

ENVIRONMENTAL IMPACT ASSESSMENT FOR THE  
PROPOSED INTEGRATED FARMING ACTIVITIES ON  
FARM AUAS SUD #7, HELMERINGHAUSSEN AREA,  
//KARAS REGION

## Environmental Scoping Report

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# DOCUMENT DESCRIPTION

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**PROJECT NAME:** Establishment, operation and Maintenance of the proposed Integrated Farming Activities on Farm Auas Sud#7, Helmeringhausen area, //Karas Region.

**DOCUMENT TYPE:** Environmental Scoping Report

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## List of Acronyms

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BID	Background Information Document
dB	decibels
DEAF	Directorate of Environmental Affairs and Forestry
EA	Environmental Assessment
EAP	Environmental Assessment Practitioner
ECC	Environmental Clearance Certificate
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
GIS:	Geographical Information System
I&APs	Interested and Affected Parties
IPM	Integrated Pest Management
MAWLR	Ministry of Agriculture, Water and Land Reform
MEFT	Ministry of Environment, Forestry and Tourism
NamWater	Namibia Water Corporation
PPE	Personal Protective Equipment
ToR	Terms of Reference

## i. Project Applicant

The proponent, Mr. Simbarashe Chanduru, intends to apply for an Environmental Clearance Certificate (ECC) for the proposed establishment of integrated horticulture and poultry farming activities on Farm Auas Sud #7, Helmeringhaussen area, //Karas Region.

**Table 1: Details of the project applicant**

<b>Applicant</b>	<b>Mr. Simbarashe Chanduru</b>
Postal Address	P O Box 35347 Kliene Kuppe, Windhoek 3 Weber Street, P O Box 35347
Contacts	+264817489139 <a href="mailto:chandurus@eaztrade.com">chandurus@eaztrade.com</a>

## ii. Environmental Assessment Practitioners (EAPs)

Green Gain Consultants cc was appointed by Mr. Simbarashe Chanduru to facilitate the Environmental Impact Assessment (EIA) process and subsequently apply for an Environmental Clearance Certificate (ECC), in accordance with the requirements of the Environmental Management Act (Act No. 7 of 2007). The Environmental consulting firm boast of professional practitioners in the environmental field, thus offering innovative solutions to environmental issues.

**Table 2: Details of the EAPs**

<b>Name of Firm</b>	<b>Green Gain Consultants cc</b>	
<b>Postal Address</b>	P. O. Box 5303, Walvis Bay	
<b>Phone</b>	+264811422927 or +264813380114	
<b>Email</b>	<a href="mailto:info@greengain.com.na">info@greengain.com.na</a>	
<b>Environmental Assessment Practitioners</b>		
<b>Name</b>	<b>Qualifications &amp; Experience</b>	<b>Responsibility</b>
<b>Mr. Joseph K. Amushila</b>	Master Environmental Management	Lead EAP
<b>Ms. Lovisa Hailaula</b>	Honours Degree: Fisheries and Aquatic Sciences	EAP

# 1. INTRODUCTION AND BACKGROUND

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## 1.1 Overview

The proponent (Mr. Simbarashe Chanduru) intends to subdivide Farm Auas Sud #7 which measures approximately 14 000 ha and utilize about 983 ha for integrated farming activities. These farming activities will interact in a symbiotic and synergetic manner whereby optimizing the use of resources on the farm. The overall objective is to practice soil and water conservation on the farm. The proposed farming activities will be established on the farm in phases over a period of five years. The activities will be integrated to ensure that waste from each activity will be used in other facilities. Conservation agriculture will be practiced with the main emphasis on taking care of the soil and managing water resources. Composting of waste from poultry as well as grass, shrubs and other material will be utilized to produce organic fertilizer for crops.

In accordance with the Environmental Management Act No. 07 of 2007 and its Regulations (GN No.03 of 2012), the proposed activities cannot be undertaken without an Environmental Impact Assessment (EIA) being carried out. Mr. Simbarashe Chanduru appointed Green Gain Consultants cc to undertake the EIA process and apply for an Environmental Clearance Certificate (ECC). The use of an EIA as a management tool in this project would ensure that the proponent complies with local, national, regional, and international environmental laws, standard design codes, promote consultation, and reduce future liabilities, and consequently assist with environmental protection.

The main objective of this EIA is to determine the potential environmental impacts emanating through the phases of the proposed activity. The EIA was conducted in a multidisciplinary approach and followed Namibia's Environmental Assessment process. Relevant environmental data have been sourced from personal observations during site visits as well as from input from stakeholders and interested and affected parties (I&APs) as well as a review of relevant literature and legal instruments.

This is a systematic study of impacts of the proposed project activities on the bio-physical and the socio-economic components of the environment. The EIA study was undertaken to envisage the impacts of the proposed development on the environment and propose mitigation measures that will be incorporated into the project's Environmental Management Plan (EMP). The EMP should be used as an on-site reference document for the operations of the activity. Parties transgressing the EMP should be held responsible for any rehabilitation that may need to be undertaken.

## **1.2 Environmental Assessment Methodology**

In compliance with the Environmental Management Act No.7 of 2007 and the Environmental Impact Assessment Regulations (GN 30 in GG 4878 of 6 February 2012), this EIA study will address environmental, social, and economic issues and concerns of the EIA process. The methodologies adopted for conducting this EIA process are as follows:

### **1. Desktop Research**

Desktop research was used to establish an environmental information database for the EIA process. Accessed materials include books, articles, maps, internet sources, photographs, Geographical Information System (GIS) datasets, and past EIA reports and baseline reports of the area.

### **2. Scoping Phase**

This was done to determine which aspects and impacts to focus on during the assessment phase. The scoping procedure was as follows:

- Identification of key assessments to be done based on project type and scope.
- Identify Interested and Affected Parties (I&APs).
- Publicizing the EIA process and registration of I&APs.
- Distribution of the BID to the I&APs and key stakeholders.
- Public and stakeholder consultation through the various modes of communication, and focal meetings.

### **3. Consultation with Stakeholders**

Experts in relevant fields, leaders in environmental matters, organs of the state and community members have been consulted for their opinions on issues relating to the potential ecological and socio-economic impacts of the proposed project.

This provided an opportunity for stakeholders and the public to engage in the process and to give comments and express their concerns regarding the proposed project. The public participation process component is fundamental to the impact assessment process and is an important informant to the decision-making process. An EMP, will be developed that will address environmental management statements for all the project elements and this forms an integral part of the EIA Report.

### **4. Site screening**

Site screening activities were done prior to the EIA Scoping period to verify and complement information gathered from desktop studies. The fieldwork covered all relevant components of ecological, socio-economic and health components of the environment.



## **5. Impact Assessment and Evaluation**

The assessment of all associated and potential impacts of the proposed project were carried out using the checklist method. The assessment reviews all environmental, social, and economic aspects in relation to applicable policies and regulations were also done and formed the basis upon which the EMP was formulated.

## **6. Assessment of Impacts**

An Impact Assessment matrix was utilized to establish the environmental risk of the overall project, its alternatives, and various components. Mitigation protocols were also established.

## **7. Final Scoping Report and EMP**

The final report will be submitted to MEFT: DEAF for review and the decision will be communicated to the registered I&APs.

## **1.3 Need and Desirability**

The need and desirability of the above-mentioned project is based on the following aspects.

### **1.3.1 The need for integrated farming**

The proposed project presents benefits to the //Karas Region's population offering direct and indirect employment opportunities and capacity building in the receiving communities. Below are various advantages of integrated farming:

- Integrating more than one field of agriculture leads to the proper management of the farm and better utilization of resources.
- Research has found that using integrated techniques uses less energy and produce fewer greenhouse gas emissions per unit of production than conventional farms.
- Alternative land uses produce high volumes of food, and they are more beneficial in terms of overall energy use, and the impact on biodiversity.
- There is an increase in demand for agriculture projects and products in Namibia and the shortfall should be catered for by emerging projects.
- A combination of the best of hydroponics, aquaponic and gardening is a productive way to grow organic vegetables, greens, herbs, and fruits, while providing the added benefits of fresh fish as a safe, healthy source of protein. On a larger scale, it is a key solution to mitigating food insecurity, climate change, groundwater pollution and the impacts of overfishing on our oceans.
- Supplement the provision of government drought relief efforts and contribute to food security in the //Karas region and Namibia as a whole.
- Promote socio-economic development and capacity building through agricultural skills transfer and training

### **1.3.2 Experience of farm owner (proponent)**

The success of this project is highly anticipated given the that the proponent has several years of experience in agriculture and livestock farming.

