DRAFT MAINTENANCE MANAGEMENT PLAN

OCTOBER 2026

PROPOSED FISH EAGLE DAM REPAIR WORKS, ST. JOHN'S VILLAGE



St. John's Village
LIFESTYLE & RETIREMENT COUNTRY ESTATE
HOMEOWNERS ASSOCIATION

REF NO: DC22/MMP/0001/2026

Report Prepared By

GREEN CHOICE CONSULTING

REPORT DISCLAIMER

This Maintenance Management Plan has been prepared by Green Choice Consulting (Pty) Ltd and NatureStamp (Pty) Ltd on behalf of the St. John's Home Owners Association for the proposed repair works to Fish Eagle Dam. The report has been compiled on the basis of information provided by the Applicant and project engineers, available project documentation, site observations and the findings and recommendations of the appointed aquatic specialists.

Green Choice Consulting has exercised reasonable professional care in the compilation of this report. Technical information and recommendations provided by the project engineers and appointed specialists have been incorporated in good faith and remain the responsibility of the relevant professional or specialist within their respective fields of expertise.

This report has been prepared specifically for the proposed Fish Eagle Dam repair works and should be read together with the supporting specialist assessment, engineering information and appendices referenced herein.

GLOSSARY OF TERMS

Competent Authority	The authority responsible for considering and making a decision on the Maintenance Management Plan. For this project, the Competent Authority is the KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs (EDTEA).
Environment	The surroundings within which humans exist, comprising the land, water and atmosphere; plant and animal life; and the physical, chemical, aesthetic and cultural properties and relationships between these components.
Environmental Control Officer (ECO)	A suitably qualified person appointed to monitor implementation of and compliance with the environmental management requirements contained in the MMP.
Environmental Impact	Any change to the environment resulting from an activity, whether adverse or beneficial.
Interested and Affected Party (I&AP)	An individual, organisation or organ of state that has an interest in, or may be affected by, the proposed maintenance works and associated MMP process.
Maintenance	Activities associated with the repair, upkeep or upgrading of existing infrastructure in order to maintain or restore its function, without materially changing the nature or extent of the existing infrastructure.
Maintenance Management Plan (MMP)	A management plan describing the maintenance activities to be undertaken and the environmental management, mitigation, rehabilitation and monitoring measures applicable to those activities.
Method Statement	A description of how a particular maintenance activity will be undertaken, including the sequence of works and the environmental management measures to be implemented.
Mitigation	Measures implemented to avoid, minimise, rehabilitate or otherwise manage adverse environmental impacts associated with an activity.
Rehabilitation	Measures undertaken to stabilise and restore areas disturbed by the maintenance works, including reshaping, erosion control and re-establishment of appropriate indigenous vegetation.
Watercourse	A river or spring; a natural channel in which water flows regularly or intermittently; a wetland, lake or dam into which or from which water flows; and any collection of water declared to be a watercourse in terms of the National Water Act.
Wetland	Land that is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which under normal circumstances supports or would support vegetation typically adapted to saturated soil conditions.

ABBREVIATIONS AND ACRONYMS

CBA	Critical Biodiversity Area
DWS	Department of Water & Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EAPASA	Environmental Assessment Practitioners Association of South Africa
ECO	Environmental Control Officer
EDTEA	Department of Economic Development, Tourism & Environmental Affairs
EIA	Environmental Impact Assessment
EIS	Ecological Importance and Sensitivity
ESA	Ecological Support Area
HGM	Hydrogeomorphic
I&AP	Interested & Affected Party
MMP	Maintenance Management Plan
NEMA	National Environmental Management Act (Act No. 107 of 1998)
NEMBA	National Environmental Management: Biodiversity Act (Act No. 10 of 2004)
NFEPA	National Freshwater Ecosystem Priority Areas
NWA	National Water Act (Act No. 36 of 1998)
PES	Present Ecological State
PPP	Public Participation Process
SACNASP	South African Council for Natural Scientific Professions
SANAS	South African National Accreditation System

EXECUTIVE SUMMARY

Fish Eagle Dam is an existing earthfill dam located within St. John's Village Lifestyle & Retirement Country Estate on Erf 3877, Howick, KwaZulu-Natal. The dam was constructed in approximately 1970 and currently forms part of the estate's stormwater and landscaping infrastructure.

Following an inspection by the Dam Safety Regulation Office in 2019, Fish Eagle Dam was classified as a Category 2 dam with a safety risk. A subsequent Dam Safety Evaluation undertaken during 2024 identified a number of deficiencies relating primarily to the capacity of the existing spillway, the condition and operation of the outlet works, and the stability and safety of the dam embankment. The significance of these deficiencies is increased by the extent of residential development that has occurred downstream of the dam since its original construction. The proposed repair works are therefore required to improve the long-term safety, stability and operation of the dam and reduce the potential risk to downstream residents, properties and infrastructure.

The proposed repair works comprise the widening and upgrading of the existing spillway system, reinstatement of the historical auxiliary spillway, repair and stabilisation of the outlet works, raising of the dam crest by approximately 400 mm, construction of a downstream stability berm and construction of a flood-protection berm adjacent to the existing spillway. The works relate to the repair and upgrading of existing dam infrastructure and will not increase the storage capacity of Fish Eagle Dam or expand the existing impoundment footprint. Following consultation with the KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs (EDTEA), it was confirmed that the proposed works are appropriately assessed and managed through a Maintenance Management Plan (MMP) process.

A specialist Watercourse and Aquatic Assessment was undertaken by NatureStamp (Pty) Ltd to identify and delineate aquatic features associated with the project area, determine their ecological condition and importance, assess the potential impacts of the proposed repair works and provide appropriate mitigation, rehabilitation and monitoring measures. The assessment identified a channelled valley-bottom wetland, two seep wetlands, a spring and Fish Eagle Dam within the broader study area. The wetland potentially affected by the proposed works was assessed as being in a Moderately Modified ecological condition (PES Category C), with the trajectory of change considered stable. Biodiversity maintenance, streamflow regulation and tourism/recreation were identified as the ecosystem services of highest value, while erosion control was identified as an important management consideration. Baseline water-quality sampling was also undertaken to provide a benchmark against which conditions can be compared during and following the repair works.

The principal environmental impacts associated with the repair works are expected to occur during construction and include temporary disturbance of aquatic and riparian habitat, erosion and sediment mobilisation, potential deterioration of surface-water quality and temporary alteration of flow conditions. The works will, however, be undertaken predominantly within and immediately adjacent to existing dam infrastructure and previously disturbed areas. The specialist assessment concluded that the identified impacts can be appropriately managed through implementation of the recommended mitigation, rehabilitation and monitoring measures incorporated into this MMP. The MMP consequently includes detailed method statements and environmental controls relating to the extent and timing of the works, protection of sensitive aquatic features, management of erosion and sediment, pollution prevention, construction access, rehabilitation and alien invasive plant control.

Public participation commenced during July 2026 and included the erection of bilingual site notices, publication of English and isiZulu newspaper advertisements and direct circulation of a Background Information Document to surrounding landowners, relevant authorities and other stakeholders. Comments received to date have predominantly comprised requests to register as Interested and Affected Parties (I&APs). Concerns raised by downstream residential estates relate principally to the potential for increased sediment loads, altered river levels, runoff and contamination during construction. Ezemvelo KZN Wildlife also requested that biodiversity-related impacts be appropriately avoided, mitigated or ameliorated. These matters have been considered through the specialist assessment and are addressed through the mitigation, method statement, rehabilitation and monitoring requirements contained in this MMP. The Draft MMP will

be made available to registered I&APs and relevant authorities for a 30-day review and comment period prior to finalisation and submission to EDTEA.

An Environmental Control Officer (ECO) will be appointed to monitor implementation of and compliance with the MMP during the repair works. Environmental monitoring will include construction compliance monitoring, surface-water quality monitoring upstream and downstream of the works, erosion and alien invasive plant monitoring, and post-construction monitoring of rehabilitation and vegetation establishment. Rehabilitation of disturbed areas will commence as soon as practicable following completion of the relevant works and will continue, together with alien invasive plant management, until the rehabilitation objectives of the MMP have been achieved.

The proposed repair works are considered necessary to address the identified dam-safety deficiencies and improve the long-term safety and resilience of Fish Eagle Dam. Subject to implementation of the environmental management, mitigation, rehabilitation and monitoring measures contained in this MMP, and compliance with any conditions imposed by EDTEA, the works can be undertaken without unacceptable residual impacts on the receiving environment. It is therefore recommended that the MMP be adopted by EDTEA to enable the proposed repair works to proceed in accordance with the environmental management requirements contained herein.

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1. INTRODUCTION

1.1 Purpose of this Report

Green Choice Consulting (Pty) Ltd alongside NatureStamp (Pty) Ltd have been appointed by the St. John's Home Owners Association (hereinafter referred to as "The Applicant") to manage the Maintenance Management Plan (MMP) process associated with the proposed repair of the existing Fish Eagle Dam.

The proposed works are limited to the repair, maintenance and upgrading of existing dam infrastructure. The works will not increase the storage capacity of Fish Eagle Dam or result in expansion of the existing impoundment footprint.

A Maintenance Management Plan (MMP) is an environmental management process recognised by competent authorities as an appropriate mechanism for assessing maintenance, repair and upgrading works associated with existing infrastructure, while ensuring that potential environmental impacts are identified and appropriately managed through suitable mitigation and monitoring measures.

The MMP will identify the environmental sensitivities associated with the site, assess potential environmental risks arising from the proposed repair works, and describe the measures that will be implemented to avoid, minimise and manage these impacts during construction.

The MMP process will include specialist aquatic and watercourse input, a public participation process, and review by EDTEA prior to any repair works commencing.

This Draft MMP comprises the following chapters:

- Chapter 1 introduces the project, the project location as well as the MMP project team.
- Chapter 2 outlines the project background.
- Chapter 3 describes the proposed maintenance works.
- Chapter 4 provides the legislative context associated with the project.
- Chapter 5 provides a description of the receiving environment.
- Chapter 6 provides a summary of the public participation process undertaken to date.
- Chapter 7 provides a summary of the specialist assessment undertaken for the proposed maintenance works.
- Chapter 8 describes the environmental risks associated with the construction and operational phases of the project.
- Chapter 9 provides the method statements associated with the proposed maintenance works.
- Chapter 10 provides the measures associated with environmental management and ongoing monitoring.
- Chapter 11 provides conclusions and recommendations.

Following submission of an Environmental Impact Assessment (EIA) Enquiry to the KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs (EDTEA), the Department confirmed that the proposed repair works are appropriately assessed through a Maintenance Management Plan process. The preparation of this Draft MMP therefore forms part of the environmental process required prior to implementation of the proposed repair works. Once adopted, the MMP will also serve as a practical environmental management document to guide the Applicant, appointed contractor and relevant site personnel during implementation of the repair works, rehabilitation and subsequent monitoring.

1.2 Applicant Details

The Applicant for this MMP process is the St. John's Homeowners Association. The Applicant's details are provided below:

Table 1: Applicant Details

Name of Applicant	St. John's Home Owners Association
Applicant Representative	Gary McDowell
Postal Address	Private Bag X12, Howick, 3290
Physical Address	33 Karkloof Road, Howick, 3290

1.3 Project Location

The existing Fish Eagle Dam is located within St. John's Village Lifestyle & Retirement Country Estate on Erf 3877, Howick, within the uMngeni Local Municipality, KwaZulu-Natal. (refer to Figure 1). The site's location details are provided in Table 2 below, while locality maps are attached as Appendix A.

Table 2: Project Property Location Details

Name of Landowner	The Applicant
Property Description	Erf 3877, Howick
Zoning	Conservation
Central Co-Ordinates	29° 27' 46.5"S 30° 14' 0.8"E

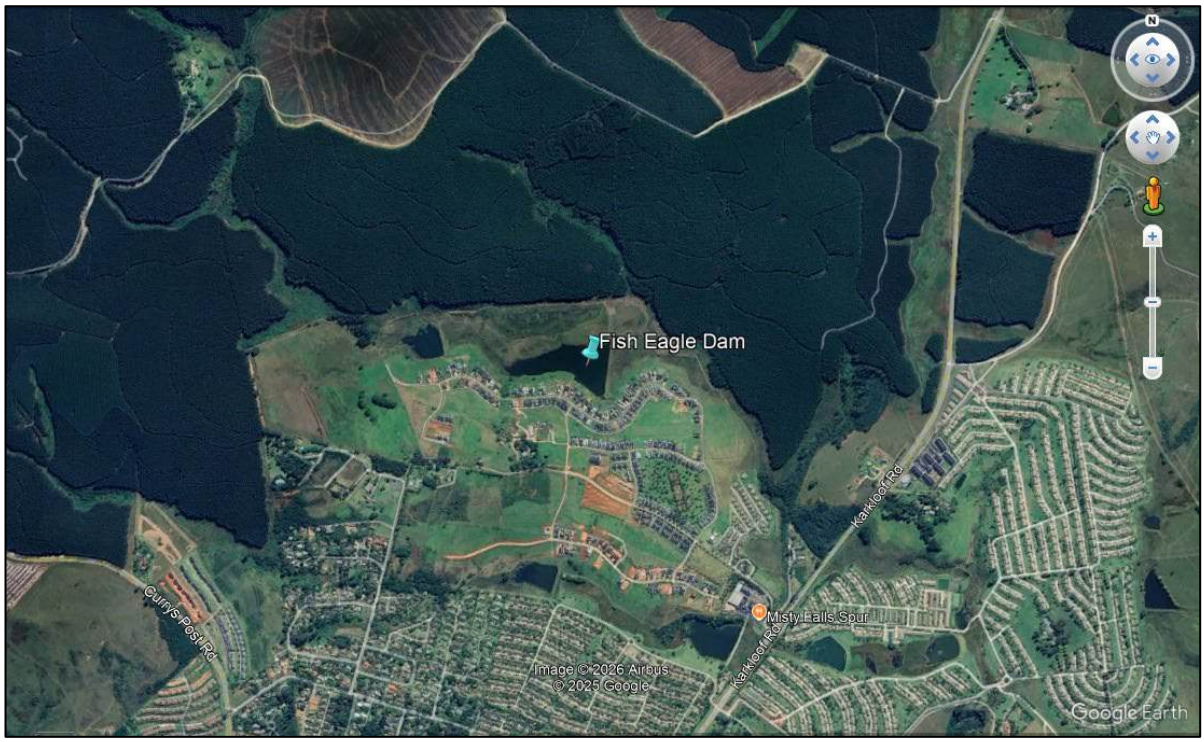


Figure 1: Location of the Fish Eagle Dam (Source: ©Google Earth Satellite Imagery).

1.4 Project Team

The Applicant has appointed Green Choice Consulting (Pty) Ltd to execute this project in a professional and unbiased manner. Sarah Stalberg of Green Choice Consulting (Pty) Ltd is an EAPASA registered Environmental Assessment Practitioner (EAP) with 16 years' experience in various fields of environmental consulting, including the undertaking of Environmental Impact Assessments, feasibility and due diligence studies, construction monitoring (performing the duties of an Environmental Control Officer), and environmental auditing. Sarah's *curriculum vitae* and EAPASA registration certificate are attached as Appendix B.

The specialist and technical component of the MMP process will be undertaken by Mark Summers of NatureStamp (Pty) Ltd. Mark is a SACNASP registered ecologist and will be responsible for the environmental impact assessment, provision of method statements, and management measures provided in the MMP.

The Competent Authority responsible for reviewing this Draft Maintenance Management Plan is the KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs (EDTEA).

1.5 Independence

The amended 2014 EIA Regulations pursuant to NEMA, provide general requirements for Environmental Assessment Practitioners (EAPs) and specialists with the intention of reducing the potential for bias in the environmental process. The first requirement is that the EAP should be independent (Regulation 13(1)(a) of GN R982, as amended).

Neither Green Choice Consulting (Pty) Ltd nor any of its sub-consultants are subsidiaries of St. John's Home Owners Association, nor is the St. John's Home Owners Association a subsidiary to Green Choice Consulting (Pty) Ltd.

Green Choice Consulting (Pty) Ltd and its sub-consultants do not have any interests in secondary or downstream developments that may arise out of the authorisation of the proposed project.

1.6 Assumptions, Limitations and Gaps in Knowledge

In undertaking this investigation and compiling this MMP, the following has been assumed:

- The information provided by The Applicant is accurate and unbiased, and no information that could change the outcome of the MMP process has been withheld.
- A site visit has been undertaken to better understand the project location and proposed activities, and to ensure that the information provided by The Applicant is correct, based on site conditions observed.
- The comments received in response to the public participation process are representative of comments from the broader community.
- The Maintenance Management Plan has been prepared using the information available at the time of writing, together with applicable legislation, available guidelines and accepted environmental best practice.

Notwithstanding the above assumptions and limitations, it is the opinion of the Environmental Assessment Practitioner that sufficient information is available to identify and assess the environmental risks associated with the proposed maintenance works and to develop appropriate management and mitigation measures for implementation during construction.

2. PROJECT BACKGROUND

2.1 Background to Fish Eagle Dam

Fish Eagle Dam is an existing dam located within St. John's Village Lifestyle & Retirement Country Estate on Erf 3877, Howick, within the uMngeni Local Municipality, KwaZulu-Natal. The dam was constructed in approximately 1970, when the property was historically used for agricultural purposes, and now forms part of the estate's existing stormwater and landscaping infrastructure.

2.2 Need & Justification for the Proposed Repair Works

In April 2019, the KwaZulu-Natal regional Dam Safety Regulation Office inspected Fish Eagle Dam and determined that it met the prescribed criteria for classification as a dam with a safety risk. The regional office subsequently assisted the Applicant with registration of the dam and its classification by the national Dam Safety Office. In November 2019, Fish Eagle Dam was classified as a Category 2 dam, comprising a small earthfill dam wall with a significant hazard potential.

The Category 2 classification was supported by the findings of the first Dam Safety Evaluation undertaken during 2024. The evaluation noted that the dam was constructed before the introduction and enforcement of the current dam-safety requirements, and before publication of the 1991 SANCOLD Guidelines on Safety in Relation to Floods. It also identified the substantial increase in downstream development since approximately 2010/2011, including retirement-estate residences situated immediately downstream of the existing spillway and further downstream of the dam. The potential consequences associated with inadequate spillway capacity or failure of the dam are therefore greater than when the dam was originally constructed.

Following completion of the Dam Safety Evaluation in December 2024, a number of measures were recommended to improve the safety, operation and management of Fish Eagle Dam. These included the following:

- Investigate measures to improve the spillway capacity of the dam to reduce the risk of overtopping of the embankment and protect downstream residential properties from flooding or damage associated with spillway discharges.
- Reconstruct the left training wall to prevent spillway flows from being directed towards the dam embankment and to guide flows away from properties situated downstream of the spillway outlet channel.
- Stabilise the downstream slope in the vicinity of the outlet valve. The recommended works may include extending the outlet pipe, installing drainage around the pipe and recompacting the embankment fill. The outlet valve should also be exposed, inspected and repaired or replaced to ensure that it remains operational.
- Prepare a formal Operation and Maintenance Manual (O&M Manual) and Emergency Preparedness Plan (EPP), including current contact details for downstream property owners who may require notification during an emergency. This recommendation is administrative in nature and does not form part of the physical repair works assessed in this MMP.

2.3 Overview of the Proposed Repair Works

The proposed works are intended to address deficiencies identified during the Dam Safety Evaluation and improve the long-term safety and operation of the existing Fish Eagle Dam. The proposed maintenance works include:

- Widening/upgrading the spillway system to safely accommodate larger flood events;
- Reinstatement of the historical auxiliary spillway;
- Repairing and stabilising the outlet works to improve the safe operation of the dam;

- Raising the crest of the dam wall by approximately 400 mm to provide an additional safety margin during extreme rainfall events;
- Construction of a downstream stability berm; and
- Construction of the flood-protection berm adjacent to the existing spillway.

Importantly, the proposed works will not increase the storage capacity of the dam or expand the existing dam footprint.

The proposed repair works will be described in detail in Chapter 3.

2.4 Motivation for the Maintenance Management Plan

The proposed activities are limited to the repair and upgrading of existing dam infrastructure and do not constitute the construction of a new dam or expansion of the existing impoundment. The proposed works will not increase the storage capacity of the dam, expand its existing footprint or alter its primary function. Following consideration of the nature and extent of the proposed works, EDTEA confirmed that the project is appropriately assessed through a Maintenance Management Plan process.

3. DESCRIPTION OF THE PROPOSED REPAIR WORKS

This chapter provides an overview of the existing Fish Eagle Dam infrastructure and describes the proposed repair works recommended by the Dam Safety Evaluation and subsequent Concept Design Report. The proposed works are intended to improve the long-term safety, stability and operation of the existing dam while maintaining its current storage capacity and footprint.

3.1 Existing Infrastructure

The existing dam wall comprises an earthen embankment approximately 185m in length, with a spillway located on the southern end of the wall (Figure 2). The outlet works comprise a 200 mm diameter steel outlet pipe which reduces to a 100 mm diameter section incorporating a butterfly valve. The concrete encasement of the pipe is not visible and the surrounding area is saturated with water (Figure 3).

The location of the abovementioned infrastructure is provided in Figure 4.



Figure 2: Earthen dam wall of the Fish Eagle Dam.



Figure 3: Existing outlet works (Source: MBB Consulting Engineers).

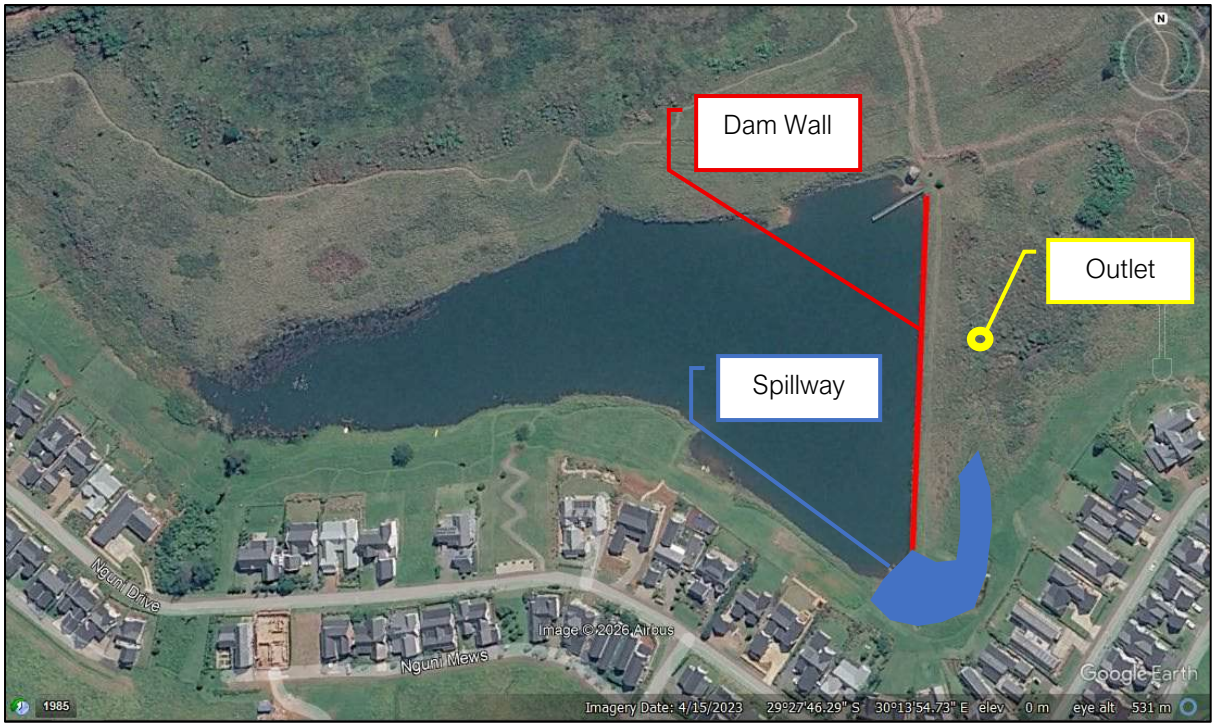


Figure 4: General arrangement of the existing Fish Eagle Dam infrastructure.

3.2 Proposed Repair Works

3.2.1 Upgrading the Spillway System

The Fish Eagle Dam currently does not have sufficient capacity to safely convey water during unusually large storm events. If more water enters the dam than the existing spillway can accommodate, it can lead to overtopping of the dam wall – one of the most common causes of dam failure.

As a result, the proposed works will entail the widening of the existing spillway to 18 meters, as well as reinstatement of an approximately 23m wide historical auxiliary spillway located on the northern side of the dam. Information provided by the Applicant indicates that the historical spillway was closed through extension of the existing earthfill dam wall, and the proposed works will involve removal and regrading of this later extension to reinstate the historical auxiliary spillway to improve the dam's flood discharge capacity. The proposed works will collectively accommodate the attenuated Safety Evaluation Discharge (SED) of 170 m^3/s. The proposed spillway improvements are confined to the existing dam infrastructure and associated disturbed areas and will not result in expansion of the overall dam footprint.

Erosion protection will also be incorporated into the final spillway design where required to protect exposed surfaces from high-velocity flows and minimise downstream erosion and sediment mobilisation. The final erosion-protection measures will be determined through the detailed engineering design.

Collectively, the proposed spillway improvements will increase the dam's capacity to safely convey floodwaters around the embankment, thereby reducing the risk of overtopping and improving protection of downstream residential properties during extreme rainfall events. The reinstated auxiliary spillway will mirror the function of the historical spillway, restoring an existing flood management feature rather than introducing a new drainage alignment.

3.2.2 Outlet Works Repairs & Stabilisation

The outlet works can be considered as the dam's plumbing system. This system has deteriorated over time, and the slope surrounding the outlet has become unstable. A new outlet works design will be adopted to enhance the operational safety and functionality of the dam. The proposed design allows for controlled

water releases, water abstraction and emergency discharges. The outlet repair works will include installation of new pipework, gate valves, butterfly valves and associated drainage infrastructure to facilitate controlled water releases, emergency discharges and irrigation abstraction (Figure 5).

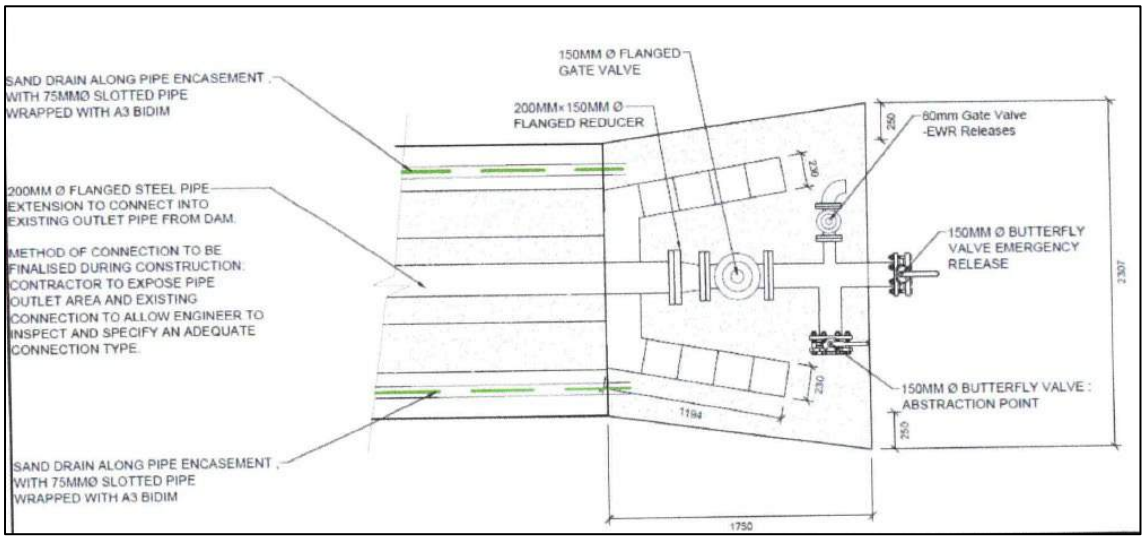


Figure 5: Proposed outlet pipe connection detail (Source: MBB Consulting Engineers)

The proposed repairs will stabilise the surrounding slope and upgrade the pipework in order for the dam to operate safely.

Detailed engineering specifications are provided in Appendix C.

3.2.3 Dam Wall Raising & Stabilisation

The dam wall will be raised by 400mm to provide an additional safety margin during unusually high rainfall events. This will aid in preventing water from flowing over the top of the dam, while maintaining the current storage capacity of the dam. To improve the stability of the existing embankment, an earthen stability berm is proposed along the downstream toe of the dam wall, extending across the broad valley floor (Figure 6). It is proposed that a 4m high berm with a 6m wide crest be constructed along the downstream toe of the embankment to improve safety of the dam wall. For internal drainage, the design incorporates a 0.5m thick sand chimney and a 0.5m thick sand blanket. Additionally, a 75mm diameter slotted drainpipe will be included at the toe to collect and safely discharge seepage water.

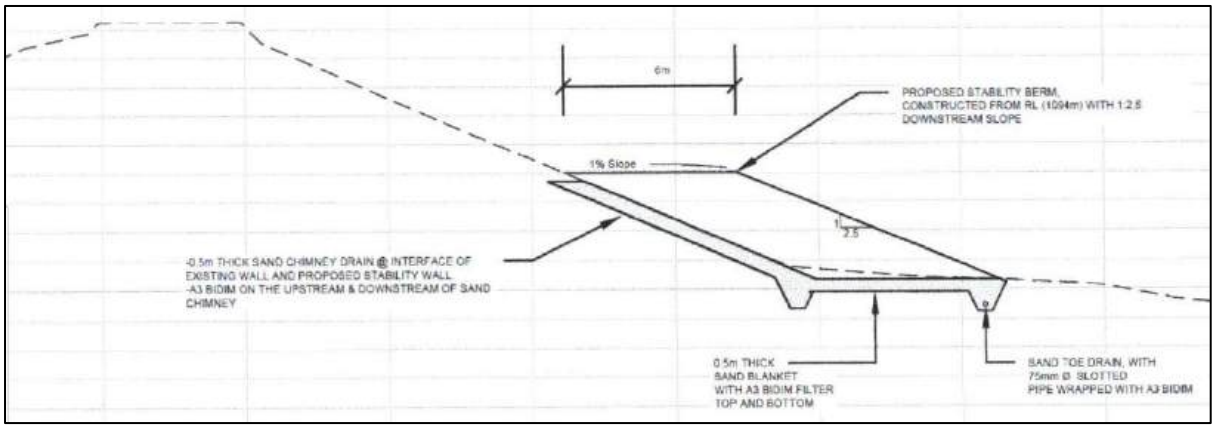


Figure 6: Proposed stabilisation berm design (Source: MBB Consulting Engineers)

The additional earthfill increases the width of the embankment base, improving slope stability and reducing the potential for embankment failure.

A full design drawing is attached as Appendix C.

3.2.4 Flood Protection Berm

Hydraulic modelling undertaken as part of the Concept Design Report indicated that, although the proposed spillway improvements would safely convey the design flood without overtopping the dam embankment, there remained a risk of floodwater inundating residential properties located adjacent to the existing primary spillway during extreme flood events. To reduce this risk, a low flood protection berm is proposed along the right-hand side of the primary spillway outlet channel.

