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Environmental Scoping Study For The Proposed Drilling Of Boreholes for Water Supply at Kasenu and Kasikili Villages in Kasika Conservancy,



Zambezi Region

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ACRONYMS

CBNRM	Community Based Natural Resource Management			
CCFN	Community Conservation Fund of Namibia			
CEO	Chief Executive Officer			
DEA	Department of Environmental Affairs			
DWA	Department of Water Affairs			
EA	Environmental Assessment			
EAP	Environmental Assessment Practitioner			
EC	Environmental Commissioner			
ECC	Environmental Clearance Certificate			
ECO	Environmental Compliance Officer			
EIA	Environmental Impact Assessment			
EMA	Environmental Management Act (No. 7 of 2007)			
EMP	Environmental Management Plan			
ESI	Environmental Social Indicators			
ESMF	Environmental and Social Management Framework			
FDM	Frequency Domain Electromagnetic			
FPIC	Free Prior Informed Consent			
GPS	Global Positioning System			
GRM	Grievance Redress Mechanisms			
HWC	Human Wildlife Conflict			
HWC and WC	Human Wildlife Conflict - Wildlife Crime			
I&APs	Interested and Affected Parties			
ILO	International Labour Organization			
IRDNC	Integrated Rural Development and Nature Conservation			
ISO	International Standard Organisation			
IWRM	Integrated Water Resource Management			
KFW	German Development Bank			
L	Litre			
m ³	Cubic			

MAWLR	Ministry of Agriculture Water and Land Reform			
MEFT	Ministry of Environment Forestry and Tourism			
MM	Millimetres			
Mm ³	Million Cubic			
NACSO	Namibian Association of CBNRM Support Organizations			
٥C	Degree Celsius			
OMDEL	Omaruru Delta			
PPE	Personal Protective Equipment			
PPP	Public Participation Process			
R	Reversible			
RD	Red-Dune Consulting CC			
SEMP	Social Environmental Management Plan			
SM	Site Manager			

EXECUTIVE SUMMARY

The concept of wildlife management at community levels through establishment of conservancies has seen remarkable population increase in wildlife. However, this increased wildlife population resulted into their expanded foraging ranges into communal and freehold farming areas resulting in an increased frequency and severity of Human Wildlife Conflict (HWC). The conflicts include damage to crops, gardens and infrastructure (water points, fences, kraals, boreholes, etc.), loss of life or injuries to people and livestock mortalities. Climate change is also known to contribute to the shift of wildlife population to areas that were previously not heavily affected by drought, which further exacerbate HWC in communities.

The location of Kasika Conservancy makes Chobe Rivers to be the main source of water both for human and animals especially during dry season. The River supports a large population of crocodiles which created a challenge of "*human-crocodile conflict*" during collection of water by people and access by animal. Often, animal are attacked by crocodiles and fatal attack involving people has been reported. The Conservancy is also home to key wild life species such as elephants, leopards, hippos, crocodiles and lions which has also created a challenge of HWC.

In December 2022, Kasika Conservancy applied for a Grant from the Community Conservation Fund of Namibia (CCFN) to be supported with drilling water point, a measure that is aimed to mitigate Human Wildlife Conflict (HWC). CCFN, through the project "*Poverty Oriented Support to Community Conservation in Namibia*" is now supporting Kasika Conservancy with two solar powered water supply points to establish safe access water point for human and livestock at Kasenu and Kasikili Villages.

The borehole will serve as a water supply infrastructure to enable safe access to water points for human and livestock. This intervention is in line with the project's objective of "providing targeted conservancies with the means to address the HWC challenges they face in line with the National Policies of Namibia".

Section 27 of EMA, has listed the "*Abstraction of ground water*" as an activity that may not be undertaken without Environmental Clearance Certificate. To fulfil this statutory requirements, Red-Dune Consulting CC (RDC) was appointed to develop an Environmental Management Plan (EMP) that would guide drilling and operation of the proposed borehole at Kasenu and Kasikili Village.

This scoping concluded that there are no significant social and /or environmental impacts that the project will cause. The project's magnitude is small and its potential negative impacts are negligible to; the Chobe River flow, aquatic bio-diversity, bio-physical environment on land and, it has positive impact on socio-economic in addressing *the human-crocodile conflict* and poverty eradication by supporting livestock of the community and potential gardens.

1 INTRODUCTION AND BACKGROUND

1.1 Poverty Oriented Support to Community Conservation in Namibia

The Community Conservation Fund of Namibia (CCFN) is a non-profit Association incorporated under Section 21 of Namibia's Companies Act of 2004. Using a foundation model, the CCFN is mandated to raise funds and manage various financial mechanisms such as endowments, sinking or revolving funds, to ensure the long-term sustainability of Community-Based National Resource Management (CBNRM) activities that are carried out by communal conservancies and other entities with a similar legal mandate.

Box 1. A Conservancy is...

- a legally registered area with clearly defined borders and a constituted management body run by the community for the development of residents and the sustainable use of wildlife and tourism.
- managed by a group elected to serve the interests of all its members.
- a place where residents can add income from wildlife and tourism to traditional farming
- activities.
- a place where wildlife populations increase as they are managed for productive gain.
- a place where the value of the natural resources increases, enhancing the value of the land.
- a forum through which services and developments can be channelled and integrated.
- zoned for multiple uses to minimize conflict and maximize the interests of all stakeholders.

With financial support from the German Government through the KfW Development Bank, CCFN is implementing a project, "Poverty Oriented Support to Community Conservation in Namibia". The project's main objective is to contribute to biodiversity conservation and rural development through the establishment of sustainable Human-Wildlife-Conflict (HWC) management systems in Namibia's communal conservancies.

The project is (i) working together with CBNRM partners to develop and institutionalize longterm mechanisms and structures that make management of HWC part of the sustainability strategy of CBNRM (ii) providing targeted conservancies with the means to address the HWC challenges they face in line with the National Policies of Namibia.

1.2 Community Based Natural Resource Management

Before Namibia gained its independence in 1990, residents in the communal areas had few rights to use wildlife. Predators and foraging wild animals were regarded as threats due to their destruction of crop fields, human attacks, killing of livestock as well as damaging of infrastructures, especially water infrastructure. In turn, community retaliate by killing wild animals, which gave birth to a concept commonly known as Human Wildlife Conflict and Wildlife Crime (HWC-WC).

After independence, and in line with Article 951¹ of the Namibian Constitution, Namibia has adopted policies, legal instruments, and strategies for addressing HWC-WC. One such strategies is enabling communities and private businesses to benefit from wildlife-based tourism and sustainable natural resource management commonly known as Community-Based Natural Resource Management (CBNRM) which is guided by the National Policy on Community Based Natural Resource Management.

The CBNRM concept is based on the understanding that if natural resources have sufficient value to rural communities, and allow for rights to use, benefit and manage, then appropriate incentives for people to use natural resources in a sustainable way will be created through the establishment of a Conservancy. The CBNRM programme links conservation to poverty eradication through developing the conservation, hunting and tourism industries which in turn contribute to the Gross Domestic Product, employment creation and the improvement of the well-being and social upliftment of rural communities.

¹ The State to actively promote and maintain the welfare of the people by adopting policies aimed at the maintenance of ecosystems, essential ecological processes and biological diversity of Namibia and utilization of living natural resources on a sustainable basis for the benefit of all Namibians, both present and future."

1.3 Challenges faced by Conservancies

The CBNRM has yielded into remarkable recovery and increase of wildlife populations, including key predator species and internationally threatened or endangered species such as elephant and black rhinoceros². However, this increased wildlife population resulted into their expanded foraging ranges into communal and freehold farming arear resulting in an increased frequency and severity of Human Wildlife Conflict (HWC) especially involving elephants, feline predators, crocodiles and hippopotamus³⁴.

The conflicts include damage to crops, gardens and infrastructure (water points, fences, kraals, boreholes, etc.), loss of life or injuries to people and livestock mortalities. Climate change is known to contribute to shift of wildlife population to areas that are not heavily affected by drought, which further exacerbate HWC & WC.

Wildlife trafficking became a million-dollar criminal enterprise that has expanded to more than just a conservation concern. The increasing involvement of organized crime in poaching and wildlife trafficking threatens peace, strengthens illicit trade routes, and destabilizes economies and communities that depend on wildlife for their livelihoods.

Namibia is not spared from Wild Crime⁵ (WC). Although the country has made remarkable effort in preventing WC, the country is still facing this challenge and requires significant financial resources to address the challenge. Statistics indicates that 27 elephant and 61 rhino were poached in 2018 while in 2019, 39 live and 65 dead pangolin were seized in 2019. Furthermore, conservancy residents experiencing HWC sometimes engage in retaliatory killing to remove problem animals⁶. Other WC reported includes poaching wildlife such as Gemsbok, Springbok, Kudu, Giraffe etc., to sell meat and for own consumption.