## 2. PROJECT DESCRIPTION

### 2.1 Project Location

Farm Auas Sud #7 is situated in the //Karas Region, approximately 10 km east of Helmeringshausen, along the D414 that leads to Bethanie as depicted in Figure 1.

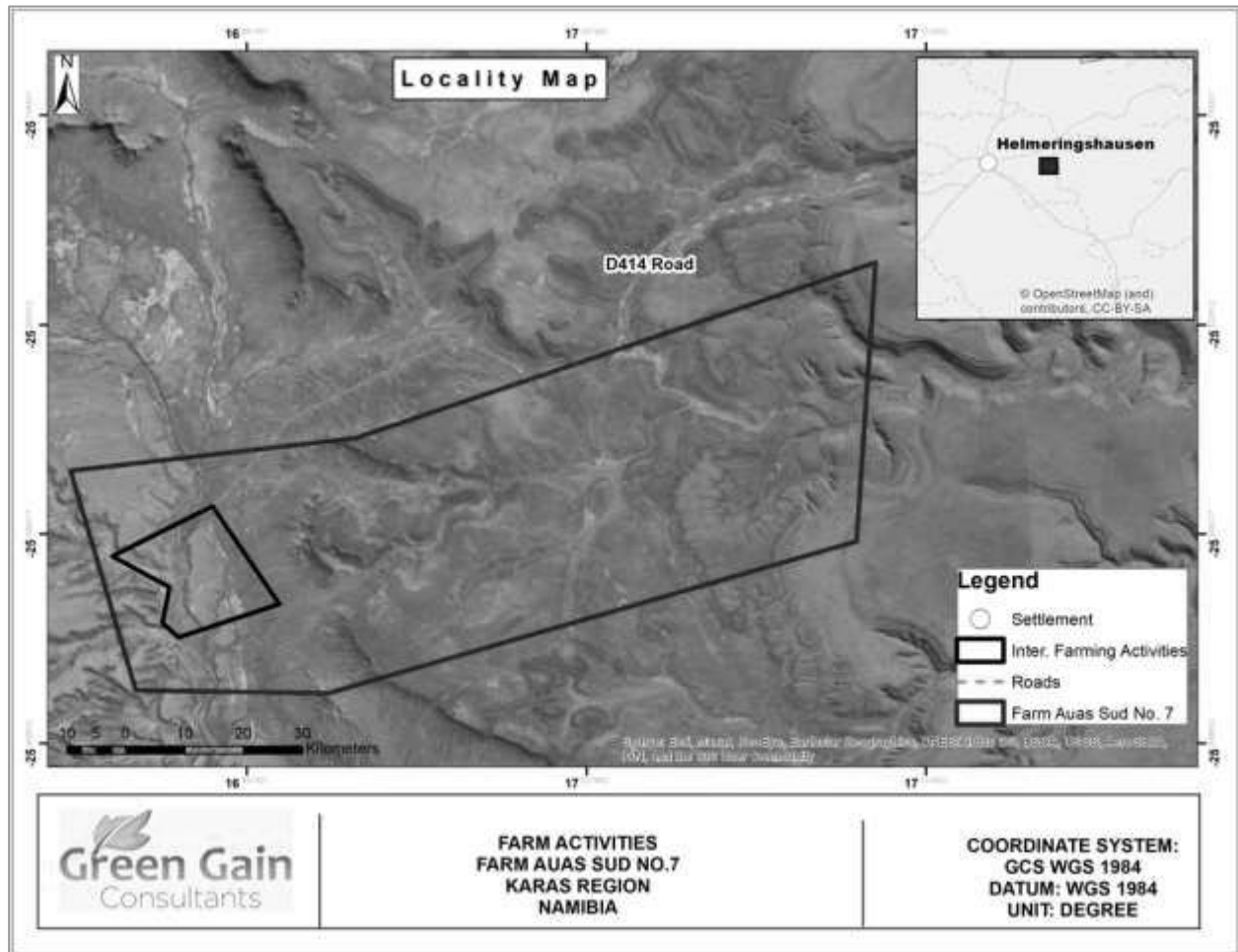


Figure 1: Locality map of Farm Auas Sud 7

## 2.2 Project site description

Farm Auas Sud #7 measures approximately 14 000 ha in extent. The farm will be subdivided into portions (Figure 1), about 983 ha will be utilized for integrated farming activities.



**Figure 2: Photograph of the project site**

The different farming activities will interact in a symbiotic and synergetic manner thereby optimizing the use of resources on the farm. No new land will be sourced nor cleared.

## 2.3 Operation of procedures

Several farming activities as listed below and as depicted below in Figure 2 are proposed to be established on the farm in a phased approach over a period of five years. The activities will be integrated to ensure that waste from each activity will be used up in other facilities. The overall objective is to practice soil and water conservation on the farm. Conservation agriculture will be practiced with the main emphasis on taking care of the soil and managing water resources. Composting of litter from poultry as well as grass, shrubs and other material will be composted to produce organic fertilizer for the crops.

### The proposed farming activities are as follows.

- 20 ha orchard for drought tolerant fruits (mainly prickly pears, aloe vera and nut trees) and these will be incorporated into the existing natural camelthorn trees to create a food forest.
- 0.28 ha greenhouses for vegetables in an intensive aquaponic setup that will use composted plant and animal waste for fertigation.
- 3 ha will be used for growing vegetables under irrigation 1 400 m<sup>2</sup> composting facility.
- 5 000 m<sup>2</sup> for Poultry with unlimited free-range space within the 983 ha.

