

**Draft Environmental Management Plan (EMP)**

**The Proposed Once-off Charcoal Production, Construction and Operation of a Horticulture, Poultry Production and Lucerne Production in Outjo Town, Kunene Region**



**ECC Application No.:**

**APP-002388**

**Document Version:**

**Draft as prescribed by Regulation 8(j) of the EIA Regulations (2012) – It is a living document that can be updated throughout the project cycle, as deemed necessary**

**Proponent:**

**Khoi Roots Farming CC**


**P. O. Box 10382 Khomasdal Windhoek**

**April 2024**

**DOCUMENT INFORMATION**

Title: Draft Environmental Management Plan (EMP) for the Proposed Once-off Charcoal Production, and Construction and Operation of a Horticulture, Poultry Production and Lucerne Production in Outjo Town, Kunene Region

**Prepared by:**

<b>Author:</b>	<b>Fredrika N. Shagama (Hydrogeologist &amp; Environmental Consultant / EAP*)</b>
<b>Qualifications:</b>	<p><b>PhD. Student: Civil Engineering (Geotechnics &amp; Hydrogeology)</b>, VSB - Technical University of Ostrava, Czech Republic</p> <p><b>MSc. Geological Engineering</b> (<i>cum laude</i>) with primary focus in Hydrogeology, VSB - Technical University of Ostrava, Czech Republic</p> <p><b>BSc. Geological Engineering</b>, VSB - Technical University of Ostrava, Czech Republic</p>
<b>Professional Affiliations:</b>	<p>International Association of Hydrogeologists (IAH) - Full Member, Membership No.139790</p> <p>Namibian Hydrogeological Association (NHA) – Member</p> <p>Environmental Assessment Professionals of Namibia (EAPAN) - Ordinary Member Practitioner (Membership No. 183)</p>
<b>Contact Details:</b>	<p>Mobile: +264 81 749 9223</p> <p>Email: <a href="mailto:eias.public@serjaconsultants.com">eias.public@serjaconsultants.com</a></p> <p>Postal Address: P. O. Box 27318 Windhoek, Namibia</p>
<b>Signature:</b>	
<b>Date:</b>	15 April 2024

**EAP\* - Environmental Assessment Practitioner**

**SERJA' STATEMENT OF INDEPENDENCE**

As the Appointed Environmental Consultant to undertake the EIA Study and prepare this Environmental Management Plan (EMP) for the proposed Once-off Charcoal Production, and subsequent construction and operation of a Horticulture, Poultry Production and Lucerne Production in Outjo Town, Serja Hydrogeo-Environmental Consultants cc declare that we:

- do not have, to our knowledge, any information or relationship with Khoi Roots Farming (the Project Proponent) or the Ministry of Environment, Forestry and Tourism (MEFT)'s Department of Environmental Affairs and Forestry (DEAF) that may reasonably have potential of influencing the outcome of this EIA Study (EMP) and the subsequent Environmental Clearance Certificate applied for.
- have knowledge of and experience in conducting environmental assessments, the Environmental Management Act (EMA) No. 7 of 2007 and its 2012 Environmental Impact Assessment (EIA) Regulation as well as other relevant national and international legislation, guidelines, policies, and standards that govern the proposed project as presented herein.
- have performed work related to the ECC application in an objective manner, even if the results in views and findings or some of these may not be favorable to the Proponent.
- have complied with the EMA and other relevant regulations, guidelines and other applicable laws as listed in this document.
- declare that we do not have and will not have any involvement or financial interest in the undertaking/implementation of the proposed project, other than remuneration (professional fees) for work performed to conduct the EIA and apply for the ECC in terms of the EIA Regulations' requirement as an Environmental Assessment Practitioner (EAP).

**Disclaimer:** Serja Hydrogeo-Environmental Consultants will not be held responsible for any omissions and inconsistencies that may result from information that was not available at the time this document was prepared and submitted for evaluation.



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**Signature:**

Fredrika N. Shagama: Principal Environmental Assessment Practitioner & Hydrogeologist

**Date:** 15 April 2024

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## LIST OF ABBREVIATIONS

CAoN:	Charcoal Association of Namibia
DAEES:	Directorate of Agricultural Extension and Engineering Services
DEAF:	Department of Environmental Affairs and Forestry
DWA:	Department of Water Affairs
EA:	Environmental Assessment
EAP:	Environmental Assessment Practitioner
EAPAN:	Environmental Assessment Professionals of Namibia
ECC:	Environmental Clearance Certificate
EIA:	Environmental Impact Assessment
EMA:	Environmental Management Act
EMP:	Environmental Management Plan
GG:	Government Gazette
GN:	Government Notice
MAWLR:	Ministry of Agriculture, Water and Land Reform
MEFT:	Ministry of Environment, Forestry and Tourism
MME:	Ministry of Mines and Energy
NCA:	Namibia Charcoal Association
NHC:	National Heritage Council (NHC) of Namibia
PPE:	Personal Protective Equipment
Reg, S:	Regulation, Section

# 1 INTRODUCTION

## 1.1 Project Background and Location

Khoi Roots Farming CC (hereinafter referred to as the *Proponent*) intends to carry out a once off charcoal production (from debushed area of the project footprint), establish and operate a horticulture, poultry and Lucerne production on a 20-hectrate (Ha) piece of land on the northern Townlands of Outjo Municipality in the Kunene Region. The locality map of the proposed project site is shown in Figure 1-1.



**Figure 1-1: Locality of Khoi Roots Farming site in Outjo, Kunene Region**

The proposed project follows the footsteps of the Government of Namibia’s aims and objectives to ensure agriculture productivity and food security as part of the Green Scheme Policy, “to maximise. Irrigation opportunities for agriculture productivity and social development around wetlands” and in line with Vision 2030 strategy.

## 1.2 Purpose of the Draft Environmental Management Plan (EMP)

The Draft EMP is developed in accordance with Regulation 8(j) of the EIA Regulations (2012) that it should be included as part of the Environmental Assessment (EA) Scoping report. A '**Management Plan**' is defined as:

*"...a plan that describes how activities that may have significant environments effects on the environment are to be mitigated, controlled and monitored."*

An EMP is one of the most important outputs of the EA process as it synthesizes all the proposed management & mitigation and monitoring actions, set to a timeline and with specific assigned responsibilities. It provides a link between the impacts identified in the EA process and the required mitigation measures to be implemented to manage project impacts. It is important to note that an EMP is a statutory document and a person who contravenes the provisions of this EMP may face imprisonment and/or a fine. This EMP is a living document and can be amended to adapt to address project changes and/or environmental conditions and feedback from compliance monitoring.

The EMP is therefore aimed at guiding environmental management throughout the three main phases of the proposed project activities, namely: planning and design, debushing (once-off charcoal production), construction (project establishment), operational and maintenance and decommissioning phases:

- **Planning and Design phase** – Preparation of all the administrative and technical requirements needed for the construction works. The planning would entail obtaining the necessary permitting and authorization from relevant national and local stakeholders, facilitating the recruitment and procurement processes, etc., in preparation of the establishment (construction) phase.
- **Debushing and charcoal production** – this is the stage which will precede the site establishment for the full construction phase, whereby the site will be debushed (removal of the vegetation from the projects' footprint or demarcated area) and the 1-2 tons of charcoal will be produced from the removed vegetation. The production of charcoal will be done at the nearest established willing charcoal producer in the area and not onsite. The once-off charcoal production will end by the end of this phase. Some of the removed vegetation will be used to fence the project site.
- **Site preparation and construction phase** – The stage during which the site is prepared for construction activities and actual construction works are carried out onsite (erection of the project structures and associated installation of supporting services and infrastructures).
- **Operation and maintenance phase** – the phase during which the proposed activities, i.e., horticulture, poultry and Lucerne production are carried out and the project' structure and infrastructures are operational. Khoi Roots Farming will be responsible for the maintenance of the site and its associated facilities (structures and infrastructures) as deemed necessary or specialized maintenance works will be outsourced to an external specialist contractor, when needed.

## 2 BRIEF DESCRIPTION OF THE PROPOSED PROJECT ACTIVITIES

According to the Proponent, the project aims to produce once-off charcoal during the very early stage of the project, produce tomatoes, eggs and expand to various crops and Lucerne production in the future.

As part of the site clearing, the Proponent will debush the 20 hectares of the proposed project land. The wood from the debushed area will be used for a once-off charcoal production. It should be noted that the trees (vegetation) onsite experienced veld fire about 3 years ago, thus, they exhibit signs of burning as shown in Figure 2-1 below. It is believed that some local residents of the Town have been doing their own charcoal production on the area. About 1 ton of charcoal will be produced from the wood of the debushing (removed vegetation). However, it is important to note since the proposed charcoal production will be a once-off activity, the production of charcoal will not be done onsite. Khoi Roots farming will enter into an agreement with a nearest established charcoal producer in the area to produce the charcoal from the vegetation removed from the project site on their behalf. The charcoal will be packaged, loaded into containers and transported for sale.



**Figure 2-1: Some photos taken from the project site with areas visibly suffered from past veld fires**

About one (1) hectare (1Ha) of the site will be irrigated to grow tomatoes. Furthermore, a chicken farm accommodating about six-hundred (600) chickens will be established onsite to produce eggs.

In the subsequent years of the project, Khoi Roots Farming intends on starting Lucerne production onsite on the 5Ha of the site land.

The project phases anticipated for the proposed project are presented herein.

### 2.1 Planning and Design

This is the phase during the Proponent will finalize all the technical designs and plans as well as financial aspects of the project in prepared for construction.



