ECC RENEWAL
ENVIRONMENTAL IMPACT ASSESSMENT FOR THE CONSTRUCTION OF A FUEL RETAIL FACILITY AND ITS ASSOCIATED DEVELOPMENTS IN OMAKANGE, OMUSATI REGION

FINAL ENVIRONMENTAL MANAGEMENT PLAN

DECEMBER 2022

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PROJECT DETAIL:

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REPORT STATUS:	**FINAL**

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Annexure A: Curriculum Vitae of Environmental Assessment Practitioners

ACRONYMS:

DEA	Department of Environmental Affairs
EA	Environmental Affairs
ECC	Environmental Clearance Certificate
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan

MCS	Matrix Consulting Services
MET	Ministry of Environment and Tourism
MET: DEA	Ministry of Environment and Tourism: Department of Environment Affairs

1 INTRODUCTION

Omakange is a village which falls under the Ruacana Constituency and is situated in the Omusati Region. Doctor Evelina N. Shingenge (proponent) has been allocated a piece of land in Omakange Village by the Omusati Regional Council (Ruacana Constituency). Authority has also been granted by the Omakange Village headman who falls under the Uukwaludhi traditional authority. The piece of land in question measures 20 000m^2 in extent. The proponent wishes to develop a fuel retail facility that will also be associated with other development activities such as, shopping complex, conference facilities, medical clinic etc. **This project was previously issued with an environmental clearance in November 2015 and in May 2019. This report serves as an updated report for the renewal application.**

The project area is located at the intersection of the C35 Road leading to Ruacana and the C41 Road leading to Okahao and Omakange Village in Omusati Region. The proposed area is mostly covered with short Came thorn shrubs and partially covered with trees. All vegetation found on site area that is deemed to be insignificant, thus will all be cleared to allow for development to take place. The few bigger trees that are also found on site will be kept and integrated as part of the development layout.

It should be noted that, this Final Environmental Management Plan (EMP) only serves to provide guidance with regards to possible impacts which may result if the application for the proposed development is successful. This EMP should only be seen as a guideline and should be updated once the exact scope of activities on site has been determined.

1.1 PURPOSE OF THIS EMP

The EMP is developed to outline measures to be implemented in order to minimise adverse environmental degradation associated with this development.

The EMP serves as a guiding tool for the contractors and workforce on their roles and responsibilities concerning environmental management on site, and also provides an environmental monitoring framework for all project phases of the proposed development. This Environmental Management Plan (EMP) aims to take a pro-active route by addressing potential problems before they occur. The EMP acts as a stand-alone document, which can be used during the various phases of the development. In addition, the EMP will also provide specific recommendations and mitigation measures on how to minimise negative impacts and therefore protecting the environment mostly on the biophysical as well as social level.

1.2 PROJECT LOCATION

The project area on which the intended Omakange developments will be developed is located at the intersection of the C35 Road leading to Ruacana and the C41 Road leading to Okahao and Omakange Village in Omusati Region. (*Refer to figure 1 for Locality Map below*)

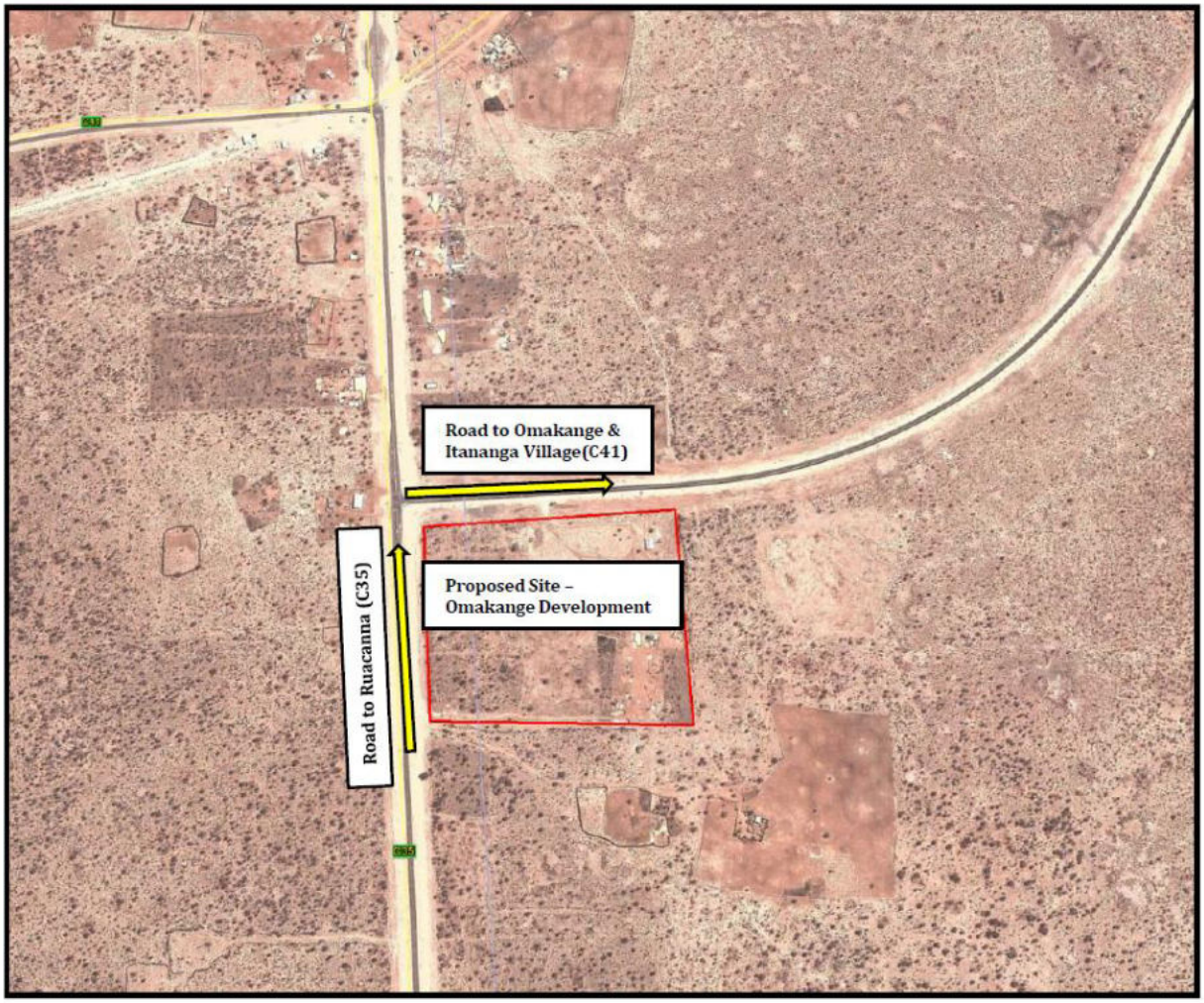

Figure 1: Locality Map for the proposed fuel retail facility in Omakange.

