APP-006938

WASTE STORAGE AND HANDLING ON ERF 1320, WALVIS BAY

UPDATED ENVIRONMENTAL MANAGEMENT PLAN

Prepared by:

Prepared for:

January 2026

Project:	**HAZARDOUS AND GENERAL WASTE STORAGE, RECYCLING SEGREGATION AND HANDLING ON ERF 1320, WALVIS BAY: UPDATED ENVIRONMENTAL MANAGEMENT PLAN**	
Report: Version/Date:	Final January 2026	
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I J. W. JREYVENSTEIN acting as the Proponent's representative (Wesco Waste Management (Pty) Ltd), hereby approve this environmental management plan and confirm that the information contained in herein is a true reflection of the information which the Proponent has provided to Geo Pollution Technologies. All material information in the possession of the Proponent that reasonably has or may have the potential of influencing any decision made based on this environmental management plan is fairly represented in this report.

Signed at WALVIS BAY on the 27 day of JANUARY 2026.

Wesco Waste Management (Pty) Ltd

2008/090

Company Registration

TABLE OF CONTENTS

1 BACKGROUND AND INTRODUCTION

Wesco Waste Management (Pty) Ltd (hereafter referred to as Wesco or the Proponent) provides waste management services to industries throughout Namibia, with specialisation in collection, handling, recycling and disposal of hazardous and non-hazardous wastes. Wesco has an existing environmental clearance certificate (ECC3764) covering the storage, handling and refining of waste oil on erf 1320, 4th Street East, Walvis Bay (Figure 1-1). Wesco requested Geo Pollution Technologies (Pty) Ltd (GPT) to update their environmental management plan (EMP) and renew their existing operational ECC for the facility. The update of the EMP aims to include the handling, recycling and disposal of all types of waste, forming part of their operations. The renewal of their ECC, encompassing all their operations, is required as per the Environmental Management Act No. 7 of 2007 (EMA).

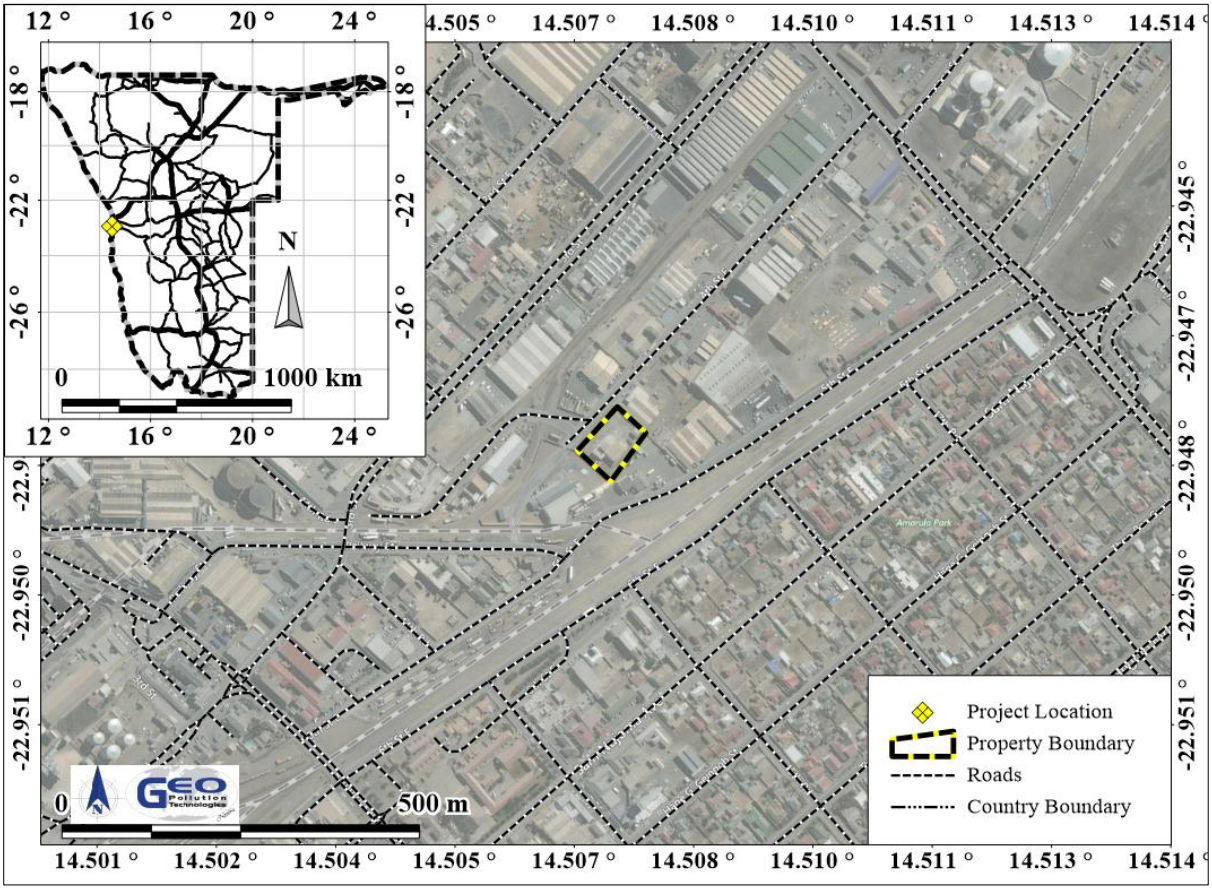

Figure 1-1 Project location

2 SCOPE

The scope of the EMP is to:

1. Provide a brief overview of the facilities operations, including waste oil storage and re-refining and general waste collection, sorting and disposal activities.
2. Summarise the legal and regulatory framework applicable to the collection, handling, storage, transport and disposal of hazardous and non-hazardous wastes associated with the proposed operations.
3. Identify practical prevention and mitigation measures to manage and reduce potential adverse environmental, health and safety impacts to acceptable levels.
4. Provide sufficient project information to the relevant competent authorities and the Ministry of Environment, Forestry and Tourism (MEFT) to support informed decision-making and any ECC screening, assessment and application processes.

3 PROJECT DESCRIPTION

Wesco commenced operations in 1986 and, following expansion over time, developed erf 1320 as their main coastal operational base for waste oil storage and recycling. This facility has been operational since 2022 and Wesco intends to further expand their scope to include general and hazardous waste collection, sorting, and disposal in their operations. An overview of existing and planned operations are presented below.

3.1 OIL REFINING

Waste oil is collected across Namibia in intermediate bulk containers (IBCs), transported to their facility, and pumped into on-site storage tanks. The range of waste oil products received, stored and handled include separator oil/sludge, oily water slops, old diesel, marine oils and diesel slops, workshop waste oils (cars, heavy vehicles and vessels), oils from industrial and mining machinery/engines, vessel-derived oily wastes (bilge water, residues and slops), wastes from refinery/blending and depot operations, off-shore operations, power stations, disposed light and heavy fuel oils (LFO and HFO), and hydrocarbon-contaminated water.

A single re-refining plant is operated on site to re-refine the waste oils, producing both clean LFO and HFO that can be re-used for various fuelling purposes. Depending on operating hours and the composition of the feedstock, the plant produces on average about 50 m³/month of LFO and 160 m³/month of HFO.

Waste oil is first transferred from temporary storage through a gravity separator to remove most of the water. The product is then heated to between 90 and 115°C in a heating tank using a boiler system (fired on LFO produced on the same premises), with gases and vapours released via smoke stacks. Once heated, the product is fed to a centrifugal separator (Alfa Laval MAPX-309) which separates the material into the final LFO or HFO products, water, and sludge based on specific gravity. Effluent water typically comprises about 10–15% of the waste oil, while solids accumulate as sludge and are flushed to a holding tank beneath the unit. Water and sludge by-products from LFO re-refining are not disposed of immediately, but are collected and refined a second time as part of the HFO re-refining process. This ensures maximum recovery of usable product with minimum waste by-products requiring disposal.

