ENVIRONMENTAL MANAGEMENT PLAN (EMP)

on the Labour Act, 6 of 1992 as amended by the Labour Act, 11 of 2007
and Section 58 of the Environmental Management Act, 7 of 2007

Project No: 2025/151/G

CONFIDENTIAL

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EMP Report

Proposed Thermal Waste Treatment Plant in Lüderitz

APP-006206

APPROVED INSPECTION AUTHORITY · (SA & NAMIBIA)

Building towards better

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STATEMENT PAGE

National Environmental Health Consultants CC (NEHC CC) is an Approved Inspection Authority in both South Africa and Namibia, and duly registered as such in terms of the **Occupational Health and Safety Act, 1993 (Act 85 of 1993)** in South Africa under Certificate Number: **OH005-CI016,** and in Namibia under the **Labour Act, 1992 (Act 6 of 1992),** as amended by the **Labour Act, 2007 (Act 11 of 2007). NEHC CC** is also registered with the Allied Health Professions Council of Namibia (HPCNA) as an Environmental Health Practitioner under Registration Number: **EPH00901**, under the **Allied Health Professions Act, 2004 (Act 7 of 2004).**

J. Cornelissen conducted this Environmental Management Plan on behalf of **NEHC CC** and hereby declares that the results/findings given in the report are a true reflection of the conditions encountered during the survey/observations on site.

Where relevant published and validated methods exist, they are always used in preference to novel methods. If a novel method is applied, a summary of validation and reference to the internal Standard Operating Procedure(s) is provided.

Whilst recommendations offered in this report are made in good faith and every effort is made to ensure the professional integrity thereof, the final responsibility lies with the client to ensure the correctness and suitability of these recommendations, prior to implementation thereof. **NEHC CC** or its officers shall in no way be liable for any losses suffered by the client as a result of the implementation of such recommendations.

NEHC CC and its personnel shall not be involved in activities in relation with projects or items surveyed which may adversely influence our independence of judgment and integrity. The company (NEHC CC) is appointed as an Independent Occupational Hygienist or Environmental Practitioner Consultant in terms of an agreement for rendering its expertise services. NEHC CC declare that they will not form lucrative connections with the designated parties, by the forging of relationships with key decision-makers, in particular, with those in the industry to which the company offers its services.

Possible scenarios shall be reported in time to be prevented and if these may arise through the course of projects, they shall also be reported.

This report, if published or reproduced by the client, must be in full unless prior written approval for the publication or reproduction in abridged form is granted by **NEHC CC**.

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12th of February 2026
EMP REPORT DATE

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Ministry of Environment, Forestry and Tourism NAMIBIA

OHAIA association

Ministry of Labour, Industrial Relations and Employment Creation NAMIBIA

EXECUTIVE SUMMARY

National Environmental Health Consultants CC (NEHC CC) was commissioned by **Wesco Waste Management (Pty) Ltd** to undertake and perform an Environmental Management Plan (EMP) for their proposed thermal waste treatment plant in Lüderitz.

The EMP is being undertaken in accordance with the requirements of Namibia's Environmental Assessment Policy and the Environmental Management Act, 7 of 2007, and other relevant legislation and regulations pertaining to Environmental Assessments and the protection of the environment in the Republic of Namibia. A host of international policies and standards are also being taken into account.

In order for the Namibian Ministry of Environment, Forestry, and Tourism (MEFT) to make an informed decision as to whether or not the project should receive an Environmental Clearance Certificate (ECC) and be allowed to proceed, it is essential that potentially significant environmental and social impacts (both negative and positive) are investigated and well understood. It is, therefore, necessary to conduct the Environmental Management Plan (EMP) process. This led to NEHC CC being appointed by **Wesco Waste Management (Pty) Ltd** to undertake the EMP for their proposed thermal waste treatment plant in Lüderitz, situated at Erf 802, Nautilus, within the Municipal Boundaries of Lüderitz, //Karas Region, Namibia.

The purpose of the EMP Report is to:

- Provide a description of the existing facilities, including a sufficient level of detail to inform the Ministry of Environment, Forestry, and Tourism, and
- Describe the local environment within which the proposed facility will be situated, to assist further, in identifying issues and concerns.

Glossary and Abbreviations

ACRONYM	*DESCRIPTION*
CC	Close Corporation
CEs	Consulting Engineers
CO	Contraction Phase
CLO:	Community Liaison Officer
DS	Design & Planning Phase
DE	Decommissioning Phase
ECO	Environmental Control Officer
EMP	Environmental Management Plan
EMPr	Environmental Management Programme
MEFT	Ministry of Environment, Forestry, and Tourism
OP	Operational Phase
PM	Project Manager (Developer Representative)
RA	*Resident Architect*
ELO	*The Environmental Liaison Officer*
VOC's	Vapours

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1. INTRODUCTION

The project proponent, **Wesco Waste Management (Pty) Ltd** has appointed National Environmental Health Consultants CC (NEHC CC), as its independent environmental consultant, for the purpose of conducting this Environmental Management Plan (EMP) process.

The purpose of an EMP is to guide the establishment of the **Wesco Waste Management (Pty) Ltd's** proposed thermal waste treatment plant in Lüderitz, from the inception thereof, until the decommissioning thereof, and will detail the actions required to effectively implement the mitigation and management measures throughout all the phases of the proposed project. This process is conducted in order to eliminate or mitigate the various possible risks to the environment, and its surrounding inhabitants during all the project phases, and through doing so, it will subsequently ensure that minimal damage will be effected or occur to these areas during the construction and operational phases of the proposed thermal waste treatment plant, to be owned and operated by **Wesco Waste Management (Pty) Ltd**, which is based on the mitigation measures which had been identified for inclusion in this updated EMP.

The ultimate goal of the EMP is to meet social, economic, and bio-physical objectives to such an extent, that the overall product of the activity will not result in a nett negative impact. The economic benefit of the proposed thermal waste treatment plant, should outweigh the negative environmental impacts addressed during this assessment.

1.1. Locality

Figure 1. Location of the existing, DESERT STORAGE CC – Farm 38, Walvis Bay

1.2. Project Background Information

National Environmental Health Consultants CC (NEHC CC) has been appointed by **Wesco Waste Management (Pty) Ltd** to conduct the Environmental Impact Assessment (EIA) and Environmental Management Process (EMP) in terms of the:

- Environmental Impact Assessments are regulated by the Ministry of Environment and Tourism (MET), in terms of the Environmental Management Act, 7 of 2007, which was promulgated and published in the Government Gazette No. 3966, on 27 December 2007,
- The List of Activities that may not be undertaken without an Environmental Clearance Certificate and the Environmental Impact Assessment Regulations in terms of the Environmental Management Act, 7 of 2007, which were promulgated and published in Government Gazette No. 4878, on 6 February 2012.

As **Wesco Waste Management (Pty) Ltd** already has an existing and established client base for the treatment and disposal of drilling mud, and other waste. Due to the increase in exploration drilling activities within the Orange River Basin, and the expansion of other industries, **Wesco Waste Management (Pty) Ltd** has concluded that sufficient volumes or quantities of waste are now available to justify the establishment of a thermal waste treatment plant.

Due to the increase of volumes and quantities of waste, which is currently being generated, and which will be generated in the future, it is foreseen that waste disposal facilities will no longer be able to meet existing and future waste disposal demands. This is particularly true in respect of hazardous waste. At present, only two (2) hazardous waste disposal facilities existing within Namibia. One of the hazardous waste disposal facilities is situated in Walvis Bay, whilst the other facility, the Kuppferberger Hazardous Waste Disposal Facility is situated in Windhoek. The Kuppferberger Hazardous Waste Disposal Facility in Windhoek has nearly reached capacity, whilst the Walvis Bay Hazardous Waste Disposal Facility, had been closed indefinitely due to compliance issues. With this in mind, the need, and desirability of a facility that can treat and dispose of hazardous waste in an environmentally friendly manner is no longer a desire but is now a necessity.

The thermal treatment of the waste and the disposal thereof in an environmentally friendly manner is an added benefit which attracts the attention of international companies, in the oil and gas industry, as they need to illustrate that the waste generated through their exploration drilling activities have been disposed of in an environmentally friendly manner, to comply with internation standards and regulations, as well as to meet and satisfy internal company policies and procedures.