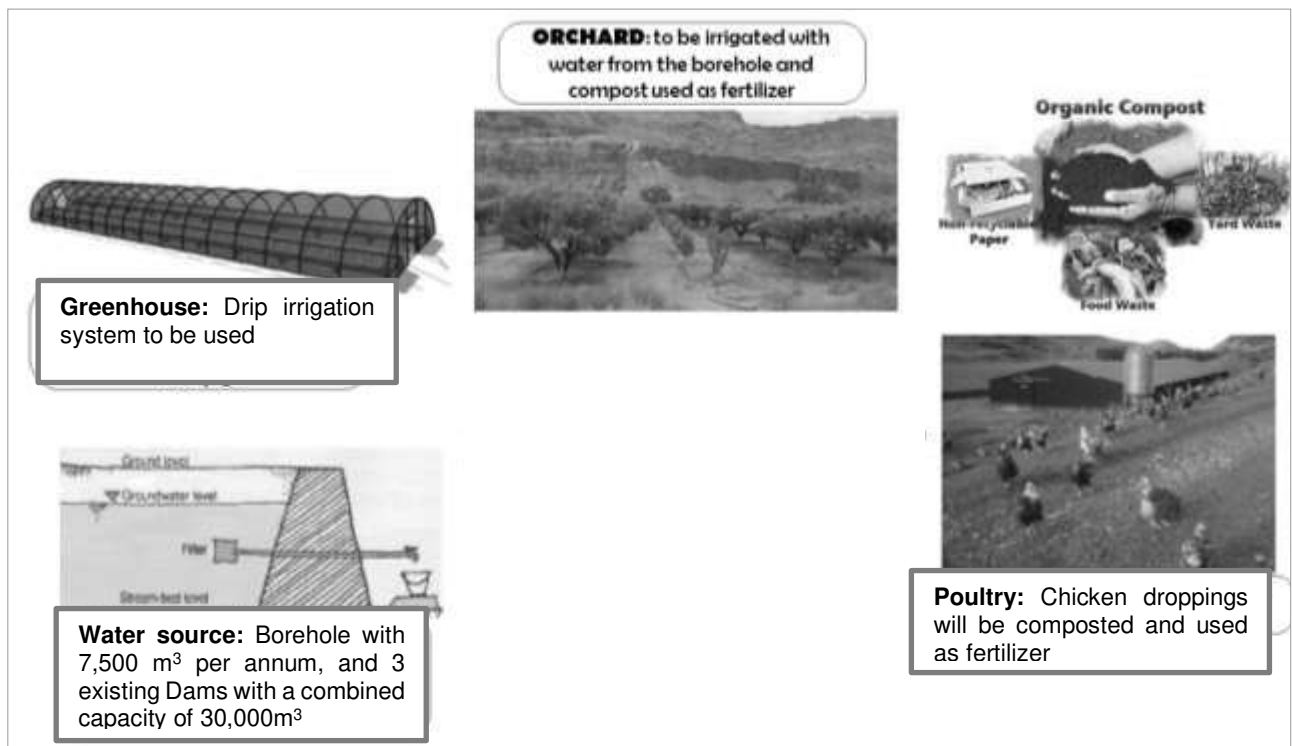


Figure 3: Concept design of the proposed farming activities on Farm Auas Sud No. 7

## 2.4 Water supply

The existing boreholes on the farm will be used to pump all the water that is required for the proposed farming activities. The proponent already has a permit to abstract water for the agricultural activities (Appendix A). According to the geo-hydrology survey that was conducted on the farm (November 2017), the borehole has a yield of approximately 7.5 m<sup>3</sup> per hour. Orchards will be planted between three earth dams on the farm streams each with a surface capacity of 10,000 m<sup>3</sup>. Additional dam capacity is derived from seepage and groundwater recharge below the dams. The proposed farming activities are expected to require approximately 11,000 m<sup>3</sup> of water per annum. Water conservation will be done via the construction of a weir. Water usually flows on top of weir, and they have been used to create ponds in some places.

### **Cultivation**

- **Land Preparation**

Cultivation will include land preparation which comprises the use of tractor implements such as moldboard plough and rippers. Minimum tillage will be practiced to reduce soil damage. The land is already cleared hence there will be minimum clearing activities to be conducted.

- **Irrigation Systems**

Various ways to irrigate fields have been developed and there is no “best” method for all soils, field sizes and crops. The best system at any location will be the one that: can adequately irrigate the fields without wasting water; the farmer can understand and use effectively; is reliable and can be rectified easily if something goes wrong; and environmentally friendly.

Drip irrigation as one of the most advanced irrigation methods will be utilised for this project. Several drip systems made up of various thin plastic pipes with extremely small holes, spaced at prescribed distances from each other over the length of the pipe are available in the market. These holes can be 30 cm to 1 m apart and water drips from each hole at pre-calculated rates to irrigate one or two individual plants at a time. Drip irrigation systems can easily save up to 30% water.

- **Crop Water Requirements**

The amount of water that a plant needs is dependent on many factors, such as the type of crop, age of crop, temperature, humidity, amount of direct sunlight and wind speed. The amount is normally expressed as depth of water in units of mm/day and includes the amount used by the plant and that which evaporates from the soil around the plant. The proposed farming activities are expected to require approximately 11,000 m<sup>3</sup> of water per annum. Water conservation will be done via the construction of a weir. The following situations will however be taken into consideration: if the weather is unusually hot, windy or dry, the crop will use more water; if the weather is unusually cool, damp or cloudy, the crop will use less water; and a young crop may use only half this amount of water.

- **Fertilization**

The project site's soil shows well suited for drought tolerant fruit (mainly prickly pears), aloe vera, nut trees and horticultural crops. Furthermore, the current and future analysis will inform soil correction where required such as N, P, K. There is other subsistence farming in the surrounding area, and it was observed that the harvest was always good. The analysis will then determine the rate of fertiliser requirement and application. The approach for the project will be to use organic fertilizer such as manure and compost as much as possible. Regular soil sample analysis and plant nutrient content analysis must be done to determine how much to apply. The aspects that will be considered in fertilizer application include availability of nutrients in manures and fertilizers, nutrient requirements of crops at different stages of crop growth, time of application, methods of application, placement of fertilizers, foliar application, crop response to fertilizers application and interaction of N, P, and K, residual effect of manures and fertilizers, crop response to different nutrient carrier, and unit cost of nutrients and economics of manuring.

- **The soil Potential of Hydrogen (pH)**

Soils can be acid or alkaline. Soils in the higher rainfall areas (above 600 mm per year) would rather develop acid characteristics, while alkaline soils occur largely in the lower rainfall areas. This would be the common tendency, but it is not always the case as more factors, other than rainfall, might determine soil pH. The soil pH expresses the degree of soil acidity on a scale from 1 (highest acidity) through 7 (neutrality) to 14 (highest alkalinity). Soil pH is of utmost importance in plant growth as it influences nutrient availability, toxicities and the activity of soil organisms. Acidification of soils results in a gradual decline in yields. Some plants are tolerant to acidic soils, but most of them grow better in neutral or slightly alkaline soils. The level of acidity that plants can tolerate is influenced by the supply of available nutrients and moisture. If the pH is too low, i.e. the soil is too acidic, lime could be applied under irrigation circumstances. Although soil pH is a critical factor in determining response of crops to fertilizers, pH is not the factor that adversely affects plant growth. Carefully application for all fertilizer should be considered not just to maximize plant nutrient uptake and crop yield, but also to reduce nutrient losses to the environment. Phosphorus (P) fertilizers pose particularly complex and acute environmental risks.

- **Pesticide use and Weed Control**

Most of the weeding will be done by hand or by mechanical means. However, when the business expands, other methods will be used, of which chemical control will be the last choice. Chemical control is expensive and if not applied properly can place a threat on people and on the environment as well as on animals that might feed on plant residues.

- **Pest Management**

Good pest management practices will be aimed at reducing risks related to both pest and pesticide damage for pesticide users, foodstuffs, consumers, and the environment. This will be done to manage pests to keep them from reaching damaging levels, instead of killing pests as well as natural enemies. Pesticides should be applied in a way that will avoid pesticide resistance developing in the pest population. This will be achieved by rotating between pesticide products of different groups or combining biological control methods with chemical control methods. Overdosing should be avoided at all costs. Improve the production methods by utilising an Integrated Pest Management (IPM). IPM is the integration of available techniques to reduce pest populations and maintain them below the levels that cause economic injury to avoid harmful side effect.

- **Harvesting, Storage and Marketing**

Harvesting will be done to create employment to the surrounding community. The transportation of harvested crops will be done to avoid any leakage and pollution. Storage drums will be strategical located to avoid odour and should be protected to avoid access to surrounding domestic and wild animals. The competition for the project is mainly the Green Scheme Irrigation Farms that produce horticultural products in and around the //Karas Regions. The shortage of local production, however, translates to very little concern regarding competitors.



## 2.5 Project Alternative Assessment

The EIA Regulations stipulates that the EIA process should investigate alternative development options. The following alternatives were considered.

- **No - Go Alternative:** This is a baseline against which all alternatives are assessed. This would essentially entail maintaining the current project status quo. Additionally, the activities may cease to exist which will have a negative economic and social impact on the Farm Auas Sud #7.
- **Land-use Alternative:** The proponent considers this piece of land as the most viable for the proposed activity since the land is owned by the proponent. The area measures approximately 14 000 ha which will be subdivided and only 983 ha will be utilized for integrated farming activities. 2. All farming activities can be accommodated on the land.

# 3. PUBLIC PARTICIPATION

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## 3.1 Overview

Public Consultation forms an important component of the Environmental Assessment process. It is defined in the EIA Regulations (2012), as a “*process in which potential interested and affected parties are given an opportunity to comment on, or raise issues relevant to, specific matters*” (S1). Section 21 of the Regulations details steps to be taken during a given public consultation process and these have been used in guiding our process.