Final LFO and HFO products are pumped to on-site storage tanks (HFO in a 208 m³ stainless steel tank, and LFO in three steel tanks). Sludge is disposed of at the Walvis Bay municipal hazardous waste disposal site, and effluent water free from hydrocarbons is discharged to the municipal sewage line (around 10 m³/week). Emissions from the heating tank pass through a smoke stack fitted with an air scrubbing system to reduce noxious emissions.

3.2 WASTE HANDLING

The Proponent intends to expand operations at the facility to include the collection (or receipt), sorting, temporary storage and disposal of wastes, with waste streams classified and managed in accordance with the Walvis Bay Municipality Solid and Hazardous Waste Management Regulations (Table 3-1). Waste will be segregated at receipt to keep hazardous waste separate from non-hazardous and recyclable waste streams. Hazardous wastes include, among others, materials such hydrocarbon contaminated items (oily rags and gloves, oil and fuel filters), asbestos, fluorescent tubes, e-waste, biological waste (medical or food industry laboratory waste), drilling mud and cuttings ,spent or contaminated chemicals and empty chemical/paint drums and cans, batteries, etc. Non-hazardous (or general) waste include any wood, metal, glass, paper and plastic type wastes, not contaminated by any hazardous substances and originates from offices, retail outlets, factories, etc. Old tyres and other rubber wastes will be received and managed as an industrial/business waste stream with additional stockpiling and fire-risk controls.

Waste will be sorted, stored and disposed of as three main categories. Hazardous wastes which will primarily be disposed of at the Walvis Bay municipal hazardous waste disposal site, with specific streams such as medical waste sent for incineration at the municipal disposal site where authorised; non-hazardous wastes that cannot be recycled or repurposed which will be disposed

of at the Municipality's general landfill; and recyclables which will be stored separately and transported to registered recyclers once sufficient volumes are accumulated. Where drilling mud and cuttings are received, these will be handled and, where applicable, treated and routed to an appropriate authorised facility in accordance with legal requirements and approved disposal arrangements.

Save for asbestos, the Proponent does not have the required authorisations and neither intends to receive, store, sort, treat or dispose of any specifically regulated hazardous materials such as radioactive materials/waste, explosives, and cyanide at the facility. Should any enquiry or request be received to accept such materials, the Proponent will assist in directing the client to an appropriate facility that is licensed and equipped to manage these materials. Oil storage and product handling will remain unchanged, and confined space activities associated with tank cleaning will continue to be managed in accordance with applicable health and safety requirements and site procedures.

Table 3-1 Waste classes (Walvis Bay Municipality regulations) relevant to the proposed operations

Waste class	Hazard Rating	Example
Domestic waste	Low	General domestic/general waste (where applicable)
Business waste	Low	General office/shop-floor type waste from non-residential premises (excluding hazardous/health care risk waste/industrial, etc.)
Industrial waste	Low–Medium (unless contaminated)	Scrap wood and metal; old tyres (managed with additional controls due to stockpiling/fire risk)
Garden waste	Low	Green waste (only if received; otherwise not applicable)
Bulky waste	Low–Medium	Large items not suitable for standard containers (only if received)
Builders' rubble	Low–Medium	Building/demolition rubble (only if received)
Special domestic waste	Medium	Carcasses/other special domestic wastes (only if received)
Special industrial waste	Medium–High	Liquid or sludge wastes from industrial processes / pre-treatment not suitable for sewer discharge (e.g. certain sludges/cuttings depending on composition)
Hazardous waste	High	Oil and fuel filters; oily rags and gloves; spent/contaminated chemicals; empty chemical/paint containers; batteries; fluorescent tubes; e-waste; hydrocarbon contaminated wash water (excluding explosives and radioactive waste, which will not be accepted)
Health care risk waste	High	Medical waste (for municipal incineration where authorised)
Recyclable waste	Low (if clean and segregated)	Glass, paper, plastics, scrap metal stored separately for transport to registered recyclers

3.3 DRILLING MUD AND CUTTINGS

Drilling muds and cuttings received at the facility will be pre-profiled and classified prior to acceptance (including confirmation of whether the material is associated with water-based drilling fluids or non-aqueous drilling fluids) and would be received in sealed skips/containers and placed in designated, impermeable, contained areas to prevent leaks and contaminated run-off. The wastes will be segregated to prevent incompatible mixing, after which the material is typically dewatered and separated to reduce volume and recover usable fractions. Depending on composition, treatment may include physical separation to recover residual base fluid and reduce residual fluid on cuttings and/or treatment such as thermal desorption, which heats cuttings to volatilise liquids and re-condense them into recoverable oil and water, leaving a solids fraction

for disposal or beneficial use where authorised. Potentially recoverable and repurposable products include recovered base fluids (oil/synthetic) for reuse or recovery, recovered water requiring appropriate treatment/disposal and drilling fluid constituents such as barite and base fluids that can be recovered and reused. Where the treated solids are non-hazardous it may be reused as road construction material, construction fill or landfill cover/capping, otherwise disposal would be at an appropriate facility.

3.4 TANK CLEANING

The Proponent also intends to offer tank cleaning services. For this purpose, employees qualified to work in confined spaces will be employed. Before tank cleaning commence, the hazards (vapours, confined space entry, residues) are assessed. The crew/workers are informed of cleaning schedule and safety measures. The tank is the isolated from operations and gas-freeing (ventilation) follows to remove flammable/toxic vapours. Permits for confined space entry is verified and secured before and work commence inside tanks. Depending on the condition of the tank, cleaning can involve one or more of the following:

- Water washing / hot water washing for general residues.
- Chemical cleaning for stubborn or hazardous residues.
- Mechanical cleaning (scraping, brushing) if required.
- Steam cleaning for heavy oils or waxes.

4 ADMINISTRATIVE, LEGAL AND POLICY REQUIREMENTS

To protect the environment and achieve sustainable development, all projects, plans, programmes and policies deemed to have adverse impacts on the environment require an environmental assessment, as per the Namibian legislation. The legislation and standards provided in Table 4-1 to Table 4-4 govern the environmental assessment process in Namibia and/or are relevant to the facility.

Table 4-1 Namibian law applicable to the bulk fuel storage and re-refining facility

Law	Key Aspects
The Namibian Constitution	♦ Promote the welfare of people ♦ Incorporates a high level of environmental protection ♦ Incorporates international agreements as part of Namibian law
Environmental Management Act Act No. 7 of 2007, Government Notice No. 232 of 2007	♦ Defines the environment ♦ Promote sustainable management of the environment and the use of natural resources ♦ Provide a process of assessment and control of activities with possible significant effects on the environment
Environmental Management Act Regulations Government Notice No. 28-30 of 2012	♦ Commencement of the Environmental Management Act ♦ List activities that requires an Environmental Clearance Certificate ♦ Provide Environmental Impact Assessment Regulations
Atmospheric Pollution Prevention Ordinance Ordinance No. 11 of 1976	♦ Governs the control of noxious or offensive gases ♦ Prohibits scheduled process without a registration certificate in a controlled area ♦ Requires best practical means for preventing or reducing the escape into the atmosphere of noxious or offensive gases produced by the scheduled process
Petroleum Products and Energy Act Act No. 13 of 1990, Government Notice No. 45 of 1990	♦ Regulates petroleum industry ♦ Makes provision for impact assessment ♦ Controls the safe disposal of petroleum products, including the collection and discarding of used oil ♦ Petroleum Products Regulations (Government Notice No. 155 of 2000) o Prescribes South African National Standards (SANS) or equivalents for construction, operation and decommissioning of petroleum facilities (refer to Government Notice No. 21 of 2002)
Petroleum Products and Energy Act, 1990 (act 13 of 1990): Regulations relating to the purchase, sale, supply, acquisition, possession, disposal, storage, transportation, recovery and re-refinement of used mineral oil Government Notice No. 48 of 1991	♦ All regulations with regard to used mineral oils ♦ Provides for permits and certificates for various aspects of possession and handling of mineral oils.
Petroleum Products and Energy Act Regulations Government Notice No. 112 of 1991	♦ Regulations relating to the purchase, sale, supply, acquisition, possession, disposal, storage, transportation, recovery and re-refinement of used mineral oil.
Namibia Integrated Health Care Waste Management Plan 2010	♦ Provides guidance for health care facilities to establish compliant health care waste management systems ♦ Promotes segregation, safe storage, treatment and disposal of health care risk waste in line with Namibian regulations

