Environmental Management Programme (EMPr)

Draft Environmental Management Programme (EMPr) for the Proposed Mabibi Water Supply Scheme Work Package 5 located within Ward 8 of the uMhlabuyalingana Local Municipality, uMkhanyakude District Municipality, KZN

A Project of uMngeni uThukela Water

November 2025

DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr)

November 2025

DOCUMENT DESCRIPTION

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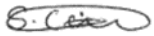
Ms. Sphelele Mhlongo - Cand. EAP (EAPASA) *Environmental Assessment Practitioner*	November 2025/ Durban	
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GLOSSARY OF TERMS

Activity (Operations)
An action either planned or existing that could result in environmental impacts through pollution or resource use. For the purpose of this report, the terms 'activity' and 'operations' are freely interchanged.

Audit
A verification process is used to obtain information regarding the implementation of the EMPr. It is an objective tool used to make improvements at the workplace.

Biophysical Environment
All aspects of the natural environment including physical features such as watercourses, groundwater and soils as well as the biological features such as plants and animals.

Bunding
An impervious containment system for potential spillages from tanks/containers stored on site. The bunded area must have a capacity greater than 110% of the total tankage contained. The bunding must be constructed of a material impermeable and resistant to the stored material.

Client
UMngeni uThukela Water, herein referred to as the Applicant.

Construction Activity
A construction activity is any action taken by the Client, a contractor, his sub-contractors, suppliers or personnel during a construction process.

Contractor
Persons or companies appointed on behalf of the Client to undertake construction or operational activities, as well as their sub-contractors and suppliers.

Construction camp
The area allocated for the establishment of equipment, repair area, ablution facilities, lie down and rest areas, etc. It also serves as the central point for the storage of fuel, construction material and contractor offices.

Decommissioning
In relation to the development and its associated buildings, structures and facilities means the planning for and management and remediation of the closure/cessation of the development.

Environmental Authorisation
Environmental Authorisation obtained in terms of the National Environmental Management Act (NEMA), Act 108 of 1998, and the associated EIA Regulations.

Environmental Control Officer (ECO)
Individual appointed by the Client and who is responsible for monitoring compliance with the implementation of the EMPr, permits and licenses; ensuring liaison between the Applicant, the contractor and Authorities; and reporting on the verified compliance with the EMPr.

Environmental Site Officer (ESO)
An environmentally knowledgeable or qualified person nominated by the appointed contractor who will manage the day-to-day implementation of the EMPr by contractors.

Environmental Management Programme (EMPr)

A plan or programme that seeks to achieve a required end state and describes how activities, that have or could have an adverse impact on the environment, will be mitigated, controlled and monitored. The EMPr provides the environmental requirements during the planning, operation and construction phases to the Mabibi Bulk Water Supply Scheme Work Package 5 and any agent, consultant, contractor and sub-contractors acting on behalf of the Client to ensure that environmental aspects are addressed to prevent or minimise environmental impacts (pollution or degradation) as a result of the activities at the proposed development.

The EMPr also provides for general instructions that must be included in a contract document for any planning and construction phases of any of the related construction activities under the responsibility of UMngeni uThukela Water. The EMPr also details the organisational structure required to ensure the effective implementation of the EMPr and measures to monitor and improve the application of the EMPr.

Environment
The environment means the surroundings within which humans exist, and that could be made up of water, air, soil, sand, plants and animals.

Environmental Aspect
An environmental aspect is any component of a contractor's construction activity that is likely to interact with and on the environment.

Environmental Impact
An impact or environmental impact is the change to the environment, whether desirable or undesirable, that will result from the effect of an activity. An impact could be the direct or indirect consequence of construction, operational or decommissioning activity.

Environmental Consultant
An independent consultant that is appointed by the Client to compile an Environmental Management Programme and to undertake environmental audits or Control Officer Functions.

Environmental Specifications
Instructions and guidelines for specific activities designed to help prevent, reduce and/or control the potential environmental implications of these activities during the operational, construction or decommissioning/ closure phases of the facilities.

Emergency
An undesired event that results in a significant environmental impact and requires the notification of the relevant statutory body such as a local or provincial authority.

Fauna
All animals identified within or outside of the operational or project area. Animals must not be harmed in any way.

Flora
All species of plants that are found within a specific region, habitat, or time period within or outside of the operational or project areas.

Hazardous Substance
Any substance that poses a significant risk to health and safety, property or the environment. These substances have been classified under the SABS Code 0228: *'The Identification and Classification of Dangerous Goods and Substances'*. Hazardous substances/materials are those that are potentially: poisonous, flammable, carcinogenic or toxic.

Some examples of hazardous substances / materials include:
a. Diesel, Petroleum, Oil, Bituminous products;
b. Cement, RhinoLite;

c. Chemicals such as solvent based acids, alkalines;
d. Lubricants such as oil and greases;
e. Pesticides, Herbicides; and
f. LP (Liquefied Petroleum) gas.

Hazardous Waste Landfill Site
A waste disposal site that is designed, managed and permitted by DWS or DEA to allow for the disposal of hazardous waste.

Incident
The occurrence of a pollution or degradation event that will have direct or indirect effects on the environment e.g., surface water, groundwater, soils, ambient air, flora, fauna and humans. In the event that an incident is reported, an incident report must be compiled and submitted to the Department in accordance with Section 30A of the National Environmental Management Act (as amended).

Landowner
The individual, Company, Entity, Tribal Authority, Local Municipality or District Municipality that legally owns the land. In this case, the Landowner is Umhlabuyalingana Local Municipality.

Mitigation measures
Mitigation seeks to address poor practices, procedures, systems and / or management measures by the implementation of preventative and corrective measures to reduce, limit, and eliminate adverse or negative environmental impacts or improve the positive aspects.

Pollution
The National Environmental Management Act, No. 107 of 1998 defined pollution to mean any change in the environment caused by – substances; radioactive or other waves; or noise, odours, dust or heat emitted from any activity, including the storage or treatment of waste or substances, construction and the provision of services, whether engaged in by any person or an organ of state, where that change has an adverse effect on human health or well-being or on the composition, resilience and productivity of natural or managed ecosystems, or on materials useful to people, or will have such an effect in the future.

Project
This refers to any new construction activities associated with the proposed Mabibi Bulk Water Supply Scheme.

Principal Agent (PA)
Principal Agent or Representative of the Client, responsible for the overall management of the construction phase of a project, operational phase or decommissioning/closure of the Mabibi Bulk Water Supply Scheme. Duties also include the management of all Contractors.

Rehabilitation
Rehabilitation is defined as the return of a disturbed area, feature or structure to a state that approximates to the state (where possible) that it was before disruption, or to an improved state.

Remediation
The management of a contaminated site to prevent, minimise, or mitigate harm to human health or the environment

Social Environment
Persons likely to be directly or indirectly affected by construction activities during a project, operational activities, or activities during the decommissioning phase.

Social Environment
Persons likely to be directly or indirectly affected by construction activities during a project, operational activities, or activities during the decommissioning phase.

Solid Waste
Means all solid waste, including domestic and office waste (food, paper, plastic), waste from operations, e.g., empty chemical containers, dried sludge as well as waste from the construction and/or decommissioning phases, chemical waste, excess cement/concrete, inert building rubble, packaging, timber, tins and cans.

Sustainable development/sustainability
The integration of social, economic and environmental factors into planning, implementation and decision-making, to ensure that development serves present and future generations.

Waste
Any substance, material or object that is unwanted, rejected, abandoned, discarded or disposed of, or that is intended or required to be discarded or disposed of, by the holder of that substance, material or object, whether such substance, material or object can be reused, recycled or recovered.

Workforce
The entire project team including people employed by the Client or the contractor, persons involved in activities related to a project, persons present at or visiting construction areas (including permanent contractors and casual labour), personnel in charge of- or tasked with maintenance of the Mabibi Bulk Water Supply Scheme Work Package 5.

GLOSSARY OF ACRONYMS

AIP:	Alien Invasive Plant
CA:	Competent Authority
DOT:	KZN Department of Transport
EA:	Environmental Authorisation
ECO:	Environmental Control Officer
EDTEA:	KZN Department of Economic Development, Tourism and Environmental Affairs
DFFE:	Department of Forestry, Fisheries and Environmental Affairs
EIA:	Environmental Impact Assessment
EMPr:	Environmental Management Programme
ESO:	Environmental Site Officer
HSE:	Health, Safety and Environment.
NEMA:	National Environmental Management Act
SEMA:	Specific Environmental Management Acts
PE:	Project Engineer
PM:	Project Manager
PPE:	Personal Protective Equipment

1. INTRODUCTION

An “Environmental Management Programme” (EMPr) is a plan or programme that sets out guidelines that describe how activities that have or could have an adverse impact on the environment, will be mitigated, controlled, monitored and subsequently achieve a desired operational and/or end state. The EMPr addresses the environmental impacts during the design, construction, operational and post-construction/rehabilitation phases of a project. The purpose of an EMPr provides for preventative, corrective and best practice measures to ensure that activities related to construction, operation and post-construction of a facility and associated activities are done in an environmentally responsible way and is sustainable.

The EMPr is a dynamic document that must be continually updated, as and when required. This EMPr prepared by Wallace and Green concerns the implementation of an Environmental Management Programme and mitigation measures related to the proposed Mabibi Bulk Water Supply Scheme Work Package 5. It sets out conditions for managing environmental impacts during the planning, construction and operational phases of the development. This project falls within the uMhlabuyalingana Local Municipality within ward 8 under the uMkhanyakude District Municipality in KZN.

Due consideration has been given to the development in terms of the planning, construction, operational phases whilst considering the environment and needs of interested and affected parties. Where relevant, rehabilitation and closure aspects have also been considered and addressed.

Due regard must be given to environmental management during the entire lifecycle stage of a project. Environmental specifications, conditions and/or recommendations are provided to ensure:

- Minimising the extent of environmental impact during the life of the project, commencing from planning through to closure;
- The rehabilitation of areas affected by construction and operation; and
- Preventing and remediating long term environmental degradation.

The principles and instructions contained in this document are to be implemented by the Applicant and all Purchasers, Consultants, Contractors and Sub-contractors.

1.1. BACKGROUND INFORMATION

uMngeni-uThukela water intends to implement the proposed Mabibi Water Supply Scheme in order to address the numerous water supply challenges being experienced under the uMhlabuyalingana Municipality areas of jurisdiction, thus uMngeni-uThukela water has sought funding from the Water Service Infrastructure Grant (WSIG) on behalf of uMkhanyakude District Municipality, the Water Services Authority and Water Service Providers for addressing the growing challenges of water supply.

The water demand for the project are based on the following data:

- Estimated projected project population, based on the 2023 estimated population projected to year 2043. The population growth rate is estimated at 1.95% per annum as provided by STATS SA 2022 census data; and
- The water demands per capita is estimated at 120Litres per day.

The projected current and 2043 water demand for Ward 8, which includes the Mabibi area is shown in Table 1 below.

Table 1: The current and projected water demand

Ward No.	Sub Wards	Population		AADD (ML/day)	
		2023	2043	2023	2043
Ward 8	Mabibi	748	1 100	0,10	0,15

	Manzengwenya	374	550	0,05	0,07
	Nkundwini	249	367	0,03	0,05
	Total	**1 371**	**2 017**	**0,18**	**0,27**

Criteria	Year	
	2023	2043
Population growth assuming 1.95% growth rate	1 3 71	2 017
Consumption per capita per day	120 l/c/d	120 l/c/d
Annual Average Daily Demand (AADD)	180 kl/d	270 kl/d
Allow 15% water losses	207 kl/d	311 kl/d
SPD Demand (Peak Demand Factor of 1.9)	393 kl/d	590 kl/d
WTW Capacity		
Add: 15% water treatment losses	59 kl/d	89 kl/d
WTW Capacity Requirement	452 kl/d	679 kl/d
		1000 kl/d

Based on the above information, the projected water demand for Mabibi is 0,59ML/day and as such the proposed plant has been sized for a capacity of 1ML/day.

The sections below provide details into the proposed Mabibi WTP and associated infrastructure:

Mabibi Package Water Treatment Plant

The total development footprint of the proposed Mabibi Package WTP is 112m². The water treatment plant will consist of a security fence, proposed access road, proposed 50kl elevated tank and base, proposed valve chamber for the elevated water tank, proposed sludge bed and the proposed water treatment works. It will be sized for the capacity of 1ML/day and will pump a total of 11.5 l/sec (41.7 m^3/hour). The water quality produced will be of Class 1, in accordance with the SANS 241: 2015.

The proposed elevated tank is sized to be 50kl, 15m in height and is stabilized with galvanized steel panels. This tank will be located within the packaged WTP.

Please refer to Figure 1 – Design of the WTP.

Details of the Water Treatment Process at the Plant

The plant's treatment processes will be engineered to effectively remove iron, manganese, turbidity, colour, and organic compounds, ensuring the water is properly disinfected to meet SANS 241: 2015 standard. The supply voltage for the facility is three-phase, 400V at 50Hz. The primary treatment sequence includes pre-oxidation (if necessary), coagulation, flocculation, clarification, filtration, and post-disinfection, collectively ensuring the delivery of safe and quality drinking water.

The section below describes the primary treatment sequence of the plant:

- **Coagulation, Flocculation and Clarification**

A pre-chlorination facility will be installed, if necessary, if the lake water presents elevated organic content. A coagulant dosing point will be positioned upstream of a flash mixer within the raw water pipeline. This system will utilize an Ion Charge Analyser to precisely control the coagulant dosage, ensuring optimal coagulation conditions for effective water treatment.

The raw water will pass sequentially through a flocculation column and then into a lamella clarifier. Rapid mixing occurs at the flash mixer, followed by slower mixing and floc formation within the flocculation column, which has a volume of 5.65 m^3 and provides approximately 8 minutes of retention time at the designed flow rate of 42 m^3/hour. Sludge removal from the flocculation process is manual, aligned with plant operation, and sedimentation within this column is minimal.

The system consists of a single clarifier, measuring 2.2 meters wide, 3.2 meters high, and 6 meters long, with a settling surface area of 13.2 m^2. Incorporating lamella plates increases the effective surface area to 50 m^2, reducing the upflow rate to 0.84 m/hour and enhancing sedimentation efficiency. The clarifiers are constructed from fiberglass to resist corrosion in the Mabibi environment, with automated desludging facilitated by pneumatically operated butterfly valves controlled via an adjustable Schneider timer.

- **Filtration**

The clarified water will flow by gravity into a settling tank measuring 2 meters in diameter and 2 meters in height. From this tank, the settled water will be pumped through five silica sand filters into the existing filtered water reservoir. The proposed filter pumps are Grundfos NK 50-200/219 models, equipped with a 3-kW motor. These pumps will also facilitate the backwashing of the filters, eliminating the need for separate backwash pumps.