Once the ECC is issued and the Khoi Roots Farming is already for site establishment, construction will commence. The Proponent will also first obtain a permit to debush the site for charcoal production from the nearest MEFT's Directorate of Forestry office.

It is during this stage that after the ECC has been issued, there will be official meetings to set up monitoring schedules and implementation strategies. This will be done for a period of one week.

## **2.2 Construction**

This phase involves the site preparation and construction of the project infrastructures, structures and services by the appointed construction contractor. The anticipated structures to be erected onsite, upon fencing of some site areas (about 2Ha for administration and egg run spaces) will include:

- Fenced area gate
- Chicken coop and associated facilities
- Ablution facilities
- Temporary administration structure (office)
- Movable living quarter (shack) of the workers
- Equipment storage rooms
- Irrigation pumps
- Drilling of site borehole
- Installation of services such as water tanks, solar energy equipment and sewage lines.

### **2.2.1 Duration of Construction and Site Preparation Activities**

Construction works are anticipated to take about seven (7) months and will be limited to weekdays and normal working hours (8am and 5pm). The breakdown of activities and durations are as follows:

- Debushing: 3 to 4 weeks
- Once-off charcoal production (offsite): sorting of woods, implement charcoal production requirements and compliance on space used for production, produce the charcoal, package charcoal and load it in containers to sell) : undetermined
- Fencing (land division, hole digging, pole erection, wiring and gate installation): 3 to 4 days
- Borehole drilling and set up (transporting of borehole equipment to site, borehole drilling, testing/pump testing, installation and development): 1 week

- Water tank installation (setting up of two 10,000-litre water storage tanks): 1 day
- Laying of concrete slab, setting up movable living quarters and solar system installation: 1 week
- Egg run (construction of chicken coop, equipment installation and ordering of chickens and feed): 1 to 2 weeks and 1 month to order chicken and their feeds.
- Soil Preparation for irrigation (soil preparation, adding fertilizer, and nutrients, sowing of tomatoes and installation of irrigation systems) : 2 to 3 weeks
- Lucerne production preparation (source funds): unknown period as it is scheduled for later years (in future).

### 2.2.2 Required Resources and Services

The following services and infrastructure as provided below will be required for the project activities:

- Human resources: During the construction and operation of the proposed project, about twenty (20) and fifteen (15) people will be employed, respectively. However, the number may vary depending on the actual works onsite.
- Accommodation: During the construction of the proposed project, workers will be accommodated in the Outjo Town (local employees will be commuting from their homes). Therefore, no onsite accommodation is required for construction workers. For the operational phase, there will be a movable structures to accommodate some of the workers who would be required to be onsite at all times.
- Administration and Control: A movable (temporary) structure that will serve as an administration office will be erected onsite.
- Water supply: since a small amount of water will be required for site establishment and construction works such as concrete mixing and foundation laying as well as drinking, this will be sourced from the Town' supply (by purchasing the water). For operational phase, this water will be sourced from the borehole to be drilled onsite to supply the whole project. For water management, the Municipality will install a water flow meter on the boreholes through which water use by the project can be monitored by the Municipality. Water will be required for basic construction works, drinking, and ablution facilities (washing and toilets). The amount of water required is not yet determined at this stage.

Water will be stored in two 10,000 litre (10m<sup>3</sup>) tanks onsite.

- Power supply: during construction, power will be supplied by generators, whereas during the operational phase, the project will mainly rely on solar energy, and where necessary, the site will be connected to the Town's power grid. If necessary, an application will be made to the Town's main electricity power provider.

- Fuel Supply (machinery and equipment): it is anticipated that there will fuel onsite during construction works to refuel project machinery and vehicles.
- Waste management: the different waste will be handled as follows:
  - Sewage: A portable toilet will be provided onsite during construction and emptied according to manufacturers' instructions. For the operational phase, there will be flushing toilets to be used by the project personnel and visitors.
  - General and domestic waste: Solid waste containers will be made available onsite for waste storage during construction and operational phases. Waste will be disposed of at the Municipal solid waste management site, upon reaching an agreement with the Municipal Council.
  - Hazardous waste: All vehicles, machinery and fuel consuming equipment onsite will be provided with drip trays to capture potential fuel spills and waste oils.  
The waste fuel/oils will be carefully stored in a standardized container to be disposed of at the nearest approved hazardous waste management facility in the country.
- Health and Safety: Adequate and appropriate Personal Protective Equipment (PPE) will be provided to all construction personnel while on and working onsite. At minimum, two fully-equipped first aid kits will be readily available onsite and two personnel trained on administering first aid.
- Potential Accidental Fire Outbreaks: A minimum of two well-serviced fire extinguishers will be readily available onsite during construction and operational phase.

## 2.3 Operations and Maintenance

### 2.3.1 Poultry (Chicken) Farming and Egg Production

Once the construction of chicken coop, and installation of its supporting equipment are completed in the construction phase, this will be followed by ordering of the six-hundred (600) chickens and feed.

The poultry part of the project will be run by taking care of and cleaning the chicken coop, and monitoring the chickens (feeding and watering them). This will also include protecting chicken against diseases and pests to ensure that the chickens produce healthy and quality eggs for the market. Thus, as part of the supporting services onsite, will include medicine and pesticides for chickens (with the expertise of a veterinarian who will be called in onsite as often as needed to check on the chickens).

The eggs produced by the chickens will be continually removed, carefully packaged and prepared for sale to consumers.

### 2.3.2 Tomato Production

For the preparation of tomato planting and production, the soil will be prepared by adding fertilizers and nutrients. Once the soil is ready, the tomato seeds will be sown on the 1Ha of land. The installation of irrigation systems (drip irrigation) will be done.

Once ready, the tomatoes will be harvested, packaged and prepared for transport to consumers for sale.

### 2.3.3 Lucerne Production

At the later stages of the project, Lucerne production will commence. This will include the following activities:

- Similar to tomato production, the drip irrigation method will be used on the fields for Lucerne to water the total 1Ha of land in the early phases of the project and later increase to 5Ha.
- The water to be used will be acquired from the aquifer (accessed by one borehole) into a reservoir (water storage tank) onsite and pumped from here to the crops. In other words, water will be pumped from the site borehole to the storage tank onsite and or directly to water the crops,
- Frequent measuring and recording of water levels to monitor water levels and for management purposes,
- Monitoring of water storage reservoir to ensure safety and water leakages.
- The Lucerne will be planted yearly, for a period of ten to eleven months (June to May) until harvesting and or grazing, and
- After this planting and growth period, the Lucerne will then be harvested, packaged and sold to customers (farmers) in the Outjo area and far areas (based on the market demand).

The Proponent will be responsible for the maintenance of the site and its associated facilities (structures and infrastructures) as deemed necessary or specialized maintenance works will be outsourced to an external specialist contractor, when needed.

## 3 LEGAL FRAMEWORK: PERMITTING AND LICENSES

The Proponent has the responsibility to ensure that the proposed project activities conform to the principles of the EMA and must ensure that employees act in accordance with such principles. Table 3-1 below lists the requirements of an EMP as stipulated by Section 8 (e) of the EIA Regulations, primarily on specific approvals and permits that may be required for the project activities.

Table 3-1: List of legal requirements and permits to the project establishment and related activities

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
<p>The Constitution of the Republic of Namibia, 1990 as amended: <u>Regulated under the Government of the Republic of Namibia (GRN)</u></p>	<p>The Constitution of the Republic of Namibia (1990 as amended) addresses matters relating to environmental protection and sustainable development. Article 91(c) defines the functions of the Ombudsman to include:</p> <p><i>“...the duty to investigate complaints concerning the over-utilisation of living natural resources, the irrational exploitation of non-renewable resources, the degradation and destruction of ecosystems and failure to protect the beauty and character of Namibia...”</i></p> <p>Article 95(l) commits the state to actively promoting and maintaining the welfare of the people by adopting policies aimed at the:</p> <p><i>“...Natural resources situated in the soil and on the subsoil, the internal waters, in the sea, in the continental shelf, and in the exclusive economic zone are property of the State.”</i></p>	<p>Khoi Roots Farming are required by the Constitution to implement the environmental management plan, the establishment will be in conformant to the constitution in terms of environmental management and sustainability.</p> <p>Ecological sustainability should be main priority for the proposed project.</p>
<p>Environmental Management Act EMA (No 7 of 2007): <u>Regulated under the Ministry of Environment, Forestry and Tourism (MEFT)</u></p>	<p>Requires that projects with significant environmental impacts are subject to an environmental assessment process (Section 27).</p> <p>Details principles which are to guide all EAs.</p>	<p>The EMA and its regulations should inform and guide this EA process. Should the ECC be issued to the Proponent, it should be renewed every 3 years, counting from the date of issue.</p>