The proposed project intends to employ thermal desorption technology. Thermal desorption technology utilized heat so physically separate volatile and semi-volatile organic contaminants from solid matrices like soil, sludge, and sediment. By heating materials to temperatures ranging between 90ºC and 560ºC, contaminants are vaporized and captured or destroyed.

The key aspects of thermal desorption can be classified as follows:

- **Process Mechanism:** Contaminated material is heated, directly or indirectly, to volatilize moisture and contaminants, which are then transported by a carrier gas or vacuum to a treatment system.
- **Not incineration:** Unlike incineration, which destroys contaminants with high heat, thermal desorption is a separation process that transfers the contaminants from soil to a gas steam for subsequent treatment.
- **Types of Systems:**

- Low-Temperature Thermal Desorption (LTTD) – Operates at 90ºC to 320ºC, and is suitable for fuel oils, and Volatile Organic Compounds, and
- High-Temperature Thermal Desorption (HTTD) – Operates at 320ºC to 560ºC and is effective for more complex contaminants like Polychlorinated Biphenyls, coal tar, and pesticides.

- **Applications:** Thermal Desorption techniques are primarily utilized for the treatment of soil contaminated with gasoline, diesel, lubricants, coal tar, and other organic pollutants. It is, however, less effective for metals, other than mercury.
- **Efficiency:** It is highly effective, allowing for the treated soil to often be returned to its original state.

Thermal desorption offers a versatile, often faster, alternative to other remediation techniques for heavily contaminated sites.

The thermal waste treatment plant will consist of mobile modular equipment, covering a working area of approximately 1 000 m2 (one thousand square meters). The unit is electrical and the emissions are recycled through the process, leaving no hazardous substance behind. The output of recycled materials is reduced to an environmentally friendly sandy substance, which in turn can be used for ordinary construction activities. The thermal waste treatment plant will consist of a primary combustion chamber, feeding emissions to a secondary combustion chamber, a quench tower, and filtration unit.

During the initial phase, the monthly waste input is expected to be between 200 and 300 Mt.

The waste to be treated and disposed of at the thermal treatment plant will be transported to the proposed site by truck or other transportation means.

1.3 Objectives of the EMP

The primary objectives of the EMP are as follows:

- To describe action plans for achieving the mitigation measures described in the Environmental Scoping Report, and
- To indicate responsibilities regarding the implementation of these action plans.

1.4 Key Characteristics of the report

Table 1: Shows an overview of the project.

Business Registration:	Wesco Waste Management (Pty) Ltd
Registration Number:	2008/090
Postal Address:	P.O. Box 157, Walvis Bay
Contact Person:	Mark-Anthony Nangoro
Designation:	Project Manager
Telephone Number:	+264 64 213 200
Email Address:	mark.n@wesco.com.na
Location of the Activity:	Erf 802, Nautilus, Industrial Area, Lüderitz, within the Municipal Boundaries of Lüderitz, //Kharas Region, Namibia

Scale and Scope of the Activity:	The extent of the activity will be approximately 3 362 m2 (square meters).
Nature of Activity:	The handling, treatment, transportation, and disposal of drill mud and other waste, in an environmentally friendly manner, through thermal treatment.
Listed activities to be conducted:	*2.1 The construction of facilities for waste sites, treatment of waste, and disposal of waste,* *2.3 The import, processing, use, and recycling, temporary storage, transit, or export of waste* *9.1 The manufacturing, storage, handling, or processing of a hazardous substance defined in the Hazardous Substances Ordinance of 1974.*

1.5 Compliance to Regulations

Wesco Waste Management (Pty) Ltd will need to comply with the following legislation:

- The Constitution of the Republic of Namibia (1990),
- Namibia's Green Plan,
- Vision 2030: Third National Development Plan of Namibia, 2006/7 – 20011/12,
- Environmental Assessment Policy, 1995,
- Draft Wetland Policy of 2003,
- The National Environmental Health Policy,
- GOVERNMENT GAZETTE OF THE REPUBLIC OF NAMIBIA, Government NOTICES, dated 06 February 2012 number 4878,
- Environmental Management Act, 7 of 2007,
- The Water Resources Management Act, 24 of 2004,
- Labour Act, 6 of 1992: Regulations for the Health and Safety of Employees at Work,
- Labour Act, 11 of 2007,
- Nature Conservation Ordinance, 4 of 1975 (as amended 1996),
- Atmospheric Pollution Prevention Ordinance, 11 of 1976,
- Petroleum Products and Energy Amendment Act, 3 of 2000,
- Soil conservation Act, 76 of 1969,
- Legislation related to effluent and wastewater disposal Model Drainage Regulations, 1996,
- Hazardous Substances Ordinance, 14 of 1974, and amendments,
- Nature Conservation Ordinance Amendment Act, 5 of 1996,
- National Policy on Tourism for Namibia, 2008, and
- National Heritage Act, 27 of 2004.

1.6. Responsible Parties

1.6.1. Phases of the Project

The point of departure for any EMP is to take a pro-active approach by addressing and minimizing any potentially significant problem, before it occurs. In particular this EMP deals with all the project phases of the proposed thermal waste treatment plant.

1.6.2. Roles and Responsibilities

Various role players have a range of responsibilities to perform throughout the different phases of the proposed thermal waste treatment plant of **Wesco Waste Management (Pty) Ltd.**

1.6.2.1. Project Manager (PM) (Developer Representative)

The Project Manager will be responsible for the following:

- The Project Manager will be responsible for ensuring that the development, upgrades, and construction is implemented and performed according to the requirements as set out in the EMP.
- The Project Manager will be responsible for overseeing the contract from the initiation thereof, to the completion of the construction on the proposed site.
- The Project Manager will appoint a team of contractors, which will be responsible for the construction of the entire project.
- The Project Manager should ensure that sufficient resources are available to the other role players to efficiently perform their tasks in terms of, and under the EMP.
- The Project Manager must appoint an independent Environmental Control Officer (ECO) to ensure strict adherence to the EMP.

1.6.2.2. Resident Architect (RA)

The Resident Architect will be responsible for the following:

- Only architects approved by the Project Manager will be allowed to work on the project and will oversee the individual contracts between the owners of the entire site or portions thereof, and the contractors.

1.6.2.3. Environmental Control Officer (ECO)

The Environmental Control Officer will be appointed at the start of the construction, or upgrades, and is mandated to do the following:

- Ensure that all contractors/subcontractors/employees are fully aware of their environmental responsibilities. This will take the form of an initial environmental awareness-training program, in which the requirements of this document will be explained.
- Any damage to the environment must be repaired as soon as possible after consultation between the Environmental Control Officer, the Consulting Engineer, and the relevant contractors.
- The Environmental Control Officer shall monitor their actions to ensure that the developer and/or contractor are adhering to all the stipulations of the EMP.
- The Environmental Control Officer shall be responsible for monitoring the construction activities throughout the project by means of site visits and meetings. This should be documented as part of the site meeting minutes.
- The Environmental Control Officer must sign off and the Project Manager must certify that all clean-up and rehabilitation, or any remedial action required, is completed prior to the transfer of properties.
- A post-construction environmental audit is to be conducted to ensure that all conditions in the EMP have been adhered to.

1.6.2.4. Auditing / Inspections

If any upgrades or construction takes place on or at the proposed **Wesco Waste Management (Pty) Ltd** thermal waste treatment plant:

- The appointed Environmental Control Officer should inspect the site on a regular basis, and as and when necessary.
- The Project Manager or the contractor's representative will accompany the Environmental Control Officer on, on-site inspections.
- The contractor will use the formats presented in this EMP to report to the Project Manager in terms of compliance to and with this document.
- When, in the opinion of the Environmental Control Officer, a construction activity will result in environmental damage, the Environmental Control Officer will issue instructions to the contractor or Project Manager, who will in turn order the contractor, to halt the activity. Spot fines or penalties may be levied for non-compliance therewith.