Each filter has a diameter of 1.2 meters, providing a surface area of approximately 1.22 m^2. At a designed flow rate of 42 m^3/hour, this setup achieves a linear filtration rate of 6.88 m/hour. A side channel blower will be installed to air scour the filters, ensuring effective removal of dirt from the filter beds. The backwash process is fully automated, controlled via pneumatic actuated valves and managed by a Schneider timer integrated into the plant's MCC.

- **Waste Stream Management**

The sludge generation rate is estimated at 10 kilograms per day. To manage the wet sludge produced by the package plant, two sludge drying beds, each measuring 5m by 3m, will be installed. The dried solids will be periodically transported to a landfill in Mbazwana every three months. A 2m^3 skip bin will be utilized for the transportation of the dried solids from the plant to the designated landfill site located 1km North West from the town of Mbazwana.

It is important to note that the applicant is in consultation with the uMhlanbuyalingana Municipality on the disposal of sludge. Proof of disposal will be submitted with the Second Draft BAR.

- **Coagulant Dosing**

The coagulant dosing system will comprise duty-standby Grundfos DDE 6-10 coagulant dosing pumps, a Lechintech Ion Charge Analyser, and a sample collection pot. The dosing pumps will be controlled via a PID system integrated within the plant's MCC, allowing precise regulation of coagulant application. The pumps will draw coagulant from a 200L day tank, with no provisions for bulk chemical storage at the site.
A sample of the raw water post-dosing will be directed to the Ion Charge Analyser's sample pot to assess charge neutralization levels. The analyser's readings will enable the controller to adjust the pump output automatically, ensuring optimal coagulant dosage under varying raw water conditions. The system will operate in synchronization with raw water flow, activating only when flow is present to optimize efficiency and chemical usage**.**

- **Flow monitoring and Filtered water transfer**

Flow measurement of raw and filtered water within the plant will be done using Autento ultrasonic flow meters, installed respectively on the raw water inlet and filtered water outlet lines. The filtered water will be transferred into a 10,000-liter buffer tank situated at ground level, serving as an intermediary storage before distribution.

The water will be pumped from the buffer tank to the 15 kl elevated tank using a duty/standby pair of Grundfos transfer pumps, each rated at 5.5 kW with NK 50-125/142 specifications. The operation of these pumps will be managed via level probes on their suction and discharge sides, ensuring protection against dry running and preventing overflow of the reservoir.

- **Civil and Power requirements**

The civil infrastructure for the water treatment plant includes a dedicated plant room measuring approximately 40m², with dimensions around 8 m by 5 m, although the exact configuration is flexible. A concrete foundation of 9m by 7m is required to support key components such as the clarifier, settled water tank, and flocculation column.

Regarding electrical requirements, the raw water pump necessitates a power supply of 15 kW, with a recommended 25 kW, three-phase transformer operating at 400V to ensure adequate capacity. The water treatment plant itself requires 18kW, with a recommended 50kW, three-phase transformer at 400 V, to accommodate potential future increases in energy demand on the site

Details of the Floating Raw Water Abstraction at Lake Sibayi

The abstraction works structure will be in the form of a floating raw water pumpstation supported on aluminum tanks and equipped with submersible raw water pumps. This structure is designed as such to omit disturbing or diverting the flow of water into the lake. The pump station will be anchored to the shore of the lake by an antirust chain bolted onto a concrete stub column on the edge of Lake Sibaya. This will allow the pumpstation to be pulled to shore for operation and maintenance purposes.

Abstraction depth is 3m below the surface of Lake Sibaya.

- Invert levels of the rising main are located in a uniform depth of 1.2m below ground level
- Base demand is 11.5l/s and peak factor is 1.5
- The development footprint of the structure is 10.92m²

The proposed abstraction system for the raw water source consists of a single self-priming Cornell pump mounted on a custom-fabricated float, with a standby pump stored at the water treatment plant and not installed. The float will be securely anchored to enable access to the pump and electrical components by pulling the structure to the side of the lake. A flexible Mineflex delivery line will be used to accommodate the movement of the float. Electrical controls for the pump will be mounted on the float to prevent vandalism. The operation of the raw water pumps will be fully automated, utilizing a no-flow switch and pressure control system to shut off the pumps at high pressure and automatically restart them after a predetermined delay (Ziyanda Annexure K WTW design report, 2024)

The design of the abstraction works makes provisions to ensure that water flows into the lake is not disturbed or diverted. In addition, the design ensures that the process of raw water extraction is undertaken in a manner that minimize ecological disturbance as the structure of the floating raw water abstraction works has a small footprint, therefore minimizing the disruption to aquatic habitats.

Raw water Rising Main Pipeline

The construction of a 2000m raw water rising main made of uPVC pipeline with a diameter of 160mm from the abstraction works to Mabibi Package Water Treatment Plant.

Please refer to Figure 2 – Design of the Preferred Rising Main Pipeline.

Proposed Construction Site Camp

The proposed construction camp is located at coordinates 27°19’ 39.58” S, 32°43’ 36.95’’ E approximately 1283.65 m South-West from Lake Sibaya. The total surface area of the proposed construction camp is 1050m². The campsite consists of the following specifications:

- RE Site office
- Covered parking area
- Covered Eating area
- Guard house
- Storage facility
- Contractors site office
- Ablution facilities
- Assembly point
- Hazardous material storage facility
- Waste bins
- Entrance gate

Please refer to Figure 3 – Overall Design Layout, illustrating the Mabibi Package Water Treatment Plan, the Preferred Rising Main Pipeline Route, the Abstraction Point and the Proposed Site Camp.

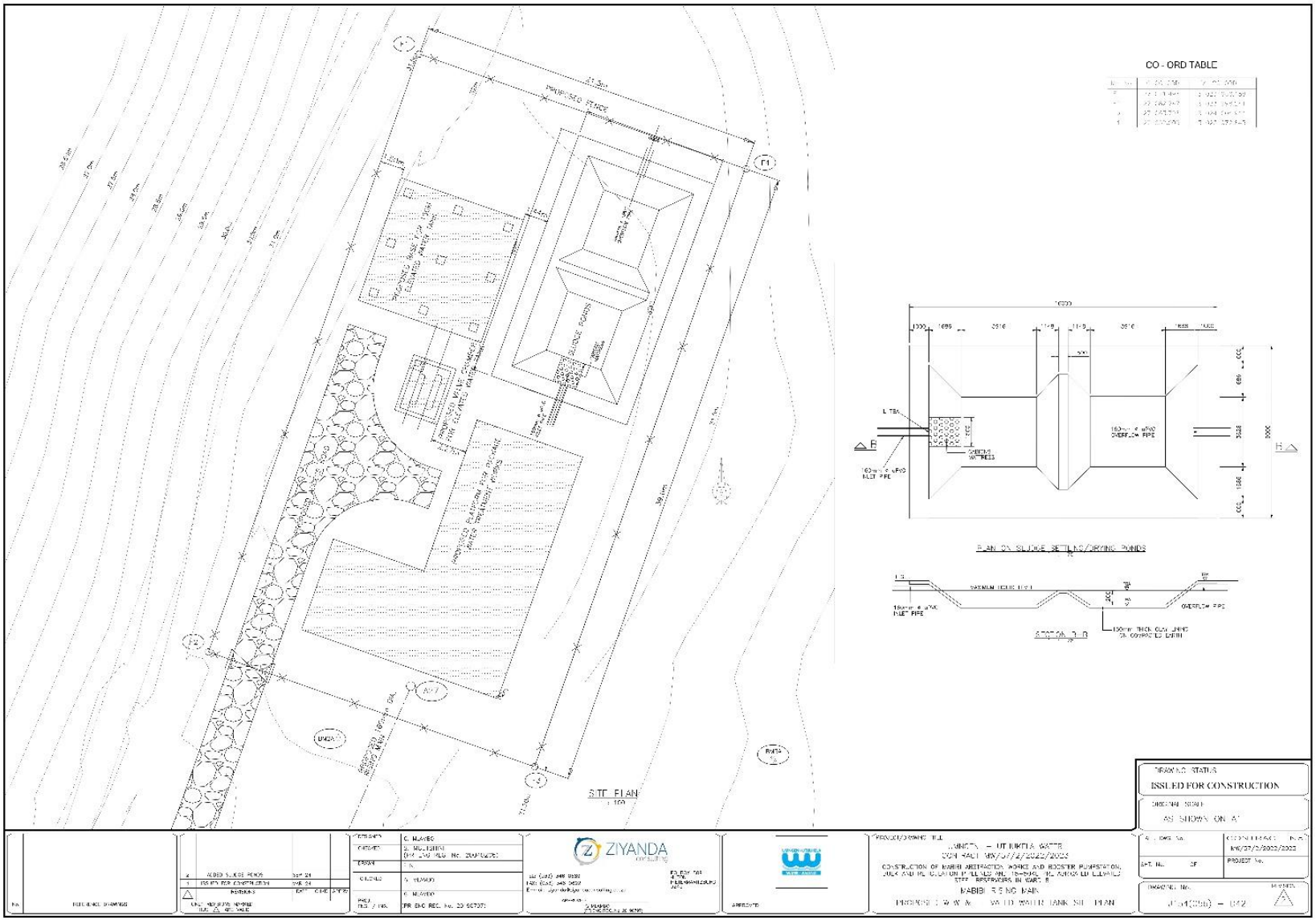

Figure 1 – Design of the WTP

Figure 2: Map Illustrating the Design of Preferred Rising Main Pipeline

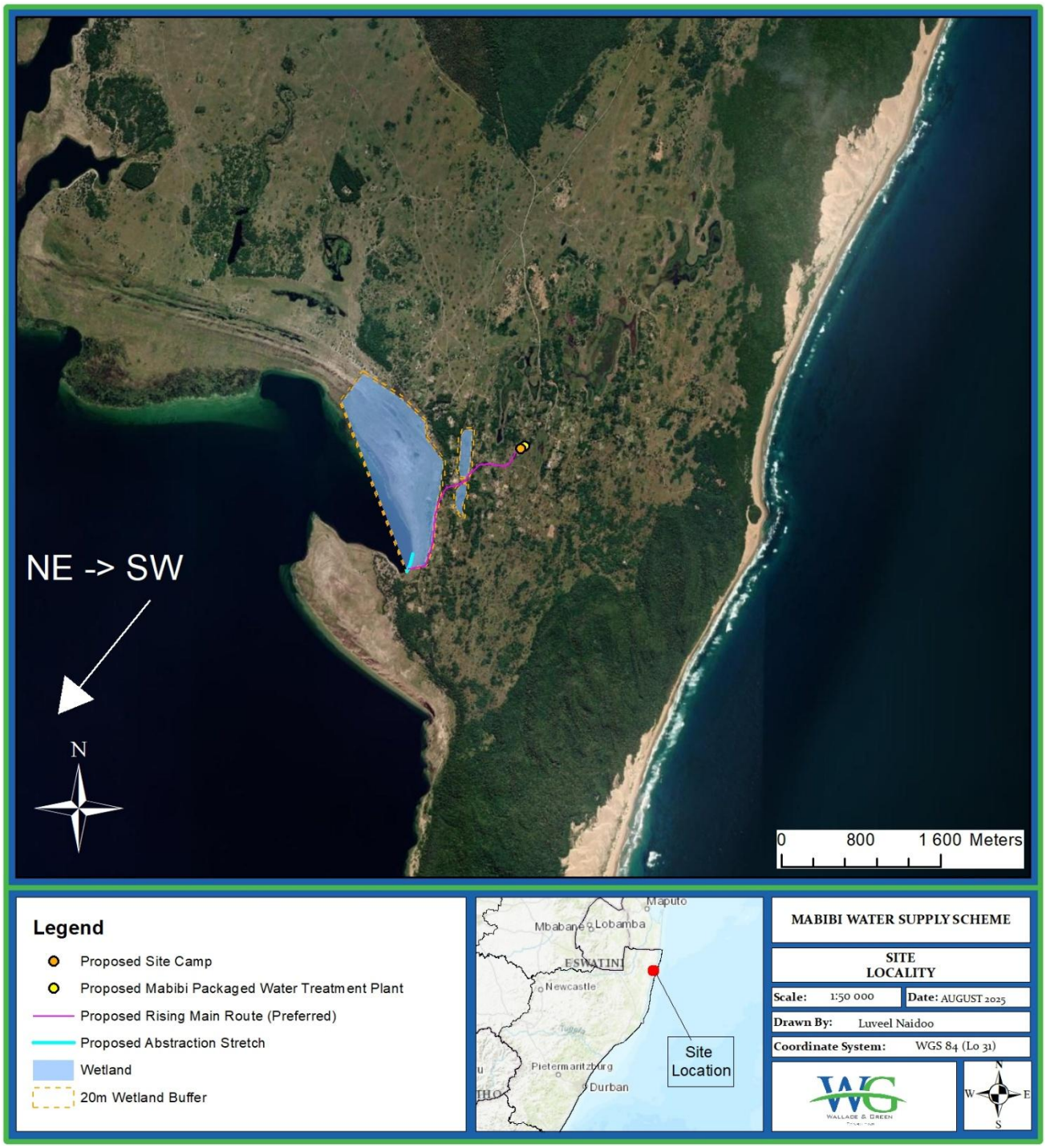

Figure 3: Overall Design Layout, illustrating the Mabibi Package Water Treatment Plan, the Preferred Rising Main Pipeline Route, the Abstraction Point and the Proposed Site Camp

1.2. SCOPE OF THE ENVIRONMENTAL MANAGEMENT PROGRAMME

This document describes the role of the EMPr in Environmental Impact Assessment (EIA) and planning for ecologically sustainable development within the framework of existing legislation and environmental management policies.

The EMPr will be used as a binding document between the Applicant and appointed personnel, as well as all other persons involved in the execution of activities related to the proposed Mabibi Bulk Water Supply Scheme Work Package 5. These conditions must be adhered to for the duration of the construction, post-construction and operation phases.

This EMPr addresses the following phases of the development:

(a) The Planning and Pre-construction Phase
The planning phase is the ideal opportunity to incorporate pro-active measures to ensure that environmental impacts arising from the Mabibi Bulk Water Supply Scheme Work Package 5 and associated services are avoided and mitigated from the outset. Proper planning during this phase can ensure that the likelihood of certain impacts taking place is minimised.

(b) The Construction Phase
The majority of the impacts which will occur during the construction phase will have immediate effect (e.g., noise, pollution, interruption of surrounding services, waste generation). If the site is monitored on a continual basis during the construction phase, it is possible to identify these impacts as they occur. These impacts will then be mitigated through the implementation of the measures described in the EMPr.

(c) Post construction and Operational Phase
Following construction, rehabilitation measures must be followed to minimise the impacts imposed during construction. This includes the removal of all material and structures that are no longer required, and restoration of areas that have been disturbed during construction. The impacts, which are anticipated during the operational phase are deemed to be the most significant and are those impacts which could result from mismanagement of the development. By taking proactive measures during the operational phase, potential environmental impacts will be minimised.

1.3. OBJECTIVES OF THE ENVIRONMENTAL MANAGEMENT PROGRAMME

The EMPr plays a vital role in the implementation of consistent and continued environmental management for the duration of a project life cycle.