² Republic of Namibia: Revised National Policy on Human Wildlife Conflict Management 2018-2027

³ Brian T. B. J and Jonathan I. Barnes 2006., Human Wildlife Conflict Study Namibian Case Study

⁴ Ailla-Tessa Nangula Iiyambula 2021., Identifying the Spatio-Temporal Distribution and Drivers Of Human-Carnivore Conflict In Epupa And Okanguati Conservancies, Kunene Region Namibia

⁵⁵ Republic of Namibia: Revised National Strategy on Wildlife Protection and Law Enforcement 2021 - 2025

⁶ Project Document: Integrated approach to proactive management of human-wildlife conflict and wildlife crime in hotspot landscapes in Namibia

2 KASIKA CONSERVANCY

The Kasika Conservancy, meaning "the small Mangosteen tree," was registered in December 2005. It covers an area of 142 km² and has a population of 1,500 people, with a conservancy membership of 962 people. It is home to the Masubia people. The main livelihoods in the conservancy include livestock and crop farming, fishing, collection of reeds and thatching grass, as well as water lilies and craft making. It is divided into four zones: settlement and cropping, multiple use – livestock priority, multiple use – tourism priority, and wildlife – trophy hunting.

2.1 Location

The conservancy is situated in east Chobe floodplain in the Zambezi Region, neighbouring the Kabulabula conservancy to the west, and the Impalila conservancy to the east. It is also bordered by the Chobe River to the south and the Zambezi River to the north (**See Figure 1&2 below**). The proposed borehole will be drilled at Kasenu (17,80194444 S, 25,0566667 E) and Kasikili village (-17.82732, 25.09397).



Figure 1. Location of Kasika Conservancy (#14)



Figure 2. Map of Kasika Conservancy (Source: NASCO)

2.2 Challenges Faced by the conservancy / communities in the area

2.2.1 Human Wild Life Conflict (HWC)

Kasika Conservancy hosts one of KAZA's keystone wildlife species, the increase in both human and wildlife populations has posed challenges to coexistence, leading to an increase in incidents of human-wildlife conflict. Situated near the Chobe and Zambezi Rivers, both livestock and communities face frequent attacks while accessing the river for domestic purposes and livestock watering.

Between 2020 and 2021, a total of 89 incidents of attacks were recorded, resulting in the loss of 85 livestock and 4 humans, with a combined value of N\$ 901,158.33. These attacks were primarily perpetrated by species such as crocodiles, lions, and hyena.

The Conservancy raised the challenge of HWC to CCFN and through a proposal, requested assistance to develop / establish safe water access point to mitigate the conflict through the provision of alternative safe water points.

The chart in **Figure 3** below shows the total number of human wildlife conflict incidents each year, subdivided by species, grouped as herbivores and predators.

The charts in Figure 3 below shows;

- A, total number of incidents each year, subdivided by species, grouped as herbivores and predators,
- **B**, the number of incidents per species for the last 3 years; the darkest bar (on the right) indicates the current year for each species
- C, the number of incidents per category for the last 3 years; the darkest bar (on the right) indicates the current year for each type.

It indicates that Crocodiles are far the most troublesome species in the conservancy responsible for livestock losses.



Figure 3. Total number of HWC incidents each year, subdivided by species and type of conflict (NACSO, 2022)

2.3 Support from Community Conservation Fund of Namibia (CCFN)

With financial support from the German Government through the KfW Development Bank, CCFN is implementing a project, "*Poverty Oriented Support to Community Conservation in Namibia*". The project's main objective is to contribute to biodiversity conservation and rural development through the establishment of sustainable Human-Wildlife-Conflict (HWC) management systems in Namibia's communal conservancies.

In line with the project objectives, CCFN is supporting Kasika Conservancy to drill a solar powered borehole to supply water to the community to mitigate the HWC conflict in the conservancy.

The project is (i) working together with CBNRM partners⁷ to develop and institutionalize longterm mechanisms and structures that make management of HWC part of the sustainability strategy of CBNRM (ii) providing targeted conservancies with the means to address the HWC challenges they face in line with the National Policies of Namibia, which is of particular relevance to this proposed intervention.

3 STATUTORY REQUIREMENTS

The protection of the environment is provided for under Article 951 of the Namibia Constitution. The Environmental Management Act (Act No 7 of 2007) (EMA) and its Environmental Impact Assessment Regulation 2012, has listed Water Resource Developments activities not to be undertaken without an Environmental Clearance Certificate (ECC) as follows;

- a) 8.1 The abstraction of ground or surface water for industrial or commercial purposes
- b) 8.2 The abstraction of groundwater at a volume exceeding the threshold authorized in terms of a law relating to water resources.

To fulfil the above statutory requirements, Red-Dune Consulting CC (RDC) was appointed to Develop an Environmental Management Plan (EMP) for drilling of a boreholes at Kasika conservancy.

In addition to EMA, there are other statutory requirements that would need to be fulfilled. The Ministry of Agriculture, Water and Land Reform as the custodian of the Water Resources Management Act, No.11 of 2013 instructs that a permit must be obtained prior to any borehole drilling activities can be undertaken.

⁷ IRDNC

4 TERMS OF REFERENCE

The scope to develop this EMP is guided by the Terms of References as provided in the EIA Regulation 2012, Section 9 (a-b) but, not limited to the following;

- Provide a comprehensive description of the proposed Project;
- Identify relevant legislation and guidelines for the project;
- Identify potential environmental (physical, biological and social) conditions of the
- project location and conduct risk assessment;
- Inform Interested and Affected Parties (I&APs) and relevant authorities about the
- proposed project to enable their participation and contribution;
- Develop an Environmental Management (EMP) that would be a legal guideline for the environmental protection by the project.

5 THE PROPONENT

Kasika Conservancy is the proponent for this application with financial support from CCFN.

6 UNDERGROUND WATER IN ZAMBEZI REGION

The aquifers in the Zambezi region are known to have a thickness of up to 125m, formed by coarse grained, semi-consolidated to consolidated sandstone with underlying layer of basal / brackish to saline water (see Figure 4).



Figure 4. Schematic Concept showing the Structure of the Aquifer System in the Eastern Caprivi (Groundwater Investigations in the Eastern Caprivi Region, Main Hydrogeological Report pp46)

6.1 **Project Alternatives**

The EMA requires impact assessment to explore various project alternatives which aims to ensure that a chosen project component does not have significant impact to the environment. Project alternatives ranges from not implementing the project (no go alternative), when the environmental impacts are severe, or there is high degree of uncertainty. Other alternative considers the project site, technology, and equipment to be used. The description of alternatives is given in table 1 below.

Table 1. Project Alternatives

Project Alternative	Description	Advantages	Disadvantages	Alternative
				adoption
No project	Do not implement the	None	HWC may increase, which could threaten	No
	project		the cost benefits of the conservation	
			incentives by conservancy members.	
Implement the	Implement the project	Reduce HWC	None	Yes
project		Improved water supply		
Diesel Power Pump	Use of diesel-powered	Cost effective and quick to	Difficult to upkeep with fuel supply	No
	water pump	implement	Diesel is very costly, and communities	
			always don't have the means to buy diesel.	
Solar Powered	Use of solar powered	Environmentally friendly.	The borehole operation could be impacted	Yes
Pump	water pump	Does not require fuel to	during cloud cover	
		operate		

7 DESCRIPTION OF THE RECEIVING ENVIRONMENT

7.1 Populational demography

The 2023 population census indicated that Zambezi region has total population of 142 373 people. Overall, 61% of the region population makes up the labour force whereby 62% and 32% of the labour force is employed and unemployed respectively. The region has 8 electoral constituencies as presented in Table 2 below. Kasika Conservancy falls within Kabbe South Constituency.

Zambezi	142 373
Judea Lyaboloma	8 738
Kabbe North	12 253
Kabbe South	11 345
Katima Mulilo Rural	24 016
Katima Mulilo Urban	46 401
Kongola	12 069
Linyanti	10 425
Sibbinda	17 126

Table 2. Electoral constituencies of Zambezi Region (Census 2023)

The average household size in the Zambezi Region was 4.4 people/household in 2015⁸, with a relatively young population of approximately 39% of the total population to be less than 15 years old. Officially, employment rate for Zambezi Region is 62%⁸, which is closely like the national average of 63.1%. Most of the employable adults are engaged in the category of agriculture, forestry, and fishing as the main sources of household income. Tourism and wildlife management are an important growing component of the economy, providing jobs through accommodation establishments and conservation work.