1.6.2.5. Method Statements

If any upgrades or construction takes place on or at the proposed **Wesco Waste Management (Pty) Ltd** thermal waste treatment plant, construction methods statements from the contractor will be required for specific activities in sensitive environments on request of the Authorities, or the Environmental Control Officer. All method statements will form part of the EMP documentation and are subject to all terms and conditions contained within the EMP document. For each instance wherein it is requested that the contractor submit a method statement to the satisfaction of Environmental Control Officer, the format should clearly indicate the following:

- What - a brief description of the work to be undertaken,
- How - a detailed description of the process of work, methods, and materials,
- Where - a description / sketch map of the locality of work, and
- When - the sequencing (phases) of actions with a commencement date and a completion date estimation.

The contractor must submit the method statement before any particular construction activity, or any upgrade is due to start. Work may not commence until the method statement has been approved by the Environmental Control Officer.

1.6.2.6. Record Keeping

All records related to the implementation of this management plan must be kept together in an office where it is safe. Records should be kept for two (2) years and at any time are available for scrutiny by any relevant Authority.

1.6.2.7. Resident Engineer (RE)

A Resident Engineer acts as a direct, on-site resource for all technical aspects related to the development. He/she is available on the construction site at all times, overseeing all phases of the construction activities. He/she will liaise with the Environmental Control Officer where required to ensure EMP implementation.

1.6.2.8. Consulting Engineers (CEs)

The Consulting Engineers are involved during the planning, design, and construction period. They are not available on site at all times but are part of the specialist team during the final design and construction stages, to advise on appropriate environmental management and mitigation.

1.6.3. Standards

If any upgrades or construction take place on or at the proposed **Wesco Waste Management (Pty) Ltd** thermal waste treatment plant:

- The Environmental Control Officer will keep written and photographic records of the site, and its surroundings before, after, and during construction on the site.
- The contractor will keep records of construction activities; instructions received from the Environmental Control Officer and Project Manager concerning environmental matters.
- The Environmental Control Officer will keep records of cases of non-compliance and remedial actions taken.
- Where no quantitative standards are applicable, visual standards will apply.
- The contractor will rehabilitate the site to a condition acceptable to the Environmental Control Officer and respond timeously to any complaints and instructions regarding construction activities.

1.6.4. EMP Objectives

This EMP must be used throughout the different phases of the proposed **Wesco Waste Management (Pty) Ltd** thermal waste treatment plant. The objectives of this plan are to:

- Ensure all environmental safeguards are carried out correctly.
- Manage site activities effectively and coordinate with other stakeholders in the project.
- Minimize adverse impacts on the environment.
- Ensure that environmental mitigation measures are in place from the start of the project.
- Minimize disruption to fauna and flora and neighbouring landowners / communities.
- Monitor the project.

1.6.5. EMP Context

The EMP forms part of the overall planning process and phase of the project, which should be implemented by the Developer, upon approval thereof by the appropriate authorities. The EMP provides for environmental mitigation measures throughout the different phases of the proposed project and should continuously be implemented throughout the duration of the project. A copy of the EMP must be available on site at all times.

There are at least 2 role players participating in the environmental management of the site, namely:

- **Wesco Waste Management (Pty) Ltd,** and
- The Service Providers utilized by **Wesco Waste Management (Pty) Ltd.**

This EMP must be attached as an Appendix to service provider tender documents and must be referred to in the tender documents as *special conditions of the tender.*

Ultimate responsibility for implementation of the EMP lies with **Wesco Waste Management (Pty) Ltd.** This responsibility, in some instances may be delegated to contractors in the employ and service of **Wesco Waste Management (Pty) Ltd** for practical purposes, but **Wesco Waste Management (Pty) Ltd** will retain legal accountability. In that capacity, **Wesco Waste Management (Pty) Ltd** should delegate suitably qualified persons with the responsibility to ensure the implementation of the EMP, and who will:

- Know the contents and implications of the Environmental Scoping Report and monitor the implementations of the Environmental Scoping Report findings using the EMP.

- Guide, advise, and consult the contractors on environmental issues during the decommissioning of the proposed thermal waste treatment plant.
- Revise and update the EMP as required and inform relevant parties of the changes.
- Protect the environment.

Service Providers and Contractors will be saddled with the following responsibilities during the decommissioning of the proposed thermal waste treatment plant.

- Ensure that all requirements of the EMP are communicated to, understood, and followed by all persons working on the project who may have an impact on the environment.
- Ensure that a procedure exists for reporting incidents and resolving any problems rapidly.
- Keep good records relating to the compliance/non-compliance with the conditions of the authorization.
- These records must be made available to the relevant authority within seven (7) days of a written request.

2. PHASES OF THE PROJECT

The aim of this EMP is to derive mitigation measures that should be made binding on all the contractors during the construction phase, as well as measures that should be implemented during the operational phase of the proposed project.

The purpose of the EMP is to provide solutions to problems before they may occur. If adhered to, this EMP should limit corrective measures required during the construction and operational phases of the proposed project.

Further mitigation measures will be implemented throughout the different phases of the project, if and when necessary, as required.

The EMP deals with the following phases as detailed below:

2.1. The Planning Phase

The EMP renders a fair opportunity to incorporate proactive environmental management measures in order to achieve sustainable development. A proactive environmental measure reduces the risk of impacts occurring during the construction and operational phase of the proposed project. However, the chance of accidental impacts taking place still does exist, and this can be counter-acted through the incorporation of contingency plans (e.g., this EMP), during the planning phase. Necessary corrective action can be taken to further limit potential impacts that may occur during the construction and operation phases.

2.2. Pre-construction Phase

Proactive planning prior to the commencement of the construction phase minimizes the chances of impacts occurring during the construction and operational phases.

Actions relating to the pre-construction phase include:

- Appointment of an Environmental Control Officer (ECO) and Environmental Liaison Officer (ELO),
- Planning and on-site briefing sessions between the Developer, Local and Regional Authorities, Contractors, Sub-contractors, Environmental Control Officer, and

Environmental Liaison Officer. A copy of the EMP is to be handed to the contractor for compliance during the construction phase, and

- Active demarcation of areas to be avoided and/or protected during the construction, which includes:
  - Active identification of areas to be used for the establishment of the construction camp and lay down areas (e.g., stockpiling), and
  - Marking of features outside of the demarcated areas that must be retained.

2.3. The Construction Phase

The majority of the impacts during this phase will have a direct and immediate effect (e.g., pollution, noise and dust). Continuous monitoring of the site during the construction phase will assist in identifying impacts as and when they occur. These impacts can then be mitigated through the contingency plans identified in the planning phase.

2.4. The Operational Phase

Potential environmental impacts arising during the operational phase can be minimized, by taking proactive measures during the planning and construction phases, and by doing so, the risk of incidents can be minimized and monitoring may be reduced, but not eliminated.

3. ANTICIPATED ENVIRONMENTAL IMPACTS

The anticipated adverse impacts requiring mitigation relating to the biophysical and socio-economic environment for both the construction and operational phase of the proposed project, are listed below:

Construction Phase - Adverse Impacts:

- Noise pollution and intrusion,
- Visual intrusion and light pollution,
- Traffic,
- Atmospheric pollution and odours,
- Safety and security,
- Soil Erosion,
- Increased hard surfaces and storm water run-off,
- Soil and groundwater contamination (surface spillage of fuel),
- Risks of fires and explosions, and
- Waste generation and disposal.

Operational Phase - Adverse Impacts:

- Noise pollution and intrusion,
- Visual intrusion and light pollution,
- Traffic,
- Atmospheric pollution and odours,
- Safety and security,
- Soil and groundwater contamination (surface spillage of fuel),
- Risks of fires and explosions, and
- Waste generation and disposal.

4. RESPONSIBILITIES

The Environmental Management Plan (EMP) specifies the responsibilities of the role players.

Wesco Waste Management (Pty) Ltd remains ultimately responsible for ensuring that the proposed thermal treatment plant is implemented according to the requirements of the EMP throughout all phases of the project.

