Environmental Management Programme (EMPr)

Environmental Management Programme (EMPr) for the Proposed Tongaat Bulk Water Pipelines Upgrade and Reservoir Extension, located within Othongathi, eThekwini Municipality, KZN

A Project of eThekwini Municipality: Water & Sanitation Unit

November 2026

DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr)

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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
eThekwini Municipality: Water & Sanitation Unit, 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

Tongaat Bulk Water Systems Upgrade 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 eThekwini Municipality. 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.

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 Tongaat Bulk Water Systems Upgrade.

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 Tongaat Bulk Water Systems Upgrade and Reservoir Extension. 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.

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 Tongaat Bulk Water Systems Upgrade.

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
EWS	eThekwini Municipality, Water & Sanitation Unit
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 Tongaat Bulk Water Pipelines Upgrade and Reservoir Extension. It sets out conditions for managing environmental impacts during the planning, construction and operational phases of the development. This project falls within OThongathi, eThekwini Metropolitan Municipality in KZN, see **Figure 1** below.

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.

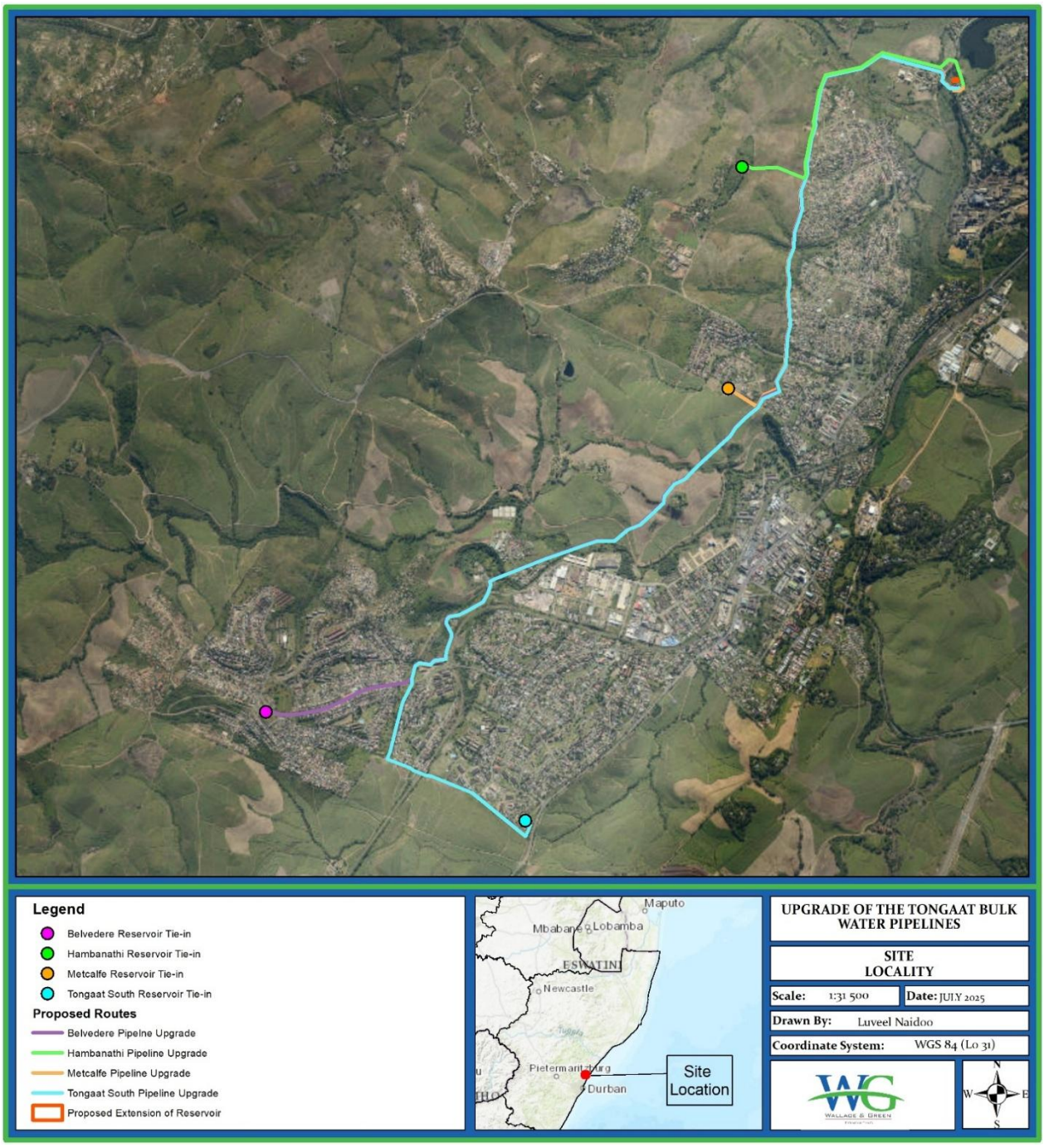


Figure 1: Locality Map

1.1. BACKGROUND INFORMATION

The proposed pipeline upgrades are located within Wards 58, 61 and 62 of the eThekwini Municipality. The site is geographically located at the following co-ordinates: 29°32'36.59S; 31°7'41.08E (start), 29°34'15.20S; 31° 6'36.38E (middle) and 29°35'13.29S; 31° 5'59.81E (end), (see **Figure 1**).

The applicant, eThekwini Municipality: Water and Sanitation Unit, noted that the existing water pipeline systems which conveys treated potable water from the Tongaat Water Treatment Works (TWTW's) to the four (4) reservoirs, namely: Tongaat South, Hambanathi, Metcalfe, and Belvedere have shown signs of deteriorated structural integrity.

The existing pipeline systems have been compromised due to a combination of factors including aged infrastructure and structural vulnerabilities at the existing river crossings. Furthermore, key operational challenges such as inaccessible routes to the existing pipeline, informal connections, and damaged valves and chambers, results in frequent bursts. This poses an ongoing risk to water security in the region and has significantly disrupted the reliable supply of potable water to Tongaat and surrounding areas.

To address this challenge, the Municipality intends to upgrade the pipeline systems by establishing new bulk water pipelines. The details of the new pipelines systems are as follows:

- Tongaat South Pipeline - Upgrade of approximately 8.4km of pipeline with an internal diameter of 315mm.
- Hambanathi Pipeline – Upgrade of approximately 2.2km of pipeline with an internal diameter of 315mm.
- Metcalfe Pipeline - Upgrade of approximately 3.5km of pipeline with an internal diameter of 315mm.
- Belvedere Pipeline - Upgrade of approximately 3.2km of pipeline with a nominal diameter of 400 mm, and 5.1km with a nominal diameter of 250 mm.

Once the proposed pipelines and associated tie-in connections are near completion, the existing pipelines will be temporarily isolated to facilitate the changeover. Following successful commissioning of the proposed pipelines, the existing pipelines will be decommissioned and will remain in situ.

An onsite storage reservoir with a capacity of 1 775m^3 exists within the TWTW. As per the Design Report compiled by Naidu Consulting (April, 2026), the capacity analysis for the existing storage is insufficient for the proposed pipeline upgrades as the reservoir capacity only allows for approximately 0.6 hours of operational storage based on all the pumps operating simultaneously to pump water to the various reservoirs. The Design Report noted that the peak operating flow of the TWTW must be managed to mitigate excessively draining the onsite storage as well as limiting down time on the system.

As such, eThekwini Municipality: Water and Sanitation Unit intends on extending the existing reservoir at the TWTW's from a capacity of 1 775m^3 to a capacity of 2 975m^3, together with the structural interface, reservoir pipework, valves, chambers, drainage and associated civil works. The reservoir extension will comprise of a separate storage unit with a capacity of 1 200m^3, to supplement the existing storage unit on site. The storage units will be linked with pipe work and will not disrupt the existing structure. The reservoir extension will comprise of 30m(L) x 10m(W) x 5m(H) reinforced concrete.

