SCOPING REPORT AND ASSESMENT AGRI-CULTURAL CASH CROP &HORTICULTURAL PROJECT IN KONGOLA, ZAMBEZI REGION

PROPONENT: KONGOLA FRESH PRODUCE
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ABBREVIATIONS

A&I	Affected and interested parties
DEA	Department of Environmental Affairs
DoF	Directorate of Forestry
EA	Environmental Assessment
EIA	Environmental Impact Assessment
MET	Ministry of Environment and Tourism
MLR	Ministry of Land Reform
NRM	Natural Resource Management
NORED	Namibia's regional Electricity Distributor
MAWF	Ministry of Agriculture Water and Forestry
AMTA	Agro-Marketing and Trade Agency
FPBHs	Fresh Produce Business Hubs

EXECUTIVE SUMMAY

The proponent Kongola fresh produce Pty Ltd intends to establish an agricultural cash cropping project under their company (Kongola fresh produce Pty ltd). The proponent has a land of 300 hectors in Kongola constituency, Kongola village which is an area situated 1km from B8 road.
The area is within a conservancy area starting from the Kwando River stretching to the northern part.

The site is situated near Kwando River, which ends in Susuwe Park; there are few types of vegetation to be cleared. There were no historic projects to be considered dangerous or hazardous. Kongola fresh produce is a close co-operation owned by 7 Namibian both from a previously disadvantaged background that have interest in hot-culture and agronomics production their main aim is to contribute to the development standards of Zambezi region and the whole of Namibia, to reduce un employment rate in Namibia. The main business activities will include hot culture Farming wheat, fruits, tomatoes, cabbage, etc.

Due to high demand for local produce , proponent intents to establish its development , which triggers an increment in water abstraction,The proponent intents to make use of boreholes which they have to construct,looking at the project scale the production will need at list there boreholes,two for irrigation use and one for alternative purposes. Agriculture is one of the most important sectors in Namibia,vital to poverty reduction and to the achievement of the Millennium Development Goals (MDGs), as emphasized in the World Development Report titled Agriculture for Development. The company's business interests are geared towards the production of agricultural products, both agronomic and horticultural products. Its underlying vision is to contribute towards achieving food security in Namibia by utilizing vast virgin lands in the Zambezi region of the country particularly Namibia's untapped water resources in the form of the mighty Zambezi and Kwando river.

About 80% of Namibia's agricultural products are imported, mainly from South Africa, which makes the country heavily dependent on imports. In order to be able to make a significant contribution towards the growth of the Namibian economy and thus wealth creation, agricultural production/output has to increase manifold.

In order to address this scenario of import dependency and improve on the country's food security, the Government of the Republic of Namibia (GRN) has embarked on the Green Scheme Programme whose objectives are to promote agricultural production and the development and implementation of a fresh produce production coordinating and marketing infrastructure in the country.

In order to implement its business objectives, Kongola Fresh Produce (Pty) Ltd want to develop an agricultural farm which entails the production of cash crops including wheat.

ENVIRONMENTAL IMPACT ASSESMENT PRATITIONER

Advanced environmental agency cc was appointed by Kongola fresh produce to determine the extent of consequences associated with the proposed project, the team is under the management of Ms Albertina J Simon.MS Albrtina has exprianceof 4 years in writing EIA and EMP reports.

Project Rationale

Agriculture remains one of the key sectors that are extremely important part of the Namibian economy particularly with regards to employment creation, improved household income, and food security.
The upscaling of the agricultural development is expected to yield socio-economic benefits as presented below:

Job creation: according to the Namibian statistics pressed in 2016 unemployment rate in Zambezi grow from 31% to 48%.kongola fresh produce plans to employ atlist +_450 employees permanently during the operation..
Improved Livelihoods: Employment enhances household income, food security and improvedlivelihoods.

Processes

The processing operations will consist of office, one packing and cold storage facility. A properly designed bio degradable sewage system will be implemented to produce grey water for dust suppression on the gravel roads.

All crop production produce will be processed and packed to be distributed all over Namibia. Products such as Sunflower will be pressed for oil and bottled for distribution and all waste from the factory processing plant will be used by Project Rationale.

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1. INTRODUCTION

Background

The proponent who intends establishment an agricultural cash crop project under their company (Kongola Fresh Produce Pty ltd) on 300 hectors of land at Kongola village within the Kwando conservancy which an area situated about 1km western part of Kongola settlement. The area is within the Kwando constituency in Zambezi region. According the Kongola sub-khuta the area of 1000 hactors was given to the GRN with an aim of producing for the Nation. The GRN through the ministry of Land and reform settlements ganded a portion of 300 hactors to the proponent.

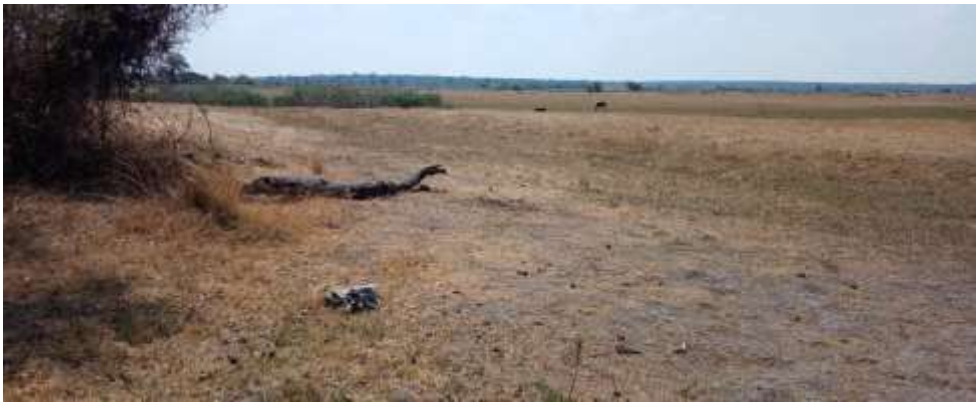
The project is aimed at producing (cash crops including, legumes, vegetables and horticultural crops including tomatoes, onions, potatoes, cabbages, carrots, green beans, peas, spinach, green pepper and chilies, butternuts, pumpkins) for local markets in the region and the country as well as for exports to other neighboring countries in Southern Africa. Kongola FreshProduce(Pty)Ltdsawacriticalneedtoundertakethisprojecthavingobservedtheh igh inflationinfoodproductsinthecountryandinternationally,whichhavenegativeimpact onthe local communities that are immensely affected by climatic changes which results in drought in the entire Southern Africanregion.

The company intends to several agronomic and horticultural products, per annum producing approximately over 2 000 tones of white maize grains, 600 tones of tomatoes at a combined market value of N$10 million, 50 tones of cabbages at a value of N$ half a million, about 1750 tones of potatoes valued at about N$ 7 million as well as 650 tones of onions valued at N$7 million and other crops with significant values such as butternuts, peppers, sweet potatoes, carrots will be included in the production at the project. In addition, a portion of the land approximately 80 ha will be dedicated to fruit and nuts production since Namibia imports around 94% of the total fruit consumed in the country.
These are orange, mango, lemons, pineapple, avocados, pecan nuts and groundnuts.

2.2 Project location

The Investor of the project are the Kongola Fresh Produce (Pty) Ltd Intends establishing an Agricultural irrigation farming project under their company on a 300 hectare of land at a given area. The area is a site free from wildlife at Kongola in the Zambezi region. The area is situated about 128 kilometers south west of the main town of KatimaMulilo.

From the map below, the proposed Kongola Fresh Produce (Pty) Ltd irrigation project for cash crop and horticulture falls under the figure highlighted in Green as number 2, which falls under dry land cropping and irrigation. This was predetermined project which the community of Kongola identified to be a potential development in their area of jurisdiction



1. Environmental Impact Assessment

An Environmental Impact Assessment (EIA) is a tool to manage negative environmental impacts that may arise from the proposed development and guides the project design to be more environmental friendly.

The aim of the EIA is to reduce negative impacts (effects) and maximize positive impacts, through the adoption of best environmental practices and application of the precautionary principle.

3.1 Environmental Management Plan (EMP)

In-addition to the EIA Scoping Report, an Environmental Management Plan (EMP) is required under the EMA as part of the ECC application. The EMP is key document and consists of the set of measures to be taken during implementation and operation to eliminate, offset, or reduce adverse environmental impacts to acceptable levels. Also included in the plan are the actions needed to implement them (Ministry of Environment and Tourism, 2008).

Scope of activities

- The field study was designed to determine the impact of reservation bank,
- The type of vegetation to be cleared, fauna's habitat to be disturbed during construction of roads and propose required mitigation measures.
- Planned and unplanned settlements
- Protection of conservancies
- socio-activities on the project area

- The major impacts the project will have on the environment will mainly arise from construction of a factory, storage facility and erection of the water-pipe line from the river to the farm, road and electricity grids, factory and, human settlement, service centers, irrigation and agriculture production.

2. Environmental Management Act

The EIA is regulated by the Environmental Management Act, 2007 and the EIA Regulations No. 30 of 2012, which is administered by the Ministry of Environment and Tourism (MET), through the Department of Environmental Affairs (DEA), which is headed by the Environmental Commissioner (EC). The EIA entails the development of the EIA Scoping Report and Environmental Management Plan (EMP) which should be submitted to MET and the competent

authority as part of the application for the ECC.

4 . LEGAL AND POLICY FRAME WORK

This chapter outlines the regulatory framework applicable to the proposed project. Table 2 provides an overview of applicable policies, plans and strategies and Table provides a list of applicable nationallegislation.

Table .1.

National Statutes	Relevance	Applicability to the Proposed Project
Soil Conservation, 1969 (Act 76 of 1969) and the Soil Conservation Amendment Act (Act 38 of 1971)	Makes provision for the prevention and control of soil erosion	Monitor and apply the soil conservation mechanisms
Forest Act 12 of 2001 ForestAct Regulations2015	To provide for the protection of the environment and the control and management of forest. Relevant sections: Approval required for the clearance of vegetation on more than 15 hectares (Section 23, subsection 1(b)). Tree species and any vegetation within 100m from a watercourse may not be removed without apermit (Section 22, subsection 1 (b))	Forestry permits required mayb clearing e for vegeta tion
Public Health Act (Act No. 36 of 1919)	Advocates for Public Health and safety	Protective clothing
The Occupational Safety and Health Act No. 11 of 2007	Advocates for employee and public safety, health	In the working context “SAFETY” implies “free from danger”
National Act, No. Heritage 2004. 27 of	The Act provides provision of the protection and conservation of places and objects with heritage significance.	Refer to handling procedures presented in the Scoping Report

Precautionary Approach Principle	The precautionary principle is a global accepted approach, which states that, when there is a insufficient information about the potential threats / impacts that may arise from theproposed development, precaution (safety) should be applied	Prevention is better the cure
Polluters Principle Pays	This principle ensures that proponent takes responsibility of their actions. Hence in cases of pollution, the proponent bears the full responsibility and cost to clean up the environment	Accountability: The day that the government and authorities start holding people accountable, a new Namibia will be born and socio-economic development will blossom

3.2 ListedActivities

Listed Activities may not be undertaken without an Environmental Clearance Certificate (ECC), and hence an Environmental Impact Assessment (EIA) is required.
The proposed project triggers a number of Listed Activities as set out in the Environmental Management Act, 2007 (Act No. 7 of 2007) (herein referred to as the EMA) and the Environmental Impact Assessment Regulation, 2007 (No. 30 of 2011) (here in referred to as the EIARegulations)

Table .2.

Listed Activity	Regulation (Activity Description)	Relevance to the Proposed activity
Activity 4 Forestry Activities	4.1 The clearance of forest areas, timber harvesting requires authorization in term of the Forest Act, 2001 (Act No. 12 of 2001) or any other law.	Expansion the entails of cultivation area vegetation clearing
Activity 8 Water Resource Developments	8.1 The abstraction of ground or surface water for industrial or commercial purposes.	Increment of the water abstraction permit to 1.5 Mm3/a

	8.2 The abstraction of groundwater at a volume exceeding the threshold authorized in terms of the law relating to water resources. 8.7 Irrigation schemes for agriculture excluding domestic irrigation.	

5. IMPACT ASSESSMENT METHODOLOGY

The fieldwork was intensive and included several activities. A reconnaissance visit was made to the project area by the EIA consultant & experts. Based on this, the team set out key areas of observation.
This was then followed by detailed visits of the project area and neighboring facilities taking records of observations as well as interviewing community members. Different stakeholders were invited to a public meeting to give their views on the expected impacts of the project. Literature review was also done. Their impacts on the environment were reviewed too. Environmental management and coordination Act (EMA) 2007 and other relevant statutes that have a direct significance to the proposed project were reviewed. Other reports and reference materials on physical and biological data on the study area were also studied and reviewed.