⁸ Namibia Statistics Agency.2015. Namibia Household Income and Expenditure Survey Report

7.2 Regional Geology and Topography

According to Mendelsohn *et al 2022*, Zambezi region, is formed up of the Kalahari Basin. The Kalahari Basin was formed from the split between Namibia and South America to form a broad coastal plain which is now the Namib Desert. The Kalahari Basin gradually filled up with sand and water borne deposit. These deposits of sands, clay and calcrete formed the Kalahari Group.

The soils are fluvisols that are derived from river deposits, and these loamy soils vary locally in the proportions of clay (distributed in the areas which experience frequent flooding) and sand (found mainly in the non-flood prone areas). While soils are naturally fertile and suitable to a range of crops, the sandy parts have poor soils with rather low nutrient levels, similar to other soils in the Kalahari Sandveld⁹.

Generally, the Zambezi region is flat and sloping toward the eastern direction. This is because, the geology of the area was formed from the filling up of the coastal plain with Namib sand and water borne deposits. Flooding is frequent in the region because of direct rainfall and rise in the Zambezi River from Angolan inflows.

The lithology of the aquifer in surrounding area is not well known. The geohydrology indicates that the aquifers are found in Kalahari Deposits where soils are clayey loam with low infiltration potentials and faced with evaporation rates higher than rainfall which consequently causes low potential of ground water recharge.

7.3 Climate

Namibia is one of the hottest and driest country in Sub-Saharan Africa. The country has high climatic variability in the form of persistent droughts, unpredictable, low, and variable rainfall patterns leading to scarcity of water¹⁰. The rainfall is highly sporadic ranging from 50mm – 600mm

⁹ Mendelsohn, J., Jarvis, A., Roberts, C., Robertson, T. (2002). Atlas of Namibia. A Portrait of the Land and its People. Cape Town (David Philip Publishers; New Africa Books (PTY) Ltd)

¹⁰ Namibia Fourth National Communication to the United Nations Framework Convention on Climate Change. Windhoek: Ministry of Environment Forestry and Tourism, March 2020

Kasika

per year which increases from the western part of the region to the eastern part. Zambezi region has the highest average rainfall of about 600 mm which is similar to that of Kasika Conservancy

(2021 / 2022 Season)

016 and 2017 rainfall season the conservancy has the highest recorded

rainfall of 955mm.



Greener than normal (5-20% above) Figure 5. Rainfall trends in Kasıka Conservancy (Source: NACSO) Far below normal (> 20% below) — Long term greenness



7.4 Biodiversity



ly vegetated region in Namibia. Due to its tropical nature, the d by thick bush, shrubs mature trees which are predominantly f Acacia trees and tall glass in the floodplain while non-flooded



areas have trees of mopane (Colophospermum mopane), and burkea-terminalia (Terminalia sericea).

Kasika Conservancy has patched dense vegetation, and glass cover in flood plain areas. Similarly, at Kasikili village, there are patches of dense vegetation, mainly shrubs and glass cover in the flood plain.



Figure 6. Vegetation cover at Kasikili village

7.4.2 Fauna

The conservancy is situated in the largest conservation area in the world, the Kavango Zambezi Transfrontier Conservation Area (KAZA – TFCA) and is home to a diversity of keystone wildlife species. Major wildlife includes crocodile, hippo, Lion, elephant, leopard, buffalo, waterbuck, Antelope, kudu, duiker, reedbuck, common impala, blue wildebeest, lechwe, plains zebra, warthog, high diversity bird species, various fish species in the Zambezi and Chobe Rivers.

7.5 Surface Water

The primary surface water in Namibia is found in dams in Ephemeral Rivers and Perennial Rivers which have a potential of 200 Mm³ and 1,105Mm³ per annum respectively. The Ephemeral Rivers in the interior flow during the raining season, where western flowing rivers drains into the Atlantic Ocean, Fish River drains into Orange River, Cuvelai system, which is not a defined River system but rather Iishanas or flood plain drains into Etosha Pan and partially contribute to Kavango, Kwando and Zambezi River.

Perennial River, which has permanent flow are all found on the border of the country. Zambezi in the northeast has a mean annual flow of 40,000 Mm³, its flow per second, 180Mm³, is about twice the overall Dams capacity in Namibia at 100Mm³. The Kwando / Linyati / Chobe has an annual flow of 10,000Mm³, Kunene 5,500Mm³ and Orange River with 11,000Mm³ flow. Chobe River is the main source of surface water for the conservancy.

7.6 Ground Water

Namibia highly relies on ground water. About 50-60% water is ground water which has a potential yield of 360Mm³. Geologically, the main aquifers are the Karst, Otjwarongo, Omaruru Delta (OMDEL), Lower Kuiseb, Windhoek, Stampriet, Koichab and Ohangwena II. Groundwater quality in much of the Zambezi Region is generally good, especially within 5-20 km from the rivers, which recharge the aquifers. Boreholes provide water for people and livestock, and most boreholes are located along the main access roads, while piped water is delivered to communal water points.

(2000 - 2021)



9 POLICY AND LEGAL FRAMEWORK

Table 3. Policy and Legal Framework

Legislation	Relevant authority	Applicability
The Namibia	Government	The Namibian constitution is the supreme law of the country and makes
Constitution	Republic of Namibia	provision for environmental protection and sustainable development.
Fnyironmontal	Ministry of	The environmental management act No.7 of 2007 aims to promote the
Managamant Act No. 7	Environment,	sustainable use of natural resources and provides the framework for the
of 2007	Forestry and	environmental and social impact assessment, demands precaution and mitigation
01 2007	Tourism	of activities that may have negative impacts on the environment and provision
		for incidental matters. Furthermore, the act provides a list of activities that may
		not be undertaken without an environmental clearance certificate.
		The Environmental Assessment Policy for Sustainable development and
		Environmental Conservation emphasize the importance of environmental
		assessments as a key tool towards implementing integrated environmental
Environmental	Ministry of	management. Sets an obligation to Namibians to prioritize the protection of
Assessment Policy	Environment,	ecosystems and related ecological processes.
(1995)	Forestry and	The policy subjects all developments to environmental assessment and provides
	Tourism	guideline for the Environmental Assessment. The policy advocates that
		Environmental Assessment take due consideration of all potential impacts and
		mitigations measures should be incorporated in the project design and planning
		stages (as early as possible).

Legislation	Relevant authority	Applicability
Pollution Control and	MEFT, MHSS and	The Pollution Control and Waste Management Bill, intents to regulate and
Waste Management Bill	others	prevent the discharge of pollutants into the air and water as well as providing for
(in preparation)		general waste management.
Public Health Act (Act No. 36 of 1919)	Ministry of Health	The Public Health Act aims to protect the public from nuisance and states that no
	and Social Services	person shall cause a nuisance or shall suffer to exist on any land or premises
		owned or occupied by him or of which he is in charge any nuisance or other
		condition liable to be injurious or dangerous to health.
Water Resources Management Act (Act No. 11 of 2013)	Ministry of	This Act provides a framework for managing water resources based on the
	Agriculture, Water	principles of integrated water resources management. It provides for the
	and Land Reform	management, development, protection, conservation, and use of water resources.
		Therefore, water abstraction should satisfy the provisions of the water act (water
		abstraction / borehole permit should be applied from the respective ministry).
		This act states that, all water resources belong to the State. It prevents pollution
		and promotes the sustainable utilization of the resource. To protect these
	Ministry of	resources, this act requires that permits are obtained when activities involve the
Water Act No, 54 of	Agriculture, Water	following:
1956	and Land Reform	(a) Discharge of contaminated into water sources such as pipe, sewer, canal, sea
		outfall and
		(b) Disposal of water in a manner that may cause detrimental impact on the
		water resources

Legislation	Relevant authority	Applicability
Soil Conservation Act No. 76 of 1969	Ministry of Agriculture, Water and Land Reform	This act promotes the conservation of soil, prevention of soil erosion. Prevent soil salinification.
National Heritage Act No. 27 of 2004	Ministry of Urban and Rural Development	The Act makes provision for the protection and conservation of places and objects of heritage significance and the registration of such places and objects. Part V Section 46 of the Act prohibits removal, damage, alteration or excavation of heritage sites or remains, while Section 48 sets out the procedure for application and granting of permits.
Regional Councils Act, 1992 (Act No. 22 of 1992)	Ministry of Urban and Rural Development	The Regional Councils Act legislates the establishment of Regional Councils that are responsible for the planning and coordination of regional policies and development. The main objective of this Act is to initiate, supervise, manage and evaluate regional development.

