Draft Environmental Management Plan (EMP) for:

The Proposed Establishment of a Namibian Correctional Service (NCS) Fully-fledged Facility and Irrigation Activities in Ohongajokatjo, Kaoko-Otavi Settlement in the Kunene Region

Document Type: **EMP**

Reference No.: **221215000710**

Author: **Fredrika Shagama** Company: **Excel Dynamic Solutions (Pty) Ltd** Telephone: **+264 (0) 61 259 530** Post: **Box 997154 Maerua Mall, Windhoek** Email: **info@edsnamibia.com**	Proponent: **Namibian Correctional Service (NCS)** Contact person: **Commissioner Immanuel Ngolo** Telephone: **+264 61 61 284 6000/6921** Post: **Private Bag 13281, Windhoek** Email: **immanuel.ngolo@ncs.gov.na**

December 2022

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

LIST OF ABBREVIATIONS

Abbreviation	Meaning
BID	Background Information Document
CP	Centre Pivot (irrigation technique)
DAPEES	Directorate of Agricultural Extensions and Engineering Services
DEAF	Department of Environmental Affairs and Forestry
DI	Drip Irrigation
EA	Environmental Assessment
EAP	Environmental Assessment Practitioner
ECC	Environmental Clearance Certificate
EDS	Excel Dynamic Solutions
EIA	Environmental Impact Assessment

Abbreviation	Meaning
EMA	Environmental Management Act
EMP	Environmental Management Plan
GG & GN	Government Gazette & Government Notice
IAPs	Interested and Affected Parties
MAWLR	Ministry of Agriculture, Water and Land Reform
MEFT	Ministry of Environment, Forestry and Tourism
NAMPOL	Namibian Police
NCS	Namibian Correctional Service
NORED	Northern Regional Electricity Distributor
PPE	Personal Protective Equipment
Reg / S	Regulation / Section
SABS/SANS	South African Bureau of Standards / South African National Standards
UN WFP	United Nations World Food Program

1 INTRODUCTION

1.1 Project Background and Locality

The Namibian Correctional Service (NCS) (hereinafter referred to as The Proponent) intends to establish and operate a fully-fledged NCS facility and irrigation activities in Ohongajokatjo Village located about 10km east of Kaoko-Otavi Settlement in the Kunene Region (hereinafter referred to as the *Project* or *Site*). The Site is shown in Figure 1-1. The activities will be established and carried out on a 250 hectare (ha) that will include the NCS facility and related operational buildings (30ha) and the farming area of 220ha in Ohongajokatjo Village, located about 39km Southwest of Opuwo (between Opuwo and Sesfontein). The centre GPS coordinates of the proposed site: -18.298036° 13.723656°. Since the Project will be in a communal land, a Land Use Consent has been issued to NCS.

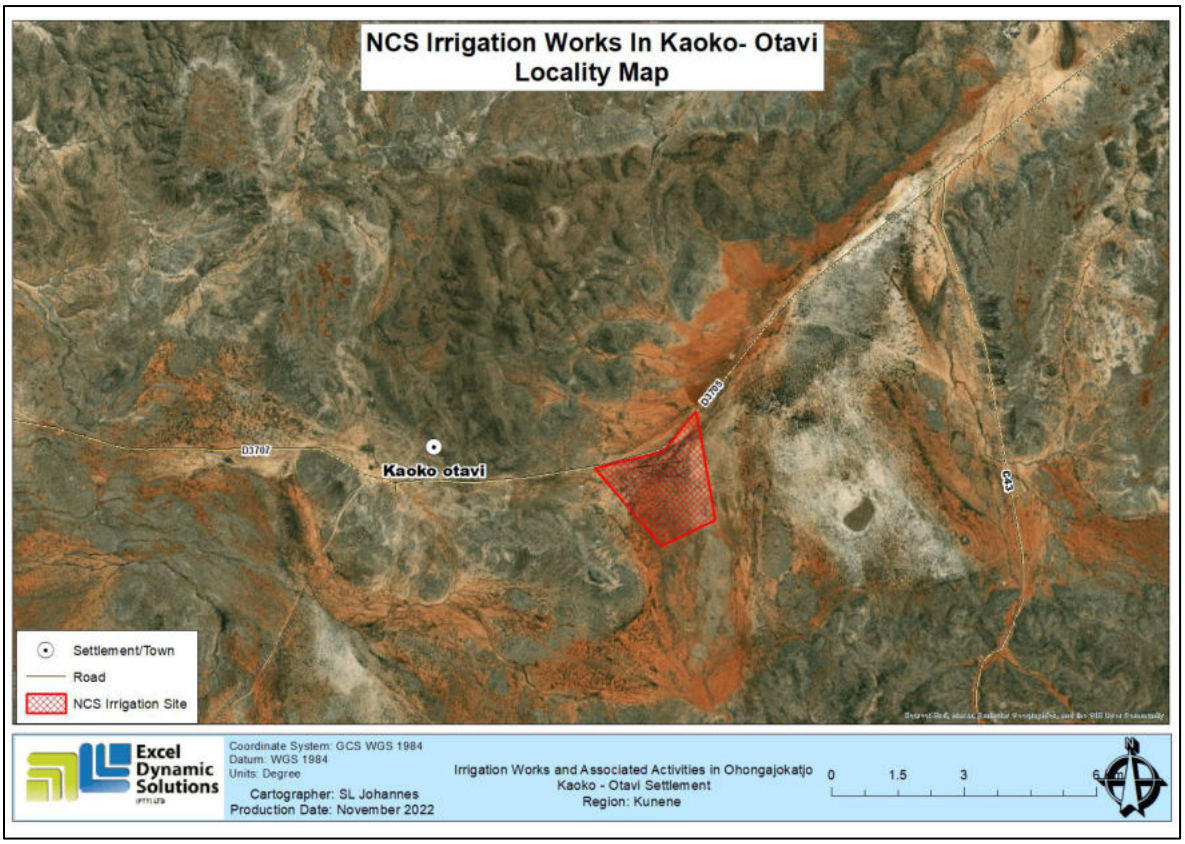

Figure 1-1: Locality of the proposed NCS Facility and Irrigation activities Site near Kaoko-Otavi in the Kunene Region

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

Regulation 8(j) of the EIA Regulations (2012) requires that a draft Environmental Management Plan (EMP) shall 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 during the project cycle. 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 purpose of this document is, therefore, to guide environmental management from rezoning to operational phase.

1.3 Application for an Environmental Clearance Certificate (ECC)

Agricultural and associated activities are listed in the EIA Regulation as activities that may not be implemented without an Environmental Clearance Certificate (ECC) under the Environmental Management Act (EMA) (2007) and its 2012 Environmental Impact Assessment (EIA) Regulations. The listed activities as per EIA regulations as relevant to the proposed activity/development are as follows:

''*7. AGRICULTURE AND AQUACULTURE ACTIVITIES AND ASSOCITAED ACTIVITIES*

8. WATER RESOURCE DEVELOPMENTS

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

- 8.7 Irrigation schemes for agriculture excluding domestic irrigation.''