- ***The Environmental Control Officer (ECO):*** The Environmental Control officer is appointed by the developer as an independent monitor of the implementation of the EMP i.e. independent of the developer and contractor. The Environmental Control Officer is responsible for providing feedback on potential environmental problems associated with the development. The Environmental Control Officer has the right to enter the site and do monitoring and auditing at any time, subject to compliance with health and safety requirements applicable to the site (e.g. wearing of protective head gear and safety boots). The Environmental Control Officer will be responsible for a minimum of monthly site audits, followed by an environmental control report, that will detail the status of environmental compliance, and highlight mitigation. The Environmental Control Officer will be responsible for liaising with authorities, MEFT. The Environmental Control Officer must submit monthly environmental audit reports to the authorities. The Environmental Control Officer must indicate the necessary corrective action measures to eliminate the cause of the non-conformances. The Environmental Control Officer is also responsible for liaising with contractors, informing them of any decisions that are taken concerning environmental management during the construction phase. This would also include informing the contractors of the necessary corrective actions to be taken.

- ***Site Agent:*** Is usually a site engineer or project manager who is the developer's most senior representative on site and coordinates activities on site. The site agent must follow the advice of the Environmental Control Officer with regards to environmental management and ensure that the contractor abides by all requirements stipulated by the Environmental Control Officer.

- ***Contractor:*** The contractor as the developer's agent on site, is bound by the Clearance Certificate and EMP conditions through his/her contract with the developer and is responsible for ensuring that conditions of the EMP are strictly adhered to at all times. The contractor must comply with all orders (whether verbal or written) given by the Environmental Control Officer, project manager or site agent in terms of the EMP.

- ***The Environmental Liaison Officer (ELO):*** The Contractor shall submit to the Site Agent a nominated representative of the Contractor as an Environmental Liaison Officer to assist with day-to-day monitoring of the construction activities for the contract. Issues raised by the Environmental Control Officer will be routed to the Environmental Liaison Officer for the contractor's attention. The Environmental Liaison Officer shall be permanently on site during the construction phase to ensure daily environmental compliance with the EMP. The Environmental Liaison Officer should preferably be a senior and respected member of the construction crew, as past experience has revealed that Environmental Liaison Officers that can relate to the workforce are most effective for information transfer and ensuring compliance with the EMP. The Environmental Liaison Officer will report directly to the Environmental Control Officer regarding environmental compliance. The site audits undertaken by the Environmental Control Officer will be undertaken alongside the Environmental Liaison Officer. The Environmental Control Officer will point out areas of concern, and the Environmental Liaison Officer will be responsible for ensuring day to day compliance with the EMP. Should any emergencies arise, the Environmental Liaison Officer will alert the Environmental Control Officer who will take action. There shall be an approved Environmental Liaison Officer on site at all times. Before the Contractor commences with each Construction Activity, the

Environmental Liaison Officer shall give to the site agent a written statement setting out the following:

- The type of construction activity.
- Locality where the activity will take place.
- Identification of impacts that might result from the activity.
- Identification of activities or aspects that may cause an impact.
- Methodology for impact prevention for each activity or aspect.
- Emergency/disaster incident and reaction procedures (need to be demonstrated).
- Treatment and continued maintenance of impacted environment.

- ***Community Liaison Officer (CLO):*** The contractor must appoint a Community Liaison Officer to act as a point of contact between the contracting team and the community that will be affected by the construction activities. Complaints from the community about construction activities must be channelled through the Community Liaison Officer. The Community Liaison Officer's responsibility is to liaise with the Interested and Affected Parties.

5. IDENTIFICATION OF ENVIRONMENTAL ASPECTS AND IMPACTS

Wesco Waste Management (Pty) Ltd's activities have the potential to impact the biophysical and socio-economic environment. Environmental aspects and potential impacts were identified during the screening and scoping phases, in consultation with authorities, Interested and Affected Parties and the environmental specialists.

The relevance of the potential impacts ("screening") is also presented in the tables below to determine if certain aspects need to be assessed in further detail. The potential impacts can also be assessed as part of this process.

The tables below provide a summary of the environmental aspects and impacts associated with the proposed thermal waste treatment plant of **Wesco Waste Management (Pty) Ltd.**

Table 2: Pre-Construction Phase.

Table 1	PRE-CONSTRUCTION PHASE:				
TASK/ ENVIRONMENTAL IMPACT	**OBJECTIVE**	**ACTION REQUIRED**	**TARGETS TO MONITOR COMPLIANCE AND REPORTING THEREON**	**RESPONSIBILITY**	**TIME FRAME**
Review and approval of EMP	To ensure sound Environmental Management on Site.	○ The EMP must be reviewed and approved by the deciding authority and any considerations deemed necessary by the said authority must be included.	Approved EMP	Ministry of Environment, Forestry and Tourism (MEFT)	Pre-construction phase
Duties of the Developer (Wesco Waste Management (Pty) Ltd)	The developer remains ultimately responsible for ensuring that the development proceeds according to the requirements of the EMP.	○ Include the EMP in the tender documentation so that the appointed contractors are bound to the conditions of the EMP. ○ Take responsibility and the necessary actions required for restoring the environment in the event of negligence, leading to damage of or to the environment. ○ Appoint an independent Environmental Control Officer during the pre-construction phase to oversee all the environmental aspects relating to the development from pre-construction until completion of construction. ○ Provide the Environmental Control Officer with all reasonable assistance to facilitate effective monitoring.	Proof of inclusion of EMP in the tender documentation. Proof that financial means for restoration and rehabilitation are available should it be necessary. Appointment letter. Proof that all reasonable requests made by the Environmental Control Officer have been facilitated as far as possible.	Developer and / or Company	Pre-construction and construction phases
Appointment and duties of Environmental Control Officer	To ensure monitoring and implementation of the EMP, by an independent third party. To report on the developer's	○ The Developer must appoint an independent Environmental Control Officer who must monitor the Developer and the Contractor's compliance with the EMP, on a continuous basis. ○ The Environmental Control Officer shall report on the findings of the monitoring to the MEFT on a monthly basis during the construction phases.	Appointment letter. Proof that monthly reports are submitted to MEFT. Proof that quarterly reports are submitted to MEFT.	Developer, Contractor, and Environmental Control Officer	Pre-construction and construction phases

Table 1	PRE-CONSTRUCTION PHASE:				
TASK/ ENVIRONMENTAL IMPACT	**OBJECTIVE**	**ACTION REQUIRED**	**TARGETS TO MONITOR COMPLIANCE AND REPORTING THEREON**	**RESPONSIBILITY**	**TIME FRAME**
	compliance with the EMP.	○ The Environmental Control Officer shall report on the findings of the monitoring to the MEFT on a quarterly basis during the operational phase.	Proof that EMP is provided to all the relevant role players. Minutes of site meetings to be included in EIA compliance.		
Appointment and duties of the Environmental Liaison Officer	To attend to the day-to-day monitoring of construction activities on the site, compliance and cooperation of all personnel.	○ The Contractor must appoint an Environmental Liaison Officer. ○ The Environmental Liaison Officer must preferably be fluent in the languages of the work crew.	Appointment letter.	Contractor	Pre-construction phases
Review of the Contractor's Health and Safety Plan	To ensure compliance with the regulations of the Labour Act, 6 of 1992, as amended by the Labour Act, 11 of 2007. To ensure a construction site that is safe not only to employees, but also to the surrounding residents and property owners.	○ The Contractor must at all times comply with the requirements of the Labour Act, 6 of 1992, as amended by the Labour Act, 11 of 2007, and the regulations promulgated thereunder. ○ The Contractor must prepare and submit a Health and Safety Plan that addresses all aspects, related to maintaining a safe and healthy environment, as per the requirements of the Labour Act, 11 of 2007. ○ The health and safety plan must include a method statement, stipulating the requirements in terms of the fire control and procedures to be followed in the event of a fire, including firefighting and fire training. ○ Emergency procedures must be produced and communicated to all employees on site. This will ensure that accidents are responded to appropriately and the impacts thereof are minimised. This will also ensure that potential liabilities and damage are avoided.	Safety Plan. Method Statements. Training Records. Site office to contain relevant contact details. Spill Control Kit on site and easily accessible and kept in order.	Contractor and Environmental Liaison Officer	Pre-construction and construction phases