10 PUBLIC CONSULTATION

Section 21 of the EIA Regulation requires the undertaking of an Environmental Impact Assessment (EIA) to follows a robust and comprehensive public consultation. This is an important process, because it gives members of the public, especially the Interested and Affected Parties to comment or raise concerns that may affect their socio-economic or general environment because of the project. Further, it solicits crucial local knowledge that the Environmental Assessment Practitioner may not have.

The Public Participation Process (PPP) was focused on members of the conservancy. While competent and or regulatory authority such as Ministry of Environment Forestry and Tourism (MEFT), Ministry of Agriculture Water and Land Reform (MAWLR), where consulted during the project development phase for application for the ECC.

10.1 Kasenu Village Consultation

A community meeting for Kasenu Village in the morning of 16 February 2024 at Kasenu village (*see Figure 8*).



Figure 8. Community Meeting at Kasenu Village, on 16 February 2024 (Source: Red-Dune Consulting 2024).

• At Kasenu, the meeting was attended by 28 people, 19 women and 9 men including an area facilitator from Integrated Rural Development and Nature Conservation (IRDNC) and a consulting team of Red Dune Consulting (see appendix A).

- Mr. Simasiku Kahundu, the Vice-Chairperson of Kasika conservancy presented the background of the project and the meeting objectives. He informed the meeting that the proposed development of water points is a result of the conservancy request to be assisted in dealing with the challenge of HWC involving crocodiles. He assured the meeting that, the proposed water development is a community project and no land will be required to be allocated to an individual or an institution.
- Red-Dune presented the meeting objectives, particularly the requirement of the Environmental Social Safeguards (ESS) as outlined in the project's Environmental Social Management Plan (ESMP).
- The meeting was informed that, the proposed water point will be developed with funding from Community Conservancy Fund of Namibia (CCFN) which received funding from the KfW development bank to support communal conservancies to mitigate issues of Human Wild Conflict (HWC).
- KfW require that the money is spent wisely and accounted for to the benefit of the communities and ensure that project implementing agencies observe the highest standard of Environmental and Social Safeguard (ESS) which aims to ensure that the project is environmental and social sustainability.
- The meeting was informed that, the ESS requirement does not be support projects if amongst many red-flags, if it involves:
 - Displacement of people
 - Destroying heritage sites
 - Damaging critical biodiversity habitat
 - Causing conflict in the community
- Furthermore, the meeting was informed that, the proposed site must not be on an occupied land.
- The meeting was further informed that the protection of the environment is provided for under the Environmental Management Act (Act No. 7 of 2007) (EMA) and its Environmental Impact Assessment Regulation 2012 where EMA has listed Water Resource Developments activities, such as drilling of boreholes not to be undertaken without an Environmental Clearance Certificate (ECC).

- To obtain an ECC, a Social and Environmental Impact Assessment has to be undertaken, which is one of the core components of the consultation.
- Lastly the meeting was informed that, a consent letter is one of the requisites for the project to be implemented. This consent letter, called 'Free Prior Informed Consent' (FPIC) represent the community in understanding and agreeing to the proposed water development project. The FPIC was explained to the project as follows;
 - **FREE** refers to a consent given voluntarily and absent of coercion, intimidation or manipulation.
 - **PRIOR** means consent is sought sufficiently in advance of any authorization or commencement of activities
 - **INFORMED** means that community was well informed about the project and they know all information about the project.
 - **CONSENT** refers to the collective decision made by the rights-holders and reached through the customary decision-making processes of the affected peoples or communities.
- Free Prior Informed Consent was verbally obtained from the meeting by show of hands and a FPIC letter was drafted in the presence of the community, read and signed by the Induna (village headman) (see appendix B).
- The community enquired the following;
 - Will the borehole be accessible to everyone on the conservancy?
 - Red-Dune (RD) informed the meeting that the borehole will be for the whole community of Kasika Conservancy. Kasenu was only chosen because it is a hotspot for crocodile attacks.
 - Will the borehole have provision for people water taps or only for animals
 - RD informed the meeting that the borehole will have provision for people water points as well.
 - Will the project construct water distribution pipelines to individual household?
 - RD: No, there will only be two provision, cattle trough and one point for people.
 - The community expressed concern about the safety of the borehole infrastructures, mainly the solar panel, hence they identified a borehole site near the village.

- The Induna, (village headman) thanked the meeting and the donors and encourage for speedy implementation of the project.
- The meeting adjourned with a prayer, and a site assessment with the community was undertaken.

10.1.1 Site Assessment

• Location: a site location for the drilling of the borehole and placement of water troughs had already been selected by the community prior to the community engagement. The site is in close proximity with the village (Figure 9). The surrounding area has a dense vegetation cover, mainly with shrubs, however, the identified site is freed of vegetation but only with grass cover. It is located at GPS Coordinates 60⁰, (17,80194444 S, 25,0566667 E). The area has hand dug well, which was dry during site assessment.



Figure 9. Selected Borehole Drilling Site, Kasenu Village on 16 February 2024 (Source: Red-Dune Consulting 2024).
10.2 Kasikili Village Community Consultation

A community meeting for Kasikili Village in the morning of 24 May 2024 at Kasikili village (Figure 10).



Figure 10. Community Meeting at Kasikili Village, (Source: Red-Dune Consulting 2024).

- The meeting was attended by 16 people, 9 women (7 from Kadiana village, 1 from the Kasika Conservancy and 1 from Red Dune Consulting) and 7 men (5 from Kandiana Village, 1 from Kasika Conservancy, and 1 from Red Dune Consulting) (See Appendix C).
- Mr. Nyambe Hansen, the Enterprise Officer of the Kasika conservancy presented the background of the project and the meeting objectives. He informed the meeting that the proposed development of water points is a result of the conservancy request to be assisted in dealing with the challenge of HWC involving crocodiles. He assured the meeting that, the

proposed water development is a community project and no land will be required to be allocated to an individual or an institution.

- Red-Dune presented the meeting objectives, particularly the requirement of the Environmental Social Safeguards (ESS) as outlined in the project's Environmental Social Management Plan (ESMP).
- The meeting was informed that, the proposed water point will be developed with funding from Community Conservancy Fund of Namibia (CCFN) which received funding from the KfW development bank to support communal conservancies to mitigate issues of Human Wild Conflict (HWC).
- KfW require that the money is spent wisely and accounted for to the benefit of the communities and ensure that project implementing agencies observe the highest standard of Environmental and Social Safeguard (ESS) which aims to ensure that the project is environmental and social sustainability.
- The meeting was informed that, the ESS requirement does not be support projects if amongst many red-flags, if it involves:
 - Displacement of people
 - Destroying heritage sites
 - o Damaging critical biodiversity habitat
- Furthermore, the meeting was informed that, the proposed site must not be on an occupied land.
- The meeting was further informed that the protection of the environment is provided for under the Environmental Management Act (Act No. 7 of 2007) (EMA) and its Environmental Impact Assessment Regulation 2012 where EMA has listed Water Resource Developments activities, such as drilling of boreholes not to be undertaken without an Environmental Clearance Certificate (ECC).
- To obtain an ECC, a Social and Environmental Impact Assessment has to be undertaken, which is one of the core components of the consultation.
- Lastly the meeting was informed that, a consent letter is one of the requisites for the project to be implemented. This consent letter, called 'Free Prior Informed Consent' (FPIC) represent the community in understanding and agreeing to the proposed water development project. The FPIC was explained to the project as follows;

- **FREE** refers to a consent given voluntarily and absent of coercion, intimidation or manipulation.
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- CONSENT refers to the collective decision made by the rights-holders and reached through the customary decision-making processes of the affected peoples or communities.
- Free Prior Informed Consent was verbally obtained from the meeting by show of hands and a FPIC letter was drafted in the presence of the community, read and signed by the Induna (village headman) (Appendix D and See Figure 10 above).
- The community enquired the following;
 - Is CCFN going to install a new borehole or use the existing borehole?
 - Red-Dune informed the meeting that this work involves drilling a new borehole and not rehabilitating the existing boreholes.
 - Will the borehole be exclusively for livestock?
 - Red-Dune clarified that the borehole will feature two distribution points, one designated for livestock and the other for human consumption.
 - Our children are growing. If they have the financial resources in the future to connect a pipeline from the borehole to their households, will they be permitted to do so?
 - Red-Dune relayed to the meeting that such an endeavour is feasible, but it
 would necessitate engaging with the conservancy and MAWLR to mitigate
 unlawful connections. Additionally, ensuring that a qualified individual
 oversees the project would help avoid potential technical complications
 such as water contamination, infrastructure deterioration, or safety hazards.
 - The conservancy secretary extended gratitude to the project team and expressed appreciation for their efforts. Access to water remains a significant challenge for both their livestock and themselves, and this initiative promises to enhance their livelihoods. The meeting concluded with a prayer, followed by a community site assessment.