Law	Key Aspects
National Coastal Policy on Coastal Management for Namibia	♦ Promotes sustainable use and management of coastal resources while maintaining biodiversity and ecosystem productivity ♦ Recognises effective waste management as a key component of protecting the coastal environment
National Environmental Health Policy	♦ Defines environmental health in relation to human health and quality of life ♦ Guides the assessment, control and prevention of environmental factors that could adversely affect the health of present and future generations
National Solid Waste Management Strategy (2018 - 2028)	♦ Addresses key waste management concerns in Namibia ♦ Provides for the responsible management of waste and disposal sites at municipal, regional and national level
National Waste Management Policy, 2010	♦ Focusses on Waste Management and use of various technologies waste treatment and disposal to minimise health risks ♦ Provides the necessary guidance on the processes related to waste management in the Ministry of Health and Social Services, wider Namibia health and social welfare sectors, and other relevant stakeholders ♦ Addresses the concerns of waste and landfill management within Namibia
Radiation Protection and Waste Disposal Regulations, 2011 Government Notice No. 221 of 2011	♦ Regulate the safe management, handling, storage and disposal of radioactive waste ♦ Require licensing for any activity involving the generation, treatment, transport or disposal of radioactive material ♦ Prescribe standards for containment, shielding, labelling and secure storage of radioactive waste ♦ Prohibit disposal of radioactive waste at unlicensed waste disposal facilities ♦ Provide for inspections, monitoring requirements and enforcement
Regional Councils Act Act No. 22 of 1992; Government Notice No. 115	♦ Sets out the powers, duties, functions, rights and obligations of Regional Councils. ♦ Provides the legal basis for the drawing up of Regional Development Plans.
Radiation Protection and Waste Disposal Regulations, 2011 Government Notice 221 of 2011	♦ Provides the regulatory basis for controlling radiation practices, including licensing/authorisation requirements and safety management measures. ♦ Includes requirements relevant to radioactive sources and radioactive waste management, including emergency preparedness and reporting obligations.
Water Resources Management Act Act No. 11 of 2013	♦ Provide for management, protection, development, use and conservation of water resources ♦ Prevention of water pollution and assignment of liability
Local Authorities Act Act No. 23 of 1992, Government Notice No. 116 of 1992	♦ Define the powers, duties and functions of local authority councils ♦ Regulates discharges into sewers

Law	Key Aspects
Public and Environmental Health Act Act No. 1 of 2015, Government Notice No. 86 of 2015	♦ Provides a framework for a structured more uniform public and environmental health system, and for incidental matters ♦ Deals with Integrated Waste Management including waste collection disposal and re-refining; waste generation and storage; and sanitation.
Labour Act Act No 11 of 2007, Government Notice No. 236 of 2007	♦ Provides for Labour Law and the protection and safety of employees ♦ Labour Act, 1992: Regulations relating to the health and safety of employees at work (Government Notice No. 156 of 1997)
Atmospheric Pollution Prevention Ordinance Ordinance No. 11 of 1976	♦ Governs the control of noxious or offensive gases ♦ Prohibits scheduled process without a registration certificate in a controlled area ♦ Requires best practical means for preventing or reducing the escape into the atmosphere of noxious or offensive gases produced by the scheduled process
Hazardous Substances Ordinance Ordinance No. 14 of 1974	♦ Applies to the manufacture, sale, use, disposal and dumping of hazardous substances as well as their import and export ♦ Aims to prevent hazardous substances from causing injury, ill-health or the death of human beings
Pollution Control and Waste Management Bill (draft document)	♦ Not in force yet ♦ Provides for prevention and control of pollution and waste ♦ Provides for procedures to be followed for licence applications

Table 4-2 Municipal by-laws, guidelines and regulations

Municipal By-laws, Guidelines or Regulations	Key Aspects
Integrated Urban Spatial Development Framework for Walvis Bay	♦ Completed during 2014 and in the final stages of acceptance ♦ Overall vision to transform Walvis Bay to being the primary industrial city in Namibia ♦ Aims to ensure that appropriate levels of environmental management is enforced for all developments in Walvis Bay
Integrated Environmental Policy of Walvis Bay (Agenda 21 Project)	♦ Indicates the directions that the Municipality of Walvis Bay will move towards in the forthcoming years to fulfil its responsibilities to manage the environment of Walvis Bay together with the town's residents and institutions ♦ Strong focus on conservation and protection of environment
Walvis Bay Municipality: Solid and Hazardous Waste Management Regulations, 2011	♦ Provides locally applicable definitions for waste classes used in reporting (e.g., domestic waste, business waste, industrial waste, builders' rubble, special domestic/industrial waste, hazardous waste, health care risk waste, recyclables). ♦ Defines "hazardous waste" to include (amongst others) explosive substances and radioactive substances. ♦ Recognises waste service activities such as collecting, sorting, storing, treating, transporting and disposing of waste (i.e., the typical "collection, sorting and disposal" scope).
Sewerage Influent Regulations	♦ The Walvis Bay Municipality does not provide specific limits as to allowable discharges into the

Municipal By-laws, Guidelines or Regulations	Key Aspects
	sewerage system. Since no separate industrial sewage treatment plant exists the guidelines of the Local Authorities Act (Act 23 of 1992) should be followed ♦ The Municipality do issue effluent discharge permits which stipulates limits and monitoring requirements
Drainage and Plumbing By-Law of 1958 (updated in 1982)	♦ "If it is ascertained that the introduction into a municipal sewer of any solid matter, suspended matter, mud, chemical or manufacturing or trade or other refuse (inclusive of vapours or gaseous matters) or of any steam, condensing water, heated waters or other liquid (such water or other liquid being of a higher temperature than 110 degrees Fahrenheit [43.33°C]), whether alone or in combination with other matter or liquids, and whether directly or through any drain or channel communicating with such sewer, either does, or may cause a nuisance, or involve danger to health of persons entering the sewers, or others, or is or may be injurious to the structure of materials of the sewers or works of the Council, or to any ground used by the Council for the disposal of sewage, the Council may, by order, absolutely prohibit from a date to be named in such order, not being earlier than 14 days from service of such order, any such matter or matters being caused or permitted to fall, flow or enter, or to be carried or washed into any sewer either directly or indirectly."

Table 4-3 Relevant multilateral environmental agreements for Namibia and the development

Agreement	Key Aspects
Stockholm Declaration on the Human Environment, Stockholm 1972.	♦ Recognizes the need for a common outlook and common principles to inspire and guide the people of the world in the preservation and enhancement of the human environment.
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, Basel 1989	♦ Aims at the reduction of hazardous waste generation and the promotion of environmentally sound management of hazardous wastes, wherever the place of disposal ♦ Restricts transboundary movements of hazardous wastes except where it is perceived to be in accordance with the principles of environmentally sound management ♦ Regulatory system applying to cases where transboundary movements are permissible."
1985 Vienna Convention for the Protection of the Ozone Layer	♦ Aims to protect human health and the environment against adverse effects from modification of the Ozone Layer are considered. ♦ Adopted to regulate levels of greenhouse gas concentration in the atmosphere.
United Nations Framework Convention on Climate Change (UNFCCC)	♦ The Convention recognises that developing countries should be accorded appropriate assistance to enable them to fulfil the terms of the Convention.
Convention on Biological Diversity, Rio de Janeiro, 1992	♦ Under article 14 of The Convention, EIAs must be conducted for projects that may negatively affect biological diversity.

Table 4-4 Standards or codes of practise

Standard or Code	Key Aspects
South African National Standards (SANS)	♦ The Petroleum Products and Energy Act prescribes SANS standards for the construction, operations and demolition of petroleum installations.