The general steps followed during the assessment were as follows:

- Environment screening, in which the project was identified as among those requiring anEIA
- Environmental scoping that provided the key environmentalissues.
- Desktop studies and open ended-questions
- Physical inspection of the site and surroundingareas
- EIA Public participation viameetings
- Reporting

Objectives

It is the policy of the Namibian Government (as enshrined in Subsecton 44 (1) (e) of the Environmental management Act(Statutory gazette No.7 of 2007) that before any development project is undertaken, an EIA is carried out.

The EIA process is a necessary undertaking because it is fundamental to mainstreaming environmental and social concerns in project development. Furthermore, the EIA process is a critical tool to sustainable developent "Ensuring
Environmental Sustainability."

EIA Regulations 27 (2) requires a project brief on the following type of projects located near environmentally sensitive areas such as:

- Rivers and water sources in this case is the Kwando River
- Agriculture
- Susuwe Park
- Electrical infrastructure
- Nature conservations areas in this case is the Suswe Park and the whole of Kongola

These selected schedules in the regulations come very close to the situation obtaining in the development of Kongola Fresh Produce (Pty) Ltd farming Project. Furthermoreaccording to project classification of World Bank Environmental Assessment Guidelines of 1989, the Kongola Fresh Produce Ltd Project falls under "category A" of the projects which have drivers and significant environmental impacts. In view of the foregoing, the EIA was designed to achieve the following objectives:

- To identify and predict possible impacts
- To map out a plan to monitor, avoid, mitigate and/or compensate the negative impacts to all investors will have to adhere to.

Table 3: Crop Description-Horticultural Crops

Crop Name	Tomatoes	Onion	Cabbage	Bean	Pea	Potato	Carrot	Squash
Variety	HTX 14	Charlize	Summer Power	Class Act	Puget	Van Der Plank	Kuroda	Waltham
Sowing Season	All Season	All Season	Autumn, Spring, Summer	All Season	All Season	All Season	Early-Mid Summer	All Season
Soil Depth	0.6-1.3cm	1-1.5cm	0.5-1.5cm	1-2cm	3-5cm	6-10cm	1-1.5cm	2-3cm
Soil Ph	5.5-6.8	6.0-6.8	5.5-6.8	5.5-6.8	6-6.8	5.5-6.5	5.5-6.8	5.5-6.8
Total Water Requirement	620 mm	600mm	440mm 1	320mm	320mm	500-750mm	200mm	350
Total Water Costs/ ha/ m³ in N$	105.40	102	74.8	54.4	54.4	127.5	34	59.5
Germination Temperature	25	25	15-27	28	5-24	15-18	26	22
Population per Hectare	22000-40000	4-4.5kg	30000-40000	150000-500000	100000-160000	30-45	1500000-2,5m	5000-10000
Days of Maturity	90-120	125-135	70-160	60-80	98	60-75	90-100	85-90
Size/Shape	Good leaf coverage	Globe Large	Round	56cm	70cm	-	18-20x5 cm(L.D)	0.8-2kg, 20-25cm
Expected Yield/Ha	80-100	40-80	60-80	12-20	3-5	-	25-50	20-30

Pests	Rust Mite, Aphids, Nematode	Thrips, Nematodes	Aphids, Bagrada Bug	Been Wee vil, Cutworm	Cutworm, Aphids, Bollworm	Potato Tuber,	RedSpi der Mites	Pumpkin Fly, Bollworm
Disea ses	Root Rot, Late Blight Fungal Rot	Black Mould	White Rust Black Ring, Stem Rot	Brown Rust, Necrosis	Mosaic Virus	Late Bligh t, Black Leg	Soft Spot	Downy Mildew, Bacterial Blight
Rema rks	High Yield Potential	Good intermediat eresistance to disease.	Good shelve life & heat tolerance	Good heat tolerance Pod length 13-14cm	Multiple pods	Large tuber s and high yield	Good Alternari a tolerance	Long thin neck, very good shelvelif e

Table 4: Crop Description: Cash Crops

Crop Name	**Maize**	**Wheat**	**Sunflower**	**Sorghum**	**Sugarcane**
Variety	Hybrid	Hybrid	Hybrid		
Sowing Season	Mid-December to mid-February (after the first 20–25 mm of rain	All year round, Winter and Summer	Summer	Summer	All year round

Soil Depth	5-7,5	3-5	3-4	2-5	
Soil Ph	5-8	7.5	6	7	
Total Water Requirement	500mm-900mm			300mm	
Total Water Costs/ ha/ m^3 in N$	$26	$35	$15		
Germination Temperature	12.7	54 to 77°C	70 to 85	-	25-32
Population per Hectare	65,000 to 75,000	150 000	21 000	50 000	
Days of Maturity	110 Days			90-160	
Size/Shape					
Expected Yield/Ha	10-12.5	7-12			
Pests	Stem borer, termites, corn earworms, cutworms, leaf hopper, locusts, white grubs, aphids, weevils, beetles, yellow pitch moth, vegetable bug	Stem borer, termites, corn earworms, cutworms, leaf hopper,		Larvae, shoot fly, weevil, angoumoismgrain moth, stem	

		locusts, white grubs, weevils		borers, midge	
Diseases	Diplodia, leaf spot, rust, root rot, leaf blight, yellow leaf wilt, anthracnose tassel smut, stem rot and dwarf mosaic virus.			Downy mildew	
Remarks					

Gazetted conservancies in Zambezi Region

This site falls under the jurisdiction of the Zambezi Communal Land Board (ZCLB) and an application for right of Leasehold was lodged with the ZCLB who will verify and measured the piece of land. The project has already received endorsement from the sub-Kuta traditional authority, the Hon. Councilor of Kongola Constituency and the Chief of Mashi Traditional Authority, as well as the Hon. Governor of the Zambezi Region.

According to the baseline information of the area, the site falls within the agricultural and forest zone in which the following activities are permitted: grazing, farming and residential activity and there is a Kwando conservation that exists in the area. The conservancy have permitted and consented to the farming project as it is located outside the wildlife corridor in the area.

The conservancy has the following land use zones:

Exclusive Wildlife: situated next to the river at selected areas;
Scattered throughout the conservancy
Settlement a: the largest of the zones, within the centre of the conservancy.

The proposed project site falls within the settlement and cropping area of the conservancy's land use zone, hence the consent by the Kwando Conservancy to the project.

Some important factors and/or the challenges for having to promote crop farming project in the country are;

Increase in food demand and food safety

Global warming and Climate change (water shortage, drought, floods)

Population growth and shortage of food in the country

High unemployment

Global financialcrisis

Capacity to innovate, develop appropriate technologies Management practices (small scale farmers and part-time farmers)
Post-harvest management (up to 30 %losses)

Soil degradations

The Zambezi Region and Two Kavango Regions in the northeast have potential for extensive crop development. Communal farms are estimated to produce 60% of their staple food, such as Pearl millets, sorghum and white maize (which is also used to brew beer). Cotton, groundnut, rice, sorghum, and vegetable production have begun on an experimental basis in Kavango. An irrigation project at Hardap dam near Mariental produces corn, alfalfa, feed corn, and grape.

Through the National Agricultural policy on farming in communal areas also makes provision for rural communities to engage into agricultural farming projects and operations in order to promote social and economic development and conservation in communalareas.

Agriculture will continue to be a priority since the sector remains the backbone of the Namibian economy and for both livelihood and employment creation. The outcome is for the agricultural production to increase and result in agriculture experiencing average real growth of 4% per annum up to 2017 and certain strategies are to be deployed to achieve this outcome, such as: - Continued promotion of the Green Scheme - Initiatives to increase the land's carrying capacity for livestock - Establishment of agricultural fresh produce markets -

Establishment of other agricultural infrastructures such as silos and research stations.

Based on the above the Environmental & Social Management Plan (ESMP) lists those management actions that are needed to ensure that undue or reasonably avoidable adverse impacts of the planning, construction and operations of the project are prevented and that the positive benefits of the project are enhanced or increased. It also gives responsibilities and will be used as a checklist to monitor compliance at the site. 6. DETAILED DESCRIPTION OF THE PROJET

THE PROJECT OPERATION ENTAILS THE FOLLOWING

6.1 Land Preparation

For potatoes, soil compaction Will not be used since the potato has a very weak root system. Where applicable and deemed to be cost effective, seed beds will be prepared with tractor mounted implements.

Deep cultivation (down to +- 25 cm) is an essential start to seedbed preparation. The aim of subsequent cultivations is to provide a fine seedbed with 10 - 15 cm of clod free tilts. Loose cloddy seedbeds will dry out, causing slow growth; irregular emergence and low stem counts.

6.2 Irrigation

A major constraint with irrigation in the region is the availability of suitable fertile land which is flooded annually. Most of the fertile land with rich soils and in proximity to water is situated within the floodplains, which poses a risk during flood season. Whilst the Zambezi River has the largest of the floodplains, the Kwando and Linyanti rivers have fewer floods.

Stakeholders from the irrigation focus group discussion, cautioned against any irrigation on the Kwando River. This is because the water capacity of the river is not sufficient for large scale irrigation projects. Therefore, any large-scale water abstraction from the river will have a negative impact on the downstream flow of the water into the Linyanti and Chobe Swamps and downstream users. The Governor of the Zambezi Region indicated the need for such projects along the Kwando River. In light of such proposed activities, the land-use plan will indicate the possibility of such irrigation activities, but with the following recommendations:
consultation with MAWF Hydrology Department on the allowable rate of abstraction for such irrigationprojects;
feasibility studies addressing not only the economic but also social aspects and type of crops that will be mostfeasible;
Revise on the downstream flow of the river to establish whether abstraction will depart sufficient water for continued fishing.
Figure 3; Example of the irrigation

The locality of the proposed project is in Kongola shows that land fertility is high and is suitable for both cash crop and horticulture farming.

The major irrigation system to be used by Kongola Fresh Produce (Pty) Ltd is the overhead sprinkler irrigation due to the size of the farm. Most crops do not have a problem with using this irrigation system. However, some crops such as tomatoes are best irrigated by the drip irrigation system, thus the project will employ drip irrigation to crops which perform better under this system.

Kongola Fresh Produce (Pty) Ltd project business will ensure that the system will be the one that:
Can adequately irrigate the fields without wastingwater;
Is reliable and can be rectified easily if something goeswrong.

In choosing the current location of the Kongola Fresh Produce Pty Ltd poject, there are a few more considerations we have taken into account over and above considerations of soil fertility and market availability:

- Watersource
- Topography
- Drainage

The most important factor Kongola Fresh Produce (Pty) Ltd considered when choosing the current farm site is that it should have good sub-surface drainage. Installation of irrigation schemes without good drainage has been responsible for damaging large areas of good land throughout the world. The reason for this is that in hot countries with high evaporation rates such as the Zambezi region, water tends to rise in the soil. This process can bring up large quantities of salts, which are deposited in the topsoil and reduce plant growth.

6.4 Sprinklers

Kongola Fresh Produce (Pty) Ltd’s most preferable type of irrigation to be used for the site is sprinkler irrigation. Sprinklers apply water slowly over several hours and as the rate of application is slower than the rate of infiltration into the soil, there is less need for special landforming.

The sprinklers will operate with pressurized water from the boreholes and Kwando River with a controlled pressure pump or from a high-up situated reservoir. This requires additional investments in terms of larger pumps and stronger pipes than required by other systems.

However, due to its improved effectiveness compared to surface irrigation systems, this could be a worthwhile consideration for the Kongola Fresh Produce Pty Ltd farming business.

Example of sprinkler irrigation system

Figure 4: Example ofSprinklerirrigation

figure 5: Example of Pivotirrigation

6.5 Drip Irrigation

Drip irrigation is currently the most advanced irrigation method. Several different systems are available on the market. They are made up of various thin plastic pipes with extremely small holes, spaced at prescribed distances from each other over the length of the pipe. These holes can be 30 cm to 1 m apart. Water drips from each hole at pre-calculated rates to irrigate one or two individual plants at atime.