The existing reservoir will remain in service for the greater part of the construction period. The new structure will therefore be constructed to the greatest practical extent before any opening of, or intrusive work to, the existing reservoir is undertaken.

Refer to **Appendix G** – Overall Layout and **Figure 2** below.

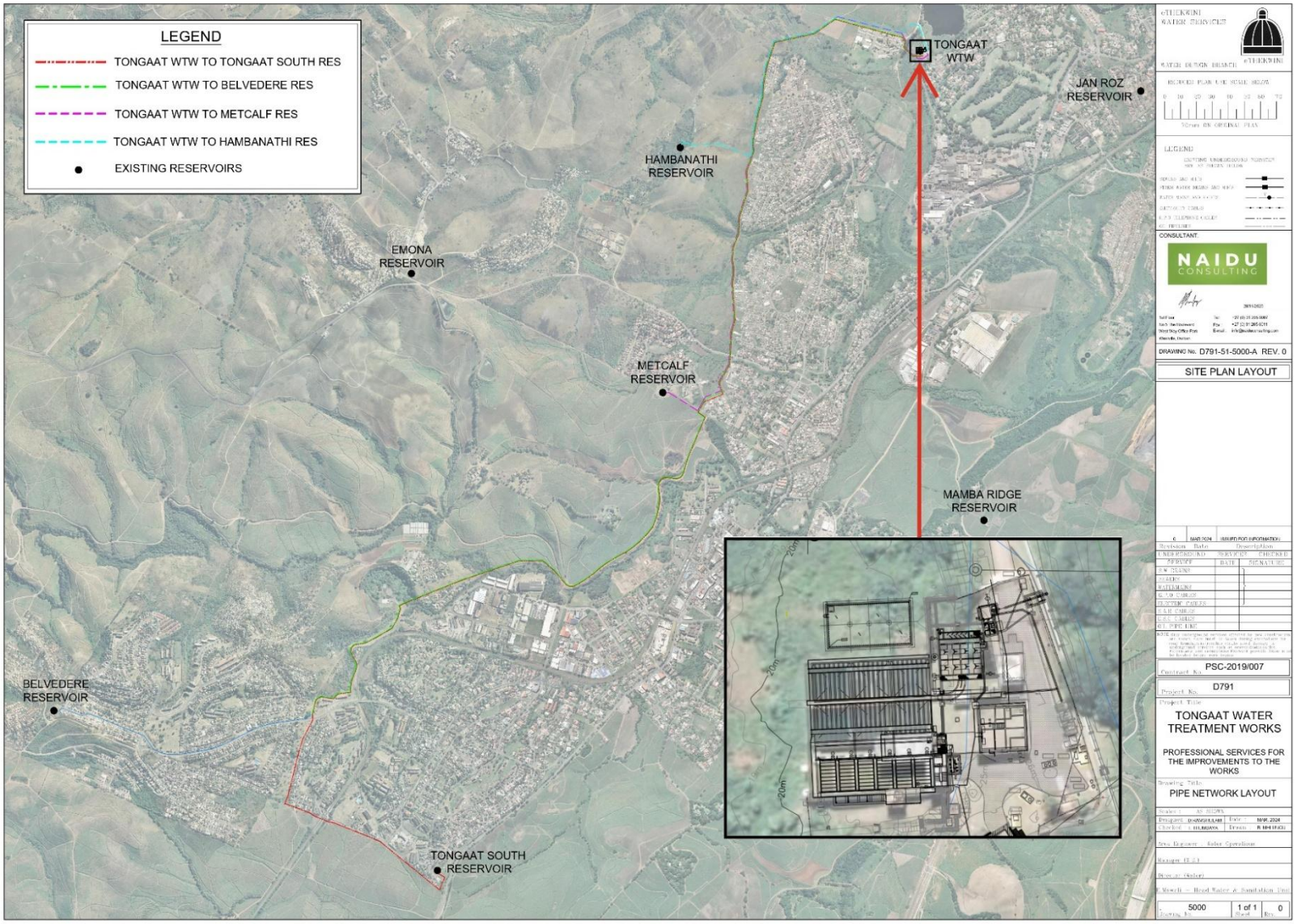


Figure 2: Overall Layout

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 Tongaat Bulk Water Pipelines Upgrade and Reservoir Extension. 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 Tongaat Bulk Water Systems Upgrade 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 11 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. Sayantha Padayachee – Junior Environmental Assessment Practitioner | Bachelor of Science (Hons) in Environmental Science

Sayantha Padayachee is a Junior Environmental Assessment Practitioner (EAP) at Wallace and Green (Pty) Ltd, who holds a BSc (Hons) Degree in Environmental Science, majoring in Industrial Air Pollution from The University of KwaZulu – Natal (UKZN). She has 3 years' experience in the field of environmental compliance and environmental management in a range of fields for corporate enterprises, private developers, and various spheres of government.

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	eThekwini Municipality: Water and Sanitation Unit		
Contact Person	Mr. Sibusiso Vilane		
Telephone Number	+27 (0) 31 322 2763	**Email**	Sibusiso.vilane@durban.gov.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 KZN Department of Economic Development, Tourism and Environmental Affairs (KZN EDTEA).

Table 1-3: KZN EDTEA Contact Detail - EIA

Name of Authority	Department of Economic Development, Tourism and Environmental Affairs (EDTEA)		
Contact Person	Natasha Brijlal		
Mobile number	079 898 0491	**Email**	natasha.Brijlal@kznedtea.gov.za

Table 1-4: KZN EDTEA Authority Contact Details – Compliance Monitoring and Enforcement (CME)

Name of Consultancy	Department of Economic Development, Tourism and Environmental Affairs (EDTEA)		
Contact Person	Mr. Siyabonga Sikhakhane		
Mobile number	(0)81 541 0758	**Email**	Siyabonga.Sikhakhane@kznedtea.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 EA (once issued) for the Tongaat Bulk Water Pipelines Upgrade and Reservoir Extension, 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)		Provides for the management and conservation of biodiversity, protection of species and ecosystems, and

Threatened or protected species (GN 388) **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)**		sustainable use of indigenous biological resources – provisions re alien and invasive species?
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.
	Section 8	General duties of employers to their employees

Occupational Health and Safety Act (No 85 of 1993)	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
eThekwini Municipality: Stormwater Management By-law, 2020
eThekwini Planning and Land Use Management By-law, 2016
eThekwini Municipality: Sewage Disposal Bylaw, 2016
eThekwini Municipality: Waste Removal Bylaw, 2016

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.

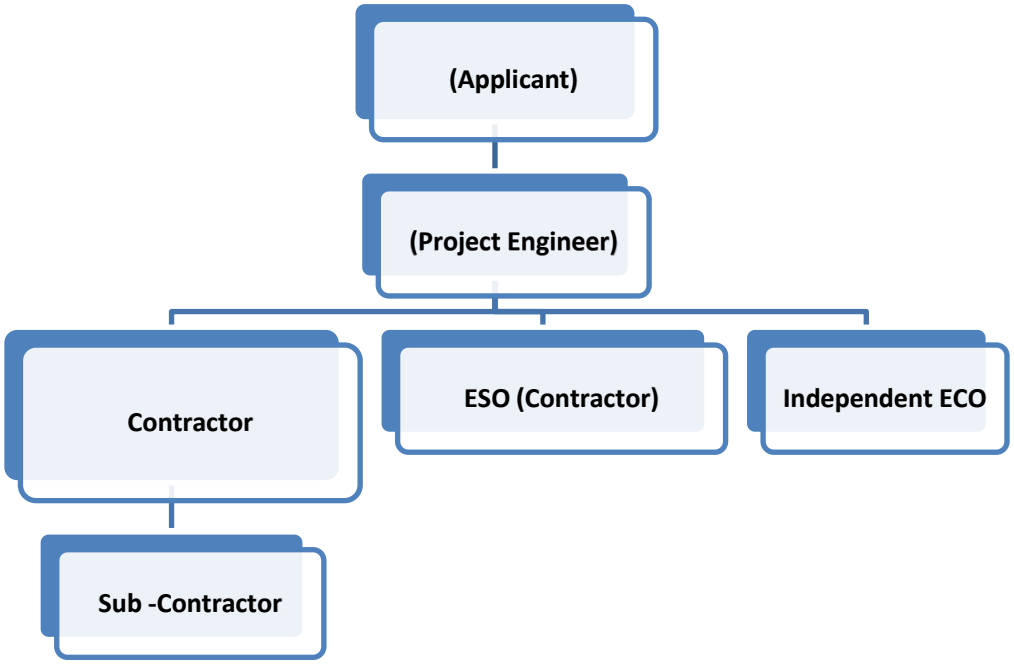


Figure 3: Organogram of formal responsibilities and reporting structure for the development implementation