Listed activities which require an ECC application (Government Regulation No 29 of 2012) related to this project include the following:

Section 2 of Government Notice No. 29 of 2012: Waste Management, Treatment, Handling and Disposal Activities

- 2.1. The construction of facilities for waste sites, treatment of waste and disposal of waste: Waste oil is stored and recycled in bulk volumes on site.
- 2.2 Any activity entailing a scheduled process referred to in the Atmospheric Pollution Prevention Ordinance, 1976. Products and processes on site conforms to the definition of hazardous substance as per the ordinance.
- 2.3 The import, processing, use and recycling, temporary storage, transit or export of waste. The site acts as a recycling and/or temporary storage facility for waste.

Section 9 of Government Notice No. 29 of 2012: Water Resource Developments

- 9.1 "The manufacturing, storage, handling or processing of a hazardous substance defined in the Hazardous Substances Ordinance, 1974." Hydrocarbon waste and products are stored and handled in bulk on site.
- 9.2 "Any process or activity which requires a permit, licence or other form of authorisation, or the modification of or changes to existing facilities for any process or activity which requires an amendment of an existing permit, licence or authorisation or which requires a new permit, licence or authorisation in terms of a law governing the generation or release of emissions, pollution, effluent or waste." The storage and handling of used mineral oil requires a permit from the Ministry of Mines and Energy.
- 9.4 "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." Hydrocarbon based waste oil and fuel are handled and stored on site in volumes more than 30 cubic meters.
- 9.5 "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." Hydrocarbon based waste oil and fuel are stored in aboveground tanks.

The Namibian legislation lacks specific, enforceable air quality parameters[1] for operations such as the re-refining of used oil. In general air quality standards aim to protect human life as well as ecosystems. In light of the lack of enforceable standards, projects may revert to the World Bank and International Finance Corporation's (IFC) Environmental, Health, and Safety guidelines (known as the EHS guidelines). These guidelines are important as Namibia is a signatory to various climate chance conventions as developed by the United Nations. The World Bank Group has a treaty-based relationship with the United Nations (UN) that dates back to its founding, and through that relationship, works to build a partnership that supports member states and contributes to effective development outcomes while preserving the distinct mandates of each institution.

The use of these guidelines are hinged on the condition that the guidelines be adapted to site specific variables, considering the sensitivity of the environment and project factors as indicated in the environmental assessment. For the purposes of this project, reference is made to the "General EHS Guidelines: Environmental Air Emissions and Ambient Air Quality". The system used to heat the used oil for re-refining may be classified as a "Small Combustion Facility". These are systems designed to deliver electrical or mechanical power, steam, heat, or any combination of these, regardless of the fuel

[1] Ambient standards provide the maximum allowable level of a pollutant in the receiving environment whereas emission standards set the maximum amount of pollutant that may be released

type, with a total, rated heat input capacity of between three Megawatt thermal (MWth) and 50 MWth. The emissions guidelines in Table 4-5 (as adapted from the guidelines) are applicable to small combustion process installations operating more than 500 hours per year, and those with an annual capacity utilisation of more than 30 percent (IFC, 2007). As the site is located in a degraded airshed, lower emission values may apply.

Table 4-5 Small combustion facilities emissions guidelines (3 MWth – 50 MWth) – (in mg/Nm^3 or as indicated) as adapted from the EHS Guidelines (IFC, 2007)

Combustion Technology / Fuel	Particulate Matter (PM)	Sulfur Dioxide (SO_2)	Nitrogen Oxides (NOx)	Dry Gas, Excess O_2 Content (%)
Boiler				
Gas	N/A	N/A	320	3
Liquid	50 or up to 150 if justified by environmental assessment	2,000	460	3
Solid	50 or up to 150 if justified by environmental assessment	2,000	650	6

Notes: -N/A - no emissions guideline; Higher performance levels than these in the Table should be applicable to facilities located in urban / industrial areas with degraded airsheds or close to ecologically sensitive areas where more stringent emissions controls may be needed. MWth is heat input on high heat value basis Solid fuels include biomass; Nm^3 is at one atmosphere pressure, 0°C.; MWth category is to apply to the entire facility consisting of multiple units that are reasonably considered to be emitted from a common stack except for NOx and PM limits for turbines and boilers.

5 ENVIRONMENTAL MANAGEMENT PLAN

The purpose of this section is to list the most pertinent environmental impacts that are expected from the operational, construction (upgrades, maintenance, etc.) and potential decommissioning activities of the facility.

5.1 OBJECTIVES OF THE EMP

The EMP provides management options to ensure impacts of the facility is minimised. An EMP is a tool used to take pro-active action by addressing potential problems before they occur. This should limit the corrective measures needed, although additional mitigation measures might be included if necessary. The environmental management measures are provided in the tables and descriptions below. These management measures should be adhered to during the various phases of the facility. All personnel taking part in the construction, operations or decommissioning of the facility should be made aware of the contents in this section, so as to plan the operations accordingly and in an environmentally sound manner.

The objectives of the EMP are:

- to include all components of construction activities (upgrades, maintenance, etc.) and operations of the facility;
- to prescribe the best practicable control methods to lessen the environmental impacts associated with the project;
- to monitor and audit the performance of operational personnel in applying such controls; and
- to ensure that appropriate environmental training is provided to responsible operational personnel.

5.2 IMPLEMENTATION OF THE EMP

Section 5.3 outline the management of the environmental elements that may be affected by the different activities. Impacts addressed and mitigation measures proposed are seen as minimum requirements which have to be elaborated on. Delegation of mitigation measures and reporting activities should be determined by the Proponent and included in the EMP. The EMP is a living document that must be prepared in detail, and regularly updated, by the Proponent as the project progress and evolve.

The EMP and ECC must be communicated to the site managers and copies should be kept on site. All monitoring results must be reported on as indicated. Reporting is important for any future renewals of the ECC and must be submitted to the MEFT. Renewal of ECC will require six monthly reports based on the monitoring prescribed in this EMP.

Various potential and definite impacts will emanate from the construction, operations and decommissioning phases. The majority of these impacts can be mitigated or prevented. The prevention and mitigation measures are listed below.

5.3 MANAGEMENT OF IMPACTS: OPERATIONS AND CONSTRUCTION

The following section provide management measures for both the operational phase as well as possible minor construction (maintenance) activities related to facility.

5.3.1 Planning

During the phases of planning for future operations, construction and decommissioning of the facility, it is the responsibility of the Proponent to ensure they are, and remain, compliant with all legal requirements. The Proponent must also ensure that all required management measures are in place prior to and during all phases, to ensure potential impacts and risks are minimised. The following actions are recommended for the planning phase and should continue during various other phases of the project:

- Ensure that all necessary permits from the various ministries, local authorities and any other bodies that govern the construction (maintenance) activities and operations of the facility remains valid.
- Ensure all appointed contractors and employees enter into an agreement which includes the EMP. Ensure that the contents of the EMP are understood by the contractors, sub-contractors, employees and all personnel present or who will be present on site.
- Make provisions to have a Health, Safety and Environmental (HSE) Coordinator to implement the EMP and oversee occupational health and safety as well as general environmental related compliance at the site.
- Have the following on site where reasonable to deal with all potential emergencies:
    - Risk management / mitigation / EMP/ emergency response plan and HSE Manuals;
    - Adequate protection and indemnity insurance cover for incidents;
    - Procedures, equipment and materials required for emergencies.
- If one has not already been established, establish and maintain a fund for future ecological restoration of the project site should a spill occur or project activities cease and the site is decommissioned and environmental restoration or pollution remediation is required.
- Establish and / or maintain a reporting system to report on aspects of construction activities, operations and decommissioning as outlined in the EMP and stipulated in the conditions of the ECC.
- Keep proof of monitoring report submissions on file (submission every six month) for submission with ECC renewal applications where needed.
- Appoint a specialist environmental consultant to apply for renewal of the ECC according to MEFTs requirements, prior to expiry.