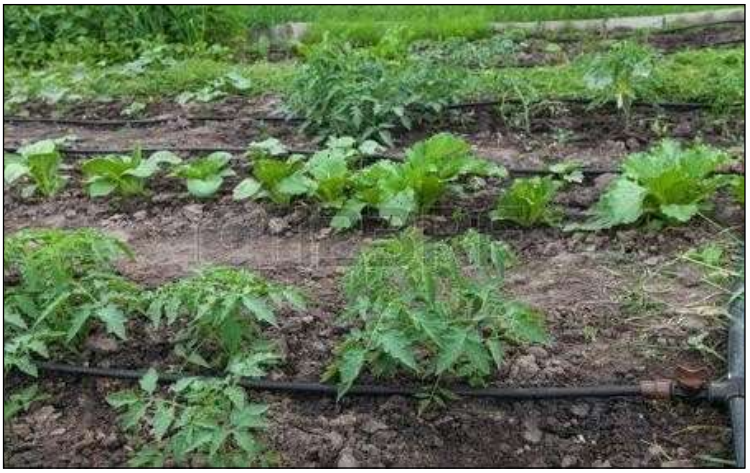


Figure 6: Example of Drip IrrigationSystem

Kongola Fresh Produce (Pty) Ltd project will construct three bore wholes water from the perennial Kwando river and drill three (2) borehole to support the irrigation system on the farm. This is a reliable supply of water; thus, instances of water shortages are never going to be an occurrence.

6.6 Employment

At the start of the project an estimate number of ± 500 unskilled local community workers will be employed to clear (de- bushing) the project site, and ±60 permanent local community workers will be employed at the project for production activities. However, during the operational phase of the project, carrying out labor work on the farm unit will consider the following;

- Scale of harvesting
- The project growth.

Electricity

The proposed project site has no access to power. Kongola Fresh Produce (Pty) Ltd plan to acquire a power transformer which is to be provided by Nored Namibia. Kongola Fresh Produce (Pty) Ltd has allocated budget for the installation of these services. Plans are underway to apply for an extension of a power line to the development property (Kongola settlement power grid), which shall be used when the project starts operating. This power connection is connected from the main town centre of KatimaMulilo to the different communal areas. However, a stand by generator or solar power plant for electricity will also be installed at the project to avoid negative impact of irrigation if electricity is interrupted.

Sewage Treatment and Disposal

Another development that will be undertaken at the site under the construction phase of the project will be development and/or the construction of the office building and a storage facility for the harvested produce at the farm. The office building will contain one (1) office and secretary. The building shall contain three (3) toilets. As a result, a 40 000 L septic tank will be installed to absorb the liquid waste produced from the building The administrative building block will contain a large 40 000l septic tank which will be installed about 4 meters underground, it is estimated that the capacity of the septic tank can take about to 20 years for it to reach its fullest capacity.

Staff housing &solid waste

Temporal staff housing for workers and security services (guards) will be constructed. Corrugated and wooden materials will be used to construct these structures. The temporal housing will accommodate up to twenty workers (50) and workers will be accommodated on a rotational or shift basis.

The solid wastes disposal will be conducted as follows:

Solid wastes (such as plastic bags, cement bags, water bottles, building rubbles) generated from Kongola farming project site will be disposed to the Kongola settlement designated dumping sites (located 3.5 kilometers) from the project site, permission to dispose these

materials will be acquired from the Zambezi regional council in KatimaMulilo. However, precaution measures such as wheel bins and black waste plastic bags will be placed on the farm where such material will be disposed or collected before being transported to the Kongola dumping site.

Access road and transportation ofgoods

Kongola Fresh Produce (Pty) Ltd will use delivery trucks mainly to the Windhoek market. Cooled trucks will be used for the export markets especially into neighboring such as Angola, Zambia, Congo DRC, Zimbabwe and Botswana where delivery may take longer than one day/night.

Product Packaging andLabeling

Major retailers have noted the deficiencies in refrigeration, storage, packaging and labeling which have made products from the north and north-eastern regions of the country unattractive. Thus, Kongola Fresh Produce Pty Ltd will have standard packaging for both perishable and non-perishable product.

6.7 Water Demand

Water for human consumption will be purified contained water to be stored in the water 10000 water tanks. This water will be suitable for human consumption. However, water for the farm at the project area will be extracted from the Kwando River and from the proposed drilled boreholes and a letter will be submitted to the Law Administration Division, MAWF, in order to obtain a permit for abstraction of water from the closest subsidiary to the project

site. However, water abstraction in cubic will be as follows.

The exactly irrigation water volume = gross depth of irrigation * the irrigated

area if the gross irrigation depth = 70 mm and the irrigated area = 1 hectare

the volume = (7 cm/ 100) * 1 hc * 10,000 = 700 cubic meter / hc

the irrigation rate unit is unit depth* (unit area) / time

so if the irrigation rate = 7mm per

hour and the gross irrigation depth =

70 mm

the time of irrigation = 70 mm / 7 mm/hr = 10 hours

This the time of supplying irrigation water to the field if the surface irrigation system is suitable to the soil properties.

For high frequency irrigation systems (as trickle or sprinkler) , the specific hydraulics of the system will be affected the design assumptions.

This means a total of 340 million cubic water per annum can be expected to be used for irrigation, from the three (3) boreholes and the r

---

Seeding

Seed Hybrids

The seeding phase of our farming activities will adhere to plant requirements as well as ensuring the right soil texture and pH in order to receive maximum yields at the least cost of production. Improved cultivars for most crops are widely available in Namibia. Most of the more expensive seeds on the market are hybrids with the following distinctive advantages above home- produced, open-pollinated seeds.
Germinatebetter;
Produce a higheryield;
Have key resistance or tolerance to diseases and some insects;and
Possess other desirable characteristics such as better size, shape, color, heat tolerance and resistance to injury duringpurchasing.
Seed companies are continuously improving varieties. Therefore, the best variety to choose will change as time passes. It should generally be recognized that using the best seeds available is the wisest decision. Yields will, on average, be higher and costs of pest management should be lower. A higher marketable or consumable yield will make the extra expense of good seeds pay for itself.

7 . DESCRIPTION OF THE RECEIVING ENVRONMENT

7.1 Introduction

In the following sections the current biological, physical and socio-economic conditions of the study area are discussed and their sensitivities to change are considered.
Climate of ZambeziRegion

The climate of the area is fundamental; in determining the availability of water and also reveals much about its ecological sensitivity and flexibility to change. The climate data below (table below) is typical for western Zambezi and is expected to occur at the farming production site.
The Zambezi Region is one of the 14 regions of Namibia, located in the extreme north- east of the country. It is largely concurrent with the Caprivi Strip and takes its name from the Zambezi River that runs along its border.
The area soils are loam-to-sandy with no rock and have clay content of between 20% and 30%. Thus, Kongola Fresh Produce Pty Ltd will adapt its irrigation and cultivation practices in order to prevent compaction of the soil. It will also implement comprehensive crop rotation practices to increase soil fertility as well as controlling the prevalence of pests and diseases.

During the summer months the average temperature lies between 20°Cand 35° C during the night and day respectively. In winter the day temperature rises to 28° C, but at night the temperature can drop up to 7° C or even 1° C. Frost does not occur though. During the summer months the Zambezi region has an average of 8 – 10 rainy days a month, whilst during the months of June to August hardly any precipitation is received since these are the dry conditions months.

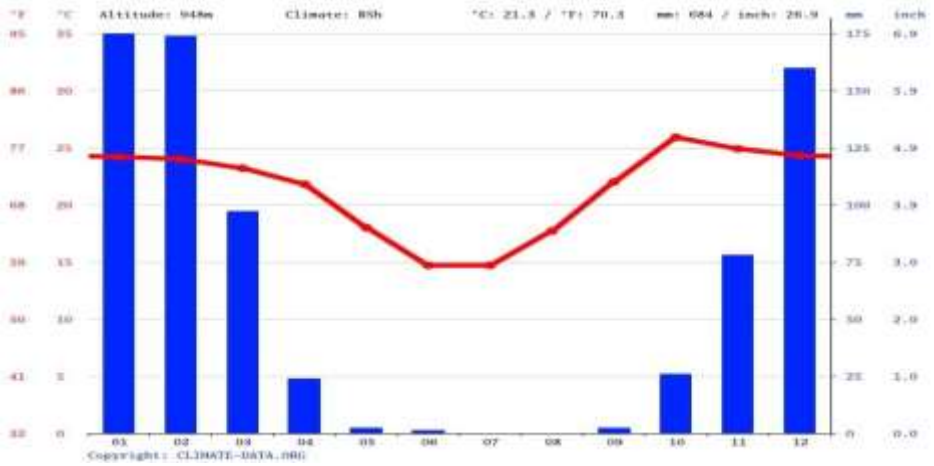
The Zambezi Region has ‘a higher rainfall, less evaporation and a warmer winter than the rest of Namibia, providing a home to many tropical to subtropical plants that are unable to survive elsewhere in Namibia’.

Rainfall

Rainfall averages about 700 mm per year in the wetter north-east, and about 500 mm in the southern Zambezi Region. The climate can be divided into two main seasons – a dry season between April and September, and a wet season which stretches from end October to early April. Rainfall, as in the rest of Namibia, is highly variable, with standard deviation values from 30–40%. For example, the long-term rainfall record from KatimaMulilo (1945–present, with a 9-year gap in the 70s-80s) shows annual totals over 1,000 mm in four of the years, and falls less than 400 mm in three years. This variability directly affects the livelihoods of farmers, exposing them to the risk of crop failure and poor grazing in some years, and floods in others.
ThusKongola Fresh Produce intends to grow through irrigation to forestall climatic conditions that may be unsuitable for rain-fed production.

7.2. Temperature, Evaporation, Wind and Solar

Temperatures are moderate during summer months in the Zambezi Region mostly due to cloudy conditions in these months. The highest temperatures are between September to November when there is less cloud cover and average daily maximums of 32-35ºC can be reached. In the winter months, the region has a more moderate winter than the rest of Namibia with maximum daily temperature of between 18 -25ºC and minimum temperatures of 5 ºC. Frost is unusual in the Zambezi Region, but may occur in some years in low lying river valleys, especially in the western part of the region. The highest rate of evaporation takes place during September to October when it is hot, dry and clouds are sparse. The potential evaporation of 2,500 mm is over four times the volume of water normally provided by rain.



7.4 Soils

The Zambezi Region is characterized by the Kalahari Basin, which consist of sand dunes. Soil types in the Zambezi were classified largely on the basis of their textures, with soils consisting of varying amounts of sand and clay having different textures. At the one end of the spectrum are the heaviest soils with a high content of clay in areas, which are regularly flooded. Water does not penetrate or drain away easily because the clay is so dense and therefore these areas hold water for longer periods. On the other end of the spectrum are the pure sands that do not hold moisture for long. Between these two extremes are a range of intermediate soils – loams, clay-loams, sandy clays- and such intermediate soils also offer the best opportunities for cultivating crops as they retain water to some degree and have fairly high levels of nutrients.

Kongola communal area is situated within Kongola district. The project site proposed for the project is therefore characterized by flat and sand, clay, loamy soil which is fertile soil suitable for cash cropping, fruits and horticulture crops and vegetables. These give rise to heavy and more fertile soils which are generally yellowish red sandy clays.

7.5 Vegetation

The texture of soil, the depth, the nutrient content, the concentrations of salts and the ability to hold water affect the kind of plants found in an area. Water drains through sand easily, washing nutrients away and leaving both the sands and many grasses low in nutrients. The Caprivi Atlas shows an assessment of the potential values of each of these variations in terms of its potential for crop cultivation, livestock farming, conservation and other non-agricultural subsistence values of these resources.
Based on the above, Kongola communal area has the following characteristic;

Hydrology andDrainage

	Potential Value for:			
Vegetation Unit	**Crop Cultivation**	**Livestock Farming**	**Other**	**Conservation**
Zambezi floodplain channels	+	+	++	++
Zambezi floodplain grassland	++	++	+	+
Zambezi transition grassland	++	++	+	+
Zambezi woodland	++	+	+++	+++
Riverine woodlands				
Maningimanzi woodland and channels	++	++	++	+++
Okavango-Kwando valley woodland	+++	+++	+++	+++
Okavango valley field and shrubland	+++	++	+	+

The Kongola Fresh Produce development area drainage System is supported by the Kwando river water plains, which runs from the South to the North of the area. During dry season the area is often dry but during rainy season rain waters usually spread through the proposed area for the project, which gives a good source of water for agricultural crop farming.

Topography

The Kongola project area is situated on an average high landscape at an altitude range of 10m to 15m above sea level. The terrain of the farm block is relatively flat with associated with savannah grassland.

Popuation

The Kongola constituency is one of the largest constituencies in Zambezi region and its one of the less density populated with only 7366 population according to 2011 national census. Population distribution is concentrated at the administrative center of Kongola settlement area with the availability of social services such as schools, government offices and small shops. The large area on western side of the constituency falls under Bwabwata national park where approximately 1900 Khwe san people reside.