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 or the Department of Water and Sanitation 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 watercourses; and
- 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 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, eThekwini 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 watercourses;
- 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

The assumption is that all significant issues have been identified during the development of the 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 Tongaat Bulk Water Systems Upgrade 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 watercourses
- 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 Tongaat Bulk Water Pipelines Upgrade and Reservoir Extension.*** • ***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 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. 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
	5. 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 and inform all surrounding landowners of the proposed development.	Contractor	Prior to construction and ongoing
	6. Temporary loading and off-loading areas and holding of construction vehicles must be designed prior to construction activities.	Contractor	During Planning and Design
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

PLANNING AND DESIGN & PRE-CONSTRUCTION ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	2. Details of the ECO must be communicated to the KZN EDTEA Control Environmental Officer: CME Component within 14 calendar days.	ECO	Prior to construction
	3. A written notice must be given to the KZN EDTEA 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 Stormwater Control Measures			
Stormwater Control Measures	1. The contractor must provide a Stormwater Management Plan prior to the commencement of construction.	Contractor	Prior to construction
	2. The temporary drainage layout and sediment control plan must be provided to the Engineer and the ECO for comment.	Contractor	Prior to construction
	3. The existing drains, culverts, overland flow paths, low points, watercourses and outfalls must be surveyed and marked prior to clearing or excavation works.	Contractor	Prior to construction
	4. Photographs must be taken of the sites pre-construction condition.	Contractor	Prior to construction

PLANNING AND DESIGN & PRE-CONSTRUCTION ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	5. Temporary clean-water diversion measures must be installed upslope of excavations prior to disturbing the ground.	Contractor	Prior to construction
	6. Shallow berms and lined channels must be used to carry uncontaminated runoff around the works and return it to a stable existing drainage path.	Contractor	Prior to construction
	7. The contractor must not block any public drains, concentrate runoff onto adjacent property, or divert the flow into an unstable slope or trench.	Contractor	Prior to construction
	8. Clearing and exposed ground must be limited to the active construction footprint.	Contractor	Prior to construction
	9. A safe route must be established for runoff that will not erode embankments or undermine structures.	Contractor	Prior to construction
7.1.4 Protection of Fauna and Flora			
Protection of Fauna and Flora	1. Once pegged, the site must be inspected during summer season by a botanist to identify all conservation-important species. These species must be translocated prior to any construction activities (Ecological Assessment, May 2026).	Contractor / ESO	Prior to construction
	2. Two protected tree species, Barringtonia racemosa (Powder-puff Tree) and Podocarpus falcatus (Common Yellowwood), and one protected plant species, Hypoxis hemerocallidea (Star-flower), were identified along the pipeline route. A permit for the Department of Forestry, Fisheries and the Environment will be required if any protected trees need to removed or trimmed, and a permit from Ezemvelo KZN Wildlife will be required to relocate the protected plant species (Ecological Assessment, 2026).	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

PLANNING AND DESIGN & PRE-CONSTRUCTION ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
7.1.5 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
	2. 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 watercourses; • 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); • 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 / ECO	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. 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
	4. The site camp must be secured and manned on a 24-hour basis.	Contractor	During construction
	5. The construction site camp must remain fenced for the entire construction period.	Contractor	During construction
	6. The Contractor must take responsibility for the site to conform to all contractual aspects and environmental standards applicable.	Contractor	During construction
	7. The Contractor must provide refuse bins that must be cleaned / emptied and the waste removed from site on a regular basis.	Contractor	During construction
	8. The construction camp must be kept in an orderly state at all times.	Contractor	During construction

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	9. The Contractor must monitor and manage drainage of the campsite to avoid standing water and soil erosion.	Contractor	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 any of the watercourses.	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
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

CONSTRUCTION PHASE ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
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.	Contractor / ESO	During construction
	3. Consideration of the implications of the 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

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	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
	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

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ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	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.			
No-Go' Areas	1. As per the Freshwater Assessment, 2026 the following buffer must be applied, 20 m buffer for the Tongati River, Hlawe River, unchanneled valley-bottom and channelled valley-bottom wetlands, and 15 m for the drainage lines, seeps and depression wetlands. These areas are off limits to construction personnel and construction vehicles.	ECO / Contractor	During construction
	2. No construction personnel and construction vehicles must be allowed with the 10 m buffer area around the Pioneer Peace Monument (Heritage Assessment, 2026).	ECO / Contractor	During construction
	3. Cordon off areas that are under rehabilitation as no-go areas using danger tape and steel droppers. If necessary, these areas should be fenced off to prevent vehicular, pedestrian and livestock access (Ecological Assessment, 2026).	ECO / Contractor	During construction
	4. 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
	5. 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

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	6. 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
	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

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	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
	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

CONSTRUCTION PHASE ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	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
	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

CONSTRUCTION PHASE ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	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. Way 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
	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

CONSTRUCTION PHASE ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
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 eThekwini 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
	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 KZN EDTEA: Control Environmental Officer: Compliance Monitoring and Enforcement within fourteen (14) days of its issue.	Contractor	During construction

CONSTRUCTION PHASE ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	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 KZN EDTEA) 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 eThekwini 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
	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.			
	1. Clearing of vegetation must be undertaken as the work front progresses. Mass clearing is not to be permitted.	Contractor/ ECO	During construction

CONSTRUCTION PHASE ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
Clearing and Protection of Fauna and Flora	2. Construction activities must be restricted to the development footprint and no access or impacts to the surrounding vegetation should be allowed (Ecological Assessment, 2026).	Contractor	During construction
	3. During the construction phase workers must be limited to areas under construction and access to the undeveloped areas must be strictly controlled (Ecological Assessment, 2026).		
	4. If any geophytes (or bulbous species) are unearthed during construction, these should be relocated (with assistance or advice from a botanist /ecologist /horticulturist) to similar habitat outside of the development footprint. Any other species deemed to be of concern must be photographed and identified by botanist / ecologist (Ecological Assessment, 2026).		
	5. Natural vegetation on surrounding land must not be collected for use as firewood.	Contractor	During construction
	6. Animals must not be disturbed unnecessarily and no animals are allowed to be shot, trapped or caught for any reason.	Contractor	During construction
	7. The introduction of alien plant species to the site and surrounding areas is strictly prohibited.	Contractor	During Construction
	8. 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. Alien invasive species, that were identified within the study area must be removed, prior to construction (Ecological Assessment, 2026).	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

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	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.			
Geological Stability and Earth-works	1. It is recommended that all earthworks be carried out in accordance with the SANS 1200 D (current version) (Geotechnical Investigation, 2026).	Contractor / Project Engineer	During construction
	2. Rock fragments equal to or larger than 200 mm in size should not be included in the fill material. Boulders or coarse construction rubble within the fill could affect compaction and mask voids into which fines could later migrate, resulting in subsidence (Geotechnical Investigation, 2026).	Contractor / Project Engineer	During construction
	3. Density control testing of fill material should be undertaken at appropriate intervals during fill construction (Geotechnical Investigation, 2026).	Contractor / Project Engineer	During construction
	4. Permanent cut slopes in soils should be formed to batters of up to 1v to 2h (≤ 26°) and to a height not greater than approximately 2 m where permanent lateral support measures are not provided (Geotechnical Investigation, 2026).	Contractor / Project Engineer	During construction