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
<p>Environmental Impact Assessment (EIA) Regulations Government Notice (GN) 28-30 (Government Gazette (GG) 4878): <u>Regulated under the Ministry of Environment, Forestry and Tourism (MEFT)</u></p>	<p>Details requirements for public consultation within a given environmental assessment process (GN 30 S21).</p> <p>Details the requirements for what should be included in a Scoping Report (GN 30 S8) and an Assessment Report (GN 30 S15).</p> <p><i>-Listed activity 8.1 Abstraction of ground or surface water for industrial or commercial purposes</i></p> <p><i>-Listed activity 8.2 The abstraction of groundwater at a volume exceeding the threshold authorised in terms of a law relating to water resources.</i></p> <p><i>-Listed activity 8.7 Irrigation schemes for agriculture excluding domestic irrigation.</i></p>	<p>For any amendments to the EMP (and subsequent ECC) or transfer of the ECC to another Proponent, an appropriate application should be submitted to the Office of the Environmental Commissioner at the Department of Environmental Affairs (DEAF) and Forestry of the MEFT. The contact details are:</p> <p><b>Mr. Timoteus Mufeti: Environmental Commissioner</b></p> <p><b>Tel: +264 61 284 2701</b></p>
<p>The Namibia Charcoal Association (NCA) or the Charcoal Association of Namibia (CAoN) Good Practice Booklet (2019)<sup>1</sup></p>	<p>According to the Booklet, has stated very helpful and clear requirements for anyone/organization intending to venture into charcoal production. It should be noted that the Proponent will only do a once-off production (on the vegetation removed/cleared from their project site footprint).</p>	<p>The Proponent will need to comply with the Booklets requirements that are listed below, but no limited to these:</p> <ul style="list-style-type: none"> <li>-The Forestry Harvesting &amp; Marketing Permit must be issued to the Proponent. The permit is only valid for 3 months.</li> <li>-Charcoal producer must have legal access to the production area. (This can be in the form of a rental or lease agreement specifically stating that the production of charcoal is allowed).</li> <li>-Neighbours are informed of charcoal production and communication system is in place to report veld fires and medical emergencies.</li> </ul>

<sup>1</sup> [http://the-eis.com/elibrary/sites/default/files/downloads/literature/GIZ\\_NCA\\_Charcoal%20Good%20Practices%20Booklet%202019.pdf](http://the-eis.com/elibrary/sites/default/files/downloads/literature/GIZ_NCA_Charcoal%20Good%20Practices%20Booklet%202019.pdf)

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
		<p>Proper facilities are available for workers. These include accommodation, ablution facilities, cooking facilities. Please refer to Appendix A (of the Booklet) for a checklist containing detailed information on accommodation.</p> <p>-A bush/tree count and vegetation composition survey has been conducted, containing encroacher bushes/trees, protected species, fodder &amp; non-targeted species.</p> <p><b>Contact the CAoN at T: +264 (0) 67 304 220</b></p> <p><b>Email: <a href="mailto:info@caon.com.na">info@caon.com.na</a></b></p> <p><b>Shop 3, St George’s Street 20 Otjiwarongo</b></p>
<p>Water Act 54 of 1956: <u>Regulated under the Ministry of Agriculture, Water and Land Reform (MAWLR)</u></p>	<p>Details requirements for public consultation within a given environmental assessment process (Government Notice No. 30 Section 21).</p> <p>The details the requirements for what should be included in an Environmental Scoping Report (Government Notice No. 30 S8) and an EIA Report (Government Notice No. 30 Section 15).</p> <p>The Water Resources Management Act 11 of 2013 is presently without regulations; therefore, the Water Act No 54 of 1956 is still in force:</p>	<p>Although the project borehole will be drilled within the Outjo Municipality boundaries, the borehole will need to obtain a drilling permit from the water custodian (MAWLR) and have the borehole registered.</p> <p>The drilling permit, water abstraction permit, and when required, the wastewater / effluent discharge Permits) should be applied from the Department of Water Affairs’ Water Policy and Water Law Administration Division</p> <p><b>Contact: Mr. Franciskus Witbooi Division:</b></p>

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
	<p>-Prohibits the pollution of water and implements the principle that a person disposing of effluent or waste has a duty of care to prevent pollution (S3 (k)).</p> <p>-Provides for control and protection of groundwater (S66 (1), (d (ii)).</p> <p>-Liability of clean-up costs after closure/abandonment of an activity (S3 (l)).</p>	<p><b>Tel: +264 61 208 7158</b></p> <p><b>Water Environment Division (for effluent discharge)</b></p> <p><b>Contact: Ms. Elise Mbandeka</b></p> <p><b>Tel: +264 61 208 7167</b></p>
<p>Water Resources Management Act (No 11 of 2013) and 2023 Water Regulations: <u>Regulated under the Ministry of Agriculture, Water and Land Reform</u></p>	<p>Ensure that the water resources of Namibia are managed, developed, used, conserved and protected in a manner consistent with, or conducive to, the fundamental principles set out in Section 66 - protection of aquifers, Subsection 1 (d) (iii) provide for preventing the contamination of the aquifer and water pollution control (Section 68).</p>	<p>The protection (both quality and quantity/abstraction) and conservation of water resources should be a priority</p>
<p>Pollution Control and Waste Management Bill: <u>Regulated under the Ministry of Environment, Forestry and Tourism (MEFT)</u></p>	<p>The bill aims to “prevent and regulate the discharge of pollutants to the air, water and land” Of particular reference to the Project is: Section 21 “(1) Subject to sub-section (4) and section 22, no person shall cause or permit the discharge of pollutants or waste into any water or watercourse.”</p> <p>Section 55 “(1) No person may produce, collect, transport, sort, recover, treat, store, dispose of or otherwise manage waste in a manner that results in or creates a significant risk of harm to human health or the environment.”</p>	<p>The Proponent, their workers and appointed contractors should practice good waste management work (directly or indirectly) to ensure that the waste does not cause environmental threat and degradation.</p> <p><b>No permit or license required</b></p>



Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Forestry Act No. 12 of 2001: <u>Regulated under the Ministry of Environment, Forestry and Tourism (MEFT)</u>	The Act provides for the management and use of forests and related products / resources. It offers protection to any living tree, bush or shrub growing within 100 metres of a river, stream or watercourse on land that is not a surveyed erven of a local authority area. In such instances, a licence would be required to cut and remove any such vegetation. These provisions are only guidelines.	Khoi Roots Farming will require the debushing of the site footprint (and use the cut trees/vegetation for the once-off charcoal production), a permit should be obtained from the nearest MEFT' Forestry Office (in Outjo or Otjiwarongo) prior to removing the trees.  <b>Mr. Johnson Ndokosho (Director of Forestry Division)</b>  <b>Tel: +264 61 208 7666</b>
Nature Conservation Ordinance (Act No. of 1996): <u>Regulated under the Ministry of Environment, Forestry and Tourism (MEFT)</u>	The Nature Conservation Amendment of 1996 (section 73.1) provides for an economically based system of sustainable management and utilization of game in communal areas; to delete references to representative authorities; and to provide for matters incidental hereto.	Although the project site is not located within protected area, there are known indigenous vegetation and fauna in the area. Therefore, this Ordinance is relevant. A permit would be required should any species onsite, with a protected or endangered status, be damaged or removed. The Proponent is required to apply for such a permit prior to commencing with the project activities.
Soil Conservation Act (No 76 of 1969): <u>Regulated under the Ministry of Agriculture, Water and Land Reform (MAWLR)</u>	The Act makes provision for the prevention and control of soil erosion and the protection, improvement and conservation of soil, vegetation and water supply sources and resources, through directives declared by the Minister.	Duty of care must be applied to soil conservation and management measures must be included in the EMP. This is mainly aimed at soil disturbance through unnecessary creation of new tracks and pollution from project related activities.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Fertilizers Farm Feeds and Agricultural Remedies Act No. 36 of 1947 and its 2007 Regulations: <u>Regulated under the Ministry of Agriculture, Water and Land Reform (MAWLR)</u>	The Act aims to provide for the appointment of a Registrar of Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies; for the registration of fertilizers, farm feeds, agricultural remedies and stock remedies; to regulate or prohibit the importation, sale, acquisition, disposal or use of fertilizers, farm feeds, agricultural remedies and stock remedies; to provide for the designation of technical advisers and analysts; and to provide for matters incidental thereto.	Khoi Roots Farming should ensure that they obtain relevant permits or licenses (for applying fertilizers and remedies for Lucerne, tomato and poultry) from the Directorate of Agricultural Extensions and Engineering Services (DAEES) of the MAWLR.  <b>Contact: Mr. Ben Haraseb</b>  <b>Director: DAEES</b>  <b>Tel: +264 61 208 7111</b>
Road Traffic and Transport Act, No. 22 of 1999: <u>Regulated under the Ministry of Works and Transport (MWT) – Roads Authority of Namibia</u>	The Act provides for the establishment of the Transportation Commission of Namibia; for the control of traffic on public roads, the licensing of drivers, the registration and licensing of vehicles, the control and regulation of road transport across Namibia's borders; and for matters incidental thereto.	Mitigation measures should be provided for, if the roads and traffic impact cannot be avoided.
Petroleum Products and Energy Act (No. 13 of 1990) Regulations (2001): <u>Regulated under the Ministry of Mines and Energy (MME)</u>	Regulation 3(2)(b) states that “No person shall possess or store any fuel except under authority of a licence or a certificate, excluding a person who possesses or stores such fuel in a quantity of 600 litres or less in any container kept at a place outside a local authority area.	In the case of onsite self-contained fuel storage tank of 600litrs volume or above, a consumer installation certificate/permit should be applied for from MME.  <b>Mr. Carlo Mcleod (Ministry of Mines and Energy: Acting Director – Petroleum Affairs)</b>  <b>Tel: +264 61 284 8291</b>

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Public Health Act (No. 36 of 1919): <u>Regulated under the Ministry of Health and Social Services</u>	Section 119 states that “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.”	The Proponent and all its employees should ensure compliance with the provisions of these legal instruments.
Health and Safety Regulations GN 156/1997 (Government Gazette 1617): <u>Regulated under the Ministry of Health and Social Services</u>	Details various requirements regarding health and safety of labourers.	<p>This includes the provision of health and safety measures, wearing of Personal Protective Equipment (PPE), health &amp; safety trainings, etc.</p> <p>This safety and health of the community around the project site and associated infrastructures should be maintained.</p> <p>No permit or license required.</p>
Public and Environmental Health Act No. 1 of 2015: <u>Regulated under the Ministry of Health and Social Services</u>	To provide a framework for a structured uniform public and environmental health system in Namibia; and to provide for incidental matters.	
Atmospheric Pollution Prevention Ordinance (1976): <u>Regulated under the Ministry of Health and Social Services</u>	This ordinance provides for the prevention of air pollution and is affected by the Health Act 21 of 1988. Under this ordinance, the entire area of Namibia, apart from East Caprivi, is proclaimed as a controlled area for the purposes of section 4(1) (a) of the ordinance.	The project and related activities should be undertaken in such a way that they do not pollute or compromise the surrounding air quality.