10.3 Site Assessment (Selected Borehole Drilling Site)

- The site location for the drilling of the borehole was pre-selected prior to the community engagement.
- Location: The site where the borehole will be drilled is an open space. The GPS Coordinates (-17.82732, 25.09397).
- **Surrounding Land Use**: There is a homestead situated approximately 15 m from the site and it is 1 km away from the Chobe River.



Figure 11. Selected Borehole Drilling Site, Kasikili village (Source: Red-Dune Consulting, 2024).

Vegetation: There are no native or indigenous plants on both sites; however, the area is surrounded by Acacia Trees (See Figure 12).



Figure 12. Acacia Tree spotted on site (Source: Red-Dune Consulting, 2024).

10.4 Site Assessment (Selected Livestock Trough Site)

- The site location for the livestock trough was selected during the community engagement.
- Location: The site where the livestock trough will be situated is an open valley, approximately 200 m away from the selected borehole site. The GPS Coordinates (-17.826645, 25.09367).
- **Surrounding Land Use:** There is a predator proof kraal situated 100 m and homesteads situated about 150 m from the site.

• Vegetation: There are no native or indigenous plants on site.

11 IMPACT ASSESSMENT

11.1 Impact Identification

Potential impact were identified in accordance to the key Environmental Social Indicators (ESI)¹¹ and using literature review, site assessment and public participation process and experience for Red-Dune Consulting.

11.1.1 Air Environment

Project activities that have potential of creating dust emission such as uncoordinated driving and drilling could deteriorate surrounding air quality from fugitive dust. Excess dust during work could be a health hazard to workers and the surrounding communities.

11.1.2 Noise Environment

Movement of heavy trucks and drill rigs, and drilling activities could produce excessive noise which could be noise nuisance to communities and hearing hazards to workers. Additionally, noise maybe generated from playing loud music or unnecessary hooting and revving of vehicles.

11.1.3 Water Environment

Drilling of boreholes has the potential of polluting underground water resources through oil spills. Additionally, poor underground water management could lead to over-abstraction what may deteriorate ground water.

11.1.4 Biodiversity Environment

¹¹ Guidance Note UNDP Social and Environmental Standards Social and Environmental Assessment and Management July 2022

Poorly-informed or executed project activities could damage critical habitats and change landscape suitability for threatened species. This could be as a result of clearing of area to make provision for project activities which may lead to destruction fauna habitats.

11.1.5 Land Environment

Land degradation could happen if the movement of heavy vehicle in an area is not coordinated. Furthermore, project activities could produce pollution such as household and industrial, both solid and liquid which could pollute the land environment.

11.1.6 Employees And Community Health and Safety Environment

Occupational health and safety at workplace is a critical component to promote the welfare of the employees and public. The employment opportunities will create new social relationship which has the potential spreading diseases such as HIV-AIDS and workers as susceptible to vector diseases such as malaria. The bush working environment makes workers to be prone to venomous insect and snake bites which may lead to fatalities. Other health risk include workers exposure to excessive noise and dust and injuries.

11.1.7 Heritage and Archaeology Resources

Although this is part of the social environmental, due to its uniqueness and importance, a chance find will be developed. This impacts links to the project risk of activities to potentially damage critical habitats.

11.1.8 Dangerous good

Handling of fuel and lubricants at project sites could casus oil spill and pollute the environment.

11.2 Impact Assessment

11.2.1 Criterial for impact assessment

The criteria used to assess the impacts and the method of determining their significance is outlined below. This process conforms with international best practices and the Environmental Impact Assessment Regulations of Environmental Management Act, 2007 (Government Gazette No. 4878) EIA regulations.

11.2.1.1 Impact Type

Following the impact determination, the impacts are classified into two categories; positive and negative impacts.

Table 4. Impact Type

Impact type	0	No Impact
	+VE	Positive
	-VE	Negative

11.2.1.2 Probability of occurrence

All potential impacts are analysed to determine their likelihood of occurrences after proposed mitigation measures / residual effect after applying the developed mitigation measures.

Table 5. Likelihood occurrence

Likelihood	1	Improbable (Low likelihood)
occurrence	2	Low probability
	3	Probable (Likely to occur)
	4	Highly Probable (Most likely)

5	Definite (Impact will occur irrespective of the applied mitigation
	measure)

11.2.1.3 Confidence level

The level of confidence residual effect¹² predictions which depends on the degree of uncertainty associated with the basis of understanding project interaction with the environment, available data/information, and the effectiveness of proposed mitigation. The confidence is determined under three levels Low, Medium and High (**Table 10**). When the uncertainty associated with the residual effect prediction increases, the level of confidence in the prediction becomes lower.

It is often best practise to undertake a specialist study to understand and develop appropriate mitigation measures, for impacts with lower confidence, however, for the proposed exploration activities, a precautional approach was developed.

For example, the confidence level of uncertainty residual effect of noise, dust, vegetation disturbances and land degradation impacts by construction activities is high. However, the confidence level of uncertainty residual effect of drilling activities on the impact to heritage / archaeological resources is lower (thus a chance find is often developed as a precaution to mitigate the impact).

Confidence	L	1	Low	The uncertainty residual effect maybe well
level				understood, but the impact severity is not known.
				Precautional approach mitigation measures based on
				literatures / world best practises are developed to
				reduce the impact significance to low levels.
	М	2	Medium	The uncertainty residual effect is partially understood
				with available information and practical mitigation

Table 6. Confidence level

¹² Residual impacts refer to those environmental effects predicted to remain after the application of mitigation outlined

			measures with monitoring program to reduce the impact significance to low levels.
Η	3	High	The uncertainty residual effect is well understood and practical mitigation measures are developed to mitigate the impact significance to low levels.

11.2.1.4 Impact Significance

The residual effect prediction of the impact were rated under 5 categories; negligible=1, Low=2, Medium=3, High=4 and Severe=5.

Table 7. Risk Rating

1	Negligible (Based on the available information, the potential impact is found to	N
	not have a significant impact)	
2	Low (The presence of the impact's magnitude is expected to be temporal or	L
	localized, that may not require alteration to the operation of the project	
3	Medium (This impact is probable, limited in scale, expected to be of short term /	Μ
	temporary, can be avoided, managed and or mitigated with simple mitigation	
	measures.	
4	High (The impact is definite, mostly predictable, temporal, can be local, regional	Η
	or national and in long term and reversible. These are impacts that may affect	
	human rights, lands, natural resources, traditional livelihood, critical ecosystem	
	services. The severity of these impact are more limited than sever impacts.	
5	Severe (The impact is definite, it has significant adverse impacts on human	S
	population and or / the environment which are of large-scale magnitude and or	
	spatial extend such as large geographic area, large number of people or	
	transboundary nature. The impact duration is long term, permanent and often	
	irreversible. Impacts include displacement of human, destruction of critical	
	ecological systems and or cultural and heritage sites etc. The impact could have a	
	no-go implication unless the project is re-designed or proper mitigation can	
	practically be applied.	

11.2.1.5 Duration of Impacts

Under this criteria, the impact is analysed based on the time at which the impact will last. During exploration, most of the impact are immediate and short term.

Table 8. Impact duration

Duration	1	Immediate
	2	Short-term (0-5 years)
	3	Medium-term (5-15 years)
	4	Long-term (more than 15 years)
	5	Permanent

11.2.1.6 Geographical Scale

The impact is further analysed based on its geographical scale or spatial extend. For example, noise pollution from drilling activities will be site specific. Positive impacts such as potential government revenue through taxes and levies will be national, and employment will mainly be regional.

Table 9. Geographical extend of impact

Scale	1	Site specific
	2	Local
	3	Regional
	4	National
	5	International

11.2.1.7 Risk Assessment

The impact significance was determined using a risk matrix (Table 10 below). A five-by-five matrix was used where the impact severity was categorised and assigned scores from 1 to 5 as

follows: Improbable=1, Low=2, Medium=3, High=4 and Severe=5. Similarly, the likelihood was assigned scores as follows; improbable=1, Low Likely=2, Probable=3, High Probability=4, Definite=5. The impact rating was determined by multiplying the impact severity and likelihood.