CONSTRUCTION PHASE ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	5. Slopes formed in weathered rock should be no steeper than 1v to 0.75h (≤ 53°) and to a height not greater than 3.0 m where retaining walls are not provided. Where fractures or bedding planes are exposed during excavation, it is recommended that a geotechnical specialist be appointed to assess their effects on the stability of the cutting(s) and the global stability of the slope (Geotechnical Investigation, 2026).	Contractor / Project Engineer	During construction
	6. Workers should not enter any excavations deeper than 1.5 m that are not shored or battered back. Sidewalls within silty soils will be prone to collapse. All excavations are to be inspected on a daily basis by a competent person to confirm stability. These inspections should be recorded (Geotechnical Investigation, 2026).	Contractor	During construction
	7. It is recommended that excavations be carried out in the dry season (Geotechnical Investigation, 2026).	Contractor	During construction
	8. Temporary groundwater control measures, such as well-point dewatering, sump pumping, or a combination thereof, will be required to maintain dry and stable excavation conditions during construction (Geotechnical Investigation, 2026).	Contractor	During construction
	9. Dewatering systems should be designed and installed by a suitably experienced specialist, taking into account the permeability of the alluvial soils, anticipated groundwater inflow rates, and proximity to the Tongati River (Geotechnical Investigation, 2026).	Contractor / Project Engineer	During construction
	10. Dewatering should be implemented in advance of bulk excavation and maintained throughout excavation, foundation preparation, and concrete placement (Geotechnical Investigation, 2026).	Contractor	During construction

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	11. Prolonged exposure of weathered shale to groundwater and atmospheric conditions should be avoided. Blinding or mass concrete should be placed as soon as practicable following inspection and approval of the founding surface (Geotechnical Investigation, 2026).	Contractor	During construction
7.2.13. Soil Management			
Topsoil	1. Topsoil must 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
	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 not occur during adverse weather conditions (i.e., storm/ rain events).	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 / ESO	During construction
	8. Topsoil is to be handled twice only – once to strip and stockpile, and once to replace and level.	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

CONSTRUCTION PHASE ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	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
	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

CONSTRUCTION PHASE ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
7.2.14 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
	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

CONSTRUCTION PHASE ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	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
	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
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

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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. Clearly demarcate all wetland, riparian, and river crossing footprints prior to construction (Freshwater Assessment, March 2026).	Contractor	During construction

CONSTRUCTION PHASE ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	2. Limit disturbance within wetlands and at river crossings to the minimum area required for installation (Freshwater Assessment, March 2026).	Contractor	During construction
	3. For reinforced concrete encasement crossings, clearly demarcate berm, excavation, and access footprints and limit these to the minimum area required for staged installation (Freshwater Assessment, March 2026).	Contractor	During construction
	4. Undertake the reinforced concrete encasement crossing in two segments using temporary earth berm diversions so that complete disruption of flow does not occur (Freshwater Assessment, March 2026).	Contractor	During construction
	5. Ensure temporary and permanent drainage at crossing areas does not concentrate or divert flow in a manner that causes scour or altered wetland drainage (Freshwater Assessment, March 2026).	Contractor	During construction
	6. Prevent preferential flow along the trench line through wetlands by implementing appropriate reinstatement and flow-control measures (Freshwater Assessment, March 2026).	Contractor	During construction
	7. Remove temporary berms completely after construction and reinstate the bed and banks to pre-construction contours (Freshwater Assessment, March 2026).	Contractor	During construction
	8. Do not place spoil, excavated material, or fill within wetlands, river channels, riparian habitat, or any area where it can be washed into the Tongati River, Hlawe River, or associated wetlands (Freshwater Assessment, March 2026).	Contractor	During construction
	9. Reinstate all wetland and river crossings to pre-construction contours immediately after pipe installation (Freshwater Assessment, March 2026).	Contractor	During construction

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ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	10. Stabilise crossing areas immediately after reinstatement to prevent erosion, sedimentation, and channel instability (Freshwater Assessment, March 2026).	Contractor	During construction
	11. Keep all spoil, excavated material, and construction material outside the active channel, wetland, and riparian habitat (Freshwater Assessment, March 2026).	Contractor	During construction
	12. Do not discharge turbid or contaminated water directly into wetlands, the Tongati River, or the Hlawe River (Freshwater Assessment, March 2026).	Contractor	During construction
	13. Manage all water generated during trenching, dewatering, or construction so that sediment and contaminant inputs to delineated watercourses are prevented. (Freshwater Assessment, March 2026).	Contractor	During construction
	14. Stop works immediately and implement containment measures if visible turbidity, concrete contamination, or any pollution enters the watercourse (Freshwater Assessment, March 2026).	Contractor	During construction
	15. Rehabilitate all disturbed wetland and riparian areas with site-appropriate indigenous vegetation as soon as practicable after construction. Continue rehabilitation until disturbed areas are stable and adequately vegetated (Freshwater Assessment, March 2026).	Contractor	During construction

CONSTRUCTION PHASE ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
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
7.2.17 Stormwater and Drainage Management			
Impact Management Outcome: The proper management of stormwater and to reduce its impacts to the environment.			
General Stormwater and Drainage Management (source: Naidu Consulting, September 2026)	1. Stormwater from roofed and hard-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

CONSTRUCTION PHASE ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	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
Stormwater management for the pipeline trenches and working area (source: Naidu Consulting, September 2026)	1. In-stream work must be scheduled for low-flow periods.	Contractor	During construction
	2. Where a trench is located on a slope or near a watercourse and could allow water to flow along the trench, temporary cross-berms or trench plugs must be installed to prevent the trench from acting as a drainage channel.	Contractor	During construction
	3. Implement erosion control measures around stockpiles with the use of compacted berms, geotextile silt fences or straw wattles.	Contractor	During construction
	4. Stockpiles that are exposed to rain must be covered	Contractor	During construction
	5. Removable sediment controls must be implemented at nearby stormwater catch pits, without compromising the inlet function.	Contractor	During construction
	6. Where trench water must be removed, it must be pumped into a contained sedimentation tank or filter bag. The clarified water must be discharged at a controlled rate.	Contractor	During construction
	7. Silt-laden water must not be discharged directly into any stormwater drains, wetlands or watercourses.	Contractor	During construction

CONSTRUCTION PHASE ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
Stormwater management for the watercourse crossings (source: Naidu Consulting, September 2026)	1. In-stream work must be scheduled for low-flow periods.	Contractor	During construction
	2. A watercourse crossing-specific stormwater management method statement must be compiled and submitted to the ECO. The method statement must indicate the following: • The approved work footprint; • Isolation and/or bypass arrangement; • Temporary flow capacity; • Upstream contingency; • Sediment controls; • Access; • Concrete works; and • Sequence of reinstatement.	Contractor	During construction
	3. The watercourse flow must be maintained past the working area with the use of approved temporary diversions.	Contractor	During construction
	4. Silt traps must be installed downstream without creating an obstruction.	Contractor	During construction
Stormwater management for the reservoir extension (source: Naidu Consulting, September 2026)	1. Upslope runoff must be intercepted before it reaches the reservoir foundation excavation, the working platform or the exposed embankments.	Contractor	During construction
	2. Temporary working areas must be graded to drain away from the reservoir excavation.	Contractor	During construction
	3. Clean water must be directed around the open excavation in temporary lined channels or with the use the use of berms.	Contractor	During construction
	4. Sump points must be established within the excavation for any potential rainfall. In the event that water collects within the sump, it must be removed and clarified with the use of sedimentation tanks or filter bags, prior to discharge.	Contractor	During construction

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	5. Cement and concrete wash water must be contained in a designated lined washout area or a sealed container away from drains and/or the wetland system.	Contractor	During construction
	6. Cement, grout and curing products must not enter the surface flow and/or the wetland system.	Contractor	During construction
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
	3. 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

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	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.			
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

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	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
	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 Visual Impact			
Visual impacts	1. All temporal and permanent infrastructure must be painted in natural, non-reflective colours to blend in with the surroundings.	Contractor	During construction

CONSTRUCTION PHASE ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	2. Stockpiled pipes and equipment must be neatly arranged and screened with shade cloth in neutral colours to minimise visual disturbance.	Contractor	During construction
7.2.21 Heritage			
Heritage and Palaeontological Significance	1. The Pioneer Peace Monument needs to be protected by a 10 m wide buffer during the construction phase and photographs of this need to be submitted on SAHRIS (Heritage Impact Assessment, February 2026).	Contractor	During Construction
	2. 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
	3. 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
	4. Work must resume once clearance is given in writing by the archaeologist and/or Amafa aKwaZulu-Natali.	Contractor	During construction
	5. 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
7.2.22 Social Consideration			
Impact Management Outcome: Community inclusion, participation and awareness.			