Formal public involvement has taken place via public consultations and focal meetings, newspaper advertisements to inform the public regarding the project. The public consultation process has been guided by the requirements of Environmental Management Act (EMA) No. 7 of 2007 and the process has been conducted in terms of regulation 7(1) as well as in terms of the EMA Regulations of GN 30 of 6 February 2012 and the World Bank EIA standards.

Its overriding goals have been to ensure transparency in decision making and to:

- ✓ Ensure stakeholder concerns are incorporated in project design and planning;
- ✓ Increase public awareness and understanding of the project and
- ✓ Enhance positive development initiatives through the direct involvement of affected people.

The objective of the public participation is to build credibility through instilling integrity and conducting the EIA. Educate the stakeholders on the process to be undertaken and opportunities for their involvement. Build stakeholders by establishing an agreed framework accordingly. This requires accessible, fair, transparent and constructive participation at every stage of the process. Inform stakeholders on the proposed project and associate issues, impacts and mitigation and using the most effective manner to disseminate information.

## 3.2 Notification and Invitations

Potential interested and affected parties (I&APs) were notified through newspaper advertisements and public notices which provided brief information about the proposed project and the EIA process. Public notices were advertised twice in two local newspapers; New Era 19 and 23 September 2022 and the Confidante newspaper for 16 and 23 September 2022 (see Appendix C). Various public notices were also displayed at public notice boards within Helmeringhaussen and at the gate of Farm Auas Sud #7. Residents were also invited by the village headman through the local radio station.

## 4. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

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### 4.1 Overview

The pursuit of sustainability by an organization is operationalized by a sound policy and legislative framework that gives operating parameters within its sphere of operation. An important part of the EIA is identifying and reviewing the administrative, policy and legislative situation concerning the proposed activity, to inform the proponent about the requirements to be fulfilled during the operations, expansion, maintenance and decommissioning of the lifespan of the project.

This section looks at the legislative framework within which the project will operate under. The focus is on the compliance with the legislation during all phases of the project. Relevant legislations, policies and international statutes applying to the project are highlighted in the table below as specified in the Environmental Management Act, 2007 (Act No.7 of 2007) and the regulations for Environmental Impact Assessment as set out in the Schedule of Government Notice No. 30 (2012).

The proposed project will trigger activities listed under the Environmental Management Act, No. 07 of 2007 and its Regulations (No. 03 of February 2012) as stipulated in the table below.

**Table 3: Listed Activity triggered by the project**

Activity	Description of the Activity	Operation of the Activity
<b>Activity 4 Forestry Activities</b>	The clearance of forest areas, deforestation, afforestation, timber harvesting or any other related activity that requires authorization in terms of the Forest Act, 2001 (Act No. 12 of 2001) or any other law.	The project entails planting non-indigenous tree species to amongst existing native species of mostly shrubs.
<b>Activity 8 Water Resource Developments</b>	8.1 The abstraction of groundwater or surface water for industrial or commercial purposes 8.2 The abstraction of groundwater at a volume exceeding the threshold authorized in terms of a law relating to water resources. 8.5 Construction of dams, reservoirs, levees and weirs. 8.7 Irrigation schemes for agriculture excluding domestic agriculture.	Groundwater will be abstracted for irrigation purposes.  Additional water requirements will be met through earth dams and contour ridges that will provide ground water recharge and supplement the borehole if ever needed.

## 4.2 Legal Instruments

Table 4: Legislative, Policy and Administrative Framework

Legislation			Relevant Provisions	Relevance to the Project
<b>Namibian Constitution Amendment Act 34 of 1998</b>	<b>First</b>		<ul style="list-style-type: none"> <li>– “The State shall actively promote and maintain the welfare of the people by adopting policies that are aimed at maintaining ecosystems, essential ecological processes and the biological diversity of Namibia. It further promotes the sustainable utilisation of living natural resources basis for the benefit of all Namibians, both present and future.” (Article 95(I)).</li> </ul>	<ul style="list-style-type: none"> <li>– Sustainable development should be at the forefront of the management of the integrated farming activities.</li> <li>– Through implementation of the environmental management plan, the proponent will ensure conformity to the constitution in terms of environmental management and sustainability.</li> </ul>
<b>Environmental Management Act 7 of 2007</b>			<ul style="list-style-type: none"> <li>– Requires that projects with significant environmental impacts are subject to an environmental assessment process (Section 27).</li> <li>– Requires for adequate public participation during the environmental assessment process for interested and affected parties to voice their opinions about a project (Section 2(b-c)).</li> <li>– Detail’s principles which are to guide all EIAs.</li> </ul>	<ul style="list-style-type: none"> <li>– This Act and its regulations should inform and guide this EIA process.</li> </ul>
<b>EIA Regulations GN 57/2007 (GG 3812)</b>			<ul style="list-style-type: none"> <li>– Identifies and lists activities that cannot be undertaken without an ECC being obtained (GN 29).</li> <li>– Details requirements for public consultation within a given environmental assessment process (GN No 30 S21). [SEP]</li> <li>– Details the requirements for what should be included in a Scoping Report (GN No 30 S8) an EIA report (GN No 30 S15).</li> </ul>	<ul style="list-style-type: none"> <li>– This Act and its regulations should inform and guide this EIA process.</li> </ul>

<b>Pollution and Waste Management Bill (draft)</b>	<ul style="list-style-type: none"> <li>- This bill defines pollution and the different types of pollution. It also points out how the Government intends to regulate the different types of pollution to maintain a clean and safe environment.</li> <li>- The bill also describes how waste should be managed to reduce environmental pollution. Failure to comply with the requirements considered an offence and is punishable.</li> </ul>	<ul style="list-style-type: none"> <li>- The project is being executed in harmony with the requirements of the act to reduce negative impacts on the surrounding environs from waste pollution within regional boundaries.</li> </ul>
<b>Soil Conservation Act 76 of 1969</b>	<ul style="list-style-type: none"> <li>- This act makes provision for combating and for the prevention of soil erosion, it promotes the conservation, protection and improvement of the soil, vegetation, sources and resources of the Republic of Namibia.</li> </ul>	<ul style="list-style-type: none"> <li>- The soil should not be polluted or left unrehabilitated during and after the farming operations cease.</li> </ul>
<b>Atmospheric Pollution Prevention Ordinance, 1976</b>	<p>The Act aims at managing air quality, mineral waste, biodiversity and health and safety.</p>	<ul style="list-style-type: none"> <li>- The pollution of water resources should be avoided during the operations of the activities.</li> </ul>
<b>Water Act 54 of 1956</b>	<ul style="list-style-type: none"> <li>- The Water Resources Management Act 24 of 2004 is presently without regulations; therefore, the Water Act No 54 of 1956 is still in force:</li> <li>- Prohibits the pollution of underground and surface water bodies (S23(1)).</li> <li>- Liability of clean-up costs after closure/ abandonment of an activity (S23(2)).</li> <li>- Protection from surface and underground water pollution</li> </ul>	<ul style="list-style-type: none"> <li>- The pollution of water resources should be avoided during the operations of the activities.</li> </ul>
<b>Water Resources Management Act No. 11, 2013</b>	<p>This Act provides for the management, protection, development, use and conservation of water resources and the regulation and monitoring of water services and for incidental matters. (Department of Water Affairs).</p>	<ul style="list-style-type: none"> <li>- The pollution of water resources should be avoided during the operations of the activities.</li> </ul>
<b>Forestry Act 12 of 2001</b>	<p>-This Act prohibits the removal of any vegetation within 100 m</p>	<ul style="list-style-type: none"> <li>- These provisions should be used as a guideline for</li> </ul>

