken together with all other industrial waste that is generated on site to the nearest hazardous waste site. A certificate of disposal needs to be kept on file. Storage areas that contain hazardous substances must be bunded with an approved impermeable liner. 	High (2)	Low (4)	2	Medium

Pathway	f impact	itus	Extent	ation	Juence	ability	sibility	Measures	Signific Imp = Consec Probo	ance of bact quence x ability	Ranking of	Confidence
Impact	Nature o	Sta	Spatial	Duro	Consec	Probo	Rever	Mitigation	Without Mitigation	With Mitigation	Impact	Levei
						O	PERATION	PHASE		·		
Heritage sites destruction during construction activities	Possible destruction to heritage sites	Neutral	Local	Long term	Substantial	Very unlikely	Partially	 A 'chance find' of any potential heritage site should be communicated to the police and the National Heritage Council of Namibia. If activities occur at the location where a 'chance find' has been made, then the activities should cease until the necessary authorities have visited the site and provided the go ahead to proceed with activities 	Moderate (3)	Low (4)	4	Medium

Pathway	of impact	atus	ll Extent	ation	duence	ability	rsibility	n Measures	Signific Imp = Consec Probo	ance of pact quence x ability	Ranking	Confidence
Impact	Nature o	Sto	Spatia	Dur	Conse	Prob	Reve	Mitigation	Without Mitigation	With Mitigation	Impact	Level
						OPI	RATION	I PHASE				
Construction activities related to the project	Employment creation	Positive	National	Long term	Slight	Very likely	Yes	 Where possible, local persons should be employed depending on the level of skills they have. Employment opportunties should the project be permitted. Promote local procurement of goods and services. 	Low + (4)	Very low + (5)		Medium

13. CONCLUSION AND RECOMMENDATION

Due to the limited scope of the proposed activities and the use of a step-by-step approach in advancing construction and operations, the overall severity of potential environmental impacts of the proposed project activities on the receiving environment will be of low magnitude, temporally duration, localized extent, and low probability of occurrence.

All impacts are provided with mitigation measures, minimized or avoided to acceptable degrees provided that the measures are put into consideration

Based on the conclusions of this EIA Report, it is thus recommended that an Environmental Clearance Certificate be provided for the planned project activities (ECC). When implementing the proposed program, the Proponent shall consider the following critical requirements:

- If applicable, the Proponent will negotiate Access Agreements with landowners.
- The Proponent is responsible for obtaining all additional permits that may be required.
- In accordance with all applicable national rules, the Proponent shall comply with all terms of the EMP and conditions of the Access Agreement to be signed into between the Proponent and the land owner/s.
- In cases where baseline information, national or international guidelines, or mitigation measures have not been supplied or do not adequately address the site-specific project effect, the Proponent must use the precautionary approach/principles.

REFERENCES

accuweather. (2022, March 31). Retrieved from https://www.accuweather.com/en/na/otjiwarongo/244940/april-weather/244940

Geological Survey of Namibia, 1999. Regional geological map of Namibia. Ministry of Mines and Energy, Windhoek, Namibia.

IowaStateUniversity.(2022).Retrievedfromhttps://mesonet.agron.iastate.edu/sites/windrose.phtml?station=DSM&network=IA_ASOS&msclkid=a2a56213b57c11ecba7ca27fd8959056

Mannheimer, C. and Curtis, B. (eds) 2009. Le Roux and Müller's field guide to the trees and shrubs of N amibia. Macmillan Education Namibia, Windhoek.

Mendelsohn, J., Jarvis, A., Roberts, A. and Robertson, T. 2002. Atlas of Namibia. A portrait of the land and its people. David Philip Publishers, Cape Town, RSA.

Miller, R.McG. 2008. The geology of Namibia. Geological Survey, Ministry of Mines and Energy, Windhoek, Vol. 3.

Miller, R. McG., 1992. Stratigraphy. The mineral resource of Namibia, Geological Survey of Namibia, MME, Windhoek, 1.2.1-1.2.13.

National Herbarium of Namibia (WIND). 2020. BRAHMS Database. National Herbarium of Namibia (WIND), National Botanical Research Institute, MAWF, Windhoek, Namibia.