To ensure that the project activities comply with the environmental management laws, the Proponent appointed Excel Dynamic Solutions Pty Ltd (a team of independent Environmental Assessment Practitioners) to undertake the required Environmental Scoping Assessment (ESA) process and apply for the ECC. This process includes public & stakeholders' engagement and consultation, compilation of the ESA Report and draft Environmental Management Plan (EMP). These documents will then be submitted to the Environmental Commissioner at the Department of Environmental Affairs and Forestry (DEAF) for evaluation and consideration of the ECC.

The application for the ECC was compiled and submitted to the Environmental Custodian, the Ministry of Environment, Forestry and Tourism (MEFT)'s Department of Environmental Affairs and Forestry (DEAF) for consideration of the ECC by the Environmental Commissioner at MEFT. The ECC would be considered upon submission of an ESA or Scoping Report and this Draft Environmental Management Plan (EMP).

1.4 Appointed Environmental Assessment Practitioner

To satisfy the requirements of the EMA and its 2012 EIA Regulations, NCS appointed a team of independent environmental consultants (Excel Dynamic Solutions (Pty) Ltd (EDS)), to conduct the required Environmental Assessment (EA) process. This EMP was drafted by Ms. Fredrika Shagama, an experienced EAP and qualified Geohydrologist with over 7 years of experience in the Environmental and Groundwater Management Consulting sector.

The description of the project activities is briefly provided under the next heading (Chapter 2).

2 THE DESCRIPTION OF PROJECT ACTIVITIES

2.1 Planning and Design Phase

Upon approval of the EIA Study (and issuance of the ECC), and completion of all necessary planning and design (administrative/preparatory) works, construction works of the Site will commence. Construction works will be outsourced to a contractor (to be appointed on tender).

The preliminary design layouts or drawings of the Site are not yet available, however, they will be prepared during this phase prior to establishment.

2.2 Site Clearing (De-Bushing) and Construction Phase

This will entail site clearing of some of the shrubs on the project site, and earth levelling in preparation of the installation of above-mentioned services infrastructure and erection of the NCS facility and supporting structures.

The construction work will also include the installation of irrigation systems and associated infrastructure on the demarcated areas at the Site. Furthermore, in preparation for the operational phase, the construction works will also entail the establishment of the water pipeline system and its connection to the water source (Site boreholes) and project Site pumps.

The following works will be done in terms of infrastructure and services provision:

- Construction of NCS facility buildings, related facility operations buildings and related infrastructures such as stormwater management channels, access roads, offloading zones, etc.
- Installation of; power supply cables, potable water pipelines, sewage systems and wastewater disposal pipelines.
- For the construction of the Site, construction materials will be sourced from the local building materials suppliers in Opuwo. And if necessary, and as required, materials will be sourced from elsewhere in the country or outside the country and as per the required and approved material standards.

2.2.1 Project Input and Resources Requirements

In terms of inputs and resources to undertake the proposed irrigation activities, the following will be required:

- Vehicles (trucks, 4x4 bakkies, etc.), equipment and machinery, temporary structure facilities such as camping, offices and or administration rooms as well as ablution.
- Hoses, centre pivots, pipes, irrigation controllers, sprinkler heads, pumps, nets, and poles.
- Storage facilities for project equipment and materials as well as containers (water, fuel, and other supplies).

2.3 Post-Construction Site Rehabilitation

Once construction phase has been completed, the associated works will be ceased, and site cleaned up in preparation for the next phase (operations). The activities to be carried out to clean up and rehabilitate the site post-construction are as follows:

- Dismantling and removal of all infrastructures and structures that will no longer be required for the operational and maintenance phase. These structures include camping sites, storage tanks, onsite temporary construction offices and ablution facilities and other supporting structures erected for construction. These will be transported to designated storage facilities offsite.
- Removal of all construction related vehicles, machinery, and equipment from site to designated parking and storage sites off site, respectively.
- Carrying away the waste storage containers and disposal of waste to nearest designated and approved waste management site (in Opuwo).
- Closure of all onsite access roads that may have been created for the construction phase and no longer required for operational phase.
- Levelling of stockpiled topsoil and where possible, backfilling of all construction excavated pits and trenches.

2.4 Operational and Maintenance Phase

It is within this phase that the irrigation and associated activities will be undertaken, and maintenance of the irrigation fields and equipment done by the Proponent (and or their appointed maintenance contractors).

The proposed project will be implemented by NCS in close collaboration with the local UN's WFP, while maintenance of the Site will be done by the NCS.

For the operational phase, the Site will have the equipment and machinery listed below.

- Seven (7) 30 ha center pivots
- A sprinkler irrigation system for 10 ha
- One (1) Combine harvester with maize and wheat head.
- Four (4) tractors
- Two (2) maize planters
- Two (2) wheat planter
- Two (2) mould board ploughs
- Two (2) disc ploughs
- Two (2) rippers
- One (1) self-propelled boom sprayer
- One (1) Hammer mill with a pre-cleaner
- One (1) 1400-ton Silo
- One (1) Cool-room for vegetable
- Two (2) warehouse grain storages
- Two (2) storerooms for inputs and farming implements
- Security perimeter fence
- One (1) diesel tank (23,000-liter volume)
- One (1) 30-ton loading truck
- Houses for NCS officers
- Offenders' accommodations
- NCS Administration building and other facility operations related buildings
- One (1) vegetable planter
- Two (2) seedbed preparators
- Four (4) 10-ton trailers

2.4.1 The Irrigation Method and Process

The agricultural / irrigation Project is expected to have seven (7) center pivots (to be determined once the total area is known) each measuring thirty (30) hectares. These center pivots will be used to produce crops such as maize, and wheat. Most of the maize, wheat and vegetables produced will be supplied to Namibian Correctional Service facilities, Namibian Police and to the community schools feeding program.

The description of the centre pivot irrigation method is described in the Scoping Report as per Phocaides (2007).

The crops that will be grown at the Project site as part of the proposed activities are as follows.

2.4.1.1 Maize Production

Each year, the total area that will be planted with maize during summer is 210ha, however, winter maize planting will also be considered to maximize production. The expected yield of maize is eight tons (8 tons/ha) per hectares and the total output will be (1680 tons x N$7.50 x 1000kg) twelve million and six hundred thousand (N$12,600,000.00) per summer. However, the price of

maize grain is expected to increase with N$1.00 per ton every year as a measure to mitigate the inflation rate.

2.4.1.2 Wheat production

Similarly, two hundred hectares (200ha) hectares will be planted with wheat during winter and the expected yield per hector is six (6 tons/ha) tons per hectares. Thus, six million and three hundred thousand (N$6,300,000.00) will be realized i.e. (1260 tons x N$5.00 x 1000 kg). The price for wheat grain is also expected to increase by N$1.00 per ton every year as a measure to mitigate the inflation rate.

2.4.1.3 Vegetable production

Ten (10) hectares will be used for vegetable production that will be supplied to NCS facilities, NAMPOL stations in Kunene, Omusati, Ohangwena and Oshana Regions as well as the school feeding program. Every month, two point five (2.5ha) will be planted with vegetables and the estimated yield per hectare is ten (10 tons) tons which translates into N$250,000.00 per month (2.5ha x N$10.00 x 10,000kg).