5.3.2 Employment

An increase of skilled and professional labour has and will continue to take place due to the operations of the facility. Employment is sourced locally while skilled labour/contractors may be sourced from other regions. The addition of waste storage, segregation and disposal operations will increase the employee base.

Desired outcome: Provision of employment to local Namibians.

Actions

Enhancement:

- The Proponent must employ local Namibians where possible.
- If the skills exist locally, employees must first be sourced from the town, then the region and then nationally.
- Deviations from this practice must be justified.

Responsible Body:

- Proponent
- Contractors

Data Sources and Monitoring:

- Bi-annual summary report based on employee records.

5.3.3 Skills, Technology and Development

During various phases of the facility, training is provided to a portion of the workforce, in order to maintain and operate various features of the facility according to the required standards. Skills are transferred to an unskilled workforce for general tasks. The technology required for the facility is often new to the local industry, aiding in operational efficiency. Development of people and technology are key to economic development.

Desired outcome: To see an increase in skills of local Namibians, as well as development and technology advancements in the waste oil re-refining industry.

Actions

Enhancement:

- If the skills exist locally, contractors and employees must first be sourced from the town, then the region and then nationally. Deviations from this practice must be justified.
- Skills development and improvement programs to be made available as identified during performance assessments.
- Employees to be informed about parameters and requirements for references upon employment.
- Provide job-specific training for the planned waste operations, including waste classification and segregation (hazardous vs non-hazardous; health care risk waste; recyclables).

Responsible Body:

- Proponent
- Contractors

Data Sources and Monitoring:

- Record should be kept of training provided.
- Ensure that all training is certified or managerial reference provided (proof provided to the employees) inclusive of training attendance, completion and implementation.
- Bi-annual summary report based on records kept.

5.3.4 Revenue Generation

The operations contribute to the national treasury. Employment of skilled and professional labour continues as part of the Proponent's operations, and related wages and salaries are paid. Revenue is generated through the refining and selling of waste oils and the handling of various waste streams. Various contractors and businesses provide goods and services such as fleet maintenance and servicing, tyres, fuel, etc., which stimulates the national economy.

Desired Outcome: Contribution to the local and national economy. Contribution to national treasury.

Actions

Enhancement:

- Payment of levies, taxes and fees according to Namibian legislation.
- The Proponent must employ local Namibians and source Namibian contractors, goods and services as far as is practically possible. Deviations from this practise must be justified.
- Remuneration of employees and payment of taxes in line with Namibian regulations.

Responsible Body:

- Proponent

Data Sources and Monitoring:

- Bi-annual summary report based on employee records.

5.3.5 Demographic Profile and Community Health

The project is reliant on labour during the operational phase. The scale of the project is limited and it is not believed to have created a change in the demographic profile of the local community. Community health may be exposed to factors such as communicable disease like HIV/AIDS and alcoholism/drug abuse, associated with trucking of oil. An increase in foreign people in the area may potentially increase the risk of criminal and socially/culturally deviant behaviour. However, such trends have not been observed since the site became operational. Spills and leaks may present health and safety risks to employees. Emissions from the re-refining facility may affect the community directly and in a cumulative manner. The waste management activities may further introduce nuisance and health risks if wastes are mismanaged, including wind-blown litter, odours, pests (flies/rodents) and increased fire risk from certain waste streams (e.g., tyres), as well as potential exposure risks if hazardous or health care wastes are not correctly segregated and secured.

Desired Outcome: To prevent the in-migration and growth in informal settlements and to prevent the spread of communicable diseases and prevent / discourage socially deviant behaviour. To prevent health impacts on the community. To prevent nuisance conditions and community exposure risks associated with waste receipt, storage and sorting.

Actions:

Prevention:

- Employ only local people from the area, deviations from this practice should be justified appropriately.
- Adhere to all municipal by-laws relating to environmental health which includes, but is not limited to, sanitation requirements.
- Continued use and maintenance of the emissions mitigation measures such as the air scrubber purification system.
- Implement waste acceptance and segregation procedures to prevent mixing of incompatible, hazardous, non-hazardous and health care risk wastes and to prevent cross-contamination of recyclables.
- Keep all waste storage areas secure (controlled access) and maintain housekeeping to prevent illegal dumping, scavenging and wind-blown litter.

Mitigation:

- Educational programmes for employees on HIV/AIDs and general upliftment of employees' social status.
- Implement a complaints procedure for the public/adjacent businesses (odour, litter, smoke), investigate complaints, and record corrective actions.
- Any waste with the potential of resulting in foul odours or a high health risk should not be stored on site for long periods.
- Appointment of reputable contractors.

Responsible Body:

- Proponent

Data Sources and Monitoring:

- Facility inspection sheet for all areas which may present environmental health risks, kept on file.
- Continued monitoring and documenting of emissions release.
- Keep records of, and investigate and act on, any complaints received regarding odours or any other impact on the surrounding community.
- Bi-annual summary report based on educational programmes and training conducted.
- Bi-annual report and review of employee demographics.

5.3.6 Waste: Oil Handling

Due to a lack of approved hazardous waste disposal sites in Namibia, it is likely that industries, businesses, etc. will dispose of waste or contaminated oil and hydrocarbons incorrectly and may then potentially cause environmental pollution and health hazards. Thus, the operations of the Wesco facility provides an avenue for the safe and legal disposal of waste oil throughout Namibia. Furthermore, what would otherwise be hazardous waste are processed into a usable resource with only limited residual waste.

Desired Outcome: Provide suitable avenue for waste oil disposal and prevent environmental contamination.

Actions

Mitigation:

- Ensure compliance to the petroleum regulations of Namibia.
- Regularly collect waste oil throughout Namibia and ensure waste oil disposal points are available at all times.

Responsible Body:

- Proponent

Data Sources and Monitoring:

- Keep record of volumes of waste oil receipt and include in figures in a bi-annual summary report.

5.3.7 Waste: Drilling Mud and Cuttings

Due to limited hazardous waste treatment and disposal capacity in Namibia, it is likely that drilling mud and cuttings may be handled or disposed of incorrectly, which could result in environmental pollution and health hazards. The facility will provide an avenue for the safe and legal handling and treatment of drilling mud and cuttings, thereby reducing the risk of uncontrolled disposal. Potential recoverable products may include a hydrocarbon fraction, separated water and recoverable drilling fluid constituents (e.g., barite) where separation and quality allow. Residual solids and any non-recoverable fractions will be managed and disposed of at appropriately authorised facilities.

Desired Outcome: Provide a suitable avenue for drilling mud and cuttings handling and treatment, recover usable fractions where practicable, and prevent environmental contamination.

Actions

Mitigation:

- Implement a waste acceptance procedure for drilling mud and cuttings, including basic profiling and inspection on receipt to ensure appropriate handling and routing.
- Segregate drilling mud and cuttings by type and condition, and prevent mixing with incompatible wastes.
- Undertake handling and treatment in designated areas on impermeable surfaces with suitable containment to prevent leaks and contaminated run-off.
- Ensure recovered fractions and residues are stored securely and routed only to authorised facilities or lawful reuse routes.
- Maintain spill response equipment and ensure any spills or leaks are cleaned up immediately.

Responsible Body:

- Proponent

Data Sources and Monitoring:

- Keep record of volumes of drilling mud and cuttings received and treated, including quantities of recovered fractions and residues generated, and include these figures in a bi-annual summary report.

5.3.8 Waste: Collection, Sorting and Disposal

General and hazardous waste handling and disposal is problematic in most towns of Namibia with firstly no regard for the correct disposal of hazardous wastes and secondly, poorly operated waste disposal sites. This, in many instances, results in significant environmental pollution. The Wesco facility provides a controlled avenue for waste receipt and routing to authorised disposal and recycling facilities, but the operation itself must be managed to prevent contamination and nuisance.

Desired Outcome: Provide a controlled and compliant avenue for waste receipt, segregation, and disposal (or recycling), while preventing environmental contamination, nuisance conditions and fire risk.