1.3 PROJECT INFORMATION

The project area is located in Omakange. Omakange is a village that falls within the Omusati Region. The village is located between Kamanjab which is about 200 km away and Tsandi which is approximately 110 km away. The Omakange area is deemed to have insufficient services for the residents leaving in the area. The area does not have a service station for people who frequent the area. The nearest service station is situated in Tsandi which is about 110 km away from the village. Residents within this community travel and walk long distances for services such as medical help, schools etc.

Doctor Evelina N. Shingenge appointed Matrix Consulting Services (MCS) to undertake the Environmental Assessment study in order to obtain an Environmental Clearance Certificate (ECC) for the intended development in Omakange.

1.3.1 Project Description

It should be noted that the scope of this project is limited to obtaining an Environmental Clearance Certificate for the constructing a fuel retail facility in Omakange.

2 LEGISLATIVE FRAMEWORK

2.1 NATIONAL LEGISLATIVE REQUIREMENTS

The EIA process is undertaken in terms of Namibia's Environmental Management act no. 7 of 2007 and the Environmental Assessment Policy of 1995, which stipulates activities that may have significant impacts on the environment. Listed activities require the authorisation from the Ministry of Environment and Tourism (DEA). Section 32 of the Environmental Management Act requires that an application for an environmental clearance certificate be made for the listed activities. The following environmental legislations are relevant to this project:

2.2 THE NAMIBIAN CONSTITUTION

The Namibian Constitution has a section on principles of state policy. These principles cannot be enforced by the courts in the same way as other sections of the Constitution. But they are intended to guide the Government in making laws which can be enforced.

The Constitution clearly indicates that the state shall actively promote and maintain the welfare of the people by adopting policies aimed at management of ecosystems, essential ecological processes and biological diversity of Namibia for the benefit of all Namibians, both present and future.

2.3 ENVIRONMENTAL MANAGEMENT ACT NO.7 OF 2007

This Act provides a list of projects requiring an Environmental Assessment. It aims to promote the sustainable management of the environment and the use of natural resources and to provide for a process of assessment and control of activities which may have significant effects on the environment; and to provide for incidental matters.

The Act defines the term "*environment*" as an interconnected system of natural and human-made elements such as land, water and air; all living organisms and matter arising from nature, cultural, historical, artistic, economic and social heritage and values.

The Environmental Management Act has three main purposes:

a) To make sure that people consider the impact of activities on the environment carefully and in good time.

b) To make sure that all interested or affected people have a chance to participate in environmental assessments

c) To make sure that the findings of environmental assessments are considered before any decisions are made about activities which might affect the environment

2.3.1 EIA Regulations GN 28, 29, and 30 of EMA promulgated on 6 February 2012

The gazette EIA Regulations promulgated in terms of the EMA, identify certain activities, which could have a substantially detrimental effect on the environment. These listed

activities require an ECC from the competent environmental authority, i.e. MET: DEA, prior to commencing.

Table 1: List of activities identified in the EIA Regulations that apply to the proposed project

Activity Description:	Description of Activity	Activities
Activity 5.1 (d) Land Use and Development Activities	The rezoning of land from – use for nature conservation or zoned open space to any other land use.	The project area will rezoned from "public open space" to "Business"
Activity 9.4 Hazardous Substance Treatment, Handling and Storage	The storage and handling of a dangerous goods, including petrol, diesel, liquid petroleum gas or paraffin, in containers with a combined capacity of more than 30 cubic meters at any one location	The project entails the handling of hazardous substances.
Activity 9.5 Hazardous Substance Treatment, Handling and Storage	Construction of filling stations or any other facility for the underground and aboveground storage of dangerous goods, including petrol, diesel, liquid, petroleum, gas or paraffin.	The project includes the construction of a service station.
Activity 10.1 (j) (Infrastructure)	The construction of – masts of any material or type of any height, including those used for telecommunication broadcasting and radio transmission but excluding lightning conductor poles.	The proposed project entails the construction of a service station which will have a standard advertising board.
Activity 10.2 (a) (Infrastructure)	The route determination of roads and design of associated physical infrastructure where – it is a public road;	The proposed project includes the construction of roads.

Line Ministry: Ministry of Environment and Tourism (Contact: Dr. Freddy Sikabongo, Tel: 061-284 2715, e-mail: freddy@met.na)

2.3.2 Atmosphere Pollution Prevention Ordinance (1976)

This Ordinance generally provides for the prevention of the pollution of the atmosphere. Part IV of this ordinance deals with dust control. The Ordinance is clear in requiring that any person carrying out an industrial process which is liable to cause a nuisance to persons residing in the vicinity or to cause dust pollution to the atmosphere, shall take the prescribed steps or, where no steps have been prescribed, to adopt the best practicable means for preventing such dust from becoming dispersed and causing a nuisance.

Line Ministry: Ministry of Environment and Tourism (Contact: Dr. Freddy Sikabongo, Tel: 061-284 2715, e-mail: freddy@met.na)

2.3.3 Water Resources Management Act of Namibia (2004)

This act repealed the existing South African Water Act No.54 of 1956 which was used by Namibia. This Act ensures that Namibia's water resources are managed, developed, protected, conserved and used in ways which are consistent with fundamental principles depicted in section 3 of this Act. Part IX regulates the control and protection of groundwater resources. Part XI, titled Water Pollution Control, regulates discharge of effluent by permit. Thus developers are required to efficiently plan for sewage disposal.

Line Ministry: Ministry of Agriculture, Water Affairs and Forestry (Contact: Ms Elizabeth Amagola, Tel: 061-208 7719)

2.3.4 Water Act No.54 of 1956

This Act provides for Constitutional demands including pollution prevention, ecological and resource conservation and sustainable utilisation. In terms of this Act, all water resources are the property of the State and the EIA process is used as a fundamental management tool.

A water resource includes a watercourse, surface water, estuary or aquifer, and, where relevant, its bed and banks. A watercourse means a river or spring; a natural channel in which water flows regularly or intermittently; a wetland lake or dam, into which or from which water flows; and any collection of water that the Minister may declare to be a watercourse. Permits are required in terms of the Act for the undertaking of the following activities relevant to the proposed project:

- Discharge of waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit in terms of Section 21 (f); and
- Disposal of waste in a manner that may detrimentally impact on a water resource in terms of Section 21 (g).

Line Ministry: Ministry of Agriculture, Water Affairs and Forestry (Contact: Ms Elizabeth Amagola, Tel: 061-208 7719)

2.3.5 The Draft Wetland Policy (1993)

Requires that any wetlands and its associated hydrological functions form a part, to be managed in such a way that their biodiversity, vital ecological functions and life support systems are protected for the benefit of present and future generations.