2.5 Human Resources, Services, and infrastructure

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

- Human Resources (Workforce): Temporary employment opportunities will be created during the construction phase. However, the exact number of people to be employed by the appointed contractor cannot be determined at this stage. Therefore, the number will be determined by the contractor based on project needs. Similarly, for the operational phase, some people will be employed onsite to help NCS with the operations of the Project.
- Accommodation: During construction, the very skilled that may be from outside Kaoko-Otavi and Opuwo/Sesfontein and general workers who are live over 2km from Site are expected to be housed in tented camps onsite (when necessary) or commuting from Opuwo. Construction workers from surrounding areas will be commuting from and to their homes daily. This is to avoid having too many workers living on site for the duration of the construction phase. During operations, permanent accommodation facilities (for offenders working onsite and Project staff) will be constructed onsite.
- Water supply: Water for the Project and related activities will be sourced from the existing water supply of five (5) boreholes onsite. The quantity of water consumption is not yet

known. Commonly there are two employed irrigation methods/techniques, namely the Centre Pivot (opted for the Project) and Drip irrigation. The two irrigation techniques have different water requirement per hectare of irrigated land, therefore, the two have been weighed and assessed in the environmental assessment report (under the alternatives chapter of the Scoping Report)) to select the best option or combined, from both economic, technical, and environmental perspectives.

- Power and Fuel Supply (machinery and equipment): During construction, diesel generators will be used to provide power to machinery and equipment. For the operations, the Site will be connected to the power grid that pass by the Site (connecting Kaoko-Otavi to Opuwo. The power supply agreements will be entered to by NCS and NORED (the regional electricity distributor). As a backup, the Project will be equipped with generators to be kept on standby onsite.
- Solid waste and Sewage management: Solid waste will be stored on-site in designated waste bins and transported to the municipal site in Opuwo Town, as often as necessary.
  Sewage: the construction workers will be using portable toilets throughout this phase. These toilets will be provided by the appointed construction contractor. For the operational phase, septic tank and sewer pond connected toilets will be erected and installed onsite.
  Hazardous waste: The hazardous substance such as oil/fuels and grease as well as used oils will be carefully handled and stored in a standardized container for disposal at the nearest approved hazardous waste management facility in the country.
- Site Access: The site is accessible from the C43 via D3705 by the existing single-track sandy/gravel access roads that will be utilized by project related vehicles.
- Site Safety and Security: The construction contractor will construct a temporary fence wall or corrugated iron sheets around the construction site to control access to the site. For operations, a security perimeter fence will be constructed around the site.
  It is expected that there will be construction vehicles and equipment on site during this phase. It is for this reason that 24-hour onsite security personnel will need to be appointed to guard the equipment against possible equipment vandalism and theft and community safety.
- Health and Safety: To ensure health and safety onsite throughout Project implementation (from construction throughout to operational and maintenance), the Project personnel will be provided with appropriate Personal Protective Equipment (PPE). A fully furnished first aid kit will be provided onsite, whereby 2-3 workers trained on how to administer first aid.

- Potential Accidental Fire Outbreaks: A minimum of two fire extinguishers will be readily available onsite during construction. During the operational phase, each building/structure will be equipped with a well-serviced fire extinguisher.
  Due to the magnitude and type of facility (Project) and related infrastructure, fire hydrants and fire reel hose will be availed onsite. A fully-fledged facility such as this needs to have these services on the ground (in place), because structures such as silo and other grain, seeds, fertilizers, and weeds controlling chemicals storage facilities are flammable (high fire risk factors).

2.5.1 Crop Production Care and Water Use and Management

The operational works will entail the following in terms of crop growth and production:

- Weed and nutrients (fertilizer application) control, and
- Insect, and pest management as well as diseases control.

Furthermore, operations will also include some actions for water use and management:

- Pumping water from the boreholes to irrigation site areas as required,
- Frequent measuring and recording of water volumes to monitor water use and for management purposes, and

Monitoring of onsite water storage reservoir to ensure safety and manage possible water leakages.

2.5.2 Harvesting and Processing of Crops

Once the planting and growth period is over, the crops will then be carefully harvested into onsite containers, packaged and or processed for the destinations at the NCS facilities, NAMPOL stations in the target regions and supply to the local school feeding programs.

2.6 Decommissioning of Project Activities

Due to the nature of irrigation projects, where the project life span is based on the reliability of resources, such as water from the source, the life span of an irrigation project of this nature would be generally more than 50 years as food would always be needed. Given the fact that there would always be a need for food to feed the offenders at the NCS facilities in the country, a complete decommissioning of the project activities is not anticipated at this stage.

3 LEGAL FRAMEWORK: PERMITTING AND LICENSING

The Proponent has the responsibility to ensure that the 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: The list of applicable of legal requirements and permits to the Project activities.

Legislation / Policy / Guideline: Custodian	Relevant Provisions	Project Activity Licensing and Contact Details
Environmental Management Act (No. 7 of 2007) and its 2012 Environmental Impact Assessment (EIA) Regulations (Government Gazette (GG) No. 4878 Government Notice (GN) No. 30): **Ministry of Environment, Forestry and Tourism (MEFT)**	The EMA has stipulated requirements to complete the required documentation to obtain an Environmental Clearance Certificate (ECC) for permission to undertake certain listed activities.	The ECC should be renewed every 3 years, counting from the date of issuance from the date of issue of the ECC). Contact details at the Department of Environmental Affairs and Forestry (DEAF) of MEFT, Office of the Environmental Commissioner **Mr. Timoteus Mufeti** **Tel: +264 61 284 2701**
Fertilizers Farm Feeds and Agricultural Remedies Act No. 36 of 1947 and its 2007 Regulation: **Ministry of Agriculture, Water and Land Reform (MAWLR)**	The registration of Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies; should be done to regulate or prohibit the importation, sale, acquisition, disposal or use of fertilizers, farm feeds, agricultural remedies, and stock remedies.	The Proponent should ensure that they register these products and remedies to obtain relevant permits or licenses from the nearest Directorate of Agricultural Extensions and Engineering Services (DAPEES) in Kaoko-Otavi.
Traditional Authority Act (Act No. 25 of 2000): **Ministry of Urban and Rural Development (MURD)**	The Traditional Authorities should be involved in the planning of land use and development for their area.	The affected communal land falls under the Vita Royal House Traditional Authority (TA). Therefore, the TA should be consulted throughout, and Consent for land use should be obtained.