<b>Nature Conservation Ordinance 4 of 1975</b>	<p>from a watercourse (Forestry Act S22 (1)).</p> <ul style="list-style-type: none"> <li>- Prohibits the removal of and transport of various protected plant species.</li> </ul>	<p>conservation of vegetation.</p>
<b>Labour Act (No 11 of 2007) in conjunction with Regulation 156, 'Regulations Relating to the Health and Safety of Employees at work'.</b>	<ul style="list-style-type: none"> <li>- This act emphasizes and regulates basic terms and conditions of employment, it guarantees prospective health, safety and welfare of employees and protects employees from unfair labour practices.</li> </ul>	<ul style="list-style-type: none"> <li>- The proponent will employ several people from the local and shall ensure securing a safe environment and preserving the health and welfare of employees at work.</li> </ul>
<b>Public Health and Environmental Act, 2015</b>	<ul style="list-style-type: none"> <li>- The Act provides a framework for a structured uniform public and environmental health system in Namibia.</li> <li>- Under this act, in section 119: "No person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health."</li> </ul>	<ul style="list-style-type: none"> <li>- The operations will ensure that there is adequate compliance to the Act through strict compliance to prevention of public hazard nuisance.</li> <li>- It is however imperative to note that the project itself is a positive drive towards preservation and protection of public health.</li> </ul>
<b>National Heritage Act 27 of 2004</b>	<ul style="list-style-type: none"> <li>- Section 48(1) states that "A person may apply to the Namibia Heritage Council (NHC) for a permit to carry out works or activities in relation to a protected place or protected object"</li> </ul>	<ul style="list-style-type: none"> <li>- Any heritage resources discovered would require a permit from the NHC for relocation.</li> </ul>
<b>Convention on Biological Diversity (1992)</b>	<ul style="list-style-type: none"> <li>- Article 1 lists the conservation of biological diversity amongst the objectives of the convention.</li> </ul>	<ul style="list-style-type: none"> <li>- The farming activities should consider the impact it will have on the biodiversity of the area.</li> </ul>

## **5. DESCRIPTION OF THE ENVIRONMENT**

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Baseline information for the proposed project site was reviewed to assess environmental aspects of the area in relation to EIA Scoping process as required by the EMA Act No. 7 of 2007. These includes both the socio-economic aspects and biophysical aspects; these are described in detail below.

### **5.1 Social Environment**

#### **5.1.1 About the town**

Helmeringhausen is a settlement in the //Karas Region located in the Berseba Constituency. It is located 200 km northeast of Lüderitz. According to the NSA, (2011) Berseba Constituency had a population of 10 589 in 2011. Helmeringhausen was founded as a farm by a member of the Schutztruppe, the colonial armed force of Imperial Germany.

#### **5.1.2 Economic activities**

Farming with mutton sheep predominates, while goats and a limited number of cattle are also abundant in the communal farmlands. Farming is generally a difficult enterprise in this landscape and livestock densities are low throughout both regions because of the low vegetation cover and low productivity of farmland. Helmeringhausen does not have an official governing body nor status as it is completely situated on private land, and all infrastructure except the roads are part of Farm Helmeringhausen. It features a small airfield, a country hotel, and a private agricultural museum.

## 5.2 Biophysical Environment

### 5.2.1 Climate conditions

In the southern Kalahari, temperatures can vary by 45°C in one day—on winter nights temperatures can plummet to -14°C, while during the day soar to 30°C, while a cold summer night may drop to 5°C, whereas daytime temperatures may also exceed 45°C. The average evaporation rate of the Aroab area is more than 2,660 mm/year (Mendelsohn, *et al* 2002).

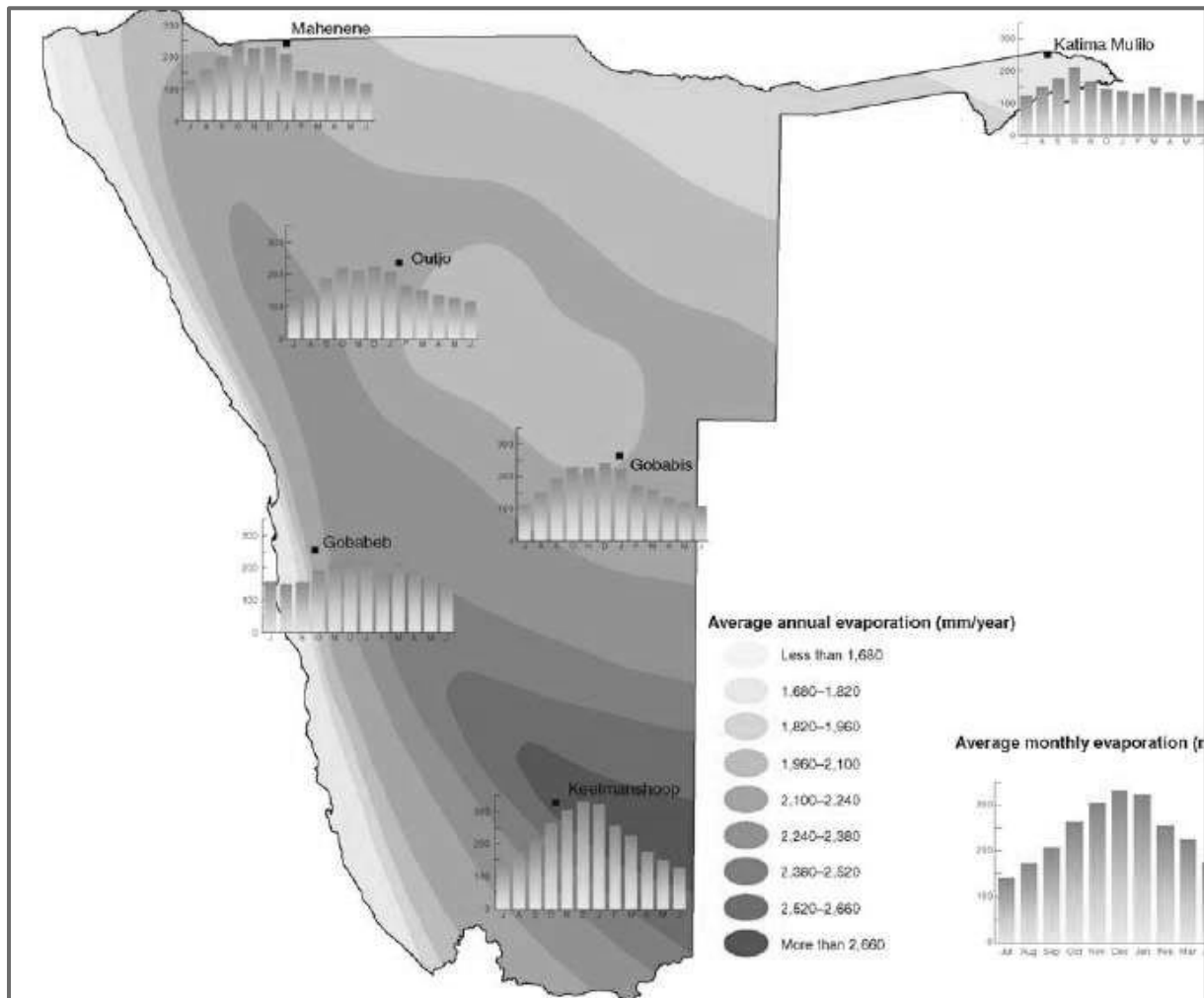
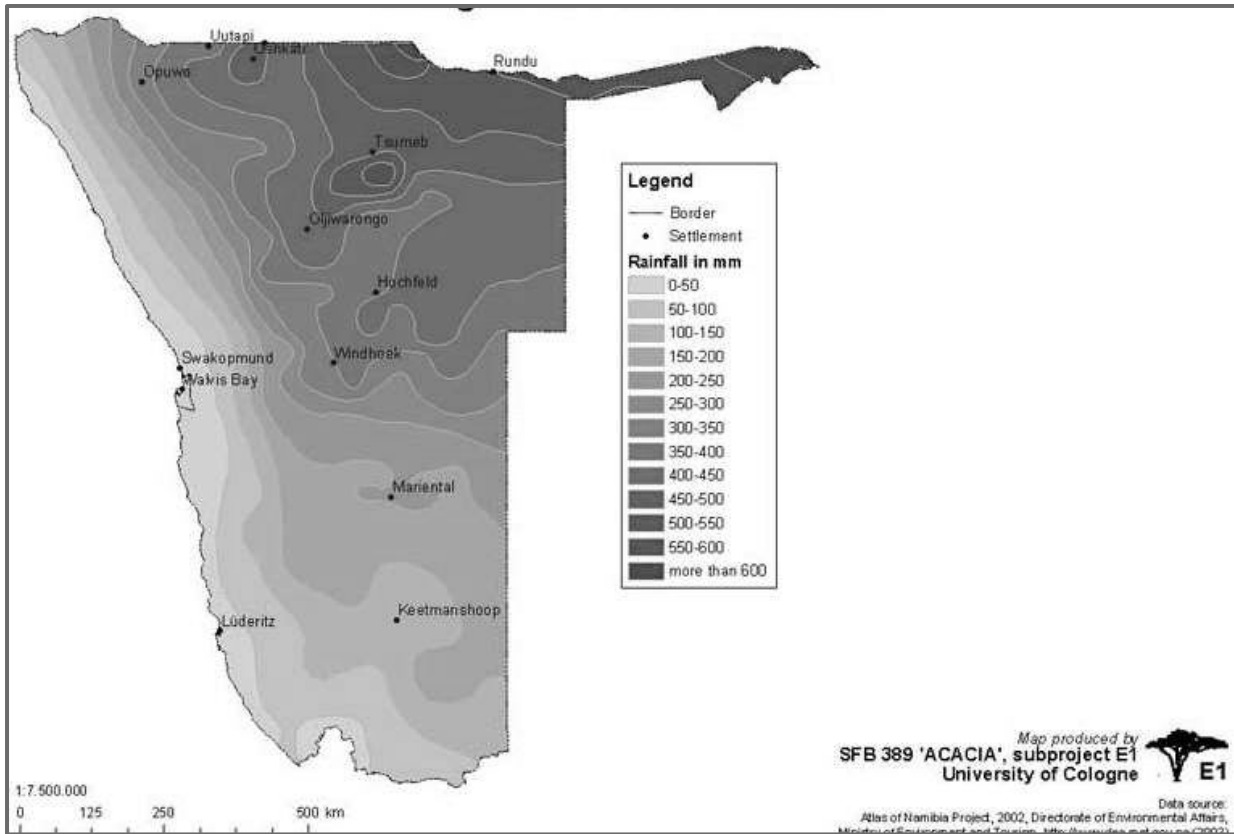