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
<p>Hazardous Substance Ordinance, No. 14 of 1974: <u>Regulated under the Ministry of Health and Social Services</u></p>	<p>The ordinance provides for the control of toxic substances. It covers manufacture, sale, use, disposal and dumping as well as import and export. Although the environmental aspects are not explicitly stated, the ordinance provides for the importing, storage, and handling.</p>	<p>The Proponent should handle and manage the storage and use of hazardous substances onsite so that they do not harm or compromise the site environment</p>
<p>Local Authorities Act No. 23 of 1992: <u>Regulated under the Ministry of Urban and Rural Development</u></p>	<p>To provide for the determination, for purposes of local government, of local authority councils; the establishment of such local authority councils; and to define the powers, duties and functions of local authority councils; and to provide for incidental matters.</p> <p>This includes the management of waste.</p>	<p>The Outjo Municipality is the responsible Local Authority of the area, therefore, should be consistently engaged throughout the project implementation.</p> <p>Khoi Roots Farming should adhere to all rules and conditions stipulated for their projects operations.</p> <p><b>Contact: Office of the Chief Executive Officer: Outjo Municipality</b></p> <p><b>Tel: +264 67 313 013</b></p>
<p>Labour Act (No. 6 of 1992): <u>Regulated under the Ministry of Labour, Industrial Relations and Employment Creation (MLIREC)</u></p>	<p>MLIERC is aimed at ensuring harmonious labour relations through promoting social justice, occupational health and safety and enhanced labour market services for the benefit of all Namibians. This ministry ensures effective implementation of the Labour Act No. 6 of 1992, specifically its Regulations, No. 156 Labour Act, 1992: Regulations relating to the health and safety of employees at work</p>	<p>The Proponent should ensure that the project construction, operations, and maintenance works, do not compromise the safety and welfare of workers.</p> <p><b>No permit or license required.</b></p>

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
National Heritage Act No. 76 of 1969	Call for the protection and conservation of heritage resources and artefacts.	<p>Should any archaeological material, such as bones, unknown graves, old weapons/equipment etc. be found onsite, work should stop immediately, and the National Heritage Council of Namibia must be informed as soon as possible. The Heritage Council will then decide to clear the area or decide to conserve the site or material.</p> <p>Contact Details at National Heritage Council (NHC) of Namibia</p> <p><b>Mrs. Erica Ndalikokule – NHC Director</b></p> <p><b>Ms. Agnes Shiningayamwe (Regional Heritage Officer) – National Heritage Council of Namibia</b></p> <p><b>Tel: +264 61 301 903</b></p>

## 4 EMP: IMPLEMENTATION ROLES AND RESPONSIBILITIES

The Proponent is ultimately responsible for the implementation of the EMP. However, the Proponent may delegate this responsibility or part of it at any time, as they deem necessary. The roles and responsibilities of all delegates/parties involved in the effective implementation of this EMP are set in Table 4-1.

**Table 4-1: The EMP implementation responsibilities for the Khoi Roots Farming project**

Role	Responsibilities
Khoi Roots Farming	<ul style="list-style-type: none"> <li>-Managing the implementation of this EMP and updating and maintaining it when necessary.</li> <li>-Management and monitoring of individuals and/ or equipment on-site in terms of compliance with this EMP and issuing fines for contravening EMP provisions.</li> </ul>
Project / Site Manager	<p>This individual will be responsible to ensure that the project activities are completed on time. The Manager's duties and responsibilities will include:</p> <ul style="list-style-type: none"> <li>-Ensure that relevant commitments contained in the EMP are adhered to.</li> <li>-Ensure relevant staff is trained in procedures entailed in their duties.</li> <li>-Maintain records of all relevant environmental documentation for the project.</li> <li>-Reviewing the EMP annually and amending the document when necessary.</li> <li>-Issuing fines to individuals who may be in breach of the EMP provision and if necessary, removing such individuals from the site.</li> <li>-Cooperate with all relevant interested and affected parties/stakeholders.</li> <li>-Development and management of schedules for daily activities</li> </ul>
Debushing and Construction Contractor	<p>The Contractors' representative or site supervisors (as appropriate) will be required to:</p> <ul style="list-style-type: none"> <li>-Ensure that the relevant commitments contained in the EMP Action Plans are adhered to.</li> <li>-Compile relevant procedures and method statements for approval by the applicable phase site manager prior to initiation of project activities on the sites.</li> <li>-Ensure that all relevant staff are trained in procedures.</li> <li>-Maintain records of all relevant environmental documentation applicable to their work</li> </ul>

Role	Responsibilities
Health, Safety, & Environmental (HSE) Officer	<p>The Proponent may assign the responsibility of ensuring EMP compliance throughout the project life cycle to a designated member of staff or external qualified and experienced person, referred to in this EMP as the HSE Officer. This officer will have the following responsibilities:</p> <ul style="list-style-type: none"> <li>-Management and facilitation of communication between the Proponent and Interested and Affected Parties and or stakeholders regarding this EMP.</li> <li>-Conducting site inspections of all areas with respect to the implementation of this EMP (monitor and audit its implementation).</li> <li>-Advising the Proponent or Project/Site Manager on the removal of person(s) and/or equipment not complying with the provisions of this EMP.</li> <li>-Making recommendations to the Manager with respect to the issuing of fines for contraventions of the EMP.</li> <li>-Undertaking an annual review of the EMP and recommending additions and/or changes to this document.</li> <li>-Ensuring that the construction an operations onsite are conducted in accordance with the International System organization (ISO) standard 14001: 2015.</li> </ul>

## 5 ENVIRONMENTAL MANAGEMENT MEASURES

### 5.1 Key identified Potential Impacts

#### 5.1.1 Potential Positive impacts

The key potential benefits (positive) impacts of the project are listed below:

- Income generation from the selling of once-off charcoal production, horticulture, Lucerne production and poultry farming. This will improve the livelihoods of the Proponent and their workers.
- Employment creation during the construction and operational phases (for the locals and contractors), thus, reducing the unemployment in the Town.
- Provision of animal feed / fodder that will be produced and made available locally.
- Local and regional economic growth through food production (security) through tomato and other future crops as well as egg production and animal feed from the Lucerne production.

### 5.1.2 Potential negative (adverse) impacts

The key potential negative impacts identified, and for which the management measures (action plans) have been provided are listed below:

- Physical land / soil disturbance resulting in compaction and erosion: Clearing vegetation for charcoal production can result in soil erosion, nutrient depletion, and loss of soil fertility. Proper land management techniques, including reforestation, terracing, and implementing erosion control measures. This can help mitigate soil degradation through engaging with soil experts to give the soil top tier nutrients as the main goal will be to start a tomato plantation. Additionally, promoting agroforestry practices, where trees are planted alongside crops, can help maintain soil health. Khoi Roots Farming intends to fertilise the ground that has been debushed with the manure of the chicken production, to treat land for envisaged future production.
- Impact on water resources, i.e., quantity (over-abstraction): there is a potential impact of water abstraction to supply the chickens and irrigation activities. The over-abstraction of more groundwater than it can be replenished by rainfall (recharge) can result in the significant lowering of water levels in the surrounding which may affect other users relying on the same aquifer.
- Environmental pollution (littering) from poor solid waste management: there is a risk of environmental pollution through improper storage and disposal of solid, domestic, human waste, etc. onsite.
- Loss of biodiversity: vegetation removal to enable construction activities, and once-off charcoal production often relies on cutting down trees for wood. This leads to deforestation, which can result in habitat loss, biodiversity decline, and disruption of local ecosystems. We mitigate this risk with sustainable forestry practices such as selective logging, and the use of fast-growing tree species specifically cultivated for charcoal production, doing only a once off small scale production. The area has experienced veld fires thus leaving some of the trees already dead.
- Potential soil and water resources pollution from oils, grease, fuels, pesticides, fertilizers, herbicides and animal (chicken) manure onsite. The improper collection and storage of these products in the facilities onsite may get spill on the site soils and washed into surface water and eventually in groundwater (aquifers).
- Accidental fire outbreaks from project activities, and particularly risk of veld fire associated with the once-off charcoal production early in the project stage.
- Potential disease outbreaks from the poultry farming: The handling of many chickens in one place may result in disease outbreaks to the nearest communities, particularly when there is poor manure handling and disposal that may be washed into surface water and eventually groundwater. Or diseases may be transported to nearby communities through dry particles wind-blown away from site.



- Noise from construction activities and the chickens kept at the site during operational phase.
- Air pollution owing to dust generation and fumes/emissions (during construction/site establishment) and burning of wood for charcoal production: Traditional charcoal production methods often involve open-air kilns or inefficient kilns, producing large amounts of smoke and air pollutants. Therefore, only in the once off production of charcoal when there will be this short-term impact of smokes.
- Inhalation of poultry house dust can lead to inflammation and respiratory diseases, adversely impacting poultry health, farm workers and communities near the project.
- Fastidious odours can have adverse effects on the project workers and nearby residents. Odours (a significant type of gaseous pollution) resulting from intensive poultry farming, derived from anaerobic and aerobic microbial activity during waste decay (primary litter). Waste produced via poultry farming contains, among others, organic particulate matter, volatile fatty acids, sulfurous and nitrogenous compounds, that are emitted into the air as malodorous compounds)<sup>2</sup>.
- Impact on archaeological and cultural heritage resources, in the case of any archaeological and heritage finds onsite (inadvertent unearthing during site preparation/excavations).
- Occupational and community health and safety risks associated with mishandling of equipment onsite and poor equipment and machinery transporting and handling at site as well as during the once-off charcoal production.