Legislation / Policy / Guideline: Custodian	Relevant Provisions	Project Activity Licensing and Contact Details
		Chief Tjimbuare or Mr. Ben Kapi at the Vita Royal House TA Office (in Opuwo) **Tel: +264 65 273 092**
Water Act No. 54 of 1956: **MAWLR**	The Act was aimed to control, conserve and use of water for domestic, agricultural, urban, and industrial purposes; to make provision for the control, in certain respects, of the use of sea water for certain purposes	The Regulations have been passed in December 2016 but have not yet been promulgated. Therefore, the Regulations of the 1956 Water Act still apply.
Water Resources Management Act No. 11 of 2013: **MAWLR**	Details on who and how water may be used. Section 45 describes "a person must not abstract/ irrigate and use water from a water resource unless the person holds a license issued by the Minister that authorises the abstraction and use of water from that water source.	The 2013 Water Act restricts water abstraction activities (for commercial purposes) without an authorised licence. The Proponent will be directly abstracting water from Site boreholes. Therefore, a Groundwater Water Abstraction and Use Permit should be applied for from the Department of Water Affairs at the MAWLR. **Contact: Mr. Franciskus Witbooi Division: Water Policy and Water Law Administration Division** **Tel: +264 61 208 7158** In the case of discharging Wastewater / Effluent into the environment, a Permit to do so should be obtained from MAWLR. Water Environment Division **Contact: Ms. Elise Mbandeka** **Tel: +264 61 208 7167**

Legislation / Policy / Guideline: Custodian	Relevant Provisions	Project Activity Licensing and Contact Details
Forestry Act 12 of 2001, Amended Act 13 of 2005: **MEFT**	Prohibits the removal of any vegetation within 100 m from a watercourse (Forestry Act S22 (1)). The Act prohibits the removal of and transport of various protected plant species.	The Site is covered by young camelthorn trees, that are protected plant species. Therefore, a Permit to remove them, if needed, should be obtained from the nearest Forestry office (Ministry of Environment, Forestry and Tourism (MEFT)) prior to removing the trees. **Contact person: Mr. Johnson Ndokosho (Forestry Director)** **Tel: +264 61 208 7666**
Petroleum Products and Energy Act (No. 13 of 1990) Regulations (2001): **Ministry of Mines and Energy (MME)**	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"	The Proponent should obtain the necessary authorisation from the MME for the storage of fuel on-site. **Mr. Carlo Mcleod (Ministry of Mines and Energy: Acting Director – Petroleum Affairs)** **Tel: +264 61 284 8291**
Road Traffic and Transport Act 52 of 1999 and its 2001 Regulations: **Ministry of Works and Transport (MWT)**	Provides for the control of traffic on public roads and the regulations pertaining to road transport, including the licensing of vehicles and drivers. Ensure the distance of 30m from the D3705 to the site boundary (road reserve).	A site access road permit from the existing road should be formalized by applying for it and obtained from the Roads Authority. **Mr. Eugene de Paauw (Roads Authority – Specialist Road Legislation)** **Tel.: +264 61 284 7027**
National Heritage Act No. 27 of 2004: **Ministry of Education, Arts and Culture (MEAC)**	This impact is likely during construction (site preparation and earthworks) when there is a potential inadvertent unearthing and damage of heritage resources.	Contact Details at National Heritage Council (NHC) of Namibia **Mrs. Erica Ndalikokule (NHC Director): Tel: +264 61 301 903**

4 EMP IMPLEMENTATION ROLES AND RESPONSIBILITIES

The Proponent has the overall responsible for the implementation of the EMP. However, the Proponent may delegate this responsibility or part of it to someone else 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 list of responsible parties and their roles in implementing the EMP.

Role (Person and or Institution)	Responsibilities
The Proponent (NCS)	-Managing the implementation of this EMP and updating and maintaining it when necessary. -Management and monitoring of individuals and/ or equipment on-site in terms of compliance with this EMP and issuing fines for contravening EMP provisions.
Project or Site Manager	-Ensure that relevant commitments contained in the EMP Action Plans are adhered to. -Collaborate with the ECO to ensure the implementation of the EMP, especially on the technical aspects and operations of the project operations. -Ensure the relevant staff is trained in procedures entailed in their duties. -Maintain records of all relevant environmental documentation for the project. -Through consultations and cooperation with the ECO/SHE officer, issuing fines to individuals who may be in breach of the EMP provision and if necessary, removing such individuals from the site. -Cooperate with all relevant interested and affected parties/stakeholders. -Development and management of schedules for daily activities in compliance with the EMP. -Ensuring compliance with relevant environmental and related authorisations and license conditions. -Identifying and appointing of appropriately qualified specialists (were necessary) to undertake the programmes in a timeous manner and to acceptable standards.
Construction (Site Establishment) Contractor	-Ensure that the relevant commitments contained in the EMP Action Plans are adhered to. -Compile relevant procedures and method statements for approval by the applicable phase site manager prior to initiation of activities.

Role (Person and or Institution)	Responsibilities
	-Ensure that all relevant staff are trained in procedures. -Maintain records of all relevant environmental documentation applicable to their work
Environmental Control Officer (ECO) or Safety, Health and Environment (SHE) Officer	-Ensure that relevant commitments contained in the EMP Action Plans are adhered to. -Planning and carrying out site inductions to the workers on-site and visitors to the work areas of the site. -Maintain records of all relevant environmental documentation for the project. -Reviewing the EMP annually and amending the document when necessary. -Management and facilitation of communication between the Proponent, and Interested and Affected Parties (IAPs) regarding this EMP. -Conducting site inspections (recommended frequency is monthly during the construction phase and bi-annually for the operation and maintenance) of all areas with respect to the implementation of this EMP (monitor and audit the implementation of the EMP). -Advising the Proponent on the removal of person(s) and/or equipment not complying with the provisions of this EMP. -Making recommendations to the Proponent with respect to the issuing of fines for contraventions of the EMP. -Undertaking an annual review of the EMP and recommending additions and/or changes to this document. -Ensuring that the operational activities on site operate according to the International System organization (ISO) standard 14001: 2015.

5 KEY IMPACTS AND ENVIRONMENTAL MITIGATION MEASURES

5.1 Key Identified Impacts

The key positive and negative impacts associated with the project are presented in Table 5-1.

Table 5-1: The key positive and negative impacts associated with the proposed Project activities

Positive Impacts	Negative (Adverse) Impacts
-Job opportunities during project establishment and operations through appointed contractors and locals. -Contribution to local and regional social economic development through food security -Reduction on the national budget for offender's rations, by producing own food supply to the other NCS facilities in the country. -Provisions of food supply to the NAMPOL stations in the selected regions and local school feeding programs. -Increased support for local businesses through the procurement of locally available goods and services. -The project will serve as a training for offenders on irrigation as part of their rehabilitation to help them become productive and law-abiding citizens after serving times. -Helping at the site will keep the offenders busy to reduce idleness amongst them. -Safeguard the sustainable existence of Namibia's agricultural sector	-Physical disturbance to site soils/land during site establishment and pollution. -Increased soil erosion due to land irrigation -Groundwater resources over-abstraction may negatively affect the local aquifers. -Potential pollution of soils and water resources from seepage of fertilizers, pesticides, wastewater, and hydrocarbons. -Dust (air quality) generated by project related traffic travelling on gravel. -Noise generated by project related vehicle and equipment, and traffic from and to the site. -Impact on biodiversity due to potential removal of site vegetation and habitat destruction. -Health and safety: health and safety risks when handling waste, machinery and equipment during the operations. -Environmental pollution (solid waste generation) – wastes generated during the project phases may lead to environmental pollution. Vehicular Traffic safety – the project works may potentially put pressure on the existing roads when project materials and goods are delivered to and from site. -Impact on archaeological and heritage resources from inadvertent destruction of subsurface sites/objects during earthworks.

The recommended measures to be implemented to mitigate and manage the adverse negative impacts listed above are provided under the next chapter and Table.

5.2 Environmental Management and Mitigation Measures

The management actions are aimed at avoiding the above-listed potential negative impacts, where possible. Where it is impossible to avoid these impacts, measures are provided to reduce the impacts' significance. The measures recommended in Table 5-2 are for the potential negative impacts are described and assessed in the Scoping Report compiled for the proposed Site.