Specifically, the EMPr:

- Ensures compliance with regulatory authority stipulations and guidelines which are local, provincial, national and all related legislation thereof.
- Ensures that there is sufficient allocation of resources on the project budget so that the scale of EMPr-related activities is consistent with the significance of project impacts.
- Outlines the functions and responsibilities or responsible persons.
- Verifies environmental performance through information on impacts as they occur.
- Outlines mitigation measures and environmental specifications which are required to be implemented for all phases of a project to minimise the extent of environmental impacts, and to manage environmental impacts associated with the proposed project.
- Establishes monitoring methods for environmental management practices for construction of the development.
- Ensures that all health and safety regulations are adhered to.
- Proposes methods to monitor compliance with the EMPr and subsequent reporting.
- Specifies timeframes within which measures set out in the EMPr must be implemented.
- Encourages good management practices through planning and commitment to environmental issues;

- Defines how the management of activities and their impact on the environment is to be reported and how performance must be evaluated;
- Provides practical environmental conditions/requirements to:
  - Minimise disturbance of the natural environment;
  - Prevent or minimise all forms of pollution;
  - Protect indigenous flora and fauna;
  - Prevent soil erosion and facilitate the re-vegetation of affected areas;
  - Ensure the maintenance of newly vegetated areas;
  - Restrict noise disturbance;
  - Ensure compliance with all applicable laws, regulations, standards and guidelines for the protection of the environment; and
  - Provide for the best practical means available to prevent or minimise adverse environmental impacts.
- Develops waste management practices based on prevention, minimisation, recycling, treatment or disposal of waste;
- Defines the arrangements that will be put in place to ensure that the mitigation measures are implemented by including recommendations of the roles and responsibilities of the project proponent, environmental management team and contractors;
- Describes all monitoring procedures required to identify impacts on the environment; and
- Trains the Applicant, its employees and contractors with regard to their environmental obligations.
- Provides an environmental awareness plan.
- Responds to changes in project implementation not considered in the EIA.
- Responds to unforeseen events.
- Provides feedback for continual improvement in environmental performance.

1.4. AUTHORS OF THE EMPr

Ms. Perushni Nicole Naidoo – Senior Environmental Assessment Practitioner | Bachelor of Science (Honours) in Environmental Management | Reg. EAP (EAPASA)

Nicole Naidoo is a Water Use License Specialist and Senior Environmental Assessment Practitioner (EAP) at Wallace and Green specializing in Water Use Licenses for a variety of development projects. She is professionally registered as a certified EAP with the Environmental Assessment Practitioners Association of South Africa (EAPASA) and registered as a certificated professional with the South African Council for Natural Scientific Professions (SACNASP). Nicole holds a BSc (Hons) Degree, majoring in Environmental Management from the University of South Africa (UNISA). She has ten years' experience in the field of environmental management and has handled assignments in a range of environmental fields for corporate enterprises, private developers, and most spheres of government, as well as a wide variety of work for local landowners.

Ms. Sphelele Mhlongo – Environmental Assessment Practitioner | Bachelor of Science (Hons) in Environmental Management| Cand. EAP (EAPASA)

Sphelele Mhlongo is an Environmental Assessment Practitioner (EAP) at Wallace and Green (Pty) Ltd, who holds a BSc. Honours in Environmental Management, with over four years of experience in environmental management. She is professionally registered as a candidate EAP with the Environmental Assessment Practitioners Association of South Africa (EAPASA). Sphelele has been responsible for compiling, reviewing and commenting on Basic Assessments Reports (BAR), Environmental Management Programmes (EMPr), Scoping and Environmental Impact Reports (EIR) for a variety of road infrastructure, residential dwellings as well as asphalt plants. She has compiled and reviewed Environmental Impact Assessment enquiries and provided responses in line with the EIA Regulations. She has monitored environmental compliance against environmental permits for various projects. She conducts construction monitoring for road constructions, housing, and mixed-use use developments and is also a member of the International Association for Impact Assessment (IAIAsa).

Wallace and Green (Pty) Ltd is an enterprise of independent environmental consultants, providing a wide range of environmental consulting services to both the private and public sectors throughout South Africa. The Company is a certified Level 1 B-BBEE company with 100% black ownership. Not only are we empowered from an ownership point of view, but our current staff complement also reflects our policies of empowerment and skills transfer, with more than 90% of our staff classified as historically disadvantaged.

Wallace and Green's Environmental Management Systems is ISO 14001 certified, and our Quality Management Systems is ISO 9001 certified. These international standard certifications represent all our dedication at W&G to deliver environmental services to our clients of the highest standard and quality.

Wallace and Green recognises that the ability to develop and implement sustainable solutions to complex environmental problems often requires the collaboration of specialists. For each project, we assemble an experienced team of professionals with local knowledge, experience and expertise in disciplines necessary to address the specific challenges of the project at hand.

Wallace and Green recognises the value of academic development and the regulation of professional associations.
Wallace and Green personnel are professionally registered & members of the following associations:

- South African Council for Natural Scientific Professions (SACNASP);
- Environmental Assessment Practitioners Association of South Africa (EAPASA);
- Institute of Waste Management of South Africa (IWMSA);
- Green Building Council of South Africa (GBCSA)
- Project Management Institute of South Africa (PMIsa)
- International Association for Impact Assessment South Africa (IAIAsa)

1.5. RESPONSIBILITY FOR ENVIRONMENTAL MANAGEMENT WITHIN ETHEWKINI MUNICIPALITY

Details of the Applicant below.

Table 1-1: Details of the Project Applicant

Name of Owner	UMngeni uThekela Water		
Contact Person	Ms. Nompumelelo Soji		
Mobile number	035 902 1000	**Email**	nsoji@umhlathuze.co.za

INDEPENDENT ENVIRONMENTAL ASSESSMENT PRACTITIONER

Wallace and Green was appointed by the applicant as the Independent Environmental Assessment Practitioner (EAP) to compile the EMPr. Table 1-2 indicates the details of the EAP:

Table 1-2: Details of Environmental Assessment Practitioner

Name of Consultancy	Wallace and Green (Pty) Ltd.		
Contact Person	Ms. Perushni Nicole Naidoo		
Telephone Number	031 563 4466	**Fax Number**	086 613 8535
Mobile number	082 355 4526	**Email**	nicolen@wallaceandgreen.co.za

The Competent Authority responsible for environmental authorisation and compliance for the proposed development is the Department of Forestry, Fisheries and Environmental Affairs (DFFE).

Table 1-3: DFFE Contact Detail - EIA

Name of Authority	Department of Forestry, Fisheries and Environmental Affairs		
Contact Person	Ms. Makhosi Yeni		
Mobile number	012 399 9285	**Email**	MYeni@dffe.gov.za

Table 1-4: DFFE Contact Details – Compliance Monitoring and Enforcement (CME)

Name of Consultancy	Department of Forestry, Fisheries and Environmental Affairs		
Contact Person	Mr Franz Scheepers		
Mobile number	012 399 9285	**Email**	DirectorCompliance@dffe.gov.za

1.6. STRUCTURE OF THE ENVIRONMENTAL MANAGEMENT PROGRAMME

Section 1 is a brief introduction and background to the project and outlines the scope as well as objectives of the EMPr. Section 2 reviews the legislation, guidelines and documentation relevant to achieving an environmentally sustainable project. Section 3 outlines the methodology of the EMPr. Section 4 explains management and compliance monitoring. Section 5 provides detailed descriptions of organisational structures, roles and responsibilities, monitoring, reporting procedures and non-compliance. Section 6 provides a summary of activities causing impacts. Section 7 presents a comprehensive environmental management programme. Section 8 is the concluding section of this EMPr.

2. APPLICABLE LEGISLATION, GUIDELINES AND DOCUMENTATION

This document describes the role of the EMPr to any existing environmental authorisations, permits, licenses and EMP's in environmental assessments and planning for ecologically sustainable development within the framework of existing legislation and environmental management policies.

South Africa is a constitutional democracy, which means the constitution and Bill of Rights are the supreme law. Our Constitution guarantees certain human rights and is one of the most progressive in the world. In line with a constitutional democracy, everyone has responsibilities.

In terms of The Constitution of the Republic of South Africa (Act No.108 of 1996), everyone has the right:

- to clean water;
- to an environment that is not harmful to their health or well-being and to have the environment protected, for the benefit of present and future generations, through reasonable legislation and other measures that prevent pollution and ecological degradation, promote conservation and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

The overarching legislative framework that governs all environmental activities is the National Environmental Management Act (No 107 of 1998). NEMA aims to provide for co-operative environmental governance by establishing principles for decision-making on matters affecting the environment, institutions that will promote co-operative governance and procedures for co-ordinating environmental functions exercised by organs of state; to provide for certain aspects of the administration and enforcement of other environmental management laws; and to provide for matters connected therewith. NEMA can help deal with problems at a municipal level and enables one to determine whether proper Integrated Environmental Management (IEM) procedures have been followed.

Accompanying NEMA is a set of Specific Environmental Management Acts (SEMA's). Known by the abbreviation of SEMA's, Specific Environmental Management Acts, all fall under the auspices of the overarching National Environmental Management Act (NEMA). To date five SEMA's have been promulgated, with the most recent one being Waste Act in 2008. The full list of SEMA's is:

1. National Environmental Management: Protected Areas Act (57 of 2003), known as the NEM: PAA
2. National Environmental Management: Biodiversity Act (10 of 2004), known as the NEM: BA
3. National Environmental Management: Air Quality Act (39 of 2004), known as the NEM: AQA
4. National Environmental Management: Integrated Coastal Management Act (24 of 2008), known as the NEM: ICM
5. National Environmental Management: Waste Act (59 of 2008), known as the NEM: WA

The Environmental Impact Assessment Regulations were published in Government Notice R982 to R985 (December 2014), and promulgated in terms of Chapter 5 of the National Environmental Management Act.

The purpose of the regulations is to regulate the procedure and criteria relating to the submission, processing and consideration of, and decision on, applications for environmental authorisations for the commencement of activities in order to avoid detrimental impacts on the environment, or where it cannot be avoided, ensure mitigation and management of impacts to acceptable levels, and to optimise positive environmental impacts, and for matters pertaining thereto.

Section 28 of NEMA (Duty of care and remediation of environmental damage) states that every person who causes or has caused significant pollution or degradation to the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment.

This EMPr must be read in conjunction with the amended EA (once issued) for the Mabibi Bulk Water Supply Scheme Work Package 5, and any other relevant documentation by provincial and national government. These could include but not be limited to: a general water use license, waste management license, conditions for establishment and health permits for sanitation from provincial health officials.

2.1. APPLICABLE ENVIRONMENTAL LEGISLATION

The following Environmental legislation was considered, in the evaluation of the activities and development of the EMPr. It must be noted that only some sections of Acts have been listed below, these were deemed pertinent and specific to the scope of this EMPr. These Acts must always be considered and adhered to in their entirety.

The list of applicable legislation and permits provided is intended to serve as a guideline only and is not exhaustive.

Table 2-1: Applicable Environmental Legislation

Legislation	Section	Relates to
The Constitution (No 108 of 1996)	Chapter 2	Bill of Rights.
	Section 24	Environmental rights.
National Environmental Management Act (No 107 of 1998 [as amended])	Section 2	Defines the strategic environmental management goals and objectives of the government. Applies through-out the Republic to the actions of all organs of state that may significantly affect the environment.
	Section 24	Provides for the prohibition, restriction and control of activities which are likely to have a detrimental effect on the environment.
	Section 28	The Applicant has a general duty to care for the environment and to institute such measures as may be needed to demonstrate such care.
	Section 30	Deals with the control of emergency incidents, including the different types of incidents, persons responsible for the incidents and reporting procedures to the relevant authority.
National Environmental Management: Waste Act (No 59 of 2008)		Provides for specific waste management measures and the remediation of contaminated land.
		Regulations for waste management licensee activities
National Environmental Management: Biodiversity Act (No 10 of 2004) **Threatened or protected species (GN 388)**		Provides for the management and conservation of biodiversity, protection of species and ecosystems, and sustainable use of indigenous biological resources – provisions re alien and invasive species?

Lists of species that are threatened or protected (GN 389) **Alien and invasive species regulations (GNR 506)** **Publication of exempted alien species (GNR 509)** **Publication of National list of invasive species (GNR 507)** **Publication of prohibited alien species (GNR 508)**		
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)		The Objectives of this Act are to provide for the conservation of the natural agricultural resources of the Republic by the maintenance of the production potential of land, by combating and preventing of erosion and weakening or destruction of the water sources, and by the protection of the vegetation and the combating of weeds and invader plants. Section 5 details measures for the prohibition of the spreading of weeds.
National Environmental Management: Air Quality Act (No 39 of 2004)	Section 32	Control of dust
	Section 34	Control of noise
	Section 35	Control of offensive odours
National Heritage Resources Act (No 25 of 1999) and regulations	Section 34	No person may alter or demolish any structure or part of a structure that is older than 60 years without a permit issued by the relevant provincial heritage resources authority.
	Section 35	No person may, without a permit issued by the responsible heritage resources authority destroy, damage, excavate, alter, deface, or otherwise disturb any archaeological or paleontological site.
	Section 36	No person may, without a permit issued by the South African Heritage Resource Agency (SAHRA) or a provincial heritage resources authority destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority. "Grave" is widely defined in the Act to include the contents, headstone, or other markers of such a place, and any other structure on or associated with such place.
	Section 38	This section provides for Heritage Impact Assessments (HIAs), which are not already covered under the ECA. Where they are covered under the ECA, the provincial heritage resources authorities must be notified of a proposed project and must be consulted during the HIA process. The Heritage Impact Assessment (HIA) will be approved by the authorising body of the provincial directorate of environmental affairs, which is required to take the provincial heritage resources authorities' comments into account prior to making a decision on the HIA.
Occupational Health and Safety Act (No 85 of 1993)	Section 8	General duties of employers to their employees
	Section 9	General duties of employers and self-employed persons to persons other than their employees
National Water Act (No 36 of 1998) and regulations	Section 19	Prevention and remedying the effects of pollution
	Section 20	Control of emergency incidents

	Section 21	Licenses for water use
Hazardous Substances Act (No 15 of 1973) and regulations		Provides for the definition, classification, use, operation, modification, disposal or dumping of hazardous substances
National Veld & Forest Fire Act		Provides for a variety of institutions, methods, and practices to prevent and combat veld, forest, and mountain fires.
National Road Traffic Act (No 93 of 1996)		Provides for controlling transport of dangerous goods, hazardous substances and general road safety
Spatial Planning and Land Use Management Act (No. 16 of 2013).		Provides the framework for spatial planning and land use management in South Africa at the different spheres of government and for the establishment, functions and operations of Municipal Planning Tribunals.
Occupational Health and Safety Act (No 85 of 1993) and regulations		Addresses occupational health and safety aspects
SANS 10103 (Noise Regulations)		The measurement and rating of environmental noise with respect to annoyance and to speech communication
KwaZulu-Natal Planning and Development Act, (No. 6 of 2008)		Strategic spatial development intentions for the municipality based on the IDP and SDF, influenced by and in alignment with adjacent municipalities.
KZN Nature Conservation Ordinance (Ordinance No. 15 of 1974)		Protected indigenous plants, in general, are controlled under the relevant provincial Ordinances or Acts dealing with nature conservation. In KwaZulu-Natal, the relevant statute is the 1974 Provincial Nature Conservation Ordinance. In terms of this Ordinance, a permit must be obtained from Ezemvelo KZN Wildlife to remove or destroy any plants listed in the Ordinance.
KwaZulu Natal Heritage Act (Act 4 of 2008)		To provide for the conservation, protection, and administration of both the physical and the living or intangible heritage resources of the Province of KwaZulu-Natal; to establish a statutory Council to administer heritage conservation in the province.
Climate Change Act (Act No. 22 of 2024)		To enable the development of an effective climate change response and a long-term, just transition to a low-carbon and climate-resilient economy and society for South Africa in the context of sustainable development; and to provide for matters connected therewith.