	5	5	10	15	20	25
	Definite	Low	Medium	High	Severe	Severe
00C	4	4	8	12	16	20
	High Probability	Low	Medium	High	High	Severe
ELIH	3	3	6	9	12	15
	Probable	Low	Medium	Medium	High	High
LIKI	2	2	4	6	8	10
	Low	Low	Low	Medium	Medium	Medium
	1	l	2	3	4	5
	Improbable	Negligible	Low	Low	Low	Low
		1 Negligible	2 Minor	3 Medium	4 High	5 Severe
]	IMPACT SEV	ERITY / CO	NSEQUENCE	
		Negligible	Low	Medium	High	Severe

Table 10. Risk assessment matrix¹³

11.3 Mitigation Hierarchy

Best practises call for mitigation measures to follow a mitigation hierarchy that favours (i) avoidance of potential adverse impacts, and where avoidance is not possible, then (ii) minimization and reduction; where adverse residual impacts remain, then (iii) mitigation measures need to be applied, and, as a last resort, (iv) measures to offset impacts that cannot be appropriately mitigated. According to EIS regulations, the objectives mitigations are to;

- Find environmental ways of doing thing
- Promote environmental benefits of the project
- Avoid, Minimise or remedy negative impacts and
- Ensure that residual negative impacts are within acceptable levels,

Further, during consideration of the mitigation measure, the following mitigation hierarchy was followed;

¹³ Risk Management Guideline for the BC Public Sector (Province of British Columbia Risk Management Branch and Government Security Office 2012)

- Avoid the negative impact through preventative means,
- Minimise the negative impacts to acceptable low levels and,
- If the above two are not possible, remedy or compensate the impact.

11.4 Potential Negative Impacts of the Project

- Noise pollution from heavy machinery and drilling
- Soil disturbance / land degradation
- Loss of habitat and biodiversity from site preparations and occupation
- Air pollution from vehicle emission and dust emission from drilling activities
- Health and Safety risk
- Risk of pollution from generated domestic solid wastes
- Risk of contamination of ground water from oil, grease and lubricants from heavy vehicles, and drilling activities.

11.5 Potential Positive Impact of the project

- Reduced HWC
- Direct and indirect creation of employment opportunities
- Knowledge and technology transfer.

11.6 Planning Phase: Impact Assessment

To ensure that the project is accepted by the public and avoid possible conflicts, the Zambezi regional council, traditional authorities and affected communities were consulted.

11.7 Siting Phase: Impact Assessment

Typically, before drilling of a borehole, a site assessment undertaken to determine the optimum location for drilling a process called siting of a borehole. This process involve analysis of

geohydrology property of the area using two main conventional methods; (i) electrical resistivity and (ii) ground conductivity. These method use Frequency Domain Electromagnetic operated by a highly trained geohydrologist.

During this phase, there will be no evasive activities that could cause harm to the physical environment. To ensure social cohesion with the siting team, it will be required for the locals, particularly the traditional authorities to be informed about the presence of the siting team in the area. This activities is usually undertaken by two people, who will carry hand held FDM. The sited location will be pinned for marking purposes.

11.8 Drilling Phase:

Drilling is the major evasive and core environmental threat. This phase involves mobilization and moving of drilling equipment to the drilling site, construction of boreholes protective fence and solar panel platforms. Where necessary, setting up campsite at the drill site with supporting infrastructures such as ablution facilities, household solid waste and other solid waste. During this phase, occupation health and safety risk such as injuries emanating from operating equipment, insect (Mosquito) and snake bites as well as potential oil pollution. Table 11 below outline all potential impacts and proposed mitigation measures during drilling phase.

Project- Environment Interaction	Description	Mitigation Measures	Impact type	Likelihood occurrence	Severity	Impact Rating	Geographical Extend	Duration	Reversibility (R)	Significance	Confidence Level
Employment /	Possible exclusion of	1. Ensure that all	+ve	2	2	4	nal	ject	n/a	wo	High
Socio-	locals community from	general work is					egic	pro		Г	
Economic	job opportunities. Unfair	reserved for local					В	e of			
advancement	compensation of	people unless in						Lif			
of local	workers. It is not	circumstances									
	anticipated that a	where specialized									
	significant number of	skills are required.									
	employment will be	2. Fair compensation									
	created during drilling	and labour									

Table 11.	. Social	Environment:	Impact	Assessment
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Project-	Description	Mitigation Measures							2		vel
Environment			e			ting	cal		ty (F	e	Lev
Interaction			typ	ood	x	Rat	phi	u	ibili	anc	ence
			pact	celih urre	'erit	pact	ogra tend	ratic	vers	nific	nfid
			Im	Lik occ	Sev	Im	Geo	Du	Rev	Sig	C01
		practice as per									
		Namibian Labour									
		Laws must be									
		followed									
		3. Ensure skill									
		transfer to the									
		locals									
		4. Use local supplier									
		for good and									
		service where									
		possible									
Health and	Job opportunities leads	1. Provide awareness	-ve	2	2	4	al	uc	n/a	nt	Hig
Safety for	to new social	to the employees on					Loc	Iratio		Lo ifica	h
employees and	relationship which often	dangers of					and	it Du		Sign	
general public	spread disease,	HIV/AIDS, alcohol					cific	rojec		Not	
	particularly pandemic	and drug abuse					Spe	Ъ			
	such as HIV and AIDS	2. Provide condoms on					Site				
	and substance abuse.	site									

Project- Environment	Description	Mitigation Measures				Jg	_		(R)		level
Interaction			t type	ence	Σ ₁	t Ratin	aphica 1	uo	sibility	cance	lence I
			Impac	Likelih occurr	Severi	Impac	Geogra	Durati	Revers	Signifi	Confid
	Hiring off unlicenced	3. Develop a safety									
	employees to operate	plan									
	vehicles and special	4. Ensure that every									
	machinery pose safety	employee goes									
	risk to themselves, co-	through an induction									
	workers and public.	course about safety									
	Additionally, employees	to train employees									
	are subject to dust and	on health and safety.									
	noise pollution as well	5. All drivers must be									
	as other occupational	in possession of									
	health and safety issues	appropriate driver's									
		licenses									
		6. Adequate safety									
		signs must be put at									
		designated places.									
		7. Provide safe wears									
		such as, overalls,									
		safety boots, safety									
		eyeglasses, Hand									

Project-	Description	Mitigation Measures				5.0			(R)		evel
Environment			ype	ce od		latin	hical		ility	nce	ce L
Interaction			act ty	lihoc rren	rity	act R	grap nd	ution	rsib	ifica	ïden
			Imp	Like occu	Seve	Imp	Geog Exte	Dura	Reve	Sign	Conf
		gloves and hard hat									
		etc to employees									
		8. Adhere to the									
		Labour act, non-									
		toxic human dust									
		exposure levels may									
		not exceed 5mg/m3									
		for respiratory dust									
		and 15mg/m3 for									
		total dust.									
		9. Employees must									
		NOT be exposed to									
		noise levels above									
		the required -85dB									
		(A) limit over a									
		period of 8 hours.									
		10. Abide by the									
		Occupational Health									
		and Safety and									

Project- Environment Interaction	Description	Mitigation Measures	Impact type	Likelihood occurrence	Severity	Impact Rating	Geographical Extend	Duration	Reversibility (R)	Significance	Confidence Level
		Labour Act of Namibia and other statutory requirement such as International Labour Practise (ILO) 11. Ensure adequate first aid kit on site taking into consideration, insect and snake bites 12. Supervisors must undergo an occupational health and first aid course, 13. Supply clean drinking water to the site, such as portable water tank;									

Project- Environment Interaction	Description	Mitigation Measures	Impact type	Likelihood occurrence	Severity	Impact Rating	Geographical Extend	Duration	Reversibility (R)	Significance	Confidence Level
		 14. Used gendered mobile toilets 15. Provide insect repellent, mosquito nets and if necessary immunization to prevent deadly diseases such as malaria. 									
Heritage and Archaeology	Potential unearthing of archaeological material or damaging heritage resources	 Employee must be trained on the possible find of heritage and archaeological material in the area; Implement a chance find and steps to be taken 	-ve	2	2	4	Site Specific	Life of project	R	Low Not Significant	High

Project- Environment Interaction	Description	Mitigation Measures	pact type	elihood urrence	erity	pact Rating	ographical end	ration	/ersibility (R)	nificance	afidence Level
			Imj	Lik occ	Sev	ImJ	Gee Ext	Du	Rev	Sig	Coi
		for heritage and									
		archaeological									
		material finding									
		(Heritage (rock									
		painting and									
		drawings), human									
		remains or									
		artefacts) are									
		unearthed									
		3. Stopping the									
		activity									
		immediately									
		i. Informing the									
		operational									
		manager or									
		supervisor									
		ii. Cordoned of									
		the area with a									
		danger tape and									

Project- Environment Interaction	Description	Mitigation Measures	Impact type	Likelihood occurrence	Severity	Impact Rating	Geographical Extend	Duration	Reversibility (R)	Significance	Confidence Level
		manager to take appropriated pictures. iii. Manager/super visor must report the finding to the following competent authorities, National Heritage Council of Namibia (061 244 375) National Museum (+264 61 276800) or the National Forensic Laboratory (+264 61 240461).									