The flood protection berm is intended to contain and redirect high flows within the spillway channel, reducing the potential for floodwater to escape the channel and inundate neighbouring properties during extreme rainfall events. Unlike the stability berm, which is designed to improve the structural stability of the dam embankment, the flood protection berm functions as a hydraulic protection measure for downstream infrastructure. The proposed berm will comprise engineered earthfill and will tie into the surrounding ground levels to direct flows safely downstream.

4. LEGISLATIVE CONTEXT

4.1 Introduction

The proposed repair works are subject to a number of legislative and regulatory requirements relating to environmental management, dam safety and the protection of water resources. Unlike a Basic Assessment or Scoping and Environmental Impact Reporting process, the preparation of a Maintenance Management Plan is not prescribed through a dedicated chapter of the Environmental Impact Assessment Regulations. Rather, the process has evolved as a recognised environmental management mechanism for the assessment of maintenance, repair and upgrading works associated with existing infrastructure.

The preparation of this MMP has therefore been guided by applicable environmental legislation, dam safety legislation, published guidance relating to Maintenance Management Plans, and the requirements of the KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs (EDTEA), following confirmation that an MMP is the appropriate environmental process for the proposed repair works.

Collectively, these legislative instruments provide the framework within which the proposed maintenance works have been assessed and the mitigation measures contained within this MMP have been developed.

4.2 The Constitution of the Republic of South Africa (Act 108 of 1996)

The Constitution, which is the supreme law of the Republic of South Africa, provides the legal framework for legislation regulating environmental management in general, against the backdrop of the fundamental human right. Section 24 of the Constitution states that:

- "Everyone has a right:
  - 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 legislative 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".

Section 24 of the Bill of Rights therefore guarantees the people of South Africa the right to an environment that is not detrimental to human health or well-being, and specifically imposes a duty on the State to promulgate legislation and take other steps that ensure that the right is upheld and that, among other things, ecological degradation and pollution are prevented.

Project Applicability: The proposed repair works support the constitutional principles of sustainable development by improving the long-term safety of existing infrastructure while ensuring that environmental impacts are identified, assessed and appropriately managed through the implementation of mitigation measures contained within this MMP.

4.3 National Environmental Management Act (Act 107 of 1998)

The National Environmental Management Act (Act No. 107 of 1998, NEMA) provides the environmental legislative framework for South Africa and establishes a set of principles which all authorities have to consider when exercising their powers. Section 2 of NEMA sets out the national environmental management principles, highlighting sustainable development, the polluter pays principle, and the precautionary approach. These core rules guide all state organs and authorities across South Africa when making decisions that may affect the environment. The core environmental management principles of NEMA include:

- Human well-being: Environmental management must place people and their needs at the forefront while ensuring protection of the environment.
- Sustainable development: Requires the integration of social, economic, and environmental factors into decisions so that development serves present and future generations equally.
- Avoidance and remediation hierarchy: Mandates that negative impacts on the environment must be anticipated and avoided wherever possible. Where avoidance is not possible, impacts should be minimized and remedied.
- Polluter pays principle: Holds the person responsible for causing pollution or environmental degradation liable to pay for fixing the damage and any adverse health effects.
- Precautionary approach: Applies a risk-averse and cautious strategy, acknowledging the limits of current knowledge about the consequences of decisions and actions.
- Public participation: Guarantees open and transparent participation of all interested and affected parties, ensuring community voices and environmental justice are considered.
- Co-operative Governance: Requires intergovernmental coordination, joint harmonization and policies, and shared legal actions relating to the environment across state departments.

Works will involve the movement and placement of more than 10 cubic metres of material within a watercourse triggering Activity 19 of Listing Notice 1 (GNR 327) of the Environmental Impact Assessment Regulations, 2014 (as amended in 2017). The exclusions in this activity apply when works are undertaken for maintenance purposes in accordance with a maintenance management plan. An MMP is therefore required in order for the proposed works to proceed lawfully without an environmental authorisation process, and must be compiled and submitted to the KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs (EDTEA) prior to commencement of the works. The applicability of the MMP process to this project was confirmed by EDTEA at the pre-application meeting held on 19 June 2026.

Project Applicability: The proposed repair works will involve the excavation, movement and/or placement of more than 10 m³ of material within the dam and associated watercourse environment. The works therefore fall within the scope of Activity 19 of Listing Notice 1 of the EIA Regulations, 2014 (as amended), which relates to the infilling, depositing, dredging, excavation, removal or movement of more than 10 m³ of material within a watercourse.

Activity 19 provides an exclusion where such activities are undertaken for maintenance purposes in accordance with a Maintenance Management Plan. As the proposed works relate to the repair and upgrading of existing dam infrastructure and will not increase the storage capacity or expand the existing impoundment footprint, the works are being assessed through this MMP. The applicability of the MMP process was confirmed by EDTEA during the pre-application process.

4.4 National Water Act (Act 36 of 1998)

Under South Africa's National Water Act (Act 36 of 1998), dam safety is governed by strict regulations managed through the Dam Safety Office to protect the public, property, and the environment. Key elements include the definition of a safety-risk dam, owner duties, and formal categorization.

The definition of a dam with a safety risk includes:

- Any dam with a storage capacity greater than 50 000m^3.
- A dam wall with a vertical height of more than 5 meters (measured from downstream ground level to the top crest).
- Any dam or category of dams declared by the Minister to pose a safety risk regardless of size.

Dam owners have five key responsibilities to uphold, including:

- Registration: Owners must register their safety-risk dams with the Department of Water and Sanitation.
- Construction Licenses: Written approval and a license from the Director-General area are required before building, enlarging, altering or repairing any safety-risk dam.

- Evaluations: Routine dam safety evaluations must be carried out by approved professional engineers at prescribed intervals based on the dam's assigned category (Category 1, 2 or 3).
- Maintenance and Operation: Owners must maintain operation and maintenance manuals as well as emergency preparedness plans where required.

The objective of these provisions is to ensure that dams with a safety risk are appropriately designed, maintained and operated in a manner that protects downstream communities, infrastructure and the receiving environment.

In addition to the dam safety requirements described above, the KZN MMP Policy Guideline requires consultation with DWS where an MMP relates to works within a watercourse, in order to confirm compliance with the National Water Act and determine whether any additional water use authorisation is required. DWS will therefore be afforded an opportunity to review and comment on the proposed works as part of the MMP process, and any additional requirements identified by the Department will be addressed prior to commencement of the repair works.

Project Applicability: Following a Dam Safety Evaluation in 2024, the Fish Eagle Dam was classified as a Category 2 dam. As a result, repairs and upgrades to the dam are required to ensure dam safety during very high rainfall events.

4.5 Maintenance Management Plan Guidelines

The KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs (EDTEA) published the Maintenance Management Plan Policy Guideline (Version 3 Final, 2022) to promote consistency and efficiency in the assessment of applications for the adoption of MMPs and to standardise the minimum information and procedural requirements applicable to MMPs within KwaZulu-Natal.

The Guideline recognises that certain activities listed in terms of the EIA Regulations may be excluded from the requirement for Environmental Authorisation where undertaken for maintenance purposes in accordance with an MMP defined or adopted by the Competent Authority. The purpose of an MMP is to facilitate the maintenance of existing infrastructure while preventing further deterioration of the environment and ensuring that unavoidable environmental impacts are appropriately managed.

Adoption of the MMP by EDTEA does not exempt the Applicant from compliance with other applicable environmental legislation or from obtaining any other authorisation that may be required. The general duty of care contained in Section 28 of NEMA also remains applicable throughout implementation of the maintenance works, requiring reasonable measures to prevent environmental pollution or degradation and, where impacts cannot reasonably be avoided, to minimise and rectify such impacts.

Project Applicability: This MMP has accordingly been prepared in accordance with the KZN MMP Policy Guideline (Version 3 Final, 2022). It is intended to be used as a practical, stand-alone document by the applicant, the appointed contractor and the site supervisory team for the duration of the maintenance works and the associated rehabilitation and monitoring period.

4.6 Other Relevant Legislation

Additional legislation that may be applicable to the project are summarised in Table 3 below.

Table 3: Legislation Applicable to the Project

Legislation	Project Relevance
National Heritage Resources Act (No. 25 of 1999)	Chance-find procedures should archaeological or heritage resources be encountered.
National Environmental Management: Biodiversity Act (Act No. 10 of 2004)	Protection of indigenous biodiversity during construction activities.

National Environmental Management: Waste Act (Act No. 59 of 2008)	Appropriate handling and disposal of construction waste generated during repairs.
Occupational Health & Safety Act	Protection of workers undertaking repair works.

Compliance with the above legislation will be supported through implementation of the mitigation measures, method statements and environmental monitoring requirements contained within this MMP.

5. RECEIVING ENVIRONMENT

This section of the MMP provides a description of the receiving environment that may be affected by the proposed repair works on Fish Eagle Dam. Aspects of the biophysical, social and economic environment that could be directly or indirectly affected by the proposed activity are described.

5.1 Climate

The Howick area is characterized by a mild and temperate climate, with a summer rainfall pattern with intermittent rainfall events in the winter months. The mean annual precipitation according to the BioResource Unit information for the area (BRU – Vb12) is approximately 1054mm with much of that precipitation occurring between the months of November and March. The seasonality of precipitation is a driving factor behind the hydrological cycles of rivers and drainage lines within the area. Typically, rivers and drainage lines have a higher flow rate during the summer months due to the higher volume of rainfall as compared to the winter months. Temperatures vary throughout the year, with an annual average of 17°C. Maximum temperatures range from 34°C in January to -3°C in June/July. The area is coldest in June with average minimum temperatures of 0.5°C.

5.2 Topography

The Fish Eagle Dam is located in a valley, bounded on its northern side by moderate hillsides, and on its southern side by more gentle rolling terrain which is developed as a residential area. The existing 10m high dam embankment spans a 220m distance across a flat, marshy valley bottom, from which the abutments climb onto the gentle toe of the natural slopes at either side, with the existing primary spillway being an open channel on the southern flank. Figure 7 depicts the topography of the project area.



Figure 7: North to south elevation profile of the project area (Source ©Google Earth Satellite Imagery, imagery date: 15/04/2023).

5.3 Vegetation

The area located immediately north of the dam is undisturbed, and is classified as indigenous Midlands Mistbelt Grassland (Endangered ecosystem under NEMBA). This undisturbed area is also classified as a Critical Biodiversity Area (CBA). The grass layer is dominated by tufted perennial grasses such as:

- Themeda triandra (Red Grass) – indigenous
- Tristachya leucothrix (Hairy Tristachya) – indigenous
- Aristida junciformis (Wire Grass) – indigenous
- Eragrostis spp. – indigenous

A variety of forbs and wildflowers are present, including members of the Asteraceae family such as:

- Helichrysum spp. – indigenous
- Senecio spp. – indigenous

In wetter areas downstream of the dam, wetland-associated species occur, including:

- Moisture-loving grasses and sedges – indigenous
- Pteridium aquilinum (Bracken fern) – indigenous
- Pioneer species including Bidens pilosa (Blackjack) – alien invasive

Figures 8, 9 and 10 depict the general vegetation in the project area.



Figure 8: Undisturbed grassland in the CBA, looking south to the residential area.



Figure 9: Transitioning from grassland to riparian vegetation, looking downstream from the northern bank of the dam.



Figure 10: Examples of riparian/wetland vegetation located immediately downstream of the dam embankment.

5.4 Critical Biodiversity & Ecological Support Areas

Critical Biodiversity Areas (CBAs) are areas required to meet biodiversity targets for ecosystems, species and ecological processes as identified in a systematic biodiversity plan. Ecological Support Areas (ESAs) are not essential for meeting biodiversity targets, however they play an important role in supporting the ecological functioning of ESAs. CBAs and ESAs are important factors to consider in decision making with regards to the location of developments. According to the 2014 KZN Biodiversity Sector Plan, portions of the existing Fish Eagle Dam and associated embankment are located within a mapped Critical Biodiversity Area. The proposed repair works therefore partially occur within a CBA (Figure 11).



Figure 11: The Fish Eagle Dam in relation to surrounding CBAs, shaded in green (Source: SANBI BGIS).

The proposed auxiliary spillway is situated within an area of the existing dam embankment that has previously been modified through the historical construction and subsequent extension of the dam wall. Information provided by the Applicant indicates that an auxiliary spillway previously existed in this location before the embankment was extended to close the spillway. The proposed works will therefore involve reinstatement of the historical spillway by removing or regrading the later embankment extension, rather than extending the dam footprint into previously undisturbed areas of the CBA.

Consequently, while the proposed repair works occur within a mapped CBA, the auxiliary spillway does not represent a significant new encroachment into intact CBA habitat. The works are largely confined to an existing disturbed portion of the dam infrastructure, thereby substantially reducing the potential for additional impacts on biodiversity. Any temporary disturbance associated with construction activities will be managed through the implementation of the mitigation and rehabilitation measures contained within this MMP.

5.5 Aquatic Habitat

5.5.1 Watercourse & Wetland Delineation

NatureStamp (Pty) Ltd undertook an aquatic and watercourse assessment of the Fish Eagle Dam and surrounding freshwater environment to identify and delineate watercourses potentially affected by the proposed repair works. The assessment identified a number of wetland and aquatic features within 500m of the project area, which were classified into the following Hydrogeomorphic (HGM) units (Figure 12):

- HGM Unit 1: Channelled Valley Bottom Wetland (CVB);
- HGM Units 2 and 3: Seep Wetlands;
- HGM Unit 4: Spring; and
- HGM Unit 5: Fish Eagle Dam.

Hydric soil characteristics, including gleying and mottling, were recorded at depths of approximately 0–20 cm along the modified margins of the visibly identifiable wetland areas. No hydric soil characteristics were identified outside the delineated wetland/riparian areas.



Figure 12: Delineated aquatic and wetland features associated with Fish Eagle Dam and the surrounding study area (Source: NatureStamp, 2026).

5.5.2 Present Ecological State

The Present Ecological State (PES) of the wetland potentially affected by the proposed works was assessed using the WET-Health methodology. The wetland achieved an overall PES of Category C (Moderately Modified), indicating that while ecological functioning has been altered from its natural condition, the system retains important ecological functions. The trajectory of change was assessed as stable across the four WET-Health assessment modules.

5.5.3 Ecosystem Services

The WET-EcoServices assessment identified biodiversity maintenance, streamflow regulation and tourism/recreation as the ecosystem services of highest value within the affected wetland system. Erosion control was identified as the only ecosystem service for which existing demand exceeds the capacity of the wetland to supply the service.

5.5.4 Baseline Water Quality

Baseline water quality sampling was undertaken upstream and downstream of the proposed maintenance area. The results recorded elevated suspended solids upstream (82 mg/l) and dissolved manganese downstream (306 µg/l), together with a downstream pH of 5.8. Nutrient and organic loading were generally low at both sampling points. These results provide a baseline against which water quality can be compared during and following implementation of the maintenance works.

5.5.5 Freshwater Conservation Context

National Freshwater Ecosystem Priority Areas (NFEPA) mapping indicates that the project area intersects a mapped channelled valley-bottom wetland classified as critically modified (Z2, Figure 13). No NFEPA river or Freshwater Ecosystem Priority Area (FEPA) is mapped within the 500 m study area, and the site is not identified as a FEPA fish-support area or migratory fish sanctuary.



Figure 13: NFEPA wetlands and rivers in proximity to Fish Eagle Dam (Source: NatureStamp, 2026).

5.6 Geology & Soils

The geotechnical investigation (compiled by Drennan Maud (Pty) Ltd in July 2025) confirmed that the site is underlain by weathered dolerite and shale, which have broken down over time to form predominantly red clay soils. Softer clay-rich soils occur along the valley floor, where shallow groundwater is present, while more competent rock occurs at greater depth. The existing dam wall is constructed mainly from these red clay soils, which are relatively consistent throughout the embankment. Understanding the ground conditions was important in designing the proposed repair works and ensuring that the dam can be stabilised safely and effectively.

5.7 Land Use and the Socio-Economic Environment

The Fish Eagle Dam is located within St. John's Village Lifestyle & Retirement Country Estate, an established residential estate situated on the outskirts of Howick. The dam forms part of the estate's existing stormwater control and landscaping infrastructure.

The proposed maintenance works are intended to improve the long-term safety, operation and resilience of the existing dam infrastructure. Completion of the repair works will reduce the risk of overtopping and potential downstream flooding during extreme rainfall events, thereby protecting residents, neighbouring properties and associated infrastructure.

Temporary construction-related impacts, including noise, dust and increased construction traffic, may be experienced during implementation of the repair works. These impacts will be localised, of short duration and managed through the mitigation measures contained within this MMP.

6. PUBLIC PARTICIPATION

6.1 Public Participation Process

Public participation provides Interested and Affected Parties (I&APs), neighbouring landowners, relevant authorities and other stakeholders with an opportunity to obtain information regarding the proposed repair works, raise issues or concerns, and provide comments for consideration during the Maintenance Management Plan (MMP) process.

The public participation process for the proposed Fish Eagle Dam repair works has been undertaken in accordance with the requirements of the KwaZulu-Natal Maintenance Management Plan Policy Guideline (2022) and the requirements confirmed by the KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs (EDTEA) during the pre-application meeting held on 19 June 2026.

The process includes initial notification and registration of I&APs, circulation of the Draft MMP for a 30-day review and comment period, consideration and response to comments received, and notification of registered I&APs following a decision by EDTEA.

Supporting documentation demonstrating the public participation process undertaken for the project is provided in Appendix D, including copies of newspaper advertisements, site notices, written notifications, the Background Information Document, the I&AP Register, comments received and the Comments and Responses Table. Appendix D will be updated as the MMP process progresses.

6.2 Summary of Public Participation Activities

Initial public notification was undertaken during July 2026 through a combination of bilingual site notices, newspaper advertisements and direct written notification. A Background Information Document (BID) was also distributed to surrounding landowners and relevant authorities to provide information regarding the proposed repair works and invite participation in the MMP process.

The public participation activities undertaken to date are provided in Table 4.

Table 4: Public Participation Activities Undertaken

Public Participation Activity	Date	Supporting Documentation
Site notices erected at the entrance of the St. John's Village Lifestyle & Retirement Country Estate	15 July 2026	Appendix D1
isiZulu Newspaper advertisement published in Isolezwe	15 July 2026	Appendix D2
Background Information Document distributed to surrounding landowners and relevant authorities	16 July 2026	Appendix D3
English newspaper advert published in the Village Talk	17 July 2026	Appendix D2
Comments and responses table, proof of correspondence & I&AP database	Ongoing throughout the MMP process	Appendix D4 – D6

The site notices and newspaper advertisements provided information regarding the proposed repair works and invited members of the public to register as I&APs. Direct notification provided identified stakeholders and authorities with the opportunity to obtain further information regarding the project and submit comments for consideration during preparation of the Draft MMP.

6.3 Summary of Comments Received

Comments received in response to the initial call to register and circulation of the Background Information Document were predominantly requests from surrounding residents and neighbouring residential estates to be registered as Interested and Affected Parties (I&APs) and to be kept informed of the proposed repair works and subsequent environmental process. Registered parties included individual residents of St. John's Village as well as representatives of the Amber Valley, Amber Ridge, Amber Lakes and Amber Lee residential estates.

Particular concern was raised by downstream properties regarding the potential effects of the construction works on the downstream aquatic environment. Amber Ridge Body Corporate noted its position downstream of Fish Eagle Dam and raised concerns regarding potential increases in sediment loads and river levels during construction. Amber Lakes similarly noted that its property and lakes receive surface drainage from St. John's Village and expressed concern regarding the potential for runoff and contamination associated with the proposed works.

Ezemvelo KZN Wildlife advised that it would not provide detailed comment on the application at this stage, but requested that significant biodiversity-related concerns be identified and appropriately avoided, mitigated or ameliorated in order to safeguard the ecological integrity of the maintenance area. Ezemvelo further requested that it be provided with a copy of the Final MMP and subsequently notified of the Competent Authority's decision.

All parties requesting registration were added to the project I&AP database and will be notified of the availability of the Draft MMP for review and comment. The concerns raised regarding downstream sedimentation, runoff, water quality and flow have been considered through the specialist Watercourse and Aquatic Assessment and are addressed through the mitigation, method statement, rehabilitation and monitoring requirements contained in this MMP.

6.4 Draft MMP Review and Comment

Following completion of the Draft MMP, the document will be circulated to registered I&APs and relevant authorities for a 30-day review and comment period. A copy of the Draft MMP will also be provided to EDTEA.

Registered I&APs and authorities will be invited to submit comments on the proposed repair works, the findings of the environmental and specialist assessments, and the proposed environmental management, rehabilitation and monitoring measures.

All comments received during the review period will be recorded in the Comments and Responses Table, together with responses from the EAP and/or relevant members of the project team. Where applicable, comments will be incorporated into the Final MMP.

6.5 Final MMP and Notification of Decision

Following completion of the public review period, the Draft MMP will be updated to address comments received and the Final MMP will be submitted to EDTEA for consideration.

Following EDTEA's decision regarding adoption of the MMP, registered I&APs will be notified of the outcome of the process and provided with the relevant details of the Department's decision.

7. SPECIALIST ASSESSMENT

7.1 Watercourse and Aquatic Assessment

NatureStamp (Pty) Ltd was appointed to undertake a specialist Watercourse and Aquatic Assessment to inform the Maintenance Management Plan (MMP) for the proposed repair works to the Fish Eagle Dam. The assessment was undertaken by Mark Summers and Dr Bruce Scott-Shaw, both of whom are registered Professional Natural Scientists with the South African Council for Natural Scientific Professions (SACNASP). The full specialist assessment is attached as Appendix E.

The purpose of the assessment was to identify and delineate watercourses and wetlands associated with the project area, establish their ecological condition and importance, and assess the potential impacts of the proposed repair works on the aquatic environment. The assessment also sought to identify appropriate measures to avoid or minimise impacts on aquatic resources and to provide recommendations for the rehabilitation and monitoring of affected areas.

The scope of the specialist assessment included the delineation and classification of aquatic features within 500m of the project area; assessment of the Present Ecological State (PES) and Ecological Importance and Sensitivity (EIS) of the identified systems; assessment of potential impacts associated with the proposed works; baseline water quality sampling; and the development of appropriate mitigation, rehabilitation and monitoring measures.

The findings and recommendations of the specialist assessment have informed the identification and assessment of environmental risks associated with the proposed repair works, as well as the method statements, environmental management measures, rehabilitation requirements and monitoring programme contained in this MMP.

7.2 Assessment Methodology

The Watercourse and Aquatic Assessment comprised a combination of desktop review and field-based investigation. A site inspection was undertaken by NatureStamp in July 2026 to identify and delineate wetland, riparian and other aquatic features associated with the Fish Eagle Dam and surrounding study area. The field assessment was supported by a review of available spatial datasets, historical aerial imagery, topographical information and relevant freshwater biodiversity information.

Wetland and riparian boundaries were delineated in accordance with the Practical Field Procedure for Identification and Delineation of Wetland and Riparian Areas (Department of Water Affairs, 2005). Wetland delineation considered terrain position, soil form and wetness indicators, and vegetation characteristics, with soil sampling undertaken where required to confirm the presence and extent of hydric soils.

The ecological condition and importance of the identified aquatic systems were assessed using recognised aquatic assessment methodologies, including WET-Health for determining the Present Ecological State (PES) of wetlands, WET-EcoServices for assessing wetland ecosystem services, and appropriate Ecological Importance and Sensitivity (EIS) assessment methods. The assessment also included baseline water quality sampling and an assessment of the potential impacts of the proposed repair works on the aquatic environment.

The results of these investigations were used to identify appropriate mitigation, rehabilitation and monitoring measures for incorporation into this MMP.

7.3 Key Findings

The specialist assessment confirmed that Fish Eagle Dam forms part of a broader aquatic system comprising a channelled valley-bottom wetland, seep wetlands, a spring and the existing dam itself. These aquatic features are hydrologically connected to varying degrees and require consideration during implementation of the proposed repair works. The delineation and ecological characteristics of these

features are described in Chapter 5 of this MMP and in detail in the specialist Watercourse and Aquatic Assessment.

The wetland system potentially affected by the proposed works was assessed as being in a Moderately Modified ecological condition (PES Category C), with the trajectory of change considered stable. Despite existing modification associated with the dam and surrounding development, the system continues to provide ecological functions, with biodiversity maintenance, streamflow regulation and tourism/recreation identified as the ecosystem services of highest value. Erosion control was identified as an important consideration, with demand for this service exceeding the existing capacity of the wetland system.

Importantly, the proposed works relate to the repair and upgrading of existing dam infrastructure and will not result in an increase in the full supply level or expansion of the existing impoundment footprint. The specialist assessment nevertheless identified the potential for temporary impacts on the aquatic environment during construction, particularly as a result of disturbance to wetland and riparian vegetation, erosion and sedimentation, deterioration of surface water quality, and temporary alteration of flow conditions associated with construction activities.

The assessment further identified the need to protect aquatic features outside the area directly required for the repair works from unnecessary disturbance and to carefully manage activities undertaken within or immediately adjacent to the dam and associated watercourse. Particular emphasis was placed on erosion and sediment control, pollution prevention, appropriate management of construction materials and stockpiles, maintenance of downstream flows during the works, and rehabilitation of disturbed areas following construction.

Subject to implementation of the mitigation, rehabilitation and monitoring measures recommended by the aquatic specialists, the potential impacts associated with the proposed repair works can be substantially reduced. The detailed environmental risks and associated mitigation measures are presented in Chapter 8, while the method statements, rehabilitation and monitoring requirements arising from the specialist assessment are incorporated into Chapters 9 and 10 of this MMP.

7.4 Specialist Impact Assessment

NatureStamp undertook an assessment of the potential impacts associated with the proposed repair and maintenance works on the aquatic environment. The assessment considered existing impacts affecting the watercourses within the study area, potential construction and operational phase impacts, and the potential influence of future climate-related changes. Each identified impact was assessed both before and after the application of recommended mitigation measures.

The principal potential impacts associated with the construction phase relate to the localised disturbance of wetland and riparian vegetation within the working area; erosion and sedimentation arising from exposed soils and earthworks; deterioration of surface water quality through sediment mobilisation or accidental pollution; temporary alteration of flow conditions; and disturbance associated with construction vehicles, machinery and personnel. The specialist assessment notes that the proposed works will comprise localised earthworks on and immediately surrounding the existing dam infrastructure, with vehicle movements largely restricted to the existing estate access network.

The assessment found that the significance of the identified impacts can be reduced through implementation of appropriate mitigation measures, including restricting activities to the required working footprint, protecting aquatic areas outside the construction area from unnecessary disturbance, implementing appropriate erosion and sediment controls, preventing pollution, managing temporary changes to flows and rehabilitating disturbed areas following completion of the works. The specialist impact assessment must therefore be read together with the environmental management, rehabilitation and monitoring recommendations contained in the specialist report.

The detailed environmental risks associated with implementation of the proposed repair works, together with the mitigation and management measures to be applied, are presented in Chapter 8 of this MMP.

7.5 Specialist Recommendations and Conclusion

The specialist Watercourse and Aquatic Assessment concluded that the proposed repair and maintenance works can be undertaken provided that appropriate environmental management, mitigation, rehabilitation and monitoring measures are implemented throughout construction and following completion of the works.

The proposed works are associated with existing dam infrastructure and are intended to address identified deficiencies relating to the dam wall, spillway and outlet works. The works will not increase the full supply level of Fish Eagle Dam or expand the existing impoundment footprint. Accordingly, the primary aquatic risks relate to temporary disturbance during construction and the potential for erosion, sedimentation, pollution and alteration of flow conditions if the works are not appropriately managed.

NatureStamp recommends that disturbance be restricted to the minimum area necessary to undertake the repair works, with wetland and aquatic features outside the required construction footprint protected from unnecessary disturbance. Particular attention should be given to erosion and sediment control, pollution prevention, management of construction materials and stockpiles, maintenance of downstream flows, and the progressive rehabilitation and stabilisation of disturbed areas.

Rehabilitation of areas affected by the works should commence as soon as practically possible following completion of construction activities and should include stabilisation of disturbed soils, re-establishment of appropriate indigenous vegetation and ongoing management of invasive alien vegetation. Post-construction monitoring should be undertaken to confirm the successful establishment of rehabilitation measures and identify any areas requiring corrective action.

The aquatic specialists further recommend ongoing monitoring of the condition of the repaired dam infrastructure, water quality and rehabilitated aquatic habitat following completion of the works. The mitigation, rehabilitation and monitoring measures recommended in the specialist assessment have therefore been incorporated into the environmental management requirements contained in Chapters 8 to 10 of this MMP.

On the basis of the specialist findings, and subject to implementation of the recommended mitigation and management measures, no aquatic environmental constraints were identified that would preclude implementation of the proposed repair and maintenance works.

8. IMPACT & RISK ASSESSMENT

The primary surrounding impacts are noted at the eroding dam wall, from stormwater inflows off the surrounding estate, and from alien woody species within the riparian zone below the wall. Historical analysis showed no evidence of cultivation or artificial drainage of the wetland systems on site. The repair and maintenance of the dam wall will involve localised earthworks on and immediately around the existing wall, which may lead to sediment wash, temporary flow alteration and localised disturbance of marginal wetland vegetation. The geomorphology is in a largely natural state.

The primary direct impacts on the channelled valley-bottom wetland and adjoining seep wetlands relate to the potential effects of the proposed repair and maintenance works on the hydrology, geomorphology and vegetation of the system.

8.1 Present Impacts

Within and around the respective study area buffers, the existing impacts on the watercourses and respective catchment areas include –

- The clearance of natural habitat for commercial plantation forestry, residential development and estate infrastructure;
- Stormwater discharge from the surrounding developed areas;
- Impoundment of the channelled valley bottom wetland by the Fish Eagle Dam;
- Streamflow reduction associated with commercial plantation forestry in the catchment;
- Sedimentation of the wetland and dam basin from erosion of the dam wall and catchment;
- Alien and invasive plant encroachment within wetlands and buffer zones;
- Concentrated flow paths from forestry roads, estate hardstanding and stormwater outlets; and
- Dumping of litter.

In the broader Water Management Area (i.e. local scale), some impacts are present as noted for the site. Additional existing impacts on the watercourses and respective catchment areas include –

- Infrastructure development within wetland systems (wetland encroachment) or riverbanks leading to a direct loss of wetland systems and decrease in provision of ecosystem services;
- Agricultural activities such as irrigated pivots, dryland crops, poultry farming, increased nutrients in the watercourses, dams and altered hydrological regime;
- Illegal and unregulated abstraction of water from major water resources;
- Expansion of tourism and rural areas resulting in an increased water demand and an increase in water pollution;
- Informal and formal watercourse crossings – leading to the change in hydrological regime;
- Litter and solid waste disposal – direct water pollution; and
- Poor or absent sanitation – direct water pollution.

8.2 Impacts Likely to Occur During Construction

Impacts likely to occur during the construction phase are presented in Table 5.