The potential environmental impacts associated with the current project are required to be considered in compliance with the EIA Regulations (2014) as amended, as well as all the SEMA's. It must also be noted that the list of Acts and their associated regulations must be frequently updated to ensure that all activities are done according to and comply with the most current legislation.

Table 2-2: Current Environmental Legislation

Regulations and Guidelines
Environmental Impact Assessment Regulations, 2014 (as amended in 2017).
Internal Guideline: Generic Water Use Authorisation Application Process, August 2007 by DWA.
The General Policy on Environmental Conservation (January 1994).
DEA (2017), Guideline on Need and Desirability, Department of Environmental Affairs (DEA), Pretoria, South Africa.
Department of Environmental Affairs (2017), Public Participation guideline in terms of NEMA EIA Regulations, Department of Environmental Affairs, Pretoria, South Africa.
Disaster Management Act (57/2002): Directions Regarding Measures to Address, Prevent and Combat the Spread of COVID-19 Relating to National Environmental Management Permits and Licences

Table 2-3: Current Municipal By-Laws

By-Laws
uMhlabuyalingana Municipality: Disaster Management Bylaw, May 2018
uMhlabuyalingana Municipality: Nuisance Bylaw
uMhlabuyalingana Municipality: Business Licensing Bylaw, 2015

Please note that all bylaws relevant to the construction and operational phases must be adhered to. Any bylaws adopted by the Municipality, which come into effect during the construction stage, must be adhered to.

3. ENVIRONMENTAL MANAGEMENT PROGRAMME

3.1. EMPr METHODOLOGY

The methodology adopted is that of an Environmental Management Programme (EMPr) as described in the Integrated Environmental Management (IEM) Guidelines published by the Department of Environmental Affairs in 1992 as well as the EIA Regulations in 2014, as amended.

The EMPr has been structured to include:

- Specific goals of the Environmental Management Programme;
- Details of management actions;
- Parties responsible for carrying out management recommendations;
- Timing and duration of management actions;
- Personnel training and financial obligations; and
- Guidelines for monitoring and auditing of compliance.

The EMPr specifies the minimum requirements to be implemented as per the scope of works and scope of the EMPr, in order to minimise and manage the potential environmental impacts and ensure sound environmental management practices.

The provisions of this EMPr are binding on the Applicant, during the life of the project. It is essential that the EMPr requirements be studied, understood, implemented, and always adhered to.

To simplify the EMPr requirements, each aspect related to the EMPr has been addressed below. Each action within the EMPr is supported by the priority of when the specific action must be implemented. Each of these aspects is briefly described below for ease of reference.

ENVIRONMENTAL ASPECT

This section highlights the various aspects associated with the project i.e., the Applicant / activities that will interact with the environment.

ENVIRONMENTAL MEASURES AND ACTION PLANS

This section indicates the actions required to either prevent and/or minimise the potential impacts on the environment that is associated with the project.

TIMEFRAMES

This section in the table indicates when the actions for that specific aspect must be implemented and/or monitor.

RESPONSIBILITY

This section indicates the party responsible for implementing the environmental measures and action plans laid out in the EMPr.

4. MANAGEMENT AND COMPLIANCE MONITORING

4.1. ORGANISATIONAL STRUCTURE, ROLES AND RESPONSIBILITIES

Formal responsibilities are defined to ensure that key procedures are executed. Specific responsibilities of the Project Engineer, Contractor, Sub-Contractor, Environmental Site Officer (ESO) and Independent Environmental Control Officer (ECO) are as detailed below.

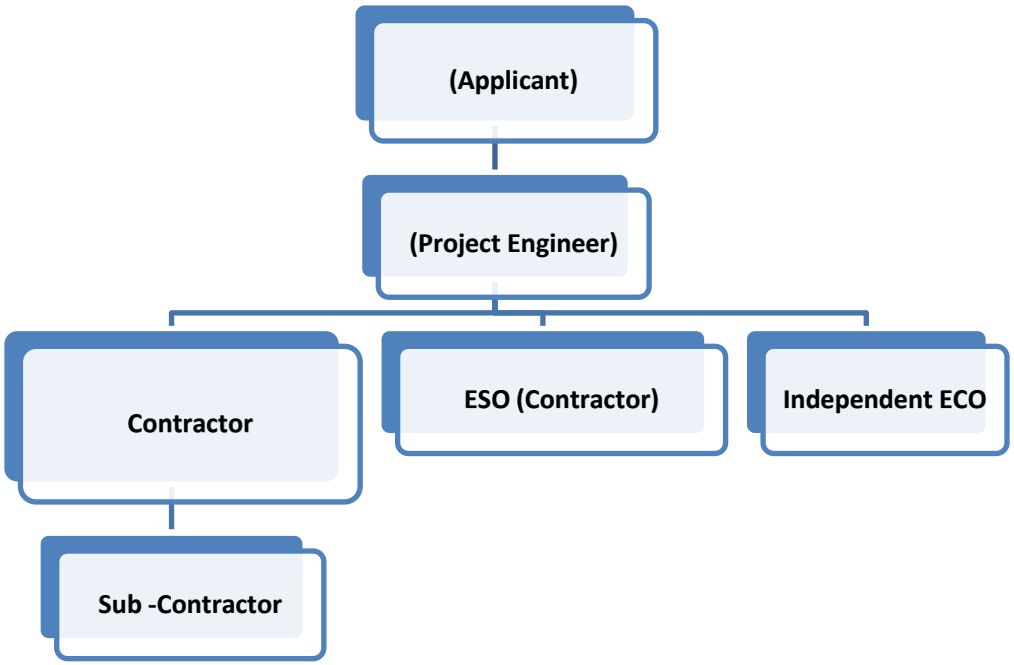

Figure 4-1: Organogram of formal responsibilities and reporting structure for the development implementation

FORMAL RESPONSIBILITIES

Formal responsibilities are defined to ensure that key procedures are executed. Specific responsibilities of the Project Manager, Project Engineer, Contractor/s, Environmental Site Officer are as detailed below.

PROJECT ENGINEER
The Engineer must: • Ensure designs are in accordance wjth the mitigation measures identified in this EMPr • Enforce the environmental specification on site; • Monitor and ensure compliance with the requirements of the specification; • Assess the Contractor's environmental performance in consultation with the Environmental Site Officer from which a brief monthly statement of environmental performance is drawn up for record purposes and to be reported to project meetings; • Liaise with the Contractor/Operator on matters concerning the environment; • Prevent actions that will harm the environment, and take steps to prevent pollution of the site; • Implement remedial measures in the event of pollution incidents or environmental impacts. • Ensure the documentation, in conjunction with the Contractor, the state of the site prior to construction activities commencing. This documentation will be in the form of photographs or video record.
ENVIRONEMTAL SITE OFFICER (CONTRACTOR)
The Environmental Site Officer must: • Be familiar with the recommendations and mitigation measures of this EMPr.

- Ensure safety measures are implemented for site personnel and are enforced throughout the project.
- Ensure that the Contractor, sub-contractors and construction teams are in compliance with the EMPr at all times during the project.
- Monitor all site activities weekly for compliance.
- Recommend corrective action for any environmental non-compliance at the site.
- Conduct weekly training with the Contractor on the EMPr and general environmental awareness. It must be noted that the responsibility of the ESO/ECO is to monitor compliance and give advice on the implementation of the EMPr and not to enforce compliance.

CONTRACTOR

The Contractor must:

- Be fully conversant with the EMPr;
- Be conversant with the requirements of this environmental specification/ EMPr. Brief all his/her staff about the requirements of the environmental specification;
- Comply with requirements of the EMPr in terms of the project specification, as applicable, within the time period specified.
- Ensure any Sub-Contractors/Suppliers who are utilised within the context of the contract comply with the environmental requirements of the project, in terms of the specifications. The Contractor will be held responsible for non-compliance on their behalf.
- Bear the cost of any delays, with no extension of time granted, should he or his Sub-Contractors / Suppliers contravene the said specifications such that the ESO/ECO orders a suspension of work. The suspension will be enforced until such time as the offending party(ies), procedure, or equipment is corrected.
- Bear the costs of any damages/compensation resulting from non-adherence to the said specifications or written site instructions.
- Bear the costs of fines/directives levied against the Applicant by DFFE, the Department of Water and Sanitation, or uMhlabuyalingana Local Municipality for any incidents occurring on site, e.g., major spills.
- Comply with all applicable legislation.
- Ensure that he informs the PA timeously of any foreseeable activities which will require input from the ECO/ESO.
- The Contractor will conduct all activities in a manner that minimizes disturbance to the natural environment as well as directly affected residents and the public in general.

4.2. TRAINING AND ENVIRONMENTAL AWARENESS

It is important to ensure that the Project Engineer and ESO have the required level of environmental awareness and competence to ensure continued environmental due diligence and ongoing minimisation of environmental harm. Training needs must be identified based on the available and existing capacity of site personnel to implement the requirements detailed in this EMPr. It is vital that all personnel are trained to perform their designated tasks to an acceptable standard.

The environmental training is aimed at:

- Promoting environmental awareness;
- Informing the Contractor of all environmental procedures, policies and programmes applicable;
- Providing generic training on the implementation of environmental management specifications; and
- Providing job-specific environmental training in order to understand the key environmental features of the construction site and the surrounding environment.

Training must be done in a verbal format. In addition to training, general environmental awareness must be fostered among the project's workforce to encourage the implementation of environmentally sound practices throughout its duration. This ensures that environmental accidents are minimised, and environmental compliance maximised.

Such training topics must be focused around the incidents that are typically frequently reported including, but not limited to, the following:

- Solid Waste management;
- Hazardous Waste Management;
- Management of alien invasive species;
- Spillages;
- Dust Management;
- Fire incidents;
- Hazardous Equipment and Storage Areas;
- Noise;
- Working within the watercourse;
- Personal Protective Equipment (PPE);

4.3. EMERGENCY PREPAREDNESS AND RESPONSE

It must be ensured that Environmental Incidents, Emergency and Response Procedures are integrated into the development procedures. Provision must be made to ensure that environmental incidents and/or accidents are managed in such a way that impacts are minimised through implementing the required procedures to respond, report, and take corrective action against the incident. The key purposes of environmental emergency response must include:

- Accident and incident reporting including environmental incidents that could cause significant environmental impacts (e.g., spills, fires, accidental discharges, accidental damage, explosions, non-compliance events) to existing facilities and the surrounding environment;
- Accidental toxic emissions into the air;
- Specific environmental effects from accidental releases or incidents;
- Adoption of Emergency Response Procedures; and
- Maintenance of records detailing non-conformity, corrective action and preventative action.

It is the responsibility of the Applicant to induct and train their respective employees and personnel onsite on the emergency procedures that are documented in this EMPr.

Spill Contingency measures

In the event of a spill, the discharge must be stopped at its source with the spilled material contained. Hand tools such as oil spill kits obtained from service providers such as Drizit/SpillTech must be used to contain and collect the material together, immediately containing the spilled material into the containment area.

In the event of a spill, the following actions are recommended to be undertaken in the listed order:

- Locate the source of the spill and to stop the spill where it originated;
- Contain the spilled material;
- Clean-up;
- Safe Disposal;
- Determination of soil, groundwater or other environmental impact; and
- Undertake remedial action if required (in consultation with DFFE/ KZN EDTEA and DWS).

The authorities must be notified (within 48 hours) by the Applicant if the spill cannot be contained or poses a serious and immediate threat to the local environment. A safe disposal certificate must be obtained for any contaminated material taken off-site. Different procedures for minor and major spills must be followed with relevant response procedures including spill containment, removal and disposal of hazardous substances (i.e., transportation) and spill kit replenishment.

5. ENVIRONMENTAL MANAGEMENT COMPLIANCE, MONITORING AND REPORTING

5.1. EMPr COMPLIANCE MONITORING AND AUDITING WITH TIMEFRAMES

Cognisance must be taken in line with Section 28 (Duty of Care) of the National Environmental Management Act, (No. 107 of 1998). In terms of these acts those responsible for environmental damage must pay the repair costs, both to the environment and human health, and implement measures to reduce or prevent further pollution and or environmental damage. Compliance with all other applicable legislation is required.

Environmental monitoring is the continual evaluation of the status of the environment and the condition of environmental elements. Its purpose is to detect activities that could have a negative impact on the environment as well as changes that take place in the environment over time. It involves the checking and correcting of onsite activities during the operational phase and measuring physical, social, and economic variables associated with development impacts. Monitoring will be ensured in terms of the EMPr conditions, uMhlabuyalingana Local Municipality Bylaws and any other binding documents.

In this regard, monitoring measures stipulated in this document for the various phases pertain to, but are not restricted to:

- Noise;
- Waste management;
- Management of flora and fauna
- Traffic control
- Dust control;
- Erosion control;
- Stormwater management;
- Working within the watercourse;
- Alien invasive management;
- Emergency and Safety equipment; and
- Social Consideration

5.2. COMPLAINTS AND ENVIRONMENTAL INCIDENTS

Identifying, recording and reporting complaints and environmental incidents further ensures the monitoring and auditing of environmental compliance and assessment of performance against the actual and perceived environmental aspects and impacts on site.

DOCUMENTATION

The following documentation must be kept on site in order to record compliance with the EMPr:

- Record of Complaints
- Non-conformance Reports
- Written Corrective Action Instructions
- Notification of Emergencies and Incidents.

The following inspection sheet and report templates are recommended and included in **Appendices B-E** respectively.