## 5.2 Environmental Management and Mitigation Measures

The management actions are aimed at avoiding the above-listed potential negative impacts, where possible, and where it is impossible to avoid these impacts, measures are provided to reduce the impacts' significance. The Management action plans (management and mitigation measures) recommended for the potential impacts are based on the following project stages (phases):

- Planning and Design Phase (Table 5-1),
- Debushing and once-off charcoal production (Table 5-3),
- Construction Phase (Table 5-4), and Operational and maintenance Phase (Table 5-4).

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<sup>2</sup><https://www.sciencedirect.com/science/article/pii/S0048969722071145#:~:text=Waste%20materials%2C%20such%20as%20poultry,to%20soil%20and%20water%20quality>.

Table 5-1: Planning and design Phase - Management and mitigation measures

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
EMP implementation and training	Lack of EMP awareness and implications thereof	<p>-A Comprehensive Health and Safety Plan for the project activities should be compiled.</p> <p>-An EMP non-compliance penalty system should be implemented on site.</p> <p>-The Proponent should appoint an HSE Officer to be responsible for managing the EMP implementation and monitoring.</p>	-All required EMP implementation Plans, and Systems are compiled and in place.	-Proponent	Pre-construction
Communication between the Proponent and community	Lack of communication between community and Proponent	<p>-The Municipality and neighbouring community should be notified on time of the commencement of the project activities and any expected delays in the progress.</p> <p>-Continual engagement with the Municipality, community and where necessary, with neighbours should be maintained.</p>	-Ongoing Consultation throughout the project, when and as required.	-Proponent	Pre-construction and throughout the project life cycle (as needed)
Employment and procurement	Empowerment of local businesses and their staff	-Where possible, preference for construction works should be given to a local contractor in Outjo Town and area, and if not available, contractors in the Kunene Region near Outjo District should be considered. Out-of-area procurement of construction contractor should be justified, for example by the unavailability of local businesses.	-The contractor is Outjo Town and or Kunene Region based, otherwise, justification for an out-of-Town / Region contractor is provided	-Proponent	Pre-construction (during planning and design)
Authorizations	Lack of Permits/ Licenses	<p>-All the required agreements and licenses or permits should be applied for and obtained</p> <p>The permits, agreements referred to herein include:</p> <p><i>-Land use (leasehold) consent and associated permits from the Outjo Municipality</i></p> <p><i>-ECC from the Environmental Commissioner at MEFT</i></p>	-Applicable permits and licenses to be obtained from relevant authorities and kept on site for records keeping and future inspections	-Proponent	Pre-construction (during planning and design) and throughout the project life cycle (based on the stage of

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		<p><i>-Forestry Harvesting &amp; Marketing Permit (valid for 3 months from Forestry Office (MEFT) (to remove vegetation for once-off Charcoal production)</i></p> <p><i>-If necessary, a consumer installation certificate/permit for the storage of fuel onsite in the volume of 600 litres or more. This certificate is obtained from the Petroleum Affairs Directorate of the Ministry of Mines and Energy (MME)</i></p> <p><i>-Borehole drilling permit from DWA (MAWLR)</i></p> <p><i>-Groundwater Abstraction to be obtained from and renewed with the DWA</i></p> <p><i>-Agricultural feeds, fertilizers and other related permits from the DAEES at MAWLR.</i></p>			respective permit requirement)
Visual (sense of place) and aesthetics	Visual nuisance	-Consider all the necessary options (colour, and overall design) to improve the aesthetic of the project and associated infrastructures to blend in with the surrounding for a better appeal to neighbouring community.	-The parameters of the project structures are considered and designed to reduce the visual impact	-Proponent's Planning & Design Engineer	Pre-construction (during planning and design)
Construction works	Debushing, once-off charcoal production construction schedules and notifications	<p>-Schedules for debushing and once-off charcoal production as well as construction should be prepared and timely shared with the Municipality and directly neighbouring community so that they are aware of the activities (charcoal production, vehicle movement and associated activities onsite).</p> <p>-Construction activities should be planned to be carried out on weekdays only i.e., Mondays to Fridays and during working hours (8:00am - 5:00pm).</p>	<p>-Timely submission of notifications to the Municipality, and neighbours</p> <p>-Clear posters erected onsite facing neighbours</p>	<p>-Proponent</p> <p>-Construction contractor</p>	Pre-construction (during planning and design)
Structure and infrastructures	Poor designs of structures and infrastructures may lead to	-The structures and infrastructures as well as services required for the project activities should be properly designed and designed for installation and erection onsite.	-The project infrastructure and structures are well designed	-Proponent's Planning & Design Engineer	Pre-construction (during planning and design)

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
	mechanical failures	-The design should include stormwater management systems for the project.  -The contractor should be advised to purchase quality materials and structures to be used for the project.	-No poor quality materials are used for the project	-Construction contractor	

**Table 5-2: Debushing and once-off charcoal production - Management and mitigation measures**

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
EMP implementation and training	Lack of EMP awareness and implications thereof	-A Comprehensive Health and Safety Plan for debushing and charcoal production activities should be compiled.  -Provide an induction on EMP implementation as part of health, safety and environmental training.  -An EMP non-compliance penalty system should be implemented on site.  -The Proponent should manage the EMP implementation and monitoring during this phase.	-All required EMP implementation Plans, and Systems are compiled and in place.	-Proponent	Pre-construction
Debushing and once-off charcoal production	Debushing, once-off charcoal production schedules and notifications	-The Municipality and project neighbours should be notified at least 2 weeks before the debushing and once-off charcoal production start.  -The debushing should be restricted to within the approved and boundaries of the project site only.	-Timely submission of notifications to the Municipality, and neighbours  -No work is done on weekends and after hours or early hours in the morning	-Proponent  -Debushing contractor	During this phase

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		-The activities should only be carried out on weekdays only i.e., Mondays to Fridays and during working hours (8:00am - 5:00pm).			
Employment and procurement	Empowerment of local businesses and their staff	-The debushing works and once-off charcoal production should be given to a local contractor in Outjo Town and area, and if not available, contractors in the Kunene Region near Outjo District should be considered. Out-of-area procurement of construction contractor should be justified, for example by the unavailability of local businesses.	-The contractor is Outjo Town based and or Kunene Region based, otherwise, justification for an out-of-Town / region contractor is provided	-Proponent / Site Manager	During this phase
Authorizations	Lack of Permits/ Licenses	-All the required agreements and licenses or permits should be applied for and obtained  The permits, agreements referred to herein include:  <i>-Land use (leasehold) consent and associated permits from the Outjo Municipality</i> <i>-ECC from the Environmental Commissioner at MEFT</i> <i>-Forestry Harvesting &amp; Marketing Permit (valid for 3 months) for Charcoal production from Forestry Office (MEFT)</i>	-Applicable permits and licenses are in place and kept on site for records and future inspections	-Proponent	During this phase (and (based on the stage of respective permit requirement)
Accidental fire outbreaks	Veld fires spreading to neighbouring vegetation and or properties	-Avoid unnecessary open fires while on and around the site.  -There should be sufficient and serviced fire extinguishers.  -There should be at least two personnel who are trained fire firefighters or have basic firefighting skills to contain accidental fire outbreaks.	-Fire management measures are in place	-Site Manager	During this phase

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		<p>-Contact the Charcoal Association of Namibia on ways to manage veld fires, in case this happens during once-off charcoal production onsite.</p> <p>-Fuel storage areas should be placed far from the charcoal production spot onsite.</p>			
Air Quality	Fumes and emissions into the surrounding air	<p>-Vehicles driven onsite should be operated at 30km/hr to avoid the generation of excessive dust. Avoid leaving machinery and vehicles idling when not in use.</p> <p>-since the charcoal production will be a once-off activity, the impact on air quality should be minimized by completing the work within the shortest time as possible. Do not unnecessarily burn wood for longer than necessary.</p>	-The measures are implemented effectively	<p>-Site Manager</p> <p>-Debushing Contractor</p>	During this phase
Occupational health and safety	Risk of injuries, and other safety and health issues on project workers	<p>-All workers should be provided with appropriate and adequate personal protective equipment (PPE) such as fire resistance/protective clothing, safety boots, eye goggles, and hand gloves, hard hats, reflectors, while onsite.</p> <p>-Train all workers on risks such as no smoking onsite and avoid the use of flammable substances (fuels, oil, papers, and plastics) near fires.</p> <p>Train all workers on the dangers of mishandling equipment and materials onsite.</p> <p>-Materials should be securely fastened on vehicles during transportation or securely fastened at storage areas onsite.</p> <p>-Provide sufficient amount of water to workers so that they stay hydrated while working onsite.</p>	<p>-The health and safety measures are in place</p> <p>-Workers are provided with appropriate safety equipment</p> <p>-Workers are issued with dust masks for health reasons</p>	<p>-Proponent</p> <p>-Site Manager</p> <p>-Debushing Contractor</p>	During this phase