Line Ministry: Ministry of Environment and Tourism (Contact: Dr. Freddy Sikabongo, Tel: 061-284 2715, e-mail: freddy@met.na)

2.3.6 Environmental Assessment Policy of Namibia (1995)

Environmental Assessments (EA's) seek to ensure that the environmental consequences of development projects and policies are considered, understood and incorporated into the planning process, and that the term ENVIRONMENT (in the context of IEM and EA's) is broadly interpreted to include biophysical, social, economic, cultural, historical and political components.

All listed policies, programmes and projects, whether initiated by the government or the private sector, should be subjected to the established EA procedure.

Line Ministry: Ministry of Environment and Tourism (Contact: Dr. Freddy Sikabongo, Tel: 061-284 2715, e-mail: freddy@met.na)

2.3.7 Petroleum Products and Energy Act (No.13 of 1990)

The Act makes provision for impact assessment for new proposed fuel facilities and petroleum products known to have detrimental effects on the environment.

2.3.8 Forestry Act (No.12 of 2001)

This Act makes provision for the protection various plant species. Harvesting permits are required from the Directorate of Forestry to clear certain protected vegetation species from the site.

Line Ministry: Ministry of Agriculture, Water Affairs and Forestry (Contact: Andries Uugwanga, Tel: 062-501925)

2.3.9 Sewerage and Drainage Regulations (amendments) Local authorities act, section 23 (1992).

The regulations make provision for proper construction of pipelines in drainage lines. The regulations also stipulate the prevention of pollution and environmental damage caused by improper construction of sewerage and water pipelines in drainage lines.

Line Ministry: Ministry of Regional and Local Government, Housing and Rural Development (Contact: Mr. Erastus Negonga, Tel: 061-297 2911)

2.3.10 Soil Conservation Act (No.76 of 1969).

The Act advocates for the Prevention and combating of soil erosion, conservation, improvement and manner of use of soil and vegetation, and protection of water resources.

(Contact: Dr. Freddy Sikabongo, Tel: 061-284 2715, e-mail: freddy@met.na)

2.3.11 Draft Pollution Control and Waste Management Bill

The intended development of the proposed Omakange fuel retail facility, only applies to Parts 2 and 7 of the Bill.

Part 2 stipulates that no person shall discharge or cause to be discharged any pollutant to the air from a process except under and in accordance with the provisions of an air pollution licence issued under section 23. It further provides for procedures to be followed in licence application, fees to be paid and required terms of conditions for air pollution licences.

Part 7 states that any person who sells, stores, transports or uses any hazardous substances or products containing hazardous substances shall notify the competent authority, in accordance with sub-section (2), of the presence and quantity of those substances.

2.3.12 Hazardous Substances Ordinance No. 14 of 1974

The Ordinance applies to the manufacture, sale, use, disposal and dumping of hazardous substances, as well as their import and export and is administered by the Minister of Health and Social Welfare. Its primary purpose is to prevent hazardous substances from causing injury, ill-health or the death of human beings.

(Line Ministry: Ministry of Health and Social Services)

2.3.13 Public Health Act 36 of 1919 and Subsequent Amendments

The Act, with emphasis to Section 119 prohibits the presence of nuisance on any land occupied. The term nuisance for the purpose of this EIA is specifically relevant specified, where relevant in Section 122 as follows:

- any dwelling or premises which is or are of such construction as to be injurious or dangerous to health or which is or are liable to favour the spread of any infectious disease;

- any area of land kept or permitted to remain in such a state as to be offensive, or liable to cause any infectious, communicable or preventable disease or injury or danger to health; or
- Any other condition whatever which is offensive, injurious or dangerous to health.

Potential impacts associated with the development of the proposed development in Omakange are expected to include dust, air quality impacts, noise, nuisance and smoke emissions.

(Line Ministry: Ministry of Health and Social Services)

2.3.14 National Heritage Act (No.76 of 1969)

The Act calls for the protection and conservation of heritage resources and artefacts. Should any archaeological material, e.g. old weapons, coins, bones found during the construction, 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.

(Contact: Rev. Salomon April, Tel: 061-244375, National Heritage Council of Namibia)

2.3.15 International Conventions and Regulations

Article 144 of the Namibian Constitution states that "the general rules of public international law and international agreements binding upon Namibia form part of the law of Namibia." This means that all the international agreements that Namibia signed become part of the law of our country. These laws and/or agreements are:

- Convention on Biological Diversity, 1992;
- United Nations Framework Convention on Climate Change, 1992;
- Kyoto Protocol on the Framework Convention on Climate Change, 1998;
- Stockholm Convention of Persistent Organic Pollutants, 2001.

3 ENVIRONMENTAL MANAGEMENT PLAN

3.1 RESPONSIBILITIES FOR ENVIRONMENTAL MANAGEMENT

Doctor Evelina N. Shingenge (proponent) will be responsible for environmental control on site during the construction and operational phase. It is very important a pre-work briefing meeting be held at all times to reach an agreement on specific roles of various parties and penalties for non-compliance.

3.2 TRAINING AND INDUCTION

The proponent is expected to be responsible for ensuring that environmental awareness education of all employees and contractors is done satisfactorily. The Village Council should also ensure that employees and contractors are made aware of the environmental requirements of the project.

The EMP should form part of the Terms of Reference for all contractors, sub-contractors and suppliers. All contractors, sub-contractors and suppliers will have to sign an agreement to assure that they understood the EMP and that they will comply. All senior staff should familiarise themselves with the full contents of the EMP and its implications. Senior staffs (Foreman/Supervisor) are expected to train and assist the rest of the employees on the contents of the EMP.

3.3 ENVIRONMENTAL INCIDENT REPORTING

All environmental incidents occurring at the proposed site will be recorded. The incident report will have to include time, date, location, and nature of the incident, extent of the incident, actions taken, and personnel involved.

All complaints received from the neighbouring community should be directed to the Technical Manager of the proponent and channelled to the appointed Environmental Control Officer (ECO). In addition, the proponent's Management should also be able to respond to the complainant within a week (even if pending further investigation).

It is important that the issues raised are considered and that the complainant feels that their concerns have been addressed to and wherever possible actions taken to address these. All complaints should be entered in the environmental register and all responses and actions taken to address these should be recorded.

3.4 ENVIRONMENTAL MONITORING

Periodic environmental monitoring must be taken on a regular basis. Monitoring should be done in order to ensure compliance with all aspects of the EMP. Findings should be liaised with to all responsible officers as chain command.

3.5 EMP ADMINISTRATION

Copies of this EMP shall be kept at the site office and should be distributed to all senior staff members, including those of the contractors.

3.6 NON COMPLIANCE OF THE EMP

Problems may occur in carrying out mitigation measures or monitoring procedures that could result in non-compliance of the EMP. The responsible personnel should encourage staff to comply with the EMP, and address acts of non-compliance and penalties.