APPENDIX A – ENVIRONMENTAL CONSULTANTS CV

APPENDIX B – AGREEMENT AND DRAWINGS



DEED OF LEASE

MEMORANDUM OF AGREEMENT ENTERED INTO BY AND BETWEEN

MUNICIPAL COUNCIL OF OTJIWARONGO

Herein duly represented by **MOSES MATYATY** in his capacity as Chief Executive Officer and **GODHARD HOKO** in his capacity as Chairperson of the Management Committee acting as such in terms of Section 31(A)(a) of the Local Authority Act (Act 23 1992).

of	Physical address	1	2 Kreft Street
			Otjiwarongo
	Postal address	3	Private Bag 2209
			Otjiwarongo
	Tel no	3	067-30 2231
	Fax no	:	067-30 2098
	(herein	after	referred to as the "LESSOR")

and

OMUTI BIOMASS

herein represented by SHAFA SHAIMEMANYA in his capacity as Chief Operations Officer and duly authorized thereto

		of
Postal address		P O Box 3902
		WINHOEK
Tel no	:	081 812 8181

(hereinafter referred to as the "LESSEE")

2

1. DESCRIPTION OF LEASED PREMISES

1.1 The Lessor herewith lets to the Lessee who herewith leases Erf 3112 situated in Extension 11 Otjiwarongo measuring 31,774.43 M² on the terms and conditions as mentioned herein.

(hereinafter referred to as the Leased Premises)

2. DURATION

- The duration is one (1) year, renewable subject to Council discretion.
- 2.2 The contract shall commence on 01 February 2022
- 2.3 The contract will expire on 31 January 2023
- 2.4 The parties to this agreement shall be entitled to, at any time during the duration hereof, give three (3) months' notice of cancellation of the agreement.

3. RENTAL

- 3.1 The Municipality leases the Leased Premises to the Lessee for the amount of N\$ 20,000.00 per month (VAT Included).
- 3.2 The rent of the leased property shall be billed separately.

4. TITLE AND CONDITIONS

4.1 The Leased Premises is leased subject to the title conditions pertaining to the Leased Premises and subject to the conditions of the Municipality.

5. CONDITION OF PREMISES

5.1 The Lessee acknowledges that he has inspected the premises and that the condition thereof is such that the Municipality is not obliged to make any improvements thereto before the Lessee takes occupation.

6. MAINTENANCE AND ALTERATION OF PREMISES

- 6.1 The Lessee is not entitled to effect any structural changes to the Leased Premises without the prior written consent obtained from the Municipality.
- 6.2 The Lessee shall keep the Leased Premises clean and in a tidy condition and free from all refuse, to the satisfaction of the Municipal Authority.
- 6.3 Any damage caused to the Leased Premises for which the Lessee is liable in terms of a provision hereof or which is attributed to the negligence or conduct of the Lessee and/or his/her

3

employee will be repaired by the Lessee at own cost, failing which, the Municipality shall be entitled to have same repaired, costs of such repair to be for account of the Lessee.

7. LIABILITY OF LESSEE

- 7.1 Electricity is to be provided by CENORED (PTY) Ltd. with whom the Lessee must engage directly, should there be a need.
- 7.2 Security of the area to be at the Lessee's cost.
- 7.3 Lessee has a duty to comply with all relevant national laws and regulations before commencing to utilize the property for the purpose applied for.

8. DESTRUCTION OF PREMISES

8.1 In the event of the Leased Premises being totally destroyed or so damaged as to render them incapable or satisfactory beneficial occupation this lease shall <u>lpso facto</u> be terminated by reason of such destruction or damage.

9. SUB-LEASE, CESSION AND ALIENATION OF RIGHTS

- 9.1 The leased premises will solely be utilized for the purposed it is intended for namely, charcoal processing and auxiliary services to this cause.
- 9.2 The Lessee may not cede or assign, pledge or make over any of its rights acquired in this agreement to any third party. If the Lessee changes ownership, the contract will become invalid immediately.

10. BEHAVIOR OF THE LESSEE

10.1 The Lessee shall not do or allow to be done anything on the Leased Premises which constitutes a nuisance or which may prejudice the rights of other occupiers or neighbors.