CONSTRUCTION PHASE ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
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
	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
7.2.23 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

CONSTRUCTION PHASE ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
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. Disturbed areas must be rehabilitated immediately after construction has been completed in that area by planting appropriate indigenous plant species (Ecological Assessment, 2026).	Contractor	After construction
	4. This site must be rehabilitated according to a site specific rehabilitation plan under the supervision of a suitably qualified ecologist/botanist (Ecological Assessment, 2026).	Contractor	After construction
	5. Rehabilitated areas must be monitored for a period of 12 months to ensure the establishment 85% ground cover (Ecological Assessment, 2026).	Contractor	After construction
	6. 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 KZN EDTEA 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			

POST - CONSTRUCTION PHASE ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
	1. An 'as-built' layout plan must be submitted to the KZN EDTEA within sixty (60) days of completion of construction.	Applicant	After construction
	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. Monitor reinstated wetland crossings for signs of altered drainage, waterlogging, drying, seepage concentration, or preferential flow along the pipeline trench (Freshwater Assessment, March 2026).	Applicant	During operation
	4. Inspect the crossing after significant rainfall or flow events and repair any erosion, bank slumping, scour, or failure immediately (Freshwater Assessment, March 2026).	Applicant	During operation
	5. Implement a leak detection and response procedure for pipeline failure near wetlands and rivers (Freshwater Assessment, March 2026).	Applicant	During operation
	6. Contain and rehabilitate any area affected by scouring, saturation, or contaminated runoff associated with pipeline failure or maintenance activities (Freshwater Assessment, March 2026).	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

POST - CONSTRUCTION PHASE ACTIVITIES

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	TIMEFRAMES
Reticulation Maintenance	Maintenance of the water pipeline reticulation system must be conducted in accordance with the eThekwini Municipality Proactive Reticulation Maintenance Procedure (refer to **Appendix H**).	Applicant	Ongoing
Leak Tracing	Tracing of potential pipe leaks must be conducted in accordance with the eThekwini Municipality Leak Tracing Procedure (refer to **Appendix I**)	Applicant	Ongoing
Water Pipe Repairs	Pipeline failures and/or leaks must be repaired in accordance with the eThekwini Municipality Water Pipe Repairs Procedure (refer to **Appendix J**).	Applicant	Ongoing

8. CONCLUSION

In order to ensure compliance, all parties undertaking the implementation of the Tongaat Bulk Water Pipelines Upgrade and Reservoir Extension 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 eThekwini 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 F

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

APPENDIX G

OVERALL LAYOUT

LEGEND

- TONGAAT WTW TO TONGAAT SOUTH RES
- TONGAAT WTW TO BELVEDERE RES
- TONGAAT WTW TO METCALF RES
- TONGAAT WTW TO HAMBANATHI RES
- EXISTING RESERVOIRS

TONGAAT WTW

JAN ROZ RESERVOIR

HAMBANATHI RESERVOIR

EMONA RESERVOIR

METCALF RESERVOIR

MAMBA RIDGE RESERVOIR

BELVEDERE RESERVOIR

TONGAAT SOUTH RESERVOIR



eTHEKWINI
WATER SERVICES

WATER DESIGN BRANCH

eTHEKWINI

REDUCED PLAN USE SCALE BELOW

0 10 20 30 40 50 60 70

70mm ON ORIGINAL PLAN

LEGEND

EXISTING UNDERGROUND SERVICES ARE AS SHOWN BELOW.

SEWERS AND M.H'S
STORM WATER DRAINS AND M.H'S
WATER MAINS AND VALVES
ELECTRICITY CABLES
G.P.O TELEPHONE CABLES
OIL PIPELINES

CONSULTANT:

NAIDU CONSULTING

28/11/2025

1st Floor
No.5 The Boulevard
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Westville, Durban

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DRAWING No. D791-51-5000-A REV. 0

SITE PLAN LAYOUT

Revision	Date	Description
0	MAR 2024	ISSUED FOR INFORMATION

UNDERGROUND SERVICE	SERVICES CHECKED DATE	SIGNATURE
S.W DRAINS		
SEWERS		
WATERMAINS		
G.P.O CABLES		
ELECTRIC CABLES		
S.A.R CABLES		
E.S.C CABLES		
OIL PIPE LINE		

NOTE: Only underground services affected by new construction are shown. Care must be taken during excavations for road foundations,trenches etc.,to avoid damage to underground services such as sewers,drains,cables, watermains and connections.Wherever possible these must be located before work begins.

Contract No. PSC-2019/007

Project No. D791

Project Title

TONGAAT WATER TREATMENT WORKS

PROFESSIONAL SERVICES FOR THE IMPROVEMENTS TO THE WORKS

Drawing Title

PIPE NETWORK LAYOUT

Scales : AS SHOWN

Designed : D.RAMGHULAM | Date : MAR. 2024

Checked : T. THUMBAYA | Drawn : B. MHLUNGU

Area Engineer : Water Operations

Manager (W.D.)

Director (Water)

E.Mseleli – Head: Water & Sanitation Unit

Drawing No.	Sheet	Rev.
5000	1 of 1	0

APPENDIX H

PROACTIVE RETICULATION MAINTENANCE PROCEDURE

RETICULATION PROACTIVE MAINTENANCE PROCEDURE

APPROVAL		
COMPILED BY	**SUPPORTED BY**	**APPROVED BY**
Mervin Govender	Vusumuzi Dlamini	Jabulani Mayise
Area Manager	*Senior Technician*	*Senior Manager*
		
2025-11-28	2026-04-22	2026-06-03

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1 PURPOSE

The purpose of this procedure is to ensure that planned routine maintenance is carried out on all water network reticulation pipelines against a planning schedule according to the Ethekwini Municipality standards and requirements.

2 SCOPE

This procedure is applicable to Operations Water Network Branch.

3 REFERENCES

3.1 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. At the time of publication, the editions indicated were valid. The standards are subject to revision and users are responsible to ensure that the most recent editions of the standards listed below are used or referenced.

(a). Supply Chain Management Policy
(b). ISO 9001 Quality Management System – Requirements
(c). Human Settlement Planning and Design volume 2

3.2 Informative references

The following documents, in whole or in part, are informatively referenced in this document. At the time of publication, the editions indicated were valid. The standards are subject to revision and users are responsible to ensure that the most recent editions of the standards listed below are used or referenced.

(a).By laws

4 TERMS AND DEFINITIONS

For the purposes of this document, the terms and definitions given in the normative references and the following shall apply.