Dr. Evelina N. Shingenge is responsible for reporting non-conformance with the EMP, to the ECO officer. The proponent's management in consultation with the ECO must thereafter, undertake the following activities:

- Investigate and identify the cause of non-conformance.
- Report matters of non-conformance to Dr. Evelina N. Shingenge (depending on the severity of the incident).
- Implement suitable corrective action as well as prevent recurrence of the incident.

- Assign responsibility for corrective and preventative action.
- Any corrective action taken to eliminate the causes of non-conformance shall be appropriate to the magnitude of the problems and commensurate with the environmental impact encountered.

3.7 ENVIRONMENTAL REGISTER

An environmental register should be kept on site in which incidents related to actual impacts are recorded. This will include information related to incidents such as spillages, dust generation and complaints from adjacent neighbours. It should also contain information relating to actions taken. Any party on site may complete the register, however, it is envisaged that the Technical Manager, the contractor and the ECO officer will be the main contributors, and who will also be the main parties involved in suggesting mitigation measures.

3.8 RESPONSIBLE PARTIES

The implementation of this EMP should be the responsibility of Dr. Evelina N. Shingenge during the construction phase of the intended development. Below are the responsibilities of the people required during the construction phase to implement a range of environmental management related issues.

3.8.1 Environmental Control Officer

A qualified Environmental Control Officer should be appointed by Dr. Evelina N. Shingenge (proponent) or the Contractor to monitor and review the on-site environmental management and implementation of this EMP.

i) Duties of the ECO officer:

The Environmental Control Officer is responsible for the following responsibilities:

- The identification of potential environmental impacts, prior to the onset of decommissioning. A site visit may also be required prior to site development. This would be carried out in consultation with the Technical Manager.
- Monitoring of all the Contractor's activities for compliance with the various environmental requirements contained in this EMP;
- Providing of an environmental register at the site to be filled in by any person reporting an environmental incident, issue or concern and inspected by the ECO officer on a regular basis to check for issues raised and actions taken;
- Ensuring that the EMP conditions are adhered to at all times and taking action;
- Ensuring that environmental impacts are kept to a minimum;
- Notifying the Environmental Authorities immediately of any events or incidents that may cause significant environmental damage or breach the requirements of the EMP;

- Environmental Awareness Training courses to be conducted to the Contractor's entire team of workers;
- Ensuring that a register of public complaints is maintained by the Contractor and that any and all public comments or issues are appropriately reported and addressed;
- Reviewing and approving method statements in consultation with the Technical Manager;
- Reporting to Dr. Evelina N. Shingenge and the Technical Manager on a regular basis and advising of any major environmental impacts. Attending the site meetings (when necessary);
- Inspecting the site and surrounding areas regularly, and monitoring an ongoing environmental awareness program in conjunction with the Technical Manager;
- Requesting the removal of people and/or equipment not complying with the specifications of EMP;
- Keeping both a written and photographic record of progress on site from an environmental perspective, and an ad hoc record of all environmental incidents;
- Undertaking continual review of the EMP and submitting a report to the relevant stakeholders; and
- The ECO officer will submit all written instructions and verbal requests to the proponent via the Technical Manager and Project Engineer.

4 CONSTRUCTION PHASE

It is recommended that all principles contained within this Environmental Management Plan (EMP) apply to all construction activities.

Dr. Evelina N. Shingenge (proponent) should be responsible for the following:

- Ensuring that all identified environmental impacts are managed in accordance with the EMP;
- Ensuring that all monitoring and compliance auditing occurs in line with the EMP;
- Ensuring that the environment is rehabilitated as far as practicable to its natural state or existing land use practices;

4.1 PLANNING AND DESIGN

It should be noted that, Dr. Evelina N. Shingenge together with the engineer to be appointed must ensure that this Environmental Management Plan is also included in the

tender documentation that is to be given to the Contractor (to be appointed) and the Contractor must adhere to all requirements as well management actions outlined in this EMP.

4.2 ENVIRONMENTAL AWARENESS

4.2.1 Access Routes, Traffic and Work Sites

With regards to traffic, the Contractor should be responsible for the control of all project related traffic. This will include building material suppliers and ensure that all construction vehicles or those associated with the project use designated routes within working times.

No new tracks/roads shall be established and only existing roads may be used and those that are planned. Work sites shall be clearly demarcated and road signs erected were needed. The general public should not have unauthorised/uncontrolled access to the project location during this phase.

Vehicle access will be limited to one or two entrances to facilitate control. Access must be of a high standard to prevent unauthorised access from entering the site.

The entrance will be manned during the operation hours; and access routes will be closed to prevent unauthorised entry. A notice board, in two languages, must be erected at the entrance and must state entrance requirements and operating hours of the site, the operator/responsible person and emergency telephone numbers. Suitable signs must also be erected on the approach roads and on-site, to direct drivers and to control speed.

Road access to the working face of the development must be maintained at all times in a manner suitable to accommodate vehicles normally expected to use the facility. Roads must be regularly graded and wetted to control dust, where necessary.

Furthermore, on-going controls, such as fencing and policing, must be implemented.

4.2.2 Fire and Safety Management

All electrical installations, wiring and systems at the project location, must be approved by a qualified electrician who will issue a Certificate of Compliance.

Proper handling, storage, use and disposal of any hazardous waste (e.g. hydrocarbons, paint, batteries, radioactive waste etc) should be conducted. Hydrocarbons are volatile under certain conditions and their vapours in specific concentrations are flammable. If precautions are not taken to prevent their ignition, fire and subsequent safety risks may arise.

No uncontrolled fire, whether for cooking or any other purpose, is to be made at the project location during both the construction and operation phases. The Contractor shall take all reasonable measures and active steps to avoid increasing the risk of fire through activities on site and prevent the accidental occurrence or spread of fire; and shall ensure that there is sufficient fire-fighting equipment on site at all times. This equipment shall include fire extinguishers. The Contractor should be prepared for such events.

It should be noted that, all fuel storage and handling facilities in Namibia must however comply with strict safety distances as prescribed by SANS 10089. SANS 10089 is adopted by the Ministry of Mines and Energy as the national standard.

4.2.3 Staff Management

The Contractor must ensure that their employees have suitable personal protective equipment and properly trained in fire fighting and first aid. Training records must be kept for future references.

4.2.4 Ablution Facilities

The Contractor shall provide temporary toilets on site for the workers and these toilets should be in a walking distance of the work area. The Engineer / ECO on site shall approve the location of the toilets and shall also not be placed closer than 50m to water resources (e.g. streams). The toilets (1 toilet per 15 users is the norm) to be provided where construction is occurring. Workers need to be encouraged to use these facilities and not the natural environment. Waste from chemical toilets should be disposed of regularly and in a responsible manner by a registered waste contractor. Discharge of waste from toilets into the environment is prohibited. All toilets shall be secured to the ground to ensure that they do not overturn during high winds or for any other reason. It is the responsibility of the Contractor to ensure that no spillage occurs when the toilets are cleaned or emptied and that these contents are removed from site.