11. BEHAVIOR OF THE MUNICIPALITY

11.1 Only the Chief Executive Officer is entitled to act on behalf of the Municipality and will have the authority to hand in complaints at the Lessee.

12. EXCLUSION OF WARRANTIES

12.1 The Leased Premises are only suitable and are only to be used for the purpose for which it is leased, namely:

a) <u>Charcoal Processing</u>.

13. INSPECTION

13.1 The Chief Executive Office may authorize an official to enter the Premises at any reasonable time in order to:

- a) inspect same;
- b) show the premises to any proposed lessee or buyer.

4 13.2 The Municipality shall be entitled to affix notice boards to the premises whereby the premises is advertised for sale or hire, and the Lessee may not in any manner tamper with or obstruct such notice boards. 14. TRANSFER OF RESPONSIBILITY 14.1 The Lessee may not transfer the responsibility, assigned to him/her in this contract, to any other party. 15. CANCELLATION 15.1 Should the Lessee fail to pay any rental on the day the same becomes due or at the latest within one week (7 days) thereafter or commit any breach of the terms or conditions of this lease, the Lessor shall have the right at once to cancel this lease and to re-enter and take possession of the Leased Premises and dispose thereof as he may think fit anything to the contrary herein contained notwithstanding and without prejudice to any claim on the Lessor's part for arrears of rent. damages or otherwise. THUS DONE and SIGNED at ______ on this _____ day of ______ 2022 on behalf of the LESSOR in the presence of the undersigned witnesses: WITNESSES: 1. on behalf of the LESSOR 2. on this THUS DONE and SIGNED at _____ 2022 on behalf of the LESSEE in day of the presence of the undersigned witnesses: WITNESSES: 1. on behalf of the LESSEE 2.





APPENDIX C – ADVERTS





Investment giants set to convene in Swakop

MNCapital Group, a top-tier Africafocused investment communication and institutional business develop-ment firm, announced that various Pension Funds and several International and local leading institutions come together to discuss Namibia's economic growth through alternative investments.

The firm is supported by Polyah Media, Mergence Unlisted Invest nert Managers, Caderice Capital, Monasa Advisory & Associates and MNCapital Botswana The Namibia Institutional Investment Forum 2022 will be held at the

Swakopmund Plaza Hotel between 10-11 March 2022, themed, "Ha nessing Alternative Investment To

Drive Economic Reco The guest speakers will be Nicole Maske, Managing Partner of Eos Capital and Kenneth Matornola, Chief Executive Officer (CEO) of the Namibia Financial Institutions Suervisory Authority With participation capped at 100, the forum brings together senior investment professionals from the

Namibia investment funds and asset management industry, and some international participants. The pro gramme will feature regulators and policymakers whose decision has a direct impact on investment decisions by pension funds, insurance commanies, development financial institutions and other institutio and private investors. Speaking in an interview, Michael

Ndinisa, Chief Executive Officer (CEO) of MNCapital Group said: "We are maily excited about the



MAASTISA III prospects of hosting the most carr prehensive institutional investment forum in Namibia. This Forum has

been designed with a deliberate is

clination towards the discussion of the formulation of pragmatic solu-tions, challenges and the alignment of Investment structures, regula-tions and best practices with cornert of in global expectations and competi-WONERS"

"These country- specific institu-tional investments programs are designed to create a platform for the discussions of issues affecting insti-tutional investors as well as other key players in the industry such as Fund managers, custodians, Admin-istrators and every other stakeholder and will look at how to develop ways to overcome the challenges through employment of factual and timerelevant information and practic as per the global standards and simultaneously matching those in Namibia. Growing investment in Af-rica's economic development along an inclusive and green path depends

ri the long-term of institutional investors in Africa because sustainable investment depends on Africa's own pension funds investing in Africa's future, Ndinisa further articulated.

Namibia recently registered a record high in investment leads, 80% over the usually expected number. These leads mainly focused on the Green Hydrogen aspect, with other lead recordings showing interest in industries such as Agriculture and tourism

This shows growth an tial and opportunity on investment in Namibia, such advancements in investment align well with the United Nations Sustainable Devel-opment guidelines, a subject James Mnyupe, the economic advisor to the president and green hydrogen commissioner will highlight on the day of the forum.