These management and mitigation measures (action plans) are developed for implementation of the three Project phases, namely the planning & design, construction (establishment), and subsequent operational and maintenance.

There will be some overlaps with regards to some potential impacts' occurrence during the construction and operational phases, therefore potential impacts have not been separated for these project phases, particularly the construction and operational phases. The required management and mitigation plan actions have been presented together with key performance indicators, responsible person(s), resources and the timeline of such actions. These aspects form the headings of the mitigation measure Table, and they are as follows:

- Environmental aspect and issues for which management actions are required.
- Proposed impact mitigation measures.
- Key performance indicator (KPI) for monitoring success levels of management actions,
- Responsible person(s) for implementing the proposed management actions,
- Resources required to implement the measures (where applicable), and
- Implementation timeframes for the proposed management actions

Table 5-2: The Management and Mitigation Measures for the Planning & Design, Construction and Operational & Maintenance Phases

Aspect	Impact	Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
PLANNING & DESIGN PHASE						
EMP implementation and training	Lack of EMP awareness and implications thereof	-A Comprehensive Health and Safety Plan for the project activities should be compiled. This will include all the necessary health, safety, and environmental considerations. -An EMP non-compliance penalty system should be implemented on site. -The Proponent should appoint a SHE Officer to be responsible for managing the EMP implementation and monitoring.	-All required Plans and systems are compiled and in place Safety, Health and Environmental (SHE) Officer is appointed. -Records of EMP implementation Plans and Systems -An SHE officer or ECO is appointed	-Proponent	-Independent Environmental Consultant: EMP compliance and auditing -DEAF: site inspections for compliance -Identification of all persons involved in the implementation of the EMP	Pre-Construction
Irrigation system Technology	Mechanical and design failures	-All manufactured materials will be required to bear the mark of SABS/SANS approval. -The Proponent should ensure that the irrigation machinery and equipment as well as associated accessories are designed in such a way mechanical failure are minimal to none. -The irrigation system's design should make provision for water conservation during irrigation.	-Approved design according to international standards -Sufficiently and appropriately designed irrigation systems	-Proponent (overall responsibility) -Planning & Design Engineer	-Technical Expert (Planning & Design Engineer) -Irrigation specialist	Pre-construction

Aspect	Impact	Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
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: *Land use Consent from the Traditional Authority *Road access from the D3705 *Petroleum storage permits (if fuel is stored on site) *Required fertilizers, agricultural remedies, and other project related feeds. *Waste disposal authorization at the nearest dumpsite (Opuwo).	-Applicable permits and licenses to obtained from relevant authorities and kept on site for records keeping and future inspections	-Proponent	-Record of permits and authorizations obtained	Prior to construction and operations
Stormwater management	Runoff of polluted water into the environment	-Stormwater management plans (discharge points) should be designed and implemented on site to prevent the potential contaminated water run-off from reaching surface water resources during heavy rain seasons.	-Stormwater discharge points incorporated into the irrigation design	-Proponent (holds overall responsibility) -Panning & Design Engineer	-Technical staff (Planning & Design engineer)	Pre-construction phase
Communication between the Proponent and surrounding land users	Lack of communication (proper liaison) between surrounding land users (communities) and Proponent	-A clear communication procedure/plan which includes a grievance mechanism should be compiled.	-A Grievance Plan is developed and communicated to the communities through the leaders	-Proponent	-Grievance logbook residents -Contact person onsite	Prior to construction and throughout the subsequent phases

Aspect	Impact	Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
Employment	Creation of employment opportunities	-Non-skilled labour should be sourced from the Kaoko-Otavi area, in accordance with procedures approved by the relevant authorities. -Equal opportunity should be provided for both men and women. -Priority of employment should be given to local people, and only if necessary and due to lack of skills in the area, out-of-area people can be given some of the work. -The locals to be employed during the project phases should be provided with the necessary training of skills required for the project to avoid bringing in many out-of-area employees.	-Number and residence of locals employed -Correct and fair recruitment procedures are followed and practised. -More local people are employed for both skilled, semi and unskilled works. -Out-of-area people only employed for specialized skills that are not found in the Project area. -No complaints of unfair recruitment procedures.	-Proponent -Construction Contractor -Site Manager	-Constituency Council office to assist in identifying unemployed people -Notification via Opuwo Rural Constituency Office and Traditional Authority -Grievance and response records	Pre-construction In special cases, during the project phases, depending on the project needs
Procurement of goods and services	The conflicts arising owing to offering opportunities to outsiders over locals for services and goods they can offer	-The procurement of goods and services should follow a fair and transparent process. -Procurements for services and goods that are locally and nationally available should be open only to Namibian	-Number of hired contractors. -Record of hired or contracted companies or services providers	-Proponent -Project/Site Manager	None	Pre-construction As and when required for maintenance

Aspect	Impact	Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		companies with strong local participation. -The business opportunities such as site clearing, cleaning services and, where necessary, site maintenance works should be given to local companies.				
Specialised procurement of services	Design, construction contractors, and services	-All services related to project activities such as construction related works that the Proponent may need, preference should be given to local providers of such services. If not available locally, the services search should be extended to a regional level (Kunene Region) and lastly, nationally, or international, if all efforts lead to no success.	-Number of hired contractors	-Proponent -Construction Contractor	-Record of hired or contracted companies (services providers)	Pre-construction As and when required for maintenance.
Corporate Social Responsibilities (CSR)	The lack of support in the community during Project implementation may lead to tensions or mistrust from the communities towards NCS	-Ensure that the hired unskilled and semi-skilled are trained and intellectually capacitated to work onsite, thus empowering locals. -Obligation to honour CSR commitment to the communities by investing in community through training and donations (through school feeding programmes).	-Visible involvement in investing in the communities through community support	-Proponent -Project/Site Manager	None	Throughout the project cycle

Aspect	Impact	Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
CONSTRUCTION AND OPERATIONAL & MAINTENANCE PHASES						
EMP implementation and training	Lack of EMP awareness and implications thereof	-EMP trainings should be provided to all new workers on site. -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 done throughout **the as recommended below:** ***Daily - construction phase** ***Bi-annually – for operations** -An EMP non-compliance penalty system should be implemented onsite.	-Compliance monitoring conducted daily during construction -Bi-annual compliance for operations -Timely renewal of the Environmental Clearance Certificate (ECC) every 3 years	-Proponent -ECO/SHE Officer	-Monitoring reports . -Records of EMP training conducted	Throughout the construction and operation phases
Soils	Site soils (land) disturbance Soil erosion	-The topsoil stripped from certain site areas to enable construction works and can be returned to its initial position, should be returned (to prevent soil erosion). -All construction pits excavated on site should be rehabilitated	-Record any evidence of new traffic tracks outside of designated access roads by means of photographs. -Record evidence of	-ECO/SHE Officer -Proponent	-Tipper trucks and excavators to backfill trenches and pits	Throughout the construction phase Operational phase