4.2.5 Waste Management

Waste will be generated in the form of rubble, cement bags, pipe and electrical wire cuttings. Contaminated soil due to oil leakages, lubricants and grease from the construction equipment and machinery may also be generated during the construction phase.

The oil leakages, lubricants and grease must be addressed. Contaminated soil must be removed and disposed off at the hazardous landfill. The contractor must provide sufficient waste containers on-site, to store any hazardous waste produced. These waste skips should be in pairs to ensure that one is always present as the other is being emptied. No waste of any sort shall be burnt or buried on site. The waste skips are expected to be emptied on a daily basis. Regular inspection and housekeeping procedure monitoring should be maintained by the contractor.

Waste in the form of solid waste will also be generated during the operational phase. Waste will be removed and disposed off at an authorised Landfill site in Omakange by Dr. Evelina N. Shingenge, its contractors or alternatively liaise and arrange with the Omusati Regional Council.

4.2.6 Cement and Concrete Batching

Concrete mixing directly on the ground shall not be allowed and shall take place on an impermeable and smooth surface. All run-off from batching areas shall be strictly

controlled, and cement contaminated water shall be collected, stored and disposed off at a suitable waste disposal facility. In cases where concrete trucks are used, it is the responsibility of the contractor to ensure that dumping of the drum-wash does not occur directly onto the ground.

Empty cement bags shall be collected continuously and stored in temporary weatherproof containers, where they are protected from dispersion by wind and shall be disposed of regularly via the solid waste disposal system.

4.2.7 Hydrocarbons Management

If any spillage occurs, contaminated soil shall be collected in a holding tray or drum and which will then disposed at a **hazardous waste disposal site**. Any spillage of more than 200 litres must be reported to the Ministry of Mines and Energy as per the Petroleum Products Act.

The Contractor shall take all reasonable measures to prevent surface or groundwater pollution from the release of oils and fuels.

4.2.8 Hazardous Substance Management

The handling of a variety of chemicals to be stored on site especially diesel, petrol and oil in regards to the service station must be properly regulated. All chemicals and other hazardous substances must be stored and maintained in accordance with the Hazardous Substances Ordinance (No. 14 of 1974), with all relevant licences and permits to be obtained where applicable. All special regulations and laws pertaining to the construction and management of a Service station must be adhered to.

It is highly recommended that all staff be trained with regards to proper handling of hazardous substances as well as first aid in the case of any intoxication or spillages. Underground fuel tankers should be stored in proper containers and include appropriate risk control measures in the case of leakages or pollution. Specific safety features and protocols should be implemented in the case of a fire or explosion.

It is also recommended that proper licensed and updated fire fighting equipments be installed and also easily implemented. Sufficient water and sand must be available on site at all times for fire fighting purposes and fire fighting equipments must be tested and inspected at regular intervals at the fuel retail facility. The following documents should be onsite and the staff should be well acquainted with these documents in case of emergency:

- Health & Risk Plan
- Risk Management Plan
- Fire & Explosions Management Plan

4.2.9 Information Board

The Contractor will be responsible for erecting information boards on site. The number and locations of these boards shall be agreed upon by the ECO officer.

The contents of the information board shall be provided by the Technical Manager and will essentially be to advise the public of the construction activity and the prohibition on entering certain areas. The information board shall also provide the contact number of the ECO, to ensure that the public can access relevant information and lodge any complaints during the construction phase of the intended development.

4.2.10 Flood Management

The intended development will be designed in such a way that surface water run-off is well developed. Storm water management of the intended development should be a key aspect of flood management within the development. All culverts should be kept clean to allow storm water to flow freely.

4.2.11 Stockpiling, Handling, and Storage of Building Materials

The Contractor shall ensure that stockpiles and storage yards be demarcated in areas that are already disturbed or where they will cause minimal disturbance. The Contractor / ECO shall indicate which activities are to take place in which areas within the site (e.g. mixing of cement, stockpiling of materials etc). These activities must be limited to single sites only. All the necessary handling and safety equipment required for the safe use of petrochemicals and oils shall be provided by the Contractor to, and used or worn by the staff whose duty it is to manage and maintain the Contractor's and his subcontractor's and supplier's plant, machinery and equipment.

In addition, all materials must be stored within the designated site and materials must be located at least 20m away from any surface water bodies.

4.2.12 Excavation, Backfilling and Trenching

The contractor shall ensure that all excavations are not to be left open for more than 2 days, thus it is recommended that excavations should be opened and closed the same day. Warning signs should be erected around the excavated area to clearly demarcate the area against access. In addition, soil that was/has been removed shall be used to backfill areas where required and excavated material shall be stockpiled along the trench within the working servitude.

4.2.13 Erosion Control

The Contractor shall protect all areas susceptible to erosion and shall take measures, to the approval of the ECO. The Contractor shall not allow erosion to develop on a large scale before effecting repairs and all erosion damage shall be repaired as soon as possible. In addition, it is the responsibility of the Contractor to immediately remedy any situation that is or has the potential to result in soil erosion and sedimentation from the works as a result of storm water flows.

4.2.14 Servicing and Re-Fuelling of Construction Equipment

All maintenance and repair work will be carried out at the main construction camp within an area designated for this purpose, equipped with necessary pollution containment measures. The ground under the servicing and refuelling areas must be protected against pollution caused by spills and / or tank overfills (bunded / lined). The Contractor may only change oil or lubricant at agreed and designated locations, except if there is a breakdown or emergency repair, and then any accidental spillages must be cleaned up / removed immediately. Construction vehicles are to be maintained in an acceptable state of repair.

No vehicles or equipment with leaks or causing spills will be permitted to operate at any of the construction sites. These will be sent immediately back to the maintenance yard for repair. Fuels required during construction must be stored in a central depot at the construction camp. This storage area should be located on a slab and be contained within a bund capable of containing at least the volume of one of the containers.

4.2.15 Noise

Construction phase of the development shall only occur from Mondays to Fridays between the hours of 8:00 am and 5:00 pm. The Contractor / ECO shall ensure that people from adjacent areas must be kept informed of the need and extent of noisy disruptive processes. The use of radios, television sets and other such equipment by workers must be controlled and noise levels kept to a level that does not disturb the neighbouring business properties.

4.2.16 Dust

The Contractor shall take precautions to the satisfaction of the ECO to limit the production of dust and damage caused by dust. Dust suppression measures shall be agreed upon in consultation with the Engineer / ECO. The following measures must be implemented to limit/ minimise dust impacts:

- Construction vehicles to only use designated roads;
- During high wind conditions the Contractor must make the decision to cease works until the wind has calmed down; and
- Cover any stockpiles with a suitable material, such as plastic or shade-cloth, to minimise windblown dust.

4.2.17 Heritage / Archaeological Sites

Should any archaeological resource be found on both sites, construction work should be ceased immediately. It is therefore the responsibility of the Contractor to inform the ECO of any archaeological resource found on site or in close proximity of the site. The ECO shall report the incident to the National Heritage Council of Namibia and during this time further construction work may only resume once clearance is given by the archaeologist and/or specialist.