Socio –Economic

The livelihood strategies of the people at Kongola are the same as the rest of the people in Zambezi Region. Where people largely depend on agricultural activities and collection of non- wood forest products. Maize, Mahangu, beans and Sorghum as well as Cassava is the main crop grown in the area. Other crops grown in medium to small quantities include groundnuts, finger millet, and sweet potatoes. Livestock though being a source of livelihood is only practiced on a small-scale Animals mostly reared include goats, pigs, chickens and

ducks. Honey and mushroom collection are another off-farm income generating activities the people depend on for livelihood.

Changes to the environment

The proposed project will have slight impact in terms of changing the environment state of biodiversity. These changes are viewed to be minimum. The land comprises of an open land associated with clay loamy soil, with small shrubs and grassland. As a result, the commissioning of the project will have very little negative effect to the vegetation and flora on the site.

The project will however bring about new changes in terms of infrastructural development such upgraded gravel roads, power supply to the area, employment creation to local residents and communities and many other socio-economic activities that will accompany the development of the far
Development activities around theproject

The current state of the proposed project area for the project shows that there are no other activities around. However on the southern side of the proposed project site there is Sisuwe Park within less than 1km. In the other parts of the proposed project site, there are no human activities since the proposed project site is within the Kongola conservancy. The proposed project will have slightly impact on the activities of wildlife as the project area will be fenced off to protect the produce from the project.

The following are the type of mammal's wild animals found in the Sisuwe Park

1.Elephants
2.games bok
3.birds

. FINDINGS/IMPACTS

The assessment considered the major components of the project & howtheywouldimpact upon the environment. The components considered include road and construction of electricity grid, harvesting process and human settlements, irrigation and agriculture production.

8.1 Extensintion of road width

The extension of the road width, which is expected to be carried out on the one primary feeder road, should upgrade their capacity in the way to improve the traffic flow.fewvegtation of aproxmatly 1m from the cleared way will have to be cleared in order to accommodate the heavy trucks.

8.2 Ecological Impacts:

Vegetation clearing and mechanized material excavation will result in soil erosion. This is considered less significant in the project site, as the area is flat and have no river catchments found. More intensive Access Road development is the in the long-term are likely to cause disruptions to wildlife habitats and the migratory bird routes due to its proximity to the local forests and conservation areas.

8.3 Social Impact

The development of the primary roads is likely to attract a proliferation of unplanned roadside settlements both within and outside the project area for commercial and social benefits. Areas with a considerable density of settlements along these routes are likely to experience growth.

8.4 Construction of ElectricityGrids

The Farm unit has one (1) proposed electricity supply lines which is intended to service all farming activities at the project site. The development of this grid system (connected to the Kongola electricity grid) as described below will require the clearance of vegetation to create a way leave; the latter will measure 20 m in width throughout the grid line.

8.5 Social-Economic Impact

The proposed activities for fruits and vegetables project at the project unit are likely to convey both negative & positive impacts in the areas concerned. From infrastructure point of view, socio-economic impacts will arise from social amenities that will be provided will include services such as job creation, schools, health centers, etc.

8.6 Employment Creation

One of the expected most positive impacts are the creation of employment for the local community members. It is predict that more than 85% of the unskilled labor will be recruited from within the Farming unit surrounding area. For skilled labor, priority will be given to Namibian with suitable qualifications before engaging expatriates. It is also anticipated that more jobs are expected to be created as the project progresses.

Project members of staff will also plough salaries and wages into the local economy directly through purchases of various goods and services which may benefit thousands of people directly or indirectly.

Table 4: Impacts of sitting of factories and agro-processing facilities

IMPACT	HOT SPOTS	MITIGATION
Aggravation of solid waste problems in the area.	Area around Kongola is planned for a cash crop & horticultures factory and agro industry.	On farm no.40 designate site for solid waste disposal/treatment. Subject the industrial developments to specificEIA Subject the Industrial development to specificEIA.

8 .7 Impacts of Irrigation

The main purpose of constructing boreholes in on site unit is to store & provide water for both cash crops & horticulture production especially on Commercial site. Irrigation will thus ensure efficient, increased and sustained crop production. Apart from the borehole, other sources of water for irrigation are the river, and underground water, which are readily available within the site.

Awareness of negative impacts likely to arise from irrigation is very crucial in ensuring sustainable development in the Farm. Impacts of immediate importance include soil erosion, salination of irrigation land and water bodies, water logging, and leaching of soil nutrients, proliferation of weeds, pollution & contamination of local groundwater.

8.9 Soil Erosion

Where the soils are porous, as is the case with sandy soils, leaching of soil nutrients, agro-chemicals and chemical fertilizers increases. It must be noted that the parent rock of the Farm is sandstone.

8.10 Pollution & Contamination of local ground water

Irrigation in itself will further enhance the infiltration of chemical fertilizers & other agro-chemicals into the groundwater. It must be noted that boreholes have been largely recommended as sources of safe drinking water. If, therefore, these chemicals infiltrate the water, then both shallow wells and boreholes will be unsafe as sources of water for human use.

8.11 Explosion of weeds

Weed seed and plant material is generally transported by water. When irrigation occurs, this weed seed and plant material is easily drawn out of the watercourse and deposited on arable

land. Some of the weed will also grow profusely along water furrows creating a bridge for insects and disease vectors for the intended crops. A good example is the water hyacinth weed, which has been a headache to deal with in many rivers and Zambezi region.

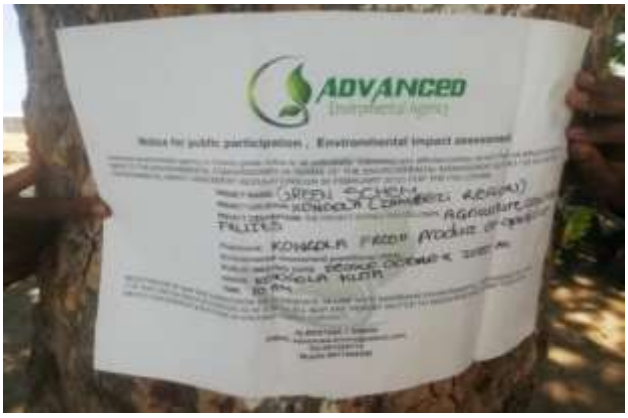
All the above impacts have a very negative effect on the environment. It is therefore incumbent upon all the developers to ensure that they develop the conservation buffers and put in place erosion control measures in order to minimize factors that may lead to land degradation irrigation.
improve the profitability of agriculture and increase investment in agriculture;

9. STAKEHOLDER AND COMMUNITYCONSULTATIONS

Public participation forms an important component of the environmental Assessment process. It is defined by the Environmental Management Act (2007), as a '*process in which potential interested and affected parties' area given an opportunity to comment on or raise issues relevant to specific matters.*

Public participation notices were placed on local notice boards and advertised in national newspaper media. The advert was in the Republikein&Confident newspapers on the 10 October 2020 respectively. Also, the list of Interested & affected parties 'stakeholder community meeting is hereby attached as *appendix*.
Communication with stakeholders about the proposed farming production facility was facilitated through the following means: The stakeholders were identified in terms of relevance to the project and who could serve as a source of information

APPENDIX 1.



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advancedenvironmental27@gmail.com

Advanced Enviromental Agency

"Maintaining sustainable development"

ATTENDANCE REGISTER

NAME.	comment	signature
1. Martin Nkwazi		
2. KWANBU GODFREY		
3 MEIFELO BONAS		
4 KWANBU STANLEY		
5 MBAMBI PETER		
6 INBUNK GEORGE MAANO		
7 NGATABE RAYMOND LIPYA		
8 LUTANGU EVANS		
9 MUIAFULI LEATAN		
10 TUHALENAWA MATHEWS		
11 CHELEZO ALEX		
12 KALUANA MILDRED		
13 ERICAH MULANBA		

CC/2017/03622

Classifieds

Contact: Mandy
• T: 061 24 6136 C: 081 895 8296
• E: mandy@confidentenamibia.com

PUBLIC NOTICE

ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED LAYOUT AND TOWNSHIP ESTABLISHMENT WARANGU

Cardy Consultancy is hereby give notice to all potentially interested and affected Parties (IAPs) that an application will be made to Environmental Commissioner in terms of the Environmental Management Act (No 7 of 2007) and the Environmental Impact Assessment Regulations (GN 30 of 6 February 2012) for the following activity:

PROJECT NAME: Layout and township establishment of Dawson Proper, Nossing Heights Proper, Anton Lubowski Proper, Dawson Extension 1 and Dawson Extension 2 in Arandis
PROJECT LOCATION: Arandis, Erongo Region
PROPONENT: Arandis Town Council
ENVIRONMENTAL CONSULTANT: Cardy Consultancy cc

PROJECT DESCRIPTION:
The project will comprise the following activities:
Clearing of land, servicing of land (sewerage system, water pipes and electric infrastructure), and establishment of roads to make serviced land available for housing development and other infrastructure in the extensions of Dawson Proper, Nossing Heights Proper, Anton Lubowski Proper, Dawson Extension 1 and Dawson Extension 2 in Arandis.

Public Meeting:
Date: 10 October 2020
Time: 11h00
Venue: Arandis Town Hall

REGISTRATION OF I&APs AND SUBMISSION OF COMMENTS:
In line with Namibian Environmental Management Act (No 7 of 2007) and EIA regulations (GN 30 of 6 February 2012), all I&APs are hereby invited to register and submit their comments, concerns or questions. All I&APs will be provided with a Background Information Document (BID) consisting of descriptive information about the development activity. Should you want to register as an I&AP, kindly contact Cardy Consultancy to on the contact details below. In light of the current COVID 19 pandemic the meeting can also be followed online at the link that will be provided on request.

Lilian Dodgo, Tel: +264 (0) 61 225 666
Email: liliancardy@gmail.com or
cardyconsultancy@gmail.com

CLOSING DATE FOR COMMENTS:
23 October 2020

hdsh

EkwaoConsulting

PUBLIC NOTICE

ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

Notice is hereby given that an application for Environmental Clearance Certificate (ECC) will be submitted to the Ministry of Environment, Forestry & Tourism in terms of the Environmental Management Act (act 7 of 2007) and applicable Regulations with respect to the following proposed development:

Development	New Fuel Service Station & Related Activities
Location	Erf 3287, Sam Nujoma Avenue, Hudatshimut, Walvis Bay, Erongo Region
Proponent	Kaskor Holdings PTY Ltd
Public Meeting	No meeting will be held but interested and affected Parties (IAPs) are hereby invited to submit their inputs and/or concerns in writing to the contact details below
Closing Date	23 October 2020
EIA Consultant	Ekwao Consulting 4300 Lomind Street, Ongwediva Cell: 081 127 3027 Fax: 088 843 028 Email: ekwao@web.na Inquiries: Joel Shanyolo A Background Information Document (BID) is available upon inquiry

Project: Green scheme

Project Description: Agriculture growing fruits & Vegetables

Project Location: Kongola (Zambezi Region)