Table 1	PRE-CONSTRUCTION PHASE:				
TASK/ ENVIRONMENTAL IMPACT	**OBJECTIVE**	**ACTION REQUIRED**	**TARGETS TO MONITOR COMPLIANCE AND REPORTING THEREON**	**RESPONSIBILITY**	**TIME FRAME**
		○ The nearest emergency service provider must be identified as well as its capacity and the magnitude of accidents it will be able to handle. ○ The contact details of this emergency center, as well as the police and ambulance service, must be available at a prominent location at the construction site. ○ The Contractor must have a basic spill control kit available at the construction site. These kits must include absorptive material that can handle all forms of hydrocarbon. The contractor shall ensure that at least the site foreman and the Environmental Liaison Officer have received formal training in the use of the spill control kit.			
The EMP	To ensure effective environmental management on site during construction and operation.	○ This EMP must be made binding to and on the main contractor, as well as to individual sub-contractors and must be included in tender documentation for the construction contract. ○ The contract with the Contractor must include penalties in the event of non-compliance with this EMP. A penalty system will be devised prior to the commencement of construction, during the planning phase.	Proof that EMP is included in the tender documentation.	Developer and Contractor	Pre-construction and construction phases
Awareness of the workforce	To ensure effective environmental management on site during construction and operation.	○ It is the Contractor's responsibility to ensure that the workforce is aware of and conforms to the environmental guidelines that are applicable in the EMP.	Training Records.	Contractor	Continuous
Record of environmental incidents	To ensure that incidents are recorded and that remedial action is taken, that would restore the environment to acceptable conditions.	○ The Contractors shall take corrective action to mitigate an incident, appropriate to the nature and scale of the incident, immediately after the occurrence of the incident. ○ Residual environmental damage that remains after having taken corrective action, shall be rehabilitated. ○ Change operating procedures where necessary to prevent the recurrence of a similar incident.	Environmental Incidents Report.	Contractor, Environmental Control Officer, and Project Engineer	Pre-construction and construction phases

Table 1	PRE-CONSTRUCTION PHASE:				
TASK/ ENVIRONMENTAL IMPACT	**OBJECTIVE**	**ACTION REQUIRED**	**TARGETS TO MONITOR COMPLIANCE AND REPORTING THEREON**	**RESPONSIBILITY**	**TIME FRAME**
	To ensure quick and appropriate responses to environmental incidents. To ensure adequate recordings of environmental incidents. To prevent the recurrence of similar incidents.	○ Record all incidents on an Environmental Incident Register. ○ Report the incident within a 24-hour period after the occurrence thereof. ○ Additional documents, including photos shall be appended to the incident report to provide a comprehensive record of the incident and the corrective and preventative action that was taken. Failure to do so shall result in a penalty. ○ All incidents will be investigated in collaboration with the Environmental Control Officer. The focus of these investigations shall not be to apportion blame to specific employees, but to ascertain the root cause of the incident and to prevent a recurrence of similar incidents.			
Rehabilitation planning	To limit disturbed areas to the minimum.	○ The Developer and Contractors shall liaise with the Environmental Control Officer during the pre-construction phase to agree on acceptable limits of disturbance.	Landscape Master Plan which includes rehabilitation areas.	Developer, Contractor, and Environmental Control Officer	Pre-construction and construction phases
Planning and Design	To mitigate the potential visual impact through the appropriate application of form, scale, materials, and finishes. To ensure minimal negative impact to the natural environment, fauna, and flora.	○ The Site Development Plan must be approved by the relevant local authority.	Approved Development Plans.	Developer, Architect, Town Planner, Project Engineer, and Environmental Control Officer	Pre-construction design and planning phases

Table 1	PRE-CONSTRUCTION PHASE:				
TASK/ ENVIRONMENTAL IMPACT	**OBJECTIVE**	**ACTION REQUIRED**	**TARGETS TO MONITOR COMPLIANCE AND REPORTING THEREON**	**RESPONSIBILITY**	**TIME FRAME**
Implementation of Sustainable Design Principles	To ensure that the development is undertaken in a harmonious manner with regards to the environment.	○ Avoid the use of energy intensive, environmentally damaging, waste producing, and/or hazardous materials. **Climate:** • Apply natural conditioning techniques to effect appropriate comfort levels for human activities. • Avoid overdependence on mechanical systems to alter the climate (such dependency signifies inappropriate design, disassociation from the environment, and no sustainable use of resources). **Temperature** (When climate is predominantly too hot for comfort): • Minimize solid enclosure and thermal mass. • Maximize roof ventilation. • Use elongated or fractured floor plans to minimize internal heat gain and maximize exposure for ventilation. • Separate rooms and functions with covered breezeways to maximize wall shading and induce ventilation. **Sun:** • The sun can be an asset in cool and cold climates to provide passive heating. • The design must reflect seasonal variations in solar intensity. • When solar gain causes conditions too hot for comfort, use overhangs to shade walls and openings. • Use shading devices such as louvers, covered porches, and trellises with natural vines to block sun without blocking out breezes and natural light use lighter-colored wall and roofing material to reflect solar radiation (be sensitive to resulting glare and impact on natural/cultural setting.). **Wind:** (wind can be an asset in hot, humid climates to provide natural ventilation): • Use natural ventilation wherever feasible; limit air-conditioning to areas requiring special humidity or temperature control.	Approved Development Plans.	Developer, Architect, Town Planner, and Project Engineer	Pre-Construction design and planning phases

Table 1	PRE-CONSTRUCTION PHASE:				
TASK/ ENVIRONMENTAL IMPACT	**OBJECTIVE**	**ACTION REQUIRED**	**TARGETS TO MONITOR COMPLIANCE AND REPORTING THEREON**	**RESPONSIBILITY**	**TIME FRAME**
		Lighting: • Natural lighting should be used wherever possible. • Lighting design should be based on standards of reduced general lighting with task lighting and highlighting for specific functional considerations. **Waste prevention:** • Use products that minimize waste and that are non-toxic. • Promote recycling and re-use. **Site design considerations:** • Plan landscape development according to the surrounding context rather than by overlaying familiar patterns and solutions. • Locate structures to take maximum advantage of passive energy technologies to provide for human comfort. • Provide space for processing all waste created onsite, so that no hazardous or destructive waste will be released into the environment. • Develop facilities to integrate selected maintenance functions such as energy conservation, waste reduction, recycling, and resource conservation into structures, native plants into landscaping, and local customs into programs and operations. **Visual Character:** • Natural vistas should be used in design whenever possible. • Creating onsite visual intrusions should be avoided, and views of offsite intrusions should be carefully controlled. • A natural look can be maintained by using native building material and working with the topography. • Incorporate indigenous materials and crafts.			

BENEFICIAL IMPACTS					
Socio-economic					
Skills Development and job opportunities	Increased economic opportunities for local communities.	○ As far as reasonably possible people from surrounding communities must be employed by the building contractor and sub-contractors. ○ This should be included in the contract upon appointment of successful tenderer.	Inclusion in the contract.	Developer, and Contractor	Planning and Construction phases
Removal of exotic plant species and establishment of indigenous vegetation.	To encourage the implementation of indigenous vegetation and to increase biodiversity.	○ All classified Invader Species are to be identified, controlled or eradicated. ○ Eradication of exotic invader plant species by means of an appropriate method, as specified by the Environmental Control Officer. ○ Dead weeds/exotic invader species must be discarded and disposed of at a landfill site.	Approved Landscape Development Plan.	Contractor, Landscape Architect, Environmental Consultant and Environmental Control Officer	Design, planning, and construction phases
ADVERSE IMPACTS					
Socio-economic					
1. Visual Intrusion and Light Pollution	Minimize visual intrusion and light pollution.	○ The site must be managed appropriately, and all refuse and rubble are to be removed to a recognized waste Site. ○ No major ground works that will result in excess soil or bedrock to be disturbed, will be applicable, but should it be encountered excess soil should be disposed of at an appropriate Site. ○ A certificate of disposal must be obtained for any waste that is disposed of. ○ Waste must not remain on site for more than 2 weeks. ○ Refuse bins must be provided by the Contractor for refuse to be placed in by staff. ○ Excess concrete must be disposed of correctly and at an appropriate Site. ○ No waste may be placed in any excavations on site. ○ The construction camp must be located within an area that will impose the least visual intrusion on the surrounding environment. ○ Advertising signs should blend in with the environment. ○ Construction/management activities must be limited to daylight hours between 07:00 AM and 17:30 PM on weekdays; 07:00 AM and 13:30 PM on Saturdays.	Installation of screening. Waste and building rubble removal records. Appropriate planning, design and placement of construction camp, vegetation and trees, advertising and signage, building layout, and lighting.	Contractor, Landscape Architect, Environmental Control Officer and Environmental Liaison Officer	Design, planning, and construction phases.