African economies bardest bit OPEC+ powerless as oil prices increase

Between December and January, OPEC nembers boosted their production by 64 000 barrels per day (bpd).

EMELINE BURCKEL are likely to be proveriess the OPEC+ cartel of

have soared above US\$100 top oil producers at their monthly eting on Wednesday

after member Russia's in-vasion of Ukraine. With some normbers failing to

to rein in prices, which

VIER MERI SOOS MUSIC MISRE BEREIK DIE NASIES EN MAAK DISSIPELS DEUR GOD EN MEKAAR LIEF TE HÉ

In biddende afhanklikheid van die Hers stel die Dagbestuur die bogenoemde wikature bekend

GEMEENTEPROFIEL:

WEGK a n wrendemontrinasionelle, ondrhanklike gemeente. Die gemeente is vertaamwroortigend van die verpleltende kulture van die dorp en beden in Afrikaam. an Ersenis, WSGK is 'n wormaaliene - Woontgefundworde genoemte met 'n sterk roeping tot Geesgeleide diens aan God en die wirekt. Daar is tuidigtik 'n jeugwerker en selentarenne op voltvidse personeel.

LERAARSPROFIEL:

Larair meist ampsbövongsbest Mi. In die gemeente aanwaar die Laraar verantwoordelikheid vir die bestudering en verkondiging van die Woord van Golt. die bediening van die takramente en die voortdurende ontwikkeling van bedeningsvaardigtede. Die Leisen is saam met die ander ampte verantwoordelik vin

- · erediemite. die opbou viet die geme
- · onderrig en toerusting van gelowiges vir hulle
- denswerk, die gemeente se dienswork in die wêreld, · leiding en organisering van die gemeente.
- ege en bedierings. kink
- pastorale versorging.
- Goeie elektroniese-medium saardighede is belangrik Minimum van 5 jaar ondervinding

AANSOEKE

n CV moet vergesel wees van 4 referente met iontaktesonderhede. Stuur 'n kort CV aan e-pos: wbochurch Eiway na Namibiesa burgers kry voorkeur

SUITINGSDATUM: 18 Maart 2022

NAVRAE:

William Deriks + 264 811280508/ (sel) Marelise Claassens - Kantoor un: (08 14:00-17:00) Tet 00264 64 20 4027 08-00-19.00

Aansoekers moet beskiktuar wees vir onderfroude en preke te Walvisbaal.

- Die Dagtiestuur behru die reg voor
- tem nie 'n ganshalling te maak nie

duction quotas, the group is not expected to be able to control the wild swings n oil prices, analysts say. "Only Saudi Arabia and the United Arab Emirates (UAE), and maybe Kawait would be able to increase production in the short-term," Tamas

Varga from PVM Energy told AFP. But group leader Saudi Arabia reiterated at the start of this year its policy of strict adherence to the terms of OPEC+ agreements and the quotas greed in them. It confirmed its commitment to the OPEC+

agreement with Russia on Sunday, according to the Saudi Press Agency,

11 March 2022 at 16h00

For further enquiries, contact

T.P. MUJORO CHIEF ELECTORAL & REFERENDA OFFICER

Ms. Helena Shoombe at 26461376215/249

tional criticism over the Ukraine conflict. Crowin Prince Mohammed bin Salman during a conver-sation with French President Emmanuel Macron "affirmed the kingdom's keenness on the stabil-ity and balance of oil markets and the king-dom's commitment to the OPEC+ agreement," the agency added. While Saudi Arabia is

seen as the kingpin of the 13 OPEC member states, Bassia is the major player among the 10 other untries that make up OPEC+.