4.2.18 Site Demarcation and Rehabilitation

The Contractor must ensure that all temporary structures, materials, waste and facilities used for construction activities are removed upon completion of the project. The sites should be fully rehabilitated (e.g. clear and clean area, rake, pack branches etc.) including all disturbed areas and protect them from erosion. Only indigenous plants which are able to establish easily and will need less maintenance because they have already adapted to the local conditions should be considered.

4.2.19 Site Management

It should be noted that areas outside this designated working zone shall be considered "no go" areas. The offloading zones must be clearly demarcated when offloading goods to enhance safety around the project location.

4.3 CONSTRUCTION PHASE MANAGEMENT ACTIONS

Below is a table with management actions that are to be implemented in order to avoid and minimise negative impacts on the environment that may occur during the construction phase of the project.

Table 1: Construction AND Operational Management Actions

Environmental Awareness (Construction Phase)	
Proposed Mitigation Measures	The Environmental, Health and Safety Induction course is to be conducted by the ECO together with the Contractor's SHE Officer.
Proposed Monitoring	To ensure that all employees are familiar with Environmental management obligations
Responsible Party	Dr. Evelina Shingenge / ECO

Safety to the Public (Construction Phase)	
Proposed Mitigation Measures	In cases where the general public might be exposed to danger of any road works or site activities, the Contractor shall provide warning signs in English or most popular language (Oshiwambo) in Omakange. The Contractor shall implement all appropriate measures to limit and social impacts that may be associated with the establishment of worker's accommodation on local communities. Operations should be strictly between 07H00 to 19H00. First aid and safety awareness training for contractors. Ensure the general safety and security measures at all times by providing day and night security guards and adequate lighting within and around the premises. The construction staff must be properly trained on safety and health issues of the project. Workers should be fully equipped with personal protective equipment gear. The site must be clearly demarked and fenced off to prevent

	unauthorised persons from accessing the site, who could get injured on site.
Proposed Monitoring	To maximise safety of the public.
Responsible Party	Dr. Evelina N. Shingenge / Contractor

Heritage or Archaeological sites (Construction phase)	
Proposed Mitigation Measures	Should there be any chance find of archaeological site or resources, these must be reported to the National Heritage Council of Namibia.
Proposed Monitoring	Protection of archaeological resources or sites.
Responsible Party	Dr. Evelina N. Shingenge / ECO

Nuisance Pollution (Construction Phase)	
Description	Aesthetics and inconvenience caused to persons using the C35 Main Road and C41 Road and other surrounding areas. The construction activities would be visible from those roads.
Proposed Mitigation Measures	The Technical Manager or Supervisor should maintain tidiness on site at all times. Take cognition when parking vehicles and placing equipment.
Proposed Monitoring	The Technical Manager or Supervisor should maintain tidiness on site at all times. Take cognition when parking vehicles and placing equipment.
Responsible Party	Dr. Evelina N. Shingenge / Contractor

Ablution Facilities (Construction Phase)	
Proposed Mitigation Measures	Portable toilets must be provided on site during construction (maximum ratio of 1 toilet per 15 people). It is the responsibility of the Contractor to ensure that workers make use of the provided toilets and not the natural environment. Toilets must be located at least 30m away from any water bodies (at the approval of the ECO) and waste from these toilets must be disposed off regularly in a responsible manner at designated sites.
Proposed Monitoring	To avoid employees from using areas outside the site demarcation.
Responsible Party	Dr. Evelina N. Shingenge / ECO

Groundwater (Construction Phase)	
Description	Possible Groundwater quality could be impacted through leachate of oil leakages, diesel, lubricants and grease from the heavy-duty equipment and machinery utilised during construction phase. Care must be taken to avoid contamination of soil and groundwater. Drip trays must be used when removing oil from machinery. Run-off from overflowing onsite sewage systems might transport the effluent to areas where geological structures are present. Inflow into these structures would cause a pollution thread. The presence of a north-south striking fault on the eastern half of the project location should be noted and protected at all cost. There is a slight potential health impact on groundwater users in the area. Potential impact on the natural environment from the polluted groundwater also exits. In general, impact on groundwater due to the

	construction of the proposed development is considered to be minimal through proper management practices.
Proposed Mitigation Measures	Prevent spillages of any chemical or fuel. Use drip trays when doing maintenance on machinery. Maintenance should be done on dedicated areas with linings or concrete floor. No maintenance of machinery may be done at the project location. Implementation of sound and proper management practices. The Contractor shall take all reasonable steps to prevent or remediate damage to the environment resulting from the Works in the form of erosion and sedimentation.
Proposed Monitoring	Regular visual inspection.
Responsible Party	Dr. Evelina N. Shingenge / Contractors

Groundwater (Operational Phase)	
Description	Spillages and/or leakages of various possible contaminants might occur due to failure of reticulation pipelines or storage tanks. Contaminated soil might pose a risk to surface water. Potential impact on the natural environment from possible polluted groundwater also exits. The area is subjected to structures, which might act as preferential pathways for any contaminants entering the saturated zone.
Proposed Mitigation Measures	The risk can be lowered further through the use of suitable and adequate SANS approved piping material; and installation should be done by certified installers/technicians. All surface spillages and leakages must be cleaned up immediately. Proper containment structures should be constructed to avoid any possible leakages. The presence of an emergency response plan and suitable equipment is advised, so as to react to any spillage or leakages properly and efficiently. All operational surfaces for fuel storage must be installed with spill containment areas as per the relevant SANS standards (or better). The risk can be lowered further through proper training of staff. All spills must be cleaned up immediately.
Proposed Monitoring	Groundwater monitoring sampling for pollution.
Responsible Party	Dr. Evelina N. Shingenge / Contractors

Surface Water (Construction Phase)	
Description	Contamination of surface water might occur through oil leakages, diesel, lubricants and grease from the heavy-duty equipment and machinery during the construction phase. Surface runoff emanating from overflowing and/or leakages from chemical and sewage storage and reticulation pipeline systems might reach water bodies. Potential Health problems caused by viruses, bacteria and

	parasites found in the effluent would be the main concern from this pathway. Potential health impact on surface water users and on the natural environment associated with the nearby streams and rivers. Surface runoff from the site is expected in a northerly direction.
Proposed Mitigation Measures	Machinery should not be serviced on site to avoid spills. All spills should be cleaned up as soon as possible. Hydrocarbon/chemical contaminated soil; clothing or equipments should not be washed within 25m of any water body.
Proposed Monitoring	Regular visual inspection. Surface water quality monitoring in cases of evident pollution.
Responsible Party	Dr. Evelina N. Shingenge / Contractors