		○ The construction footprint must be minimized. ○ Lighting on site is to be sufficient for safety and security purposes, but should not be intrusive to neighboring occupants, community, disturb wildlife, or interfere with road traffic. ○ Should overtime/night work be authorized, the Contractor shall be responsible for ensuring lighting that does not cause undue disturbance to neighboring occupants or communities. In this situation low flux and frequency lighting shall be utilized.			
Noise Pollution	Minimize noise pollution.	○ Noise levels shall be kept within acceptable limits, and the construction crew must abide by National Noise Laws and local by-laws regarding noise. ○ If work is to be undertaken outside of normal work hours, permission must be obtained. Prior to commencing any such activity, the Contractor is also to advise the potentially affected neighbouring occupants and community. Notification could include letter-drops. ○ No sound amplification equipment such as sirens, loud hailers or hooters are to be used on site, except in emergencies and no amplified music is permitted on site. ○ Construction/management activities, involving the use of the service vehicle, machinery, hammering etc., must be limited to the hours between 07:00 Am and 17:30 PM on weekdays; 07:00 AM and 13:30 PM on Saturdays; and no noisy activities may take place on Sundays or Public Holidays. ○ Activities that may disrupt neighbors must be preceded by notice being given to the affected neighbors at least 24 hours in advance. ○ Equipment that is fitted with noise reduction facilities must be used as per the operating instructions and maintained properly during site operations.	Incident reports indicating complaints from neighbouring properties.	Contractor	Design, planning, and construction phases
Atmosphere pollution and odors	Minimize atmosphere pollution and odors.	○ Dust generation should be kept to a minimum. ○ Dust must be suppressed on access roads and construction areas during dry periods by the regular application of water or a biodegradable soil stabilization agent. ○ Speed limits must be implemented in all areas to limit the levels of dust pollution. ○ Sand stockpiles are to be covered with Hessian, shade cloth or DPC plastic.	Incident reports Indicating complaints from neighboring Properties.	Contractor	Construction phase

		○ Where possible stockpiles are to be located in sheltered areas and the usable/cut face orientated away from the direction of the prevailing wind for that season. ○ Excavating, handling or transporting erodible materials in high wind or when dust plumes are visible shall be avoided. ○ All materials transported to site must be transported in such a manner that they do not fly or fall off the vehicle. This may necessitate covering or wetting friable materials. ○ No burning of refuse or vegetation is permitted.			
Safety and Security	Preventing the loss of assets of surrounding landowners. To ensure that potential liabilities and damage to life and the environment are avoided.	○ Signs should be erected on all entrance gates, indicating that no temporary jobs are available, thereby limiting opportunistic labourers and crime. ○ The site and crew are to be managed in strict accordance with the Labour Act, 6 of 1992, as amended by the Labour Act, 11 of 2007, as well as the National Building Regulations. ○ Potentially hazardous areas such as trenches are to be cordoned off and clearly marked at all times. ○ The Contractor is to ensure traffic safety at all times and shall implement road safety precautions for this purpose when works are undertaken near public roads. ○ Necessary Personal Protective Equipment (PPE) and safety gear appropriate for the task being undertaken, is to be provided to all site personnel. ○ All vehicles and equipment used on site must be operated by appropriately trained and/or licensed individuals in compliance with all safety measures as laid out in the Labour Act, 6 of 1992, as amended by the Labour Act, 11 of 2007. ○ An environmental awareness training programme for all staff members shall be put in place by the Contractor. Before commencing with any work, all staff members shall be appropriately briefed about the EMP and the relevant occupational health and safety issues. ○ All construction employees shall be issued with ID badges and clearly identifiable uniforms. ○ Access to equipment stores needs to be strictly controlled. ○ No unauthorized firearms are permitted on site. ○ Emergency procedures must be in place and communicated to all the employees on site. This will ensure that accidents are responded to appropriately and that the impacts thereof are	Safety Plan. Incidents Report, including indication of remedial actions to ensure that future incidents do not occur.	Contractor	Construction phase

		minimised. This will also ensure that potential liabilities and damage to life are avoided. ○ Adequate emergency facilities must be provided for the treatment of any emergency on the site. ○ The nearest emergency service provider must be identified during all phases of the project, as well as its capacity and the magnitude of accidents it will be able to handle. ○ Emergency contact numbers are to be displayed conspicuously at prominent locations around the construction site and the construction camp at all times. ○ The Contractor must have a basic spill control kit available at the construction camp and around the construction site.			
Possible damage or loss of subterranean artifacts	Preventing damage or loss of subterranean Artifacts.	○ No action required due to current state of proposed site.	No destruction of Archaeological finds/ removal of artifacts.	Developer, Contractor, Environmental Liaison Officer, Environmental Control Officer, Contractor, and Project Engineer	Construction phase
Heavy vehicle increase could prove to be a nuisance to commuters, local users and could impact negatively on safety of existing roads.	Minimize impact on traffic flow.	○ Existing roads must be utilized as far as possible. ○ No unauthorized access is permitted to the proposed site. ○ Access roads for loading, handling, lifting or any other material handling equipment and delivery of construction material must be clearly designated. ○ A road safety program will be implemented in order to inform all relevant parties of the possible risks of the construction site, including red flags should be used to warn the public and construction vehicle operators at the entrance of the proposed site or access route into the construction area and ensuring adequate and correct road signage in the construction affected. ○ Ensure adequate and correct road signage in the construction affected area. ○ Limit construction activities strictly to daylight hours. ○ Access routes to be limited.	No evidence of Report of accidents.	Contractor, Project Manager, and Project Engineer	Construction phase

Bio-physical					
Soil Erosion	Limit loss of soil.	○ Slopes with a gradient exceeding 1:3 should be avoided. ○ Appropriate erosion and storm water management structures must be installed around the construction site. ○ Storm water control measures on site could include: • Berms, and • Energy Dissipating Structures. ○ Contracts with contractors are to include penalties related to environmental damage caused by such Contractors. ○ Construction schedules to indicate which areas can be cleared for construction work. ○ Regular inspections are to be conducted by the Environmental Control Officer to ensure compliance with these requirements. ○ The construction program is to indicate when specific areas may be cleared.	Regular Inspections by the Environmental Control Officer to ensure compliance.	Developer, Environmental Liaison Officer, Environmental Control Officer, Contractor, and Project Engineer	Construction phase
Soil and Groundwater Pollution	Prevent the contamination of natural resources	○ All construction vehicles, machinery, and equipment must be properly maintained to prevent leaks. ○ Vehicles are to be repaired immediately upon developing leaks. Drip trays shall be supplied for all repair work undertaken on machinery on site or at the campsite area. ○ Drip trays are to be utilized during daily greasing and refueling of machinery and to catch incidental spills and pollutants. ○ Drip trays are to be inspected daily for leaks and effectiveness and emptied when necessary. This is to be closely monitored during rain events to prevent overflow. ○ Vehicles to be used during the construction phase are to be kept in good working condition and should not be the source of excessive fumes. ○ General housekeeping is crucial to minimize any spillages and losses. ○ Surface drainage and spillages on hard surfaces should be channeled daily. ○ All excavations and foundations must be inspected regularly. ○ Once earthworks are complete, disturbed areas are to be stabilised with mulch, straw or other approved methods. ○ Additionally, quality testing (major ions and hydrocarbons) will be useful baseline data for future monitoring protocols.	No evidence of soil contamination or contaminated water resources.	Developer, Environmental Liaison Officer, Environmental Control Officer, Contractor, and Project Engineer	Construction phase