Table 5: Impact Drivers and Description During Construction

ACTIVITY / DRIVER OF IMPACT	IMPACT	DESCRIPTION OF HOW IMPACT OCCURS
Increased sediments/spoil sites	Enhanced erosion potential	• The reduction in vegetation cover results in open bare soil therefore reducing the surface roughness and increasing the erosive potential to the elements (wind and rain). Sheet wash, rill and gully erosion is likely and may lead to the collapse or slumping of downstream wetland/stream bank areas that would bury marginal wetland habitat. • An increase in compaction of the soils along the edge of the site where heavy machinery traverses may lead to an increase in the runoff.
	Decrease in water quality	• Sedimentation wash into the wetland and dam basin from earthworks at the dam wall. • As a result of contaminants from heavy machinery (oil, fuel) infiltrating / washed into the system as well as sediments from the implementation area.
	Spread of alien invasives	• As these plants colonise stockpiles and spoil sites / spoil sites given their easily dispersed seed.
	Continued alteration of flow pattern	• A result of concentrated flow from modified surfaces and storm water channels. A general change in flow regimes. • Due to works undertaken directly within the watercourse at the dam wall
Excavation and reprofiling at the dam wall	Direct loss of wetland and riparian areas	• Direct disturbance of wetland and riparian vegetation within the immediate working area at the dam wall and its existing access route.
Alteration of hydrology	Alteration of flow patterns	• Temporary increase in surface runoff from compacted and disturbed working surfaces during the works. • Increase in the erosion potential due to concentrated flow paths. • Increase in the flood peak due to a quicker response time. • Increase risk of pollutants being washed into the system. • Alteration of streamflow and baseflow during temporary drawdown of the impoundment for the duration of the works

ACTIVITY / DRIVER OF IMPACT	IMPACT	DESCRIPTION OF HOW IMPACT OCCURS
Clearance of vegetation	Loss of wetland area and marginal vegetation	• Direct removal of marginal indigenous species within the working area and material laydown area at the wall. • The removal of indigenous species and further ruderal and alien plant invasion will occur. This may also further • Increase the rate of erosion. • The likely introduction of alien seeds in spoil obtained from nearby areas. • Exposed slopes will result in erosion and sedimentation of downstream wetlands
High activity of heavy machinery and construction staff on-site	Air pollution affecting wetland fauna	• As a result of excessive air emissions from heavy machinery and equipment. • As a result of dust from the implementation working area.
	Noise and disturbance affecting wetland fauna	• Excessive noise emissions from heavy machinery and equipment. • Operation of plant during the repair works.
	Decrease in water quality (impact to aquatic flora and fauna; and water supply)	• As a result of potential leaks of fuel, grease and oil from the heavy machinery. Wash related to the above-mentioned changes during rainfall events will lead to the movement of these substances into the soil and the watercourse systems. • As a result of improper storage and handling of hazardous chemicals such as fuel and oil as well as chemicals relating to staff ablution facilities. • As a result of any spills during implementation. • Due to sedimentation and dust from the increase in vehicular traffic during the works. • Due to mixing of the instream sediments, impacting upon aquatic biodiversity and downstream water quality.

8.3 Impacts Likely to Occur During Operation

The majority of impacts are anticipated to occur during construction. However, some impacts are likely during operation. These include -

- Increase in pollution: an increase in pollution around the site including petro-chemicals from vehicle/transport and human waste during maintenance activities;
- Increase in overall edge effects on wetland: heightened activity in the area.
- Impact on surface and groundwater resources: altered inundation levels behind the repaired wall potentially affecting recharge of the adjoining seep wetlands; and

The impact drivers and a description thereof are presented in Table 6.

Table 6: Impact Drivers and Description During Operation

ACTIVITY / DRIVER OF IMPACT	IMPACT	DESCRIPTION OF HOW IMPACT OCCURS
Discharge over and below the repaired dam wall	Erosion of the wetland channel below the wall	• Removing sand alters the channel's morphology, which increases the speed of flowing water. This leads to accelerated erosion of riverbanks, enhanced flood scouring, and sinking water tables
Discharging of water / waste water into the environment	Untreated waste water being discharged into water resources	• On site ablution facilities may release chemicals into the surrounding watercourse resulting in a change in the chemical and biological characteristics of the water resources
Disturbance of accumulated sediment at the dam wall	Increased sedimentation	• Disturbance of sediment accumulated behind the wall results in suspended sediments being released into the channel below the wall, changing the water quality and impacting upon the aquatic biodiversity. • Turbidity clogs aquatic environments and smothers the instream spawning habitats of fish and benthic macroinvertebrates. It can also mobilize buried toxicants or result in chemical spills from heavy machinery.
Stormwater runoff along the disturbed working surfaces and cut-off drains	Soil wash	• Disturbance of the soil profile and vegetative cover may prompt a change in flow path, with surface runoff running in rills along the edges. • The risk on natural wetlands within 500 m of the site is low but measures should be taken to manage storm water.
Greater human/vehicle movement through the site	Increase in pollution	• An increase of machine operation may lead to further pollution such as noise, dust, oil and similar hazardous materials.

8.4 Impacts Associated with Climate Change Projections

The following potential impacts may arise as a result of climatic changes in the future, which would possibly affect the watercourses and surrounding environment:

- Increase in extreme weather events such as powerful rain/thunderstorms, strong winds, intense heat waves, severe coldness and increased lightning strikes.
- This would likely cause flooding within the watercourses, as well as fallen trees which would damage the surrounding environment and on site infrastructure.
- The risk of contamination of watercourses would increase due to significantly greater volumes of runoff, which may lead to disease outbreaks and human health problems.
- The changing environmental conditions within the study area could potentially increase the invasion of alien plant species within and surrounding watercourses due to newly suitable temperature and weather conditions.
- Alien vegetation uses more water than indigenous vegetation, therefore reducing natural water supplies / choking natural watercourses. Alien plants have the ability to outcompete indigenous vegetation and become overgrown within rivers and streams.

8.5 Alternatives

No alternatives have been provided, as the activity is the repair and maintenance of an existing structure in its current position. Retaining the existing dam wall alignment and footprint, with the watercourse delineations and associated buffer zones observed for the duration of the works, is deemed the preferred alternative.

8.6 No-Go Alternative

The 'no-go' alternative is the option of not constructing the project, where the status quo of the current land use will occur. In this case the continued erosion and deterioration of the dam wall would persist, with an ongoing risk of partial or complete wall failure, uncontrolled release of impounded water and mobilisation of accumulated sediment into the downstream channelled valley bottom wetland. The 'no-go' alternative is therefore not preferred from a watercourse perspective, and the repair and maintenance of the wall is considered acceptable.

8.7 Impact/Risk Assessment Methodology

The Environmental Impact Assessment (EIA) Methodology has been compiled by NatureStamp, and assists in evaluating the overall effect of a proposed activity on the environment. Determining of the significance of an environmental impact on an environmental parameter is determined through a systematic analysis.

8.7.1 Determination of Significance of Impacts

Significance is determined through a synthesis of impact characteristics which include context and intensity of an impact. Context refers to the geographical scale (i.e. site, local, national or global), whereas intensity is defined by the severity of the impact e.g. the magnitude of deviation from background conditions, the size of the area affected, the duration of the impact and the overall probability of occurrence.

Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The total number of points scored for each impact indicates the level of significance of the impact.

8.7.2 Impact Rating System

The impact assessment must take account of the nature, scale and duration of effects on the environment and whether such effects are positive (beneficial) or negative (detrimental). Each issue / impact is also assessed according to the various project stages, as follows:

- Planning;
- Construction;
- Operation; and
- Decommissioning.

Where necessary, the proposal for mitigation or optimisation of an impact should be detailed. A brief discussion of the impact and the rationale behind the assessment of its significance has also been included.

The rating system is applied to the potential impact on the receiving environment and includes an objective evaluation of the possible mitigation of the impact. Impacts have been consolidated into one rating. The rating criteria (including an allocated point system) is provided in Table 7.

Table 7: Rating of Impacts Criteria

ENVIRONMENTAL PARAMETER		
A brief description of the environmental aspect likely to be affected by the proposed activity (e.g. Surface Water).		
ISSUE / IMPACT / ENVIRONMENTAL EFFECT / NATURE		
Include a brief description of the impact of environmental parameter being assessed in the context of the project. This criterion includes a brief written statement of the environmental aspect being impacted upon by a particular action or activity (e.g. oil spill in surface water).		
EXTENT (E)		
This is defined as the area over which the impact will be expressed. Typically, the severity and significance of an impact have different scales and as such bracketing ranges are often required. This is often useful during the detailed assessment of a project in terms of further defining the determined.		
1	Site	The impact will only affect the site
2	Local/district	Will affect the local area or district
3	Province/region	Will affect the entire province or region
4	International and National	Will affect the entire country
PROBABILITY (P)		
This describes the chance of occurrence of an impact		
1	Unlikely	The chance of the impact occurring is extremely low (Less than a 25% chance of occurrence).
2	Possible	The impact may occur (Between a 25% to 50% chance of occurrence).
3	Probable	The impact will likely occur (Between a 50% to 75% chance of occurrence).
4	Definite	Impact will certainly occur (Greater than a 75% chance of occurrence).
REVERSIBILITY (R)		
This describes the degree to which an impact on an environmental parameter can be successfully reversed upon completion of the proposed activity.		
1	Completely reversible	The impact is reversible with implementation of minor mitigation measures
2	Partly reversible	The impact is partly reversible but more intense mitigation measures are required.

3	Barely reversible	The impact is unlikely to be reversed even with intense mitigation measures.
4	Irreversible	The impact is irreversible and no mitigation measures exist.
IRREPLACEABLE LOSS OF RESOURCES (L)		
This describes the degree to which resources will be irreplaceably lost as a result of a proposed activity.		
1	No loss of resource.	The impact will not result in the loss of any resources.
2	Marginal loss of resource	The impact will result in marginal loss of resources.
3	Significant loss of resources	The impact will result in significant loss of resources.
4	Complete loss of resources	The impact is result in a complete loss of all resources.
DURATION (D)		
This describes the duration of the impacts on the environmental parameter. Duration indicates the lifetime of the impact as a result of the proposed activity.		
1	Short term	The impact and its effects will either disappear with mitigation or will be mitigated through natural process in a span shorter than the construction phase (0 – 1 years), or the impact and its effects will last for the period of a relatively short construction period and a limited recovery time after construction, thereafter it will be entirely negated (0 – 2 years).
2	Medium term	The impact and its effects will continue or last for some time after the construction phase but will be mitigated by direct human action or by natural processes thereafter (2 – 10 years).
3	Long term	The impact and its effects will continue or last for the entire operational life of the development, but will be mitigated by direct human action or by natural processes thereafter (10 – 50 years).
4	Permanent	The only class of impact that will be non-transitory. Mitigation either by man or natural process will not occur in such a way or such a time span that the impact can be considered transient (Indefinite).
INTENSITY / MAGNITUDE (I / M)		
Describes the severity of an impact (i.e. whether the impact has the ability to alter the functionality or quality of a system permanently or temporarily).		
1	Low	Impact affects the quality, use and integrity of the system/component in a way that is barely perceptible.
2	Medium	Impact alters the quality, use and integrity of the system/component but system/ component still continues to function in a moderately modified way and maintains general integrity (some impact on integrity).
3	High	Impact affects the continued viability of the system/component and the quality, use, integrity and functionality of the system or component is severely impaired and may temporarily cease. High costs of rehabilitation and remediation.

4	Very high	Impact affects the continued viability of the system/component and the quality, use, integrity and functionality of the system or component permanently ceases and is irreversibly impaired (system collapse). Rehabilitation and remediation often impossible. If possible rehabilitation and remediation often unfeasible due to extremely high costs of rehabilitation and remediation.

SIGNIFICANCE (S)

Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. This describes the significance of the impact on the environmental parameter. The calculation of the significance of an impact uses the following formula:

Significance = (Extent + probability + reversibility + irreplaceability + duration) x magnitude/intensity.

The summation of the different criteria will produce a non-weighted value. By multiplying this value with the magnitude/intensity, the resultant value acquires a weighted characteristic which can be measured and assigned a significance rating.

Points	Impact Significance Rating	Description
5 to 23	Negative Low impact	The anticipated impact will have negligible negative effects and will require little to no mitigation.
5 to 23	Positive Low impact	The anticipated impact will have minor positive effects.
24 to 42	Negative Medium impact	The anticipated impact will have moderate negative effects and will require moderate mitigation measures.
24 to 42	Positive Medium impact	The anticipated impact will have moderate positive effects.
43 to 61	Negative High impact	The anticipated impact will have significant effects and will require significant mitigation measures to achieve an acceptable level of impact.
43 to 61	Positive High impact	The anticipated impact will have significant positive effects.
62 to 80	Negative Very high impact	The anticipated impact will have highly significant effects and are unlikely to be able to be mitigated adequately. These impacts could be considered "fatal flaws".
62 to 80	Positive Very high impact	The anticipated impact will have highly significant positive effects.

8.8 Impact Ratings/Risk Assessment

The impact rating/risk assessment for the proposed repair works was compiled by NatureStamp, and is provided in the table below. The impact assessment includes all phases of the project.

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S
CONSTRUCTION PHASE																				
Loss and disturbance of wetland and riparian vegetation	Direct disturbance and removal of marginal wetland and riparian vegetation within the working area at the dam wall and along the existing access route, introduction and spread of alien and invasive species on disturbed surfaces, and temporary noise, dust and disturbance to wetland fauna.	1	4	1	2	2	3	30	-	Medium	• Works and laydown confined to the existing wall and adjacent working area; upstream wetland, seeps and spring demarcated no-go (Section 9, planning). • 32 m no-go buffer pegged out; machinery confined to designated access points (Section 9, operation). • Monthly alien and invasive control; compacted areas ripped and seeded with an indigenous grass mix (Section 9, construction). • Topsoil stripped, stockpiled and replaced in its horizon; margins replanted with wetland species and a veld and sedge mix.	1	3	1	1	1	2	14	-	Low

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ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S
Erosion, sedimentation and decrease in surface water quality	Exposed and compacted soils at the wall reduce surface roughness and increase erosive potential, with sheet wash, rill and gully erosion delivering sediment to the channelled valley bottom wetland. Suspended sediment is released from material accumulated behind the wall, and hydrocarbon, cement and sanitation related contamination may arise from plant and site facilities.	2	4	1	2	2	3	33	-	Medium	• In-channel works restricted to the dry season, with silt curtains or earth berms isolating the working area (Section 9, operation). • Silt fencing and hessian nets along the working area; stormwater outflows protected with cut-off berms (Section 9, construction). • Spoil and material stockpiles kept outside the wetland buffer and bermed or silt fenced (Section 9, operation). • Drip trays, spill contingency plan, fuel storage bunded to 110%, and no refuelling, cement mixing or ablutions within 100 m of the watercourse (Section 9, construction).	1	3	1	1	1	2	14	-	Low

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S
Alteration of flow regime and temporary drawdown of the impoundment	Temporary drawdown and diversion of flow to allow works on the wall alters flow timing, volumes and inundation levels within HGM 1 and the adjoining seep wetlands and spring.	2	4	1	2	1	3	30	-	Medium	• Works completed in winter or low flow, so that drawdown coincides with the lowest inflow. • Drawdown limited to the minimum level and duration required, with flow released downstream throughout. • Stormwater structures to promote infiltration and dissipate flow, with wetland species planted in drains (Section 9, construction). • Surface flows into the wetland reinstated and compaction prevented on completion (Section 9).	1	4	1	1	1	2	16	-	Low

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S
OPERATIONAL PHASE																				
Erosion of the wetland channel below the repaired wall	Discharge over and below the repaired wall concentrates flow and energy in the channel below the structure, with potential for bank erosion and channel incision.	2	3	1	2	3	3	33	-	Medium	• Reno-mattresses and gabion baskets keyed into natural ground at discharge points, with no flow paths around them (Section 9, construction). • Stormwater infrastructure maintained; disturbed areas monitored monthly through the first wet season (Section 9, operation). • Steep drops reshaped to 1:3 and stabilised with coir logs or geotextiles, then planted with indigenous riparian species (Section 9, operation). • Obligate wetland species planted below the wall to increase roughness and slow flows.	1	2	1	1	2	2	14	-	Low

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S
Altered inundation levels affecting the adjoining seep wetlands and spring	Restoration of the design storage level alters the inundation regime at the dam margins and may affect the groundwater relationship that supports the adjoining hillslope seep wetlands (HGM 2 and 3) and the spring (HGM 4).	1	3	2	2	3	2	22	-	Low	• Impoundment restored to its original design level, with no raising of the full supply level. • Seeps and spring retained within the existing demarcated buffer and conservation zones. • Wetland extent, vegetation and hydric soils at the seeps and spring monitored post-rehabilitation.	1	3	1	1	3	2	18	-	Low
Pollution and stormwater impacts from ongoing maintenance	Periodic maintenance of the wall and its surrounds introduces hydrocarbons from vehicles and plant, human waste and litter, while hardened surfaces increase runoff, edge effects and the risk of pollutants being washed into the system.	1	3	1	1	2	2	16	-	Low	• Oils, fuels and hazardous substances stored beyond 50 m of the watercourse in a bunded area, with spill kits on site (Section 9, construction). • Plant checked for leaks before entry and serviced away from the watercourse and its buffer (Section 9, construction).	1	2	1	1	2	1	7	-	Low

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S
											• Stormwater structures maintained to promote infiltration; litter and solid waste removed (Section 9, operation).									
Restored integrity of the dam wall and avoided catastrophic failure	Repair of the eroding wall removes the risk of partial or complete wall failure, the uncontrolled release of impounded water and the mobilisation of accumulated sediment into the downstream channelled valley bottom wetland, and secures the assurance of supply that the Southern Drakensberg Strategic Water Source Area is intended to provide to downstream users and ecosystems.	2	4	1	1	3	3	33	+	Medium	• Repair designed to restore full structural integrity and storage capacity, and to pass the 1:100 year flood (Section 9, planning). • Inspection and maintenance of the wall and stormwater structures carried into the EMPr (Section 9, operation). • Disturbed margins rehabilitated to reinstate the wetland environment around the wall.	2	4	1	1	3	4	44	+	High

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S
DECOMMISSIONING PHASE																				
Decommissioning	No decommissioning phase is proposed. The activity is the repair and maintenance of an existing dam wall, which will remain in place for the operational life of the estate. Should the impoundment be decommissioned in future, the impacts would be equivalent to the construction phase impacts assessed above, and the same mitigation measures, together with the rehabilitation actions in Section 9, would apply.	-	-	-	-	-	-	-	-	-	As per the construction phase measures above and Section 9.	-	-	-	-	-	-	-	-	-
RESIDUAL IMPACTS																				
Retained impoundment of the channelled valley bottom wetland	The impoundment of HGM 1, and the associated loss of hectare equivalents (2.6 ha of the 3.3 ha unit), is a permanent, pre-existing modification which the	2	4	3	2	4	2	30	-	Medium	• The repair does not increase the impoundment extent, inundated area or footprint within the wetland. • Trajectory of change assessed as stable	2	3	2	2	3	2	24	-	Low

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S
	repair retains rather than creates.										across all four WET-Health modules. • Buffer and conservation zones maintained to protect the residual wetland extent.									

9. METHOD STATEMENTS

9.1 Description of Tasks and Subordinate Actions

A method statement is provided below outlining the proposed tasks and the sequence in which the maintenance works will be undertaken. The detailed engineering methodology will be confirmed by the appointed dam engineer; however, the environmental sequencing and management measures specified below will apply irrespective of the final engineering methodology adopted.

9.2 Pre-Construction and Planning Activities

Prior to the commencement of construction, the following activities must be undertaken:

- The maintenance area — including any site camp, access routes, stockpile areas, excavation and working areas, storage facilities and parking — must be clearly demarcated for the duration of the works, and all activity confined to this footprint.
- Environmentally sensitive areas, and any protected or sensitive plant species within or adjacent to the working area, must be clearly demarcated and protected.
- All contractors and staff must receive environmental awareness training prior to commencing work.
- All works within the watercourse must be undertaken in winter or low-flow conditions, outside the peak rainfall season, so that drawdown coincides with the lowest inflow and the energy available to transport disturbed sediment downstream is minimised.

9.3 Description of the Work to be Undertaken: What, When and How

- Establish temporary flow management (e.g. temporary diversion or pumping) as required to allow the spillway, outlet works and dam wall to be worked on in the dry. The temporary containment works must be designed to double as a sediment retention system, with silt curtains or earth berms isolating the working area from the impoundment and the downstream channel. Drawdown must be limited to the minimum level and duration required, and flow must be released downstream throughout. No permanent diversion is proposed.
- Upgrade the spillway capacity to the design standard identified in the Dam Safety Evaluation.
- Stabilise the outlet works area and extend/upgrade the outlet infrastructure within the existing location and footprint.
- Repair the eroded dam wall and raise the dam crest by approximately 400 mm using suitable engineered fill, compacted to an equivalent density to the surrounding wall profile.
- Reshape, rehabilitate and re-vegetate all disturbed areas immediately following completion of the works.
- Prior to commencement of any works requiring temporary drawdown or diversion of water, the appointed Contractor, in consultation with the Dam Engineer, must prepare a site-specific method statement addressing the proposed dewatering arrangements, temporary flow management, sediment interception and measures to prevent the uncontrolled discharge of sediment-laden water downstream. The method statement must demonstrate compliance with the environmental management requirements of this MMP and must be reviewed by the ECO prior to implementation, with aquatic specialist input obtained where necessary.

9.4 Materials to be Used

The following materials to be used for the proposed repair works have been identified by the Project Engineer:

- Suitable engineered earthfill for construction of the stability berm and associated dam wall repairs, with the material specifications and source to be confirmed by the appointed Dam Engineer prior to commencement of works;
- Sand and stone for the chimney filters;
- Gabion baskets and Reno mattresses;

- Concrete for the spillway sills;
- Steel pipework and valves for the new outlet works assembly.

9.5 Machinery to be Utilised

The equipment required will generally be earthworks equipment such as:

- Excavators;
- Dump trucks;
- Padfoot roller compactors;
- TLB's;
- Light motor vehicles;
- Concrete vibrators; and
- Hand tools.

9.6 Access to and from the Site

Existing estate roads and tracks to the dam are to be used. No new access routes are to be created; if unavoidable, access must be routed through the most degraded areas, avoiding sensitive or indigenous vegetation.

9.7 Disposal of Sand, Soil, Pebbles and Rock

Excess excavated material is to be reused on site where possible (e.g. behind the wall) or disposed of at an appropriate and lawful facility. No material is to be side-cast into the watercourse.

9.8 Proposed Tasks, Assessment of their Impacts and Mitigation Measures

The proposed tasks to be undertaken for the proposed repair works with the related impact assessment and provision of mitigation measures, are provided in Table 8.

Table 8: Proposed Tasks, Impact Assessment and Mitigation Measures

Action	Potential impact	Severity	Mitigation measures	Corrective / remedial measures
Dam wall repair & crest raise	Altered flow and infilling within a watercourse	Medium	• Confine works and laydown to the existing dam wall and the immediately adjacent working area; the upstream channelled valley bottom wetland, the hillslope seeps, the spring and their buffers are no-go areas. • Peg out a rigid 32 m NEMA buffer. • Protect the banks of the active channel from erosion. • Undertake all in-channel work in winter / low flow, with the	• Protect and rehabilitate disturbed riparian areas; • reinstate bank profiles to pre-works condition.

Action	Potential impact	Severity	Mitigation measures	Corrective / remedial measures
			temporary containment works also serving as a sediment retention system. • Limit drawdown to the minimum level and duration required, releasing flow downstream throughout.	
Spillway & outlet works	Increased erosion leading to soil wash	Low–Medium	• Install silt fencing, sandbags or hessian netting along the boundaries of the working and stockpile areas; • divert silt-laden water to settling areas before discharge; • construct erosion prevention berms on steep sections of the working area and direct them into natural vegetation; • key reno-mattresses or gabion baskets into natural ground at discharge points so that no concentrated flow path develops around them.	• Assess and remediate any erosion or sedimentation; • re-vegetate exposed areas.
General construction	Decrease in water quality (fuel, oil, concrete, ablutions)	Low	• Bunded fuel/chemical storage (110% capacity) located beyond 50 m of the watercourse; • drip trays under machinery; • No refuelling, servicing or cement mixing within 50 m of the watercourse or its buffer; • Cement to be mixed over an impermeable lined surface or in a vehicle load bin, or ready-mixed concrete trucked in; • No washing of vehicles in the watercourse;	• Immediately contain and clean up spills; • remove and dispose of contaminated soil at a licensed facility; • report significant spills to the authorities.

Action	Potential impact	Severity	Mitigation measures	Corrective / remedial measures
			• Chemical sanitation facilities ≥ 50 m from the watercourse.	
All works	Disturbance to aquatic/riparian fauna	Low–Medium	• Restrict working hours; • Limit working area; • Implement the Water Quality Monitoring Programme contained in the Watercourse & Aquatic Assessment, including monitoring of the determinand suite identified for catchment U20E. Monitoring results must be assessed against baseline and upstream/downstream conditions, with reference to the applicable Resource Quality Objectives; • Where a material deterioration attributable to the works is identified, appropriate corrective action and follow-up sampling must be undertaken. • Where temporary drawdown of Fish Eagle Dam is required, water levels must be lowered gradually and in a controlled manner, as far as practicable, to minimise the risk of aquatic fauna becoming stranded. Exposed dam margins and isolated pools must be inspected during drawdown, and any stranded aquatic fauna must be protected from harm. Where safe and appropriate, project personnel may assist stranded fauna to reach suitable, connected aquatic	• Identify and mitigate factors causing any decline; • undertake follow-up surface water quality sampling at the upstream and downstream points and, where rehabilitation is implicated, monitoring of wetland extent, vegetation and hydric soils.

Action	Potential impact	Severity	Mitigation measures	Corrective / remedial measures
			habitat within the dam. Any handling or relocation requiring specialist expertise or authorisation must be referred to an appropriately qualified person.	

9.9 General Environmental Management Controls

The following controls apply for the duration of the maintenance works, in addition to the mitigation measures set out in Table 7. They are drawn from the impact mitigation principles of the KZN MMP Policy Guideline and are to be included in the contractor's obligations.

9.9.1 Site Establishment and Sensitive Features

1. Site camp, storage, stockpile, laydown and ablution areas must be located outside the delineated watercourses and outside the 32m NEMA buffer zone delineated in the Watercourse and Aquatic Assessment (Appendix E).
2. Environmentally sensitive areas, and any sensitive or protected plant species within the maintenance footprint, must be clearly demarcated and protected for the duration of the maintenance period.
3. The removal, cutting, pruning or relocation of protected indigenous species or vegetation must be approved by the relevant competent authority before such work is undertaken.
4. Where necessary, the working area must be screened from adjacent residences and other sensitive receptors within the estate using fencing and shade cloth.
5. Construction materials must not be stockpiled within the watercourse buffer, so as to prevent substances such as sand, cement, bricks or rubble from being washed into the watercourses.
6. Any removal of existing material must be undertaken with careful consideration for the surrounding and adjacent watercourses, to avoid spilling substances such as rubble and concrete into the watercourses. Material removed from the project area must be placed outside the watercourse buffer and must be removed from the site within 72 hours.
7. Adequate stormwater containment structures must be designed and built to prevent stormwater runoff from the working area entering any watercourse.
8. Construction vehicles must not be parked within the watercourse buffer unless specifically required at that point in time for works taking place around the watercourse.

9.9.2 Spills and Pollution Control

1. Chemicals, dangerous goods, oils and fuels must not be stored within 50 m of the full extent of the watercourses and their associated buffer zones. Where such materials are stored within the working area, a designated storage area must be provided with an impervious surface and a bund capacity of at least 110% of the material storage capacity. Emergency spill kits must be available on site to clean up and remove accidental spills.
2. A spill contingency plan must be implemented as part of this MMP, and any spillage of chemicals, dangerous goods or fuel must be attended to immediately.
3. Petrochemical storage infrastructure must be completely lined within a concrete bunded area with the capacity to contain 110% of the total quantity of petrochemicals stored within any tank, and must be fitted with valves or taps to contain or release any spillage collected from the storage

tanks, and with fire extinguisher equipment. Spills must be completely removed from the site unless an oil separator is installed.

4. Emergency contact numbers must be displayed on site, spill cleaning kits must be kept available on site, all chemicals on site must be recorded in an inventory of hazardous substances, and equipment, machinery and vehicles must be regularly checked and maintained in good order.
5. Machinery and equipment maintenance must be undertaken in designated areas, with drip trays placed underneath machinery and equipment during maintenance.
6. Contaminated soils resulting from spills must be removed and disposed of within the hazardous waste stream at an appropriately licensed landfill site.
7. Where a spill occurs, the source of the spill must be located, the spill stopped and further spreading prevented, and the spilled substance cleaned up and removed using an appropriate oil sponge, absorbent or spill kit. Spills from trucks or tractors must be contained within a concreted site area and prevented from spreading. Every spill must be reported to the site manager or supervisor and to the ECO, and, depending on the significance of the spill, must also be reported immediately to EDTEA and the Department of Water and Sanitation.
8. Oil interceptors and/or drip trays must be used under machinery and vehicles in parking areas and during refuelling, and must be inspected and cleaned regularly.
9. No refuelling, servicing or maintenance of vehicles or machinery may take place within 50 m of the watercourses and their associated buffer zones. All vehicles and machinery must be checked for oil, fuel or other fluid leaks before entering the working area, and must be regularly serviced and maintained.
10. No vehicle may be washed within the watercourse or in any manner that may result in contamination of the watercourse or water resource.
11. No cement or concrete mixing may take place within the watercourses or their buffer zones. Any concrete mixing on site must be conducted on impermeable plastic sheets to prevent cement entering the watercourses through seepage or accidental spillage; alternatively, mixing may take place within the footprint where permanent concreting will occur.

9.9.3 Water Use, Waste and Ablutions

1. Water used during the maintenance works may only be abstracted or obtained from a source approved by the relevant authority.
2. Waste management measures must be established to separate, collect, store and dispose of general and hazardous waste streams; hazardous waste must be kept separate from general waste.
3. General and hazardous waste must be disposed of at appropriate and lawful waste disposal facilities. No waste may be burnt on site.
4. Recycling, reuse and waste reduction measures must be implemented, and waste removal and safe disposal certificates must be retained on site and made available on request.
5. Temporary chemical sanitation facilities must be provided, serviced at least weekly by a registered service provider, and located at least 50 m from the watercourses and their associated buffer zones or any other water source.
6. No long-drop toilets are permitted on site. Sanitation facilities must be checked regularly for maintenance purposes and cleaned often to prevent spills.

9.9.4 Vehicle Access, Traffic and Soil Compaction

1. Vehicles must use the existing estate access routes. Where no route exists, access must be created through the most degraded area, avoiding sensitive and indigenous vegetation.
2. A rigid 32 m no-go buffer must be pegged out between the edge of the watercourse and riparian zone and the laydown and access areas, other than where works must be undertaken at the dam wall itself. Heavy machinery must operate from a single designated access point and may not traverse the vegetated wetland margins. Where work within the buffer is unavoidable at the wall, measures must be implemented to limit soil compaction and to restrict the extent of the working area.

3. Techniques to minimise soil compaction must be applied, including restricting access during wet conditions and using protective boarding and low ground pressure machinery. Where necessary, soil must be carefully removed and stored for subsequent reinstatement.
4. Compacted areas must be ripped and seeded immediately on completion of work in that area, using an indigenous grass seed mix approved by the wetland specialist.
5. Stormwater structures must be installed to promote infiltration and to dissipate flow away from concentrated flow paths, with erosion prevention berms on steep sections of the working area directed into natural vegetation.
6. Where practical, obligate wetland species or dissipation structures must be established in drains around the structures.