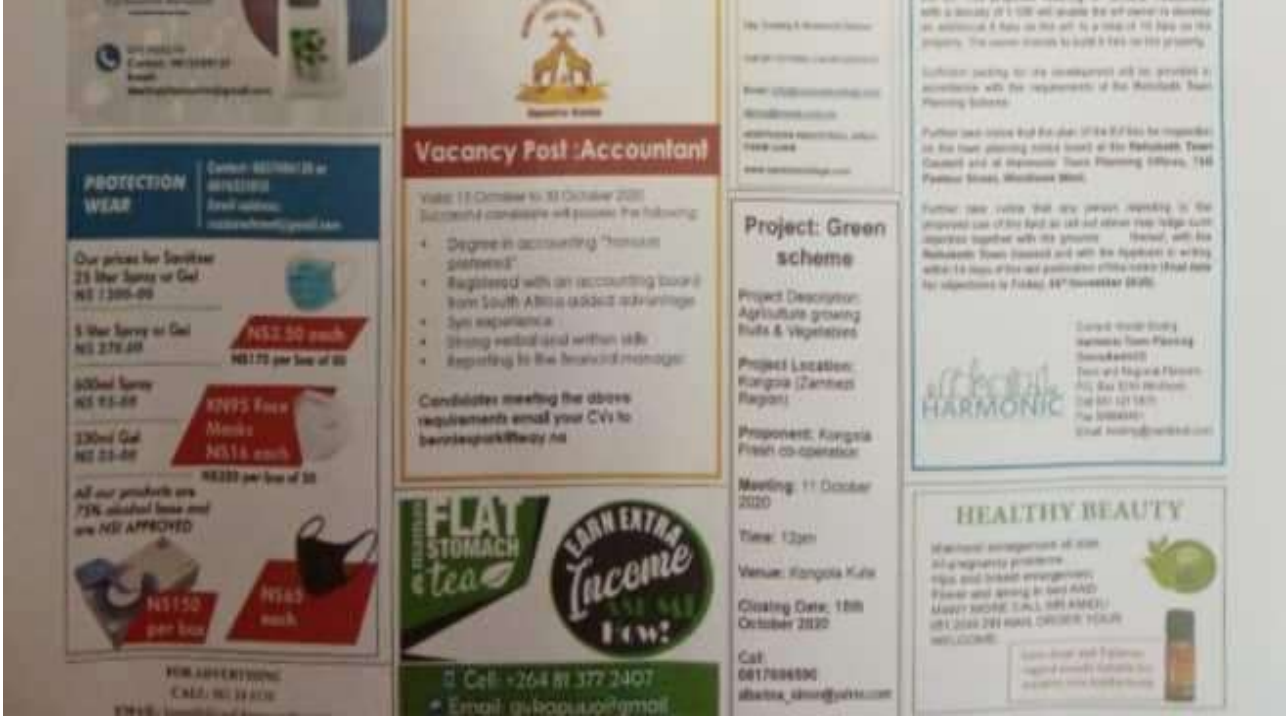
Proponent: Kongola Fresh co-operation

Meeting: 11 October 2020

Time: 12pm

Venue: Kongola Kuta

Closing Date; 15th October 2020


PROTECTION WEAR
Vacancy Post :Accountant
Project: Green scheme
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9.1Public meeting at Kongola

A public consultation meeting took place on the 10.10.2020 between the Community members, Line Ministries, stakeholders, the traditional Authority and investors, to discuss issues and concerns regarding the proposed farming project and also raised concerns and proposals to mitigate theproblems.

A total of 14 people or stakeholders attended the meeting (see attached attendance list dated 10.10.2020 (see Letters for invitation to I & APs), The following key stakeholders were also invited to the public consultation meeting (see Letters for invitation to I
Kwandoconservancy
Kongola Sub-Kutas, and Mashi TraditionalAuthority

Public participation meeting: Kongola sub-Kuta. 10.10.2020

A summary of the issues and concerns that were raised by the interested and affected parties is listed below. The

purpose of presenting the issues raised by participants in this section is simply to:

Ensure that all predicted consiquences are well adressed;

- Ensure that all issues raised are properly addressed in the EIA, ESMP and mitigation measures proposed
- Issues dominated the discussions range from:

- Employment Creation
- Water abstraction – the fear that abstraction of high volumes might dry the Kwando

river or the riverflow

- ❖ Clearing of valuable plant species – the concern for removal of sensitive and protected plant species in the area and the effect to the biodiversitythereof
- ❖ Wildlife habitat – concerns were raised regarding the destruction of wildlife habitats or the living environmentof animals,ecosystem and theecology as the project area'slocality which is (1m)to the susuwe game park

Ownership of the land (proposed project site) and grazing oflivestock
Direct and indirect benefits from the proposedproject
Soil type (in terms of the suitability for the proposedfarm)
Effects of climate change as a result of deforestation

10. MAJOR IMPACTS

Deforestation and ecosystemimpacts
Namibia is the driest sub-Saharan country in Africa. Forested areas are therefore restricted to the northern east wherehighrainfallisexperienced.According to Namibians statistics deforesitation has been increasing in the astlist 6 year, regions like zambezi holds the high value of forest in the country.

10.1 Grazing for Livestock

Having the farming project in communal areas is believed to affect the grazing land for livestock in certain areas as most of the land earmarked for the project consists of few trees whilst the large portion of the area is open savannah grassland suitable and often used for grazing purpose.

Through consultations with the community, it was discovered that the proposed project site for the fruit & vegetable does not infringe in the land for livestock grazing. Thus, alternative or mitigation measure are proposed to be put in place, whereby communities will use a nearby commonage suitable for grazing which is located few kilometers from the project site. The developer or farm owners have agreed to leave some open spaces on the farm which will be fenced to allow livestock movement to access other grazing sites.

10.2 Groundwater Surface Water and Soil contamination

In terms of vulnerability of the soil and groundwater there are two main features of importance. These areas (1) the clay loamy soils of the areas are prone to high level of leaching and (2) a middle-low water level in the areas. One main factor may impact on underground water and soil. These are (1) spilling of fuel, oil or hydraulic fluids when earth moving machines area fuelled or repaired on the site.

Key Consideration Area:

- Contribute to local economy
- Employment Creation
- Local level economicempowerment

11. IMPACT ASSESSMENT AND MITIGATION

Here the Kongola fresh Produce Pty Ltd will discusses project impact for fruit &vegetable farming on both the biophysical and socio economic and cultural environment within the project's area of influence. A matrix was used to establish the likely changes effected by the project on the environment. Results obtained were then analyzed and assessed to establish significant, major and minor impacts. The following criterion was used:
The Sensitivity of the environmental element beingimpacted

The spatial extent of theimpact

The severity/intensity of theimpact

The period of theimpact

The Probability/frequency of occurrence of the impact or source ofimpact

Furthermore, impacts were characterized according to the phase of the project implementation as follows:
Impacts associated with preliminary and constructionphase

Impacts associated with Operational Phase

Impacts associated with Decommissioning and ClosurePhase

Impact significance characterization was determined at four levels namely: Non- Significant, Low Significant, Moderately Significant and highlysignificant impacts. Characterization definitions adopted for the study were as follows:

Highly Significant impact: A frequent Impact and or one with highly severeeffects.

Moderately Significant Impact: A frequent impact of moderateseverity.

Low Significant Impact: An infrequent impact of moderateseverity.

Non- Significant Impact: An improbable impact or one with non-severeeffects.

Severe Impact: impact infringing on legal provisions or established social norms and with widespread effect i.e. impact affecting areas outside the immediate confines of the defined project area.
Moderately Severe Impact: Impact causing serious but reversible damage and result in moderate publicoutcry.
Non-Severe Impact: Impact not subscribing to any of theabove.

Project impact identification and their spatial extent were restricted to the following classes:

Environmental impacts: these included impacts on Air quality, surface & ground water, soils, flora, fauna and fauna. Impacts of chemical application on the surrounding communities and settlements in Kongola area. Mitigation measures aimed at preventing, reducing, compensating and/or managing the impacts were identified for all significant impacts with monitoring activities proposed for residual impacts of the project in the event that Kongola Fresh Produce (Pty) Ltd ceases the operations of the farms.

11.1 Biophysical Environment

The impacts on the biological and physical environment of the project area have been detailed in accordance with the three project implementation phases i.e. preparatory and construction, operation and decommissioning and closure. The impact characterization details of each evaluated impact according to Nature of impact (positive, direct/ indirect and reversible/ irreversible), timing, duration, spatial extent, likelihood, frequency and sensitivity are given in the foregoing.

Although the significance rating of the most of the impacts can be reduced considerably to a “low significance” by implementation proper mitigation measures the proponent should however understand that a “low significance” impact still exerts pressure on the environment and therefore the proponent should intend to go above and beyond the prescribed mitigation and management measures provided in this report by aiming to

improve the remaining environment. There are specific policies and guidelines that address environmental issues related to the development. The policies and guidelines were referred to in the legal section. The FAO guidelines for fields projects (FAO, 2012) will be used during the assessment.

Table: 5 Environmental categories for FAO field projects

Environmental Category	Environmental and Social Impacts	Environmental Analysis or AssessmentRequired
Category A	Significant, or irreversible adverse impacts	Mandatory environmental impact assessment
Category B	Less significant adverse impacts that may be easily prevented or mitigated	Environmental analysis to identify more precisely potential negative impacts
Category C	Minimal or no adverse impacts	No further environmental and/ or social analysis or assessment required

Based on the above FAO's categories of field project analysis, the proposed farming project at Kongola falls under category B, which or where environmental analysis is required to analysis to identify more precisely potential negative impacts. The following box below specify the type of projects under Category B, which according to FAO (2012) do not require a full EIA but will require further deepening of environmental or social considerations, depending on the expected magnitude of risks. In many cases, the analysis would aim at gathering additional information in sufficient detail so as to be able to discuss concretely how risks could be addressed and minimized (and possibly eliminated) in the project design.

11.2 Surface Water Quality

There are no permanent wetlands in the 300Ha extent of Kongola project site. No rivers or streams traverse within the farm land. However, the nearest river close to the project site is the Kwando River is located in less than 1km from the site on the southern side of Kongola area. Therefore, Chemical application activities and poor management of soils resulting into erosion and also from water runoff especially during rainy season may pose a risk of surface water contamination over a long period. This impact if it occurs will be minimal or negligible considering the land orientation and water drainage systems in the area. The other

possibility is that of storm water flowing along road way drains and across the farm land. This impact is also considered minimal.

11.3 Ground Water Quality

Kongola Fresh Produce (Pty) Ltd intends to drill one (3) water boreholes for purposes of supporting the project Cash crop and Horticulture production during winter season. The project site has rich underground water resource as evidenced from the historical information obtained from the previous owners of the farms. Kongola Fresh Produce Pty Ltd Farming unit currently have no boreholes drilled on the farm as it's not operational. Petroleum handling at the farms specifically the handling of fuels (diesel) at the fuel storage tank, leakages of oils from farm machinery, vehicles and handling of used oil at the workshop is likely to result into ground water contamination through introduction of hydrocarbons into the soil and direct infiltration into ground water.

During the rainy season, fuel and oil spills if not properly handled, they will end up in the soil and eventually in ground water. This impact may affect both the proposed project site and surrounding areas as they share the same underground water aquifer. The impact will be regional since the area shares the same underground water aquifer.
Impact significance: Moderate

11.4 Air Quality

The main access tarred road to other areas beyond Kongola farm **does not** pass within the project site boundaries.

This means there will not be any potential increased of traffic on the road situated close to human settlements or surrounding areas hence the low levels of dust which shall not affect the air quality of the area. Movement of construction vehicles during access road development, rehabilitation, clearing of vegetation, sinking of boreholes, construction and other support infrastructure may result in low levels of dust and exhaust fumes from motor vehicles and machinery on site. Ploughing and tilling, transportation of materials and construction of all ancillary facilities will certainly generate appreciable amount of dust. This impact will be regional as it may affect both the proposed project site and itsvicinity.

Impact significance: LOW

11.5 Soil pollution

Poor management of fresh and used oils will also certainly contaminate the soil. This impact will be regional as it may affect the proposed project sites and its vicinities. The poor management of effluent from the factory from wash water may contaminate ground water and soil within the farm area. This impact is considered localized and of lowmagnitude.

Impact significance: *Low* ***Soil erosion***
A smaller part of the farm land at Kongola will be cleared for agricultural activities and construction of other infrastructure. The Clearing of vegetation, construction of access roads and infrastructure will result into possibilities of soil erosion. This impact will be local as it will be restricted to the proposed project site. Soil erosion will eventually result into poor soil fertility as the nutrients will be leached out.
Impact significance: ***Low***

Sound Pollution

Transportation of farm implements, use of dozers, graders, tractors and any other equipment in vegetation clearing, sinking of boreholes and construction of infrastructure will result into noise generation. This impact will be regional as it may go beyond the proposed project site. Operations of machinery will be restricted to day light (between 07:00 to 18:00hours) at all farming blocks and machinery will be regularly serviced to emit sound with the acceptable audiblefrequencies.
Impact significance: ***Low***

Land Use

Construction of all necessary farm infrastructures will certainly have a positive impact on land use. Land use will change from idling and transformed to its intended purpose of commercial agricultural activities under the management of Kongola Fresh Produce Pty Ltd.