Figure 4: Map depicting the average evaporation rate



Rainfall is remarkably patchy and average annual rainfall is highest in the northeast and lowest in the southwest, ranging between 150 and 200 mm.



**Figure 5: Map depicting the rainfall**



### 5.2.3 Soil

The dominant soil in the area is Kalahari sands which are of the *calcisols* and *leptosols* groups, which is nutrient poor and reddish-brown in colour, except were leached by water (Makhabu SW, et al, 2002). The soil texture ranges from sandy loam to weathered rocky soil.

The soil type is rocky area with limited soils, but the soil is derived from weathering of these rocks. The soil in this area is weakly developed and shallow. Vegetation cover will generally be sparse because the soil will not be able to provide plants with sufficient water or nutrients.

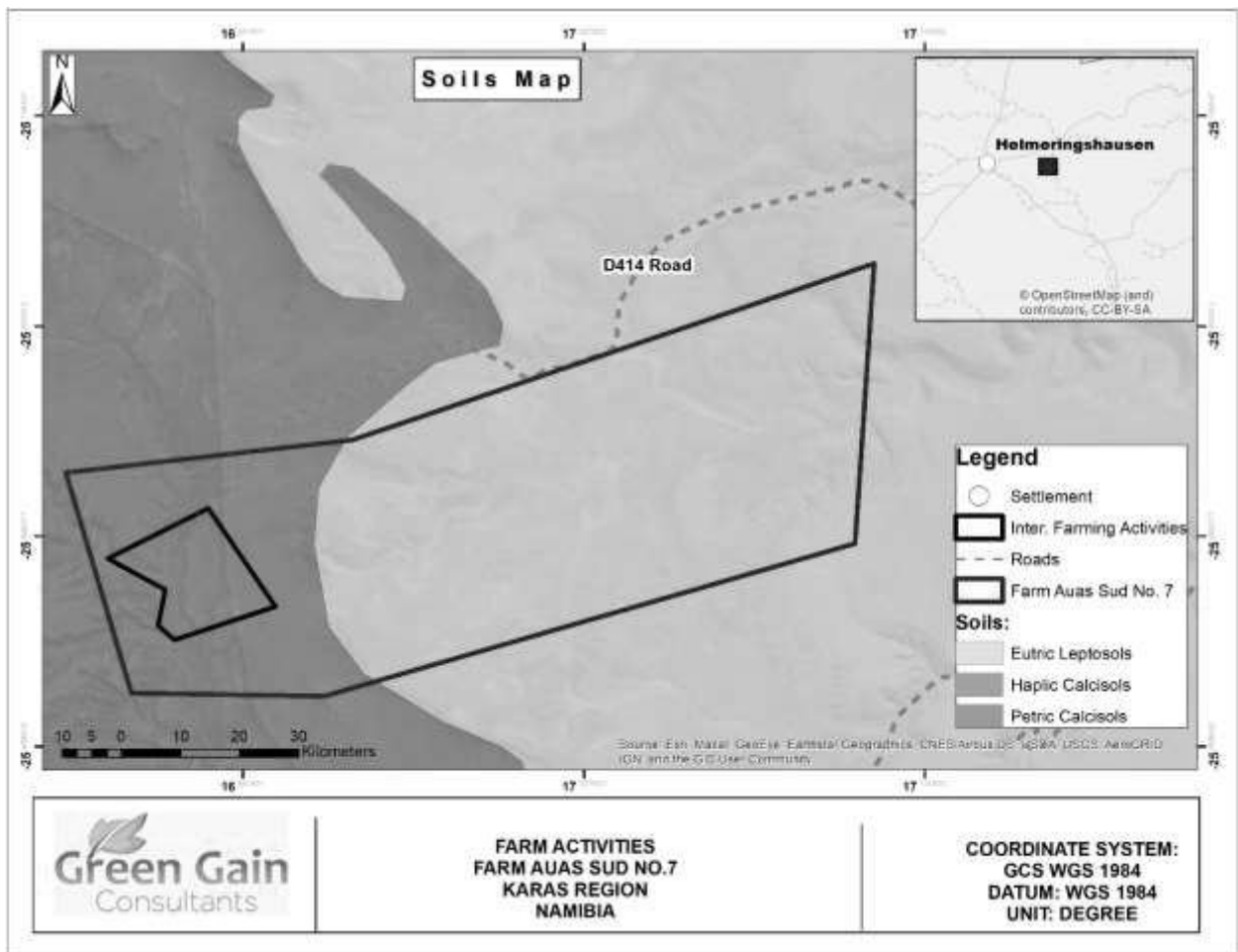


Figure 7: Local soil



## 5.2.5 Fauna and Flora

As a result of low rainfall, vegetation is generally sparse, with few trees and a thin covering of grass. Plant cover varies with rainfall, and so the northern areas of Hardap have more trees and grass than the western, coastal areas. Vegetation is dominated by short shrublands with the Succulent Shrubland getting more prevalent as one moves south-west. Winter rains and the generally arid conditions help contribute to the formation of the Succulent Shrubland, also known as the Succulent Karoo. This vegetation type is unique to southern Africa and has special value because of its high species endemism. The biome is also recognised as one of the biological 'hotspots' of the world and therefore has a global biodiversity significance. Grass production is highly dependent on rainfall resulting in both livestock and wildlife suffering when rains fail.

Larger species include oryx, springbok, the greater kudu and Hartmann's Mountain zebra while smaller antelopes such as klipspringer, steenbok and duiker are also found. After good rains, when there is sufficient grass, gemsbok and springbok are found in large herds of several hundred animals. Carnivores include side-striped jackals, brown hyena, mongoose, bat-eared fox and cats. The Orange River (which fall in //Karas Region but does not form part of the landscape) is rich in birdlife.