9.9.5 Nuisance Management

1. Prior notice must be given to residents of the estate, to the estate management and to any adjacent sensitive receptors of any noisy or dusty activities to be undertaken.
2. Maintenance work and site activity may only be undertaken between 07:00 and 17:00 on weekdays and between 07:00 and 15:00 on Saturdays.
3. Dust suppression measures must be applied where necessary to limit dust impacts on adjoining land uses and residences.

9.9.6 Cultural Heritage – Chance Finds

1. Should any heritage objects, human remains or graves be identified during excavation, all maintenance work in the affected area must cease immediately and the competent authority for cultural heritage (Amafa aKwaZulu-Natali) must be contacted. Work may only resume once authorisation to proceed has been issued by that authority.

9.10 Post-Maintenance Rehabilitation

The following rehabilitation measures must be implemented on completion of the maintenance works:

1. All disturbed areas associated with the maintenance works must be reshaped, rehabilitated and re-vegetated immediately following completion of the works, and rehabilitation must occur at the earliest possible time.
2. Any steep vertical drops left by excavation must be mechanically reshaped to a gentle, stable slope of approximately 1:3 to prevent slumping. Reshaped banks must be stabilised immediately using biodegradable materials such as coir logs or geotextiles, followed by active planting of deep-rooted indigenous riparian vegetation.
3. All temporary dams, berms, cofferdams and other material used to divert flow must be completely removed from the channel, and the streambed and bank profiles must be returned to their pre-maintenance condition where applicable and appropriate.
4. Infilling and reinstatement around the repaired wall must utilise suitable material as specified by the appointed dam engineer, with appropriate geotextile material installed where required to prevent sediment migration.
5. Surface flows into the wetland must be reinstated on completion, and surface roughness must be increased so that flows entering the wetland are slow and dissipated.
6. Rehabilitation and re-vegetation of disturbed areas must make use of locally indigenous species appropriate to Midlands Mistbelt Grassland, established from an indigenous grass and sedge mix approved by the wetland specialist. A list of recommended indigenous species may be obtained from the municipality.
7. Revegetation of the dam crest, downstream embankment slope, stability berms and auxiliary spillway must be restricted to appropriate indigenous sod-forming grasses and shallow-rooted sedges, as specified by the appointed Dam Engineer and aquatic specialist. No trees or woody shrubs may be established within 10 m of engineered earthfill structures.
8. Obligate wetland species — including Cyperus, Juncus, Kniphofia and Phragmites — must be planted within the permanent wetland zones where practical. Planting must be undertaken in the spring or summer months to ensure plant survival. Where natural re-vegetation is not successful,

hydroseeding and geofabrics must be used. The rehabilitation area must be fenced to prevent encroachment by pedestrians and estate traffic until vegetation is established.

9. All construction debris and waste material must be removed from the site and disposed of at an appropriate and lawful general waste disposal facility.
10. Topsoil must be stripped from the full extent of the working area and may not be spoiled. Topsoil and subsoil stockpiles must be kept on opposite sides of the excavation, and stockpiles must be protected against erosion. Naturally occurring vegetation removed by site clearance may be grubbed in with the topsoil for stockpiling.
11. Topsoil and stripping must not be undertaken during wet weather. During stripping and stockpiling, unnecessary compaction must be avoided and topsoil should not be pushed over distances exceeding 50 m, unless otherwise specified by the appointed Engineer.
12. Topsoil may be handled twice only — once to strip and stockpile, and once to replace, level, shape and scarify.
13. A record must be kept of all topsoil quantities. Any shortfall required for rehabilitation must be made up with replacement material from a commercial source approved by the Engineer, preferably from areas identified as having excess topsoil.
14. Alien and invasive plant control must be undertaken monthly within the maintenance footprint and the 32 m buffer, and must continue after completion of the works until the site has been suitably rehabilitated and re-vegetated with locally indigenous species.
15. Vegetation rehabilitation monitoring must be undertaken quarterly for at least one year following completion of the maintenance works.

9.11 Timeframes and Frequency of the Maintenance Actions

The maintenance works contemplated in this MMP comprise once-off repair and upgrading works and are not intended to be repeated at regular intervals. Routine inspection and minor maintenance of the dam, spillway and outlet works will continue as part of the ongoing operation and maintenance of Fish Eagle Dam.

The construction programme will be confirmed by the appointed dam engineer and contractor prior to commencement of the works. Where practicable, works within the watercourse will be scheduled during the drier winter period and under low-flow conditions in order to minimise disturbance and the potential mobilisation of sediment.

Rehabilitation of disturbed areas must commence as soon as practically possible following completion of the relevant construction activities. Post-construction rehabilitation and alien invasive plant monitoring must continue for a minimum period of one year, or until the rehabilitation objectives specified in this MMP have been achieved.

All works must be undertaken as efficiently as reasonably possible to minimise the duration of environmental disturbance.

10. ENVIRONMENTAL MONITORING PROGRAMME

The purpose of the environmental monitoring programme is to identify any changes in environmental conditions arising from the maintenance works and to enable appropriate corrective or remedial measures to be implemented where required. The water quality monitoring requirements contained in this section are based on the Water Quality Monitoring Programme developed as part of the Watercourse and Aquatic Assessment (Appendix E). Follow-up monitoring will assist in determining whether the works are adversely affecting the aquatic environment and whether additional mitigation or corrective measures are required.

An Environmental Control Officer (ECO) must be appointed to monitor compliance with this MMP during implementation of the maintenance works. Monitoring findings must be appropriately documented and records retained for inspection by the relevant authorities where required.

The Contractor will be responsible for implementing the method statements and environmental management measures contained in this MMP. The ECO will be responsible for monitoring and recording compliance, identifying non-compliances and recommending or instructing appropriate corrective action. The ECO will also oversee rehabilitation and confirm satisfactory completion of the rehabilitation measures, with input from the aquatic specialist where required. The appointed dam engineer will remain responsible for the engineering design and technical requirements associated with the repair works.

10.1 Environmental Management Programme

The Environmental Management Programme for this MMP is provided in Table 9.

Table 9: Environmental Management Programme

Part of the site monitored	Frequency of monitoring	Responsible Party	Monitoring procedure	How results are analysed and reported
Dam wall, spillway and outlet works	Monthly during construction; every 6 months for the first 2 years of operation	ECO	ECO inspection with compliance audits	ECO to assess and report on the contractor's compliance with the mitigation measures in this MMP; reports submitted to EDTEA (Compliance, Enforcement & Monitoring Unit).
Watercourse water quality (upstream & downstream)	Baseline complete; once off during ongoing construction; every 6 months for one year during operation	ECO	Surface water quality sampling will be undertaken at the upstream and downstream monitoring points identified in the Watercourse and Aquatic Assessment. The completed baseline assessment comprised 16	Monitoring results will be compared against the baseline water-quality results and the corresponding upstream and downstream measurements, with reference to the applicable Resource Quality Objectives for catchment U20E.

Part of the site monitored	Frequency of monitoring	Responsible Party	Monitoring procedure	How results are analysed and reported
			determinands, while construction and post-construction monitoring will be undertaken for the reduced determinand suite specified in Tables 18 and 19 of the revised specialist assessment, having regard to the applicable Resource Quality Objectives for catchment U20E (Government Notice No. 1386 of December 2017). Laboratory analyses will be undertaken by an appropriately accredited laboratory.	Where a material deterioration in downstream water quality attributable to the maintenance works is identified, the cause must be investigated, appropriate corrective measures implemented and follow-up sampling undertaken to confirm recovery. Monitoring results and corrective actions must be documented and reported to EDTEA as required.
Disturbed / rehabilitated areas	Monthly for erosion through the first wet season after construction; monthly for alien and invasive species; quarterly for vegetation establishment for at least 1 year post-works	ECO	Erosion, alien and invasive plant, and vegetation rehabilitation monitoring; post-rehabilitation monitoring of wetland extent, vegetation and hydric soils at the seeps and spring	Progress of re-vegetation with locally indigenous species and alien plant control reported to the ECO / EDTEA.

10.2 Reporting and Auditing

Monitoring and reporting will be undertaken in accordance with the requirements of this MMP and any conditions imposed by EDTEA upon adoption of the MMP. The following reporting arrangements are proposed:

1. The ECO must keep a site diary and a photographic record of the works, and must record all incidents, non-compliances and corrective actions taken.
2. Water quality sampling must be undertaken by a suitably qualified person appointed by the applicant, and all samples must be analysed by a laboratory accredited by the South African National Accreditation System (SANAS). The sampling method, and the split between in-situ field measurement and laboratory analysis, must be recorded with each round of results.
3. Each round of water quality results must be submitted to the ECO for interpretation against the baseline determinand results, assessed as the downstream/upstream difference, with the

specialist assessment and the U20E Resource Quality Objectives, and must be included in the ECO's compliance audit report and in the rehabilitation monitoring report submitted to EDTEA.

4. Where a material or sustained deterioration downstream relative to the upstream point and the baseline is confirmed, the ECO must investigate the cause, implement source-based corrective action, arrange re-sampling to confirm recovery, and report the deterioration and the action taken to EDTEA and the Department of Water and Sanitation.
5. The ECO must compile a compliance audit report on completion of the maintenance works, and a rehabilitation monitoring report at the end of the twelve-month post-works monitoring period, both of which must be submitted to EDTEA.
6. All monitoring data, waste disposal certificates and records of authority correspondence must be retained on site for the duration of the works and made available to EDTEA on request.
7. Any incident that results in significant pollution or degradation of the environment, including any significant spill, must be reported to EDTEA and to the Department of Water and Sanitation immediately.
8. In the event of an uncontained spill, the source must be identified and contained immediately, and contaminated material must be removed and disposed of at an appropriately authorised waste disposal facility. The ECO must assess the extent of contamination and determine whether further investigation, remediation or water quality monitoring is required, with specialist input obtained where necessary. Significant pollution incidents must be reported the relevant authorities in accordance with applicable legislative requirements.
9. Stormwater infrastructure must be inspected and maintained to prevent erosion of discharge points into the wetland, and litter and solid waste must be removed.

EDTEA may, at any reasonable time, evaluate the maintenance activities and assess the maintenance site to determine whether the works are being undertaken in accordance with the adopted MMP.

11. CONCLUSION

Fish Eagle Dam is an existing dam located within St. John's Village Lifestyle & Retirement Country Estate and has been in operation since approximately 1970. The 2024 Dam Safety Evaluation identified a number of deficiencies relating primarily to the capacity of the existing spillway, the condition of the outlet works and the stability and safety of the dam embankment. The proposed repair works are therefore required to improve the long-term safety and operation of the dam and reduce the risk posed to existing development situated downstream.

The proposed works comprise the upgrading and widening of the existing spillway system, reinstatement of the historical auxiliary spillway, repair and stabilisation of the outlet works, raising of the dam crest by approximately 400 mm, and construction of the associated stability and flood-protection berms. The works relate entirely to the repair and upgrading of existing dam infrastructure and will not increase the storage capacity of Fish Eagle Dam or expand the existing impoundment footprint.

The Watercourse and Aquatic Assessment undertaken by NatureStamp identified a number of aquatic features associated with the dam and surrounding environment and confirmed that the proposed works have the potential to result in localised and predominantly temporary impacts during construction. These relate principally to disturbance of aquatic and riparian habitat, erosion and sedimentation, deterioration of surface water quality and temporary alteration of flow conditions. The specialist assessment concluded that these impacts can be appropriately managed through implementation of the recommended mitigation, rehabilitation and monitoring measures incorporated into this MMP.

The MMP therefore provides the environmental management framework within which the repair works must be undertaken. This includes controls relating to the extent and timing of the works, protection of sensitive aquatic features, erosion and sediment management, pollution prevention, rehabilitation of disturbed areas and post-construction monitoring. Compliance with these measures will be monitored by an appointed Environmental Control Officer, with specialist input obtained where required.

The proposed repair works are considered necessary to address the identified dam safety deficiencies and, subject to implementation of the mitigation and management measures contained in this MMP and compliance with any conditions imposed by EDTEA, can be undertaken without unacceptable residual impacts on the receiving environment.

It is therefore recommended that the Maintenance Management Plan be adopted by EDTEA to enable the proposed repair works to proceed in accordance with the environmental management, rehabilitation and monitoring requirements contained herein.

Adoption of this MMP does not exempt the Applicant from compliance with any other applicable legislative requirements or from the general duty of care contained in Section 28 of NEMA.

APPENDIX A: LOCALITY MAP



Co-Ordinate System

Projection : Transverse Mercator
Ellipsoid : WGS 84
Datum : Hartebeesthoek 94
Central Meridian : LO 31
Topo Map : 2930AC HOWICK 2023

SCALE BAR
0 1250 2500

Rev.	Date	Description	By	Chkd
R01	29/11/2024	ISSUED FOR INFORMATION	MA	AK
R00	29/11/2024	ISSUED FOR INFORMATION	MA	AK

Revisions

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Website: www.mbb.co.za
Civil, Agricultural, Structural, Environmental, Project Management
MBB CONSULTING ENGINEERS (PMB)

For MBB CONSULTING ENGINEERS (PMB)

Pr Eng ..... Date .....

St Johns Home Owners Association

Amberg Glen Dam 1 First DSE

LOCALITY PLAN

USE : FOR INFORMATION

Drawn	M. Appolus	Surveyed	M. Appolus
Date	11 August 2025	Designed	M Appolus
Scale	1:50 000 (A3)	Checked	A. Knox (APP)

DRAWING NUMBER	PROJECT NUMBER				DISC	STAGE	DRAWING CODE			REVISION NUMBER	
	M	1	8	9	2	C	4	0	0	1	0	1

Drawing No: 01
Date: 01/10/2026



APPENDIX B: EAP CV & EAPASA CERTIFICATION



CURRICULUM VITAE OF SARAH STALBERG

(NEE FERNANDES)

Hi there! My name is Sarah Stalberg and I am a passionate registered Environmental Assessment Practitioner with 15 years' experience in various fields of environmental management. My interests lie in environmental impact assessment, environmental auditing, and compliance.

CONTACT

PHONE:
+27 71 851 6976

EMAIL:
sarah@greenchoiceconsulting.co.za

DATE OF BIRTH

24 January 1985

RESIDENCE

Gillitts, KwaZulu-Natal

QUALIFICATIONS

University of KwaZulu-Natal
2008 - 2012
MSc (Environmental Science)
Thesis Title: An Analysis of the Net Flux of Nitrates from the Isipingo, Mgeni and Tongati Estuaries of the eThekwini Metropolitan Area, KwaZulu-Natal, South Africa.

University of KwaZulu-Natal
2007
BSc Honours (Geography & Environmental Management)
Thesis Title: Investigating the Impacts of the March 19th Storm on the Geomorphology of Zinkwazi Beach.
Golden Key International Honour Society Membership Awarded.

University of KwaZulu-Natal
2003 – 2006
BSc (Geography & Environmental Management)

ADDITIONAL COURSES

Business Success Solutions
2024
Practical Implementation of Environmental Auditing and Monitoring

SE Solutions
2023
Integrated Environmental Management

Business Success Solutions
2022
Environmental Legal Compliance, Auditing & Monitoring

Terra Firma Academy
2021
Solar Feasibility Assessment
Certificate of Competency achieved.

Terra Firma Academy
2020
Carbon Footprint Analyst
Certificate of Competency achieved.

Institute of Waste Management of South Africa
2018
Waste Legislation Training Course

University of South Africa (UNISA)
2016
Programme in Business Management – passed with distinction

South African Association for Marine Biological Research (SAAMBR)
2015
Introduction to Marine Biology Course

Marine & Estuarine Research (MER)
2009
The Management of Estuaries in South Africa Course

PUBLICATIONS

Environmental Science Journal
A Study of the Net Flux of Nitrates from Estuaries of the eThekwini Municipality of Durban, KwaZulu-Natal

Reference: Fernandes, S. & S. Pillay, 2012 A study of the net flux of nitrates from estuaries of the eThekwini Municipality of Durban, KwaZulu-Natal, South Africa. Environ Earth Sci. J.: 67 (8), 2193 – 2203. DOI 10.1007/s12665-012-1659-2.

MEMBERSHIPS

Environmental Assessment Practitioners Association of South Africa (EAPASA)
Registered Environmental Assessment Practitioner
Registration No: 2019/1841

International Association for Impact Assessment (IAIASA)
Membership No: 6673

WORK EXPERIENCE

Green Choice Consulting – Founder & Registered Environmental Assessment Practitioner
January 2021 – Present
Green Choice Consulting offers the following environmental consulting services:

- Basic Assessments.
- Scoping & Environmental impact reporting.
- Waste management license applications.
- Water Use License applications.
- Environmental feasibility assessments.
- Environmental due diligence assessments.
- Environmental management programmes.
- Environmental monitoring & auditing.
- Environmental advice.
- Carbon footprint analysis.

Green Office (Pty) Ltd – Sustainability Officer
January 2018 – 2020
My duties included:

- Develop environmental strategies that ensure corporate sustainable development.
- Continually strive for improved environmental performance within the organization.
- Monitor and ensure compliance with environmental legislative requirements.
- Calculate, analyze and report on the organization's carbon footprint.
- Oversee and ensure best practice surrounding waste management and recycling.
- Lead ISO 14001: 2015 within the organization and assist with ISO 9001: 2015.
- Provide input in quarterly SHE meetings.
- Lead environmental strategies that enhance environmental sustainability for the organization's clients.
- Drive awareness on environmental issues both internally and for the organization's clients.
- Driving One Planet Living within the organization.

Marine & Estuarine Research – Consultant
April 2016 – November 2017
My duties at Marine & Estuarine Research included:

- Management of biomonitoring projects associated with the estuarine/coastal environment.
- Water quality, sediment and benthic macroinvertebrate sampling.
- Processing scientific data.
- Interpretation and analysis of data and results.
- Report preparation.
- Consultation with various stakeholders, clients, specialists and organs of state.
- Environmental impact assessment.

Kantey & Templer Consulting Engineers – Environmental Scientist
January 2011 – March 2016
I undertook and managed various environmental impact assessments for clients within the petro-chemical industry. My duties included:

- Management of the environmental impact assessment process.
- Preparation of Basic Assessments, Scoping and EIA reports.
- Management of the public participation process.
- Preparation of environmental management programmes.
- Client, specialist and government liaison.
- Preparation of environmental queries.
- Performed the duties of an environmental control officer (ECO).
- Preparation of environmental audit reports.
- Preparation of proposal and cost estimates and invoicing of projects.

Kerry Seppings Environmental Management Specialists – Junior Environmental Consultant
March 2010 – August 2010
I began my career working as a junior environmental consultant at KSEMS. My duties included:

- Environmental authorization application and report preparation.
- Involvement in the public participation process.
- Project research.
- Performing duties of an environmental control officer.

REFERENCES

Sharon Joubert (ex-supervisor at Green Office
Tel: 084 511 3333

Bianca McKelvey Morgan (previous colleague at Marine & Estuarine Research)
SAAMBR
Ushaka Marine World
Point
Durban
Tel: 071 625 0829
Email: bmckelvey@ori.org

Torin Pfotenhauer
Kantey & Templer Consulting Engineers
9/11 University Road
Westville
Tel: 031 266 6535

Kerry Stanton
Kerry Seppings Environmental Management Specialists
4 Woodville Lane
Summerveld
Tel: 082 823 1844

Environmental Assessment Practitioners Association of South Africa

Registration No. 2019/1841

Herewith certifies that

SARAH KATE STALBERG

is registered as an

Environmental Assessment Practitioner

Registered in accordance with the prescribed criteria of Regulation 15. (1) of the Section 24H Registration Authority Regulations (Regulation No. 849, Gazette No. 40154 of 22 July 2016, of the National Environmental Management Act (NEMA), Act No. 107 of 1998, as amended).

Effective: 01 April 2026

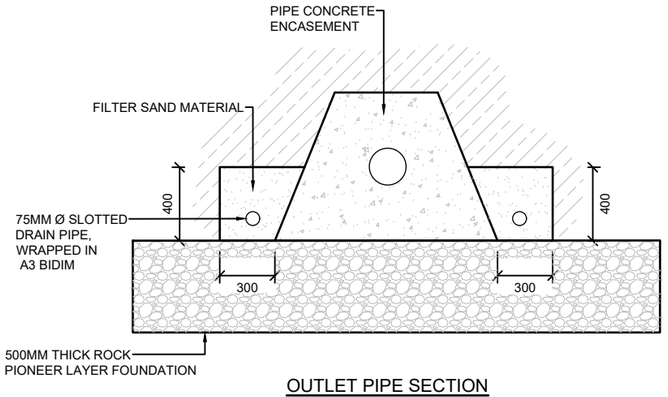
Expires: 31 March 2027

Chairperson

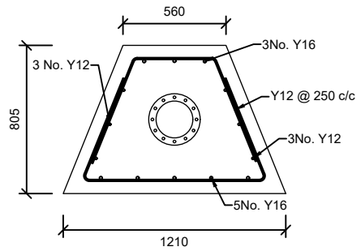
Registrar

SAQA
SOUTH AFRICAN QUALIFICATIONS AUTHORITY

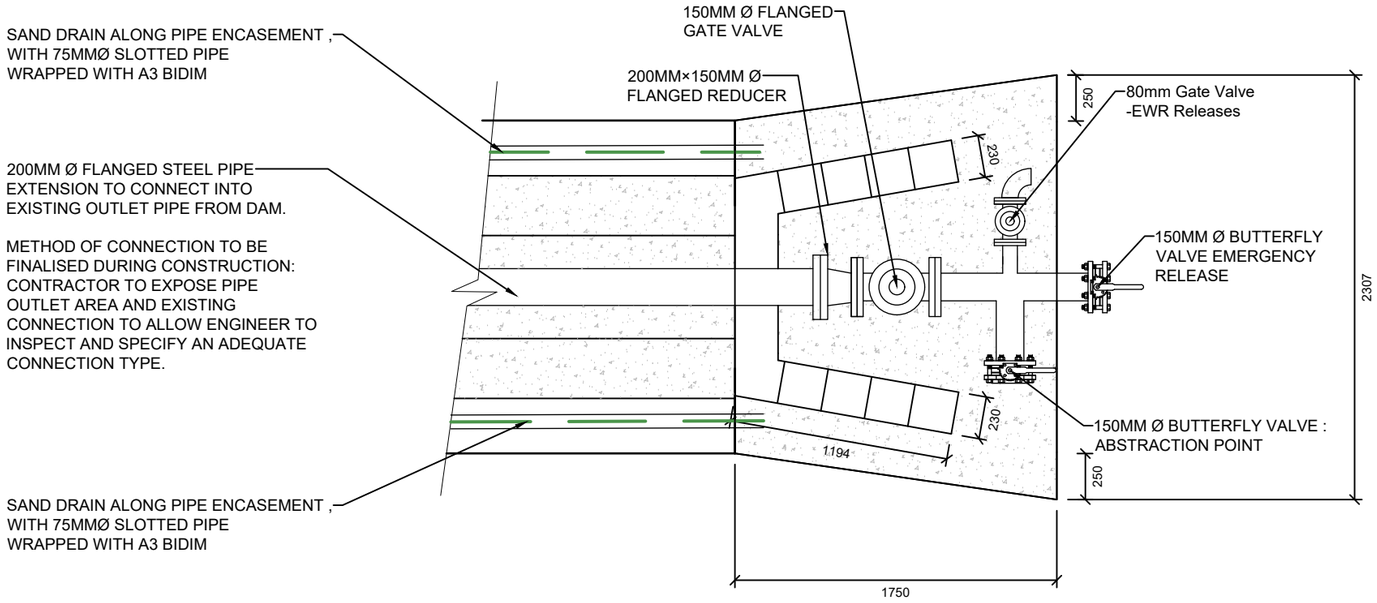
APPENDIX C: ENGINEERING DRAWINGS



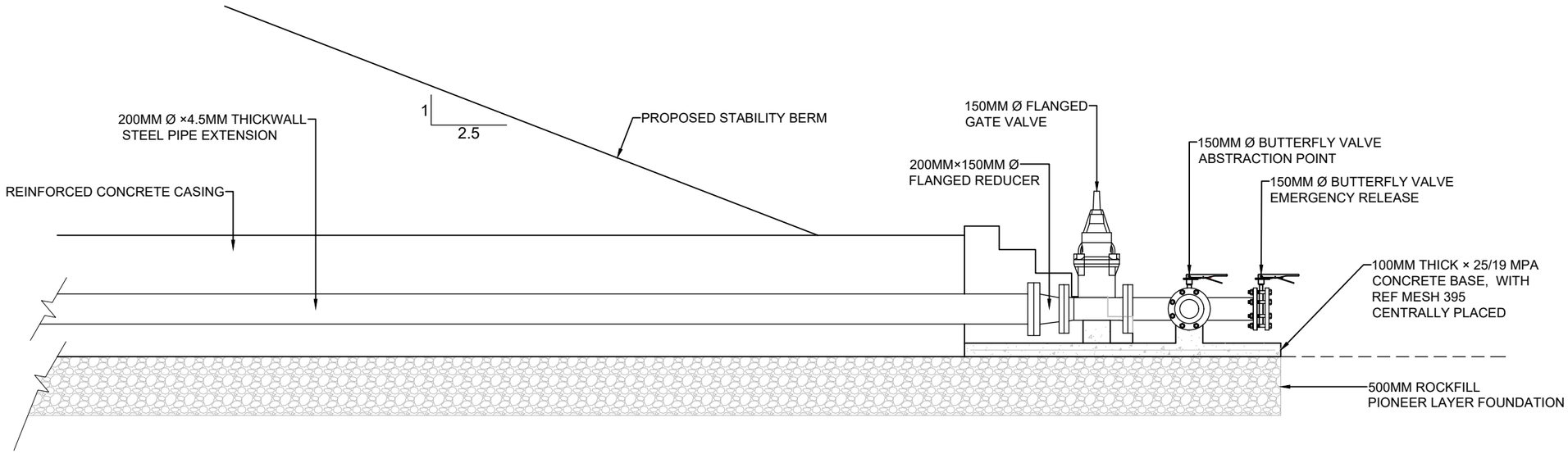
OUTLET PIPE SECTION
SCALE 1:33.33



OUTLET PIPE
ENCASEMENT REINFORCING DETAIL
SCALE 1:33.33



PLAN VIEW OF PROPOSED OUTLET PIPE
CONNECTION DETAIL
SCALE 1:33.33



ELEVATION VIEW OF OUTLET PIPE EXTENSION
CONNECTION DETAIL
SCALE 1:33.33

Co-Ordinate System

Projection	: Transverse Mercator
Ellipsoid	: WGS 84
Datum	: Hartebeesthoek 94
Central Meridian	: LO 31

SCALE BAR
0

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For MBB CONSULTING ENGINEERS (PMB)

Pr Eng ..... Date .....

St John Home Owners Association

Fish Eagle Dam Spillway Improvements & Dam Repair works

OUTLET PIPE EXTENSION DETAILS AND FITTINGS

Rev.	Date	Description	By	Chkd
R00	13/08/2025	ISSUED FOR INFORMATION	MA	AP

Revisions

USE : FOR INFORMATION

Drawn	M. Appolus	Surveyed	M. Appolus
Date	13 August 2025	Designed	M Appolus
Scale	1:33.33 (A3)	Checked	A. Knox

DRAWING NUMBER

PROJECT NUMBER				DISC	STAGE	DRAWING CODE			REVISION NUMBER	
M	1	8	9	2	C	4	0	0	8	0	0

EXISTING INFRASTRUCTURE
1. BIRD VIEWING THATCHED HUT
2. WOODEN JETTY

LARGE 0.5m-2m DIAMETER ANGULAR RIP-RAP .

CONTROL POINT CO-ORDINATES			
Name	Y	X	Z
CP1	-3260920.965	-74364.779	1097.692
CP2	-3260953.980	-74364.278	1099.418

PROPOSED 23m WIDE AUXILIARY SPILLWAY AT LEVEL 1097.700m (RL)

FILL AND LEVELCREST TO 1099.241m (RL)

SAND FILTER TOE DRAIN WITH 75MM Ø SLOTTED PIPE WRAPPED IN A3 BIDIM

0.5m SAND BLANKET DRAIN ALONG FOOTPRINT OF STABILITY BERM

TOE DRAIN PIPE INSPECTION MANHOLE. PIPE TO DISCHARGE AT SILL

500mm THICK ROCK PIONEER LAYER

0.5m SAND CHIMNEY DRAIN ALL ALONG STABILITY BERM INTERFACE WITH EXISTING WALL

PROPOSED OUTLET PIPE HEADWALL, REFER TO OUTLET WORKS DETAILS

OLD VALVE

TOE DRAIN PIPE INSPECTION MANHOLE. PIPE TO DISCHARGE AT SILL

0.5m SAND BLANKET DRAIN ALONG FOOT PRINT OF STABILITY BERM

SAND FILTER TOE DRAIN WITH 75mm Ø SLOTTED PIPE WRAPPED IN A3 BIDIM

PRIMARY SPILLWAY ENTRANCE CHANNEL TO BE LEVELED TO 1097.30m (RL)

EXISTING RENO MATRESS (REMOVED)

CP1

CP2

HW41

HW44

Gabion 10

Gabion 4

Gabion 3

Gabion 2

Gabion 1

Co-Ordinate System

Projection	: Transverse Mercator
Ellipsoid	: WGS 84
Datum	: Hartebeesthoek 94
Central Meridian	: LO 31

SCALE BAR 0 25 50

Rev.	Date	Description	By	Chkd
R00	13/08/2025	ISSUED FOR INFORMATION	MA	AK

Revisions

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Website: www.mbb.co.za
Civil, Agricultural, Structural, Environmental, Project Management
CONSULTING ENGINEERS (PMB)

For MBB CONSULTING ENGINEERS (PMB)

Pr Eng ..... Date .....

St Johns Home Owners Association

Fish Eagle Dam Spillway and Repair

STABILITY BERM DRAINAIGE LAYOUT PLAN

USE : FOR INFORMATION

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Scale	1:1000 (A3)	Checked	A. Knox (APP)

DRAWING NUMBER	PROJECT NUMBER				DISC	STAGE	DRAWING CODE			REVISION NUMBER	
	M	1	8	9	2	C	4	0	0	6	0	0

FILL AND LEVELCREST
TO 1099.241m (RL)

PROPOSED STABILITY BERM,
CREST AT1094.0 m (RL)

PROPOSED OUTLET PIPE
HEADWALL, REFER TO
OUTLETPIPE DETAILS

CLEAR AND CUT TO ALLOW
SPILL DISCHARGES TO FLOW
FREELY INTO WET VLEI AREA

OLD GV

PROPOSED 18m WIDE
PRIMARY SPILLWAY
CHANNEL

PRIMARY SPILLWAY
ENTRANCE CHANNEL TO BE
LEVELED TO 1097.30m (RL)

EXISTING RENO MATRESS
(REMOVED)

HW59

CP1

CP2

HW44

1.5m WIDE ×48m FLOOD
PROTECTION BERM RL 1099m

CONTROL POINT CO-ORDINATES			
Name	Y	X	Z
CP1	-3260920.965	-74364.779	1097.692
CP2	-3260953.980	-74364.278	1099.418

FIBRE LINE
STORMWATER LINE
SEWER LINE

Co-Ordinate System

Projection	: Transverse Mercator
Ellipsoid	: WGS 84
Datum	: Hartebeesthoek 94
Central Meridian	: LO 31

SCALE BAR
0 18.75 37.5

Rev.	Date	Description	By	Chkd
R01	13/08/2025	ISSUED FOR INFORMATION	MA	AK
R00	29/11/2024	ISSUED FOR INFORMATION	MA	AK

Revisions

The copyright of this design and drawing is reserved.
Scaled measurements are not valid.
Check drawing measurements before commencing work.
This drawing is specific to this project and should not be used for
any other project on any other site.