Damage to agricultural lands/aquatic life

This impact is unlikely to occur as Kongola farm have no streams or rivers with fish likely to be destroyed by the project. Irrigation water will be obtained through river seasonally, rain waters and boreholes. Kongola Fresh

Produce (Pty) Ltd farm will be developed in line with appropriate farming methods that will not result in indiscriminate use of land.
Impact significance: **Low**

Flora

Clearing of vegetation will certainly reduce the number of trees in the area. Some of trees that will be cleared are endangered specifies. It is almost impossible or very difficult to replace the endangered species at any time. Most of the trees in the farm will and some were cleared because the Kongola Fresh Produce Pty Ltd farm was proposed. Impact on flora will be localized.
Impact significance: **Low**
Fauna

The impact on fauna is likely as there are frequent large animal movements (such as elephants, buffalos, kudus) within the surrounding area of the project site or in the vicinity which are sensitive to such developments. Other animals present are those that are able to survive even with such developments. Examples are birds, rabbits, lizards, rodents, snakes and smaller animals. Impact of construction and operation activities will be localized
Impact significance: *moderate*

Public Safety
The development and revamping of the Farm for Kongola Fresh Produce (Pty) Ltd will result in the influx of people around the project areas seeking employment and business opportunities. This will result in increased crime rates in the areas. Vehicular movement and farm equipment may possibly cause accidents to members of the public who may illegally stray into the farm area. Open boreholes are certainly a danger to public safety.
Kongola Fresh Produce (Pty) Ltd intends to engage the (Kongola Police branch) for Namibian Police Service through the Ministry of Safety & Security to offer manpower and that the company will request for police patrols in the areas to help reduce incidents of crime and theft. This request to the Namibian police will be laid once the construction commences upon approval.

Impact significance: *Moderate*

Archaeology and cultural site

There are no archaeological sites in proposed project site area. Archaeological sites having items such as cultural relics, iron and Stone Age objects, old caves, artistic work and paintings, spiritual and worshiping items, churches, traditional places may possibly be damaged during construction phase if found within the vicinity of the farm blocks. Thus, the farm unit at Kongola has no historical, cultural and archaeological sites within the farm; therefore, this impact is very negligible.

Impact significance: ***Low***

Hazardous Waste

Fresh and used machinery oil is likely to be spilled into the soil during the construction phase depending on the management of these items. Other hazardous waste such as expired chemicals, batteries, electronic waste and filters will also be generated. The impact will be localized.

Solid Waste

Construction packaging material (e.g. cement bags), off cuts from steel, trees, rubble and domestic waste will be generated during construction. This impact will be local.

Sewerage Waste

Use of toilets whether pit latrines or advance will result into sewer waste being generated. This may possibly
have affected ground water quality in the vicinity of the pits. This impact is minimal and will be localized.

Operational phase impacts

Surface Water Quality

There may be possibility of surface water contamination resulting from water runoff containing chemical residues of pesticides and herbicides from the farming operation. The other possibility is that of storm water flowing along road way drains and across the farm land. Effluent water from the factory clean up may also affect surface water quality. This water will finally sink or percolate into the soil. It is therefore unlikely that there will be surface water pollution resulting from the any activities from the farm and any associated activities.

Impact significance: *Low*

Impact significance: *High Ambient Air Quality*
High wind velocities may also result into dust generation from the bare land that has been cleared of its vegetation. This may happen even during off season periods of farming or when the land is idle during the window period of the rotation system that will be used at the farm.

Vehicular movement through the proposed access roads within the farming Unit may lead to dust generation. Ploughing and tilling, transportation of materials (inputs and out puts), will certainly generate appreciable amount of dust. This impact will be regional as it may affect both the proposed project site and its vicinity. This will be a nuisance.

Impact significance: ***Low***

Soil Contamination

Poor management of fresh and used oils will also certainly contaminate the soil. This impact will be regional as it may affect the proposed project site and its vicinity. It is also possible that soil contamination may occur due to inappropriate handling of chemicals such as fertilizer, insecticides, fungicides and herbicides. In the event of rain or irrigation leading to water runoff, these chemicals may percolate through surface soils causingcontamination.

Soil Erosion

Poor maintenance of access roads and drainages may result into continuation of soil erosion. Soil erosion may be from storm water and or high velocity winds. This impact will be local as it will be restricted to the proposed project site. Soil erosion will eventually result into poor soil fertility as the nutrients will be leached out.

Impact significance: *Low Noise*

Transportation of farm implements and products, use of farm equipment in ploughing and tilling, application of fertilizers, insecticides, fungicides and pesticides, pumping of water, and any other activity associated with the operational phase will certainly result into noise generation. This impact will be regional as it may go beyond the proposed project site. The impact will be low as operations will be restricted to working hours only i.e. from 07:00 to 17:00 hours.

Land Use

The use of centre pivots, tilling and ploughing, transportation of farm inputs and outputs, built infrastructure, pumping of water from borehole, supply of electricity and any other activity that will be carried out on the farm lands at operational phase will certainly have a positive impact on land use. Land use will change from the dormancy period it has undergone the last ten years to commercial agricultural activity. Land use will bring about the needed infrastructural development and economic enhancement in the Kongola area. This is a positive impact on the land as it will generate income.

Flora

During operational phase it is possible that invasive flora species may be introduced accidentally into the proposed project site and in the vicinity of the proposed project site. The agents of this invasive specifies may.

not be necessary the developer but may be from the out- grower scheme that will be initiated and encouraged by the development.

Impact significance: Low
proposed cash crop &horticulture farming unit (through the past experiences of subsistence farming by local communities)is being in existence for many years and has no large or endangered animal species that will be impacted by the development thus the operational phase activities will have no significant impact on fauna on the proposed project site or in the vicinity which are sensitive to such developments. Only small animals may be impacted by the revamping and operational activities on the farm. These animals may include birds, rabbits, lizards, rodents, snakes and squirrels. The impact if any will be localized to the project sites.

Landscape and Visual characteristics

The landscape and visual characteristics of the project sites will change drastically. Use of access roads, buildings, tilling and ploughing, irrigation system, growing of fruits and use of machinery at the farm will certainly have an impact on the landscape and visual characteristic of the proposed project sites.
This impact will be localized.

Public safety and occupational health risk

Movement of haul vehicles, farm machinery such as tractors and circular movement of the centre pivots may cause serious occupational health risk to workers on site and also to the public. The fuel storage facility and an open borehole may also be a source of public safety hazard resulting from fire and physical injuries respectively.

Archaeology and cultural sites

Operational phase activities are unlikely to have any impact to archaeological and cultural sites as they are located away from the project site. The impact of activities on the site will be insignificant.
Hazardous Waste
The management of fresh and used machinery oils if not adequately addressed may result in contamination of soils and subsequently ground water within the farm sites or workshop and/or oil storage area. This may be so also in the fuel storage facility. Other waste will be obsolete and expired chemicals, fertilizers and empty chemical containers. The impact will be localized to the above stated area.
Solid Waste

Domestic and Biomass waste will be generated during operational phase. This impact will be local. The domestic waste generation is negative while the biomass generation is a positive impact. The biomass may be used as an energy source with appropriate technology that may be considered by Kongola Fresh Produce Pty Ltd.

Sewerage Waste

Waterborne toilets will be used at the farm at Kongola (where an office will be developed) and will be connected to a septic tank-soak away system. In other operation centers where applicable, the farm will construct Ventilated Improved Pit latrines (VIP's).

These operations will result in the generation of sewer waste. This may possibly affect ground water quality in the vicinity of the project site.
Impact significance: ***Low***

Impact of out grower scheme to local farmers Construction Phase

The impact is negligible and insignificant at this stage.

Operational Phase

Engagement of local people in the farming of Cash crops & horticulture production on out grower scheme basis will help boost productivity, enhance local farmers' incomes and subsequently improved lives and reduced poverty. In terms of magnitude, likelihood, extent and frequency, the impact is considered significant, possible, confined to the project site surrounding and an annual occurrence respectively.

Improved Local Authority Revenue base

Construction Phase

Kongola Fresh Produce (Pty) Ltd will make statutory contributions to the Kongola local communities through service delivery of employment creation. The Namwater, NORED, and line Ministries will benefit through payment of land rates, taxes, and other licenses' to be issued for compliance. The impact is considered significant at this stage.

Operational Phase

Throughpaymentofvariousleviesandrevenues,fulloperationsofthefarmwillimprovethefinancial standingoftheLocalcommunities,theZambezi region and country as well as other regulatory agencies. In terms of magnitude, likelihood, extent and frequency, the impact is considered significant, possible, confined to the project site surroundings and an annual occurrencerespectively.lowest2-low
Sensitivityoftheoccurrencereferstotheresponsethattheimpactwillreceivefromtheaffectedparties.Thisisratedfrom1to
5 with 1 representing the minimal response to the impact while 5 represent the highest response level to the impact.

Environmental Aspect	Potential Impact	Environmental Impact Characterizations						
		Nature	Likely hood	Timing	Duration	Extent	Frequency	Sensitivity

Surface Water Quality	Storm water contamination	91 1. Negative Direct Irreversible	likely	Preconstruction to distant future	Short term	Regional	2	1
Ground Water Quality	Ground water contamination	Negative Direct 3. Irreversible	likely	Near-future	Short term	Regional	1	5
Drawdown	Reduction in drawdown levels	Negative Direct 3. Irreversible	unlikely	Near-future *(operations)*	Short term	Regional	1	5
Ambient Air Quality	Contamination of ambient air with dust	Negative Direct 3. Irreversible	Certain	Pre-construction to nearfuture	Short term	Regional	3	3

Soil Contamination	Contamination of soil with hazardous waste (used oil)	Negative Direct Irreversible	likely	Pre-construction to nearfuture	Medium term	Local	2	3
	Contamination of soil with Pesticides, fungicides and herbicides	Negative Direct 3. Irreversible	unlikely	Start of operational to near future	Medium term	Local	1	4
Soil Erosion	Lose of soil fertility as a result of soil erosion by wind and or by water	Negative Direct Irreversible	likely	Pre-construction to nearfuture	Permanent	Local	3	4
Noise	Generation of Noise	Negative Direct 3. Irreversible	certain	Preconstruction to near future	Medium term	Regional	2	3
Land Use	Change of land use	Negative Direct 3. Irreversible	certain	Start of operational to closure	Medium term	Local	2	4

Flora	Clearing of vegetation	Negative Direct 3. Irreversible	certain	Pre - construction	Permanent	Local	1	5
	Introduction of Invasive Species	Negative Direct 3. Irreversible	possible	Pre - construction	Permanent	Regional	2	5
	Extinction of endangered species	Negative Direct Irreversible	certain	Pre - construction	Permanent	Regional	2	5
Fauna	Loss of fauna	Negative Direct Irreversible	certain	Pre - construction	Permanent	Regional	1	5
	Interruption of animal corridors	Negative Direct 3. Irreversible	unlikely	Pre-construction to operational phase	Permanent	Regional	2	5

	Loss of endangered fauna species	Negative Direct 3. Irreversible	unlikely	Pre - construction	Permanent	Regional	1	5
Archaeology and cultural sites	Damage and removal of archaeological sites	Negative Direct Irreversible	unlikely	Pre - construction	Permanent	Local	1	4
	Damage and removal of Cultural Sites	Negative Direct Irreversible	unlikely	Pre - construction	Permanent	Local	1	4
Public Safety	Danger to the community from farm equipment	Negative Direct 3. Irreversible	Possible	Preconstruction to near future	Medium Term	Regional	2	4
Landscape and visual characteristics	Change to landscape and visual characteristics	Negative Direct Irreversible	Certain	Pre-Construction	Medium Term	Local	1	4

Hazardous Waste	Generation of hazardous waste such as used oil, chemical containers, batteries, florescencetubes, filters etc.	Negative Direct Irreversible	Certain	Pre-construction to operational phase	Short Term	Local	2	4
Solid Waste	Generation of Solid Waste from plant biomass	Negative Direct Irreversible	Certain	Operational Phase	Medium Term	Local	1	4
	Generation of Domestic Waste	Negative Direct Irreversible	Certain	Pre – Construction to Mid Future	Short Term to Medium Term	Local	3	3
Sewerage Waste	Generation of Sewer Waste	Negative Direct Irreversible	Certain	Pre – Construction to Mid Future	Short Term to Medium Term	Local	3	3
Surface Wa ter Quality	Surface water contamination	Negative Direct 3. Irreversible	Unlikely	Pre – Construction to Mid Future	Short Term	Regional	3	1

Ground Wa ter Quality	Contamination of ground water	Negative Direct Irreversible	Possibl e	Near-future	Short Term	Regio nal	1	5

ENVIRONMENTALMANAGEMENTPLAN

The Environmental Impact Assessment Regulations require the developer to provide an Environmental and Social Management Plan. An EMP is a document where all the measures that are required for environmental protection, which will include the mitigation measures and the monitoring plan, will be found for easy reference. The aim of an environmental management plan is to avoid, minimize, or ameliorate effects or impacts resulting from project implementation and where possible, enhance beneficial effects.

This EMP seeks to limit the interaction of disturbed with undisturbed lands at Kongola farm project site and through the various processes of project implementation, restore the disturbed land to a predetermined form of land-use or to a productivity level similar to that occurring prior to disturbance.