- Project Start Up Inspection Sheet
- Routine Site Inspection Sheet
- Site Decommissioning Sheet
- Site Inspection Report Structure

COMPLAINT RECORDS

The lodged complaint must be brought to the attention of the ESO who will respond accordingly. The following information will be recorded:

- *Details of the complainant;*
- *Time, date and nature of the complaint;*
- *Response and investigation undertaken; and*
- *Actions taken and by whom*

All environmental incidents occurring on the site will be recorded. The following information will be documented:

- *Time, date, location and nature of the incident*
- *Actions taken and by whom*
- *Response to complainant*
- *Close Out.*

The following additional information can be added to the complaints and incident records:

- *Party/parties responsible for causing complaint/incident*
- *Additional corrective or remedial action taken and/or to be taken to address and to prevent reoccurrence of the complaint/incident*
- *Timeframes and the parties responsible for the implementation of the corrective or remedial actions*
- *Procedures to be undertaken and/or penalties to be applied if corrective or remedial actions are not implemented*
- *Copies of all correspondence received regarding complaints/incidents*.

5.3. LIMITATIONS AND ASSUMPTIONS REGARDING ASSESSMENT AND MITIGATING OF IMPACTS

All significant issues and impacts were identified and addressed in the Amendment process. All relevant issues and impacts have been addressed in this EMPr.

Environmental issues, concerns and development constraints were identified using professional judgement, project information, experience of similar projects, a review of available literature, site visits and consultation with the authorities.

The significance of environmental issues were evaluated, thereafter mitigation and management measures were identified as part of the EMPr development. The effectiveness of the EMPr is limited by the level of adherence to the conditions set forth in this report by the Applicant and the various contractors and agents acting on behalf of the Applicant.

It is further assumed that compliance with the EMPr will be monitored and audited on a regular basis as set out in the Environmental Authorisation. It must also be noted that this EMPr is a dynamic document that must be continually updated, as and when required. Also, all other documents from the Applicant must be referred to in addition to this EMPr.

6. SUMMARY OF ACTIVITIES AND ASPECTS CAUSING IMPACTS

The construction of the Mabibi Bulk Water Supply Scheme Work Package 5 can potentially result in negative impacts on the receiving environment. These potentially significant negative impacts have been identified and summarised by the Environmental Assessment Practitioner (EAP).

- Stormwater contamination
- Safety and security

- Waste management
- Noise, dust and odours
- Indigenous vegetation clearance
- Disturbance to the flora and faunal species.
- General waste
- Infilling of the watercourse
- Hazardous waste
- Fire incidents
- Traffic and Safety

The aspects mentioned above can potentially cause negative impacts that could occur during the planning, construction, operational or post-construction phases of the proposed project:

In order to prevent and/or minimise these impacts, conditions of the EMPr must be adhered to regarding the disposal of waste, spillage, storage, noise, dust control, sediment management, the demarcation of sensitive areas and management of the different phases of construction and operation. With management of these mitigation measures, the associated risks, and significant negative impacts of the proposed project can be minimised and/or entirely negated. These will all be dealt with in this EMPr.

7. DETAILED ENVIRONMENTAL MANAGEMENT PROGRAMME

This Section provides environmental specifications that must be adhered to during the planning, construction and post construction/rehabilitation phases of the proposed development. It is essential that all listed specifications are considered and incorporated into the planning, design and/or contract documentation, and adhered to during the respective phases of the project.

The listed environmental specifications must be regarded as the minimum range of environmental constraints, controls, procedures and/or standards. They must not be regarded as exhaustive and therefore improvements and/or amendments must be made where reasonable and required.

Such requirements could be identified by stakeholders and/or other interested and affected parties, upon which the EMPr and the relevant environmental specifications require revision. Environmental specifications have been listed in tables in the sub-sections as per the following phases:

- Planning, Design, Pre-Construction
- Construction Phase
- Post-Construction Phase

For each timeframe and specification, the responsible monitoring party/parties and frequency, where relevant, is indicated.

PLANNING AND DESIGN & PRE-CONSTRUCTION ACTIVITIES

7.1. PLANNING AND DESIGN PHASE & PRE-CONSTRUCTION ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
7.1.1. Administrative and Legal Requirements			
Impact Management Outcome: • ***To guarantee administrative and legal requirements such as licenses and approvals are in place prior to the implementation of Mabibi Bulk Water Supply Scheme Work Package 5.*** • ***Determine the roles and responsibilities of staff, contractors etc.*** • ***All site staff must be aware of the EMPr and its conditions.***			
Planning Requirements	1. All building plan approvals, authorisations, permits and licences and any associated amendments must be obtained by the applicant prior to the commencement of construction related activities.	Contractor	Prior to construction
	2. The applicant must adhere to the Environmental Authorisation (once received), Water Use License and any other approvals for the development	Applicant	Ongoing
	3. Prior to the commencement of construction, proper signage must be erected along roads warning both pedestrians and motorists of earthworks.	Contractor	Prior to construction
	4. The construction site camp must be located as the following GPS coordinates: 27°19'39.14''S, 32°43'36.95'E. Should a new area be proposed, this must be assessed by the ECO to ensure that the location will not pose any negative environmental impacts.	Applicant/ Contractor	Prior to construction and ongoing
	5. An internal Environmental officer must be appointed to ensure overall environmental management of the site and provide guidance to the project team with regards to non-compliances.	Applicant/ Contractor	Prior to construction and ongoing
	6. The contractor must adhere to the public participation guideline in terms of the National Environmental Management Act, 1998 Environmental Impact Assessment Regulations, 2014 as amended in 2017 and inform all surrounding landowners of the proposed development.	Contractor	Prior to construction and ongoing
	7. Temporary loading and off-loading areas and holding of construction vehicles must be designed prior to construction activities.	Contractor	During Planning and Design

PLANNING AND DESIGN & PRE-CONSTRUCTION ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
Appointment of the ECO	1. The applicant must appoint a person with a qualification in Environmental Management or Science as the ECO. The ECO must be the responsible person for monitoring and reporting on compliance in respect of the implementation of the EMPr and the EA.	Applicant	Ongoing during construction
	2. Details of the ECO must be communicated to the DFFE Control Environmental Officer: CME Component within 14 calendar days.	ECO	Prior to construction
	3. A written notice must be given to the DFFE at least seven (7) days prior to the commencement of construction. Commencement for this purpose includes site preparation. The notice must include a date on which it is anticipated that the activity will commence and the reference number for the EA.	ECO	Prior to construction
	4. The ECO must conduct audits as per the frequency specified in the EA for the duration of the construction phase.	ECO	Ongoing during construction
	5. The ECO must report environmental incidents in accordance with the requirements of the EMPr and environmental legislation to the applicant. The Section 30A incident report must be compiled and submitted to the Department within 24 hours of the incident.	ECO	On-going during construction
7.1.2. Appointment of Contractor			
Appointment of Contractor	1. This EMPr and EA must form part of any contractual agreements with the Contractor(s) and sub-contractor(s) for the execution of the proposed project. The Contractor must make provision in their budgets for the implementation of the EMPr and EA.	Applicant / Contractor	Prior to construction
7.1.3 Protection of Fauna and Flora			

PLANNING AND DESIGN & PRE-CONSTRUCTION ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
Protection of Fauna and Flora	1. Should vegetation clearance start in the egg laying periods of M. ameliae and C. natalensis, no more than 2 weeks prior to the start of vegetation clearance, a walk-through survey must be conducted by a suitably qualified Zoologist/Ecologist, and especially in the hygrophilous grassland next to Lake Sibaya, must be undertaken to ensure that no nesting sites of the ground nesting birds M. ameliae and C. natalensis are present (Terrestrial Assessment. July 2024).	Applicant / Contractor	Prior to construction
	2. Should active nesting sites of the species listed above identifies, vegetation clearance must be postponed until after the fledgling stage of a species (i.e., nestling period). (Terrestrial Assessment. July 2024).	Applicant / Contractor	Prior to construction
	3. Prior and during vegetation clearance any larger fauna species noted should be given the opportunity to move away from construction machinery.	Applicant / Contractor	Prior to construction
	4.	Applicant / Contractor	Prior to construction
7.1.3. Preparation of Method Statements			
Preparation of Method Statements	1. Method Statements applicable to the development must be submitted by the Contractor to the ECO and must be adhered to by the Contractor and the Project Engineer.	Contractor / Project Engineer	Prior to construction

PLANNING AND DESIGN & PRE-CONSTRUCTION ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	The following Method statements must be submitted to the ECO for comment. These method statements are applicable to the site sensitivity and the development activity: • Vegetation removal methods; • Construction plan for the development; • Solid waste management and removal from site; • Storage of hazardous materials; • Working within the wayercourses; • Noise management; • Dust control; • Stormwater management plan; • Contaminated water management plan, including the containment of runoff and polluted water; • Incidence Response Method Statements (including details of methods for fuel spills and clean-up operations); • Safety and security; • Emergency procedure for the encounter of dangerous animals / reptiles; and • On site refuelling of construction vehicles.	Contractor	Prior to construction

CONSTRUCTION PHASE ACTIVITIES

7.2. CONSTRUCTION PHASE

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
7.2.1. Site Establishment			
Impact Management Outcome: Minimise impact on the environment when establishing site camp. The development foot print of the site camp must be minimal and kept to demarcated areas.			
Construction Camp Site	1. Prior to the establishment of the site camp / office, the Contractor must produce a site layout plan showing the positions of all equipment storage, waste stockpiling, fuel storage areas, and other infrastructure for approval of the ECO.	Contractor	Prior to construction
	2. This EMPr must be retained onsite in hard copy format for reference purposes with the Complaints and Non-Conformance and Incident Registers	ESO	During construction
	3. The construction site camp must be located as the following GPS coordinates: 27°19'39.14''S, 32°43'36.95'E. Should a new area be proposed, this must be assessed by the ECO to ensure that the location will not pose any negative environmental impacts.	Contractor	Prior to construction
	4. Signage must be placed in the area where construction will take place informing the public of the activities taking place.	Contractor / ESO / Project Engineer	During construction
	5. The site camp must be secured and manned on a 24-hour basis.	Contractor	During construction
	6. The construction site camp must remain fenced for the entire construction period.	Contractor	During construction
	7. The Contractor must take responsibility for the site to conform to all contractual aspects and environmental standards applicable.	Contractor	During construction

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	8. The Contractor must provide refuse bins that must be cleaned / emptied and the waste removed from site on a regular basis.	Contractor	During construction
	9. The construction camp must be kept in an orderly state at all times.	Contractor	During construction
	10. The Contractor must monitor and manage drainage of the campsite to avoid standing water and soil erosion.	Contractor / ECO	During construction
7.2.2. Ablution / Sanitation			
Ablution / Sanitation	1. As per the Occupational Health & Safety Act (Act 85 of 1993), a minimum of one chemical toilet must be provided per 15 persons. The construction of "long drop" toilets is prohibited. Under no circumstances can open areas or the surrounding bush be used as toilet facilities.	Contractor	During construction
	2. Do not locate any site toilet or sanitary convenience, or any substance which is likely to cause pollution within a horizontal distance of 100 m from Lake Sibaya.	Contractor / HSE	During construction
	3. Chemical toilets must be secure, clean and functional throughout the construction period.	Contractor / HSE	During construction
	4. All ablution activities must take place in these facilities, and must be serviced weekly by a registered service provider.	Contractor / HSE	During construction
	5. All temporary / portable toilets must be secured to the ground to prevent them from toppling due to wind or any other cause.	Contractor / HSE	During construction
	6. Unauthorised dumping / spilling of waste from toilets into the environment and burying of waste are strictly prohibited.	Contractor / HSE	During construction
	7. Ablution facilities must not cause any pollution to any water resource and it must not be a health hazard to the general public.	Contractor / HSE	During construction

CONSTRUCTION PHASE ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
7.2.3. Access to Construction Site			
Maintenance of the site access road	1. The construction site must have strict access control to reduce the risks associated with vehicular transportation and pedestrian access on the site.	Contractor	During construction
7.2.4. Environmental Training and Awareness			
Environmental Training and Awareness	1. The contractor team including all sub-contractors must be educated by the ECO, and the Contractor's ESO as to the provisions included in the EMPr and the EA (once issued).	Contractor / ESO / ECO	During construction
	2. All staff of Sub-contractors / Suppliers / Service Providers must be trained on the environmental, occupational safety and/or legal responsibilities expected from them. The training must take into account language and literacy requirements as well as measures to determine the effectiveness of the training. Proof of training must be attached to the ECO's audit reports.	Contractor / ESO	During construction

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	3. Consideration of the implications of the original and amended EA (once issued) and the EMPr and must form part of the formal site induction for all contractors, sub-contractors and casual labourers, preferably in their native language. The induction training will, as a minimum, include the following: • The importance of conformance with all environmental policies; • The environmental impacts, actual or potential, of their work activities; • The environmental benefits of improved personal performance; • Their roles and responsibilities in achieving conformance with the environmental policy and procedures and with the requirement of the Consultant's environmental management systems, including emergency preparedness and response requirements; and • The mitigation measures required to be implemented when carrying out their work activities.	ESO	During construction
	4. The Contractor is required to have weekly "tool box" talks. These talks must be in accordance with the risks and trends associated with the project. Proof of these talks must be kept on site within the Site Environmental File.	Contractor/ ESO	During construction
7.2.5. Fire Management			
Impact Management Outcome: Prevention of uncontrollable fires.			
Fire prevention and control	1. No open fires or uncontrolled fires will be permitted on site.	Contractor	During construction
	2. Firefighting measures such as fire extinguishers must be located on site.	Contractor	During construction

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	3. The workforce must be made aware of fire prevention and firefighting measures.	Project Engineer / Contractor	During construction
7.2.6. Vehicle Maintenance Yard			
Vehicle Maintenance Yard	1. Heavy machinery and construction vehicles must be stored in a vehicle maintenance yard which must be illustrated on the site camp layout.	Contractor	During construction
	2. Regularly check vehicles, machinery and equipment operating on site to ensure that none have leaks or cause spills of oil, diesel, grease, or hydraulic fluid.	Contractor	During construction
	3. A dedicated maintenance area must be demarcated with an impermeable surface leading to an oil-water separator. No vehicle must be extensively repaired in any place other than in the dedicated maintenance yard – if such repairs are required the vehicle must be made safe (i.e. no leakage while being removed to the repair facility) and removed at the earliest opportunity to the repair facility. Prior to returning on site the Engineer must declare the vehicle safe to return to site.	Project Engineer / Contractor	During construction
	4. Washing of vehicles on site or at the construction camp is prohibited. The only exception is if a designated bund facility with a separator is constructed at the construction camp or vehicle maintenance yard. Such a facility must consider water recycling or water reuse options. The positioning of such a facility shall be approved prior to construction by the ECO in consultation with the Engineer.	Project Engineer / Contractor	During construction
7.2.7. *No-Go' Areas*			
Impact Management Outcome: Prevent access to No – Go areas minimising impacts to private properties not associated with the project/outside the project boundary.			