Tel: +27 (0)33 345 3530, Fax: +27 (0)33 342 7728
E-mail: infopmb@mbb.co.za
465 Townbush Road, Pietermaritzburg, 3201
Website: www.mbb.co.za
Civil, Agricultural, Structural, Environmental, Project Management
MBB CONSULTING ENGINEERS (PMB)

For MBB CONSULTING ENGINEERS (PMB)

Pr Eng ..... Date .....

St Johns Home Owners Association

Fish Eagle Dam Spillway and Repair

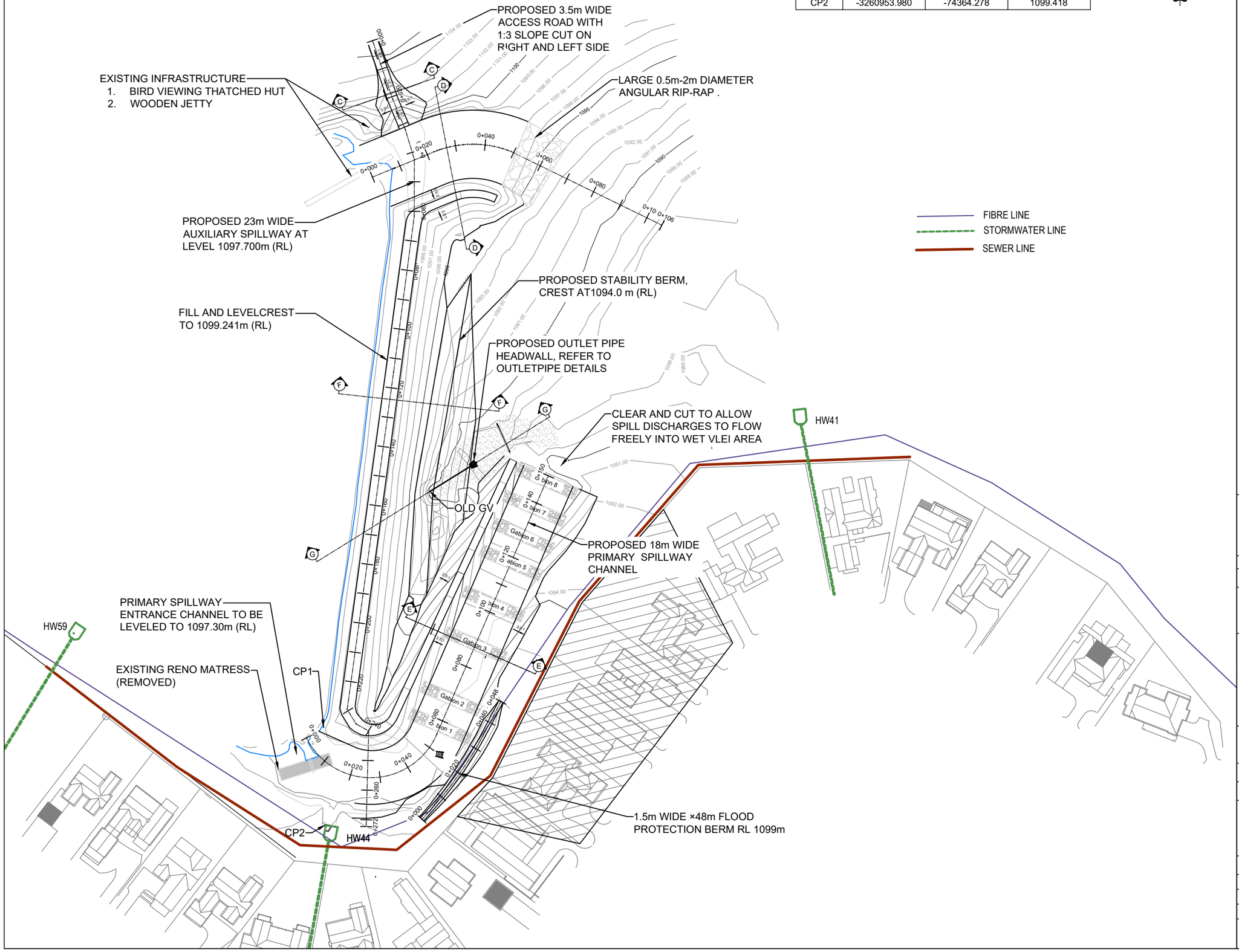
LAYOUT PLAN-PRIMARY SPILLWAY

USE : FOR INFORMATION

Drawn	M. Appolus	Surveyed	M. Appolus
Date	13 August 2025	Designed	M. Appolus
Scale	1:750 (A3)	Checked	A. Knox (APP)

DRAWING NUMBER	PROJECT NUMBER				DISC	STAGE	DRAWING CODE			REVISION NUMBER	
	M	1	8	9	2	C	4	0	0	2	0	1

CONTROL POINT CO-ORDINATES			
Name	Y	X	Z
CP1	-3260920.965	-74364.779	1097.692
CP2	-3260953.980	-74364.278	1099.418



Co-Ordinate System

Projection : Transverse Mercator
Ellipsoid : WGS 84
Datum : Hartebeesthoek 94
Central Meridian : LO 31

SCALE BAR
0 31,25 62,5

Rev.	Date	Description	By	Chkd
R01	13/08/2025	ISSUED FOR INFORMATION	MA	AK
R00	29/11/2024	ISSUED FOR INFORMATION	MA	AK

Revisions

The copyright of this design and drawing is reserved.
Scaled measurements are not valid.
Check drawing measurements before commencing work.
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Tel: +27 (0)33 345 3530, Fax: +27 (0)33 342 7728
E-mail: infopmb@mbb.co.za
465 Townbush Road, Pietermaritzburg, 3201
Website: www.mbb.co.za
Civil, Agricultural, Structural, Environmental, Project Management
MBB CONSULTING ENGINEERS (PMB)

For MBB CONSULTING ENGINEERS (PMB)

Pr Eng ..... Date .....

St Johns Home Owners Association

Fish Eagle Dam Spillway and Repair

LAYOUT PLAN

USE : FOR INFORMATION

Drawn	M. Appolus	Surveyed	M. Appolus
Date	13 August 2025	Designed	M. Appolus
Scale	1:1250 (A3)	Checked	A. Knox (APP)

DRAWING NUMBER	PROJECT NUMBER				DISC	STAGE	DRAWING CODE			REVISION NUMBER	
	M	1	8	9	2	C	4	0	0	2	0	1

APPENDIX D: PUBLIC PARTICIPATION PROCESS

APPENDIX D1: SITE NOTICES

FISH EAGLE DAM MMP: PROOF OF SITE SIGNAGE



GREEN CHOICE CONSULTING

NOTICE OF MAINTENANCE MANAGEMENT PLAN

Notice is hereby given in terms of Section 28 of the Environmental Impact Assessment Regulations, 2014 (as amended) inviting members of the public to register as interested and affected parties for the following project:

FISH EAGLE DAM REPAIR WORKS, ST. JOHN'S VILLAGE LIFESTYLE & RETIREMENT COUNTRY ESTATE

Green Choice Consulting (Pty) Ltd has been appointed by St. John's Village Lifestyle & Retirement Country Estate to manage the Maintenance Management Plan (MMP) process associated with the proposed Fish Eagle Dam repair works, located within the St. John's Village Lifestyle & Retirement Country Estate, Erf 3877 in Howick, KwaZulu-Natal. The proposed repair works are required to address dam safety deficiencies identified during a Dam Safety Evaluation and are intended to maintain the safe operation of the existing dam.

The Department of Economic Development, Tourism & Environmental Affairs (EDTEA) confirmed that the proposed works are considered appropriate for assessment through a Maintenance Management Plan process, and are the Competent Authority for the application. Members of the public wishing to register as interested and affected parties, or to obtain further information regarding the project, are requested to submit their name, contact details and interest in the matter to the Environmental Assessment Practitioner below. Registered Interested and Affected Parties will be notified once the Draft Maintenance Management Plan is available for review and comment. Registration details may be submitted to:

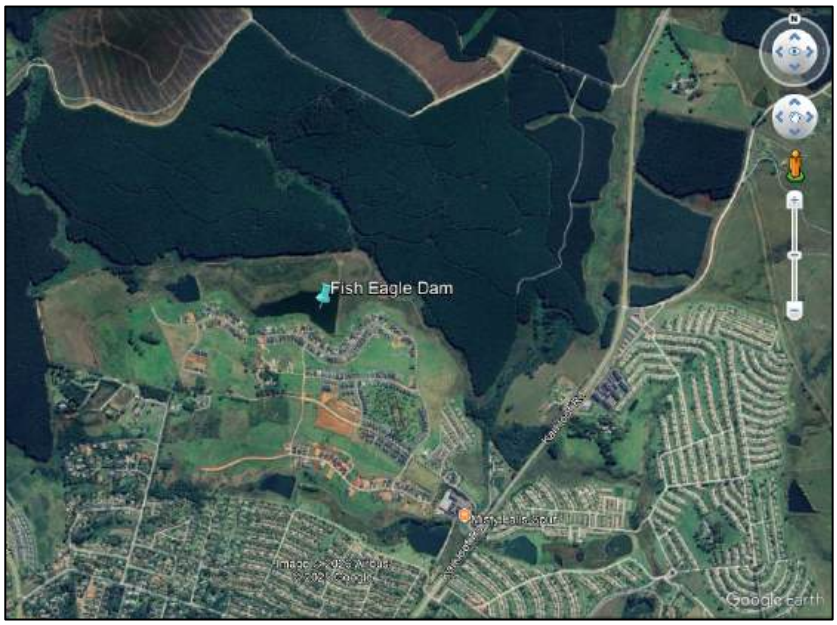


Figure 1: Location of the Fish Eagle Dam.

Contact: Sarah Stalberg
Telephone: 071 851 6976
Email: sarah@greenchoiceconsulting.co.za
Date: 15/07/2026
Website: www.greenchoiceconsulting.co.za

GREEN CHOICE CONSULTING

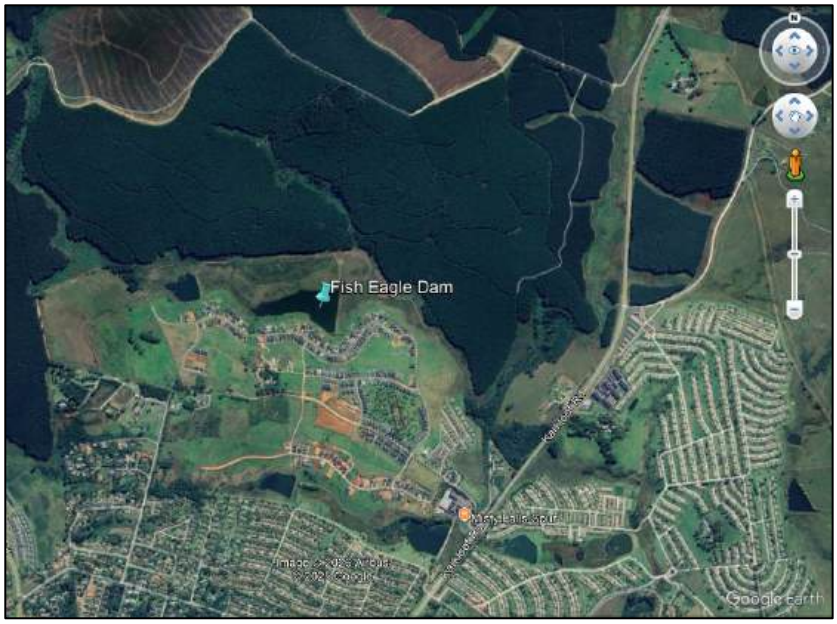
ISAZISO SOMPHAKATHI SOHLELO LOKUNAKEKELWA KWENDAWO

Lesi yisaziso esifakwa ukulandela Isigaba 28 Semithethonqubo Yokuhlola Ukuthinteka Kwemvelo ka 2024 (njengoba ichitshiyelwe) lapho kumenywa amalunga omphakathi ukuba abhalise njengabantu abathintekayo nabanentshisekelo emsebenzini olandelayo:

UMSEBENZI WOKULUNGISWA KWEDAMU I-FISH EAGLE, ENDAWENI I-ST. JOHN'S VILLAGE LIFESTYLE & RETIREMENT COUNTRY ESTATE

Abakwa-Green Choice Consulting (Pty) Ltd baqokwe ngabakwa-St. John's Village Lifestyle & Retirement Country Estate ukwengamela Uhlelo Lokunakekelwa Kwendawo (MMP) oluhambisana nomsebenzi ohlongozwayo wokulungisa Idamu iFish Eagle, elisendaweni ephakathi kwe-St. John's Village Lifestyle & Retirement Country Estate, Isiza 3877 e-Howick, KwaZulu-Natal. Imisebenzi ehlongozwayo yokulungisa kuhloswe ngayo ukubhekana nokwentuleka kwezokuphepha okwakhonjwa ngesikhathi kwenziwa Ukuhlola Kokuphepha Kwedamu futhi lokulungisa kuhloswe ngakho ukugcina ezokuphepha uma kusetshenziswa idamu elikhona manje.

Umnyango Wezokuthuthukisa Umnotho, Ezokuvakasha Nezemvelo uvumile ukuthi imisebenzi ehlongozwayo itholakala ikulungele ukuhlola Ngokohlelo Lokunakekelwa Kwendawo, nokuthi lomnyango yiwo Oyisiphathimandla Esifanele sokufakwa kwesicelo. Amalunga omphakathi afisa ukubhalisa njengabantu abathintekayo nabanentshisekelo, kumbe uma edinga olunye ulwazi mayelana nalomsebenzi, ayacelwa ukuba athumele amagama awo, imininingwane yokuthinteka nesizathu sokuba nentshisekelo lokhu akuthumele Kumhloli Wokuthinteka Kwemvelo obhalwe ngezansi. Abantu abathintekayo nabanentshisekelo ababhalisile bazokwaziswa uma Uhlelo Lokunakekelwa Kwendawo Olusalungiswa selutholakala ukuze balufunde futhi baphawule ngalo. Imininingwane yokubhalisa ingathunyelwa ekhelini elilandelayo:



Isithombe 1: Indawo okutholakala kuyo kwedamu i-Fish Eagle .

Igama: Sarah Stalberg
Ucingo: 071 851 6976
Imeyili: sarah@greenchoiceconsulting.co.za
Usuku: 15/07/2026
Iwebhusayithi: www.greenchoiceconsulting.co.za

GREEN CHOICE CONSULTING

APPENDIX D2: NEWSPAPER ADVERTS

Village Talk CLASSIFIEDS

NOTICES
0000

PERSONAL
0060

HOUSE OVERFLOWING?
Please consider donating ANY clean and resaleable unwanted items to The Howick Community Medical Charitable Trust.
Phone Mel on 082-555-6862 or Rosebud on 082-575-1868. Anything resaleable gratefully received.
SA004714

HOME IMPROVEMENTS
0200

PLUMBERS
0215

PLUMB IT DOC
Plumbing, Bathroom renovations maintenance and tiling.
Call 074 190 0661/ 079 990 4659 Martin
SA004715

SERVICES
0300

CLEANING
0321

CLEANING
A wonderful clean by Lavender Green Carpet and Upholstery Cleaning
Call/WhatsApp Rich 0823250384
SA004713

WASH- IT
Professional Window & Solar Panel Cleaning.
RUSSEL 0823878956
SA004716

TRANSPORT / TAXIS / COURIERS
0384

AIRPORT SHUTTLES
0832255585
SA004734

VACANCIES
0800

DOMESTIC EMPLOYMENT WANTED
0877

ANGELINE
seeks full domestic work. Has exp. 0799376205
SA004763

DOREEN
seeks full domestic work. Has exp. 0727698868
SA004766

IGNATIA
seeks domestic work on Monday`s & Thursday`s only. Has exp. 0792677060
SA004756

KHANYISILE
seeks domestic or caregiver work. Has exp. 0647231163
SA004758

MANTHATI
seeks sleep in /out domestic or caregiver work. Has exp. 0670895828
SA004720

MARGARET
seeks full domestic work. Has exp. 0761920605
SA004760

NELLY
seeks 6 days per week domestic work. Has ref & exp. 0716574939
SA004759

SWEETNESS
seeks domestic work. Has exp. 0697106731/ 0716498989
SA004761

THANDAZILE
seeks genaral housekeeping/ office cleaning work. 0760887996
SA004757

ZINHLE
seeks 3 to 5 days per week domestic or caregiver work. work. Has exp. 0646572412
SA004762

WANTED: Your old cricket bats deserve a second innings. At Old School Willow, we're on the hunt for vintage and collectible cricket bats — the older, the better. Think classic makers like Gunn & Moore, Slazenger, Kookaburra, Duncan Fearnley, Gray-Nicolls and other heritage brands, especially player-endorsed models, autograph bats, and anything with real history and character in the willow.
Whether it's been resting in the garage, the loft, or your grandad's old kit bag — if it's got age, a story, or a name on it, we want to hear about it.
Help us keep cricket history alive, one bat at a time.
Please WhatsApp us on 083 456 8868

OLD SCHOOL WILLOW EST 2026

SARDIWALLA OPTOMETRIST HOWICK
RECEPTIONIST NEEDED
Requirements: Good interpersonal skills, computer skills & trustworthiness. Good reference required. We are looking for someone who is friendly, bubbly, punctual, reliable & hardworking. Has medical/retail experience. If this sounds like you, please send your CV to zioptics@gmail.com

LEGALS
0900

0906 ESTATES

Estate late:
Coleen Root
Identity number:
4209270011086
Of 3 Barred Lane
Amber Valley
Howick
Estate number:
7641/2025/PMB
Date of Death:
12/10/2025

The FIRST AND FINAL LIQUIDATION AND DISTRIBUTION ACCOUNT IN THE ESTATE OF THE LATE COLEEN ROOT

Liquidation and Distribution Account in the above estate will lie for inspection of all persons interested therein, for a period of 21 days from 17/07/2026 at the Office of the Master of the Supreme Court

Pietermaritzburg
Magistrate Howick

J M Steenkamp & Co
Posbus 863 P O Box
Vryheid
3100
Tel: 083 273-9431

Estate late:
Graham Arnold Root
Identity number:
4306145004088
Of 3 Barred Lane, Amber Valley, Howick
Estate number:
4636/2025/PMB
Date of Death:
25/05/2025

The FIRST AND FINAL LIQUIDATION AND DISTRIBUTION ACCOUNT IN THE ESTATE OF THE LATE GRAHAM ARNOLD ROOT

Liquidation and Distribution Account in the above estate will lie for inspection of all persons interested therein, for a period of 21 days from 17/07/2026 at the Office of the Master of the Supreme Court

Pietermaritzburg
Magistrate Howick

J M Steenkamp & Co
Posbus 863 P O Box
Vryheid
3100

Tel: 083 273-9431

J Leslie Smith & Company Inc.

ESTATE LATE

WILLIAM ALAN NASH
MASTERS REFERENCE No.: 005326/2025
IDENTITY NO.: 3901105067181
ADDRESS: MANWOOD LODGE, OLD MAIN ROAD, ROSETTA
THE FIRST AND FINAL LIQUIDATION AND DISTRIBUTION ACCOUNT IN THE ABOVE ESTATE WILL LIE FOR INSPECTION AT THE OFFICES OF THE MASTER OF THE HIGH COURT, PIETERMARITZBURG, AND AT THE MAGISTRATE, HOWICK FOR TWENTY ONE (21) DAYS FROM 17 JULY 2026 .

M M McCULLOUGH
EXECUTOR
25HE0037/DJM
J Leslie Smith & Company
PO BOX 297
PIETERMARITZBURG
3200

NOTICE TO CREDITORS

In the estate of the late HAMISH GUNN McLEOD
Identity Number:
3911065014081
Estate Number:
2876/2026
who was ordinarily resident at Howick and who died at Howick
on the 21 April 2026. All persons having claims against the above estate are hereby called upon to file their claims with the undersigned within 30 days from the date of the publication hereof.

McLeod & Associates
100 Main Street
Matatiele
4730

Village Talk

Drop your Funda Nenja dog food donations at Village Talk: 3A Market Street, Howick



PUBLIC NOTICE OF MAINTENANCE MANAGEMENT PLAN

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The Department of Economic Development, Tourism & Environmental Affairs (EDTEA) confirmed that the proposed works are considered appropriate for assessment through a Maintenance Management Plan process, and are the Competent Authority for the application. Members of the public wishing to register as interested and affected parties, or to obtain further information regarding the project, are requested to submit their name, contact details and interest in the matter to the Environmental Assessment Practitioner below. Registered Interested and Affected Parties will be notified once the Draft Maintenance Management Plan is available for review and comment. Registration details may be submitted to:

Sarah Stalberg for Green Choice Consulting (Pty) Ltd
Tel: 071 851 6976
Email: sarah@greenchoiceconsulting.co.za

R1 000 REWARD

For the safe return of a lost **Rolex Oyster Perpetual 26mm Lady Datejust watch.**

Lost in the Howick shopping area between **Monday 6 July** and **Tuesday 7 July.**

If found please phone:
082 569 9484







DEBATING SUCCESS FOR MELOKUHLE

Howick High School grade nine pupil, Melokuhle Zitha, has been selected to represent the Pietermaritzburg Debating League in the Junior team.

MANDELA DAY FEEDING SCHEME IN HOWICK WEST

The Howick West Charity Association will be hosting a Mandela Day feeding programme in the Howick West Hall at 12.30pm on Saturday, July 18.

TAROS will provide transport from the Howick South Grounds at 11.30 am, Howick West Primary School at 11.45am, and Sphumelele Creche in Mathandubisi at 12.15 pm.

All welcome. Entertainment provided. Phone Sudhir Billyram at 082 551 8191 or Magnie Govender at 076 66 09783.

Howick Choristers to perform three concerts

The Howick Choristers present *From Renaissance to Rock 'n Roll* at three venues in the Ambers.

Their first performance, which will be conducted by Johan Grobler and accompanied by Rosemary Tregenza and Pat Bennet, will take place in the Ambers Auditorium at 3pm on Sunday, July 26.

The second concert is at Amberglen at 5pm on Friday, July 31, with the final one taking place at Amberfield at 3pm on Sunday, August 2.

Entry is free, but donations are encouraged. The money raised will go to charities supported by the Choristers.

IT'S TRASHION TIME!

The annual Trashion Show, which celebrates creative, eco-conscious learners as they strut their runway-ready stuff on the runway, will be taking place on Saturday, July 25.

Doors open at 9.30am and the parade is at 10.30am in the Thembilihle School Hall (entrance in Symmonds Lane), Howick.

Tickets are R60 at Quicket. For more information phone 083 473 3074.

Talk on NSRI at University of Third Age meeting

The University of the Third Age (U3A) will meet on Wednesday, July 22 at 2.30pm for 3pm in the Team Teaching Room of Howick High School in Amber Avenue.

Guest speaker, Helen Wienand, will be telling members and visitors about the amazing work undertaken by the NSRI with regards to saving lives in South African waters.

Not only is their mission to rescue people from the ocean but they have also played a massive role in rescue efforts in the recent floods of KZN and the Cape. It should prove to be a fascinating afternoon.

Enter through the lower second school gate to park. Visitors are welcome at R10.

The U3A is an educational organisation for retired people; membership is R80 per annum. Advance booking is not necessary. Email u3ahowick@gmail.com for more information.

Village Talk **Send your classifieds to sadiya@capitalmedia.co.za**

701 ABBREVIATED SUMMONS

IN THE HIGH COURT
"A"
OF SOUTH AFRICA
KWAZULU-NATAL
DIVISION,
PIETERMARITZBURG

CASE NO: 14/2025P

In the matter between:
NEDBANK LIMITED
PLAINTIFF

and

ZETHEMBE KINGDOM MKWANAZI
DEFENDANT
[ID NUMBER: 900310 5443 084]

ABBREVIATED NOTICE

KINDLY TAKE NOTICE: ZETHEMBE KINGDOM MKWANAZI with Identity Number: 900310 5443 084 that Nedbank Limited has instituted legal proceedings against you in the Pietermaritzburg High Court under Case Number: 14/2025P for the following relief:
1. Payment in the sum of R138 351.97.
2. Interest on the aforesaid amount at a rate of 0.00% per annum, calculated and capitalised from 28 November 2024 to date of payment, both days inclusive.
3. Costs of suit on the scale as between attorney and own client.
4. Further and/or alternative relief.
A complete copy of the combined summons can be obtained from
Berrange Inc.-
033 813 0411/
naven@b-inc.co.za.

The Plaintiff will apply for judgment against you without any further notice should no notice of opposition be delivered within twenty (20) days hereof.

700 LEGALS

707 LEGAL SERVICES

714 PUBLIC NOTICES

ISAZISO SOMPHAKATHI SOHLELO LOKUNAKEKELWA KWENDAWO

Lesi yisaziso esifakwa ukulandela Isigaba 28 Semithethonqubo Yokuhlola Ukuthinteka Kwemvelo ka 2024 (njengoba ichitshiyelwe) lapho kumenywa amalunga omphakathi ukuba abhalise njengabantu abathintekayo nabanentshisekelo emsebenzini olandelayo:

UMSEBENZI WOKULUNGISWA KWEDAMU I-FISH EAGLE, ENDAWENI I-ST. JOHN'S VILLAGE LIFESTYLE & RETIREMENT COUNTRY ESTATE

Abakwa-Green Choice Consulting (Pty) Ltd baqokwe ngabakwa-St. John's Village Lifestyle & Retirement Country Estate ukwengamela Uhlelo Lokunakekelwa Kwendawo (MMP) oluhambisana nomsebenzi ohlongozwayo wokulungisa Idamu iFish Eagle, elisendaweni ephakathi kwe-St. John's Village Lifestyle & Retirement Country Estate, Isiza 3877 e-Howick, KwaZulu-Natal. Imisebenzi ehlongozwayo yokulungisa kuhloswe ngayo ukubhekana nokwentuleka kwezokuphepha okwakhonjwa ngesikhathi kwenziwa Ukuhlola Kokuphepha Kwedamu futhi lokulungisa kuhloswe ngakho ukugcina ezokuphepha uma kusetshenziswa idamu elikhona manje.

Umnyango Wezokuthuthukisa Umnotho, Ezokuvakasha Nezemvelo (EDTEA) uvumile ukuthi imisebenzi ehlongozwayo itholakala ikulungele ukuhlola Ngokohlelo Lokunakekelwa Kwendawo, nokuthi lomnyango yiwo Oyisiphathimandla Esifanele sokufakwa kwesicelo. Amalunga omphakathi afisa ukubhalisa njengabantu abathintekayo nabanentshisekelo, kumbe uma edinga olunye ulwazi mayelana nalomsebenzi, ayacelwa ukuba athumele amagama awo, imininingwane yokuthinteka nesizathu sokuba nentshisekelo lokhu akuthumele Kumhloli Wokuthinteka Kwemvelo obhalwe ngezansi. Abantu abathintekayo nabanentshisekelo ababhalisile bazokwaziswa uma Uhlelo Lokunakekelwa Kwendawo Olusalungiswa selutholakala ukuze balufunde futhi baphawule ngalo.

Imininingwane yokubhalisa ingathunyelwa ekhelini elilandelayo:
Sarah Stalberg kwa Green Choice Consulting (Pty) Ltd
Ucingo: 071 851 6976
Imeyili: sarah@greenchoiceconsulting.co.za

For all your **Legal** Advertising
Classifieds
031 308 2004

714 PUBLIC NOTICES

For all your **Legal** Advertising
Classifieds
031 308 2004

707 LEGAL SERVICES

801 SERVICE GUIDE

LIGHTNING CONDUCTORS



Isikhonkwana
Lightning conductors
Isikhonkwana sivimba izulu.
Ukuthi lingangeni ekhaya.
Sesizifakile ezindawen
eziningi Kwa Zulu Natal
Sivikile nemfuyo ekhaya

073 276 0933
067 159 7825

801 SERVICE GUIDE



LLOYD REMOVALS
4 ton truck for hire removals, rubble etc.
073 414 3813 / 073 169 5244

Looking for Garden Services?
Classifieds
Service Guide
To advertise please call us on
031 308 2004

ROAD ACCIDENT FUND CLAIMS
HAVE YOU BEEN SERIOUSLY INJURED IN AN ACCIDENT OR HAVE A LOVED ONE WHO PASSED AWAY IN AN ACCIDENT?

M.A.K. AMEEN & CO.
Attorneys At Law | Commissioner of Oaths
Tel: 031 309 7761
Cell: 084 852 1575
zaheera@durbanlaw.co.za
Suite 31, 3rd Floor Lornegrey Medical Centre, 280 Dr Yusuf Dadoo (Grey) Street, Durban
We are situated at the corner of Lorne Street and Grey Street - Near City Hospital

710 LIQUOR ACT

ANNEXURE D

NOTICE TO DISPLAY INTENTION TO APPLY FOR LIQUOR LICENCE IN TERMS OF

SECTION (42)(1)(B)(III) OF ACT KWAZULU-NATAL LIQUOR LICENSING ACT, 2010

(ACT NO. 6 OF 2010)

KZNLA 3

Name and surname of the applicant :
SICELOSAKHE PHIWEYINKOSI MZOLO

Category of licence applied for :(on-/off-consumption/micro-manufacturer/special event):
OFF - CONSUMPTION

Type of premises for which licence is applied for :
LIQUOR STORE

Trading name of the premises :
MAVUTHELA BOTTLE STORE

Address of the premises :
C1687
BABAKHULU AVENUE
UMLAZI
4066

Date of display : 15 JULY 2026

Expiry date of display : 14 AUGUST 2026

NB: Objections to this application to be lodged with the Ethekwini Local Committee at the address hereunder and a copy there of to be served on the applicant within 21 working days from the date of this notice.

Address : KwaZulu-Natal Liquor Authority, 22 Dorothy Nyembe Street, Durban, 4000.
The objectors must comply with section 42 & 43 of the KZN Liquor Act, Act 6 of 2010 relating to the procedure on objecting.

Email: Sibusiso.zwane@kznlqa.co.za Tel : 031-3020 600

MANDENI MUNICIPALITY

PUBLIC NOTICE CALLING FOR THE INSPECTION OF THE SUPPLIMENTARY VALUATION ROLL AND LODGING OF OBJECTIONS

Notice is hereby given in terms of Section 49(1)(a)(i) read together with section78(2) of the Local Government Municipal Property Rates Act, 2004 (Act No. 6 of 2004), hereinafter referred to as the "Act", that the Supplementary Valuation Roll for the financial year **2026/2027** is open for public inspection at the Mandeni Municipal offices or on the website *http://www.mandeni.gov.za*, from **17 July 2026 to 28 August 2026.** An invitation is hereby made in terms of section 49(1)(a)(ii) of the Act that any owner of property or other person who so desires should lodge an objection with the municipal manager in respect of any matter reflected in, or omitted from, the supplementary valuation roll, within **17 July 2026 to 28 August 2026.**

Attention is specifically drawn to the fact that an objection must be in relation to a specific individual property and not against the supplementary valuation roll as such. The form for the lodging of an objection is obtainable at the municipal offices in Mandeni.
For enquiries, please contact the Revenue Office at (032) 456 8290.