Actions

Mitigation:

- Inform clients on proper waste segregation from the start so that general non-hazardous waste does not become hazardous waste through contamination be joint disposal into bins (e.g. disposing used oil filters into bins with general waste). This will decrease the volume of hazardous waste requiring disposal, save on disposal costs and reduce pressure on hazardous disposal sites.
- Regularly collect waste from clients so that waste do not accumulate and become an environmental risk due to insufficient temporary waste storage space.

Responsible Body:

- Proponent

Data Sources and Monitoring:

- Maintain a waste register recording waste class/type, source, volumes/weights received, storage location, and final destination (recycling/treatment/disposal).
- Keep waste transfer records, proof of disposal and recycler certificates on file.
- Include waste receipt and disposal/recycling volumes and incident statistics in a bi-annual summary report.

5.3.9 Traffic

Traffic to and from the site has increased congestion in 4th Street East and may result in an increased risk of incidents and accidents, as well as unauthorised traffic movement on neighbouring properties. The impact has a strong cumulative nature as various industries, on surrounding properties, rely on heavy motor vehicles for product and / or service delivery. The waste management activities may further increase vehicle movements (waste collection vehicles, skip trucks, hazardous waste transporters and recycler collections), which may intensify congestion, queuing at the entrance, and interaction risks between heavy vehicles, light vehicles and pedestrians.

Desired Outcome: Minimum impact on traffic and no transport or traffic related incidents.

Actions

Prevention:

- Erect clear signage regarding access and exit points at the facility.
- Ensure all waste transporters and collection vehicles comply with required licensing/permits and that loads are secured to prevent litter and debris falling from vehicles.

Mitigation:

- Trucks delivering waste oil and waste products, or collecting any form of waste or product should not be allowed to obstruct any traffic or access to facilities in 4th Street East or in the cul-de-sac. Where clients transport their own waste to the site, they should be informed on preferred routes and parking areas to minimize impacts.
- If any traffic impacts are expected, traffic management should be performed to prevent these.
- The placement of signs to warn and direct traffic will mitigate traffic impacts.

Responsible Body:

- Proponent

Data Sources and Monitoring:

- Any complaints received regarding traffic issues should be recorded together with action taken to prevent impacts from repeating itself.
- A bi-annual report should be compiled of all incidents reported, complaints received, and action taken.

5.3.10 Health, Safety and Security

Activities associated with the operational phase relies on labour and therefore exposes employees to health and safety risks. Activities such as the operation of machinery and handling of hazardous chemicals (inhalation and carcinogenic effect of some petroleum products), poses the main risks to employees. The waste management activities will introduce additional risks related to manual handling, moving plant/forklifts, handling of mixed/unknown wastes, potential , inhalation of asbestos fibres, sharps and broken glass, batteries and e-waste hazards, and the handling and temporary storage of health care risk waste. Security risks are related to unauthorized entry, theft and sabotage. Waste storage areas may also attract illegal dumping and scavenging if access is not controlled.

Desired Outcome: To prevent injury, health impacts and theft.

Actions

Prevention:

- Implement and maintain an integrated health and safety management system, to act as a monitoring and mitigating tool, which includes: colour coding of pipes, operational, safe work and medical procedures, permits to work, emergency response plans, housekeeping rules, MSDS's and signage requirements (PPE, flammable etc.).
- All health and safety standards specified in the Labour Act should be complied with and where the Act and its regulations do not stipulate any, international best practice (such as World Health Organisation (WHO)) should be used.
- Ensure that all personnel receive adequate training on operation of equipment / handling of hazardous substances. This includes for example operating machinery, working in confined spaces, and identification of hazardous products.
- Implement a waste acceptance and screening procedure to reduce exposure to unknown or incompatible wastes (including visual inspection at receipt and immediate isolation of suspect loads).
- Develop task-specific safe work procedures for waste sorting and handling.
- Segregate and store health care risk waste in closed, clearly labelled containers in a designated, secure area with controlled access, and ensure frequent removal to prevent exposure and nuisance.
- Clearly label dangerous and restricted areas as well as dangerous equipment and products.
- Provide all employees with required and adequate personal protective equipment (PPE).
- Selected personnel should be trained in first aid and a first aid kit must be available on site. The contact details of all emergency services must be readily available.
- Strict security that prevents unauthorised entry and security procedures and proper security measures must be in place to protect workers and clients.
- Equipment on site must be locked away or placed in a way that does not encourage criminal activities (e.g. theft).
- Implementation of maintenance register for all equipment and fuel/hazardous substance storage areas.
- Under no circumstances accept radioactive waste, explosives or any other controlled products at the facility; ensure staff are trained to identify and reject such loads and record rejections.

Responsible Body:

- Proponent
- Contractors

Data Sources and Monitoring:

- Any incidents must be recorded with action taken to prevent future occurrences.
- Keep a register of waste-related incidents and near-misses (, including corrective actions and close-out dates.

- A bi-annual report should be compiled of all incidents reported. The report should contain dates when training were conducted and when safety equipment and structures were inspected and maintained.

5.3.11Fire

Operational and construction activities may increase the risk of the occurrence of fires. The site is located next to built-up area which increases the risk as well as the difficulty of fighting fires. Flammable products are stored on site. Heating of the waste oil, as well as the burning of LFO significantly increases fire risk associated with such products. Waste oil may have be mixed with fuel after prolonged periods of use, resulting in oil dilution. The entry of foreign substances, fuel or water, are the reason why the flash point of other oils could drop, hence increasing the risk of fire. LFO stored on site could have a flash point of below 100 ºC. Boiler operation see temperatures exceeding 100 ºC. Fire risks are increased when permit requirements for the storage and handling of used oil are not met. The waste management activities may further increase fire risk due to the temporary storage of combustible wastes. Incompatible wastes (such as oxidisers and hydrocarbons) when mixed can result in spontaneous combustion and explosions.

Desired Outcome: To prevent property damage, possible injury and impacts caused by uncontrolled fires.

Actions:

Prevention:

- A holistic fire protection and prevention plan is needed. This plan must include an emergency response plan, firefighting plan and spill recovery plan.
- Maintain firefighting equipment, good housekeeping and personnel training (firefighting, fire prevention and responsible housekeeping practices).
- Ensure all hazardous substances are stored according to permit conditions, MSDS and SANS instructions.
- Locate tanks away from heat and other sources of ignition. Ensure heating coils are always covered with product (minimum 15 cm).
- Electrostatic charges may be generated during pumping. Ensure electrical continuity by bonding all equipment.
- Ensure all tanks are completely free from product when any work inside fuel tanks are performed.
- Maintain regular site, mechanical and electrical inspections and maintenance.
- Clean all spills / leaks.
- Store combustible waste streams (e.g., oily rags, filters and contaminated packaging) in closed, clearly labelled containers, and keep them away from heat sources and ignition points.
- Segregate wastes that are incompatible and when in doubt, never mix substances by adding it to the same container.
- Manage tyre storage as a controlled stockpile.
- Apply hot-work controls (permit-to-work) for any welding/cutting/grinding near tanks, waste storage and sorting areas.
- Prohibit open burning of any waste on site and enforce strict housekeeping.
- Special note must be taken of the relevant regulations stipulated in sections 47 and 48 of the regulations (Government Notice 155 of 2000) of the Petroleum Products and Energy Act, 1990 (Act No. 13 of 1990).
- Follow SANS standards for operation and maintenance of the facility as per the requirements for refining used mineral oil, storage and handling.
- Clearly indicate no smoking areas and ensure all staff adhere to the restrictions.

Responsible Body:

- Proponent
- Contractors

Data Sources and Monitoring:

- A register of all incidents must be maintained on a daily basis. This should include measures taken to ensure that such incidents do not repeat themselves.

- A bi-annual report should be compiled of all incidents reported. The report should contain dates when fire drills were conducted and when fire equipment was tested and training given.