CONSTRUCTION PHASE ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
7.2.7. No-Go' Areas	1. As per the Terrestrial Biodiversity Assessment compiled by A. Rautenbach, dated July 2024, the undeveloped areas beyond the boundaries of the development footprint must be regarded as Highly Sensitive and treated as no-go areas. The no-go areas must be expressly off limits to construction personnel and construction vehicles. This must be clearly communicated to them and monitored daily.	Project Engineer / Contractor	During construction
	2. No vegetation clearance, construction camps, access roads, firewood collecting, hunting, disturbance of fauna/flora must be allowed in the no-go areas.	ECO / Contractor	During construction
	3. In areas where vegetation clearance will be required, vegetation clearance must be confined to the development footprint, and the boundaries of the areas to be cleared must be clearly demarcated.	ECO / Contractor	During construction
	4. Note that additional 'no-go' areas must be identified by the ECO as needed, and will be confirmed with the Engineer. Once approved, the additional 'no-go' areas will be considered to be an extension of the already approved controls.	ECO / Project Engineer / Contractor	During construction
7.2.8. Health and Safety			
Health and Safety	1. The Contractor must adhere to the prescriptions of the relevant health and safety legislation and standards. The Contractor must familiarise himself and his employees with the contents of the aforementioned legislation.	Contractor	During construction
	2. First Aid requirements as required must be on hand at all times, with at least one trained medical officer on site at any time when work is being carried out.	Contractor	During construction

CONSTRUCTION PHASE ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	3. The Contractor must implement mandatory safety precautions relating to all aspects of the construction. Such safety measures and work procedures / instructions must be communicated to construction workers.	Contractor / ESO	During construction
	4. The wearing of Personal Protective Equipment (PPE) on site is mandatory for all personnel and construction team members. Minimum requirements must include the wearing of an approved safety helmet, safety boots, and safety reflective jackets. Additional items such as safety eyewear, dust masks, ear plugs, etc. must be worn as required with the need to use such being clearly indicated in the relevant areas.	Contractor / HSE	During construction
	5. PPE signs must be erected on site at the areas where it specific items of PPE are required (e.g. high noise level areas and thus ear plugs). The integrity and availability of the signs must be maintained at all times.	Contractor	During construction
	6. No one must be allowed on site unless they are wearing the minimum approved safety equipment.	Contractor	During construction
	7. Make use of existing roads and tracks were feasible, rather than creating new routes.	Contractor	During construction
	8. Casual visitors will be required to sign a register at the security checkpoint and undergo a site induction by the HSE Officer. The responsible person for the visitor must then be contacted and must collect the visitor from the site entrance area / site office. No unauthorised visitors or unaccompanied visitors are to be allowed on site.	Contractor	During construction
	9. All personnel must be trained in basic site safety procedures.	Contractor / HSE	During construction
	10. Workers' right to refuse work in unsafe conditions must be respected.	Contractor	During construction

CONSTRUCTION PHASE ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	11. Construction activities occurring adjacent to existing roads must be screened to protect workers from traffic and vice versa as well as to limit any disturbance onto the roads from the adjacent construction activities.	Contractor / HSE	During construction
7.2.9. General and Hazardous Substances and Materials			
Impact Management Outcome: Proper storage and handling of equipment and materials.			
General and Hazardous Substances and Materials	1. Storage areas must be designated, demarcated and fenced.	Contractor	During construction
	2. Storage areas must be secure, under lock and key, so as to minimise the risk of crime.	Contractor	During construction
	3. Fire prevention facilities must be present at all storage facilities.	Contractor / ESO	During construction
	4. Proper storage facilities for the hazardous substances to be used, must be provided to prevent the migration of spillage into the ground and/or groundwater around the storage area(s). These pollution prevention measures for storage must include a bund wall high enough to contain at least 110% of any stored volume.	Contractor / ESO	During construction
	5. A daily procedure of inspection and emptying of drip trays must be conducted. Drip trays must be monitored closely during rainy weather and measures must be implemented to prevent overflowing and/or spillage.	Contractor / ESO	During construction
	6. The bunded area for storage of hazardous substances must have a smooth impermeable surface and the floor of the bunded area must slope towards oil traps. Any water that collects in the bund must not be allowed to stand and must be removed immediately.	Contractor / ESO	During construction

CONSTRUCTION PHASE ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	7. Symbolic safety signs depicting “No Smoking”, “No Naked Flames” and “Danger” are to be prominently displayed in and around the fuel storage area.	Contractor / ESO	During construction
	8. All waste fuel and chemical contaminated rags must be stored in leak-proof containers and disposed of at an approved hazardous waste site.	Contractor / ESO	During construction
	9. Material Safety Data Sheets (MSDSs) must be readily available on site for all chemicals and hazardous substances to be used on site. The available MSDSs must include information on ecological impacts and measures to minimise negative environmental impacts during accidental releases or spillages.	Contractor / ESO	During construction
	10. Staff dealing with these materials / substances must be aware of their potential impacts.	Contractor / ESO	During construction
	11. A Waste Disposal Contractor must be employed to remove oil waste. Oil waste must only be disposed of at licensed landfill sites designed to handle hazardous waste. Weigh bills must be provided for all hazardous waste being disposed of.	Contractor	During construction
	12. Cement / concrete must not be mixed directly on the ground. Cement mixing must be done on hardened surfaces, ‘dagga’ boards, or mixing trays and impermeable sumps must be used at all mixing and supply points.	Contractor / ESO	During construction
	13. The washing of concrete trucks on site is prohibited.	Contractor / ESO	During construction
	14. Unused cement bags must be stored so as not to be affected by rain or run-off events.	Contractor / ESO	During construction

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	15. Used cement bags must be stored in weather-proof containers to prevent windblown cement dust and water contamination. The bags must be secured so that they do not become windborne litter. Used cement bags must be disposed of on a regular basis via the solid waste management system, and must not be used for any other purpose.	Contractor	During construction
	16. All visible remains of excess concrete must be physically removed on completion of the plaster or concrete pour section and disposed of. Washing the remains into the ground is not acceptable (i.e. dilution), as groundwater contamination could occur.	Contractor	During construction
7.2.10. Spills, Incidents and Pollution Control			
Spills, Incidents and Pollution Control	1. In the event of a significant spillage that cannot be contained and which poses a serious threat to the environment, the following Departments must be informed within forty-eight (48) hours of the incident and in accordance with Section 30 of the NEMA: • The uMhlabuyalingana Local Municipality • Department of Water and Sanitation; • KZN EDTEA Pollution and Waste Management; • DFFE; • The Local Fire Department; and • Any other affected Department.	Applicant/ ECO	During construction
	2. Any spillage must be investigated and immediate action must be taken according to the requirements of the Spill Contingency Plan. This must also be reported to the ECO.	Contractor	During construction
	3. All personnel/workers must be trained to deal with spills/leaks or emergency situations on site.	Contractor	During construction

CONSTRUCTION PHASE ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	4. In the event of a spill, the material, together with any contaminated soil, must be collected in skips or drums (dependent on quantity) and disposed of at licensed landfill sites designed to handle hazardous waste. The incident report must be submitted to DFFE: Control Environmental Officer: Compliance Monitoring and Enforcement within fourteen (14) days of its issue.	Contractor	During construction
	5. The Contractor must exercise precautions with the storage, handling and transport of all materials that could adversely affect the environment. If pollution of any surface or groundwater occurs, it must immediately be reported to the ECO (and DFFE) and mitigation measures must be employed.	Contractor	During construction
	6. In the event of a pollution incident occur on site the ESO must: • Implement reasonable measures immediately to contain and minimise the impacts of the incident; • Notify all persons whose health will be affected by the incident; • Notify KZN EDTEA, DFFE and uMkhabuyalingana Local Municipality. • Undertake clean up procedures immediately; • Notify the Contractor of the incident immediately who will advise the employees as to the measures that must be implemented; • Record the incident in the Environmental Incident Register; and • Implement measures to prevent similar incidents from occurring in the future.	ESO / Contractor	During construction

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	7. Concrete mixing must be confined to as few areas as possible. Areas where concrete was mixed must be cleaned up after use. Concrete mixing is to be undertaken on an impervious surface.	Contractor	During construction
7.2.11. Clearing and Protection of Fauna and Flora			
Impact Management Outcome: Minimise disturbance and negative impacts to fauna and flora.			
Clearing and Protection of Fauna and Flora	*1.* Clearing of vegetation must be undertaken as the work front progresses. Mass clearing is not to be permitted.	Contractor/ ECO	During construction
	2. Vegetation clearance must be confined to the development footprint, and the boundaries of the areas to be cleared must be clearly demarcated.	Contractor	During construction
	3. Natural vegetation on surrounding land must not be collected for use as firewood.	Contractor	During construction
	4. Animals must not be disturbed unnecessarily and no animals are allowed to be shot, trapped or caught for any reason.	Contractor	During construction
	5. The introduction of alien plant species to the site and surrounding areas is strictly prohibited.	Contractor	During Construction
	6. Should vegetation clearance start in the egg laying periods of M. ameliae and C. natalensis, no more than 2 week prior to the start of vegetation clearance, a walk-through survey conducted by a suitably qualified Zoologist/Ecologist in the PAOI, and especially in the hygrophilous grassland next to Lake Sibaya, must be undertaken to ensure that no nesting sites of the ground nesting birds M. ameliae and C. natalensis are present (Terrestrial assessment, July 2024).	Contractor	Ongoing

CONSTRUCTION PHASE ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	7. Should active nesting sites of the species listed above are located, vegetation clearance must be postponed until after the fledgling stage of a species (Terrestrial assessment, July 2024).	Contractor	Ongoing
	8. F. laxa subsp. azurea's estimated area of occupancy (AOO) is 176 km2 and is known from only 10 remaining locations. No further habitat loss of the species should therefore be permitted (Terrestrial assessment, July 2024).	Contractor	Ongoing
	9. No wild animal may under any circumstance be hunted, snared, captured, injured, or killed. This includes animals perceived to be vermin such as rodents as these animals serve as prey species for several avian, mammalian and reptilian species.	Contractor	Ongoing
Alien vegetation	1. Aliens identified must be removed from site.	Contractor	Ongoing
	2. No alien species must be cultivated onsite. If re-vegetation is required, only indigenous, waterwise and locally occurring species must be used.	Contractor	Ongoing
	3. The alien plant removal and control method guidelines must adhere to best practice for the species involved.	Contractor	Ongoing
	4. Pesticides may not be used. Herbicides may be used to control listed alien weeds and invaders only.	Contractor	Ongoing
7.2.12. Geological Stability and Earth-works			
Impact Management Outcome: Earthworks are undertaken in a manner which has minimal impact on the environment.			

CONSTRUCTION PHASE ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
Geological Stability and Earth-works	1. As per the Geotechnical Investigation conducted by Geosure (Pty) Ltd, dated April 2024, earthworks and drainage measures be designed in such a way as to prevent ponding of, or high concentration of, stormwater or groundwater anywhere on site, both during and after the development.	Contractor / Project Engineer	During construction
	2. The implementation of the geotechnical recommendations must be certified and agreed upon by the design engineers in consultation with the geotechnical professionals.	Contractor / Project Engineer	During construction
	3. Temporary stabilisation measures, for areas of sidewall excavation, particularly where there is presence of shallow groundwater conditions must be approved and to the specifications of the engineer.	Contractor / Project Engineer	During construction
	4. is recommended that all earthworks be carried out in accordance with the SANS 1200 D (current version). All earthworks must be carried out in a manner to promote stable development of the site.	Contractor / Project Engineer	During construction
	5. Lateral support such as sheet piling to the engineer's detail must be implemented where unstable trench sidewalls exacerbated by the observed shallow groundwater conditions, are identified. The potential for sheet piling is the greatest in the general area of Lake Sibayi.	Contractor / Project Engineer	During construction
	6. The contractor must carry out regular documented inspections of the trenches in the company of the geotechnical professional, in order to detect unstable sidewall conditions during the construction phase.	Contractor / Project Engineer	During construction

CONSTRUCTION PHASE ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	7. An appointed Geotechnical must carry out periodic inspections during construction. Any change from the anticipated ground conditions could then be considered to avoid unnecessary expenses.	Contractor / Project Engineer	During construction
	8. Any open trenches during the development of the site infrastructure must have an appropriately sloping section of the sidewall to ensure that any trapped animals can escape (The Terrestrial Assessment, July 2024).	Contractor / Project Engineer	During construction
	9. Open trenches must be inspected daily and any trapped individuals that was unable to escape must be removed and released in a safe place and in a suitable habitat outside the PAOI (The Terrestrial Assessment, July 2024).	Contractor / Project Engineer	During construction
	10. On-site inspections and evaluations must be conducted by an experienced engineering geologist/geotechnical engineer so that stability problems can be timeously identified and remedied.	Contractor	During construction
	11. All site disturbances must be limited to the areas where structures will be constructed.	Contractor	During construction
	12. Prior to the placement of any fill, the in-situ subsoil material containing vegetation must be removed.	Contractor	During construction
7.2.13. Soil Management			
Topsoil	1. Topsoil should be stockpiled separately from overburden (subsoil).	Contractor	During construction
	2. The topsoil obtained from site clearing must be stored in stockpiles no higher than 3m and used during rehabilitation.	Contractor	During construction
	3. Store stripped topsoil in approved, demarcated areas for later reuse in the rehabilitation process.	Contractor	During construction

CONSTRUCTION PHASE ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	4. Strip topsoil from all areas to be impacted upon by construction and any significant vehicular movement.	Contractor	During construction
	5. Stockpile topsoil stripped from different areas separately, as reapplication during rehabilitation must be site specific. If necessary, keep a stockpile register.	Contractor	During construction
	6. Stripping of topsoil must only occur in the right weather conditions (not in adverse weather conditions).	Contractor	During construction
	7. The stripping of topsoil must be supervised by a competent person who has read and acknowledged that he understands the requirements detailed within the EMPr and any other relevant documents.	Contractor	During construction
	8. Topsoil is to be handled twice only – once to strip and stockpile, and once to replace and level.	Contractor	During construction
	9. The Contractor must strip and stockpile all topsoil within the work area for subsequent use at a later stage.	Contractor	During construction
Subsoil	1. The stripping of subsoil must be supervised by a competent person who has read and acknowledged that he understands the requirements detailed within the EMPr and any other relevant documents.	Contractor	During construction
	2. The Contractor must strip and stockpile all subsoil within the work area for subsequent use at a later stage unless it is not able to be utilised onsite and is required to be removed from the site. In such instances such material is to be taken to an approved dumping site and proof of disposal must be provided and retained by the Contractor.	Contractor	During construction
	3. Different layers of subsoil must be stockpiled separately.	Contractor	During construction
Erosion and Sediment control	1. Site-specific plans for site erosion and sediment control must be developed and implemented.	Contractor	During construction