Aspect	Impact	Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		and returned to their pre-excavation state as possible. -Soils that are not within the intended footprints of the site areas should be left undisturbed. -Project vehicles/machinery should stick to access roads provide and or meant for the project operations but not to unnecessarily create further tracks on and around the site by driving everywhere resulting in soil compaction.	new erosion gullies (photographs)			
	Soil pollution	-Spill control preventive measures should be in place on site to management soil contamination, thus preventing and or minimizing the contamination from reaching groundwater bodies. Some of the soil control preventive measures are: *Identification of oil storage and use locations on site and allocate drip trays and polluted soil removal tools suitable for that specific surface (soil or hard rock cover) onsite. *Maintain equipment and fuel storage tanks to ensure that they	-No complaints of pollutants on the soils -No visible oil spills on the ground or contaminated/pollution spots owing to construction activities.	-ECO/SHE Officer	-Soil pollution preventive resources such as kits, drip trays, awareness, etc	Throughout the construction and operational & maintenance phases

Aspect	Impact	Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		are in good condition, thus preventing leaks and spills. *The oil storage and use locations should be visually inspected for container or tank condition and spills. *Maintain a fully provisioned, easily accessed spill kit. Spill kits should be located throughout the active project sites contain the floor dry absorbent material and absorbent booms, pads, mats. *All project employees should be made aware of the impacts of soil pollution and advised to follow appropriate fuel delivery and handling procedures. *The Proponent should develop and prepare countermeasures to contain, clean up, and mitigate the effects of an oil spill. *Ensure employees receive basic Spill Prevention, Control, and Countermeasure (SPCC) Plan training and mentor new workers as they get hired in each phase of the project. -The site areas where hydrocarbons will be utilized, the surface should be covered with				

Aspect	Impact	Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		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. -Project machines and equipment should be equipped with drip trays to contain possible oil spills when operated. -All wastewater and hydrocarbon substances and other potential pollutants associated with the project activities should be contained in designated containers on site and later disposed of at nearby approved waste sites -In cases of accidental fuel or oil spills on the soils from site vehicles, machinery and equipment, the polluted soil should be removed immediately and put in a designate waste type container for later disposal as per the preceding bullet point. -Polluted soil must be collected and transported away from the				

Aspect	Impact	Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		site to an approved hazardous waste treatment facility. -Washing of equipment contaminated with hydrocarbons, as well as the washing and servicing of vehicles should take place at a dedicated (impervious) area. -Toilet water should be treated using one of the following methods: *Discharged into chemical toilets and periodically emptied out before reaching capacity and transported to a wastewater treatment facility. *A type of pit latrine (where excreta in the pit is treated to prevent the waste from being a water pollution risk).				
Water Resources	Water use (quantity) and overutilization	-Water should be efficiently used by implementing water saving measures such as recycle and re-use where necessary and possible. -A Groundwater Abstraction and Use Permit should be applied from MAWLR prior to project commencement.	-Proof or recording/ quantification of water saving efforts. -Water abstraction permit obtained -Water saving and conservation awareness are regularly raised to Project personnel	-Site Manager (holds overall responsibility) -ECO/SHE Officer -Construction Contractor	-None	During the construction and operational phases

Aspect	Impact	Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		-The Proponent should aim to only abstract/pump water when needed. -Water storage tanks should be inspected daily to ensure that there is no leakage to minimize water wastage on site. -In the case that there will be consideration for a reservoir(s) on site, these should be covered to minimize water losses through evaporation. Thus, minimizing the need to abstract more water to replenish reservoir loses. -Water conservation awareness and saving measures should be made to all employees and become accountable.				
	Water resources (quality) and pollution	**SURFACE WATER** -Consider carrying out construction works during the dry months of the year where potential surface run off from site to the nearby rivers is none. -All runoff materials such as hydrocarbons, wastewater and other potential contaminants should be contained on site in designated containers and disposed of appropriately.	-Effluents contained and stored in designated containers.	-Proponent (holds overall responsibility) -ECO/SHE Officer -Construction Contractor	-Non-permeable material to cover the ground surface at areas where hydrocarbons and potential pollutants are utilized. -Designated wastewater	-Throughout all the project phases

Aspect	Impact	Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		-The irrigated land should be maintained frequently to ensure that no uncontrolled contaminated water leaves the site unnoticed by incorporating stormwater management into the site layout. **GROUNDWATER** -Stormwater management plans (discharge points) should be designed and implemented on site to prevent the potential contaminated run-off from infiltrating into groundwater.			storage containers	
Biodiversity	Loss of Fauna and Flora	**Flora:** -A permit must be obtained from the Directorate of Forestry before any protected species is removed. The plant species include the *Acacia Mellifera and reficiens* (black and red-thorn camelthorn trees onsite- **Appendix 1**). -Vegetation found on the site, but not in the actual project footprints should not be removed but left to preserve biodiversity on the site area. -No onsite vegetation should be cut or used for firewood related to the project's operations. The	Flora -The record of names of all protected plant species identified prior to site clearing. -The permit to remove the necessary protected trees such as camelthorn and mopane is obtained from the nearest Forestry Directorate prior to removing them (only if obstructing operations) Fauna	-The Proponent -Site Manager -ECO/SHE Officer	-Barricading tape (to indicate working areas) -Technical Consultant (Botanist and or Ecologist) to help identify further protected species -Anti-poaching Unit of the Namibian Police Force -Ministry of Environment,	-Throughout the phases -Botanist involvement prior to construction

Aspect	Impact	Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		Proponent should provide firewood for his onsite camping workers from authorized firewood producer or seller. -Care should be taken when carrying out vegetation clearing without destroying all the site vegetation. **Fauna** -Personnel should refrain from killing or snaring any animal species (big or small) that may be found on and around the site. -Refrain from disturbing, killing or stealing locals' animals and/or small soil animals species found on site. -The poaching or illegal hunting of wildlife on and surrounding areas is strictly prohibited. -Any project related worker or visitor that will be caught attempting to poach (illegally hunt) wildlife in the area should be reported to the Namibian Police Force' Anti-poaching Unit for further actions. -Environmental awareness on the importance of biodiversity preservation should be provided	-Records of all vehicle-animal collision incidences. -No disturbance to unmarked site areas. -No complaints of livestock theft, snaring or killing related to the project personnel.		Forestry and Tourism (MEFT)	

Aspect	Impact	Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		to the site contractors, workers, and visitors.				
Air Quality	Air quality (dust)	-Construction schedule should be 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 (in dry months). -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) or certain parts of the local utilized gravel roads that is generating a lot of dust. -All access roads leading to the site should have speed limits of no more than 40km/h to minimise the amount of dust generated by the vehicles. -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.	-Dust suppression measures implemented -Visible efforts to curb dust	-Proponent -ECO/SHE Officer -Construction Contractors	-Grievance logbook -Dust suppression water tanks -Vehicle and machinery mechanic to ensure that vehicles and machinery do not emit harmful gases due to malfunctions	Throughout the construction phase

Aspect	Impact	Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		-The vehicles carrying dusty materials should be covered to prevent materials being blown from the vehicle. -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. -Project vehicles and heavy machines should not be left idling when not in use, such that they emit air polluting gases. -Project vehicles and machinery should be maintained through regular servicing to ensure that they do not release air polluting fumes while on and off site.				
Noise	Noise	-Noise from project vehicles and equipment on site should be reduced to acceptable levels. -Excavations and all activities that are likely to increase noise levels should be conducted between 8am and 5pm during weekdays. -When operating trucks such as hauling or any high noise level machinery, workers should be	-Weekdays activities during construction -PPE provided to workers operating noisy equipment and in noisy site areas.	-Site Manager -ECO/SHE Officer -Construction Contractor	-Clearly written placards with construction hours in a day placed at the turn off from D3705	Throughout construction