# 6. IMPACTS ASSESSMENT

## 6.1 Overview

The EIA Regulations require “a description of the significance of any significant effects, including cumulative effects, which may occur as a result of the undertaking of the activity”. This chapter describes the assessment methodology utilised in determining the significance of the management, location and operational impacts of the integrated farming activities. Mr. Simbarashe Chanduru will implement an Environmental Management Plan (EMP) to prevent, minimise and mitigate negative impacts. The environmental management plan is being developed to address all the identified expected impacts, the plan will be monitored and updated on a continuous basis with aim for continuous improvement to addressing impacts.

## 6.2 Assessment of Impacts

This section sets out the overall approach that was adopted to assess the potential environmental and social impacts associated with the project. To fully understand the significance of each of the potential impacts each impact must be evaluated and assessed. The definitions and explanations for each criterion are summarised in the table below.

**Table 5: Assessment Criteria**

<b>Duration – What is the length of the negative impact?</b>	
None (N)	No Effect
Short (S)	Less than one year
Moderate (M)	One to ten years
Permanent (P)	Irreversible
<b>Magnitude/Intensity – What is the effect on the resource within the study area?</b>	
None (N)	No Effect
Small (S)	Affecting less than 1% of the resource
Moderate (M)	Affecting 1-10% of the resource
High (H)	Affecting greater than 10% of the resource
<b>Spatial Extent – what is the scale of the impact in terms of area, considering cumulative impacts and international importance?</b>	
Local (L)	In the immediate area of the impact
Regional / National (R)	Having large scale impacts
International (I)	Having international importance
<b>Type – What is the impact</b>	
Direct (D)	Caused by the project and occur simultaneously with project activities
Indirect (ID)	Associated with the project and may occur at a later time or wider area
Cumulative (C)	Combined effects of the project with other existing / planned activities
<b>Probability</b>	

<b>Duration – What is the length of the negative impact?</b>	
Low (L)	<25%
Medium (M)	25-75%
High (H)	>75%

Adopted from IFC (2012)

**Table 6: Impact Significance**

<b>Class</b>	<b>Significance</b>	<b>Descriptions</b>
1	Major Impact	Impacts are expected to be permanent and non- reversible on a national scale and/or have international significance or result in a legislative non- compliance.
2	Moderate Impact	Impacts are long term, but reversible and/or have regional significance.
3	Minor	Impacts are considered short term, reversible and/or localized in extent.
4	Insignificant	No impact is expected.
5	Unknown	There are insufficient data on which to assess significance.
6	Positive	Impacts are beneficial

Adopted from IFC (2012)

**Table 7: Environmental Impacts and Aspects Assessment: Establishment Phase**

Potential Impacts	Ratings (before mitigation/measures)				Significance		Mitigation measures
	Extent	Duration	Intensity	Probability	Without measures	With measures	
<p><b>Land-use effects</b></p> <p>Loss of vegetation through site clearance.</p> <p>Loss of topsoil due to exposure during construction works</p>	1	1	1	1	4	2	<ul style="list-style-type: none"> <li>✓ No vegetation clearance is expected</li> <li>✓ Soil excavation is minimal</li> </ul>
<p><b>Dust and Noise</b></p> <p>To be generated from works might constitute to a nuisance. This will be limited to project site.</p>	1	1	1	1	4	2	<ul style="list-style-type: none"> <li>✓ Work should be limited to daytime hours.</li> <li>✓ Provide measures to control dust, noise.</li> </ul>
<p><b>Waste generation</b></p> <p>The clearing of the land and set-up of facility will generate waste.</p>	2	1	1	1	5	3	<ul style="list-style-type: none"> <li>✓ Building rubble and other general waste should be disposed of appropriately at Berseba disposal site.</li> <li>✓ Steel and metals should be taken to local Scrapyards in the nearest town if any.</li> </ul>
<p><b>Soil contamination</b> from spills and leaks of lubricants and oil from vehicles, machinery, and equipment.</p>	1	1	1	2	5	3	<ul style="list-style-type: none"> <li>✓ All Vehicles and Machinery with leakage should be provided with drip trays.</li> <li>✓ Contaminated sand must be cleaned up and disposed of appropriately at the nearest dumpsite.</li> </ul>
<p><b>Safety and health hazards</b></p> <p><i>The safety of the community living in proximity of the site and the employees could be compromised by workplace hazards.</i></p>	2	1	1	1	6	4	<ul style="list-style-type: none"> <li>✓ Erect warning signs at the construction work site.</li> <li>✓ The site should be fenced off and out of bound.</li> <li>✓ All employees should be equipped with appropriate PPE.</li> <li>✓ Prohibition signs and access restricted should be displaced at the site.</li> </ul>



**Table 8: Environmental Impacts and Aspects Assessment: Operation Phase**

ASPECT	POTENTIAL IMPACTS	SIGNIFICANCE (IF IT DOES OCCUR)					MITIGATION MEASURES
		Extent	Duration	Intensity	Probability	Overall significance (with mitigation)	
<b>Impacts on Biodiversity</b>	<ul style="list-style-type: none"> <li>The orchard might attract new pest and crop diseases in the area</li> </ul>	1	4	1	1	Low	-Only local cultivars will be used. -The use of exotic varieties is subjected to approval from MAWLR  -The project will use organic fertilizer  -The planted trees will contribute to ecosystem service of the area.
	<ul style="list-style-type: none"> <li>Use of some pesticides which contains POP might cause serious impacts to the local biodiversity (flora and fauna).</li> </ul>	1	1	1	1	Low	
	<ul style="list-style-type: none"> <li>The orchard will attract fauna such as, bees, birds for feed, pollination, and nest etc.</li> </ul>	1	4	2	2	<b>Low (Positive)</b>	
<b>Impacts on Freshwater</b>	<ul style="list-style-type: none"> <li>Irrigation water containing fertilizer and pesticides could contaminate surface runoff and nearby water sources.</li> </ul>	1	1	1	1	Low	-Only organic fertilizer will be used  -Drip irrigation system will be used as it contribute to water conservation -The project will also harvest water from surface runoff, thus will not rely entirely on groundwater.
	<ul style="list-style-type: none"> <li>Use of freshwater for other project activities could increase water demand</li> </ul>	1	1	1	1	Low	
<b>Impacts on Groundwater</b>	<ul style="list-style-type: none"> <li>Use of pesticides and other chemical could enter groundwater through soil or surface runoffs.</li> </ul>	1	1	1	1	Low	-Only organic fertilizer will be used -Ensure groundwater monitoring on the downstream every year. -Ensure soil quality testing annually

<b>Impacts on the Topography and drainage</b>	<ul style="list-style-type: none"> <li>Cultivation in the main drainage lines might affect the natural storm water flow.</li> </ul>	1	1	1	1	Low	<ul style="list-style-type: none"> <li>✓ Avoid drainage lines and slope areas</li> <li>✓ Provide channels for storm water flows.</li> <li>✓ Natural drainage maybe diverted for any reason</li> </ul>
<b>Impacts on local soil and ecology</b>	<ul style="list-style-type: none"> <li>Loss of topsoil during cultivations</li> </ul>	1	2	1	1	Moderate	<ul style="list-style-type: none"> <li>✓ Cultivate land against the slope to prevent erosion.</li> <li>✓ Only organic fertilizer will be used</li> <li>✓ Provide erosion works to prevent excessive soil erosion by water.</li> </ul>
	<ul style="list-style-type: none"> <li>Soil contamination with nutrients, fertilizer, pesticides or untreated wastewater.</li> </ul>	1	1	1	1	Low	<ul style="list-style-type: none"> <li>✓ Soil quality testing for pH, nutrients, EC every year before growing season.</li> <li>✓ Do not apply untreated wastewater in the field</li> <li>✓ Check level of Chlorine regularly</li> </ul>
	<ul style="list-style-type: none"> <li>Contamination of soil from oil spillage from operating machinery and equipment.</li> </ul>	1	1	2	1	Moderate	<ul style="list-style-type: none"> <li>✓ All machineries must be serviced regularly.</li> <li>✓ No machinery with leaking engines may be parked for too long at the site</li> <li>✓ Provide maintenance workshop with covered floors where servicing and engine overhauling should take place.</li> </ul>
<b>Impacts on Geology</b>	<ul style="list-style-type: none"> <li>Disturbance of geotechnical of the soil during cultivation.</li> </ul>	1	1	1	1	Low	<ul style="list-style-type: none"> <li>✓ Only cultivate at given depth (0.5m).</li> </ul>
<b>Waste generation</b>	<ul style="list-style-type: none"> <li>Generation of waste (garden refuse, domestic</li> </ul>	1	1	1	1	Low	<ul style="list-style-type: none"> <li>✓ Garden waste and animal waste to be composted and used as fertilizer</li> </ul>