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		<p>-There should be a fully furnished first aid kit onsite and train at least two people (project workers) on how to administer first aid.</p> <p>-Emergency Services contact details such as fire brigade, ambulance and Police should be readily visible and known by personnel.</p>			
Biodiversity	Loss of Fauna and Flora	<p>-Avoid the killing or burning of animals that may be encountered onsite during debushing and charcoal production.</p> <p>-Avoid the disturbance of nesting raptors or to cut any trees that hold large bird nests.</p> <p>-Poaching of wildlife is prohibited by law and this should be strictly dealt with if noticed. No animals should be unnecessarily disturbed or killed.</p> <p>-Avoid the removal or disturbance of unauthorized trees or vegetation outside the site boundaries (footprint).</p> <p>-Some vegetation should be left to be used as shade during the project operations and conserve some biodiversity.</p> <p>-Avoid leaving equipment or machinery leaning on vegetation.</p> <p>-Environmental awareness on biodiversity preservation (for both plants and even small animals encountered onsite) should be provided to the workers and contractors during EMP induction.</p> <p>-Consider replanting (growing) some crops and trees on the debushed field, thus, adding plant life back to the debushed area.</p>	<p>-No complaints of unauthorised vegetation removal by the project personnel.</p> <p>-No intentional disturbance and destruction of site vegetation</p> <p>-Barricading tape (to indicate working areas)</p>	<p>-Site Manager</p> <p>-Debushing contractor</p> <p>-Construction contractor</p> <p>-HSE Officer</p>	Throughout the phase

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
Waste management	Environmental pollution: solid and sewage	<ul style="list-style-type: none"> <li>-Dispose of waste in a responsible manner and not to litter.</li> <li>-No wastes should be left onsite or scattered within or around site.</li> <li>-All domestic and general waste produced should be contained onsite until such that time it will be transported to the Municipal solid waste management site.</li> <li>-No waste may be buried or burned on site or anywhere else.</li> <li>-The site should be equipped with separate waste bins for solid and general/domestic waste.</li> <li>-A penalty system for irresponsible disposal of waste onsite and anywhere in the area should be implemented.</li> <li>-Provide sufficient toilet facilities for workers (portable chemical toilet) and regularly disposed of at the nearest treatment facility</li> <li>-No open defecation is allowed on and around the site. Use provided portable toilets for workers.</li> </ul>	<ul style="list-style-type: none"> <li>-There are sufficient waste bins onsite</li> <li>-There is a toilet for workers</li> <li>-No littering on and around the site</li> </ul>	<ul style="list-style-type: none"> <li>-Site Manager</li> <li>-Debushing Contractor</li> </ul>	Throughout the phase

**Table 5-3: Construction Phase - Management and mitigation measures**

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
EMP implementation and training	Lack of EMP awareness and implications thereof	<ul style="list-style-type: none"> <li>-EMP trainings should be provided to all workers onsite.</li> <li>-All site personnel should be aware of necessary health, safety, and environmental considerations applicable to their respective work.</li> </ul>	<ul style="list-style-type: none"> <li>-Records of EMP compliance/monitoring conducted bi-annually</li> <li>-The ECC is renewed every 3 years</li> </ul>	<ul style="list-style-type: none"> <li>-Site Manager</li> <li>-Construction Contractor</li> </ul>	Throughout the construction phase, and when deemed necessary (for certain activities)



Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		<p>-The implementation of this EMP should be monitored.</p> <p>The site should be inspected, and a compliance audit done throughout <b><u>the project activities, monthly and bi-annually for overall EMP implementation.</u></b></p> <p>-EMP non-compliance penalty system should be implemented.</p>	<p>-Records of EMP training conducted.</p>	<p>-HSE Officer</p>	<p>such as ECC renewal)</p>
<p>Soils</p>	<p>Physical soil / land disturbance and loss of topsoil</p>	<p>-Stockpiled topsoil and excavated materials should be used to backfill the excavated and disturbed site post-construction.</p> <p>-Soils that are not within the intended footprints of the site footprint should be left undisturbed and soil conservation implemented as far as possible.</p> <p>-Project vehicles/machinery should stick to access route provided and not to unnecessarily create further tracks onsite by driving everywhere causing soil compaction and erosion.</p> <p>-Implement proper land management techniques such as reforestation, terracing, and implementing erosion control measures to mitigate soil degradation</p> <p>-Engage soil experts to advice on providing the soil with top tier nutrients as the main goal will be to start a tomato plantation.</p> <p>-Promoting agroforestry practices, where trees are planted alongside crops, can help maintain soil health.</p> <p>-Consider fertilising the ground that has been debushed with the manure of the chicken production, to treat land for envisaged future production.</p>	<p>-No proliferation of informal vehicle tracks created by project activities.</p> <p>-No new erosion gullies.</p> <p>-No signs of soil compaction</p> <p>-No disturbance to unmarked areas onsite.</p>	<p>-Site Manager</p> <p>-Construction Contractor</p> <p>-HSE Officer</p>	<p>Throughout the construction phase</p>

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
Soil and water pollution	Soil and water resources pollution	<p>-Water pollution awareness for workers should be implemented.</p> <p>-All run off materials such as hydrocarbons, waste water and other potential pollutants associated with the project should be contained on site in designated containers and disposed of at the nearby municipal waste discharge standards, so that they do not reach water systems.</p> <p>-Septic tank (if any) onsite should be maintained regularly to ensure that waste is not leaching into the ground and eventually water resources.</p> <p>-Spill control preventative measures should be put in place to manage soil contamination, thus minimizing the contamination from reaching to groundwater.</p> <p>-Project waste solid, human and hazardous waste should be properly contained for proper disposal at the appropriate waste site.</p> <p>-The site areas where hydrocarbons will be utilized, the surface should be covered with an impermeable plastic liner (e.g., an HDPE liner), carefully placed to minimize risk of puncturing, to prevent any spillages from getting into direct contact with the soils and prevent eventual infiltration into the ground and pollute groundwater.</p> <p>-Project machines and equipment should be equipped with drip trays to contain possible oil spills when operated.</p>	-No visible oil spills on the ground or contaminated/pollution spots owing to construction activities	-Site Manager  -Construction contractor	Throughout the construction phase
Biodiversity	Loss of Fauna and Flora	-Avoid unnecessary removal and or disturbance of site vegetation and animals that may be grazing or wandering around the site.	-No complaints of unauthorised vegetation	-Site Manager	Throughout the construction phase

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		<ul style="list-style-type: none"> <li>-Plants (vegetation) found on the site, but not in the actual footprint should not be disturbed, therefore, should be avoided.</li> <li>-Avoid leaving equipment or machinery leaning on vegetation.</li> <li>-Environmental awareness on biodiversity preservation (both plants and even small animals encountered onsite) should be provided to the workers and contractors during EMP induction.</li> </ul>	<ul style="list-style-type: none"> <li>removal associated with project personnel.</li> <li>-No intentional disturbance and destruction of site vegetation</li> <li>-Barricading tape (to indicate working areas)</li> </ul>	<ul style="list-style-type: none"> <li>-Construction contractor</li> <li>-HSE Officer</li> </ul>	
Occupational and locals health and safety	General health and safety associated with project activities during construction	<ul style="list-style-type: none"> <li>-During induction, personnel should be provided with an awareness training of the risks of mishandling equipment and materials on site.</li> <li>-Appropriate and clearly written warning signage should be placed onsite, where visible.</li> <li>-Projected loads should be securely fastened to vehicles to avoid falling and injuring people.</li> <li>-Heavy vehicle and equipment should be properly secured to prevent any harm or injury to both project personnel and community members moving within the premises.</li> <li>-When working on site, employees should be properly equipped with personal protective equipment (PPE) such as coveralls, masks, gloves, safety boots, earplugs, safety glasses, and hard hats.</li> <li>-Personnel should not be allowed to consume alcohol or other intoxicants prior to and during working hours as this may lead to mishandling of equipment resulting in health and safety risks.</li> <li>-For community safety and site protection, a razor mesh fence or a similar fence should be erected around the designated site</li> </ul>	<ul style="list-style-type: none"> <li>-Comprehensive health and safety plan for the activities is compiled.</li> <li>-Availability of fully-furnished first aid kits</li> <li>-Trained worker to administer first aid</li> <li>- Mesh fence is constructed</li> </ul>	<ul style="list-style-type: none"> <li>-Site Manager</li> <li>-Construction contractor</li> <li>-HSE Officer</li> </ul>	Throughout the construction phase

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		area to secure it and prevent possible public unauthorized access, especially local children and animals			
	Accidental fire outbreak	<ul style="list-style-type: none"> <li>-Portable and serviced fire extinguishers should be available onsite.</li> <li>-No open fires should be created by project personnel onsite.</li> <li>-Make provision for smoking areas for crew members who smoke. This is to ensure that the cigarettes' fire is completely put out to and disposed of in allocated bins onsite</li> </ul>	<ul style="list-style-type: none"> <li>-No wildfires recorded (due to presence of project personnel)</li> <li>-Fire extinguishers (1 per vehicle)</li> </ul>	<ul style="list-style-type: none"> <li>-Site Manager</li> <li>-Construction contractor</li> <li>-HSE Officer</li> </ul>	Throughout the construction phase
Littering and waste management	Environmental Pollution	<ul style="list-style-type: none"> <li>-Dispose of waste in a responsible manner and not to litter.</li> <li>-After each daily works, ensure that there are no wastes left onsite or scattered within site premises.</li> <li>-All domestic and general operational waste produced daily should be contained onsite until such that time it will be transported to designated waste sites.</li> <li>-No waste may be buried or burned on site or anywhere else.</li> <li>-The site should be equipped with separate waste bins for solid and general/domestic waste.</li> <li>-A penalty system for irresponsible disposal of waste onsite and anywhere in the area should be implemented.</li> </ul>	<ul style="list-style-type: none"> <li>-No visible litter around the project area</li> <li>-Provision of sufficient waste storage containers</li> <li>-Waste management awareness</li> <li>-Waste disposal permits to the Municipal dumpsite</li> <li>-Environmental, Health and Safety Statements and Policy</li> </ul>	<ul style="list-style-type: none"> <li>-Site Manager</li> <li>-Construction contractor</li> <li>-HSE Officer</li> </ul>	Throughout the construction phase
	Sewage generated by construction workers	<ul style="list-style-type: none"> <li>-Provide sufficient toilet facilities for workers while onsite (portable chemical toilet, if possible).</li> <li>-No open defecation is allowed on and around the site. Use provided portable toilets for the construction workers.</li> </ul>	<ul style="list-style-type: none"> <li>-Adequate toilet and basic ablution facilities on site</li> <li>-Chemical toilets</li> <li>Sewage removal operator</li> </ul>	<ul style="list-style-type: none"> <li>-Construction contractor</li> <li>-HSE Officer</li> </ul>	Throughout the construction phase