The 23 countries will gather via teleconfer-ence on Wednesday, facing prices not seen

NOTICE TO ALL SUPPLIERS OF THE

ELECTORAL COMMISSION OF NAMIBIA

Electoral Commission of Namibia (ECN) hereby request all

its Service Providers of works, goods and services to submit

outstanding invoices for 2021/2022 financial year, to ensure

timely processing if all payments. Kindly submit them to

the ECN Head Office at 67-71 Van Rhijn Street, Windhoek

North or post to private Bag 13352 Windhoek on or before

since 2014. They will aim to live up to their mission of "stabilization of oil markets", particularly at this time of "extreme oil price volatility", accord-ing to Stephen Brennock, analyst at PVM Energy Between December and January, OPEC members boosted their production by 64 000 harrels per day (hpd), reaching a total of some 27 981 million bpd, according to the org isation's last monthly report. But this is far below the

target of a 400 000-bpd increase that the group has been aiming for since May 2021, when it embarked on a gradual re-opening of the taps to accompany the global



Africa

Covid has hit African economies the hardest and Nigeria and Angola have struggled to keep up investment in infrastructure with both existing and new wells," Edward Moya, analyst at Oanda, told AFP.

"Years of underinvestment and political in-stability have lent themselves to severely limited spare capacity in the likes of Nigeria, Angola, and Libya, according to analyst Han Tan from Eduity

OPEC's latest report says that Congo and Equatorial Guinea produced much less than expected in January: Since May 2021, the level of crude produced by OPEC members has been just sky of 756,000 bpd under the authorised limit, According to Carsten Fritsch, quoted in an analysis from Com-

merzbank, the gap v only widen unless Sau Arabia and other cou tries with spare capac ty step in with increase

Right now, there seemingly no desire to ease market condi-tions either, with producers capitalising high prices which the don't deem to be over harmful for the econo after years of very lo prices," Craig Erlam 7 Oanda told AFP

Wednesday's meetic also takes place at a ke moment for negotiation to revive the 2015 Ira nuclear deal which an widely expected to com to a head in a matter o days.

The deal provided san tions relief for Tehran is return for strict curbs of its nuclear program but has be in disinte grating since former U president Donald Trun withdrew from it in 201 and reimposed sanctic including on Iran's exports. - 41

PUBLIC NOTICE

APPLICATION FOR ENVIRONMENTAL IMPACTABLE SIMESI INTERNATION OF A CHARGE CONSTRUCTION AND OPERATION OF A CHARCOM, PROCESSING TROCKARIS AND STORAGE FACULTY IN OTAMARDIGD INDUSTRIAL AREA CLOZORDAUM RESION

revental Services CC herewith Earth Err terms of the Environmental Manadement Act, of 7 of 2007 and Environmental Impact Assessment EtA) Results the fire the roposed construction and operatio ackaging, and intrage facility of a charcoal pr

Properant: Om A Berrare CC

Location of the project area: ERF 3112, Ogwarongs It area, Oljozonskupa mgion

The proponent has appointed Earth Environmental Services CE as the Environmental Consultant to conduct an Environmental Impact Assessment and Draft Environmental Management Paris to support the application for an Environmental Cleatance Certificate

All Interested and Affected Parties (ISAPs) are to register and sub-relations transe traver to an interpreted on the probability of the comparison of the

Email:

s earthervices@gmail.com Cell: 2014/2010/00/10/00 2017/010801



APPENDIX D – SITE NOTICES AND CONSULTATIONS







Image 4: Placed at The Otjiwarongo Municipality



Image 5: Proponent, consultants and Municipality official during consultation

APPENDIX E – FLORA SPECIES LIST

SPECIES	ENDEMISM	PROTECTED	IUCN1	IUCN2
Acacia fleckii Schinz				
Acacia hereroensis Engl.				
Acacia luederitzii Engl. var. luederitzii				
Acacia nilotica (L.) Willd. ex Delile subsp. kraussiana				
(Benth.) Brenan				
Acacia reficiens Wawra subsp. reficiens				
Acacia senegal (L.) Willd. var. rostrata Brenan				
Acacia tortilis (Forssk.) Hayne subsp. heteracantha (Burch.) Brenan				
Acanthosicyos naudinianus (Sond.) C.Jeffrey				
Achyranthes aspera L. var. aspera				
Aerva leucura Mog.				
Aloe zebrina Baker		Protected		
Alternanthera nodiflora R.Br.				
Aneilema hockii De Wild.				
Anthephora pubescens Nees				
Anthephora schinzii Hack.				
Aptosimum decumbens Schinz				
Asparagus cooperi Baker				
Asplenium cordatum (Thunb.) Sw.				
Barleria kaloxytona Lindau	Endemic			
Barleria lanceolata (Schinz) Oberm.	Endemic			
Bergia polyantha Sond.				
Blepharis obmitrata C.B.Clarke				
Boerhavia coccinea Mill.				
Boerhavia deserticola Codd	Endemic			
Boscia foetida Schinz subsp. foetida				
Bothriochloa insculpta (Hochst. ex A.Rich.) A.Camus				
Brachiaria eruciformis (Sm.) Griseb.				
Brachiaria grossa Stapf				
Brachiaria malacodes (Mez & K.Schum.) Scholz				
Brachiaria schoenfelderi C.E.Hubb. & Schweick.	Endemic			
Cenchrus ciliaris L.				
Chamaecrista biensis (Steyaert) Lock				
Cheilanthes dinteri Brause				
Chenopodium amboanum (Murr) Aellen	Endemic			
Chloris virgata Sw.				
Clematis brachiata Thunb.				
Cleome angustifolia Forssk. subsp. diandra (Burch.)				
Kers			1	

SPECIES	ENDEMISM	PROTECTED	IUCN1	IUCN2
Cleome monophylla L.				
Cleome oxyphylla Burch. var. oxyphylla				
Cleome suffruticosa Schinz	Endemic			
Coccinia rehmannii Cogn.				
Coccinia sessilifolia (Sond.) Cogn.				
Colophospermum mopane (J.Kirk ex Benth.) J.Kirk ex		Forestry		
J.Léonard		Protected		
Combretum apiculatum Sond. subsp. apiculatum				
Combretum imberbe Wawra				
Commelina benghalensis L.				
Commelina forskaolii Vahl				
Commicarpus decipiens Meikle	Endemic			
Commicarpus pentandrus (Burch.) Heimerl				
Commiphora africana (A.Rich.) Engl. var. africana				
Commiphora angolensis Engl.				
Commiphora nigrescens Engl.				
Corbichonia decumbens (Forssk.) Exell				
Corchorus asplenifolius Burch.				
Corchorus tridens L.				
Corchorus trilocularis L.				
Cotula anthemoides L.				
Crotalaria argyraea Welw. ex Baker				
Crotalaria barnabassii Dinter ex Baker f.				
Crotalaria steudneri Schweinf.				
Croton gratissimus Burch. var. gratissimus				
Cullen tomentosum (Thunb.) J.W.Grimes				
Cynodon dactylon (L.) Pers.				
Cyperus foliaceus C.B.Clarke				
Cyphostemma congestum (Baker) Desc. ex Wild & R.B.Drumm.				
Dactyliandra welwitschii Hook.f.				
Dactyloctenium aegyptium (L.) Willd.				
Dichanthium annulatum (Forssk.) Stapf var. papillosum (A.Rich.) De Wet & Harlan				
Dicoma tomentosa Cass.				
Digitaria seriata Stapf				
Digitaria velutina (Forssk.) P.Beauv.				
Dipcadi glaucum (Burch. ex Ker Gawl.) Baker				
Ehretia alba Retief & A.E.van Wyk				
Elephantorrhiza suffruticosa Schinz				
Enneapogon cenchroides (Licht. ex Roem. & Schult.) C.E.Hubb.				
Eragrostis biflorg Hack, ex Schinz				
SPECIES	ENDEMISM	PROTECTED	IUCN1	IUCN2
---	-----------	-----------	-------	-------
Eragrostis cilianensis (All.) Vignolo ex Janch.				
Fragrostis echinochloidea Stapf				
Eragrostis nindensis Eicalho & Hiern				
Fragrostis omghekensis De Winter	Endemic			
Fragrostis porosa Nees	Lindernie			
Eragrastis superba Povr				
Eragrostis trichophora Coss & Durieu				
Eriocephalus luederitzianus O Hoffm				
		Forestry		
Erythrina decora Harms	Endemic	Protected		
Euclea undulata Thunb. var. myrtina (Burch.) Hiern				
Euphorbia inaequilatera Sond. var. inaequilatera				
Evolvulus alsinoides (L.) L.				
Felicia clavipilosa Grau subsp. clavipilosa				
Fingerhuthia africana Lehm.				
Elueagea virosa (Roxb. ex Willd.) Vojat subsp. virosa				
Geigeria acaulis (Sch.Bip.) Benth. & Hook.f. ex Oliv. &				
Hiern				
Gisekia africana (Lour.) Kuntze var. africana				
Gloriosa superba L.				
Grewia flava DC.				
Grewia flavescens Juss.				
Grewia retinervis Burret				
Harpagophytum procumbens (Burch.) DC. ex Meisn.				
subsp. procumbens		Protected		
Helichrysum tomentosulum (Klatt) Merxm. subsp.				
aromaticum (Dinter) Merxm.				
Helinus integrifolius (Lam.) Kuntze				
Helinus spartioides (Engl.) Schinz ex Engl.				
Heliotropium nelsonii C.H.Wright				
Heliotropium ovalifolium Forssk.				
Hermannia eenii Baker f.				
Hermannia modesta (Ehrenb.) Mast.				
Hermannia rautanenii Schinz ex K.Schum.				
Hermannia tomentosa (Turcz.) Schinz ex Engl.				
Hermbstaedtia odorata (Burch.) T.Cooke var. odorata				
Hibiscus caesius Garcke var. caesius				
Hibiscus calyphyllus Cav.				
Hibiscus dinteri Hochr.	Endemic			
Hibiscus nigricaulis Baker f.				
Hibiscus sulfuranthus Ulbr.	Endemic			
Hiernia angolensis S.Moore				
Hirpicium gorterioides (Oliv. & Hiern) Roessler subsp.				
gorterioides				ļ
Hyparrhenia rufa (Nees) Stapf var. rufa			1	