Unsupervised and misuse of fire on site	To reduce the risk of a fire on site.	○ No smoking is allowed outside demarcated areas on the proposed site. ○ Fire extinguishers must be provided at the site camp, where it is easily accessible. ○ Fire extinguishers must be serviced, full and in good working order. ○ The Contractor's Health and Safety Plan must include particulars in respect of firefighting and training.	Implementation of effective fire management practices.	Contractor, Environmental Liaison Officer and Environmental Control Officer	Construction phase
Waste management	To minimize/prevent impact on soil and water bodies. To ensure the responsible disposal of waste generated by the Contractor and to prevent the accumulation of litter and waste on site and in the surrounding area.	○ Waste skips are to be fitted with lids to prevent littering. ○ Containers shall be emptied once weekly by a licensed waste contractor and disposed of at a municipal waste site. No solid waste or any materials used may be disposed of on site. ○ Solid construction waste not posing a pollution hazard should be used on site as a filling material. Should no filling material be required, this waste should be disposed of, along with domestic waste. ○ No rubble or discarded building material may remain on site for more than two weeks. ○ No waste material may be burnt on-site. ○ Liquid waste is to be stored in a bunded area. Bunded area is to have a complete seal and a volume equal to 110% of the total volume of liquid stored in the area. ○ Liquid waste is to be disposed of at a class HH site only. ○ Chemical containers and packaging brought onto the site must be removed for disposal at a suitable site. ○ No material may be disposed of in the surrounding region. Written proof of disposal at a registered waste disposal site must be given to the Environmental Control Officer on every load of construction waste removed from the site. ○ Concrete shall be mixed on mixing trays only, not on exposed soil. Concrete shall be mixed only in areas which have been specially demarcated for this purpose. ○ All concrete that is spilled outside these areas must be promptly removed by the Contractor and taken to an approved disposal site. ○ After all the concrete mixing is complete, all waste concrete must be removed from the batching area and disposed of at an approved disposal site.	Proof of correct waste disposal at registered waste disposal sites and regular inspections by the Environmental Control Officer.	Contractor, Environmental Liaison Officer, and Environmental Control Officer.	Construction phase.

		○ The Contractor must adhere to all the relevant laws and regulations applicable to the disposal of construction waste and rubble. ○ Waste streams generated on the site shall be sent to a waste collection point for sorting and recycling. ○ Bins should be clearly marked to ease the management of waste and recycling.			
Increase in paved areas and storm water run-off	Minimize storm water run-off and prevent pollution of surface and ground water.	○ **I**t is important to minimize concentration of storm water run-off and ponding of water to ensure successful storm water design. ○ It is imperative that adequate surface and sub-surface drainage conditions be provided prior or during the development of the site. ○ Channels must have sufficient carrying capacity to cater for the volume of storm water run-off generated. ○ General surface water must be prevented from ponding. ○ Limit hard services and make use of materials that are pervious or absorbent. ○ Soft landscaping is to be used as far as possible. ○ Promote the use of pervious paving.	Implementation as per the Storm water Management Plan.	Developer, Engineer, Management, Environmental Control Officer and Environmental Liaison Officer	Planning, construction and operational phases
Geotechnical Recommendations	Minimize risks related to soil instability on site.	○ It is recommended that the Structural Engineers calculate the best economical foundation option for the proposed development, based on the type of structure, the different available construction methods and the specific foundation conditions in the footprint area of the proposed structures. ○ Good site drainage will be necessary to prevent water infiltration that may cause seasonal perched water tables or wet soil profile conditions. ○ The saturation of the soil profile will also need special site drainage precautions as this may lead to additional collapse settlements under load. ○ Due to the pollution potential from surface spills the surface drainage and prevention of perching will need special attention. Special measures will be needed to prevent any spillage, if such an event occurs. ○ The soils are expected to be highly corrosive, and it will be good practice to use plastic pipes rather than steel pipes for services and supply. ○ Cathodic protection to be used where necessary.	Implementation as per Storm water Management Plan.	Developer, Engineer, Management, Environmental Control Officer and Environmental Liaison Officer.	Planning and construction phases

Table 3: Operational Phase

OPERATIONAL PHASE					
TASK/ ENVIRONMENTAL IMPACT	**OBJECTIVE**	**ACTION REQUIRED**	**TARGETS TO MONITOR COMPLIANCE AND REPORTING THERE ON**	**RESPONSIBILITY**	**TIME FRAME**
BENEFICIAL IMPACTS					
Socio-economic					
Job Opportunities and Economic Upliftment	Advantages for local previously disadvantaged communities in terms of employment, empowerment and socio-economic upliftment.	▪ Constructing the proposed development will result in direct jobs being created for the construction of the site. Indirectly, jobs are also created in industries that provide goods, materials and services. ▪ The proposed project will increase skills development and also local employment in the area. Both short-term and long-term employment will be created in this case. ▪ The development will lead to an increase in the number of convenience facilities in the primary market area.	Record of local employees employed.	Developer	Operational phase
Contribute to the upgrading of the existing infrastructure	Improved municipal services.	▪ All recommendations made by the civil, traffic and electrical engineers, and approved by the Local Town Council must be installed as per the standard specifications.	Implementation of infrastructure as per approved engineering plans.	Developer, Traffic, Engineer, COJMM, and Environmental Control Officer	Construction and operational phases
Bio-physical					
Removal of exotic plant species and the establishment of indigenous vegetation.	The removal of exotic plant species and the planting of indigenous vegetation within landscaped areas will increase biodiversity.	▪ No action is foreseen due to current state of proposed site.	Landscape Development Plan.	Contractor, Landscape Architect, Environmental Consultant, and Environmental Control Officer	Design, planning, and construction phases

OPERATIONAL PHASE					
TASK/ ENVIRONMENTAL IMPACT	**OBJECTIVE**	**ACTION REQUIRED**	**TARGETS TO MONITOR COMPLIANCE AND REPORTING THERE ON**	**RESPONSIBILITY**	**TIME FRAME**
ADVERSE IMPACTS					
Socio-economic					
Visual Intrusion and Light Pollution	To mitigate the potential negative impact on *"genius loci"* and visual impact, should architecture not be in line with the natural character of the area, through the appropriate application of form, scale, materials and finishes.	▪ Light pollution should be minimized. ▪ Littering, refuse and illegal disposal on the site is not allowed. ▪ Refuse must be contained and disposed of at the municipal land fill site. ▪ Refuse bins must be provided. These must be sufficient in number and must be easily accessible. ▪ The buildings may not be visually intrusive. ▪ The buildings must be painted regularly. ▪ All lights used for non-security purposes should be energy efficient, for example compact fluorescent lights (CFL). Fluorescent lamps give five times the light and last up to 10 times as long as ordinary bulbs. ▪ Outside lights will have to be downward shining (eyelid type), low wattage and should not be positioned higher than 1 m above the ground surface. ▪ Signs must conform to Local Municipal Standards. ▪ Areas that have been landscaped must be maintained. ▪ The site boundary will be erected around the site, thereby securing the activities of the proposed thermal waste treatment plant from the adjoining sites.	No complaints from surrounding property owners	Developer, Architect, Landscape Architect.	Planning and operational phases

OPERATIONAL PHASE					
TASK/ ENVIRONMENTAL IMPACT	**OBJECTIVE**	**ACTION REQUIRED**	**TARGETS TO MONITOR COMPLIANCE AND REPORTING THERE ON**	**RESPONSIBILITY**	**TIME FRAME**
Traffic	Possible increased pedestrian hazard and increased road damage.	▪ Access to the proposed site is from existing municipal road infrastructure. ▪ Road surfaces in the immediate vicinity of the site should be monitored. If the road is damaged the relevant authority must be notified. ▪ If advertising boards are erected, it must be in accordance with local governance and not block the visibility to and from the proposed site. ▪ Access to and from the site must not have a negative impact on the exciting traffic flow within reasonable means. ▪ All requirements by the Traffic Engineer and Provincial and Local Traffic Department must be adhered to.	No complaints from road users.	Developer and Traffic Engineer	Planning, design and operational phases
Noise	To minimize the impact of noise on surrounding properties and the environment.	▪ Noise levels shall be kept within the acceptable limits, and forecourt staff must abide by National Noise Laws and local by-laws regarding noise. ▪ If any mechanical equipment is used, noise reduction facilities must be used as per the operating instructions and maintained properly. ▪ Noise levels should comply with the SANS Code of Practice 100103-0994 for recommended noise levels.	No complaints from surrounding property residents.	Developer, Contractor Management	Construction and operational phases