The Environmental Management Plan for the management of the identified environmental impacts associated with this project consists of three main components:

Implementing the Impact MitigationPlan.
Monitoring the implementation of the EMP
Impact and MitigationPlan

The Environmental management plan allocates the responsibilities for implementation of the proposed mitigation measures to the various stakeholders and indicates at what stage in the project they should be performed. The Plan is presented in this document in a section and it addresses the negative impacts generated by the constructionand operation phase of the project and presents the associated cost estimates of mitigating the adverse impacts. The key components of the proposed management plan are:

- ✓ Surface and ground water quality management
- ✓ Vegetation and Flora
- ✓ Soil erosionControl
- ✓ Wildlife and FaunaHabitats
- ✓ Bushfires
- ✓ Noise and vibrations

- ✓ Occupational Health andsafety
- ✓ Land use andSoil
- ✓ AirQuality
- ✓ Landscape, land use and Aesthetics
- ✓ Socio-economic components of the mitigation plan include
- ✓ Cultural and Historic Sites
- ✓ Employment and conditions of service

Surface and ground water management

Surface and ground water are an important component of agricultural, ecological and human use of the land in the farming unit. The aim of the water management program is to ensure that where practical, flows into and through the project sites is maintained and that ground water sources (boreholes within the farms) are used efficiently to prevent inconsistent draw down of water during abstraction. The following will be undertaken to protect surface and ground water:

An effective drainage system will be put in place to capture all wastewater.

Oil spillages from vehicles and machinery will be avoided on site. Compliance with the Hazardous Waste Regulations will bepriority.
A good and effective monitoring schedule will be put in place during operations. Regular surface and ground water samples will be collected and analyzed. Bi-annual results will be submitted every year to the Ministry of Environmental directorate .Ensuring that boreholes and septic tanks are at least 60 meters apart.

Soil erosion control

The Kongola Fresh Produce (Pty) Ltd farming area has soils with less likelihood of soil erosion. However, the nature of the soil in high rainfall or winds may be prone to erosion. The cultivation methods to be employed by Kongola Fresh Produce (Pty) Ltd will ensure less risk of soil erosion and runoff water to nearby farms and settlements

Vegetation andFlora

No subdivision of the land has been cleared, however the local chiefs has made it clear that they used to cultivate on a small portion of the farmland which doesn’t required any vegetation to be cleared. They use to plant maize. A number of management initiatives shall be

implemented to reduce further potential impacts and disturbance to flora and vegetation. These include clearly marking and restricting access to areas of high conservation value; concentrate the farming operations to already cleared land for cultivation purposes.

Wildlife and Fauna habitats

During the site visit there was no animals seen on site, however the proposed site ends in Kwando River bordering with Susie Park. Other anthropogenic activities at the project block, the area has minimum large animals that will be disturbed or likely to migrate due to the projects activities to be undertaken by Kongola Fresh Produce (Pty) Ltd. However, in the event that the small identified animals are threatened, it is most likely that the species will tend to migrate from the area of greatest activity during site preparation and operation but will return during the night and more stable years of the operations. The selected potential impact.

THE IMPLEMENTATION OF THE ENVIRONMENTAL MANAGEMENT PLAN (EMP)

Table below outlines the management of the environmental elements during the planning and operational phases. Section 2 provides a brief summary of the management of the farming project. Contents of these tables could be incorporated into a HSEQ management system. The proponent would be responsible to assign the responsibilities and ensure that the tasks are executed.

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Environmental Aspect	Objectives	Monitoring Frequency	Mitigation and enhancement measures	Responsible person	Monitoring cost s (N$)
PREPARATION & CONSTRUCTION PHASE					
Surface Water Quality	To protect contamination of storm water.	Seasonal	Construction of proper drains alongside access roads and drains within the farm land and operation areas.	Operations Director	4,200

Ground Water Quality	To protect ground water contamination from oil spills and chemical runoff.	Quarterly	Drip trays will be used when removing used oils from equipment waiting servicing.	Farm Manager	3,400
			Fuel storage tanks will be placed in a banded wall and concreted surface. The bounding shall have a volume equivalent to 110% the volume of the fuel tank. A sump shall be constructed in such a way as to drain any oil that has spilled	Farm Manager	
			Used oil storage facility shall be kept under lock and key, concreted and bounded	Farm Manager	1.
			Drainage systems in the farm will be constructed to prevent chemical runoff during irrigation and rainy season	Farm Manager	1.

Drawdown	To reduce the impact of draw down.	During borehole drilling & test pumping	Boreholes shall be located and drilled in such a way as not to increase the impact of drawdown. Boreholes will be sighted in	Farm Manager	2.

			Areas within the farm away from shallow wells to protect shallow wells from drawdown.		
Ambient Air Quality	Reduction of gasand fumes from borehole drilling and diesel Machines	Quarterly	Diesel equipment to be equipped with gas absorbers	Farm Manager	2,200
			Use of low Sulphur content fuel (diesel) will be prioritized	Farm Manager	3.
	Suppression of dust from constructionsites and access roads	Weekly	The farm shall have a water bowser which shall be used to suppress dust on the main road and other access roads and construction sites where there is dust.	Farm Manager	4.
			If available molasses will be sprayed on roadsand constructionsitestosuppressdustformation.Emission sanddustlevelswillbemonitoredbywayofperiodical air sampling using mobile dragger pump. Results willbe submitted to DEA quarterly.	Farm Manager	1,400

Soil Contamination	To protect soil from contamination from fresh and used oil spills, andfuel.	Quarterly	Re-fueling& repair of construction equipment will be done in designated areas and periodic maintenance will be done on all equipment to avoid oil leaks getting into the soil	Farm Manager	5.
			Drip trays will be used in maintenance areas to drain used oil from equipment.	Farm Manager	6.

			Fresh and used oil will be stored in separate and lockable shades whose floors shall be concreted	Workshop manager	7.
			A bioremediation plan shall be established for the purpose bioremediation of oil contaminated soils.	Farm Block Manager	3,000
Soil Erosion	To protect the soil from erosion	Monthly	Storm water drains will be constructed around construction sites to collect storm water and there by prevent soil erosion	Farm Manager	8.
			Access roads and the plant periphery will be left with tree sand this will protect soil erosion	Farm Manager	9.
Noise	Minimize Noise to acceptable levels	Monthly	All farm equipment will be subject to a routine maintenance to ensure they are in good working order, hence minimizing noise levels. Restrict operations to day time only.	Farm Manager	10.
			Employees shall wear ear muffs or ear plugs and other necessary Personal Protective Equipment (PPE).	Farm Manager	3,000
	To protect workers from noise exceeding acceptablelevels	Monthly	Periodical monitoring of noise levels shall be conducted.	Farm Manager	11.
			Selection of low noise level equipment when purchasing farm and workshop equipment will be first priority.	Farm Manager	12.
			Trees along access and periphery roads shall left in tactto shield and reduce noise levels	Farm Manager	13.

Land Use	To rehabilitate the farm area and try to restore to its original state.	Annually	The mitigations here shall only come at closure. Buildings like the farm house, workers houses, fuel storage facility, used oil storage shed and the mini workshop will be demolished, area cleared and rehabilitated. The center pivot shall be removed and the other irrigation equipment removed also. Pumps shall be roved and boreholes caped. The farm land shall be re-vegetated and or allowed to naturally re-vegetate.	Operations director	1,000
Flora	To protect the local flora where possible.	Quarterly	The project will be implemented mostly to utilize spaces or land which was already cleared in the farm blocks	Farm Manager	1,800
Fauna	To protect local fauna.	Quarterly	Noticed fauna in the proposed project site will be preserved by taking it to areas that will remain undisturbed.	Farm Manager	1,200
Archaeology and cultural sites	To protect cultural heritage fromdamage	Project Inception	Any cultural heritage site discovered during construction will be preserved and the cultural heritage commission informed accordingly.	Farm Manager	1,500
Public Safety	To minimize health and safety risks.	Quarterly	Pre-employment and regular medical examinations will be carried out on all farm employees to ascertain their health.	Farm Manager	1,450

			All plant equipment will be subject to a routine maintenance programme to ensure they are in good working order, hence minimizing health and safety risks.	Farm Manager	14.

			All workers including contractors will be subject to wearing appropriate personal protective equipment (PPE) depending on the work type andplace	Farm Manager	15.
			All workers to go through safety and health inductions upon employment.	Farm Manager	16.
	Top rotect members of the public from hazards associated wit h construction activities.		Only authorized workers will be allowed to enter construction areas. No members of the public will be allowed to enter construction sites as well as the farm premises	Farm Manager	17.
			"Danger" warning signs to be placed in different points along the boundary of the farm and along the access road.	Farm Manager	18.
			Warning signs to be written in symbols, English and Vernacular language for easy interpretation.	Farm Manager	19.
Landscape and Visual characteristics	To protect visual characteristics of the landscape.	Project inception	Where there shall be no roads and buildings, the visual characteristics of the landscape shall not be altered.	Farm Manager	1,100
Hazardous Waste	To safely keep generated hazardous waste and dispose of appropriately	ThroughoutProject	Used oil and used batteries storage areas shall be constructed according to environmental guidelines. Lockable, concreted and bounded shed shall be constructed.	Farm Manager	1,200

Sewerage Waste	To protect sewer waste from contaminating the soil and orground water	Throughout Project	A septic soak way system shall be constructed to treat sewer waste since farming block & surrounding areas are not serviced by municipal infrastructure	Farm Manager	1,250
Solid Waste	Dispose solid waste at construction site accordingly	ThroughoutProject	Metallic and timber off cuts will be stored in designated areas and sold or given to authorize scrap metal dealers or given to the locals for domesticuse.	Health officer	1,450
			Cement empty bags and containers will be re-used or returned to supplier for re-use.	Farm Manager	
Occupational health and safety issues	Protection and safety of workers durin g construction	Throughout th e project	Number of construction workers provided with protective equipment such as helmets, safety shoes, gloves and eye glasses as appropriate. Number of injuries, lost days, and fatalities of construction workers and others.	Contractor's Occupational Health and Safety Officer	1,450
Loss of residential & business housing units, and other properties	Compensation for loses	Construction phase	Pay compensation for the affected properties based on the current market value or according to the Regulations	Developers (Kongola Fresh Produce PtyLtd)	Upon evaluatio n of the loses & agreement
Loss of farmlands	Compensation for loses	Construction phase	Pay compensation for the loss of income benefits from affected farmlands according to the Regulations	Developers (Kongola Fresh Produce PtyLtd)	Upon evaluation of the loses & agreement

OPERATIONAL PHASE

Surface and ground Water Quality	To protect contamination of surface and ground water	Quarterly	Proper maintenance of storm water drains along access roads and drains within the farm land	Operations Director	
			The transport of hazardous materials to and from farm will be done in accordance with laid down procedures. Requirements will Include: documentation and inventory control through chain of custody; emergency response training for spills.	Farm Manager	
			Only designated transport routes shall be used to transport chemicals such as fertilizer, fungicides, herbicides, fuel, used oil, fresh oil, lime and pesticides to and from the farm.	Farm Manager	
			Contracted transporters of chemicals shall be licensed with Ministry of Mines & Energy	Farm Manager	
			Contracted transporters of petroleum products shall be licensed with the Energy Regulation Board	Farm Manager	
			Application of fertilizers, fungicides, pesticides and herbicides will be in accordance will the law and guidelines.	Farm Manager	
Drawdown	To protect the locals	Monthly	A drawdown monitoring programme will be put in place	Farm Manager	20.

	from being affected by the		Locals will be informed how far from the farm should they put their wells.	Farm Manager	