5.3.12 Air Quality

The heating tank and boiler are the principal emitters of air pollutants and of key concern are the "exhaust" gases: nitrous oxides, sulphurous oxides, hydrocarbons, carbon monoxide, carbon dioxide, as well as unknown volatiles and particulate matter, which are all considered to be significant sources of air pollution. Gases emitted from the stack contribute to the greenhouse effect while also being detrimental to employee and community health.

Vapours may also be released into the air during refilling of bulk storage tanks. Prolonged exposure may have carcinogenic effects. Dust may be generated should any construction take place. The waste management activities may contribute to air quality impacts through increased vehicle movements and idling, and odours if waste streams are stored for extended periods or are not adequately sealed/covered.

Desired Outcome: To prevent health impacts and minimise the dust generated.

Actions

Prevention:

- All infrastructure must comply with SANS requirements and conditions of the Ministry of Industries, Mines and Energy permit.
- All emissions released must adhere to the Labour Act of 1992 regulations on employee health and safety.
- Under no circumstances allow open burning of waste on site.
- All venting systems and procedures must be designed to required standards or industry best practice.
- Include vapour recovery systems and carbon filters on vents.
- Continued use and maintenance of the air scrubber purification system.
- Develop procedural guidelines and policy for wet scrubber operation, including communication with neighbours and disciplinary actions for non-conformance.
- Regular maintenance of boiler systems to prevent excessive emissions.
- Conduct quality checks on LFO used in boiler operations (good quality fuel reduces emissions).
- Develop and implement a comprehensive Air Quality Management Plan for the facility.
- Develop and implement a comprehensive Emergency Response Plan: Procedures for accidental releases, fires, or exposure incidents.
- Adjust boiler operations as necessary to reduce emissions in line with AQMP findings.
- Store odorous or volatile wastes (oily rags, filters, contaminated packaging, chemical wastes) in closed, clearly labelled containers in designated areas; avoid prolonged storage.
- Ensure frequent removal of odorous wastes using a "first-in, first-out" approach to minimize nuisance.
- Limit unnecessary idling of waste collection vehicles; maintain vehicles and handling equipment to reduce exhaust emissions.
- Regular monitoring of emissions from stacks for PM, SO_2, NO_x, VOCs.
- Monitoring schedule must align with noxious industry consent use and conform to World Bank/IFC standards.
- Optimize boiler efficiency and consider renewable energy integration to reduce emissions footprint.
- Maintain a complaints register for dust/odour issues; implement mitigation (e.g., dust suppression) and record corrective actions.
- Personnel must be issued with appropriate masks/respirators where dust or vapours are present.
- Employees should be trained/coached on the dangers of hydrocarbon vapours (some carcinogenic).
- Carry out periodic health surveys among workers.
- Liaise with local health facilities to conduct passive surveillance among nearby residents for ailments potentially linked to emissions.

Mitigation:

- If emissions monitoring results indicate continued elevated values (for three monitoring cycles) the Proponent should employ additional air purification measures such as selective catalytic, or non-catalytic reduction systems and increasing of stack height as per good international industry practise for stack height.

Responsible Body:

- Proponent
- Contractors

Data Sources and Monitoring:

- Monitoring results to be kept on file.
- Any complaints received regarding dust, fuel vapours or emissions should be recorded with notes on action taken to address concerns.
- Incidents log to be kept of all non-conformances such as those related to the operation and management of the wet scrubber (such as not engaging the system during operations)
- Air quality management plan to be documented and include monitoring.
- All information and reporting to be included in a bi-annual report.

5.3.13 Noise

Noise pollution will exist due to heavy motor vehicles accessing the site to offload oil and load fuel, as well as additional waste collection vehicles and skip trucks associated with the waste management activities, while construction (maintenance and upgrade) may generate excessive noise.

Desired Outcome: To prevent any nuisance and hearing loss due to noise.

Actions

Prevention:

- Follow Health and Safety Regulations of the Labour Act and / or World Health Organization (WHO) guidelines on maximum noise levels (Guidelines for Community Noise, 1999) to prevent hearing impairment and nuisances.
- All machinery must be regularly serviced to ensure minimal noise production.

Mitigation:

- Hearing protectors as standard PPE for workers in situations with elevated noise levels.

Responsible Body:

- Proponent
- Contractors

Data Sources and Monitoring:

- Health and Safety Regulations (Labour Act) and WHO Guidelines.
- Maintain a complaints register.
- Bi-annual report on complaints and actions taken to address complaints and prevent future occurrences.

5.3.14 Waste Production

The main purpose of the facility is to act as a waste receipt, recycling (of waste oil), sorting, and temporary storage facility, with ultimately offsite disposal at registered disposal sites or recyclers. It is thus inevitable that waste will be present on site. The Proponent will howver also produce their own wastes such as sludge from the waste oil recycling process and domestic and operational wastes. Sludge from the re-refining process and water from the air scrubber purification system are considered hazardous along with all hydrocarbon polluted material such as soil, etc. Main contaminants in effluent water (from the re-refining process) are oil, phenols, sulphides and ammonia which all result from contact with the hydrocarbon product processed. These wastes present contamination risks and when not removed regularly may become a fire hazard. Construction waste may include building rubble and discarded equipment contaminated by hydrocarbon products. Incorrect segregation, damaged containers, or prolonged storage of wastes may increase the risk of leaks, odours, wind-blown litter and fire load (e.g., tyres and combustible wastes), and may also result in cross-contamination of recyclables.

Desired Outcome: To reduce the amount of waste produced by the facility itself, and prevent pollution, contamination and littering of the environment.

Actions

Prevention:

- Develop a waste management plan covering both waste produced by the Proponent and wastes handled as part of operations.
- For operational waste, waste reduction measures should be implemented and all waste can be handled together with the waste received from clients for ultimate disposal.
- All hydrocarbon and hazardous substance handling to be conducted on impermeable surfaces.
- Ensure adequate waste storage facilities are available and that waste cannot be blown away by wind and liquid waste remains contained.
- Prevent scavenging (human and non-human) of stored waste.
- Industrial effluent disposed into municipal sewers from the re-refining process should comply with municipal permit conditions and be sampled regularly to ensure no hydrocarbons are present.
- Waste should be disposed of regularly and at appropriately classified disposal facilities, this includes hazardous material (hydrocarbon residues, empty chemical containers, contaminated rugs, paper water and soil) that must be discarded at the hazardous waste disposal facility of the Municipality or incinerated (liaise with the municipality regarding waste and handling of hazardous waste).
- See the material safety data sheets available from suppliers for disposal of contaminated products and empty containers.
- Surfactants (soap) may not be allowed to enter any oil water separation processes.

Mitigation:

- In the event of effluent discharge not meeting municipal standards, the effluent should be treated prior to release into the municipal system.

Responsible Body:

- Proponent
- Contractors

Data Sources and Monitoring:

- A register of hazardous waste disposal should be kept. This should include type of waste, volume as well as disposal method/facility, and safe disposal certificate/proof.
- Compliance to the municipal effluent permit conditions and testing as may be prescribed by the municipality.
- Document any effluent treatment conducted.
- Any complaints received regarding waste should be recorded with notes on action taken.

- All monitoring results should be kept on file and included in a bi-annual report.
- All information and reporting to be included in a bi-annual report.

5.3.15 Ecosystem and Biodiversity Impact

The nature of the operational activities is such that the probability of creating a habitat for flora and fauna to establish is low. This being an existing site, no impact on flora is expected. Impacts on fauna is mostly related to birds. Excessive lighting used at night and especially those that are directed upwards blinds birds like flamingos that fly at night. This may result in disorientation of birds and collisions with structures. Further impacts will mostly be related to pollution of the environment and the waste management activities may increase the likelihood of attracting scavenging species (birds and small mammals) if wastes are not adequately contained, which can increase nuisance and the potential for wildlife interaction with hazardous wastes.

Desired Outcome: To avoid pollution of and impacts on the ecological environment.

Actions.