Aspect	Impact	Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		equipped with personal protective equipment (PPE) such as earplugs to reduce noise exposure. These PPE should be regularly checked/tested for effectiveness and on detected malfunction, should be replaced as soon as possible.				
Health, Safety and Security	General health and safety associated with project activities	-All items for treatment as specified in the material safety data sheets (MSDS) for hazardous materials shall be available in the comprehensive first aid kit onsite. -Establish an emergency rescue system for the evacuation of injured people, if needed. -Emergency procedures for accidents shall be communicated to all workers. -Ensure that personnel know where the first aid kits are located and who is trained in administering in first aid. -Heavy vehicle, equipment and fuel storage site should be properly secured, and appropriate warning signage placed where visible.	-Compilation of Comprehensive Health and Safety Plan. -Health, safety and environment inductions are provided to personnel and site visitors -Two or three personnel are trained on first aid administering	-Proponent -Site Manager -ECO/SHE Officer -Construction Contractor	-Health and Safety Policies -First aid kit -PPE	Prior to site setup activities and throughout the phases

Aspect	Impact	Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		-An emergency preparedness plan should be compiled, and all personnel appropriately trained. -Workers should not be allowed to drink alcohol prior to and during working hours as this may lead to mishandling of equipment which results into injuries and other health and safety risks. -The site to be equipped with "danger" or "cautionary" signs for any potential danger or risk area identified on site. -A security guard should be part of the team to look after the Project equipment and vehicles that would be left onsite.				
	Occupational Health and Safety	-When working on and moving around the site, employees and visitors should be properly equipped with adequate personal protective equipment (PPE) such as coveralls, gloves, safety boots, earplugs, dust masks, safety glasses, etc. -The Proponent must avail adequate and appropriate PPE to all workers and visitors.	-Regular health screening of workers -Bi-annual health and safety audits done.	-Site/Project Manager (holds overall responsibility) -ECO/SHE Officer	-Funds to acquire health and safety related equipment. and to pay for employee medical services -First Aid training for at least 1 personnel at each work site	Throughout the project phases and when required

Aspect	Impact	Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		-Timeously recording and reporting of all health and safety incidences.				
	Potential increase of prevalence of HIV and AIDS, as well as other sexually transmitted diseases (STDs) prevalence	-The workers should be engaged in health talks and training about the dangers of engaging in unprotected sexual relations which results in contracting HIV/AIDS and other sexual related infections. -Provision of condoms and sex education through distribution of pamphlets and health trainings. These pamphlets can be obtained from local health facilities.	-No new infections recorded linked to Project workers -Occupational health and safety personnel -Sex and Health Education/Awareness -Provision of condoms at the campsite	-Site Manager -ECO/SHE Officer	-Provision of sexual health education -Condoms made available onsite	Throughout the Project phases
Health and safety	Accidental fire outbreak	-Portable fire extinguishers should be provided on site. -Fire hydrants and fire reel hose should be availed onsite	-No wildfires recorded (due to presence of workers)	-Site Manager -ECO/SHE Officer	-Fire extinguishers (1 per vehicle) and 1 per working site	Throughout construction and operational phases

Aspect	Impact	Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		particularly for high fire risk structures and substances such as silo and other grain, seeds, fertilizers, and weeds controlling chemicals storage facilities. -No open fires to be created by Project personnel. -Potential flammable areas and structures such as fuel storage tanks should be marked as such with clearly visible signage.				
Archaeology and heritage	Accidental disturbance and destruction of archaeological or heritage objects and sites	-Caution should be exercised when carrying out excavations associated with the project activities if archaeological/heritage remains are discovered. -Identified of any archaeological significant objects on the site should not be disturbed but are to be reported to the project Environmental/Safety officer or National Heritage Council offices for further instructions and actions. -The Site manager should familiarise themselves with the National Heritage Council's Chance Find Procedure (please refer to **Appendix 2 of this**	-Preservation of all artefacts that are discovered around project area -Cessation of work upon discovery / unearthing of unknown objects	-Site Manager -Construction Contractor -ECO/SHE Officer -Archaeologist	-Salvage equipment -Flag tapes -GPS (site marking) -Technical Staff/Consultant (Archaeologist to help identify and advise on heritage object discovery)	As and when required, prior to site setup activities and upon encounter. -Archaeologist to be present during the earth workings

Aspect	Impact	Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		document) and if uncertain about the procedure should 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 duration.				
Social conflicts	Job seeking, private property intrusion or damage	-The Proponent should inform their workers (especially those from outside the site area) about the importance of respecting the locals' properties by not intruding or damage their homes or yard fences. -Any personnel that will be found guilty of intruding peoples' properties should be called in for disciplinary hearing and/or dealt with as per their employer' (Proponent)'s code of employment conduct -Project personnel should be advised to respect the community and local's private properties, values, and norms. -Personnel should not wander in people's private yards or fences without permission.	-No complaints of property theft or damage related to project workers -More local workers who are familiar with the values, and way of living in the area	-Site Manager -SHE Officer	-Grievance logbook -Employment Code of Conduct	Pre- Construction and throughout the Project phases

Aspect	Impact	Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		-Avoid the killing or disturbing livestock or wild animals that may be seen on and around the site.				
Buried service and infrastructure pipelines or cables	Damage or deformation of possible buried pipelines and cables that may run across the Site	-Excavation works on top and within the servitude of water supply pipelines should be avoided at all costs. -The Proponent (with the assistance of local communities) should mark the positions/route of buried water pipeline to avoid pipeline damage.	-Marked position of the buried pipelines and servitudes -No signs nor complaints of damaged pipelines	-Proponent -Site Manager	-None	Pre-construction
Littering and waste management	Environmental Pollution	-Project personnel should be sensitized to dispose of waste in a responsible manner and not to litter. -Ensure that there are no wastes left on the site at the end of day. -All domestic and general operational waste produced daily should be contained onsite until such that time it will be transported to the nearest designated waste sites. -Do not bury or burn waste onsite or anywhere else.	-Site wide evaluation of the general condition of all waste storage sites must be conducted as part of the bi-annual environmental audits -A register of all waste generated on site is kept on site. -All waste disposal permits from relevant authorities are available on site. -No littering on and around the project site	-Site Manager -Construction Contractor -ECO/SHE Officer	-Funds to acquire waste storage bins/ drums; and transport all waste from the site. -Waste storage containers	Throughout the Project phases.