SPECIES	ENDEMISM	PROTECTED	IUCN1	IUCN2
Hypericum Ialandii Choisy				
Indigastrum costatum (Guill. & Perr.) Schrire subsp.				
macrum (E.Mey.) Schrire				
Indigofera filipes Benth. ex Harv.				
Ipomoea dichroa Choisy				
Ipomoea oblongata E.Mey. ex Choisy				
Ipomoea sinensis (Desr.) Choisy subsp.				
blepharosepala (Hochst. ex A.Rich.) Verdc. ex				
Ipomoed verbascoided Choisy				
(S Moore) Hedrén				
Kirkia acuminata Oliv				
Kleinia longiflora DC				
Kohautia caespitosa Schnizl. subsp. brachyloba				
Konautia cynanchica DC.				
Lanfana angolensis Moldenke				
Lantana dinteri Moldenke				
Lapeirousia rivularis Wanntorp				
Leucas martinicensis (Jacq.) R.Br.				
	Near			
Leucas pechuelli (Kuntze) Gurke	Endemic			
Leucosphaera bainesii (Hook.f.) Gilg				
Limeum argute-carinatum Wawra ex Wawra & Peyr.				
var. argute-carinatum				
Limeum myosofis H. Walter Var. confusum Friedrich				
Grimme				
Lycium trathao Dammar				
Macrotyloma axillare (E Mey) Verde, var. axillare				
Macrua panyifolia Pay				
		Forestry		
Maerua schinzii Pax		Protected		
Megalochlamys marlothii (Engl.) Lindau				
Melbania virescens (K. Schum.). K. Schum				
Melinis repens (Willd.) Zizka subsp. grandiflora				
(Hochst.) Zizka				
Melinis repens (Willd.) Zizka subsp. repens				
Monechma debile (Forssk.) Nees				
Monechma divaricatum (Nees) C.B.Clarke				
Monechma genistifolium (Engl.) C.B.Clarke subsp.				
genistifolium	Endemic			
Monelytrum luederitzianum Hack.				
Monsonia angustifolia E.Mey. ex A.Rich.				