	waste) could cause pollution.						✓ General waste should be collected and disposed of at municipal dumpsite. ✓ Provide sanitation which has septic tank or connected to the sewage system.
<b>Land use effects</b>	• Inappropriate use of pesticides or fertilizers could decrease quality of the soil.	1	1	1	1	Low	✓ In case of chemical control, only use environmentally friendly products. ✓ Conduct soil testing at beginning of growing season
<b>Impact of migrant workers</b>	• Spread of HIV diseases and other social impacts i.e. causal relationship.	1	4	1	1	Low	✓ Project to employ local people
<b>Increase in crime rate in the area</b>	• Project facilities could attract criminals	1	1	1	1	Low	✓ Inevitable impact and not only limited to the project. Provide security.
<b>Employment opportunities</b>	• Direct and indirect job opportunities	2	3	3	3	High	✓ Positive impact
<b>Economic benefits</b>	• Income generation and contribution to GDP	4	3	2	2	High	✓ Positive impact
<b>Provision of feed supply</b>	• The project will ensure a good supply of quality fodder at an acceptable standard.	3	3	3	3	High	✓ Positive impact

## **6.3 Mitigation Measures**

There is a mitigation hierarchy of actions which can be undertaken to respond to any proposed project. These cover avoidance, minimization, restoration, and compensation. When negative impacts occur then the recommended potential mitigation measures be followed.

### **a) Impact on Fauna and Flora**

Prevent contractors from collecting wood, veld food during the construction phase. Keep individual trees/shrubs not directly affecting the project. Fencing should allow the for smaller animals to enter and move freely into and out of the periphery of the site.

### **b) Surface Water Impact**

It is recommended that construction takes place before or after the rainy season to limit flooding on site and surface water pollution. No dumping of waste products in and in proximity to the surface water bodies. Heavy construction vehicles should be kept limited to the existing roads and tracks. Drip trays must be placed underneath all construction vehicles when not in use to contain all oil that might be leaking from these vehicles. During operation, contaminated runoff from the various activities should not allowed to enter any surface water bodies and should be properly managed. Ensure that surface water accumulating on site is channeled and captured through a storm water management system to be treated in an appropriate manner before disposal into the environment.

### **c) Ground Water Impacts**

Contaminated runoff from the construction sites should be prevented from entering the ground water bodies. Disposal of waste from the sites should be properly managed and disposed off properly. There should be ablution facilities available for construction workers and should not allow any possible contact with ground water resources. Washing of personnel or equipment should not be permitted on site. Ensure regular inspections and maintenance of equipment.

### **d) Soil Impacts**

It is recommended that construction takes place before and after rainy season to limit possible flooding and the runoff loose soil possibly causing erosion. Appropriate erosion control structure must be put in place where soil may be prone to erosion. Any evidence of erosion, investigations must be carried out at regular intervals to identify areas when it is occurring.

### **e) Heritage Impacts**

There is no major historical activity known to have taken place in proximity to the project site. The proponent should however contact the National Heritage Council of Namibia in events of finding archaeological items.

#### **f) Health, Safety and Security Impacts**

No personnel should overnight on site, except the security personnel. Ensure that all personnel are trained depending on the nature of their work. Provide first aid kit and properly train personnel to apply when necessary. Restrict unauthorized access to the site and implement access control measures. The contractor must comply with all application occupational health and safety requirements. The personnel should be provided with all necessary Personnel Protective Equipment. Health programs should be initiated to raise awareness on health issues such as sexually transmitted diseases and Covid-19. No go areas should be clearly demarcated. Visitors and personnel on site must be fully aware of all health safety measures and emergency procedures.

#### **g) Traffic Impacts**

Limit and control the number of access roads to the site during construction. All road users should adhere to the speed limit. Traffic control measures and signage should be implemented where necessary. Construction vehicles should be in a road worthy condition and maintained throughout the construction phase.

#### **h) Noise Impacts**

No loud music should be allowed on site and all areas where noise levels are above 85 dB should be managed and controlled in accordance with the Labour Act. Limit construction work time to acceptable daylight hours e.g., 08H00 – 17H00. Immediate neighbours should be informed regarding the construction activities before commencement. Install technology such as silencers on construction machinery. Monitoring of noise levels should be conducted to make sure noise levels do not exceed acceptable limits.

#### **i) Dust and Emission Impact**

Construction vehicles should only use the demarcated roads and tracks. No construction work should be done when there are high wind conditions. Cover any stockpiles with plastics to minimize windblown dust. Provide personnel with appropriate Personnel Protective Equipment such as dust masks. The air quality in the area is good, nonetheless during operations emissions may result from the movement of vehicles. These are however expected to have insignificant impacts when properly managed.

#### **j) Land Use Impact**

Maintain the grass and small shrubs found on site to blend in the existing subsistence farming activities ongoing in the area.

### **k) Visual Impact**

All structures on site should be aesthetically pleasing and compatible to the surrounding landscape.

### **l) Existing Services Infrastructure**

The project will make use of existing infrastructure regarding water and electricity. Electricity demand for the activities will be provided by Southern Regional Electricity Distributer. An existing borehole on the farm will be used to pump all the water that is required for the proposed farming activities. All required permits will be secured from the relevant authorities.

### **m) Social Impact**

The project is expected to be the main economic driver in the village and surroundings. It is expected to provide job opportunities during the construction and operational phases targeting the locals. The operational lifespan of the project is not yet determined. The project will also harness business opportunities, skills development and on the training.

### **n) Cumulative Impact**

If all proposed mitigation measures brought forward are considered, this can minimize the overall impacts. Hence, the cumulative impacts can be expected as minor for the construction, operations, and decommissioning of the integrated farming activities.

# 7. CONCLUSION AND RECOMMENDATIONS

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## 7.1 Conclusion

The objective of the Scoping phase of the EIA study was to define the range of the environmental impact assessment and to determine the need to conduct any specialist study. It is believed that this objective has been achieved and the study can be concluded at the Scoping level.

## 7.2 Recommendations

To ensure a healthy and safe environment during the operations of the project and its environs, a plan for environmental management must be instituted through monitoring. Recommendations are stipulated below, as follows:

- Ensure health & security provision for personnel.
- The guidelines outlined in the EMP should be abided to during the construction, operations and possible decommissioning of the project.
- Appoint an Environmental Control Officer (ECO) to oversee the project implementation and conduct regular monitoring of the project activities
- Prepare Quarterly reports and submit to the Ministry of Environment, Forestry and Tourism.

Thus, it is recommended that the Environmental Commissioner considers issuing the Environmental Clearance Certificate for the proposed **“Establishment, operation, and maintenance of the proposed Integrated Farming Activities on Farm Auas Sud#7, Helmeringhausen area, //Karas Region.**

## 8. LIST OF REFERENCES

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## **9. APPENDICES**

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- 9.1 Appendix A: List of I&APs**
- 9.2 Appendix B: Water Abstraction Permit**
- 9.3 Appendix C: Proof of Consultation**
- 9.4 Appendix D: EMP**

**APPENDIX A: LIST OF I&APS**

ORGANISATION	REPRESENTATIVE AND TITLE	CONTACT DETAILS
<b>Proponent</b>	Mr. Simba Chanduru	0814406573 <a href="mailto:chandurus@gmail.com">chandurus@gmail.com</a>
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	Karas Regional Office	Tel: +264 63-222868
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