CONSTRUCTION PHASE ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	2. Program construction activities so that the area of exposed soil is minimised during times of the year when the potential for erosion is high, for example during the rainy season.	Contractor	During construction
	3. Sediment barriers or sediment traps such as silt fences, sandbags, and hay bales for example must be established to curb erosion and sedimentation where necessary.	Contractor	During construction
	4. Stockpiling of any materials on slopes is to be avoided unless appropriate erosion control and management measures are implemented.	Contractor	During construction
	5. Protect all areas from erosion and ensure that there is no undue soil erosion resultant from activities adjacent to the work areas.	Contractor	During construction
	6. Do not permit vehicular or pedestrian access into undeveloped areas (no-go areas) beyond the demarcated boundary of the work areas.	Contractor	During construction
	7. Make use of existing roads and tracks where feasible, rather than creating new routes. Ensure that only authorised roads and access routes are used.	Contractor	During construction
	8. Maintain all access routes to minimise erosion and undue surface damage. Repair rutting and potholing immediately and maintain stormwater control mechanisms.	Contractor	During construction
Air Quality			
Impact Management Outcome: Minimise the release of pollution and odours into the atmosphere.			
Pollution Management and Odour Control	1. Any oil containing equipment or containers must be managed to prevent oil exposure into the atmosphere – the aim being to limit evaporation of volatiles into atmosphere.	Contractor	During construction

CONSTRUCTION PHASE ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	2. Odours from chemical toilets and waste must be managed. Toilets must be serviced weekly to prevent spillages from overfilling, and to minimise odour generation. At minimum, chemical toilets must be cleared and cleaned weekly.	Contractor	During construction
	3. Removal and disposal of litter and debris must be undertaken during periods of high ventilation.	Contractor	During construction
	4. No fires (for cooking or heating) are allowed on site. Cooking and heating alternatives for staff must be organised.	Contractor / ESO	During construction
	5. Vehicles must be maintained to mitigate excessive emissions and smoke. Similarly, equipment must be serviced on a regular basis to prevent leakages of hazardous substances.	Contractor	During construction
Dust Control	1. Dust from disturbed areas to paved road surfaces must be managed by making use of one of the following measures to: • Road sweeping. • The use of chemical dust suppression or a biodegradable soil stabilising agent on disturbed areas. • Irrigation to the roads using a light spray of water with / without a dust suppressant. • The quantities of dust suppressant / water used must not result in run-off, erosion and/or muddied areas. • Any usage of water must be efficient and minimal.	Contractor	During construction
	2. Vehicles transporting sand or finer grained materials must be covered to prevent dangers/nuisance to other road users.	Contractor	During construction
	1. Dust liberated to atmosphere must not reduce the visibility for private vehicles making use of the road passing by the site.	Contractor	During construction
	2. Speed limits of a maximum of 40 km/hr are to be implemented on site and enforced by the Contractor.	Contractor	During construction
	3. Shade cloth fencing is to be used to reduce dust aggravation.	Contractor / ESO	During construction
	4. Construction activities must be contained to reasonable hours during the day avoiding periods of sunrise and sunset.	Contractor	During construction

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	5. Surplus fill material sites and stockpiles must be positioned such that they are not vulnerable to wind erosion.	Contractor	During construction
	6. A dust suppression register as well as a complaints register must be kept in the environmental file.	Contractor / ESO	During construction
	7. All complaints received must be investigated with remedial action taken communicated to the affected party within 14 days.	Contractor / ESO	During construction
Climate Change	1. Restoration of the ecological make-up disturbed during the implementation of the scheme in the area back to its initial condition (Climate Change Assessment, September 2025).	Contractor / ESO	During construction
	2. Retention of the landscape plantations and soils removed to make way for the pipeline of the project (Climate Change Assessment, September 2025).	Contractor / ESO	During construction
7.2.15 Waste Management			
Impact Management Outcome: The proper management of waste and to reduce its impacts on the environment.			
General Waste	1. General waste receptacles, including bins must be arranged around the construction site to collect all domestic refuse and prevent littering.	Contractor	During construction
	2. Bins must be clearly marked and lined for efficient control and safe disposal of waste.	Contractor / ESO	During construction
	3. Different waste bins, for different waste streams must be provided for waste separation.	Contractor / ESO	During construction
	4. A fenced area must be allocated for waste sorting and storage on the site prior to disposal. All waste material generated on site, prior to being collected for safe disposal, must be stored undercover and within a designated and fenced waste storage area which must be bunded and hard surfaced. Access control to this area must be properly managed.	Contractor / ESO	During construction

CONSTRUCTION PHASE ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	5. General waste produced on site is to be collected in skips for disposal at a registered landfill site. Hazardous waste is not to be mixed or combined with general waste earmarked for disposal at the municipal landfill site.	Contractor / ESO	During construction
	6. Under no circumstances is waste to be burnt or buried on site. The excavation and use of rubbish pits on site is prohibited.	Contractor / ESO	During construction
	7. Waste bins must be cleaned out on a regular basis to prevent any windblown waste and/or visual disturbance.	Contractor / ESO	During construction
	8. All general waste must be removed from the construction areas on a daily basis and disposed of in a designated waste receptacles at the construction camp.	Contractor / ESO	During construction
	9. All general waste must be disposed of at a licensed waste disposal facility. Through exploring practical means for reducing, reusing and recycling waste generated in undertaking the activity, the Contractor must dispose of the minimum amount of waste possible.	Contractor	During construction
	10. Any form of waste material and rubble generated during construction must be removed from the site and disposed of at a facility registered in terms of section 20(b) of the NEM: WA (Act No. 59 of 2008), if it cannot be responsibly reused or recycled on site. No waste material must be buried (for the sole purpose of final disposal) or burnt. The Contractor responsible for the removal of the rubble and waste must supply the ECO with a certificate indicating safe disposal.	Contractor / ESO	During construction
Hazardous and Industrial Waste	1. Hazardous waste is to be disposed of at a Permitted Hazardous Waste Landfill Site. The Contractor must identify an approved waste disposal site at the inception of the project.	Contractor / ESO	During construction
	2. Hazardous waste bins must be clearly marked, stored in a contained area (or have a drip tray) and covered (either stored under a roof or the top of the container must be covered with a lid).	Contractor / ESO	During construction

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	3. Report major oil or fuel spills to the provincial Department of Water Affairs and Forestry, as well as to the relevant local authorities.	Contractor / ESO	During construction
	4. No refuelling, servicing of plant/equipment or fuel storage must be allowed outside of designated areas.	Contractor / ESO	During construction
	5. Implement a contingency plan to handle spills, so that environmental damage is avoided.	Contractor / ESO	During construction
	6. Drip trays must be placed beneath standing machinery/plant. Drip trays are to be watertight and must be emptied regularly and before and after rain events. The contents of drip trays are to be treated as hazardous waste.	Contractor / ESO	During construction
	7. Chemical storage areas must be situated on a concrete slab surrounded by bund walling with a containment capacity of 150% of the chemicals stored.	Contractor / ESO	During construction
	8. A hazardous waste disposal certificate must be obtained from the waste removal company as evidence of correct disposal and kept on site within the environmental file.	Contractor / ESO	During construction
	9. The waste must be transported to a central point where it can be collected in bulk by the waste disposal company. It must however be noted that: • Transport of hazardous materials must be done in accordance with legislative control; and • Relevant SABS Codes of Practice must be adhered to.	Contractor / ESO	During construction
7.2.16 Watercourses and Groundwater Management			
Impact Management Outcome: The proper management of groundwater and to reduce impacts on the environment.			
Watercourse Management	1. The client must be made aware of the estimated 1:10 year, 1:50 year & 1:100-year flood lines & flood levels (Floodline Assessment, August 2024).	Contractor	During construction

CONSTRUCTION PHASE ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	2. Filter sieves must be fixed to the abstraction points to limit the potential desiccation of fish species.	Contractor	During construction
	3.		
	4. Should there be any embankments and retaining structures within the floodplain, these should be appropriately designed to withstand the hydraulic forces of the flood waters (Floodline Assessment, August 2024).	Contractor	During construction
	5. Mabibi Water Supply must be constructed in such a manner to ensure minimal impact or obstruction to the natural watercourse / Lake Sibayi (Floodline Assessment, August 2024).	Contractor	During construction
	6. The flood lines & flood levels should be inserted on all relevant drawings (flood levels taking preference over flood lines due to limited survey).	Contractor	During construction
	7. An ongoing maintenance/management plan should be in place to ensure that this portion of the watercourse along the project area is kept free of silt and debris, so as not to increase the flood levels (Floodline Assessment, August 2024).	Contractor	During construction
	8. The watercourses to be re-analysed if any changes occur in the geometric configuration of the river or additional infrastructure or/and controls are introduced into the system (Floodline Assessment, August 2024).	Contractor	During construction
	9. No impeding flow other than for the approved activities.	Contractor	During construction
	10. Filtration sieves should be fixed to the proposed abstraction pipes to avoid the potential desiccation of fish species.	Contractor	During construction
	11. Chemical water analysis must be conducted on Lake Sibayi to determine the measurements of arsenic and iron within the lake (Freshwater Resource Assessment, September 2025).	Contractor	During construction

CONSTRUCTION PHASE ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	12. Monthly monitoring of the water quality of Lake Sibaya must be undertaken during the construction phase to identify any possible impact (Freshwater Resource Assessment, September 2025).	Contractor	During construction
	13. Quarterly monitoring of the wetland features associated with the project area must be conducted during the construction phase by a registered wetland specialist to ensure the present ecological state is maintained (Freshwater Resource Assessment, September 2025).	Contractor	During construction
Groundwater Management	1. The following measures must be conducted by the Contractor to prevent chemicals and hazardous substances from contaminating groundwater. • Contaminated water originating from construction activities must be contained and disposed of, to prevent the contamination of soil. • Oil/ chemical spills must be stopped at its source with the spilled material contained. Hand tools such as oil spill kits obtained from service providers such as Drizit/SpillTech must be used to contain and collect the material together, immediately containing the spilled material • Proper storage facilities for the hazardous substances to be used, must be provided to prevent the migration of spillage into the ground and/or groundwater around the storage area(s). These pollution prevention measures for storage must include a bund wall high enough to contain at least 110% of any stored volume.	Contractor	During construction
	2. Erosion and loss of soil must be prevented by minimising the construction areas exposed to surface water runoff.	Contractor / ESO	During construction
	3. Bare areas are to be rehabilitated when the areas become available or after use.	Contractor / ESO	During construction
	4. Records of water quality results are to be kept by the contractors and checked by the appointed ECO.	Contractor / ESO	During construction

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	5. If groundwater resources from the Mabibi borehole are to be used at any stage of the proposed development, it is recommended that the borehole/groundwater be treated before it is consumed or used by humans. If water be sourced from the Mabibi borehole, the groundwater quality must meet the SANS241 (2015) guideline standards for domestic consumption.	Contractor / ESO	During construction
7.2.17 Stormwater and Drainage Management			
Impact Management Outcome: The proper management of stormwater and to reduce its impacts to the environment.			
Stormwater and Drainage Management	1. Stormwater from roofed and surface areas is to be reticulated allowing for attenuation and erosion control to engineer's details	Contractor	During construction
	2. Construction terraces should be shaped to a gradient to prevent water ponding on the surface and should be graded to direct water away from the structures.	Contractor	During construction
	3. No materials, fluids or substances are permitted to enter the stormwater system that could have a detrimental impact on flora and/ or fauna.	Contractor	During construction
	4. Earth, stone and rubble must be disposed of so as not to obstruct natural water pathways over the site. i.e. these materials must not be placed in stormwater channels or drainage pathways.	Contractor	During construction
	5. All bare slopes and surfaces to be exposed to the elements during clearing and earthworks must be protected against erosion using rows of hay-bales, sandbags and/or silt fences to break the energy of surface flows.	Contractor	During construction

CONSTRUCTION PHASE ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
7.2.18 Traffic and Safety			
Impact Management Outcome: The proper management of traffic and to reduce its impacts to the environment.			
Lane closures	1. Road signs for all lane closures must be done in accordance to the South African Road Traffic Signs Manual.	Contractor	Prior to and during construction
	2. Construction routes must be clearly defined.	Contractor	Prior to and during construction
	1. Pedestrian access must be managed by a traffic officer.	Contractor	During construction
Construction Vehicles	1. Access of all construction and material delivery vehicles must be strictly controlled.	Contractor	During construction
	2. Holding of all construction vehicles must not unnecessarily impede traffic.	Contractor	During construction
	3. Servicing of vehicles must be done off-site.	Contractor	During construction
	4. All road speed limits must be adhered to.	Contractor	During construction
	5. Machinery or equipment used on site must not constitute a pollution hazard. The Contractor must order such equipment to be repaired or withdrawn from use if they consider the equipment or machinery to be polluting and irreparable.	Contractor	During construction
Road Maintenance	1. Pedestrian pathways or holding areas must be maintained in good condition by attending to any damages (e.g. road signs or stormwater damage, etc.) when these develop.	Contractor	During construction
	2. Staff must be employed to clean surfaced roads adjacent to construction sites where materials have spilt.	Contractor	During construction
7.2.19 Noise			
Impact Management Outcome: Minimise the generation of noise.			