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		<p>-Sewage waste should be stored as per the portable chemical toilets supplied on site and regularly disposed of at the nearest treatment facility.</p> <p>-Sufficient flushing toilets for the project should be constructed in preparation of the operational phase.</p>	<p>-Waste treatment agents/chemicals.</p>		
<p>Air pollution owing to dust generation and fumes / emissions</p>	<p>Dust emission and</p>	<p>-The Proponent should ensure that the construction schedule is limited to the given number of days of the week, but not every day. This will keep the vehicle-related dust level minimal in the area, especially when it is windy.</p> <p>-A reasonable amount of water should be used to suppress the dust that may be emanating from certain site areas (limited to the site only) that are generating a lot of dust.</p> <p>-All access roads leading to the site should have speed limits of no more than 30km/h to minimise the amount of dust generated by the vehicles, which will in turn minimise air quality concerns to any potential receptors, particularly the residents south of the site.</p> <p>-Dust masks, eye protective glasses and other respiratory personal protective equipment (PPE) such as face masks should be provided to the workers on site operating or working at the excavated areas, where they may be exposed to dust.</p> <p>-The vehicles carrying dusty materials should be covered to prevent materials being blown from the vehicle.</p> <p>-The transportation of project materials, equipment and machinery should be limited to certain days of the week only as so to reduce dust generated by heavy vehicles in the area.</p>	<p>-Dust suppression measures implemented</p> <p>-Visible efforts to curb dust</p>	<p>-Site Manager</p> <p>-Construction Contractor</p>	<p>Throughout the construction phase</p>

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		<p>-Project vehicles and heavy machines should not be left idling when not in use, such that they emit air polluting gases.</p> <p>-Project vehicles and machinery should be maintained through regular servicing to ensure that they do not release harmful and air polluting fumes while on and off site</p>			
Vehicular traffic	Vehicle traffic safety impact	<p>-Vehicles drivers should not be allowed to operate vehicles or machinery while under the influence of alcohol.</p> <p>-Vehicles drivers and equipment operators should be in possession of valid and appropriate driving licenses and adhere to the road safety rules.</p> <p>-Drivers should drive slowly (30km/hour or less) while onsite.</p> <p>-Project vehicles should be in a road worthy condition and serviced regularly to avoid accidents owing to mechanical faults.</p> <p>-Vehicle drivers should only make use of designated site access roads provided and as agreed.</p> <p>-Truck movements, frequency, times and routes should be carefully planned and scheduled. To control traffic movement on site, deliveries and collection of goods and waste to and from the site should be carefully scheduled. This should optimally be done during weekdays and between the hours of 08h00 and 17h00.</p>	<p>-No complaints from neighbours about vehicular traffic issues related to the project activities.</p> <p>-All personnel operating the project vehicles and machinery are appropriately licensed and possession of valid driving licenses.</p> <p>-there are demarcated areas for parking, offloading, and loading zones onsite.</p>	<p>-Site Manager</p> <p>-Construction contractor</p>	Throughout the construction phase
Noise	Noise from construction activities	<p>-Noise from vehicles and equipment on sites should be reduced to acceptable levels.</p>	<p>-No complaints of noise associated with the project</p>	<p>-Construction contractor</p> <p>-HSE Officer</p>	Throughout the construction phase

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		<p>-Construction hours should be between 08AM and 5PM to prevent noise generated by equipment and movement of heavy vehicles onsite.</p> <p>-When operating excavators and other noise generating machinery onsite, workers should be equipped with personal protective equipment (PPE) such as earplugs to reduce exposure to excessive noise.</p> <p>-Operational activities should only be carried out between 08:00 and 17:00 on working days to ensure that noise is strictly limited to normal working days only i.e. no work is done in the weekends.</p> <p>-All machinery and vehicles should be maintained to reduce noise levels.</p>			
Archaeology and heritage	Accidental disturbance of archaeological or heritage objects	<p>-If any archaeological materials or human burials or skeletal remains are uncovered during construction earthworks, the work in the immediate area should be halted, the finds would need to be reported to the NHC may require inspection by an Archaeologist. The ECO should have the area fenced off and contact the NHC.</p> <p>-Avoid direct damaging of archaeological or heritage such that may be encountered during excavations.</p> <p>-All accidental discoveries shall be reported immediately to an archaeologist/heritage practitioner so that an investigation and evaluation of the finds can be made, acting upon advice the HSE Officer will advise the necessary actions to be taken.</p> <p>-Familiar with the NHC's Chance Find Procedure (Appendix 1 of this document) and if uncertain about the procedure should</p>	<p>-Preservation of all artefacts and objects that are discovered onsite</p> <p>-Salvage equipment</p> <p>-Flag tapes</p> <p>-GPS (site marking)</p>	<p>-Site Manager</p> <p>-Construction contractor</p> <p>-HSE Officer</p>	As and when required, i.e., prior to site set up, and during construction.

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		receive training by a suitably qualified archaeologist with respect to the identification of archaeological/heritage remains and the procedures to follow if such remains are discovered throughout the project activities' duration.			

**Table 5-4: Operations and Maintenance Phase - Management and mitigation measures**

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
EMP implementation and training	Lack of EMP awareness and implications thereof	-EMP trainings should be provided to workers onsite. -All site personnel should be aware of necessary health, safety, and environmental considerations applicable to their respective work. -The implementation of this EMP should be monitored. The site should be inspected, and a compliance audit <b><u>bi-annually for overall EMP implementation.</u></b> -EMP non-compliance penalty system should be implemented.	-Records of EMP compliance/monitoring conducted bi-annually -The ECC is renewed every 3 years -Records of EMP training conducted.	-Site Manager -HSE Officer	Throughout the phase, and when deemed necessary (for certain activities such as ECC renewal)
Water resources use	Over-abstraction of groundwater resources	-Apply for and obtain a groundwater abstraction permit from the Department of Water Affairs at MAWLR. This permit should be obtained prior to the commencement of the project activities. -The annual volume allocated to the permit should be adhered to and if necessary, the Proponent should aim to only abstract water when needed.	-water records are kept -water preservation measures are in place -the water abstraction permit is obtained and conditions adhered to	-Site Manager	Throughout the project cycle



Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		<p>-Groundwater quality monitoring (sampling) should be done a quarterly basis and a groundwater database developed as soon monitoring starts.</p> <p>-Groundwater in the Town flows from the east to the west/northwest Therefore, boreholes within 2km north-western/west side (downstream) and east (downstream) of the project should be considered and used as monitoring boreholes. Thus, forming part of the monitoring network.</p> <p>-Water should be use water wisely, by re-using water onsite, where possible.</p> <p>-Irrigation should be restricted to actual field footprints only, i.e. watering / irrigation should only be done on sections of the fields that really require it (water).</p> <p>-The design of a sufficient groundwater monitoring plan is essential for the management of the groundwater resource.</p> <p>-Inspection of leakages from the water tanks must be made on a weekly basis to prevent water losses and wastage.</p>			
Soil and water resources pollution	Pollution of soils and water resources	<p>-Irrigation systems should be designed and managed for zero or minimum deep percolation during the growing seasons to keep fertilizer and pesticides in the root zone as long as possible.</p> <p>-Nitrate contamination of groundwater should be minimized by carefully controlling the timing and amount of nitrogen fertilizer applications according to crop needs, using slow-release fertilizers and other Best Management Practices (BMPs). This is done to keep nitrate in the root zones as long as long possible where it can be taken up the plant roots or denitrified.</p>	<p>-No visible signs of littering or fuel spills onsite</p> <p>-pollution measures are implemented onsite</p>	-Site Manager	Throughout the phase

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		<p>-Water pollution awareness for irrigation workers should be implemented.</p> <p>-All run off materials such as hydrocarbons, waste water and other potential pollutants associated with the project should be contained on site in designated containers and disposed of at the nearby municipal waste discharge standards, so that they do not reach water systems.</p> <p>-Septic tank (if any) onsite should be maintained regularly to ensure that waste is not leaching into the ground and eventually water resources.</p> <p>-Spill control preventative measures should be put in place to manage soil contamination, thus minimizing the contamination from reaching to groundwater.</p> <p>-Project waste including chicken manure should be properly contained and treated for proper disposal at the appropriate waste site.</p>			
Vehicular traffic safety	Presence of heavy vehicles onsite construction	<b>Please refer to construction phase management and mitigation measures.</b>	<p>-No complaints from members of the public regarding vehicular traffic issues related to the project activities.</p> <p>-All personnel operating the project vehicles and machinery are appropriately licensed and possession of valid driving licenses.</p>	-Site Manager	Throughout this phase