OPERATIONAL PHASE					
TASK/ ENVIRONMENTAL IMPACT	**OBJECTIVE**	**ACTION REQUIRED**	**TARGETS TO MONITOR COMPLIANCE AND REPORTING THERE ON**	**RESPONSIBILITY**	**TIME FRAME**
Atmospheric Pollution and Odors	Minimize atmospheric pollution and odors.	▪ Emissions from the proposed thermal waste treatment site must be regularly monitored so as to ensure that atmospheric pollution does not occur. ▪ The emissions from the proposed thermal waste treatment plant will be dispersed according to the prevailing wind direction, with increased distance the concentration of the emitted particles will decrease. ▪ All general waste areas are to be maintained in a neat and orderly manner, and bins must have secure lids.	No reports of negative health incidents or complaints from surrounding property residents. Emissions Monitoring Reports.	Developer, Contractor, Management	Construction and operational phases
Safety and Security	Ensure safety and security of staff and users of the site.	▪ Appropriate measures should be in place for the correct storage and handling of waste, as well as the procedures for dealing with dangerous situations. ▪ Staff should be adequately trained with respect to dealing with crime. ▪ Equipment and materials must be handled by staff that have been supervised and adequately trained. ▪ Staff must be regularly updated about the safety procedures. ▪ Emergency facilities must be available and adequately supplied for the use by staff and customers. ▪ Emergency contact details for the police, Security Company and fire department must be readily available.	Record of regular training for staff.	Developer, Contractor, Management.	Construction and operational phases

Bio-physical					
Soil and Groundwater Contamination	Prevent soil and groundwater Contamination.	▪ All erected storage Site equipment must be located on a hardened surface to contain spillages. ▪ All erected storage Site equipment and forecourt areas should all be located on a hardened surface. ▪ Strict procedures for the management of the site must be developed and adhered to. ▪ Staff must be trained to prevent spillages during loading and off-loading of the product.	Approved Spill Contingency Plan. Record of regular training of staff.	Developer, Management, Environmental Control Officer	Planning, construction and operational phases
Subsurface leaks	Prevent soil and groundwater Contamination.	▪ Staff must be trained adequately so as to identify and minimize the impacts of leaks. ▪ Cathodic protection will prevent corrosion in pipelines. ▪ A proper management and monitoring program must be implemented to ensure that the groundwater resources are protected.	Approved Spill Contingency Plan. Record of regular training of staff. Record of regular Monitoring.	Developer, Engineer, Environmental Control Officer	Operational phase.
Risks of Fires and Explosions	Prevent emergency incidents.	▪ The design and construction of the proposed thermal waste treatment plant and associated infrastructure must conform to the following fire safety standards and legislation: ➢ The manufacturing, storage, handling or processing of a hazardous substance, as defined in the Hazardous Substances Ordinance, 14 of 1974. ➢ The Labour Act, 6 of 1992, as amended by the Labour Act, 11 of 2007. ➢ Fire Services Act, 99 of 1956. ➢ National Building Regulations Act, 103 of 1977 – Fire extinguishers must be easily accessible. ➢ Environmental Management Act, 7 of 2007, and its corresponding regulations.	Approved Emergency Response Plan. Record of regular training of staff. Record of regular monitoring.	Developer, Engineer, COJMM, Proposed Bulk Storage Site and associated infrastructure Management, Environmental Control Officer	Planning, construction and operational phases

		▪ The following signs must be installed in accordance with the Walvis Bay Municipalities' Fire Department: ➢ "NO SMOKING" ➢ "NO NAKED FLAME" ➢ "NO CELLPHONES" ▪ Staff must be trained adequately so as to identify and minimize the impacts of leaks and to deal with fires.			
Waste Generation and Disposal	Prevent pollution of ground and surface water and the environment as a whole.	▪ Solid waste generated needs to be collected at a central point. This waste will be disposed of as normal domestic waste at the closest municipal waste disposal site. ▪ The Waste Management and Pollution Control Act covers all aspects relating to waste management and must be adhered to at all times. Any other relevant legislation must also be adhered to. ▪ Waste management at the proposed thermal waste treatment plant and associated infrastructure shall be strictly controlled and monitored. Only approved waste disposal methods shall be allowed. ▪ Management of the proposed thermal waste treatment plant and associated infrastructure shall ensure that all personnel are instructed in the proper disposal of all waste. ▪ Staff training should be undertaken every six months to capacitate staff in terms of waste minimization and waste disposal. ▪ No burning, on-site burying or dumping of waste shall occur. ▪ Hazardous waste will only be produced during emergency situations such as a spill that has been cleaned up with an absorbent material. This will be disposed of at a registered hazardous landfill site.	Removal of waste to certified land fill sites.	Developer, COJMM, Waste Removal Contractor, Engineer, and Environmental Control Officer	Operational phase

		▪ These materials may be removed by an appropriate hazardous waste Contractor. Proof of appropriate disposal must be obtained from the Contractor.			

6. CONCLUSION

The proposed operation of the thermal waste treatment plant in Lüderitz, by **Wesco Waste Management (Pty) Ltd** will provide an alternative, environmentally friendly manner in terms of which waste can be treated and disposed of. This proposed project of **Wesco Waste Management (Pty) Ltd** aims to alleviate the enormous pressure waste disposal facilities within Namibia are currently facing, in particular the hazardous waste facilities, as neither facility has the capacity to accept hazardous waste at present. The thermal desorption techniques to be implemented through this project will make hazardous waste, such as exploration drill mud, less hazardous through the treatment thereof, in order for the end-product, which is a sandy substance, to be reused in construction and other related activities and processes. This proposed project will also elevate Namibia in the international sphere as a country which offers environmentally friendly waste disposal alternatives. The entire project will contribute to the national treasury through payment of taxes, levies and permitting fees, and will be a solution to the country's rising hazardous waste disposal crisis.

Regulations related to the handling and transport of waste as prescribed by Namibian law, or according to international best practice standards where Namibian law is lacking, must be followed during the planning and operations of the project. The necessary permits and approvals must be obtained from the relevant authorities. Dust suppression must be adequate to protect both employees and nearby receptors (businesses and residential areas). All hazardous substances and waste (i.e., fuel) should be handled and stored according to MSDS requirements which include storage in bunded areas with sufficient spill containment infrastructure and segregation of incompatible products. Noise pollution should at all times meet the prescribed Health and Safety Regulations of the Labour Act and WHO requirements to prevent hearing loss and to minimize nuisance. Fire prevention should be adequate, and health and safety regulations should be adhered to in accordance with the regulations pertaining to relevant laws and internationally accepted standards of operation. Any waste produced must be removed from site and disposed of at an appropriate Site or re-used or recycled where possible. Hazardous waste must be disposed of at an approved hazardous waste disposal site by a registered hazardous waste disposal contractor.

The EMP should be used as an on-site reference document for the operations of the proposed site. Parties responsible for transgressing of the EMP should be held responsible for any rehabilitation that may need to be undertaken. **Wesco Waste Management (Pty) Ltd** could use an in-house Health, Safety, Security and environment management system in conjunction with the EMP. All operational personnel must be taught the contents of these documents.

Should the Directorate of Environmental Affairs (DEA) find that the impacts and related mitigation measures, which have been proposed in this report are acceptable, an environmental clearance certificate may be granted to **Wesco Waste Management (Pty) Ltd**. The environmental clearance certificate issued, based on this document, will render it a legally binding document which should be adhered to. Focus could be placed on the EMP for this project. It should be noted that the assessment process's aim is not to stop the activity, or any of its components, but to rather determine its impact and guide sustainable and responsible development as per the spirit of the Environmental Management Act.

ANNEXURE A: ENVIRONMENTAL INCIDENT LOG

Date	Incident	Comments *(Include any possible explanations for current condition and possible responsible parties. Include photographs, records etc. if available)*	Mitigation Measure *(Give details and attach documentation as far as possible)*	ECO Signature

ANNEXURE B: COMPLAINTS RECORD SHEET

RECORD OF COMPLAINTS	PAGE OF	DATE: / /
Complainant:		
Capacity of complainant:		
Complaint recorded by:		
Complaint:		
Corrective measure:		
ECO:	Date:	
Notes by ECO:		