CONSTRUCTION PHASE ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
Noise	1. Neighbouring landowners (in any occupied buildings) must be notified about construction activities at least 48 hours prior to commencement of the activity.	ESO/ ECO	During construction
	2. All construction vehicles and equipment must be kept in good repair and must be fitted with standard silencers prior to construction.	Contractor/ ESO	During construction
	3. Where possible, stationary noisy equipment (e.g. compressors, generators etc.) must be encapsulated in acoustic covers, screens or sheds. Portable acoustic shields must be used in the case where noisy equipment are not stationary (e.g. drills, angle grinders, chipping hammers).	Contractor	During construction
	4. Labourers must adhere to the following conditions to prevent noise disturbance: • Regulated working hours as per the National Building Regulations (Regulation F6) under the Building Standards Act, 1977 (Act No. 103 of 1977) ○ 6:00 – 18:00 on Monday – Friday ○ 6:00 – 17:00 on Saturday • Drop off/ pick up of labourers must take place in an area designated by the Contractor.	Contractor	During construction
	5. As per the National Building Regulations (Regulation F6) under the Building Standards Act, 1977 (Act No. 103 of 1977), no person may use any machine, engine, tool, or apparatus during building, demolition, or excavation work in the following timeframes: • Sundays or public holidays • Before 06:00 or after 18:00 on any other day (i.e., weekdays) • Before 06:00 or after 17:00 on Saturdays	Contractor/ESO	During construction

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	6. Machines in intermittent use must be shut down in the intervening periods between work or throttled down to a minimum.	ESO / Contractor	During construction
	7. In general, operations must meet the noise standard requirements of the Occupational Health and Safety Act (Act No 85 of 1993).	Contractor	During construction
	8. Construction staff working in areas where the 8-hour ambient noise levels exceed 85 dBA, must wear ear protection equipment.	Contractor	During construction
	9. Noise levels must be kept within acceptable limits. All noise and sounds generated must adhere to SANS 10103 specifications for maximum allowable noise levels for central business districts. No pure tone sirens or hooters must be utilised except where required in terms of SANS standards or in emergencies.	Contractor	During construction
	10. Noisy operations must be combined so that they occur where possible at the same time.	Contractor	During construction
7.2.20 Heritage			
Heritage and Palaeontological Significance	1. The graves identified in close proximity of the construction site must be left in-situ. A minimum of a 15m no-development buffer must be maintained around the boundary of each grave (Heritage Impact Assessment and Desktop Palaeontological Impact Assessment, July 2024).	Contractor	During Construction
	2. The final bulk water pipeline servitude must be aligned to avoid both of the grave sites, including the 15m no-development buffer (Heritage Impact Assessment and Desktop Palaeontological Impact Assessment, July 2024).	Contractor	During Construction

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	3. The position of the grave sites and 15m buffer must be shown on all the relevant construction plans to ensure that all staff and contractors are aware of the presence of these sites (Heritage Impact Assessment and Desktop Palaeontological Impact Assessment, July 2024).	Contractor	During Construction
	4. If an artefact on site is uncovered, work in the immediate vicinity must be stopped immediately. The point of discovery must be demarcated and the matter must be reported to the local police station and Amafa aKwaZulu-Natali for investigation.	Contractor/ESO	During construction
	5. The contractor must take reasonable precautions to prevent any person from removing or damaging any such article and must immediately, upon discovery thereof, inform the Project Engineer.	Contractor / Project Engineer	During construction
	6. Work must resume once clearance is given in writing by the archaeologist and/or Amafa aKwaZulu-Natali.	Contractor	During construction
	7. The project must adhere to the requirements of the NHRA and the KwaZulu-Natal Amafa and Research Institute Act, and Draft Regulations, which requires that a person that discovers any archaeological or palaeontological material or a meteorite must immediately cease all operations or activity within a 25m radius of the discovery and must notify the KwaZulu-Natal Amafa and Research Institute.	Contractor	During construction
7.2.21 Social Consideration			
Impact Management Outcome: Community inclusion, participation and awareness.			
Social Consideration	1. Working hours are restricted to daylight hours. If work is required after these hours, personnel who resides in close proximity to the site and who would be impacted upon by the disturbance, must also be notified.	Contractor	During construction

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	2. All neighbouring landowners / businesses and those that are disturbed due to construction activities must be notified of construction activities and provided with feedback on the status of construction. The notification must be conducted at least 48 Hours prior to the commencement of construction activities.	Contractor	During construction
	3. The Contractor must arrange for a candidate to assist with the appointment of local labour and assist with any labour disputes.	Contractor	During construction
7.2.22 Reporting & Record Keeping			
Impact Management Outcome: Compliance with environmental authorisation and record keeping.			
Complaints Register	1. Complaints received must be registered and recorded by the contractor and brought to the attention of the contractor. Both parties will respond accordingly. The following information must be recorded in the case of any complaint/incident: • Time, date and nature of complaint; • Response and investigation undertaken; and • Corrective actions taken and by whom.	Contractor / ESO	During construction
	2. All complaints received must be investigated and a response must be given to the complainant within 7 days.	Contractor / ESO	During construction
Environmental Incidents Register	3. All environmental incidents occurring on the site must be recorded in an Environmental Incident Book and brought to the attention of the ECO. The following information must be provided: • Time, date and nature of complaint; • Response and investigation undertaken; and • Corrective actions taken and by whom.	Contractor / ESO	During construction

POST - CONSTRUCTION PHASE ACTIVITIES

3. POST-CONSTRUCTION PHASE – REHABILITATION AND MAINTENANCE

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
7.3.1. Construction Camp			
Construction Camp	1. Disposal of all waste must be done at the registered waste facility.	Contractor	After construction
	2. All structures comprising the construction camp must be removed from the site and surrounding areas, including all chemical toilets and hazardous substances.	Contractor	After construction
	3. The area must be checked for spills of substances such as oil, paint, diesel or any hazardous materials and these must be cleaned up.	Contractor	After construction
	4. All hardened surfaces within the construction camp must be removed, and the area must be topsoiled and re-grassed.	Contractor	After construction
	5. The Contractor must arrange the cancellation of any temporary services.	Contractor	After construction
7.3.2. Materials and Infrastructure			
	1. All residual stockpiles must be removed and disposed at an approved dumpsite with proof of disposal.	Contractor	After construction
	2. All remaining building materials must be returned to the depot or removed from the site.	Contractor	After construction
	3. The Contractor must repair any damage that the construction works have caused to adjacent properties.	Contractor	After construction
	4. Fences, barriers and demarcations associated with the construction phase are to be removed from the site unless stipulated otherwise by the Applicant.	Contractor	After construction
7.3.3. Rehabilitation			
Impact Management Outcome: Rehabilitation of all working areas.			

POST - CONSTRUCTION PHASE ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
Rehabilitation	1. The Applicant is responsible for compliance with the provisions for Duty of Care and Remediation of Damage in accordance with Section 28 of National Environmental Management Act (NEMA), Act No. 107 of 1998.	Applicant	After construction
	2. All fill banks must be planted with indigenous vegetation to control and minimise erosion.	Contractor	After construction
	3. All areas that have been disturbed by construction activities (including the construction camp area) must be cleared of alien vegetation.	Contractor	After construction
7.3.4 Site Closure			
Site closure	1. A closeout audit must be conducted by the Contractor and the ECO to approve all remediation activities and check that the site has been restored to a condition acceptable to the ECO.	Contractor / ECO	After construction
	2. A site close-out audit is to be undertaken by the ECO prior to handover of the site by the Contractor.	ECO / Contractor	After construction
	3. The post-construction audit report must be submitted DFFE Control Environmental Officer: Compliance Monitoring and Enforcement, within sixty (60) days of the completion of construction.	ECO	After construction
7.3.5 Monitoring and Maintenance			
	1. An 'as-built' layout plan must be submitted to the DFFE within sixty (60) days of completion of construction.	Applicant	After construction

POST - CONSTRUCTION PHASE ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	2. The conditions of the development must be monitored for a period of three years after the development is complete to check that: • Erosion is controlled; • The stormwater run-off measures are working; • An Environmental Complaints Register must be kept, detailing complaints received, date, response and action taken; • Any maintenance where intrusive works are proposed, must adhere to the mitigation measures put in place in the EMPr; and • Where such measures are impractical due to the nature, duration and extent of maintenance works, a maintenance method statement must be developed prior to maintenance works being undertaken.	Applicant	After construction
	3. As per the Freshwater Resource Assessment dated September 2025, bi-annual aquatic monitoring be conducted during operation to establish potential influences on fish communities.	Applicant	During operation
	4. The applicant must monitor the development to ensure that it does not compromise Lake Sibaya's ecological integrity. The following aspects must be assessed on the annual basis: drought resilience, water budgeting, monitoring of lake levels, and equitable distribution of water. It is important to note that the supply from the Lake is a short-term intervention which will be discontinued once the supply from Jozini Dam reaches the Mabibi area.	Applicant	During operation
Road Maintenance	1. All temporary road signs must be removed on completion of works.	Applicant	After construction
	2. All covered road signs must be reinstated.	Applicant	After construction

8. CONCLUSION

In order to ensure compliance, all parties undertaking the implementation of Mabibi Bulk Water Supply Scheme Work Package 5 must be fully acquainted with the contents of this EMPr. Penalties to be imposed for the transgression of environmental specifications are also noted along with the roles and responsibilities of all stakeholders. This will ensure that potential adverse impacts are identified, avoided or mitigated, ensuring compliance with the environmental specification and upholding the environmental commitment to compliance, the conditions of uMhlabuyalingana Local Municipality Bylaws and other related binding documentation related to the management of the environment.

APPENDIX A

ENVIRONMENTAL CODE OF CONDUCT

One of the objectives of the EMPr is to ensure that all the workforce, contractors, sub-contractors and construction staff understand environmental issues and potential impacts on site activities. This environmental code of conduct provides the basic rules that must be strictly adhered to. It is the responsibility of the Environmental Site Officer and ECO to ensure that each contractor, sub-contractor and workforce understand and adhere to the Code of Conduct.

ALL PERSONS ARE OBLIGED TO KEEP TO THE RULES OF THIS CODE OF CONDUCT

- Do not waste electricity, water or consumables;
- Only use authorised accesses;
- Do not litter;
- Dispose of solid waste to the correct waste containers provided;
- Prevent pollution;
- Use the toilet facilities provided;
- Do not dispose contaminated wastewater to the storm water or the environment;
- Immediately report any spillage from containers, plant or vehicles;
- Do not burn or bury any waste;
- Do not trespass onto private properties;
- Strictly leave all animals alone. Never tease, catch or set devices to trap or kill any animal;
- Never damage or remove any trees, shrubs or branches unless it forms part of working instructions;
- Do not deface, draw or cut lettering or any other markings on trees, rocks or buildings in the area;
- Know the firefighting procedure and locations of firefighting equipment; and
- Know the environmental incident procedures.

APPENDIX B

PROJECT START UP INSPECTION SHEET

PROJECT START UP INSPECTION SHEET

PROJECT: _____ **DATE:** _____
CONTRACT NO: _____ **COMPLETED BY:** _____
CONTRACTOR: _____

ES	ENVIRONMENTAL ASPECT	YES NO N/A	COMMENTS	ACTION
PLANNING				
ESTABLISHMENT				
CLEARANCE				

APPENDIX C

ROUTINE SITE INSPECTION SHEET

ROUTINE SITE INSPECTION SHEET

PROJECT: _____ **DATE:** _____
CONTRACT NO: _____ **COMPLETED BY:** _____
CONTRACTOR: _____

ES	ENVIRONMENTAL ASPECT	YES NO N/A	COMMENTS	ACTION
HOUSEKEEPING				
CONSTRUCTION ACTIVITIES				
REINSTATEMENT AND REHABILITATION				

APPENDIX D

SITE DECOMMISSIONING INSPECTION SHEET

SITE DECOMMISSIONING INSPECTION SHEET

PROJECT: _____ **DATE:** _____
CONTRACT NO: _____ **COMPLETED BY:** _____
CONTRACTOR: _____

ES	ENVIRONMENTAL ASPECT	YES NO N/A	COMMENTS	ACTION
DECOMMISSIONING OF THE SITE				

APPENDIX E

SITE INSPECTION REPORT STRUCTURE

Purpose of the Site Inspection Report

The purpose of the Site Inspection Report is to describe the results of the site inspections undertaken by the Environmental Control Officer (ECO) or delegated responsible person so that the level of compliance with the Environmental Management Programme (EMPr) can be monitored throughout the contract.

It will be expected to summarise the following:

- The key results
- Trends observed
- Key issues observed
- Problems encountered
- Actions required and response taken or to be taken
- Recommendations.

The Site Inspection Report must conclude with a commentary on the overall performance of the Contractor in terms of meeting the requirements of individual/groups of Environmental Specifications and/or EMPr.

Preparation of the Site Inspection Reports

Site Inspection Reports are expected to be prepared monthly throughout a given construction contract, including (but not limited to) the following:

- Prior to the handover of the site to the Contractor
- At regular stages throughout the construction works, and particularly with the commencement of particularly significant activities
- At the decommissioning of the site and prior to the handover of the site to the Employer/Operator.

Recommended Structure for the Site Inspection Reports

The following report structure is suggested for the Site Inspection Report:

Introduction	By way of setting the context for the Site Inspection Report, this section must outline the following: ▪ The need for the Site Inspections, and reporting. ▪ Purpose of the Site Inspection Report. ▪ The scope of coverage of the Site Inspection
Environmental Management Requirements	This section must summarise the environmental requirements for the contract and for the construction works, and against which environmental performance is assessed.
Methodology	This section must describe the activities undertaken during the site inspection, such as: ▪ A site walkabout with the Principal Agent (PM). ▪ A review of documents and records, such as complaints records and/or incidents reports maintained by the Contractor and/or ECO. ▪ Consultations with pertinent parties on site.

Findings of the Site Inspection	This must contain reference to the following: ▪ A commentary on the level of compliance with key aspects of the Environmental Specifications, as listed in the checklist(s). ▪ Details of issues, infringements, problems and non-compliances encountered. ▪ Recommendations on actions to be undertaken to address any issues, infringements and/or non-compliances.
Conclusions	This must include an overall statement on the level of compliance observed during the site inspection.
Annexures	Annexures must be used to store supporting information to the main document, such as: ▪ Photographs. ▪ A quick reference, summary table of issues of concern and the corrective measures required to address these issues.

APPENDIX F

ENVIRONMENTAL INCIDENTS REGISTER

APPENDIX K

INCIDENTS INCURRING PENALTIES	VALUE
Failure to secure construction site from public access.	R5,000.00
Failure to stockpile topsoil correctly.	R1000.00
Failure to stockpile materials in designated areas.	R500.00
Pollution of water bodies – including increased suspended solid loads.	R2,000.00
Discharging effluent and/or storm water onto the ground or into surface water	R1,000.00
Failure to provide adequate sanitation, waste disposal facilities or services.	R1,000.00
Failure to demarcate construction area boundaries before commencing construction clearance and other activities	R1,000.00
Insufficient education of employees regarding environmental matters and site housekeeping practices	R500.00
Use of soil in an unspecified manner	R500.00
Inappropriate mixing of cement/concrete and poor management of slurry	R1,000.00
Unauthorised removal of indigenous trees, medicinal or other plants.	R1,000.00
Damaging/killing animals/birds.	R1,500.00
Failure to reinstate disturbed areas within the specified timeframe.	R1,000.00
Fire – costs of runaway fires will be borne by the Contractor, should he/she be proven responsible for such fires.	R5,000.00
Failure to provide equipment for emergency situations	R1,000.00
Defacing, painting or damaging natural or heritage features and private property	R1,000.00
Damaging cultural, historical and/or archaeological sites of importance	R5,000.00
Failure to maintain basic safety measures on site	R1,000.00
Failure to obey site protection measures specified by the Project Manager	R1,000.00
Failure to carry out required community liaison, damage to property etc., without prior negotiation and/or compensation and other social infringements	R500.00
Persistent and un-repaired oil leaks from machinery. The use of inappropriate methods of refuelling.	R500.00
Failure to provide drip trays and/or empty them frequently.	R500.00
Inappropriate use of bins and poor waste management on site.	R200.00
Inappropriate off-site disposal of waste from site.	R1,000.00
Deliberate lighting of illegal fires on site.	R500.00
Eating of meals on site outside the defined eating area. Individual not making use of the site ablution facilities.	R100.00
Dust or excess noise on or emanating from the site.	R500.00
Inappropriate use of watercourses and water bodies – such as for unapproved water abstraction, washing of vehicles, wastewater disposal and use by employees for washing.	R2,000.00
Failure to comply with specifications for working within a wetland and stream.	R 10,000.00
Any person, vehicle, item of plant, or anything related to the Contractor's operations causing a public nuisance.	R1,000.00
Improper use of plant or equipment.	R500.00
Construction vehicles not adhering to speed limits.	R250.00
Failure to maintain a register of incidents on site.	R1,000.00
Failure to remove all temporary features and leftovers from the construction site and works areas upon completion of the works.	R20,000.00
Repeated contravention of the specifications or failure to comply with instructions	R5,000.00