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
Occupational and community health and safety	General health and safety associated with project activities	<p>-Projected loads should be securely fastened to vehicles to avoid falling and injuring people.</p> <p>-Heavy vehicle and equipment should be properly secured to prevent any harm or injury to project personnel and community members moving near the site.</p> <p>-Personnel should be properly equipped with personal protective equipment (PPE) such as coveralls, masks, gloves, safety boots, earplugs, safety glasses, and hard hats.</p> <p>-Personnel should not be allowed to consume alcohol or other intoxicants prior to and during working hours as this may lead to mishandling of equipment resulting in health and safety risks.</p> <p>-The site should be equipped with security control gate to limit / restrict access to authorised personnel only.</p> <p>-Workers should be provided with training of the risks of mishandling equipment and materials on site.</p> <p>-When working on site, employees should be properly equipped with personal protective equipment relevant to the type of work they are doing on site.</p>	<p>-Comprehensive health and safety plan for the activities is compiled.</p> <p>-Availability of fully-furnished first aid kit onsite</p> <p>-Trained worker to administer first aid</p> <p>-Workers are adhering to the health and safety measures</p>	<p>-Site Manager</p> <p>-HSE Officer</p>	Throughout the phase
	Public safety and health	<p>-Empty hazardous containers that may be used onsite should be securely kept onsite, inside the site boundary before transporting the containers to the approved dumping site.</p> <p>-Elongated loads should securely fastened to vehicles so that they do not fall off and injure people along the roads.</p>	<p>-Empty hazardous containers and waste container kept within the site fence boundaries and out of public reach</p>	-Site Manager	Throughout the phase

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
Fire outbreaks	Accidental fire outbreak	<ul style="list-style-type: none"> <li>-Portable and serviced fire extinguishers should be availed onsite and availed onsite.</li> <li>-No open fires should be created onsite.</li> <li>-Potential flammable areas and structures such as fuel storage tanks should be marked as such with clearly visible signage and NO FIRE signage pasted up.</li> </ul>	-Fire extinguishers are onsite	-Site Manager	Throughout the phase
Littering and waste management	Environmental Pollution	<ul style="list-style-type: none"> <li>-Dispose of waste in a responsible manner and not to litter.</li> <li>-After each daily works, ensure that there are no wastes left onsite or scattered within site premises.</li> <li>-All domestic and general operational waste produced daily should be contained onsite until such that time it will be transported to the Municipal waste dumpsite.</li> <li>-No waste may be buried or burned on site or anywhere else.</li> <li>-The site should be equipped with separate waste bins for solid and general/domestic waste.</li> <li>-A penalty system for irresponsible disposal of waste onsite and anywhere in the area should be implemented.</li> </ul>	<ul style="list-style-type: none"> <li>-No visible litter around the project area</li> <li>-Provision of sufficient waste storage containers</li> <li>-Waste management awareness</li> <li>-Waste disposal permits to the Municipal dumpsite</li> <li>-Environmental, Health and Safety Statements and Policy</li> </ul>	-Site Manager	Throughout the phase
	Sewage generated onsite	<ul style="list-style-type: none"> <li>-Provide sufficient toilet facilities for workers.</li> <li>-No open defecation is allowed on and around the site.</li> <li>-Make use of constructed flushing toilets.</li> </ul>	-there are sufficient toilets within the project site	-Site Manager	Throughout the phase
Odour	Fastidious odours effects	<ul style="list-style-type: none"> <li>-Incorporate odour control technologies onsite, where possible.</li> <li>-With regards to persistent odour issue, should the residents still express grievances over odour from poultry farming, consider</li> </ul>	-Odour measures are considered and implemented.	-Site Manager	Throughout the phase

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
		consulting with the affected residents to collectively find ways to solve the issue.  -Clean the chicken coop regularly to prevent waste build up which results in odour.	-Bi-annual odour interviews with neighbours to the site.  -Records of odour related grievances		

### 5.3 Environmental Monitoring Actions

To ensure that the implementation of recommended environmental management measures is working and produces the desired results (minimizing the "medium" and uphold the "low" significance ratings of impacts), certain key impacts will need to be monitored and reported on. The "Observation, *compliance status and Recommended Action*" columns will be completed for every monitoring done on site.

Monitoring reports are to be compiled by the project HSE Officer, audited by an Independent Environmental Consultant, and submitted to the DEAF for archiving on a bi-annual basis (every 6 months throughout the project operations) or as required by the Environmental Commissioner (as per the ECC conditions). The environmental components or features provided in the Table will be updated accordingly once the project commences

## 6 RECOMMENDATIONS AND CONCLUSIONS

This EMP was prepared for Khoi Roots Farming for their proposed Once-off charcoal production, horticulture, Lucerne production and poultry farming a request by the MEFT in application for the project activities' ECC. The potential negative impacts associated with the project activities will be managed and mitigated by effectively implementing the recommended management action measures, and commitment on environmental monitoring and reporting.

It is recommended that the project and associated activities be granted an ECC, provided that:

- All the management and mitigation measures provided in this EMP are implemented effectively.
- All required permits, licenses, consents and or approvals required for the project activities prior to implementation are obtained on time and renewed as required. These permits include the:
  - Land use (leasehold) consent and associated permits from the Outjo Municipality
  - Forestry Harvesting & Marketing Permit (valid for 3 months) from the nearest MEFT's Forestry Office
  - If necessary, a consumer installation certificate/permit for the storage of fuel onsite in the volume of 600 litres or more. This certificate is obtained from the Petroleum Affairs Directorate of the Ministry of Mines and Energy (MME)
  - Borehole drilling permit from DWA (MAWLR)
  - Groundwater Abstraction to be obtained from and renewed with the DWA

- If necessary, effluent (wastewater) discharge permit from the Water Environment Division of MAWLR
- Agricultural feeds, fertilizers and other related permits from the DAEES at MAWLR.
- Where required and emphasized, improvements should be made with full commitment and effectively put in place.
- The Khoi Roots Farming and their project workers, contractors and or specialists (consultants) comply with the legal requirements governing the project and its associated activities.
- All the necessary environmental and social (occupational health and safety) precautions provided are adhered to.
- An Environmental Officer or Consultant should effectively conduct Environmental (EMP) Compliance through Bi-Annual Monitoring and most importantly.
- Ensure timely renewal of the ECC. An ECC renewal application can be submitted at least 1 month before the expiry date of the valid ECC to allow time for the evaluation of the application and approval by the Environmental Commissioner.
- The first EMP Compliance check (Bi-Annual Environmental Monitoring) should be done 6 months from the commencement of the project activities (from construction) which will see progress reporting on the project activities. The monitoring exercise can be undertaken either by the project Environmental Officer, or an independently appointed Environmental Consultant. An Environmental Audit/Compliance/Bi-Annual Report shall be compiled for every monitoring and submitted to the DEAF at the MEFT for archiving.

In conclusion, Serja Consultants believes that the effective implementation of the measures provided in this EMP will help Khoi Roots Farming to manage (where avoidance is impossible) the potential negative impacts. The implementation of management and mitigation measures will help to reduce the significance of impacts to acceptable levels to the environment, thus ensuring environmental protection and sustainability while maximizing the project benefits.

**APPENDIX 1: CHANCE FINDS PROCEDURE (AFTER KINAHAN, 2020)**

Areas of proposed projects may be subject to heritage survey and assessment at the planning stage. These surveys are based on surface indications alone, and it is therefore possible that sites or items of heritage significance will be found during development work. The procedure set out here covers the reporting and management of such finds.

**Scope:** The “*chance finds*” procedure covers the actions to be taken from the discovery of a heritage site or item to its investigation and assessment by a trained archaeologist or other appropriately qualified person.

**Compliance:** The “chance finds” procedure is intended to ensure compliance with relevant provisions of the National Heritage Act (27 of 2004), especially Section 55 (4): “*a person who discovers any archaeological .... object .....must as soon as practicable report the discovery to the Council*”. The procedure of reporting set out below must be observed so that heritage remains reported to the NHC are correctly identified in the field.

Manager/Supervisor must report the finding to the following competent authorities:

- **NHC of Namibia (Head Office: +264 61 244 375 / Technical Office +264 61 301 903)**
- **National Museum (+264 61 276 800),**
- **National Forensic Laboratory (+264 61 240 461).**

**ARCHAEOLOGICAL MATERIAL MUST NOT BE TOUCHED.** Tempering with the materials is an offence under the heritage act and punishable upon conviction by the law.

**Responsibility:**

**Operator:** To exercise due caution if archaeological remains are found

**Foreman:** To secure site and advise management timeously

**Superintendent:** To determine safe working boundary and request inspection

**Archaeologist:** To inspect, identify, advise management, and recover remains

**Procedure:****Action by person identifying archaeological or heritage material:**

- a) If operating machinery or equipment stop work
- b) Identify the site with flag tape



- c) Determine GPS position if possible
- d) Report findings to foreman

Action by foreman

- a) Report findings, site location and actions taken to superintendent
- b) Cease any works in immediate vicinity

Action by superintendent

- a) Visit site and determine whether work can proceed without damage to findings
- b) Determine and mark exclusion boundary
- c) Site location and details to be added to project GIS for field confirmation by archaeologist

Action by Archaeologist

- a) Inspect site and confirm addition to project GIS
- b) Advise NHC and request written permission to remove findings from work area
- c) Recovery, packaging and labelling of findings for transfer to National Museum

In the event of discovering human remains

- a) Actions as above
- b) Field inspection by archaeologist to confirm that remains are human
- c) Advise and liaise with NHC and Police
- d) Recovery of remains and removal to National Museum or National Forensic Laboratory, as directed.