Surface Water (Operational Phase)	
Description	Spillages are likely to occur during fuel delivery and loading of road transport tanker trucks. This usually happens during the refill of vehicles. Potential health impact on surface water users and on the natural environment associated with the river channels in the area do exist. This may result in socio-economic impacts on surface water users.
Proposed Mitigation Measures	Drip trays and/or plastic sheeting should be used to contain any leaks emanating from the heavy-duty machinery and fleet. All spills should be cleaned up as soon as possible. The presence of an emergency response plan and suitable equipment is advised, so as to react to any spillage or leakages properly and efficiently.
Proposed Monitoring	Regular visual inspection. Surface water monitoring sampling for hydrocarbon pollution.
Responsible Party	Dr. Evelina N. Shingenge / Contractors

Dust [Air Quality] (Construction Phase)	
Description	Dust will be generated during the construction, installation of bulk services, decommissioning phase and problems thereof are expected to be site specific. Dust is regarded as a nuisance as it reduces visibility, affects the human health and retards plant growth.
Proposed Mitigation Measures	It is recommended that regular dust suppression be included in the construction activities, when dust becomes an issue. The Contractor must ensure that stockpiles of sand or construction areas that are likely to cause dust are made wet after daily construction work (after hours -17h00). Excavation, handling and transport of materials must be avoided under high wind conditions. During high winds, dust suppression measures may be required (e.g. dampening with water).
Proposed Monitoring	Regular visual inspection.
Responsible Party	Dr. Evelina N. Shingenge / Contractors

Dust [Air Quality] (Operational Phase)	
Description	During the operational phase of the proposed development, it is expected that dust impacts may occur should the proposed roads leading to the development not be tarred. In addition, hydrocarbon vapours will normally be released during delivery of fuel as liquid displaces the gaseous mixture in the tanks.

Proposed Mitigation Measures	It is recommended that dust suppression is implemented by means of wetting the roads at agreed intervals. Heavy duty construction trucks (machines) shall NOT be allowed on these streets other those for waste removal. Constant rehabilitation of the road must be implemented.
Proposed Monitoring	Regular visual inspection. A complaints register regarding emissions/smell should be kept and acted on if it becomes a regular complaint.
Responsible Body	Dr. Evelina N. Shingenge

Noise (Construction Phase)	
Description	An increase of ambient noise levels at the proposed site area is expected due to the construction activities that will be taking place. Noise pollution due to heavy-duty equipment and machinery will be generated. It is not expected that the noise generated during construction will impact any third parties. Thus, vendors and other business properties within close proximity of the project area should be taken into consideration.
Proposed Mitigation Measures	Sensitive construction vehicle drivers and machinery operators must switch off engines of vehicles or machinery not being used. Ensure engines of machinery are fitted with mufflers. Equipment and machinery operators should be equipped with ear protection equipment. Operations should be strictly between 08H00 to 17H00. No amplified sound shall be allowed on site. It is the responsibility to ensure that construction vehicles and machinery have silencer units and should be maintained in good working order.
Proposed Monitoring	Strict operational times. Regular inspection.
Responsible Party	Dr. Evelina N. Shingenge / Contractors

Noise (Operational Phase)	
Description	Noise pollution due to this projecting the operational phase is expected to be mainly from road maintenance machinery during maintenance.
Proposed Mitigation Measures	Delivery of fuel products by heavy-duty tankers should be limited to normal working hours (07h00 to 19h00). Loud music from vehicles fuelling up should be restricted.
Responsible Body	Dr. Evelina N. Shingenge / Contractors

Erosion & Sedimentation (Construction Phase)	
Description	Vegetation clearance and creation of impermeable surfaces could result in erosion in areas across the development site. The clearance of vegetation will further reduce the capacity of the land surface to slow down the flow of surface water, thus decreasing infiltration, and increasing both the quantity and velocity of surface water runoff. The proposed development will increase the amount of impermeable surfaces and therefore decrease the amount of groundwater infiltration. As a result, the amount of storm water during rainfall events could increase.

Proposed Mitigation Measures	Implementation of proper storm water management measures should be conducted as to prevent negative impact on the water courses in the area. Any erosion that occurs on site must be repaired as soon as possible to avoid it spreading onto a large scale of the site area. It is recommended that storm water drainage systems or measures are developed on site to prevent runoff and avoid erosion.
Proposed Monitoring	Regular visual site inspection.
Responsible Party	Dr. Evelina N. Shingenge, Contractor / ECO

Erosion & Sedimentation (Operational Phase)	
Description	Potential release of sewage, storm-water, water, into the environment due to pipeline/system failure. As a result, the spillage could be released into the environment and could potentially be a health hazard to surface and groundwater.
Proposed Mitigation Measures	Proper reticulation pipelines and drainage systems should be installed. Regular bulk services infrastructure and system inspection should be conducted.
Proposed Monitoring	Regular visual site inspection.
Responsible Party	Dr. Evelina N. Shingenge

Waste Generation(Construction Phase)	
Description	This can be in a form of rubble, cement bags, pipe and electrical wire cuttings. Contaminated soil due to oil leakages, lubricants and grease from the construction equipment and machinery may also be generated during the construction phase.
Proposed Mitigation Measures	Contaminated soil must be removed and disposed off at the hazardous landfill. The contractor must provide containers on-site, to store any hazardous waste produced. Waste skips must be provided at the construction sites as well as the construction camps. Ensure that no excavated soil, refuse or building rubble generated on site are not placed, dumped or deposited on adjacent/surrounding properties or land. These waste kips must have lids to avoid rubbish being blown away by the wind. It is the responsibility of the Contractor to ensure that workers put the rubbish in the waste skips / bins provided. The Contractor / ECO shall ensure that the waste skips are emptied and transported in plastic rubbish bags and disposed off at an authorised Omakange landfill site.
Proposed Monitoring	Regular inspection and housekeeping procedure monitoring. Observation of site appearance by the manager.
Responsible Party	Dr. Evelina N. Shingenge, Contractors / ECO

Waste Generation (Operational Phase)	
Description	Waste in the form of contaminated soil, rubble and domestic waste. Littering along access roads may also be produced during the operational phase.