The completed forms must be returned to Mandeni Municipal Offices, No 02 King Fisher Road, Mandeni, or e-mail to, senzo.makhoba@mandeni.gov.za, or e-mail to, *Bhekizwe.Cikwayo@mandeni.gov.za*, no later than **28 August 2026.**

MR. SG KHUZWAYO
MUNICIPAL MANAGER

www.mandeni.gov.za
PN44/2026

717 TENDERS

Umkhandlu wakwa
NONGOMA
Local Municipality

INTENTION TO AWARD

Nongoma Local Municipality is hereby confirming the intention to award to the below mentioned tender, subject to the objection period of **14 calendar days,** starting from **15 July 2026 to 29 July 2026.**

BID NUMBER	BIDDERS	DESCRIPTION
9/1 - T13/2025/26	1. Uphofu Services (Pty) Ltd 2. Aros Protection Services (Pty) Ltd 3. Mvimbeni Associates (Pty) Ltd 4. Ndate Sbonga Projects (Pty) Ltd 5. Ntshasa Group (Pty) Ltd	Panel of VIP Protection Services for Nongoma Municipality for a Period of 36 Months.

MR M.B. MNGUNI: ACTING MUNICIPAL MANAGER



UKAPUTENI we-England uHarry Kane Isithombe: EPA

Amagqubu kowe-England ne-Argentina kweyoMhlaba

XOLILE MPISANE

UZOKHULA umlando weNdebe yoMhlaba phakathi kwe-England ne-Argentina njengoba la mazwe ezotholana phezulu kowandulela owamanqamu alo mqhudelwano e-Atlanta Stadium, e-United Stated, ngo-9 kusihlwa.

I-England ingene kulo mdlalo ngokunqoba i-Norway ngo 2-1. Kweminye yomkhumulajezi idlule ngo 2-1 kwiDemocratic Republic of Congo kwi-Last 32, yanqoba iMexico ngo 3-2 kwiLast 16.

I-Argentina inqobe iSwitzerland ngo 3-1 kuma-quarterfinals. Kwi-Last 32 inqobe iCape Verde ngo 3-2, kwi-Last 16 yakhipha i-Egypt ngendlela efanayo.

La maqembu azobe ebhekana okokuqala selokhu agcina kowobungani ngo-2005 kanti kuzobe kungokokuqala isilomo sase-Argentina, uLionel Messi, sibhekana ne-England.

I-England ne-Argentina sebedlale kahlanu emlandweni weNdebe yoMhlaba, i-England yanqoba kathathu, i-Argentina yadlula kabili.

"Asigxilile emlandweni ngaphambi kwalo mdlalo. Esikwaziyo njengabadlali wukuthi sizodlala neqembu elikhaliphile futhi elikwaziyo ukudlala ibhola. Kunzima ukubhekana nabo kodwa siyethemba ukuthi lokho kuzokwenza nathi sidlale kangcono," kusho ukaputeni we-England , uHarry kane.

"Banomdlali obalwa nabahamba phambili emhlabeni, okunguLionel messi. Siyazi ukuthi uyingozi kangakanani kodwa sizobe sidlala ne-Argentina, hhayi uMessi."

UMessi uthe ukubheke ngabomvu ukugijimisana ne-England, nokungenzeka kube yithuba lakhe lokuqala nelokugcina lokudlala naleli lizwe.

"Kuhlezi kukhethekile ukubhekana nezwe elinomlando ebholeni. Angikaze ngidlale ne-England phambilini," kusho uMessi.



UKAPUTENI we-Argentina, uLionel Messi
Isithombe: EPA

"Ukudlala kowandulela owamanqamu eNdebeni yoMhlaba kuyinto ekhethekile kukodwa nje. Sidlule emidlalweni enzima ukuze sifike kulo mzuliswano. Kufanele siwujabulele lo mdlalo ngoba asazi ukuthi kuyothatha isikhathi esingakanani ukuthi izwe lethu liphinde lifike kulesi sigaba,"

UKane useshayele i-England amagoli ayisithupha kule Ndebe yoMhlaba, okuyirekhodi aliphethe nozakwabo uJude bellingham kuleli qembu. UMessi useshayele i-Argentina amagoli ayisishiyagalombili emqhudelwaneni wanonyaka.

PUBLIC NOTICE OF MAINTENANCE MANAGEMENT PLAN

Notice is hereby given in terms of Section 28 of the Environmental Impact Assessment Regulations, 2014 (as amended) inviting members of the public to register as interested and affected parties for the following project:

FISH EAGLE DAM REPAIR WORKS, ST. JOHN'S VILLAGE LIFESTYLE & RETIREMENT COUNTRY ESTATE

Green Choice Consulting (Pty) Ltd has been appointed by St. John's Village Lifestyle & Retirement Country Estate to manage the Maintenance Management Plan (MMP) process associated with the proposed Fish Eagle Dam repair works, located within the St. John's Village Lifestyle & Retirement Country Estate, Erf 3877 in Howick, KwaZulu-Natal. The proposed repair works are required to address dam safety deficiencies identified during a Dam Safety Evaluation and are intended to maintain the safe operation of the existing dam.

The Department of Economic Development, Tourism & Environmental Affairs (EDTEA) confirmed that the proposed works are considered appropriate for assessment through a Maintenance Management Plan process, and are the Competent Authority for the application. Members of the public wishing to register as interested and affected parties, or to obtain further information regarding the project, are requested to submit their name, contact details and interest in the matter to the Environmental Assessment Practitioner below. Registered Interested and Affected Parties will be notified once the Draft Maintenance Management Plan is available for review and comment. Registration details may be submitted to:

Sarah Stalberg for Green Choice Consulting (Pty) Ltd
Tel: 071 851 6976
Email: sarah@greenchoiceconsulting.co.za

ISAZISO SOMPHAKATHI SOHLELO LOKUNAKEKELWA KWENDAWO

Lesi yisaziso esifakwa ukulandela Isigaba 28 Semithethonqubo Yokuhlola Ukuthinteka Kwemvelo ka 2024 (njengoba ichitshiyelwe) lapho kumenywa amalunga omphakathi ukuba abhalise njengabantu abathintekayo nabanentshisekelo emsebenzini olandelayo:

UMSEBENZI WOKULUNGISWA KWEDAMU I-FISH EAGLE, ENDAWENI I-ST. JOHN'S VILLAGE LIFESTYLE & RETIREMENT COUNTRY ESTATE

Abakwa-Green Choice Consulting (Pty) Ltd baqokwe ngabakwa-St. John's Village Lifestyle & Retirement Country Estate ukwengamela Uhlelo Lokunakekelwa Kwendawo (MMP) oluhambisana nomsebenzi ohlongozwayo wokulungisa Idamu iFish Eagle, elisendaweni ephakathi kwe-St. John's Village Lifestyle & Retirement Country Estate, Isiza 3877 e-Howick, KwaZulu-Natal. Imisebenzi ehlongozwayo yokulungisa kuhloswe ngayo ukubhekana nokwentuleka kwezokuphepha okwakhonjwa ngesikhathi kwenziwa Ukuhlola Kokuphepha Kwedamu futhi lokulungisa kuhloswe ngakho ukugcina ezokuphepha uma kusetshenziswa idamu elikhona manje.

Umnyango Wezokuthuthukisa Umnotho, Ezokuvakasha Nezemvelo (EDTEA) uvumile ukuthi imisebenzi ehlongozwayo itholakala ikulungele ukuhlola Ngokohlelo Lokunakekelwa Kwendawo, nokuthi lomnyango yiwo Oyisiphathimandla Esifanele sokufakwa kwesicelo. Amalunga omphakathi afisa ukubhalisa njengabantu abathintekayo nabanentshisekelo, kumbe uma edinga olunye ulwazi mayelana nalomsebenzi, ayacelwa ukuba athumele amagama awo, imininingwane yokuthinteka nesizathu sokuba nentshisekelo lokhu akuthumele Kumhloli Wokuthinteka Kwemvelo obhalwe ngezansi. Abantu abathintekayo nabanentshisekelo ababhalisile bazokwaziswa uma Uhlelo Lokunakekelwa Kwendawo Olusalungiswa selutholakala ukuze balufunde futhi baphawule ngalo. Imininingwane yokubhalisa ingathunyelwa ekhelini elilandelayo:

Sarah Stalberg kwa Green Choice Consulting (Pty) Ltd
Ucingo: 071 851 6976
Imeyili: sarah@greenchoiceconsulting.co.za

APPENDIX D3: BACKGROUND INFORMATION DOCUMENT & PROOF OF CIRCULATION

From:	sarah@greenchoiceconsulting.co.za
To:	"sarah@greenchoiceconsulting.co.za"
Bcc:	"dladlal@dws.gov.za"; "iem.app@kznwildlife.com"; "Marc.Hattingh@umngeni.gov.za"; "Cll.Lake@umngeni.gov.za"; "Simphiwe.Zuma@umdm.gov.za"; "mandisa.khomo@umdm.gov.za"; "em@greaterambers.com"; "Andrew.Pool@sappi.com"
Subject:	RE: Invitation to Register as an Interested and Affected Party – Fish Eagle Dam Repair Works, St. John"s Village Lifestyle & Retirement Country Estate
Date:	Thursday, 16 July 2026 09:04:00
Attachments:	St. John"s BID.pdf
Importance:	High

Dear Stakeholder/Authority

Green Choice Consulting (Pty) Ltd has been appointed by St. John's Village Lifestyle & Retirement Country Estate to manage the Maintenance Management Plan (MMP) process associated with the proposed repair of the existing Fish Eagle Dam.

Please find attached a Background Information Document (BID), which provides a brief, non-technical overview of the proposed repair works and the environmental process that will be followed.

This notification is circulated to inform stakeholders of the proposed project and to invite Interested and Affected Parties (I&APs) to register and participate in the environmental process. Should you wish to register as an I&AP, or if you have any questions or comments regarding the proposed project, kindly submit your name, contact details and interest in the project to the undersigned.

Should you require any further information, please do not hesitate to contact me.

Kind Regards,

Sarah Stalberg
Environmental Consulting
EAPASA Registered EAP | Reg. No: 2019/1841

GREEN CHOICE CONSULTING

M: +27 71 851 6976
E: sarah@greenchoiceconsulting.co.za
www.greenchoiceconsulting.co.za

MAINTENANCE MANAGEMENT PLAN
FISH EAGLE REPAIR WORKS
ST. JOHN'S VILLAGE

GREEN CHOICE CONSULTING

BACKGROUND INFORMATION DOCUMENT

PURPOSE OF THIS DOCUMENT

This Background Information Document (BID) is provided in terms of the Environmental Impact Assessment Regulations, 2014 (as amended), promulgated under the National Environmental Management Act (Act 107 of 1998) (NEMA).

Green Choice Consulting (Pty) Ltd has been appointed by St. John's Village Lifestyle & Retirement Country Estate to manage the Maintenance Management Plan (MMP) process associated with the proposed repair of the existing Fish Eagle Dam.

The purpose of this Background Information Document (BID) is to:

- Provide a brief overview of the proposed repair works;
- Explain the environmental process that will be followed; and
- Invite members of the public to register as Interested and Affected Parties (I&APs).

This document provides a concise, non-technical overview of the proposed project and the environmental process to be undertaken.

PROJECT BACKGROUND

The Fish Eagle Dam is an existing dam located within St. John's Village Lifestyle & Retirement Country Estate on Erf 3877, Howick, within the uMngeni Local Municipality, KwaZulu-Natal. The dam forms part of the estate's existing stormwater and landscaping infrastructure and has been in operation since 1970.

A Dam Safety Evaluation undertaken during 2024 identified several maintenance and safety improvements required to ensure the continued safe operation of the dam. The proposed works are therefore intended to repair and upgrade the existing dam infrastructure rather than establish new infrastructure.

Following submission of an Environmental Impact Assessment (EIA) Enquiry, the KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs (EDTEA) confirmed that the proposed repair works may be assessed through a Maintenance Management Plan (MMP) process.

A locality map is provided in Appendix A.

DESCRIPTION OF THE PROPOSED REPAIR WORKS

The proposed works are intended to address deficiencies identified during the Dam Safety Evaluation and improve the long-term safety and operation of the existing Fish Eagle Dam. The proposed maintenance works include:

- Upgrading the existing spillway to safely accommodate larger flood events;
- Repairing and stabilising the outlet works to improve the safe operation of the dam;
- Raising the crest of the dam wall by approximately 400 mm to provide an additional safety margin during extreme rainfall events; and
- Associated rehabilitation of disturbed areas following completion of the repair works.

Importantly, the proposed works will not increase the storage capacity of the dam or expand the existing dam footprint.

A site layout plan illustrating the proposed repair works is provided in Appendix B.

ENVIRONMENTAL PROCESS

A Maintenance Management Plan (MMP) is an environmental management process used to assess maintenance, repair and upgrading works associated with existing infrastructure.

The MMP will identify the environmental sensitivities associated with the site, assess potential environmental risks arising from the proposed repair works, and describe the measures that will be implemented to avoid, minimise and manage these impacts during construction.

The MMP process will include specialist aquatic and watercourse input, a public participation process, and review by EDTEA prior to any repair works commencing.

APPROACH TO THE MMP PROCESS

The MMP process has commenced with notification of the project and registration of Interested and Affected Parties.

The following activities will be undertaken during the course of the environmental process:

- Specialist aquatic and watercourse investigations;
- Compilation of the Draft Maintenance Management Plan;
- Public review of the Draft MMP;
- Consideration of comments received from stakeholders and organs of state;
- Compilation of the Final MMP; and
- Cubmission of the Final MMP to EDTEA for consideration.

Registered Interested and Affected Parties will be notified once the Draft MMP is available for review and comment.

ENVIRONMENTAL CONSIDERATIONS

Although the proposed works are confined to an existing dam, the surrounding environment contains a number of environmentally sensitive features, including wetland and aquatic habitat, and areas of indigenous vegetation.

The MMP will assess the potential environmental risks associated with the proposed repair works and identify appropriate mitigation, rehabilitation and monitoring measures to ensure that impacts are appropriately managed throughout the construction period.

Specialist aquatic and watercourse investigations will form an important component of the MMP.

HOW CAN YOU BE INVOLVED?

Public participation forms an important part of the Maintenance Management Plan process and provides Interested and Affected Parties with an opportunity to participate meaningfully in the environmental assessment.

If you consider yourself to be an Interested and Affected party, you are encouraged to:

- Register as an I&AP by submitting your name, contact details and interest in the project;
- Submit comments, questions or concerns to the Environmental Assessment Practitioner; and
- Review the Draft MMP and provide written comments during the public comment period.

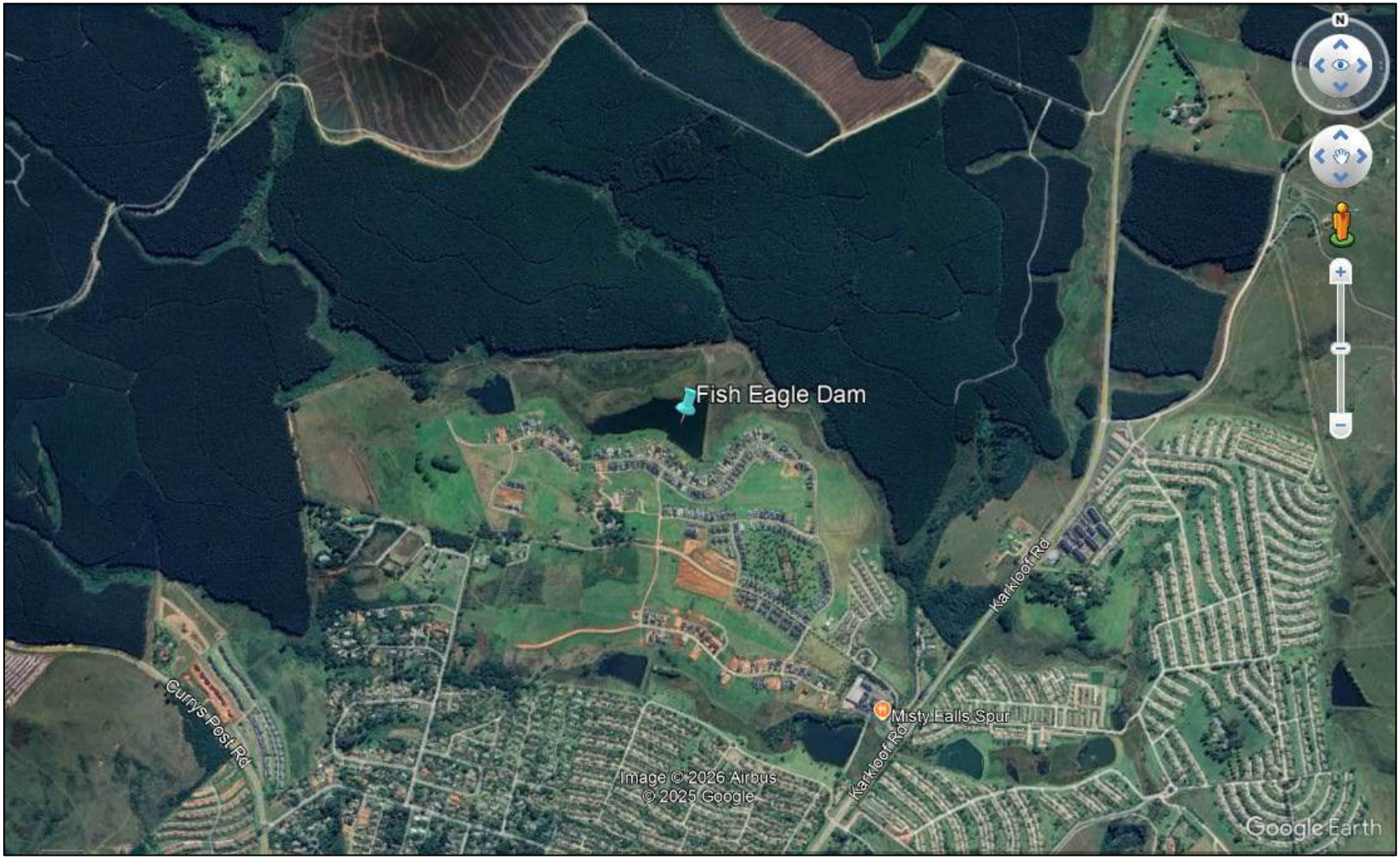
Please note that the collection and storage of personal information by Green Choice Consulting (Pty) Ltd is subject to the Protection of Personal Information Act (Act 4 of 2013). Personal information will be used solely for purposes related to this environmental process. Should you wish to withdraw your registration at any stage, kindly notify Green Choice Consulting accordingly.

CONTACT DETAILS

To register as an interested and affected party, or to obtain further information, please submit your name, contact details, and interest in the matter to:

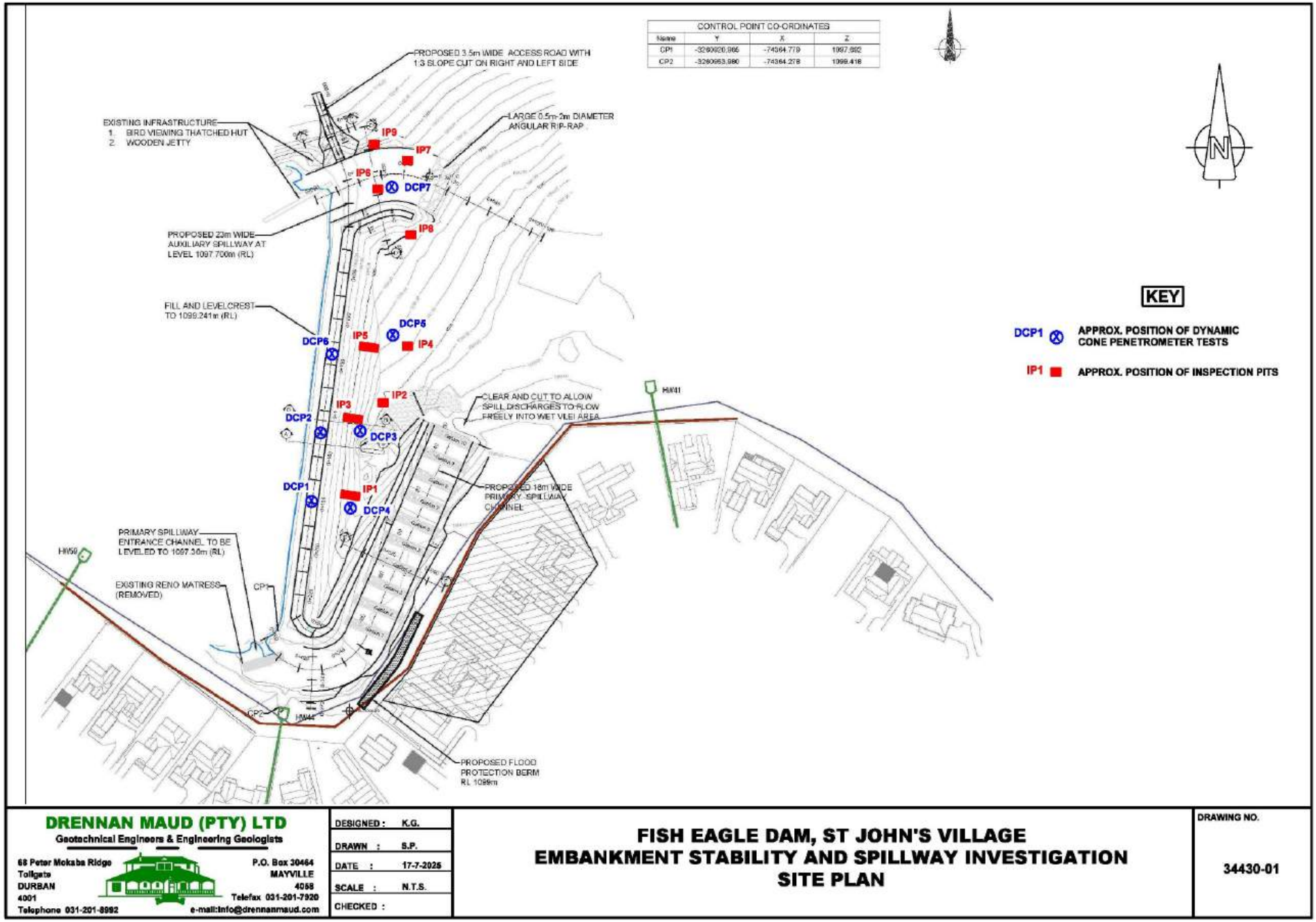
Sarah Stalberg for Green Choice Consulting (Pty) Ltd
Tel: 071 851 6976
Email: sarah@greenchoiceconsulting.co.za

APPENDIX A: LOCALITY MAP



Satellite image showing the location of the Fish Eagle Dam (Source: ©Google Earth Satellite Imagery).

APPENDIX B: SITE LAYOUT PLAN



DRENNAN MAUD (PTY) LTD
Geotechnical Engineers & Engineering Geologists
68 Peter Mokaba Ridge
Tollgate
DURBAN
4001
Telephone 031-201-8992
P.O. Box 30464
MAYVILLE
4058
Telefax 031-201-7920
e-mail:info@drennanmaud.com

DESIGNED :	K.G.
DRAWN :	S.P.
DATE :	17-7-2025
SCALE :	N.T.S.
CHECKED :	

FISH EAGLE DAM, ST JOHN'S VILLAGE
EMBANKMENT STABILITY AND SPILLWAY INVESTIGATION
SITE PLAN

DRAWING NO.
34430-01

APPENDIX D4: COMMENTS & RESPONSES TABLE

COMMENTOR	COMMENTS	PROJECT TEAM RESPONSE
COMMENTS RECEIVED IN RESPONSE TO THE CALL TO REGISTER & CIRCULATION OF BID		
St. John's resident, George Levine, via email, on the 17th July 2026.	Dear Sarah, I wish to register as an interested or affected party wrt Fish Eagle Dam at St John's Village. Thank you	Good morning George Thank you for your email and request to be registered as an Interested and Affected Party, which is hereby confirmed. You will be notified of the availability of the Draft Maintenance Management Plan in due course. Have a great day further.
Amber Valley Body Corporate, Shirley Benney, via email, on the 20th July 2026.	Dear Sarah, I hereby request that you register us as an Interested and Affected Party: Amber Valley Body Corporate 3 Karkloof Road Chairperson of the Amber Valley Board of Trustees (currently Shirley Benney) 082 657 4144 chairmanav@greaterambers.com Amber Valley is a property across Karkloof Road from St. John's Village Lifestyle & Retirement Country Estate, with our said property being downstream from St. John's Village and thus downstream from Fish Eagle Dam. Kindly acknowledge receipt of this e-mail and provide confirmation that the Body Corporate has been added to the list of Interested and Affected Parties.	Good morning Shirley Thank you for your email and request for the Amber Valley Body Corporate to be registered as an Interested and Affected Party, which is hereby confirmed. Please find attached a Background Information Document for your information. You will be notified of the availability of the Draft Maintenance Management Plan in due course. Have a great day further.
Amber Ridge Body Corporate, Meyrick Bowker, via email, on the 20th July 2026.	Dear Sarah Please register me and Amber Ridge Body Corporate as an IAP.	Good morning Meyrick

COMMENTOR	COMMENTS	PROJECT TEAM RESPONSE
	Meyrick Bowker chairmanar@greaterambers.com 083 788 35527 Role: Chairman of Amber Ridge Body Corporate Concern: The Greater Ambers are directly downstream of this rehabilitation work and are therefore concerned about the silt load and potential river levels as a result of this construction. Although it will be to our eventual advantage to have this rehabilitation done, we are concerned about the impacts during the work stage of the project.	Thank you for your email and request for the Amber Ridge Body Corporate to be registered as an Interested and Affected Party, which is hereby confirmed. Please find attached a Background Information Document for your information. You will be notified of the availability of the Draft Maintenance Management Plan in due course. Have a great day further.
Amber Lakes, Norman Freeman, via email, on the 21st July 2026.	Dear Sarah, Please will you register Amber Lakes as an "Interested Party" for this proposal. Our property and lakes are positioned as the first receiver of any runoff of surface drainage or possible contamination from St Johns through the major arch culvert under Karkloof Road. Kindly acknowledge receipt.	Good morning Norman Thank you for your email and request for Amber Lakes to be registered as an Interested and Affected Party, which is hereby confirmed. Please find attached a Background Information Document for your information. You will be notified of the availability of the Draft Maintenance Management Plan in due course. Have a great day further.
Ezemvelo KZN Wildlife, Irene Hatton, via email, on the 23rd July 2026.	Thank you for forwarding the Background Information Document (BID) for the Maintenance Management Plan (MMP) received during July 2026, for the abovementioned application to Ezemvelo KZN Wildlife (Ezemvelo) for review and comment. This document was received via email by the Integrated Environmental Management (IEM) Section of Conservation Planning.	Good morning Irene Thank you for your email – received and noted.

COMMENTOR	COMMENTS	PROJECT TEAM RESPONSE
	Based on the information supplied, Ezemvelo will not be providing comment on this application but trusts that all significant biodiversity-related concerns will be clearly identified and made known in the assessment together with appropriate measures (viz. avoid, mitigate and thereafter ameliorate) to safeguard the ecological integrity of the maintenance area. Please be advised that the potential impacts upon biodiversity will be evaluated by the Competent Authority who may, upon identification of potential biodiversity concern, refer such biodiversity concern to Ezemvelo for evaluation and advice before making a decision. In such a case, the environmental principles prescribed in the National Environmental Management Act, 1998 (Act 107 of 1998 as amended), the objectives of the National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004 as amended), and Best Practice will be applied. Please provide Ezemvelo with a full copy of the Final MMP as submitted to the competent authority once this becomes available. If the document is not too large, it may be emailed together with a cover letter to IEM.App@kznwildlife.com (confirmation of receipt is required for delivery) or sent in hardcopy or on a flash drive (USB memory stick) to: Dr Andy Blackmore – Manager Conservation Planning c/o The IEM Technician Planning Division: IEM Section Queen Elizabeth Park 1 Peter Brown Drive Montrose, 3201 Ref: 202603_14617	

COMMENTOR	COMMENTS	PROJECT TEAM RESPONSE
	For this particular application, may I request that a copy of the Final MMP also be e-mailed (or a link if too large for email) to myself, Irene.Hatton@kznwildlife.com Please also ensure that a copy of the competent authority's decision is provided to Ezemvelo. It is respectfully requested that your office confirm receipt of this letter. Should any biodiversity issues arise, please do not hesitate to contact this office. Ezemvelo wishes you well with your assessment.	
Amber Lee Board of Trustees, Malcolm Powell, via email, on the 26th July 2026.	Dear Sarah, As chairman of the Amber Lee Estate, I would like to register us as an I&AP for the proposed work on Fish Eagle Dam within the St Johns complex. Thank you,	Good morning Malcolm Thank you for your email, and kindly accept my apologies for my late response to your request to be registered as in Interested & Affected Party for the St. John's Fish Eagle Dam Maintenance Management Plan (MMP) project. I can confirm that the Amber Lee Board of Trustees has been registered as an Interested & Affected Party, and you will be notified when the Draft MMP is ready for review. Thank you Malcolm, enjoy your day.
St. John's Resident, Lorna Williamson, via email, on the 31st July 2026.	Dear Sarah I, Lorna Williamson, own erf 3312 Nguni Drive at St Johns Village.	Good morning Lorna Thank you for your email and request to be registered as an Interested and Affected Party, which is hereby confirmed. Please find attached a

COMMENTOR	COMMENTS	PROJECT TEAM RESPONSE
	My home is directly below the Fish Eagle dam wall, therefore, I would like to register as an interested and affected party in the maintenance plan of this dam. Please keep me updated with any further progress on the above project. Kind regards Lorna Williamson Cell: 0827454855 Email: lornajson@gmail.com	Background Information Document for your information. You will be notified of the availability of the Draft Maintenance Management Plan in due course. Have a great day further.

APPENDIX D5: PROOF OF I&AP CORRESPONDENCE

From:	sarah@greenchoiceconsulting.co.za
To:	"Cllr.Lake@umngeni.gov.za"
Subject:	Invitation to Register as an Interested and Affected Party – Fish Eagle Dam Repair Works, St. John"s Village Lifestyle & Retirement Country Estate
Date:	Thursday, 16 July 2026 09:12:00
Attachments:	St. John"s BID.pdf

Good morning Councillor Lake

I hope this email finds you well.

Green Choice Consulting (Pty) Ltd has been appointed by St. John's Village Lifestyle & Retirement Country Estate to manage the Maintenance Management Plan (MMP) process associated with the proposed repair of the existing Fish Eagle Dam.

Please find attached a Background Information Document (BID), which provides a brief, non-technical overview of the proposed repair works and the environmental process that will be followed.

This notification is circulated to inform stakeholders of the proposed project and to invite Interested and Affected Parties (I&APs) to register and participate in the environmental process. Should you wish to register as an I&AP, or if you have any questions or comments regarding the proposed project, kindly submit your name, contact details and interest in the project to the undersigned.

Should you require any further information, please do not hesitate to contact me.