Mitigation:

- Report any extraordinary faunal sightings to the Ministry of Environment, Forestry and Tourism.
- Mitigation measures related to waste handling and the prevention of groundwater, surface water and soil contamination should limit ecosystem and biodiversity impacts.
- Ensure waste cannot be blown away by wind.
- Ensure waste storage areas (particularly potentially edible wastes) are managed to prevent scavenging by animals and attraction of vermin.
- Prevent pooling of water in waste handling and storage areas (good drainage and prompt clean-up) to avoid creating attraction points for birds and pests.
- Secure lightweight recyclables (plastics/paper) and ensure skips are covered where practicable to prevent dispersal into the surrounding environment and potential ingestion/entanglement by fauna.
- Lights used at site should be directed downwards to the working surfaces.

Responsible Body:

- Proponent
- Contractors

Data Sources and Monitoring:

- Report on any extraordinary faunal sightings and/or bird collisions.
- Record any scavenging/pest observations linked to waste storage areas and the corrective actions taken (e.g., improved containment, increased removal frequency) for inclusion in the bi-annual report.
- All information and reporting to be included in a bi-annual report.

5.3.16 Groundwater, Surface Water and Soil Contamination

Operations entail the storage and handling of drilling mud and cuttings, waste oil, HFO, LFO and various potential hazardous wastes which present a contamination risk. Contamination may either result from failing storage facilities, pumps and pipelines, spills and leaks associated with overfilling or human error, or incorrect disposal of waste. Such spills may contaminate soil and groundwater and through groundwater possible contaminate the ocean. Storage and handling of products outside of bunded areas present a pollution risk

Desired Outcome: To prevent the contamination of water and soil.

Actions

Prevention:

- Spill control structures and procedures must be in place according to permit conditions, SANS standards or better.
- All storage of hydrocarbons must occur in suitably bunded areas with concrete floors.
- All handling of hydrocarbons should be on spill proof surfaces connected to an oil water separator.
- The procedures followed to prevent environmental damage during service and maintenance, and compliance with these procedures, must be audited and corrections made where necessary.
- Proper training of operators must be conducted on a regular basis (hydrocarbon products handling, spill detection, spill control).
- Develop and implement an emergency response plan and in the event of a spill/leak from stored wastes, immediately isolate the area, contain and recover the material, and dispose of contaminated clean-up materials as hazardous waste, with corrective actions implemented (e.g., container replacement, improved storage/segregation).
- Contaminated water must be prevented from entering the municipal sewers or environment, and treated as hazardous waste.
- Contaminated run-off should be kept separate from relatively clean run-off.

Mitigation:

- Any fuel spillage of more than 200 litre should be reported to the Ministry of Industries, Mines and Energy as well as the local municipality.
- Spill clean-up means must be readily available on site and spills must be cleaned up immediately.
- Surfactants (soap) may not be allowed to enter any spill catchments or any oil water separation process e.g. soap usage on spill control surfaces.

Responsible Body:

- Proponent
- Contractors

Data Sources and Monitoring:

- Groundwater monitoring for petroleum hydrocarbons must be conducted annually and remediation instituted where needed.
- A report should be compiled bi-annually of all monitoring and spills or leakages reported. The report should contain the following information: date and duration of spill, product spilled, volume of spill, groundwater monitoring results, remedial action taken, etc., and a copy of documentation in which spill was reported to Ministry of Industries, Mines and Energy.

5.3.17 Visual Impact

This is an impact that not only affects the aesthetic appearance, but also the integrity of the facility, particularly where wastes (including skips, recyclables, tyres and general waste) are stored for extended periods, are not adequately contained, or where litter accumulates due to wind dispersal.

Desired Outcome: To minimise aesthetic impacts associated with the facility.

Actions

Mitigation:

- Regular waste disposal, good housekeeping and routine maintenance on infrastructure will ensure that the longevity of structures are maximised and a low visual impact is maintained.
- Cover or enclose lightweight wastes (paper/plastics) and manage tyre storage volumes and storage duration to prevent unsightly stockpiles.
- Implement routine litter patrols (especially after windy conditions) and maintain boundary cleanliness to prevent off-site dispersion.

Responsible Body:

- Proponent
- Contractors

Data Sources and Monitoring:

- A bi-annual report should be compiled of all complaints received and actions taken.

5.3.18 Cumulative Impact

Possible cumulative impacts associated with the operational phase include increased traffic in the area and emissions release. This will have a cumulative impact on traffic flow in 4th Street East. Being located in an industrial area, cumulative air quality impacts can be expected as a result of boiler operations. The waste management activities may contribute to cumulative impacts through additional vehicle movements (collections and disposals), increased noise from loading/offloading and handling, and potential nuisance impacts (odour, litter and pests) if wastes are not removed frequently and contained appropriately.

Desired Outcome: To minimise cumulative impacts associated with the facility.

Actions

Mitigation:

- Addressing each of the individual impacts as discussed and recommended in the EMP would reduce the cumulative impact.
- Reviewing biannual reports for any new or re-occurring impacts or problems would aid in identifying cumulative impacts and help in assessing if the existing mitigations are insufficient.

Responsible Body:

- Proponent

Data Sources and Monitoring:

- Review bi-annual reports to identify recurring concerns and or areas of improvement..

5.4 DECOMMISSIONING AND REHABILITATION

Decommissioning is not foreseen during the validity of the environmental clearance certificate. Decommissioning was however assessed as construction activities include modification and decommissioning. Should decommissioning occur at any stage, rehabilitation of the area may be required. Decommissioning will entail the complete removal of all infrastructure including buildings and underground infrastructure. Any pollution present on the site must be remediated. The impacts associated with this phase include noise and waste production as structures are dismantled. Noise must be kept within Labour Act and WHO standards and waste should be contained and disposed of at an appropriately classified and approved waste facility and not dumped in the surrounding areas. Future land use after decommissioning should be assessed prior to decommissioning and rehabilitation initiated if the land would not be used for future purposes. The EMP for the facility will have to be reviewed at the time of decommissioning to cater for changes made to the site and implement guidelines and mitigation measures.

5.5 ENVIRONMENTAL MANAGEMENT SYSTEM

The Proponent could implement an Environmental Management System (EMS) for their operations. An EMS is an internationally recognized and certified management system that will ensure ongoing incorporation of environmental constraints. At the heart of an EMS is the concept of continual improvement of environmental performance with resulting increases in operational efficiency, financial savings and reduction in environmental, health and safety risks. An effective EMS would need to include the following elements:

- A stated environmental policy which sets the desired level of environmental performance;
- An environmental legal register;
- An institutional structure which sets out the responsibility, authority, lines of communication and resources needed to implement the EMS;
- Identification of environmental, safety and health training needs;
- An environmental program(s) stipulating environmental objectives and targets to be met, and work instructions and controls to be applied in order to achieve compliance with the environmental policy;
- Periodic (internal and external) audits and reviews of environmental performance and the effectiveness of the EMS; and
- The EMP

6 CONCLUSION

The above management measures, if properly implemented, will help to continually minimise adverse impacts on the environment while promoting positive impacts associated with both the waste oil re-refining operations and the waste management activities (waste collection, sorting, recycling and disposal). Where negative impacts occur, immediate action must be taken to reduce the escalation of effects associated with these impacts. To ensure the relevance of this document it must be reviewed on a regular basis, and updated where operational changes occur or where monitoring results and incident trends indicate that additional controls are required.

This EMP should continue to be used as an on-site reference document during all phases of the proposed project, and auditing should take place in order to determine compliance with the EMP for the proposed site, including compliance with waste acceptance, segregation, storage and lawful disposal/recycling requirements. Parties responsible for transgression of the EMP should be held responsible for any rehabilitation that may need to be undertaken. Monitoring reports and rehabilitation plans and results must be submitted to the Ministry of Environment, Forestry and Tourism on a bi-annual basis to allow for future renewal of the ECC, this is a requirement of the Ministry, and should include waste receipt and routing records, incident/complaints registers, and any corrective actions implemented for both the re-refining process and waste handling activities.