4.1 Abbreviations

SCM - Supply Chain Management

4.2 Definition of terms

Completion Codes - Are different codes issued when the job is completed

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5 EQUIPMENT / SOFTWARE / PROGRAM

5.1 Software and Program

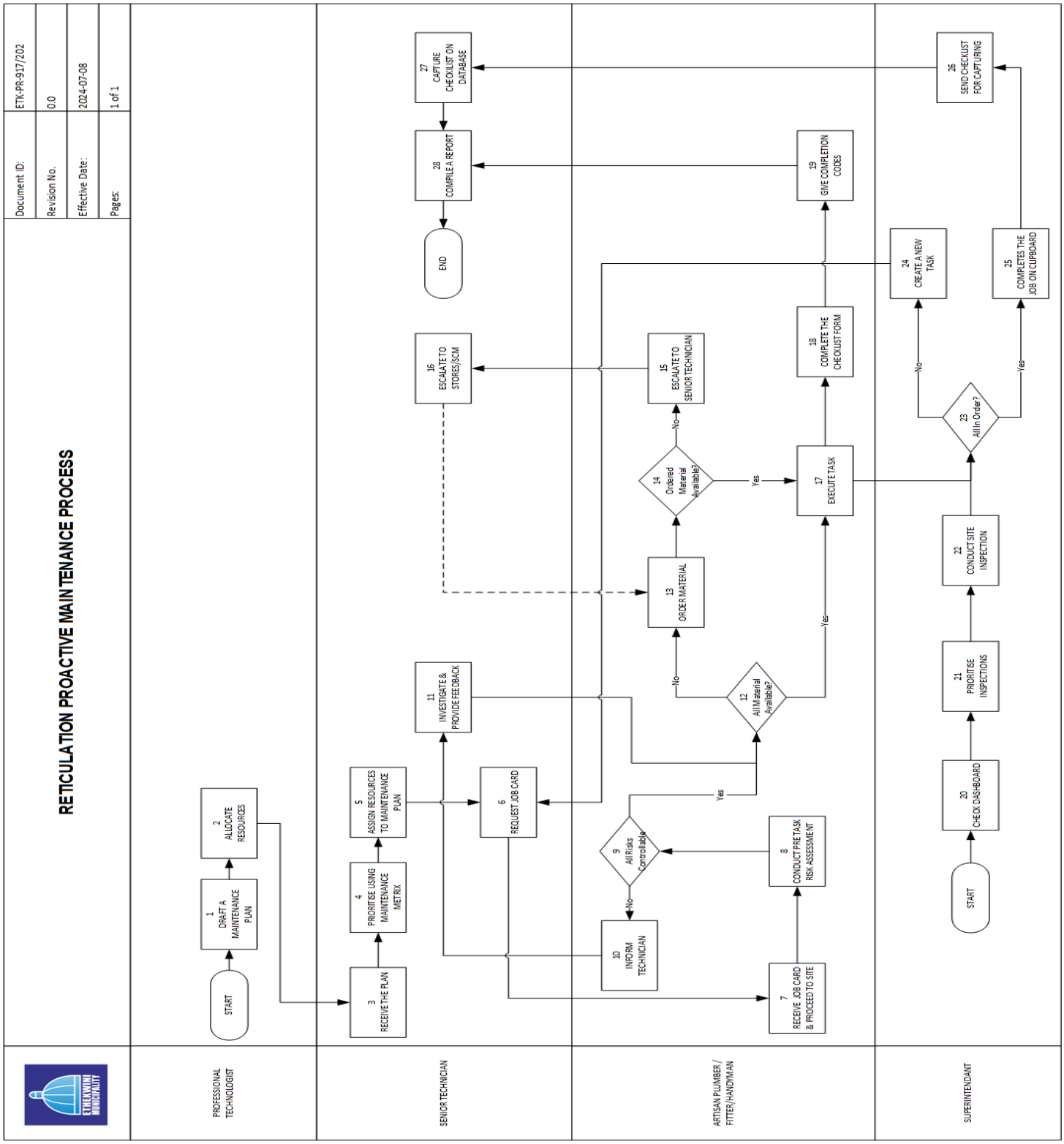
- Microsoft Word
- Microsoft Excel
- GIS
- JD Edwards

5.2 Equipment

- Small Plant
- Picks
- Cable detection locators
- Shovels
- Rakes
- Sieves
- Shoring
- Ladders
- Excavators
- TLBs
- Compressors
- Generator
- Spotlights and torches
- Barricading equipment including signage, chevron tape, “safenet” safety netting, standards, droppers (drums)
- Dewatering pumps
- Lime, chalk, paint and other materials to mark out the excavation (N/A for unplanned)
- Survey and setting out instruments and equipment, including for aligning the excavation to line and level (N/A for unplanned)

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6 RETICULATION PROACTIVE MAINTENANCE PROCESS



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6.1 Process description

6.1.1 The Professional Technologist draft a maintenance plan for the financial year
6.1.2 The Professional Technologist allocates the plan to different resources
6.1.3 The Senior Technician receives the plan
6.1.4 The Senior Technician prioritise the plan using maintenance matrix.
6.1.5 The Senior Technician assign the resources to the maintenance plan
6.1.6 The Senior Technician request for the job card from Control
6.1.7 Artisan Plumber receive the job card and proceed to site
6.1.8 The Artisan Plumber conducts the pre task risk assessment
6.1.9 The Artisan Plumber determine if all risks on site are controllable
6.1.10 If no, the Artisan Plumber informs the Technician.
6.1.11 The Senior Technician investigate and provides feedback to Artisan Plumber.
6.1.12 If all risks are controllable, the Artisan Plumber determine if all material is available.
6.1.13 If no, Artisan Plumber orders the required material.
6.1.14 The Artisan Plumber determines if all ordered material is available.
6.1.15 If no, Artisan Plumber escalates to Senior Technician.
6.1.16 The Senior Technician escalates to Stores/ SCM and provide feedback.
6.1.17 If material is available, the Artisan Plumber execute the task.
6.1.18 The Artisan Plumber complete the checklist form.
6.1.19 The Artisan Plumber provide completion code to Senior Technician.
6.1.20 The Superintendent checks the dashboard from Faultman system.
6.1.21 The Superintendent prioritise inspections.
6.1.22 The Superintendent conducts site inspections.
6.1.23 The Superintendent determines if all is in order upon site inspection
6.1.24 If no, the Superintendent creates a new task and request for job card from Senior Technician.
6.1.25 If all is in order, the Superintendent completes the job on the clipboard.
6.1.26 The Superintendent send checklist for capturing to Senior Technician.
6.1.27 The Senior Technician captures the checklist on the database
6.1.28 The Senior Technician compiles a report

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7 REVISION/AMENDMENT HISTORY

Date	Revision	Description of changes / Amendment(s)
2026-06-03	0.0	The initial issue of the procedure under ISO 9001 requirement

8 ATTACHMENTS

None

9 DEVELOPMENT TEAM

9.1 Gugu Mbatha	Senior Technician
9.2 Nastashia Moodley	ISDG Graduate
9.3 Siphiwe Zama	Senior Technician
9.4	
9.5	

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APPENDIX I

LEAK TRACING PROCEDURE

LEAK TRACING PROCEDURE

APPROVAL		
COMPILED BY	**SUPPORTED BY**	**APPROVED BY**
Gugu Mbatha	Mervin Govender	Jabulani Mayise
Senior Technician	*Area Manager*	*Senior Manager*
		
2026-03-05	2026-05-21	2026-06-11

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5.3 PPE ..... **Error! Bookmark not defined.**

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1 PURPOSE

The purpose of this procedure is to effectively and timeously trace water leaks which are not serious enough to manifest as visible bursts to prevent water losses and to avoid damage to roads and buildings etc.

2 SCOPE

This procedure is applicable to the tracing of leaks in all the reticulation within the eThekwini area of jurisdiction. The scope excludes water meters and leaks on the consumer side of the water meters (private leaks).

3 REFERENCES

3.1 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. At the time of publication, the editions indicated were valid. The standards are subject to revision and users are responsible to ensure that the most recent editions of the standards listed below are used or referenced.

(a). Infrastructure Leakage Index
(b). Water Conservation, Water Demand Management Plan
(c). ISO 9001 Quality Management System - Requirements

3.2 Informative references

The following documents, in whole or in part, are informatively referenced in this document. At the time of publication, the editions indicated were valid. The standards are subject to revision and users are responsible to ensure that the most recent editions of the standards listed below are used or referenced.