Kind Regards,

Sarah Stalberg
Environmental Consulting
EAPASA Registered EAP | Reg. No: 2019/1841

GREEN CHOICE CONSULTING

M: +27 71 851 6976
E: sarah@greenchoiceconsulting.co.za
www.greenchoiceconsulting.co.za

From: sarah@greenchoiceconsulting.co.za
To: "manager@stjohnsvillage.co.za"
Cc: "Deanne Kathleen"
Subject: RE: FISH EAGLE DAM MMP PROJECT - CIRCULATION OF BACKGROUND INFORMATION DOCUMENT
Date: Thursday, 16 July 2026 09:07:00
Attachments: St. John"s BID.pdf

Good morning Gary

I hope you are keeping well and warm!

With regards to the Fish Eagle Dam MMP, would it be possible for the attached Background Information Document to be circulated to the St. John's homeowners?

Kind Regards,

Sarah Stalberg
Environmental Consulting
EAPASA Registered EAP | Reg. No: 2019/1841

GREEN CHOICE CONSULTING

M: +27 71 851 6976
E: sarah@greenchoiceconsulting.co.za
www.greenchoiceconsulting.co.za

From:	sarah@greenchoiceconsulting.co.za
To:	"sarah@greenchoiceconsulting.co.za"
Bcc:	"dladlal@dws.gov.za"; "iem.app@kznwildlife.com"; "Marc.Hattingh@umngeni.gov.za"; "Cll.Lake@umngeni.gov.za"; "Simphiwe.Zuma@umdm.gov.za"; "mandisa.khomo@umdm.gov.za"; "em@greaterambers.com"; "Andrew.Pool@sappi.com"
Subject:	RE: Invitation to Register as an Interested and Affected Party – Fish Eagle Dam Repair Works, St. John"s Village Lifestyle & Retirement Country Estate
Date:	Thursday, 16 July 2026 09:04:00
Attachments:	St. John"s BID.pdf
Importance:	High

Dear Stakeholder/Authority

Green Choice Consulting (Pty) Ltd has been appointed by St. John's Village Lifestyle & Retirement Country Estate to manage the Maintenance Management Plan (MMP) process associated with the proposed repair of the existing Fish Eagle Dam.

Please find attached a Background Information Document (BID), which provides a brief, non-technical overview of the proposed repair works and the environmental process that will be followed.

This notification is circulated to inform stakeholders of the proposed project and to invite Interested and Affected Parties (I&APs) to register and participate in the environmental process. Should you wish to register as an I&AP, or if you have any questions or comments regarding the proposed project, kindly submit your name, contact details and interest in the project to the undersigned.

Should you require any further information, please do not hesitate to contact me.

Kind Regards,

Sarah Stalberg
Environmental Consulting
EAPASA Registered EAP | Reg. No: 2019/1841

GREEN CHOICE CONSULTING

M: +27 71 851 6976
E: sarah@greenchoiceconsulting.co.za
www.greenchoiceconsulting.co.za

Conservation Planning: IEM Section

Enquiries: I Hatton

Your Ref: None provided
Our Ref: 14845

Green Choice Consulting (Pty) Ltd
Unit 8 Tanglewood Gardens
12 Bartle Road,
Gillitts,
3610
Email: sarah@greenchoiceconsulting.co.za

23 July 2026

ATTENTION: Sarah Stalberg

Dear Sir/Madam

RESPONSE: BID for MAINTENANCE MANAGEMENT PLAN APPLICATION: FISH EAGLE DAM REPAIR WORKS, ST JOHNS VILLAGE LIFESTYLE AND RETIREMENT COUNTRY ESTATE ERF 3877, HOWICK, UMNGENI LOCAL MUNICIPALITY, KWAZULU-NATAL

Thank you for forwarding the Background Information Document (BID) for the Maintenance Management Plan (MMP) received during July 2026, for the abovementioned application to Ezemvelo KZN Wildlife (Ezemvelo) for review and comment. This document was received via email by the Integrated Environmental Management (IEM) Section of Conservation Planning.

Based on the information supplied, Ezemvelo will not be providing comment on this application but trusts that all significant biodiversity-related concerns will be clearly identified and made known in the assessment together with appropriate measures (viz. avoid, mitigate, and thereafter ameliorate) to safeguard the ecological integrity of the maintenance area.

Please be advised that the potential impacts upon biodiversity will be evaluated by the Competent Authority who may, upon identification of a potential biodiversity concern, refer such biodiversity concern to Ezemvelo for evaluation and advice before making a decision. In such a case, the environmental principles prescribed in the National Environmental Management Act, 1998 (Act 107 of 1998 as amended), the objectives of the National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004 as amended), and Best Practice will be applied.

Please provide Ezemvelo with a full copy of the Final MMP as submitted to the competent authority once this becomes available. If the document is not too large, it may be emailed[1] together with a cover letter to IEM.App@kznwildlife.com (confirmation of receipt is required for delivery) or sent in hardcopy or on a flash drive (USB memory stick) to:

Dr Andy Blackmore – Manager Conservation Planning

[1] Note that we cannot accept weblinks that either expire or have multiple downloads required.

c/o The IEM Technician
Planning Division: IEM Section
Queen Elizabeth Park
1 Peter Brown Drive
Montrose, 3201
Ref: 202603_14617

For this particular application, may I request that a copy of the Final MMP also be e-mailed (or a link if too large for e-mail) to myself, Irene.Hatton@kznwildlife.com

Please also ensure that a copy of the competent authority's decision is provided to Ezemvelo.

It is respectfully requested that your office confirm receipt of this letter.

Should any biodiversity issues arise, please do not hesitate to contact this office.

Ezemvelo wishes you well with your assessment.

Yours sincerely



pp. Dr Blackmore - Scientific Manager-Conservation Planning
For CEO: EZEMVELO KZN WILDLIFE

From:	sarah@greenchoiceconsulting.co.za
To:	"Chairman LS"
Cc:	"lyndakriel@futurenet.co.za"; "Eric & Helen Lusso "; "Peter Jackson"
Subject:	RE: Invitation to Register as an Interested and Affected Party - Fish Eagle Dam Repair Works, St. John"s Village Lifestyle & Retirement Country Estate
Date:	Monday, 27 July 2026 07:09:00
Attachments:	St. John"s BID.pdf

Good morning Norman

Thank you for your email and request for Amber Lakes to be registered as an Interested and Affected Party, which is hereby confirmed. Please find attached a Background Information Document for your information.

You will be notified of the availability of the Draft Maintenance Management Plan in due course.

Have a great day further.

Kind Regards,

Sarah Stalberg
Environmental Consulting
EAPASA Registered EAP | Reg. No: 2019/1841

GREEN CHOICE CONSULTING

M: +27 71 851 6976
E: sarah@greenchoiceconsulting.co.za
www.greenchoiceconsulting.co.za

From: Chairman LS <chairmanls@greaterambers.com>
Sent: Tuesday, 21 July 2026 09:44
To: sarah@greenchoiceconsulting.co.za; sarah@greenchoiceconsulting.co.za
Cc: lyndakriel@futurenet.co.za; 'Eric & Helen Lusso ' <elusso@xsinet.co.za>; Peter Jackson <pmjacko6@gmail.com>
Subject: FW: Invitation to Register as an Interested and Affected Party - Fish Eagle Dam Repair Works, St. John's Village Lifestyle & Retirement Country Estate
Importance: High

Dear Sarah,

Please will you register Amber Lakes as an “Interested Party” for this proposal.
Our property and lakes are positioned as the first receiver of any runoff of surface drainage or possible contamination from St Johns through the major arch culvert under Karkloof Road.

Kindly acknowledge receipt.

Kind regards,

Norman Freeman
Chairman: Amber Lakes Board of Trustees.

From: sarah@greenchoiceconsulting.co.za
To: "Chairman AL"
Cc: "Estate Manager"
Subject: RE: Repair to St Johns" dam
Date: Tuesday, 29 September 2026 11:06:00

Good morning Malcolm

Thank you for your email, and kindly accept my apologies for my late response to your request to be registered as in Interested & Affected Party for the St. John's Fish Eagle Dam Maintenance Management Plan (MMP) project.

I can confirm that the Amber Lee Board of Trustees has been registered as an Interested & Affected Party, and you will be notified when the Draft MMP is ready for review.

Thank you Malcolm, enjoy your day.

Kind Regards,
Sarah Stalberg
Environmental Consulting
EAPASA Registered EAP | Reg. No: 2019/1841

GREEN CHOICE CONSULTING

M: +27 71 851 6976
E: sarah@greenchoiceconsulting.co.za
www.greenchoiceconsulting.co.za

From: Chairman AL <Chairmanal@greaterambers.com>
Sent: Sunday, 26 July 2026 19:14
To: sarah@greenchoiceconsulting.co.za
Cc: Estate Manager <em@greaterambers.com>
Subject: Repair to St Johns' dam

Dear Sarah,

As chairman of the Amber Lee Estate, I would like to register us as an I&AP for the proposed work on Fish Eagle Dam within the St Johns complex.

Thank you,

Malcolm Powell
Chairman - Amber Lee Board of Trustees
7 Otter Lane
Amber Lee
Pvt Bag X11 Howick 3290

033 - 239 0897
082 - 458 0977

From: sarah@greenchoiceconsulting.co.za
To: "Chairman AR"
Cc: "Estate Manager"
Subject: RE: Invitation to Register as an Interested and Affected Party - Fish Eagle Dam Repair Works, St. John"s Village Lifestyle & Retirement Country Estate
Date: Monday, 27 July 2026 07:07:00
Attachments: St. John"s BID.pdf

Good morning Meyrick

Thank you for your email and request for the Amber Ridge Body Corporate to be registered as an Interested and Affected Party, which is hereby confirmed. Please find attached a Background Information Document for your information.

You will be notified of the availability of the Draft Maintenance Management Plan in due course.

Have a great day further.

Kind Regards,
Sarah Stalberg
Environmental Consulting
EAPASA Registered EAP | Reg. No: 2019/1841

GREEN CHOICE CONSULTING

M: +27 71 851 6976
E: sarah@greenchoiceconsulting.co.za
www.greenchoiceconsulting.co.za

From: Chairman AR <chairmanar@greaterambers.com>
Sent: Monday, 20 July 2026 19:45
To: sarah@greenchoiceconsulting.co.za
Cc: Estate Manager <em@greaterambers.com>
Subject: Fw: Invitation to Register as an Interested and Affected Party - Fish Eagle Dam Repair Works, St. John's Village Lifestyle & Retirement Country Estate

Dear Sarah

Please register me and Amber Ridge Body Corporate as an IAP.

Meyrick Bowker
chairmanar@greaterambers.com
083 788 35527

Role: Chairman of Amber Ridge Body Corporate

Concern:

The Greater Ambers are directly downstream of this rehabilitation work and are therefore concerned about the silt load and potential river levels as a result of this construction.
Although it will be to our eventual advantage to have this rehabilitation done, we are concerned about the impacts during the work stage of the project.

Regards

Meyrick

From: sarah@greenchoiceconsulting.co.za <sarah@greenchoiceconsulting.co.za>
Sent: Thursday, 16 July 2026 09:04
To: sarah@greenchoiceconsulting.co.za
Subject: RE: Invitation to Register as an Interested and Affected Party - Fish Eagle Dam Repair Works, St. John's Village Lifestyle & Retirement Country Estate
Importance: High

Dear Stakeholder/Authority

Green Choice Consulting (Pty) Ltd has been appointed by St. John's Village Lifestyle & Retirement Country Estate to manage the Maintenance Management Plan (MMP) process associated with the proposed repair of the existing Fish Eagle Dam.

Please find attached a Background Information Document (BID), which provides a brief, non-technical overview of the proposed repair works and the environmental process that will be followed.

This notification is circulated to inform stakeholders of the proposed project and to invite Interested and Affected Parties (I&APs) to register and participate in the environmental process. Should you wish to register as an I&AP, or if you have any questions or comments regarding the proposed project, kindly submit your name, contact details and interest in the project to the undersigned.

Should you require any further information, please do not hesitate to contact me.

Kind Regards,

Sarah Stalberg

Environmental Consulting

EAPASA Registered EAP | Reg. No: 2019/1841

GREEN CHOICE CONSULTING

M: +27 71 851 6976

E: sarah@greenchoiceconsulting.co.za

www.greenchoiceconsulting.co.za

From:	sarah@greenchoiceconsulting.co.za
To:	"Chairman AV"
Cc:	"Estate Manager"; "Admin Manager"
Subject:	RE: Invitation to Register as an Interested and Affected Party - Fish Eagle Dam Repair Works, St. John"s Village Lifestyle & Retirement Country Estate
Date:	Monday, 27 July 2026 07:06:00
Attachments:	St. John"s BID.pdf

Good morning Shirley

Thank you for your email and request for the Amber Valley Body Corporate to be registered as an Interested and Affected Party, which is hereby confirmed. Please find attached a Background Information Document for your information.

You will be notified of the availability of the Draft Maintenance Management Plan in due course.

Have a great day further.

Kind Regards,
Sarah Stalberg
Environmental Consulting
EAPASA Registered EAP | Reg. No: 2019/1841

GREEN CHOICE CONSULTING

M: +27 71 851 6976
E: sarah@greenchoiceconsulting.co.za
www.greenchoiceconsulting.co.za

From: Chairman AV <chairmanav@greaterambers.com>
Sent: Monday, 20 July 2026 19:21
To: sarah@greenchoiceconsulting.co.za
Cc: Estate Manager <em@greaterambers.com>; Admin Manager <pa@greaterambers.com>
Subject: RE: Invitation to Register as an Interested and Affected Party - Fish Eagle Dam Repair Works, St. John's Village Lifestyle & Retirement Country Estate

Dear Sarah,

I hereby request that you register us as an Interested and Affected Party:

Amber Valley Body Corporate
3 Karkloof Road
Chairperson of the Amber Valley Board of Trustees (currently Shirley Benney)
082 657 4144
chairmanav@greaterambers.com
Amber Valley is a property across Karkloof Road from St. John's Village Lifestyle & Retirement Country Estate, with our said property being downstream from St. John's Village and thus downstream from Fish Eagle Dam.

Kindly acknowledge receipt of this e-mail and provide confirmation that the Body Corporate has been added to the list of Interested and Affected Parties.

Kind regards
Shirley Benney
Chairperson of the Amber Valley Board of Trustees

From: sarah@greenchoiceconsulting.co.za <sarah@greenchoiceconsulting.co.za>
Sent: Thursday, 16 July 2026 09:04
To: sarah@greenchoiceconsulting.co.za
Subject: RE: Invitation to Register as an Interested and Affected Party - Fish Eagle Dam Repair Works, St. John's Village Lifestyle & Retirement Country Estate
Importance: High

Dear Stakeholder/Authority

Green Choice Consulting (Pty) Ltd has been appointed by St. John's Village Lifestyle & Retirement Country Estate to manage the Maintenance Management Plan (MMP) process associated with the proposed repair of the existing Fish Eagle Dam.

Please find attached a Background Information Document (BID), which provides a brief, non-technical overview of the proposed repair works and the environmental process that will be followed.

This notification is circulated to inform stakeholders of the proposed project and to invite Interested and Affected Parties (I&APs) to register and participate in the environmental process. Should you wish to register as an I&AP, or if you have any questions or comments regarding the proposed project, kindly submit your name, contact details and interest in the project to the undersigned.

Should you require any further information, please do not hesitate to contact me.

Kind Regards,
Sarah Stalberg
Environmental Consulting
EAPASA Registered EAP | Reg. No: 2019/1841

GREEN CHOICE CONSULTING

M: +27 71 851 6976
E: sarah@greenchoiceconsulting.co.za
www.greenchoiceconsulting.co.za

From: sarah@greenchoiceconsulting.co.za
To: "Irene Hatton"
Subject: RE: Ezemvelo Response - BID for MMP - Fish Eagle Dam, St John"s Village, Howick
Date: Monday, 27 July 2026 07:03:00
Attachments: image003.png

Good morning Irene

Thank you for your email – received and noted.

Kind Regards,
Sarah Stalberg
Environmental Consulting
EAPASA Registered EAP | Reg. No: 2019/1841

GREEN CHOICE CONSULTING

M: +27 71 851 6976
E: sarah@greenchoiceconsulting.co.za
www.greenchoiceconsulting.co.za

From: Irene Hatton <irene.hatton@kznwildlife.com>
Sent: Thursday, 23 July 2026 10:38
To: sarah@greenchoiceconsulting.co.za
Subject: Ezemvelo Response - BID for MMP - Fish Eagle Dam, St John's Village, Howick

Good day Sarah

Please find Ezemvelo's MMP BID comment for this development project, attached. Please could you send me a copy of the final MMP document when you submit to the Competent Authority (for my file)

Regards
Irene

Irene Hatton | Environmental Management Systems Planner
Ezemvelo KZN Wildlife
Conservation Planning
Queen Elizabeth Park | 1 Peter Brown Drive | Montrose | Pietermaritzburg |3201
PO Box 13053|Cascades| 3202 | Republic of South Africa
Cell : 082 611 6614| Email: Irene.Hatton@kznwildlife.com

Please send all documentation electronically or provide non-time-sensitive document links

EZEMVELO KZN WILDLIFE

From: sarah@greenchoiceconsulting.co.za
To: "George Levine"
Subject: RE: St Johns Village - Fish Eagle Dam
Date: Friday, 17 July 2026 11:55:00

Good morning George

Thank you for your email and request to be registered as an Interested and Affected Party, which is hereby confirmed.

You will be notified of the availability of the Draft Maintenance Management Plan in due course.

Have a great day further.

Kind Regards,
Sarah Stalberg
Environmental Consulting
EAPASA Registered EAP | Reg. No: 2019/1841

GREEN CHOICE CONSULTING

M: +27 71 851 6976
E: sarah@greenchoiceconsulting.co.za
www.greenchoiceconsulting.co.za

From: George Levine <geo123@live.co.za>
Sent: Friday, 17 July 2026 11:24
To: sarah@greenchoiceconsulting.co.za
Subject: St Johns Village - Fish Eagle Dam

Dear Sarah,

I wish to register as an interested or affected party wrt Fish Eagle Dam at St John's Village.

Thank you

George Levine
3300 Nguni Drive
St Johns
.

APPENDIX D6: I&AP DATABASE

ERF 781 BUDE RD. SOUTHBROOM - STAKEHOLDERS / INTERESTED AND AFFECTED PARTIES

Fish Eagle Dam MMP

Category	Department / Section	Contact Person	Address	Tel.	Email
Provincial / District Authority	Dept. of Economic Development, Tourism & Environmental Affairs: Umgungundlovu District	Nombasa Kama	8 Warwick Road, Cascades, Pietermaritzburg, 3201		Nombasa.Kama@kznedtea.gov.za
Provincial / District Authority	Dept. of Economic Development, Tourism & Environmental Affairs: Umgungundlovu District	Aphelele Ngubane	8 Warwick Road, Cascades, Pietermaritzburg, 3201	0634732878	Aphelele.Ngubane@kznedtea.gov.za
Provincial / District Authority	Department of Water & Sanitation	Lindiwe Dladla	88 Field Street, Durban, 4000	0313362765	dladlal@dws.gov.za
Provincial / District Authority	Ezemvelo KZN Wildlife	IEM	Queen Elizabeth Park, 1 Peter Brown Drive, Pietermaritzburg, 3201		iem.app@kznwildlife.com
Local Municipality	Umngeni Municipality	Marc Hattingh	Cnr Dicks & Somme Streets, Howick, Kwa-Zulu Natal, 3290	0733118944	Marc.Hattingh@umngeni.gov.za
Local Municipality	Umngeni Municipality - Ward 5 Councillor	Cll. Hazel M. Lake	Cnr Dicks & Somme Streets, Howick, Kwa-Zulu Natal, 3290	0823231191	Cllr.Lake@umngeni.gov.za
District Municipality	Umgungundlovu District Municipality	Simphiwe Zuma	176 Langalibalele Street, Pietermaritzburg, 3201	0338976733	Simphiwe.Zuma@umdm.gov.za
District Municipality	Umgungundlovu District Municipality	Mandisa Khomo	176 Langalibalele Street, Pietermaritzburg, 3201	033 897 6811	mandisa.khomo@umdm.gov.za
St. John's Homeowners Association	Homeowners Association	Gary McDowell	33 Karkloof Road, Howick, 3290	0330320588	manager@stjohnsvillage.co.za
Private	Amber Valley (Neighbour)	Wayne Coertze	41 Karkloof Road, Howick, 3290	0835602848	em@greaterambers.com
Private	Sappi (Neighbour)	Andrew Pool		0823299223	Andrew.Pool@sappi.com
Private	St. John's Village resident	George Levine	3300 Nguni Drive, St. John's Village, Howick, 3290		geo123@live.co.za
Private	Amber Valley Body Corporate	Shirley Benney	3 Karkloof Road, Howick, 3290	0826574144	chairmanav@greaterambers.com
Private	Amber Ridge Body Corporate	Meyrick Bowker		08378835527	chairmanar@greaterambers.com
Private	Amber Lakes	Norman Freeman			chairmanls@greaterambers.com
Private	Amber Lee - Board of Trustees	Malcolm Powell	7 Otter Lane, Amber Lee, Howick, 3290	0824580977	Chairmanal@greaterambers.com
Private	St. John's Village resident	Lorna Williamson	3312 Nguni Drive, St. John's Village, Howick, 3290	0827454855	lornajson@gmail.com

APPENDIX E: SPECIALIST AQUATIC ASSESSMENT

WATERCOURSE AND AQUATIC ASSESSMENT

FOR THE REPAIR AND MAINTENANCE OF THE FISH EAGLE DAM WALL AT ST. JOHN'S LIFESTYLE VILLAGE, HOWICK, UMNGENI LOCAL MUNICIPALITY, UMGUNGUNDLOVU DISTRICT, KWAZULU-NATAL



Compiled by

Dr Bruce Scott-Shaw & Mark Summers
NatureStamp (Pty) Ltd
Tel 078 399 9139
Email bruce@naturestamp.com /
mark@naturestamp.com

Compiled for

Sarah Stalberg
Green Choice Consulting
Tel +27 71 851 6976
Email
sarah@greenchoiceconsulting.co.za

September 2026
FINAL REPORT

Protocol Requirements for Specialist Reports

PROTOCOL FOR THE SPECIALIST ASSESSMENT AND MINIMUM REPORT CONTENT REQUIREMENTS FOR ENVIRONMENTAL IMPACTS ON AQUATIC BIODIVERSITY	**Section of Report**
The Aquatic Compliance Statement must contain, as a minimum, the following information:	
• The compliance statement must be prepared by a suitably qualified specialist registered with the SACNASP, with expertise in the field of aquatic sciences.	**Annexure A**
• The compliance statement must: o be applicable to the preferred site and the proposed development footprint; o confirm that the site is of "low" sensitivity for aquatic biodiversity; and o indicate whether or not the proposed development will have an impact on the aquatic features.	**Section 1.1** **Section 5.7 and 6.1** **Section 7**
• The compliance statement must contain, as a minimum, the following information:	
o contact details of the specialist, their SACNASP registration number, their field of expertise and a curriculum vitae;	**Section 2.1 and Annexure A**
o a signed statement of independence by the specialist;	**Page i and Annexure B**
o a statement on the duration, date and season of the site inspection and the relevance of the season to the outcome of the assessment;	**Section 4, 5.7 and 6**
o a baseline profile description of biodiversity and ecosystems of the site;	**Section 5 and 6**
o the methodology used to verify the sensitivities of the aquatic biodiversity features on the site including the equipment and modelling used where relevant;	**Section 3**
o in the case of a linear activity, confirmation from the aquatic biodiversity specialist that, in their opinion, based on the mitigation and remedial measures proposed, the land can be returned to the current state within two years of completion of the construction phase;	**Not applicable – the activity is not linear**
o where required, proposed impact management outcomes or any monitoring requirements for inclusion in the EMPr;	**Section 8 and 9**
o a description of the assumptions made as well as any uncertainties or gaps in knowledge or data; and	**Section 4**
o any conditions to which this statement is subjected.	**Section 4 and 10**

• A signed copy of the compliance statement must be appended to the Basic Assessment Report or Environmental Impact Assessment Report.	**To be undertaken by EAP.**

Acronyms

BA	Basic Assessment
DWS	Department of Water & Sanitation
DWAF	Department of Water Affairs & Forestry
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EIS	Ecological Importance & Sensitivity
FEPA	Freshwater Ecosystem Priority Area
GIS	Geographical Information Systems
HGM	Hydro-Geomorphic
IAPs	Invasive Alien Plants
kV	Kilovolts
PES	Present Ecological State
NEMA	National Environmental Management Act (Act No. 107 of 1998)
NFEPA	National Freshwater Ecosystem Priority Areas
UCVB	Un-channeled Valley Bottom

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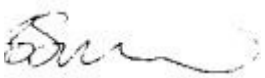
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Specialist Details & Declaration

This report has been prepared in accordance with Section 13: General Requirements for Environmental Assessment Practitioners (EAPs) and Specialists as well as per Appendix 6 of GNR 326 – Environmental Impact Assessment Regulations and the National Environmental Management Act (NEMA, No. 107 of 1998 as amended 2017) and in alignment with the water use authorisation requirements of the National Water Act (Act No. 36 of 1998), including the General Authorisation in terms of GN 4167, December 2023. It has been prepared independently of influence or prejudice by any parties

Document control					
Report title		Watercourse and Aquatic Assessment for the repair and maintenance of the Fish Eagle dam wall at St. John's Lifestyle Village, Howick, Umngeni Local Municipality, Umgungundlovu District, KwaZulu-Natal			
Document ID		27082026-001	**Proj. number**	27082026-001	
Client		Sarah Stalberg	**Client contact**	sarah@greenchoiceconsulting.co.za	
Rev	**Date**	**Rev details/status**	**Prepared by**	**Author**	**Approver**
1	27/08/2026	Draft	MS	MS	BCSS
1	28/09/2026	FINAL	MS	MS	BCSS
Key Words		Wetland, watercourse, HGM, Impact Assessment			
Approval					
Author signature			Reviewer signature		
Name		Mark Summers	Name	Bruce Scott-Shaw	
Title		Report & Reviewer	Title	Director	
Affiliations		Pr.Nat.Sci - 120309	Affiliations	SACNASP:118673	
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1. INTRODUCTION

1.1 Project Background and Description of the Activity

NatureStamp (Pty) Ltd, alongside Green Choice Consulting have been appointed by St. John's Homeowners Association (the applicant) to compile a Watercourse / Aquatic Assessment to inform a Maintenance Management Plan (MMP) for the proposed repair and maintenance of the Fish Eagle Dam wall. The Fish Eagle Dam is an existing dam situated within the grounds of St. John's Lifestyle Village in Howick, Mngeni Local Municipality, uMgungundlovu District, KwaZulu-Natal (**Figure 1**). The dam was constructed in 1970 and functions as a landscaping and amenity feature within the established estate.

The dam wall has been eroded as a result of flooding, and a Dam Safety Evaluation undertaken in 2024 identified deficiencies associated with the spillway capacity, the outlet works and the dam safety infrastructure. The applicant proposes to upgrade the spillway capacity, stabilise the outlet works area, extend and upgrade the outlet infrastructure, and raise the dam crest by approximately 400 mm. These works are confined to the repair, maintenance and upgrading of existing infrastructure in its existing location and footprint. No increase in the storage capacity of the dam and no expansion of the existing impoundment footprint is proposed.

Uninformed and poorly planned infrastructural developments in the vicinity of water resources, such as sensitive surface and groundwater, can rapidly degrade these resources. Thus, pre-development (or in some cases post development) assessments are required to gain an understanding of the natural environment and guide the developmental process in order that site-specific mitigation measures can be put in place. As per the legislative requirements, a delineation of wetlands/watercourses within the development area, a functional assessment and the determination of appropriate buffers to mitigate potential impacts is required. Additionally, an impact assessment has been undertaken for all of the proposed infrastructure.

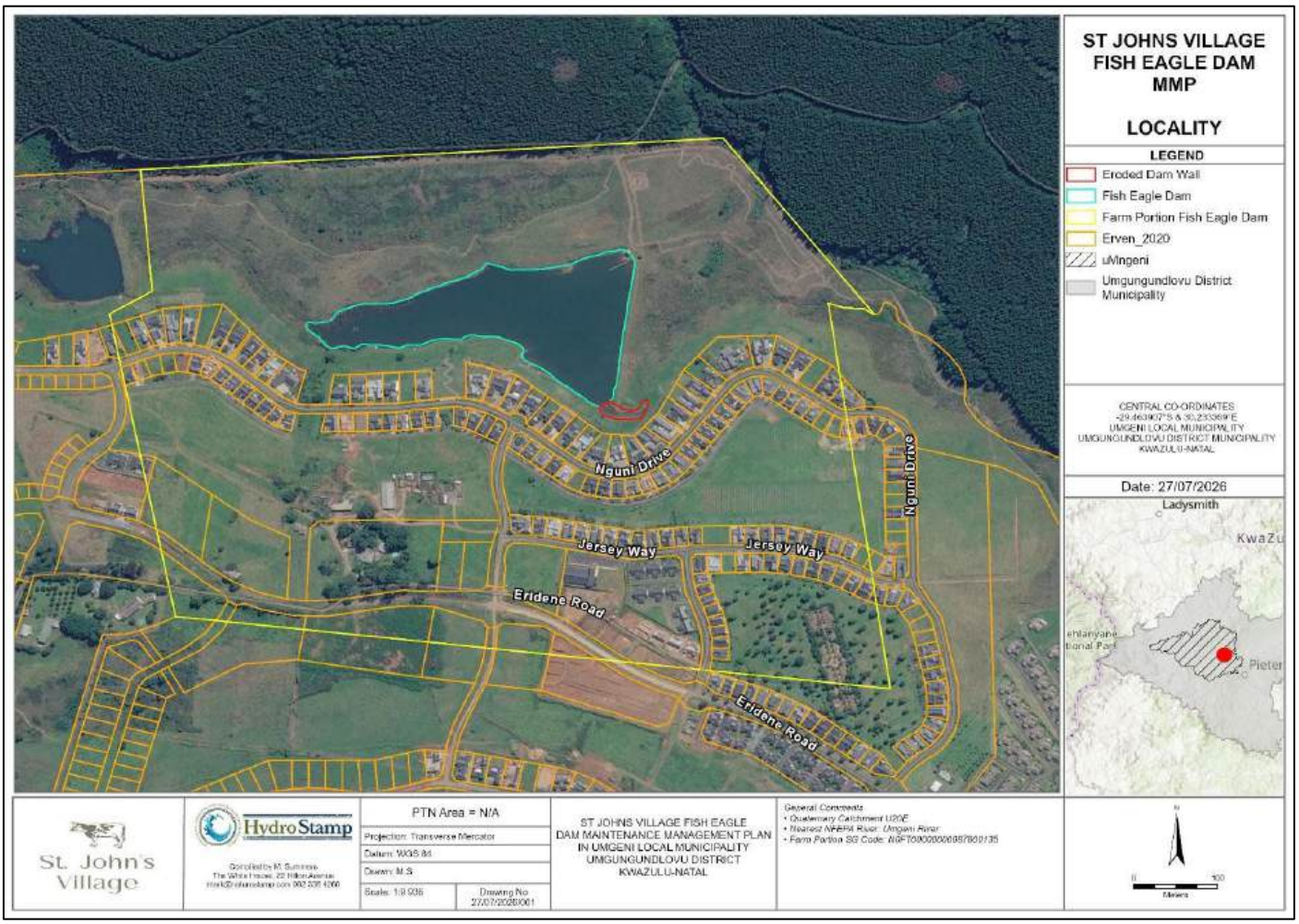


Figure 1: Site location for the repair and maintenance of the Fish Eagle Dam in St Johns Village.