Aspect	Impact	Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		-Provide separate waste bins for hazardous and general/domestic waste. -Sewage waste should be stored as per the portable chemical toilets supplied on site and regularly disposed of at the nearest treatment facility -Oil spills should be taken care of by removing and treating soils affected by the spill. -A penalty system for irresponsible disposal of waste on site and anywhere in the area should be implemented. -An emergency plan should be available for major/minor spills at the site during operation activities and during the transportation of the product(s) such as fuel to site -Ensure careful storage and handling of fuels on site.				
	Wastewater generated by workers and	-Provision of toilet facilities for project workers and visitors (chemical toilet during construction). Emptying of	-Adequate toilet facilities on site.	-Ste Manager -ECO/SHE Officer	-Chemical toilets or excavator (pit creation), waste	At site setup and throughout the phases

Aspect	Impact	Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
	visitors (sanitation)	chemical toilets according to the manufacturer's specifications. -The septic tanks and sewer pond should properly bunded and lined respectively.			treatment agents/chemicals	
	Hazardous waste	-All hazardous materials shall be stored (on bunded area), handled and disposed of according to the applicable material safety data sheets (MSDS), as well as applicable regulations (e.g., the Health and Safety Regulations). -Hazard identification signage shall be erected at appropriate locations. -All hydrocarbon substances should be contained in designated containers on site and later disposed of at nearby approved waste sites.	-Site wide evaluation of the general condition of all hazardous waste storage sites must be conducted as part of the bi-annual environmental audits -A register of all waste generated on site is kept on site. -All waste disposal permits from relevant authorities are available on site	-Site Manager -Construction Contractor -ECO/SHE Officer	-Funds to acquire waste storage bins/ drums; and transport all waste from the site. -Waste storage containers	Throughout the Project phases.
Vehicular Traffic	Traffic safety	-The transportation of project materials, equipment and machinery should be limited to once or twice a week only, but not every day. -The heavy truck loads should comply with the maximum allowed limit while transporting materials and	-Site access road permits obtained, and requirements fulfilled -No complaints from members of the public regarding vehicular traffic issues related to the project -All personnel operating the project	-Site Manager -ECO/SHE Officer -Construction Contractor	-Vehicular traffic compliance to be included in the annual environmental audit reporting	Throughout the phases. Site access permit (s) to be applied for and obtained prior to commencement of construction works

Aspect	Impact	Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		equipment/machinery on the public and access roads. -The site access road(s) should be upgraded to an unacceptable standard to be able to accommodate project related vehicles and access permits obtained from the Roads Authority. -Drivers of all project phases' vehicles should be in possession of valid and appropriate driving licenses. -Vehicle drivers should adhere to the road safety rules. -Drivers should drive slowly (40km/hour or less), and on the lookout for animals and people. -Project vehicles should be in a road worthy condition and serviced regularly to avoid accidents due to mechanical faults of vehicles. -Vehicle drivers should only make use of designated site access roads provided. -Vehicle's drivers should not be allowed to operate vehicles while under the influence of alcohol.	vehicles and machinery are appropriately licensed and possession of valid driving licenses. -Demarcated areas for parking, offloading, and loading zones are on sites			

Aspect	Impact	Mitigation Measure(s)	Key Performance Indicator (KPI)	Responsible Person	Resources	Timeline
		-The Proponent should make provision for safe materials and equipment offloading and loading areas on sites. -The site access roads should be equipped with road safety signs.				
	Potential increase of prevalence of HIV and AIDS, as well as other sexually transmitted diseases (STIs) prevalence	-The workers should be engaged in health talks and training about the dangers of engaging in unprotected sexual relations which results in contracting HIV/AIDS and other sexual related infections. -Provision of condoms and sex education through distribution of pamphlets. These pamphlets can be obtained from local health facilities.	-No new infections recorded linked to the project workers	-SHE Officer	-Availability of condoms onsite -Sex Education awareness placards and posters at camps	During site setup and throughout the phases

5.3 Environmental Management and Mitigation Measures- Decommissioning

The measures provided in Table 5-3 below are aimed at decommissioning the construction works upon completion.

Table 5-3: The Environmental management and mitigation measures for the Decommissioning of Construction Works

Aspect	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
Construction Work Decommissioning Phase and Site Rehabilitation				

Aspect	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Timeline
Infrastructure and structures: Decommissioning of services and infrastructures	-Dismantling of temporary structures and office spaces for disposal at the Municipal landfill site (if cannot be reused). -Transport all equipment and vehicles to offsite storage facilities.	-Structures disposed of at the Municipality dumpsite or taken away for re-use	-Proponent -ECO/SHE Officer	At the end of construction
Stockpiled topsoil and trenches	-All the topsoil that was stockpiled to enable construction works should be levelled to prevent soil erosion. -All site trenches and or holes that were dug for construction purposes and no longer required for operational phase, should be backfilled and the ground surface levelled.	-The stockpiled topsoil is levelled	-Site Manager	At the end of construction
Generated and Accumulated Waste	-All the waste generated (building rubbles, and solid waste) from leading to the last days on site should be transported to the municipal dumpsite. -Building rubbles must be removed from Site and taken to an approved dumpsite in Opuwo. -Waste should be sorted accordingly and disposed of at Opuwo waste management facility/dumpsite. -No waste should be buried nor left scattered on site.	-All waste is disposed of at the respective waste facilities (based on waste types)	-Proponent -ECO/SHE Officer	Before handing over the site to NCS for operations

6 RECOMMENDATIONS AND CONCLUSIONS

6.1 Recommendations

The EDS Consultants are confident that the potential negative impacts associated with the project activities can be managed and mitigated by the effective implementation of the recommended management and mitigation measures. This would also be improved by more effort and commitment towards monitoring the implementation of these measures.

It is therefore, recommended that the project activities be granted an Environmental Clearance Certificate. The Proponent will be required to ensure that:

- All the management and mitigation measures provided in the Draft EMP are effectively and progressively implemented and monitored.
- All required approval consents, permits and licenses for certain activities should be obtained as required and ensuring compliance with the specific conditions and legal requirements attached thereto.
- All Site personnel, contractors, and visitors comply with the legal requirements governing the Project and its associated activities.
- The disturbed areas owing to the project activities during construction should be rehabilitated, as far as practicable.

6.2 Conclusions

Based on the assessment conducted for the proposed Site and its planned activities, the project and its associated activities do not pose a significant risk to the environment that would hinder its implementation. However, it is highly recommended that the measures provided are effectively implemented and monitoring to protect the biophysical and social environment throughout the project duration.

APPENDIX 1: PHOTOS OF THE TREE SPECIES THAT WOULD REQUIRE A PERMIT BEFORE REMOVAL AND THE CONTACT DETAILS FOR THE PERMIT APPLICATION (DURING CONSTRUCTION / SITE ESTABLISHMENT)

Please note that the protected trees can only be removed, if necessary and obstruct the Project activities. The Permit should be applied for prior to removing the tree(s) at the nearest **MEFT Forestry Office or contact the Office of the Forestry Director using the details below:**

- Mr. Johnson Ndokosho (Forestry Director)
- Tel: +264 61 208 7666

These protected tree species onsite are **Black-thorn camelthorn *(Vachellia (Acacia) mellifera* and Red-thorn camelthorn (*Vachellia (Acacia) reficiens*)**

APPENDIX 2: CHANCE FINDS PROCEDURE (AFTER KINAHAN, 2020)

The Archaeological and Heritage surveys are based on surface indications alone, and it is therefore possible that sites or items of heritage significance will be found during site preparation and construction. 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:

- National Heritage Council of Namibia (+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:

<u>Action by person identifying archaeological or heritage material:</u>

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.