(a).By laws
(b).Supply Chain Management Policy
(c).OHS Act 85 of 1993

4 TERMS AND DEFINITIONS

For the purposes of this document, the terms and definitions given in the normative references and the following shall apply.

4.1 Abbreviations

OHS – Occupational Health and Safety Act

WSA – Water Services Assessor

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4.2 Definition of terms

None

5 EQUIPMENT / SOFTWARE / PROGRAM

5.1 Software and Program

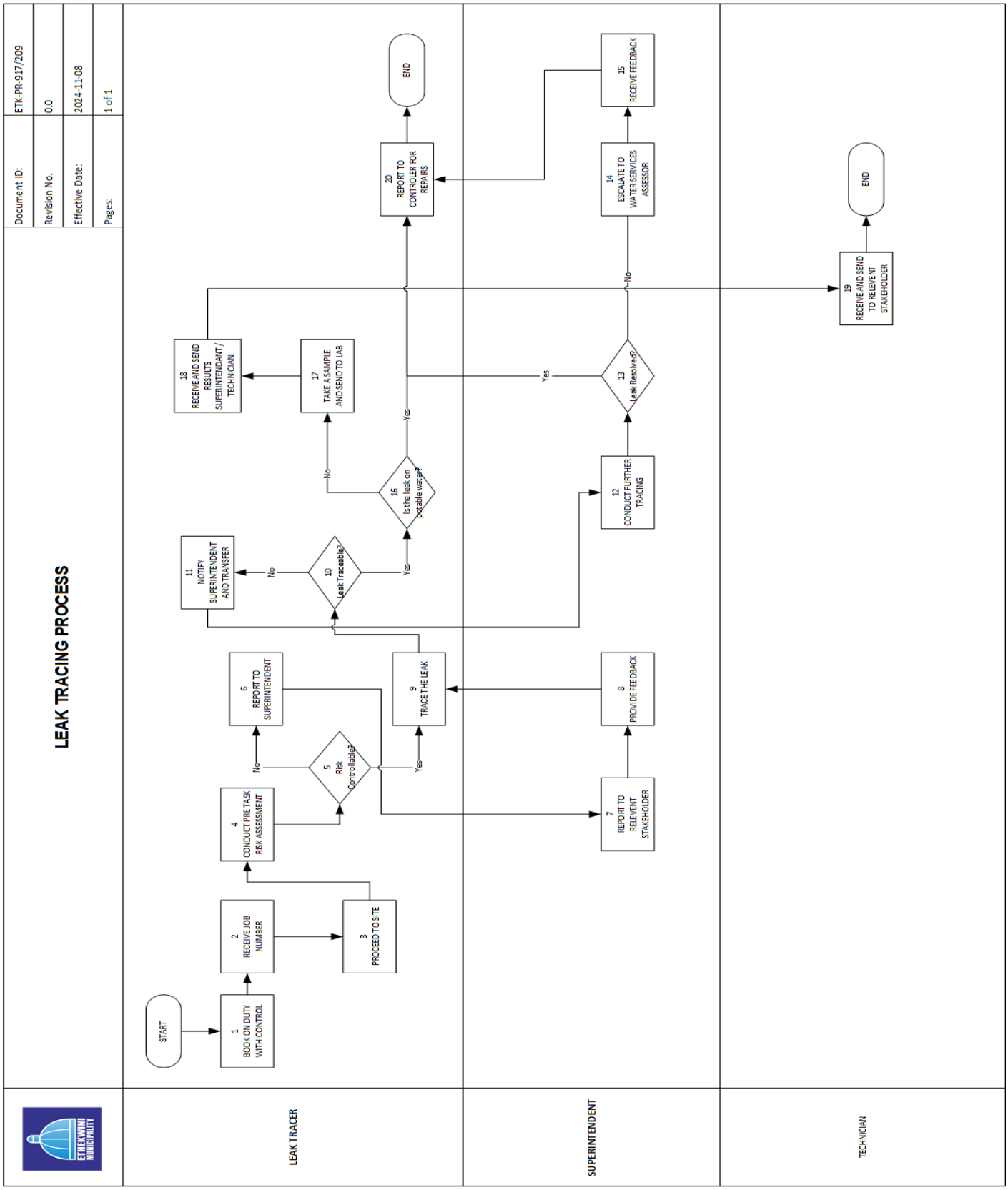
- Microsoft Word
- Microsoft Excel
- Faultman

5.2 Equipment and Tools

- Small Plant and hand tools
- Geophone
- Dye
- Cooler box and ice packs
- Metal detector
- Cable locator equipment (where available)
- Spray paint and chalk
- Traffic control equipment - signage, cones, chevron tape, safety netting etc.
- Vehicle
- PPE

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6 LEAK TRACING PROCESS



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6.1 Process description

6.1.1 The Leak Tracer books on duty with Control Centre.

6.1.2 The Leak Tracer receives job number from Control

6.1.3 The Leak Tracer proceed to site.

6.1.4 The Leak Tracer conduct pre task risk assessment.

6.1.5 The Leak Tracer determines if all risks are controllable.

6.1.6 If the risks are not controllable, the Leak Tracer report to Superintendent

6.1.7 The Superintendent reports all risks to the relevant stakeholder.

6.1.8 The Superintendent receives feedback from stakeholders and provides it to Leak Tracer

6.1.9 If the risks are controllable or within the control of the Leak Tracer, Leak Tracer takes the necessary actions. The Leak Tracer traces the leak after all the risks have been resolved.

6.1.10 The Leak Tracer determines if the leak is traceable or not.

6.1.11 If the leak is not traceable, the Leak Tracer notifies the Superintendent and transfer to relevant stakeholder.

6.1.12 The Superintendent conducts further tracing.

6.1.13 The Superintendent determines if the leak has been identified or not.

6.1.14 If the leak is not identified, the Superintendent escalates the fault to Water Services Assessor.

6.1.15 The Superintendent receives feedback from WSA and informs the Leak Tracer.

6.1.16 If the leak is traceable, the Leak Tracer determines if the leak is on potable water or not.

6.1.17 If the leak is not on potable water, the Leak Tracer takes the sample and sends it to the Lab.

6.1.18 The Leak Tracer receives the results and sends them to the Superintendent/ Technician.

6.1.19 The Technician receives, analyse and forward results to relevant stakeholder.

6.1.20 If the leak is on the potable water, the Leak Tracer report to Controller for repairs.

7 REVISION/AMENDMENT HISTORY

Date	Revision	Description of changes / Amendment(s)
2026-06-11	0.0	The initial issue of the procedure under ISO 9001 requirement

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8 ATTACHMENTS

8.1 Daily Field Returns
8.2 Daily log sheet
8.3 Method statement
8.4 Repair notification
8.5 Fault man records

9 DEVELOPMENT TEAM

9.1 Nastashia Moodley	ISDG Graduate
9.2 Vusumuzi Dlamini	Senior Technician
9.3	
9.4	
9.5	

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APPENDIX J

WATER PIPE REPAIR PROCEDURE

WATER PIPE REPAIR PROCEDURE

APPROVAL		
COMPILED BY	**SUPPORTED BY**	**APPROVED BY**
Mervin Govender	Siphiwe Zama	Jabulani Mayise
Area Manager	*Area Technologist*	*Senior Manager*
		
2026-02-11	2026-06-02	2026-06-10

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1 PURPOSE

The purpose of this procedure is to ensure that repairs of leaks and bursts on all types of pipes are completed within the shortest practical time to minimise water interruptions and water losses.

2 SCOPE

This procedure is applicable to all the pipes and pipe systems within the area of jurisdiction of eThekwini. It applies to the internal teams as well as the external contractors appointed and managed by any of the department divisions.

3 REFERENCES

3.1 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. At the time of publication, the editions indicated were valid. The standards are subject to revision and users are responsible to ensure that the most recent editions of the standards listed below are used or referenced.