Project- Environme nt Interaction	Description	Mitigation Measures	Impact type	Likelihood occurrence	Severity	Impact Rating	Geographical Extend	Duration	Reversibility (R)	Significance	Confidence Level
Biodiversity : Flora	Destruction of trees	 Avoid cutting down mature and protected plant species. Ensure that access roads are rehabilitated after use to enhance revegetation 	-ve	2	2	4	Site Specific	Construction / Drilling	R	Low	High
Biodiversity : Fauna	Destruction of animal habitats such as bird nests, poaching, stealing of livestock	 Do not kill animal, unless such animals pose eminent danger to humans There must be ZERO tolerance to poaching to ensure this, no weapon and traps are allowed on site; 	-ve	2	2	4	Regional	Construction / Drilling	R	Low	High

Table 12. Bio-Physical Environment: Impacts Assessment

Project-	Description	Mitigation Measures							<i>(</i> ?		vel
Environme			e	_ a		tting	ical		ity (I	е	e Le
nt			it typ	hood	ity	t Ra	aphi d	ion	sibili	ican	denc
Interaction			mpac	ikeli ccuri	everi	mpac	eogr aten	urat	ever	ignif	onfie
Surface and	Heavy vehicle	1 Fuelling of heavy	-Ve	1 0	2 2		.9 .9	D D	P R	N N	gh C
Cround	and machinery	vahiala on site must ha	-vc	2	2	-	ecif	rillir	К	Lo	Hiβ
							e Sp	/ Di			
water	may pollute	well coordinated at					Sit	tion			
Pollution	water sources	designated places,						struc			
	from leakages	2. Stationary vehicles						Cons			
	of oils,	must be provided with									
	hydraulic	drip tray to capture oil,									
	fluids,	lubricants and hydraulic									
	lubricants and	fluids leakages									
	greases. These	3. All vehicle and									
	pollutants may	machinery must be well									
	reach	service to avoid									
	underground	leakages									
	water through	4. Provide and train on oil									
	seepage.	spill emergency									
	Further	response									
	surface water	5. Servicing of vehicles									
	may be	and machinery must									
		and machinery must									

Project- Environme nt Interaction	Description polluted from surface run off soils that is	Mitigation Measures take place at designate places	Impact type	Likelihood occurrence	Severity	Impact Rating	Geographical Extend	Duration	Reversibility (R)	Significance	Confidence Level
Waste Generation	General household pollution and littering such as used oil cans drums, metals, and household solid and liquid waste	 Provide skip bins to collect waste and be disposed of at an approved disposal site Provide labelled household waste drums for household solid waste. Do not burry waste on site Excavate a small biodegradable waste site that would be dump filled at the end of the project, alternatively, 	-ve	2	2	4	Site Specific	Life of project	R	Low	High

Project- Environme nt Interaction	Description	Mitigation Measures	Impact type	Likelihood occurrence	Severity	Impact Rating	Geographical Extend	Duration	Reversibility (R)	Significance	Confidence Level
		 provide mobile toilets that will be disposed at an approved site and ensure separate ablution facilities for men and women. 5. Used oil, grease and lubricants cans must be collected in appropriate drums and disposed of at an approved site 6. Maintain good housekeeping on site. 7. Do not burry waste on site 									
Noise Pollution	Noise from the aero plane and heavy vehicles	 The aircraft must fly at heights which may not cause noise nuisance to human and animals 	-ve	2	2	4	Local	Immediate	n/a	Low	High

Project- Environme nt Interaction	Description	Mitigation Measures	Impact type	Likelihood occurrence	Severity	Impact Rating	Geographical Extend	Duration	Reversibility (R)	Significance	Confidence Level
		 A fixed wind air craft is recommended than a helicopter Heavy vehicles must be well serviced Switch off engine for vehicles when not in use 									
Dust Pollution	Land clearing, digging, excavation of trenches, drilling, movement of vehicles and heavy machinery in site, transportation	 Movement of heavy vehicles must strictly be restricted on site. Adhere to the minimum speed limit of 30 or 40km/hour when on farm roads. On site where soil is loosened by vehicle movement, apply dust a suppression method 	-ve	2	2	4	Local and Site Specific	Immediate	R	Low	High

Project-	Description	Mitigation Measures				50			R)		evel
Environme			pe	e d		ating	nical		lity (JCe	ce Le
nt			act ty	lihoo rren	rity	act R	grapl nd	ition	rsibi	ificar	ïden
Interaction			Imp	Like	Seve	Imp	Geog Exte	Dura	Reve	Signi	Conf
	of material to	such as water									
	site, will	spraying.									
	create fugitive	4. During drilling, use									
	dust which	water to suppress the									
	could be a	dust									
	nuisance to										
	the										
	surrounding.										
Land	Uncoordinated	1. Movement of heavy	-ve	2	2	4	cific	oject	R	Tow	High
degradation	movement of	vehicles must be					Spee	f prc			ł
and	heavy vehicles	coordinated and					Site	ife o			
pollution	and	restricted to be on						Г			
	uncoordinated	access roads									
	land clearing	2. Normally, public									
	could lead to	gravel roads are meant									
	soil erosion.	for light vehicles,									
	Possible spill	exploration vehicles									
	and leakages	have the potential to									

Project-	Description	Mitigation Measures							2		vel
Environme			9			ting	cal		ty (I	e	e Le
nt			t typ	hood	ty	t Ra	aphi d	ion	ilidis	icano	lenc
Interaction			npac	ikelil	everi	npac	eogr xten	urat	ever	ignifi	onfic
			П	ă ă	Š	II	U A	<u>Ó</u>	R	Si	Ŭ
	of fuel and	damage the access									
	lubricants	roads. Hence proper									
	from vehicle	road maintenance									
	and machinery	must be implemented									
	could pollute	to ensure that the									
	the soil and	roads are left on good									
	eventually the	state									
	ground water	3. Fuelling of heavy									
	resource.	vehicles on site must									
		be well coordinated at									
		designated places									
		4. Servicing of vehicles									
		and machinery must									
		take place at									
		designated sites									
		5. Stationary vehicles									
		must be provided with									
		drip tray to capture oil,									

Project- Environme nt Interaction	Description	Mitigation Measures	Impact type	Likelihood occurrence	Severity	Impact Rating	Geographical Extend	Duration	Reversibility (R)	Significance	Confidence Level
		lubricants and									
		hydraulic fluid									
		leakages									
		6. All vehicles and									
		machinery must be									
		well serviced to avoid									
		leakages									
		7. Provide and train on									
		oil spill emergency									
		response.									

11.9 Operational Phase:

The main activities during the operational phase of the borehole is water abstraction which, if not well monitored could lead to over abstraction and consequently to deteriorating of water quality and potential impacts on vegetation from deepening of water table. The borehole could also cause social conflict whereby community in the surrounding area could claim ownership of the borehole and may prevent other communities from using the borehole. The table below outlines the potential impacts during the operational phase and proposed mitigation measures.

Table 13. Operational Phase Impact Assessment

Project- Environment Interaction	Description	Mitigation Measures	Impact type	Likelihood occurrence	Severity	Impact Rating	Geographical Extend	Duration	Reversibility (R)	Significance	Confidence Level
Reduced	The borehole	1. Animal owners / herders	-ve	2	2	4	ific	ject	R	MO	igh
Human Wild-	operation	should ensure that					Spec	proj			Н
Life Conflict	will ensure	animals are made to					Site (fe of			
	domestic	drink from water points						Lii			
	animals do	to prevent crocodile									
	not drink	attack.									
	directly from										
	the river.										