	Effect of drawdown on their water supply wells.		Boreholes in the farm to located faraway from residential areas where locals are likely to put boreholes. A minimum of 300 meters away is recommended.	Farm Manager	
Ambient Air Quality	To prevent contamination of air due to dust emissions from vehicles and trucks operating ondirt roads	Quarterly	The farm shall have a water browser which shall be used to suppress dust on access roads and construction sites where there is dust.	Farm Manager	1,250
			If available molasses will be sprayed on road sand construction sites to suppress dust formation	Farm Manager	
	Low fume and gas emissions		Trees will be left along access roads and on the periphery of the proposed project site to act as a wind breaker and thereby reduce dustlevels	Farm Manager	
			Diesel equipment to be equipped with gas absorbers	Farm Manager	
Soil	Protection of soil from contamination b y hazardous waste	Quarterly	Hazardous waste shall be kept in a lockable, concreted and bounded storage facility	Farm Manager	
	Protection of Soil from contamination b y	Quarterly	Pesticides. Herbicides, fertilizer and fungicides shall be kept in a properly constructed area with proper ventilation, concreted floor, bounded and lockable shed	Farm Manager	

	fertilizer, pesticides , fungicides and herbicides		Application of these chemicals shall follow the right procedures	Farm Manager	
Soil Erosion	To protect the soil from erosion	Quarterly	Storm water drains will be periodically maintained to collect storm water and there by prevent soil erosion.	Farm Manager	
			Access roads and the plant periphery will be left with tree sand this will protect soil erosion	Farm Manager	
Noise	To minimize noise levels to acceptable levels	Quarterly	All farm equipment will be subject to a routine maintenance programme to ensure they are in good working order, hence minimizing noise levels.	Farm Manager	1,450
	To protect workers from noise exceedin g acceptable levels		Employees will wear appropriate ear protection in workplaces where noise levels exceed the minimum requirement Kongola Fresh Produce (Pty) Ltd management will enforcetheuse of PPE in the farm.	Farm Manager	
			Trees left along access roads and the farm periphery will not only act as a wind breaker but also sound proof.	Farm Manager	
Land Use	Protect land from being used in other ways	Throughoutproject life	The Kongola farm will be strictly for commercial farming of crop, vegetables and fruits other items such as soya beans, wheat, maize etc. Any other use which isnot in the description will be prohibited.	Farm Manager	

Flora	To protect the local flora where possible	Throughoutproject life	All the trees left after the construction phase shall not be cut for whatever reason. A procedure for cutting of trees shall be put in place. Progressive planting of trees shall becarriedoutandencouragedinareaswheretreeshad been carelessly cut.	Farm Manager	
	Extinction of endangered plant species.		Identified Endangered plant species shall be preserved and planted elsewhere at all costs if possible.	Farm Manager	
	Protection fro m introduction of invasive species		No invasive or alien species shall be introduced on this farmland in accordance with the invasive species act.	Farm Manager	
Fauna	To protect local fauna.	Throughoutproject life	Noticed fauna in the proposed project sites will be preserved relocating it to areas that will remain undisturbed	Farm Manager	
Archaeology and cultural sites	To protect cultural heritage fromdamage	Throughoutproject life	Any cultural heritage site discovered during operational phase other than the existing grave site will be preserved and the cultural heritage commission informed accordingly	Farm Manager	
Public Safety	To minimize health and safety risks.	Throughoutproject life	Pre-employment and regular medical examinations will be carried out on all farm employees	Farm Manager	3,000

	To protect members of the public from hazards		All plant equipment will be subject to a routine maintenance programme to ensure they are in good working order, hence minimizing health and safety risks	Farm Manager	

	associated wit h constructionactivities		All workers whether contractor or not will be subject to wearing appropriate personal protective equipment (PPE) depending on the work type andplace	Farm Manager	
			All workers to go through safety and health inductions when just employed	Farm Manager	
	To protect members of the public from hazards associated wit h construction activities	Throughoutproject life	Only authorized workers will be allowed to enter construction areas. No members of the public will be allowed to enter construction sites.	Farm Manager	
			"Danger" warning signage to be placed in different points along the boundary of the farm.	Farm Manager	
			Warning signs to be written in symbols, English and vernacular language.	Farm Manager	
Landscape and Visual characteristics	To protect visual characteristics of the landscape	Throughoutproject life	Where there shall be no roads and buildings, the visual characteristics of the landscape shall not be altered	Farm Manager	
Loss of farm and grazing lands	Compensation to loses	Throughout th e project	Pay compensation for loss of land, structures, and income benefits from affected lands	Developers (Kongola Fresh Produce PtyLtd)	

Hazardous Waste	To safely store and handle generated hazardouswaste	Throughoutproject life	Used oil and batteries storage areas shall be maintained according to environmental guidelines. Lockable, concreted and bounded shed shall be used.	Farm Manager	
Sewerage & effluent Waste	To protect sewer waste from contaminating the soil and/ or ground water	Throughoutproject life	A septic soak way system shall be used to treat sewer waste. HDPE lined effluent ponds will be constructed on the farm for bio-treatment of effluent.	Farm Manager	
Solid Waste	Disposal of solid waste	Throughoutproject life	Biomass from the plants will be stored and energy generation options evaluated	Farm Manager	
			Domestic solid waste will be disposed of at Kongola combined school Clinic and School disposal site in accordance with the waste management regulations	Farm Manager	
Unforeseen impacts	Unexpected impacts	Throughoutproject life	Identify unforeseen socio-environmental impacts of the project and propose remedial measures and/or Advise construction contractor regarding unforeseen environmental issues of the Project	Farm Manager	
DECOMMISSIONING AND CLOSURE PHASE					

Ambient Air Quality	Contamination of ambient air with dust	Quarterly	Progressive and natural re-vegetation shall be done and this will protect land from winds and that result into generating of dust.	Farm Manager	

Soil Erosion	To protect the soil from erosion	Quarterly	Storm water drains will be periodically maintained to collect storm water and there by prevent soil erosion	Farm Manager	
			Access roads and the plant periphery will be left with tree sand this will protect soil erosion	Farm Manager	
Land Use	Change of land use	Bi-annual	Demolition of all surface infrastructures, grading and re- profiling of the surface and re-vegetation will be done. If possible land use will change to the original one.	Farm Manager	
Public Safety	Danger to the community from farm equipment	Monthly	All farm equipment removed and infrastructure will be demolished. Areas requiring rehabilitation rehabilitated. Bore holes shall be caped.	Farm Manager	3,000
Landscape and Visual characteristics	Change to landscape and visual characteristics	Quarterly	Demolition of all surface infrastructures, grading and re- profiling of the surface and re-vegetation will change the landscape and visual characteristics	Farm Manager	
Solid Waste	Generation of Domestic Waste	Quarterly	Domestic solid waste will be disposed of at Kongola Clinic and school disposal sites according to the waste management regulations.	Farm Manager	
Sewerage Waste	To protect sewer waste from contaminating the soil and orground water	Quarterly	A septic tank-soak way system shall be used to treat sewer waste	Farm Manager	

DECOMISSIONINGPHASE

Once the Kongola Fresh Produce Pty Ltd reached the decommissioning phase, the closure objective will be restore the farm site to its natural state. This will be a makeshift change over a period of time in order to restore the land to its original state. Kongola farm will be restored to a condition which is safe, stable and minimizes environmental impacts on the flora, fauna, water, and soil and air quality. The area must as a minimum not negatively affect the socio-economic status of the local residents close to the project areas. Other objectives of the closure plan are to:

Protect future human, flora and fauna health andsafety.

Minimize or prevent biophysical and social environmentaldegradation.

As far as practical, return the site to the pre-farming land use (sustainable woodland) or another appropriate alternative,and
Minimize any adverse socio-economic impacts. Generally, closure objectives covering public health and safety, landform (soils) and vegetation will be developed as outlined in the tablebelow.

The Kongola Fresh Produce Pty Ltd intends to undertake their farming project through the 25- year lease as stipulated by the Namibian government land Reform Act no 5 of 2002. All relevant local and regional regulatory bodies such as Namibian Environmental Management commission, Zambezi Regional Council, government departments and other relevant local authorities and/or interested parties will be informed beforehand that Kongola Fresh Produce (Pty) Ltd decides to abandon the implementation of the project for any predicted or unforeseen circumstances. A detailed final closure plan will be submitted for approval to the Ministry of Environment, directorate of Environmental Affairs.

The following sections describe the activities to be undertaken by Kongola Fresh Produce (Pty) Ltd to successfully bring the project to a close enchanting into consideration all the environmental, physical and socio-economic impacts that may arise during this phase.

Dismantling of equipment and farm machinery

All the farm machinery, and auxiliary equipment on site will be dismantled to manufacturer specifications in a well-planned manner in order to avoid contamination of soil, air and water and to eliminate the physical hazards associated with the equipment and machinery to be dismantled and relocated.

Un-installation/ removal of the center pivot

All the components of the center pivots will be dismantled component by component and packed into haul trucks for transportation to another site for alternative use and/or sale. The dam used for storage of irrigation water will be buried and the soil replaced and area re- vegetated.

Removal of pumps and burying of boreholes

The submersible and surface water pumps and all electrical components associated with the

pumps will be disconnected from the power supply and uninstalled. A total of 3 boreholes will be buried to restore the bore sites to their original state while the remaining 2 boreholes will be used as monitoring boreholes for underground contamination for the next two (02) years of the post closure program to be implemented by Kongola Fresh Produce (Pty) Ltd

Movement of re-usable farm machinery

Kongola Fresh Produce (Pty) Ltd does not operates any other ventures in Namibia that will require the use of the machinery relocated from the Zambezi region Farm project. The machinery salvaged from Zambezi region farming units will be moved, lease or sold to an appropriate farming operation that will utilize the equipment.

Demolition of the Farm infrastructure

The administration building, storage, workshop, chemical stores, farm house, workers quarters and other concrete related infrastructure will be demolished accordingly. This will be done systemically in order to recover as much reusable construction material as possible. The rabble resulting from this demolition will be used to level the ground and refill and re-profile the septic tanks and soak away system that will be utilized as a sewerage management facility during theoperation phase. General cleaning of the areas formerly occupied by the demolished structures will be conducted to be coupled with grading and levelling the ground to pave way for treereplanting.

Installation of warning signage and symbols

In order to maintain safety and reduce the risk of physical accidents from trespassers, the areas considered to pose accident risks will have warning signage installed to prevent injury and restrict access to the site. This will also be done for the main access road that traverses through the farm.

CONCLUSIONS ANDRECOMMENDATIONS

Conclusion

Agricultural production has proven itself time and again as a powerful instrument for socio- economic development. Community farming and irrigation projects are important tool in alleviating poverty and providing alternative livelihoods, especially in Namibia’s community areas with a low rate of unemployment. These specific areas have a lot of potential as an agricultural crop production. And there is need for more some irrigation farm establishments that do not only provide economic benefits to the communities but also offer socio-economic benefits to the local communities with minimized ecological impacts. Since the proposed site falls within the Zambezi region which is rated as a second poorest region according to

the regional poverty profile (NPC, 2004) the surrounding communities can only benefit from the proposed agricultural in terms of increased long-term quality of life.

Recommendations

Development related impacts must be prevented or mitigated by implementing strict monitoring and control. All permits and approval must be obtained from the relevant ministries or authorities for the operation of the farm. It is imperative that the mitigation measures as set out in the ESMP be implemented during the planning (layout design) construction and operational phases to prevent unnecessary damage to the natural environmen

The ESMP should be added to all contractors' agreements and be signed by such contractors. The recommendations made in this report places the developer under a legal obligation to ensure that all mitigation measures are implemented and followed through during construction and operation of the farms.

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Advanced Environmental Agency cc Environmental and Management Consultant

REFERENCES

Directorate of Environmental Affairs, 2008. Procedures and Guidelines for Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP). Directorate of Environmental Affairs, Ministry of Environment & Tourism, Windhoek

Legal Assistance Centre (LAC) and the advocacy unit Namibia National Farmers Union (NNFU), 2009. *Guide to the Communal Land Reform Act, 2002. Published by LAC, Windhoek* **Mendelsohn, J. El Obeid, S. And Roberts, C. 1997.***An environmental profile and atlas of Caprivi.* Windhoek: Ministry of Environmental and Tourism.

Mendelsohn, J. Jarvis, A. Roberts, C. and Robertson, T. 2002. Atlas of Namibia. *A portrait of the land and its people.* Published for MET by David Philip.

MET. 1995a. Wildlife management, utilisation and tourism in communal areas. Policy document. Windhoek: Ministry of Environmental and Tourism.

Environmental impact Assesment report.

Simmons, R.E. Barnes K.N., Jarvis, A.M. & Robertson, A. 1999. Important Bird areas in Namibia. research Discussion Paper. DEA, Ministry of Environmental and Tourism.

Tweddle, D. 2009. Integrated Management of Zambezi /Chobe river system – transboundary fishery resource, Namibia/Zambia/Botswana. Final evaluation report. Commissioned by WWF in Namibia, Windhoek, Namibia.

National Agricultural Policy.1995. THE MINSTER OF AGRICULTURE, WATER AND RURAL DEVELOPMENT. White paper. Windhoek

MAWF.2016. Zambeziregionsoilanalysisreport.MinistryofAgriculture,Water&Forestry. Zambeziregion

Food Association Organisation (FAO). 2012. Environmental impact assessment. Guidelines for FAO field projects. Report

Caprivi Project, Bushfire Management retrieved from:

http://www.irdnc.org.na/December 2012 http://www.nationsencyclopedia.com 2016