(a). Supply Chain Management Policy
(b). OSH Act 85 of 1993
(c). ISO 9001 Quality Management System - Requirements

3.2 Informative references

The following documents, in whole or in part, are informatively referenced in this document. At the time of publication, the editions indicated were valid. The standards are subject to revision and users are responsible to ensure that the most recent editions of the standards listed below are used or referenced.

(a).By laws

4 TERMS AND DEFINITIONS

For the purposes of this document, the terms and definitions given in the normative references and the following shall apply.

4.1 Abbreviations

AP - Artisan Plumber

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4.2 Definition of terms

None

5 EQUIPMENT / SOFTWARE / PROGRAM

5.1 Software and Program

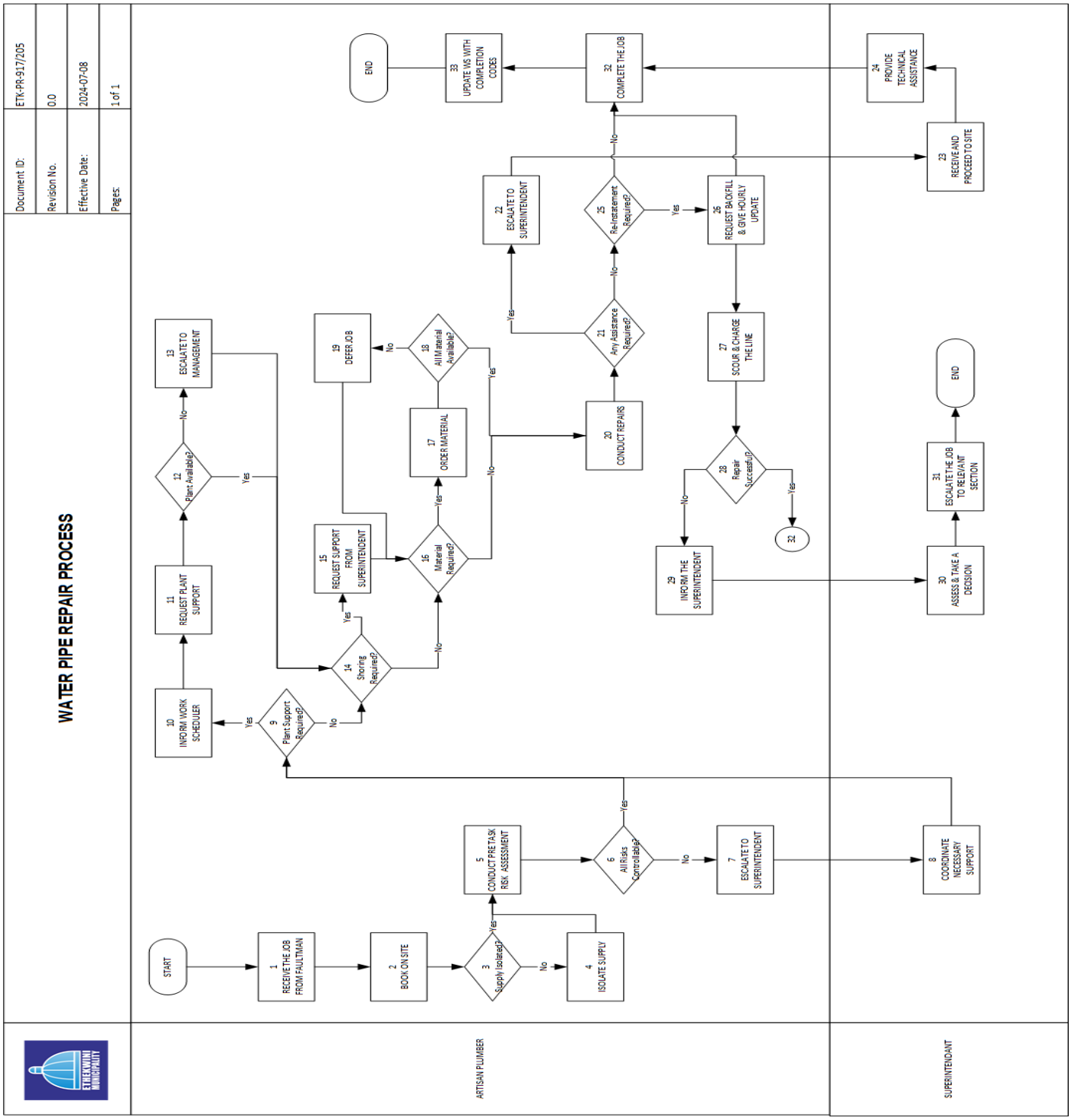
- Microsoft Word
- Microsoft Excel
- Faultman

5.2 Equipment

- Small Plant
- Excavator, TLB, Crane truck, compressor where required
- Picks, shovels
- Hand tools
- Breakers (electric and pneumatic)
- Skhil saw
- Electro-fusion for HDPE
- Vehicles
- Generator and lighting sets
- Dewatering pumps
- Traffic control equipment - signage, drums, chevron tape, safety netting etc.
- Ladders Requirements as per type of work and requirements

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6 WATER PIPE REPAIR PROCESS



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6.1 Process description

6.1.1 The Artisan Plumber receives jobs from the Faultman system

6.1.2 The Artisan Plumber book on site by informing Control.

6.1.3 The Artisan Plumber determines if the supply of water has been isolated.

6.1.4 If not, the Artisan Plumber conducts the isolation by ensuring that all valves closest to the burst have been isolated.

6.1.5 If the supply is isolated, the Artisan Plumber conducts a pre task risk assessment

6.1.6 The Artisan Plumber determines if all risks are controllable

6.1.7 If not, the Artisan Plumber escalates to Superintendent

6.1.8 The Superintendent coordinates necessary support and provides feedback to Artisan Plumber

6.1.9 The Artisan Plumber determines if plant support is required or not.

6.1.10 If yes, the Artisan Plumber inform Work Scheduler.

6.1.11 The Artisan Plumber request for plant support

6.1.12 The Artisan Plumber determine if the plant is available.

6.1.13 If the plant is not available, the Artisan Plumber escalates the matter to management and provides feedback

6.1.14 If the plant support is not required, the Artisan Plumber determines if shoring is required?

6.1.15 If yes, the Artisan Plumber request for support from Superintendent.

6.1.16 If no, the Artisan Plumber determine material required for the job

6.1.17 Artisan Plumber orders required material

6.1.18 Artisan Plumber determines if all material required for the job is available?

6.1.19 If no, the Artisan Plumber defers the job until all material is available.

6.1.20 If no material is required or all material required is available, the Artisan Plumber conduct the repairs.

6.1.21 The Artisan Plumber determines if assistance is required.

6.1.22 If yes, the Artisan Plumber escalates to Superintendent.

6.1.23 The Superintendent receives the job and proceed to site

6.1.24 The Superintendent provides technical assistance and Artisan Plumber completes the job.

6.1.25 If no assistance is required, the Artisan Plumber determines if re-instatement is required?

6.1.26 If yes, Artisan Plumber request a backfill and provide hourly update.

6.1.27 The Artisan Plumber scour and charge the line

6.1.28 The Artisan Plumber determine if the repairs were completed successfully?

6.1.29 If no, the Artisan Plumber informs the Superintendent.

6.1.30 The Superintendent assesses and take a decision

6.1.31 The Superintendent escalates the job to relevant department.

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6.1.32 If there's no need for re-instatement and repairs were successfully completed, the AP completes the job.

6.1.33 The AP updates Control with completion codes.

7 REVISION/AMENDMENT HISTORY

Date	Revision	Description of changes / Amendment(s)
2026-06-10	0.0	The initial issue of the procedure under ISO 9001 requirement

8 ATTACHMENTS

8.1 Daily log sheet
8.2 Requisitions
8.3 Daily field returns form

9 DEVELOPMENT TEAM

9.1 Nastashia Moodley	ISDG Graduate
9.2 Gabriel Motilal	Area Manager
9.3 Vusumuzi Dlamini	Senior Technician
9.4	
9.5	

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