Proposed Mitigation Measures	Waste must be removed and disposed off at an authorised Omakange landfill site by Dr. Evelina N. Shingenge and/or her Waste Removal Contractors. Regular maintenance of the oil/water separator. Bioremediation of contaminated soil should be enforced and/or hazardous waste must be disposed at a Hazardous waste site. Removal of sand and other material from containment areas. Rubbish must be collected and disposed at a suitable waste disposal site.
Proposed Monitoring	Regular visual inspection. Containment area inspections and monitoring of the oil/water separators.
Responsible Body	Dr. Evelina N. Shingenge

Traffic, Work Sites (Construction Phase)	
Description	The servicing of the intended development activities are expected to have a minor impact on the movement of traffic along the C35 main Road leading to Ruacana and the C41 Road that is leading to Okahao and Omakange Village. No diversion of traffic or closure of roads is expected. Speed limit warning signs must be erected to minimise accidents. Heavy-duty vehicles and machinery must be tagged with reflective signs or tapes to maximise visibility and avoid accidents.
Proposed Mitigation Measures	It is recommended that if the need arises for traffic diversion or road closure, the Contractor should liaise with the Omusati Regional Council. Speed limit and site warning signs must be erected to minimise accidents. Construction vehicles must be tagged with reflective signs or tapes to maximise visibility of the vehicles and avoid accidents.
Proposed Monitoring	Observations of the traffic flow on the C35 Main Road and C41 Road.
Responsible Party	Dr. Evelina N. Shingenge, Contractors / ECO

Traffic, Work Sites (Operational Phase)	
Description	Traffic around the proposed development should be monitored, to avoid traffic congestion in the area during maintenance.
Proposed Mitigation Measures	Delivery of fuel products by heavy-duty tankers should be limited to normal working hours (07h00 – 19h00).
Proposed Monitoring	Observations of the traffic flow on both the C35 Main Road and C41 Road.
Responsible Body	Dr. Evelina N. Shingenge

Stockpiling, Handling & Storage of Building Materials (Construction phase)	
Proposed Mitigation Measures	The Contractor or ECO shall ensure that stockpiles as well as storage yards are separated in areas that already disturbed. The Contractor shall ensure that all operations which may involve the use of cement and concrete are to be carefully monitored.

	It is recommended that concrete and cement mixing must only take place within construction or specific areas on site AND concrete may NOT be mixed directly on the ground. It is also the responsibility of the Contractor to make sure that no empty or open cement bags should be lying around the site.
Proposed Monitoring	To ensure that stockpiling only takes place within the site demarcation.
Responsible Party	Dr. Evelina N. Shingenge, Contractors / ECO

Ecological Impacts (Construction phase)	
Description	The intended development lies in an area which is free of any conservation worthy vegetation and fauna besides the big trees that will be kept as part of the project layout plan. Land will be cleared, leaving the big trees to maintain the vegetation within Omakange. However, impacts on fauna and flora are expected to be minimal.
Proposed Mitigation Measures	Disturbance of areas outside the designated working zone is not allowed. It is the responsibility of the ECO to ensure that no animal is to be killed, removed or interfered with the Contractor together with his workers (employees). The Contractor must ensure that no domesticated animals are brought along on sight. It is however recommended that, the site be kept tidy and free of rubbish that will attract animals to the site. The ECO shall ensure that no poaching of flora and fauna should be tolerated by the Contractor or his workers. The bigger trees (>150mm circumference) on site must be conserved and made part of the development.
Proposed Monitoring	Regular site inspection by the Site Manager or Supervisor.
Responsible Party	Dr. Evelina N. Shingenge, Contractors / ECO

Ecological Impacts (Operational Phase)	
Description	No impacts are expected from the proposed development during the operational phase. Vegetation in open spaces should not be disturbed or removed during the operational phase.
Proposed Mitigation Measures	Minimise the area of disturbance by restricting movement to the designated working areas during maintenance.
Proposed Monitoring	Regular site inspection by the Site Manager or Supervisor.
Responsible Body	Dr. Evelina N. Shingenge

Excavation, Backfilling & Trenching (Construction phase)	
Proposed Mitigation Measures	The Contractor shall ensure that all excavations are marked with a tape to clearly demarcate the site areas.
Proposed Monitoring	Regular site inspection by the Site Manager or Supervisor.
Responsible Party	Dr. Evelina N. Shingenge, Contractors / ECO

Hazardous Materials (Construction Phase)	
Proposed Mitigation Measures	It is the responsibility of the Contractor to make sure that all personnel on site are well trained and educated on how to handle these materials. The Contractor shall establish an emergency procedure when dealing with spills or the release of other hazardous materials. All accidental chemical or fuel spills must be corrected and cleaned immediately. The Contractor shall ensure that hazardous materials are stored safely and are under strict control.
Proposed Monitoring	Handling of hazardous substances or chemicals on site.
Responsible Party	Dr. Evelina N. Shingenge / Contractor

Site Demarcation & Rehabilitation (Construction phase)	
Proposed Mitigation Measures	The Contractor is to be held responsible for the rehabilitation of all areas disturbed during construction works. Rehabilitation will include stockpile areas, servicing of the roads. All temporary structures erected during construction works as well as materials, waste generated are all removed upon completion of the project.
Proposed Monitoring	The site area and surrounding areas are rehabilitated.
Responsible Party	Dr. Evelina N. Shingenge, Contractor / ECO

Overfilling of underground Tanks & Vehicles (Operational Phase)	
Description	Overfilling of vehicles and fuel storage tanks may take place.
Proposed Mitigation Measures	This impact can be reduced by the installation of spill containment areas around the pumps and through proper training of the operators. Proper monitoring of the product levels in the tanks must take place to eliminate overfilling. Proper training of the operators on site is vital.
Proposed Monitoring	Regular inspection of the level of fuel tanks.
Responsible Body	Dr. Evelina N. Shingenge

Hydrocarbon Spillages (Operational Phase)	
Description	Fuel spillages might occur during delivery during the operational phase.
Proposed Mitigation Measures	This impact can be reduced by the installation of spill containment areas around the pumps and through proper training of the operators. All spills must be cleaned up immediately. The presence of an emergency response plan and suitable equipment is advised, so as to react to any spillage or leakages properly and efficiently.
Proposed Monitoring	Risk of impact from this can be lowered through proper training of staff and the installation of suitable containment structures.
Responsible Body	Dr. Evelina N. Shingenge

Failure of Reticulation Pipelines (Operational Phase)	
Description	Potential release of sewage, storm-water, water, into the environment due to pipeline/system failure. As a result, the spillage could be released into the environment and could potentially be a health hazard to surface and groundwater.

Proposed Mitigation Measures	Proper reticulation pipelines and drainage systems should be installed. Regular bulk services infrastructure and system inspection should be conducted.
Proposed Monitoring	Regular visual site inspection.
Responsible Body	Dr. Evelina N. Shingenge

5 CONCLUSION

If the above-mentioned management recommendations are properly implemented, it is anticipated that most of the adverse impacts on the environment can be mitigated. An appointed environmental officer/consultant will need to monitor or audit the site throughout construction and operation phase to ensure that the EMP is fully implemented and complied with. The EMP caters for all project phases, but will need to be reviewed during all phases of project, especially when revisions are made to the project development plans.

The Environmental Management Plan should be used as an on-site tool during all phases of the proposed project. Parties responsible for contravention of the EMP should be held responsible for any rehabilitation that may need to be undertaken.

Clearance Certificates issued on EIA/EMPs are only valid for 3 years and will need to be reviewed and submitted to the Department of Environmental Affairs again for approval.

Matrix Consulting Services cc
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Annexure A
Curriculum Vitae of Environmental Assessment Practitioners