Project- Environment Interaction	Description	Mitigation Measures	Impact type	Likelihood occurrence	Severity	Impact Rating	Geographical Extend	Duration	Reversibility (R)	Significance	Confidence Level
Increase in community water supply	Besides reducing HWC, the borehole will also make water readily available for household use by the community	 Aid in increasing water point in the village Reduced distance travel by people to water points Sustainable supply of water during drought 	-ve	2	2	4	Site Specific	Life of project	R	Low	High
Over abstraction of underground water	High and unsustainable water abstraction which could affect ground water quality	 Do not abstract more than what is recommended by the permit Where possible, install automatic measuring gauge to monitor abstraction 	-ve	2	2	4	Site Specific	Life of project	R	Low	High

Project-	Description	Mitigation Measures				50			(R)		evel.
Environment			'pe	e e		atin	nica		lity	oce	ce L
Interaction			ct ty	ihoo ren	ity	ct R	rapl	tion	rsibi	ficar	iden
			Impa	Likel occui	Sevel	Impa	Geog Extei	Dura	Reve	Signi	Conf
		3. Monitor water level									
		periodically									
		4. Carry out periodic									
		pumping yield to assess									
		aquifer sustainability									
		5. Undertake systematic									
		water quality assessment									
Risk of water	Elephant are	1. Construct an elephant	-ve	2	2	4	ific	ect	R	ow	igh
infrastructure	notorious	proof fence around the					Spec	proj		Γ	Η
destruction	known for	borehole and its					Site S	fe of			
buy elephant	damaging	supporting					01	Lii			
	water points	infrastructures									
	in search for	2. Build high and thick									
	drinking	enough walls that will									
	water	prevent elephants									
		access to the water tank									
		and solar									
		infrastructures.									

Project- Environment Interaction	Description	Mitigation Measures	Impact type	Likelihood occurrence	Severity	Impact Rating	Geographical Extend	Duration	Reversibility (R)	Significance	Confidence Level
Conflict of water use buy villagers	Claim of ownership of water point / borehole by some community members	 Raise awareness of the indented purpose of the borehole Ensure no one is made to be entitled to owning or have controlling power on who should use the borehole 	-ve	2	2	4	Site Specific	Life of project	R	Low	High
Theft of borehole infrastructures	There are reported cases where boreholes infrastructure such as solar panel are stolen	 Construct theft proof fence to protect solar panels 	-ve	2	2	4	Local	Life of project	R	Low	High

12 GRIEVANCE PROCEDURE

The Grievance Procedures will be a process to facilitate for an easy and smooth process in which stakeholders are able to submit their complaints about the project activities or its consequences i) free of charge ii) without fear of retribution iii) anonymously and iv) user friendly channels.

It is important to emphasise that the Grievance Procedure will not address HWC incidents per se, because those are not caused by the Project. Grievances that are eligible are, for instance, cases where a party is disadvantaged as a result of a Project activity, or as a result of negligence on the part of the Project to follow its procedures thoroughly or fairly. Complainants may be by actual or potential beneficiaries of the Project, or any members of the public.

In general, the grievances process will follow six (6) Grievance Redress Mechanism (GRM) value chain, namely; i) Receive and log grievance, ii) Acknowledge grievance, iii) Assess and Investigate iv) Grievance Resolution, iiv) Sign-off on grievance and iiiv) Monitor and continuously evaluate the effectiveness of the GRM.

Grievances will be addressed through the channels in the institutional structure presented below, in an efficient, effective and consistent manner.


Figure 13. GRM flow chart (Source: ESMF_ Poverty Oriented Support to Community Conservation in Namibia)

The eligibility of the grievance will be assessed at the level where it is first received, at a local MEFT / ISO office (Step 1) and the following actions / steps will be undertaken. The grievance will be discussed with the complainant, with the objective of understanding the problem and giving the complainant a fair hearing (Step 2). The local CCFN representative will submit the grievance, and any notes of their own, to the CCFN head office for higher-level input to the issue (Step 2). The CCFN senior officer will investigate the substance of the grievance (Step 3). If necessary, assistance may be sought from the TAP.

Further dialogue with the complainant and others affected by the grievance might also be necessary. The CCFN senior officer will compile a written report on the grievance and communicate the outcome to the complainant.

Any actions necessary to resolve the grievance will be implemented by the relevant parties, under the direction of the CCFN (Step 4). Resolution of the grievance will be documented and entered into the Grievance Register. Under normal conditions, a grievance will be resolved,

and redress actions commenced within 30 days of receiving a complaint. A complainant is permitted to appeal against the decision by the CCFN, to the CCFN CEO (Step 5). In such a case the CEO must present the grievance and the CCFN decision to the Board, for reconsideration.

13 DECOMMISSIONING AND REHABILITATION PLAN

Decommissioning is normally the reverse of construction where all installed equipment / structure must be removed. Supply of water to the community is aimed to be a life-long intervention unless of a pressing issue that would necessitate decommissioning. Aging equipment that requires replacement should be done by qualified Namibians to ensure smooth operation and constant water supply.

14 CONCLUSION AND RECOMMENDATIONS

14.1 Conclusion

With the available information, the following conclusions were made:

- 1. The area is known to have high yield aquifer.
- 2. Over-abstraction of water has been not been reported in the area.
- 3. The area receives the highest rainfall in the country which increases potential of recharge.
- 4. HWC is critical in the area, and water is the main contributing factor.

14.2 Recommendations

- It is recommended to the approving authority for the issuance of the ECC.
- CCFN support the Conservancy to ensure intermittent testing of water quality and obtain necessary fitness approval.

15 ANNEX 1. GROUNDWATER MONITORING PLAN

The purpose of the groundwater monitoring plan is to make sure that suitable procedures are in place to monitor and evaluate the response of the aquifer and the surrounding environment to the abstraction process. Furthermore, the plan is aimed to control the impacts of groundwater abstraction and contaminant loads, and monitoring aquifer response and quality. The proposed procedures shall also serve as an early warning system for over-abstraction.

15.1 Groundwater Quality

It is essential that the quality of groundwater abstracted is monitored on a realistically regular basis, to serve as an early warning of quality changes that may occur due to the abstraction; natural causes; or pollution. Undertake intermittent water quality testing.

15.2 Groundwater Level Measurements

The level of groundwater in the aquifer will serve to inform the water quantity vs the rate of abstraction. This will be critical given low to no recharge due to lower rainfall in the area. This provision is provided for in the monitoring sheet for water meter readings provided by the MAWLR to the borehole operator. It is therefore important that hydrological baseline information of water level is recorded to ensure time-variant collection of data. This type of monitoring becomes effective proof of errors when MAWLR also carries out periodic inspections.

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17 APPENDICES

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17.1 Appendix A. Attendance Register_ Kasenu Village

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17.2 Appendix B. Consent Letter_ Kasenu Village

16 February 2024 To Whom It May Concern: Dear Sir / Madam Subject: Free prior informed consent for the drilling of water point in communal consenancies of Zambezi Region - Kasika Conservancy: Kasenu Village. The above subject bears reference, I, KAMWI MAXWELL NSUNdaNO KATTA in my Capacity as the INJUNG for Kaseny Sub-Khuta in Kasika Conservancy fully understand the above mentioned project and its benefit to our community. The proposed project does not interfre with our traditional norms and culture. We welcome it and encourage adequate consultation during the implementation of project activities. This letter to serve as a Free Prior Informed Consent for the project. Yours Sincerely, KASIKA SUB-KHUTA KAUNO 08/2526525-KAMWI MAYWELL NSundano Kasenu Village Sub-Khuta Rasika Conservancy

No	Name à Surrame	Gerde	Village	Contact	Signatur
1:	Iuze Matengu	Female	hasihili	081 8345038	note
2	lydia Sihanze	Female	hasikili	081 2043620	St
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9	Siyauva Limba	f	Kasibili village	ORIEL X DAIL	AQU!
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11.	Simasiku Room	M	Kasikilill	081143122	stil.
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	Adding Coold	Fermite I	Morren Village	0813187256	Mae

17.4 Appendix D: Consent Letter_ Kasika Sub-Khuta, Kasikili Village

23 May 2024

To Whom It May Concern:

Dear Sir / Madam

SUBJECT: FREE PRIOR INFORMED CONSENT FOR THE DRILLING OF WATER POINT IN COMMUNAL CONSERVANCIES OF ZAMBEZI REGION, KASIKA CONSERVANCY KASIKILI VILLAGE

The above subject bears reference, I, <u>Matergu</u> <u>Alffed</u> <u>SimuSiky</u> as the area Headman of Kasikili Village under the <u>Kasika</u> <u>Sub-Khuta</u> Traditional Authority in Kasika Conservancy fully understand the above-mentioned project and its benefit to our community. The proposed project does not interfere with our traditional norms and culture. We welcome it and encourage adequate consultation during the implementation of project activities.

This letter to serve as a Free Prior Informed Consent for the project.

Yours Sincerely

Dimasiky ena

Name of Headman Kasika Subkuta Traditional Authority Kasikili Conservancy

OS 1055

Cellphone Number

KASIKA KHIITA PO BOX 98 Katima Mulilo Zembozi Rining REPUBLIC OF NAMIEL

Stamp

Signature