SPECIES	ENDEMISM	PROTECTED	IUCN1	IUCN2
Montinia caryophyllacea Thunb.				
Nelsia quadrangula (Engl.) Schinz				
Neorautanenia mitis (A.Rich.) Verdc.				
Nerine laticoma (Ker Gawl.) T.Durand & Schinz				
Nidorella resedifolia DC. subsp. resedifolia				
Ocimum americanum L. var. americanum				
Ocimum filamentosum Forssk.				
Ondetia linearis Benth.	Endemic			
Ornithogalum pulchrum Schinz				
Oropetium capense Stapf				
Otoptera burchellii DC.				
Oxygonum alatum Burch. var. alatum				
Oxygonum sinuatum (Hochst. & Steud. ex Meisn.) Dammer				
Ozoroa paniculosa (Sond.) R.Fern. & A.Fern. var. salicina (Sond.) R.Fern. & A.Fern.				
Panicum maximum Jacq.				
Pavonia burchellii (DC.) R.A.Dyer				
Peliostomum leucorrhizum E.Mey. ex Benth.				
Pellaea calomelanos (Sw.) Link var. calomelanos				
Petalidium englerianum (Schinz) C.B.Clarke				
Philenoptera nelsii (Schinz) Schrire				
Plectranthus caninus Roth				
Plectranthus neochilus Schltr.				
Pogonarthria fleckii (Hack.) Hack.				
Pogonarthria leiarthra Hack.	Endemic			
Pollichia campestris Aiton				
Ptycholobium biflorum (E.Mey.) Brummitt subsp. angolensis (Baker) Brummitt				
Ranunculus multifidus Forssk.				
Raphionacme lanceolata Schinz				
Rhamphicarpa brevipedicellata O.J.Hansen				
Rhigozum brevispinosum Kuntze				
Rhus ciliata Licht. ex Schult.				
Rhus marlothii Engl.				
Rhynchosia minima (L.) DC. var. minima				
Rhynchosia minima (L.) DC. var. prostrata (Harv.) Meikle				
Rotheca myricoides (Hochst.) Steane & Mabb. var.				
myricoides				
Schmidtia pappophoroides Steud.				
Seddera suffruticosa (Schinz) Hallier f. var. suffruticosa				
Senna italica Mill. subsp. arachoides (Burch.) Lock				
Sericorema sericea (Schinz) Lopr.				

SPECIES	ENDEMISM	PROTECTED	IUCN1	IUCN2
Sesamum triphyllum Welw. ex Asch. var. triphyllum				
Sesbania macowaniana Schinz				
Setaria pumila (Poir.) Roem. & Schult.				
Solanum capense L.				
Solanum delagoense Dunal				
Solanum tettense Klotzsch var. renschii (Vatke) A.E.Gonç.				
Sorghum halepense (L.) Pers.				
Sporobolus festivus Hochst. ex A.Rich.				
Sporobolus fimbriatus (Trin.) Nees				
Steganotaenia araliacea Hochst. var. araliacea				
Stipagrostis hirtigluma (Steud. ex Trin. & Rupr.) De Winter subsp. patula (Hack.) De Winter				
Striga gesnerioides (Willd.) Vatke				
Tagetes minuta L.				
Talinum arnotii Hook.f.				
Tephrosia oxygona Welw. ex Baker subsp. lactea (Schinz) A.Schreib.				
Terminalia sericea Burch. ex DC.				
Tragus racemosus (L.) All.				
Triaspis hypericoides (DC.) Burch. subsp. nelsonii (Oliv.) Immelman				
Tribulocarpus dimorphanthus (Pax) S.Moore				
Trochomeria macrocarpa (Sond.) Hook.f. subsp. vitifolia (Hook.f.) R.Fern. & A.Fern.				
Urginea altissima (L.f.) Baker				
Urochloa brachyura (Hack.) Stapf				
Urochloa oligotricha (Fig. & De Not.) Henrard				
Vigna frutescens A.Rich. subsp. frutescens var.				
frutescens				
Waltheria indica L.				
Xenostegia tridentata (L.) D.F.Austin & Staples subsp. angustifolia (Jacq.) Lejoly & Lisowski				
Xerophyta viscosa Baker				
Zehneria marlothii (Cogn.) R.Fern. & A.Fern.				
Ziziphus mucronata Willd. subsp. mucronata				
Zornia milneana Mohlenbr.				