Figure 2: General site pictures around Fish Eagle Dam.

1.2 Aims and Objectives

The aim of the report is to assess proposed impacts of the dam wall repair and maintenance on watercourses to align with the requirements of the National Water Act (Act No. 36 of 1998) and the EIA application process (a Maintenance Management Plan in this case).

The objectives are to:

- Identify, predict, and evaluate the potential impacts of existing infrastructure and activities on surface water resources.
- Identify and map the boundaries of all wetlands and watercourses within the development area.
- Assess the Present Ecological State (PES) and the Ecological Importance and Sensitivity (EIS) of both riverine and wetland systems.
- Calculate the significance of impacts according to their nature, extent, magnitude, and probability, and to recommend site-specific mitigation measures.
- Determine appropriate watercourse buffers required to mitigate potential degradation of sensitive surface and groundwater resources.
- Develop a Watercourse Management and Rehabilitation Plan that includes a surface water monitoring programme to establish baseline water quality.

2. TERMS OF REFERENCE

2.1 Specialist Credentials

Please refer to Appendix A (Specialist CVs)

2.2 Terms of Reference

i. Site Sensitivity Verification & Compliance Statement

This report has been undertaken in terms of Aquatic Site Verification and Compliance Statement in line with GN 320 (20 March 2020) and GN 1150 (30 October 2020) of the National Environmental Management Act (NEMA) EIA Regulation of 2014. The Scope of Work includes the following:

- Identification of sensitivity / sensitivities to determine if a Compliance Statement or Impact Assessment is required;
- Undertaking site visit(s);
- Undertaking specialist assessments;
- Identifying whether the respective assessments need to be in line with the latest Species Environmental guideline(s);
- Presentation of the results;
- Compilation of impact assessment reports, including mitigation measures.

ii. Watercourse/Aquatic Assessment

The condition/Present Ecological State (PES) of the delineated riverine and wetland areas present within 500 m of the proposed site; as well as the functional importance of any wetlands present within and near the development footprint would be assessed. This will involve:

a. an assessment of the delineated riverine areas by:
    i. determining the condition/PES of the riverine system using the rapid/qualitative Index of Habitat Integrity (IHI) tool (Kleynhans *et al*., 2008) for rivers (in-stream and riparian habitats assessed separately); and
    ii. determining the health/ecological importance & sensitivity (EIS) using the DWAF riverine EIS tool (Kleynhans, 1999).
b. an assessment of the delineated wetland areas by:
    i. determining the condition/ PES of the delineated wetlands using the Level 1 WET-Health tool (Macfarlane et al, 2020);

ii. determining the ecological importance & sensitivity (EIS) of the delineated wetlands using the EIS Assessment tool (Kotze *et al*., 2020).

c. an impact assessment to investigate, evaluate and assess the impacts of the above-mentioned activities on the environment.

d. Brief water quality assessment:
   i. Identify possible sources of existing information and negotiate access, if necessary.
   ii. Analyse maps and aerial photo/satellite image to identify potential pollution areas.
   iii. Compile a water quality sampling strategy
   iv. Report on the findings and location of any water quality samples.

e. Risk Matrix and Management Plan / Mitigation Measures: General Authorization (GN 4167, December 2023) applies to water use activities of section c) and i) of the NWA that have a low risk class as determined through the Risk Matrix, found in Appendix A of the GN. The impacts of the proposed development on the delineated watercourse areas would be identified, predicted and described. The significance of the proposed impacts would be rated according to nature, extent, magnitude, duration and probability. Measures would be recommended to mitigate impacts. Impacts and mitigation would be structured in a matrix that highlights overall risk as High, Medium, Low.

f. Watercourse Management and Rehabilitation Plan, including Water Quality Monitoring Programme: A Watercourse Management and Rehabilitation Plan would be developed to guide the construction and operational phases of the development. It would include a monitoring programme for surface water which established baseline water quality at the site. A series of actions for an audit plan would also be provided.

3. METHODOLOGY

A detailed description of the methods has been provided. The regional context and desktop analysis were used as the point of departure. Subsequently, a site visit was undertaken in July 2026, to delineate any wetlands and riparian areas. These systems were then assessed to determine the potential impacts that have been caused. The assessment of these systems considered the following tools where relevant:

Table 1: Assessment approach and the recommended tools for rivers and wetlands

Aquatic Component	Method/Technique	Tool Utilized
Rivers	Delineation	*A Practical Field Procedure for Identification and Delineation of Wetland and Riparian Areas' (DWAF, 2005).*
	Classification	*National Wetland Classification System for Wetlands and other Aquatic Ecosystems in South Africa (Ollis et al, 2014).*
	River condition/Present Ecological State (PES)	DWAF IHI (Index of Habitat Integrity) tool (Kleynhans *et al*., 2008) for rivers (riparian habitat only)
	River Ecological Importance & Sensitivity (EIS)	DWAF riverine EIS tool (Kleynhans, 1999)
Wetlands	Delineation	*A Practical Field Procedure for Identification and Delineation of Wetland and Riparian Areas' (DWAF, 2005).*
	Classification	*National Wetland Classification System for Wetlands and other Aquatic Ecosystems in South Africa (Ollis et al, 2014).*
	Wetland condition/Present Ecological State (PES)	Level 1 WET-Health tool (Macfarlane *et al*., 2020)
	Wetland Functional/Ecosystem Services Assessment	Level 2 WET-EcoServices assessment tool (Kotze *et al*., 2020)
	Wetland Ecological Importance & Sensitivity (EIS)	Wetland EIS assessment (Kotze *et al*., 2020)

Table 2: Data type and source for the assessment

Data Type	Year	Source/Reference
Aerial Imagery	1978-2025	Surveyor General
1:50 000 Topographical	2011	Surveyor General
5m Contour	2010	Surveyor General
River Shapefile	2011	Planet GIS
Land Cover	2015	DEA
Water Registration	2016/2019	WARMS - DWS

*Data will be provided on request

3.1 Regional Context

3.1.1 National Freshwater Ecosystem Priority Areas (NFEPA) Project / Assessment

The 'National Freshwater Ecosystem Priority Areas' (NFEPA) project is a systematic biodiversity planning tool developed by the CSIR (2011) to identify freshwater areas considered the most important for biodiversity conservation. The key objectives of the NFEPA project are to ensure that all ecosystems and species are represented and that key ecological processes remain intact – achieving biodiversity targets within the smallest, most efficient area possible, with attention to connectivity over large areas (CSIR, 2011).

The conservation importance of the site was determined by consulting the relevant NFEPA layers (NFEPA WMA map, NFEPA wetlands and NFEPA rivers) in a geographical information system.

NFEPA was a three-year partnership project between South African National Biodiversity Institute (SANBI), CSIR, Water Research Commission (WRC), Department of Environmental Affairs (DEA), Department of Water Affairs (DWA), Worldwide Fund for Nature (WWF), South African Institute of Aquatic Biodiversity (SAIAB) and South African National Parks (SANParks). NFEPA map products provide strategic spatial priorities for conserving South Africa's freshwater ecosystems and supporting sustainable use of water resources. These strategic spatial priorities are known as Freshwater Ecosystem Priority Areas, or FEPAs.

FEPAs were determined through a process of systematic biodiversity planning and were identified using a range of criteria for conserving ecosystems and associated biodiversity of rivers, wetlands and estuaries. FEPAs are often tributaries and wetlands that support hard-working large rivers, and are an essential part of an equitable and sustainable water resource strategy. FEPAs need to stay in a good condition to manage and conserve freshwater ecosystems, and to protect water resources for human use. The current and recommended condition for all river FEPAs is A or B ecological category. Wetland FEPAs that are currently in a condition lower than A or B should be rehabilitated to the best attainable ecological condition.

3.1.2 Terrain, Soils, Geology & Vegetation

Contour lines (5 meter) were used to calculate the slope of each of the banks. The soils and geology were obtained from GIS layers and were validated during the site visit. Various vegetation databases were used to determine the likely or expected vegetation types (Mucina & Rutherford, 2006; Scott-Shaw & Escott, 2011). A number of recognized databases were utilized in achieving a comprehensive review, and allowing any regional or provincial conservation and biodiversity concerns to be highlighted.

- *Mucina and Rutherford's Vegetation Assessment*

The South African National Biodiversity Institute (SANBI) developed a database of vegetation types. This database provides information on groups of vegetation at a course scale. It is useful in determining the expected species, conservation status and management practices of an area. However, this database does not provide information on species of conservation concern. This database is used as a step towards grouping vegetation types identified on site.

3.2 Extent, Classification and Habitat Characteristics

The boundary of wetlands and riparian areas occurring on the site was identified and delineated according to the Department of Water Affairs wetland delineation manual '*A Practical Field Procedure for Identification and Delineation of Wetland and Riparian Areas*' (Department of Water Affairs, 2005). Land cover data, contour data and the latest aerial imagery were examined in a thorough desktop analysis of the site. This provided important background information to the specialists' understanding of the broader context of the

landscape (e.g., baseline vegetation, geology and climate). An on-site delineation was undertaken as described below.

3.2.1 Wetland Delineation

The following indicators stipulated in the national delineation guidelines were considered in the field. Not necessarily all of these indicators were used at each site. Mention was made in the results which of these indicators were used:

- **Terrain Unit Indicator** – this relates to the position within the landscape where a wetland may occur. A typical landscape can be divided into five main terrain units, namely the crest (hilltop), scarp (cliff), midslope (often a convex slope), footslope (often a concave slope), and valley bottom. As wetlands occur where there is a prolonged presence of water, the most common place one would expect to find wetlands is on the valley bottom (Rountree *et al,* 2008*)*.

- **Soil Form Indicator** – this identifies the soil forms, as defined by the Soil Classification Working Group (1991), which are associated with prolonged and frequent saturation.

- **Soil Wetness Indicator** - Prolonged saturation of soil results in the development of anaerobic conditions, which has a characteristic effect on soil morphology, causing two important redoximorphic features: mottling and gleying. The hue, value and chroma of soil samples obtained at varying depths can be visually interpreted with the aid of the Munsell Colour Chart and the interface between wetland and non-wetland zones determined.

- **Vegetation Indicator** – Plant species have varying tolerances to different moisture regimes. The presence, composition and distribution of specific hydrophytic plants within a system can be used as an indication of wetness and allow for inference of wetland characteristics.

The area was extensively traversed, auger sample points were taken as required and the exact location of sample points logged using a Garmin GPSMAP 64. At each sampling point the soils were sampled at depths of 0-10 cm and 40-50 cm below surface. The soil value, hue and matrix chroma were recorded for each sample according to the Munsell Soil Colour Chart, and the degree of mottling and/or presence of concretions were recorded. Although the site was transformed, any vegetation of interest was noted for the assessments. If the author was not able to identify any potentially important species, a leaf and bark sample was taken for analysis using a key guide.

3.3 Classification System for Wetlands and Other Aquatic Systems

Differences in terminology can lead to confusion in the scientific and consulting fields. As such, terminology used in the context of this report needs to be defined. The NWA defines a watercourse, wetland and riparian habitat as follows:

- A **watercourse** means - (a) a river or spring; (b) a natural channel in which water flows regularly or intermittently; (c) a wetland, lake or dam into which, or from which, water flows; and (d) any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse, and a reference to a watercourse includes, where relevant, its bed and banks.
- A **wetland** means land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.
- A **riparian habitat** includes the physical structure and associated vegetation of the areas associated with a watercourse which are commonly characterised by alluvial soils, and which are inundated or flooded to an extent and with a frequency sufficient to support vegetation of species with a composition and physical structure distinct from those of adjacent land areas.

Any features meeting these criteria within the development site for the respective grid connection projects were delineated and classified using the Classification System for Wetlands and other Aquatic Ecosystems in South Africa. User Manual: Inland systems hereafter referred to as the "Classification System" (Ollis *et al*., 2013). A summary of Levels 1 to 4 of the classification system are discussed further below.

Inland wetland systems (non-coastal) are ecosystems that have no existing connection to the ocean which are inundated or saturated with water, either permanently or periodically (Ollis *et. al*., 2013). Inland wetland systems were divided into four levels by the Freshwater Consulting Group in 2009 and revised in 2013. Level 1 describes the connectivity of the system to the ocean, level 2 the regional setting (eco-region), level 3 the landscape setting, level 4A the hydro-geomorphic (HGM) type and level 4B the longitudinal zonation. Further information has been provided in Annexure B.

The level 3 classification has been divided into four landscape units. These are:

a) **Slope** – located on the side of a mountain, hill or valley that is steeper than lowland or upland floodplain zones.
b) **Valley Floor** – gently sloping lowest surface of a valley, excluding mountain headwater zones.
c) **Plain** – extensive area of low relief. Different from valley floors in that they do not lie between two side slopes, characteristic of lowland or upland floodplains**.**
d) **Bench** (hilltop/saddle/shelf) - an area of mostly level or nearly level high ground, including hilltops/crests, saddles and shelves/terraces/ledges.

Level 4 HGM types (which is commonly used to describe a specific wetland type) have been divided into 8 units. These are described as follows:

- **Channel** (river, including the banks) - an open conduit with clearly defined margins that (i) continuously or periodically contains flowing water. Dominant water sources include concentrated surface flow from upstream channels and tributaries, diffuse surface flow or interflow, and/or groundwater flow.
- **Channelled valley-bottom wetland** - a mostly flat valley-bottom wetland dissected by and typically elevated above a channel (see channel). Dominant water inputs to these areas are typically from the channel, either as surface flow resulting from overtopping of the channel bank/s or as interflow, or from adjacent valley-side slopes (as overland flow or interflow).
- **Un-channelled valley-bottom wetland** - a mostly flat valley-bottom wetland area without a major channel running through it, characterised by an absence of distinct channel banks and the prevalence of diffuse flows, even during and after high rainfall events.
- **Floodplain wetland** - the mostly flat or gently sloping wetland area adjacent to and formed by a Lowland or Upland Floodplain river, and subject to periodic inundation by overtopping of the channel bank.
- **Depression** - a landform with closed elevation contours that increases in depth from the perimeter to a central area of greatest depth, and within which water typically accumulates. Dominant water sources are precipitation, ground water discharge, interflow and (diffuse or concentrated) overland flow.
- **Flat** - a near-level wetland area (i.e. with little or no relief) with little or no gradient, situated on a plain or a bench in terms of landscape setting. The primary source of water is precipitation.
- **Hillslope seep** - a wetland area located on (gentle to steep) sloping land, which is dominated by the colluvial (i.e. gravity-driven), unidirectional movement of material down-slope.
- **Valley head seep** - a gently-sloping, typically concave wetland area located on a valley floor at the head of a drainage line, with water inputs mainly from subsurface flow.

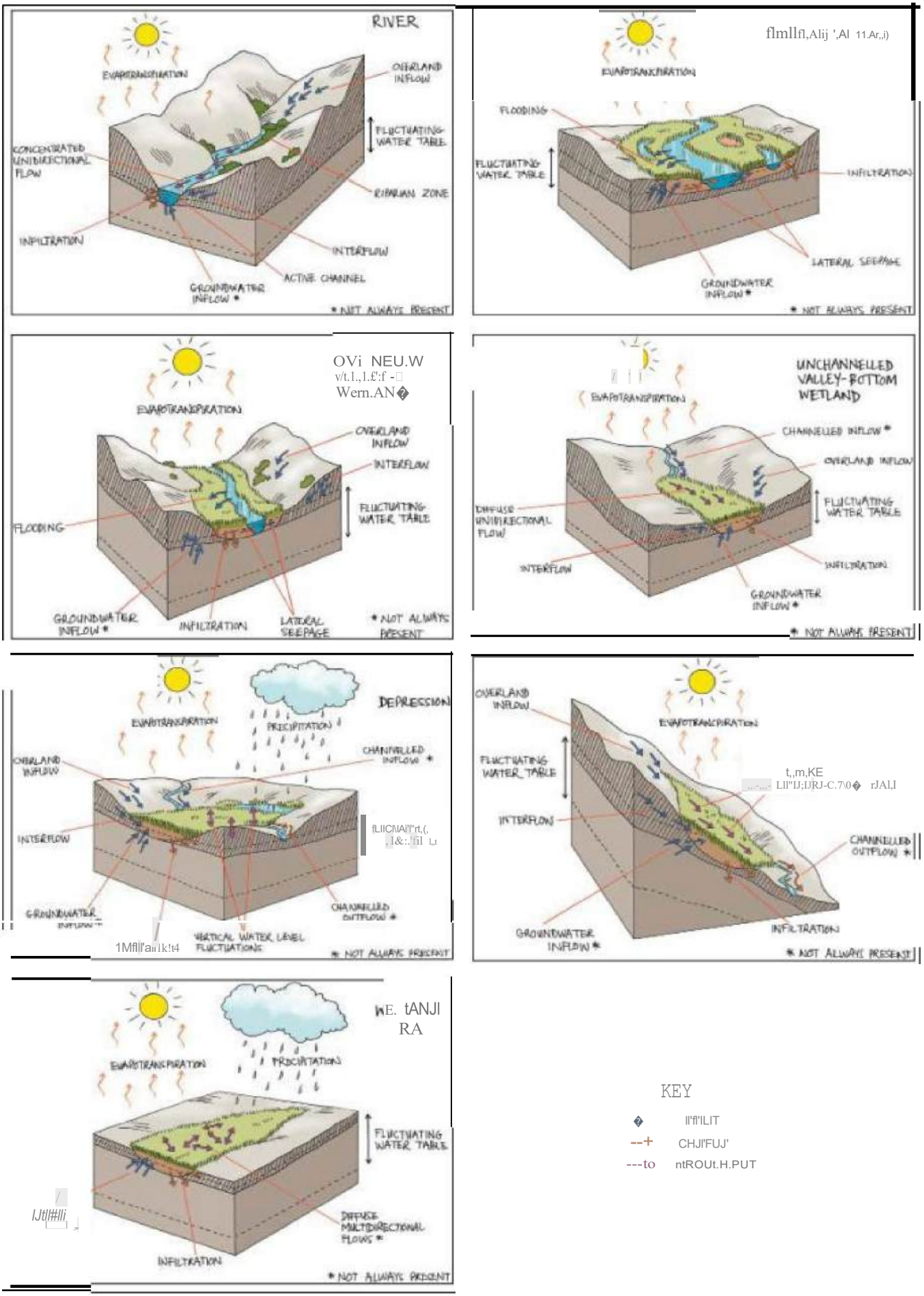


Figure 3: Visual representation of Level 4 primary HGM Units (SANBI, 2013)

3.3.1 Riparian Delineation

Riparian area/zone delineation is similar to wetland delineation in that indicators are used to define the edge of the system. It considers indicators such as topography, vegetation, alluvial soils, and deposition of material to mark the outer edge of the macro-channel and its associated vegetation. **Figure 4** below shows the typical morphology of a river channel.

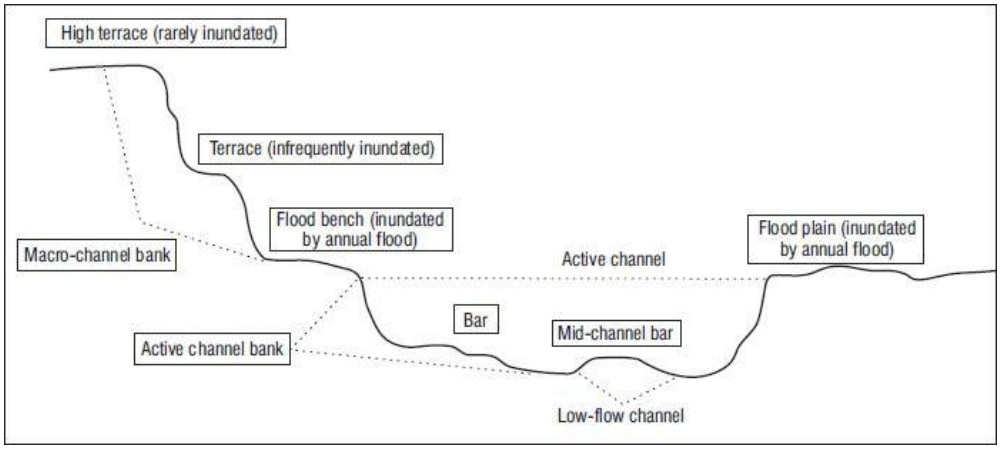


Figure 4: Typical cross-section of a river showing channel morphology 'A Practical Field Procedure for Identification and Delineation of Wetland and Riparian Areas – Edition 1' (Department of Water Affairs, 2005)

A Practical Field Procedure for Identification and Delineation of Wetland and Riparian Areas (DWAF, 2005) was used in the delineation of the riparian zone boundary. Delineated riparian zones were then classified using an HGM classification system based on the system proposed by Ollis *(*2013*)*. According to Cowan *et* al. (2005), riparian ecosystems are separated from other wetland ecosystems on the following three major features:

1. They have linear form as a consequence of their proximity to rivers and form a boundary between the terrestrial and aquatic ecosystems.
2. Energy and materials from the surrounding landscape converge and pass through riparian ecosystems. This amount is greater in terms of unit area than with any other system.
3. Riparian ecosystems are connected hydrologically to both upstream and downstream ecosystems (intermittently).

An example of the soil sampling approach is provided in **Figure 5**.



Figure 5: Example of soil sampling undertaken on site

3.4 Present Ecological State (PES) Assessment

3.4.1 Present Ecological State (adapted from WET-Health, Macfarlane et al., 2020)

A WET-Health (Macfarlane *et al*., 2020) Level 1 Rapid Appraisal was used to assess the eco-physical health of any wetlands in the study area. Focusing on geomorphology, hydrology and vegetation, the tool examines the impacts and indicators of change within the system and its catchment by determining the deviation (in terms of structure and function) from the natural reference condition. The outcomes of the appraisal place importance on issues that should be addressed through rehabilitation, mitigation and/or prevention measures. A standardized scoring system allows for consistencies between different systems and reduces user subjectivity.

Scores are allocated according to the magnitude and extent of impact. These scores are integrated to produce an overall score for Present Ecological State (PES) of the system – *namely, natural, largely natural, moderately modified, largely modified, extensively modified,* and *critically modified.*

3.4.2 Index of Habitat Integrity (IHI – Kleynhans, 2012)

The ecological integrity of a river is defined as its ability to support and maintain a balanced, integrated composition of physico-chemical and habitat characteristics, as well as biotic components on a temporal and spatial scale that are comparable to the natural characteristics of ecosystems of the region (Kemper, 1999). The IHI (Index of Habitat Integrity), version 2 (Kleynhans, 2012) is used in order to determine both riparian and instream habitat integrity of the River Units assessed. The methodology is based on the qualitative assessment of a number of pre-weighted criteria which indicate the integrity of the in-stream and riparian habitats available for use by riverine biota. Sampling for the IHI assessment involves recording visual observations at selected points at each sampling site. This information was supplemented with a desktop analysis of catchment land cover and land uses observed using colour aerial photography, as appropriate.

Table 3: Criteria used in the assessment of the habitat integrity

Criterion	Relevance

Water abstraction	Direct impact on habitat type, abundance and size. Also implicated in flow, bed, channel and water quality characteristics. Riparian vegetation may be influenced by a decrease in the supply of water.
Flow modification	Consequence of abstraction or regulation by impoundments. Changes in temporal and spatial characteristics of flow can have an impact on habitat attributes such as an increase in duration of low flow season, resulting in low availability of certain habitat types or water at the start of the breeding, flowering or growing season.
Bed modification	Regarded as the result of increased input of sediment from the catchment or a decrease in the ability of the river to transport sediment (Gordon *et al*., 1993). Indirect indications of sedimentation are stream bank and catchment erosion. Purposeful alteration of the stream bed, e.g. the removal of rapids for navigation (Hilden & Rapport, 1993) is also included.
Channel modification	May be the result of a change in flow, which may alter channel characteristics causing a change in marginal instream and riparian habitat. Purposeful channel modification to improve drainage is also included.
Water quality modification	Originates from point and diffuse point sources. Measured directly or agricultural activities, human settlements and industrial activities may indicate the likelihood of modification. Aggravated by a decrease in the volume of water during low or no flow conditions.
Inundation	Destruction of riffle, rapid and riparian zone habitat. Obstruction to the movement of aquatic fauna and influences water quality and the movement of sediments (Gordon *et al*., 1992).
Exotic macrophytes	Alteration of habitat by obstruction of flow and may influence water quality. Dependent upon the species involved and scale of infestation.
Exotic aquatic fauna	The disturbance of the stream bottom during feeding may influence the water quality and increase turbidity. Dependent upon the species involved and their abundance.
Solid waste disposal	A direct anthropogenic impact which may alter habitat structurally. Also a general indication of the misuse and mismanagement of the river.
Indigenous vegetation removal	Impairment of the buffer the vegetation forms to the movement of sediment and other catchment runoff products into the river (Gordon *et al*., 1992). Refers to physical removal for farming, firewood and overgrazing.
Exotic vegetation encroachment	Excludes natural vegetation due to vigorous growth, causing bank instability and decreasing the buffering function of the riparian zone. Allochtonous organic matter input will also be changed. Riparian zone habitat diversity is also reduced.
Bank erosion	Decrease in bank stability will cause sedimentation and possible collapse of the river bank resulting in a loss or modification of both instream and riparian habitats. Increased erosion can be the result of natural vegetation removal, overgrazing or exotic vegetation encroachment.

Table 4: Impact classes and their associated scores

Impact category	Description	Score
None	No discernible impact, or the modification is located in such a way that it has no impact on habitat quality, diversity, size and variability.	0
Small	The modification is limited to very few localities and the impact on habitat quality, diversity, size and variability is also very small.	1-5
Moderate	The modifications are present at a small number of localities and the impact on habitat quality, diversity, size and variability is also limited.	6-10
Large	The modification is generally present with a clearly detrimental impact on habitat quality, diversity, size and variability. Large areas are, however, not influenced.	11-15
Serious	The modification is frequently present and the habitat quality, diversity, size and variability in almost the whole of the defined area is affected. Only small areas are not influenced.	16-20
Critical	The modification is present overall with a high intensity. The habitat quality, diversity, size and variability in almost the whole of the defined section are influenced detrimentally.	21-25

Table 5: Description of the IHI categories

Category	Description	Score (% of total)
A	Unmodified, natural.	100
B	Largely natural with few modifications. A small change in natural habitats and biota may have taken place but the ecosystem functions are essentially unchanged.	80-99
C	Moderately modified. A loss and change of natural habitat and biota have occurred but the basic ecosystem functions are still predominantly unchanged.	60-79
D	Largely modified. A large loss of natural habitat, biota and basic ecosystem functions have occurred.	40-59
E	The loss of natural habitat, biota and basic ecosystem functions are extensive.	20-39

Category	Description	Score (% of total)
F	Modifications have reached a critical level and the lotic system has been modified completely with an almost complete loss of natural habitat and biota. In the worst instances the basic ecosystem functions have been destroyed and the changes are irreversible.	0-19

3.5 Ecological Importance & Sensitivity (EIS) Assessment (River & Wetland)

The Ecological Importance and Sensitivity (EIS) of riparian areas is an expression of the importance of the aquatic resource for the maintenance of biological diversity and ecological functioning on a local scale to a broader scale; whilst Ecological Sensitivity (or fragility) refers to a system's ability to resist disturbance and its capability to recover from disturbance once it has occurred (Kleynhans & Louw, 2007). In this study a qualitative assessment was applied and was partially informed by the present state assessment. This assessment followed the DWA river eco-classification criteria (Module A, Kleynhans & Louw, 2007). The classification provides insights into the causes and sources of the deviation of the PES of biophysical attributes from the reference condition (Kotze et al., 2020). A wetland EIS assessment was undertaken as well.

Table 6: List of the River EIS categories used in the assessment tool (Kotze *et al.*, 2020)

EIS Score	EIS Rating	General Description
0-1	Very Low	Features are not ecologically important and sensitive at any scale. The biodiversity of these areas is typically ubiquitous with low sensitivity to anthropogenic disturbances and play an insignificant role in providing ecological services.
1-2	Low	Features regarded as somewhat ecologically important and sensitive at a local scale. The functioning and/or biodiversity features have a low-medium sensitivity to anthropogenic disturbances. They typically play a very small role in providing ecological services at the local scale.
2-3	Medium	Features that are considered to be ecologically important and sensitive at a local scale. The functioning and/or biodiversity of these features is not usually sensitive to anthropogenic disturbances. They typically play a small role in providing ecological services at the local scale.
3-4	High	Features that are considered to be ecologically important and sensitive at a regional scale. The functioning and/or biodiversity of these features are typically moderately sensitive to anthropogenic disturbances. They typically play an important role in providing ecological services at the local scale.
4	Very High	Features that are considered ecologically important and sensitive on a national or even international level. The functioning and/or biodiversity of these features are usually very sensitive to anthropogenic disturbances. This includes areas that play a major role in providing goods and services at a regional level.

Table 7: Rating scheme used for the assessment of wetland EIS (Kotze *et al.*, 2020)

EIS Score	EIS Rating	General Description
0-0.79	Very Low	Wetlands that are not ecologically important and sensitive at any scale and provide negligible biodiversity maintenance, regulating, provisioning and cultural services.
0.8-1.29	Low	Wetlands that are not ecologically important and sensitive at any scale and provide low levels of biodiversity maintenance, regulating, provisioning and cultural services.
1.3-1.69	Moderately-Low	Wetlands that are not ecologically important and sensitive at any scale and provide moderately-low levels of biodiversity maintenance, regulating, provisioning and cultural services.
1.7-2.29	Moderate	Wetlands that are considered to be ecologically important and sensitive on a provincial or local scale and provide biodiversity maintenance, regulating, provisioning and/or cultural services of moderate importance. They play a small but measurable role in moderating the quantity and quality of water in major rivers.
2.3-2.69	Moderately-High	Wetlands that are considered to be ecologically important and sensitive on a provincial or local scale and provide biodiversity maintenance, regulating, provisioning and/or cultural services of moderately-high importance. They play a measurable role in moderating the quantity and quality of water of major rivers.
2.7-3.19	High	Wetlands that are ecologically important and sensitive on a provincial or national scale and provide biodiversity maintenance, regulating, provisioning and/or cultural services of high importance. They play an important role in moderating the quantity and quality of water of major rivers.
3.2-4.0	Very High	Wetlands that are considered ecologically important and sensitive on a national or even international level and provide biodiversity maintenance, regulating, provisioning and/or cultural services of very high importance The biodiversity of these wetlands is usually very sensitive to flow and habitat modifications. They play a major role in moderating the quantity and quality of water in major rivers

3.6 Impact Assessment Methodology

The aim of the impact assessment is to identify the impacts that the current activity, as well as the remaining construction and operational phase of the development will have on the receiving environment. If avoidance is not possible, mitigation is required in the form of practical actions (Ramsar Convention, 2008). Mitigation actions can be grouped into the following:

i. **Pre-construction:** This may take the form of changes in the scale of the development (e.g. reduce the size of the development), location of development (e.g. find an alternative area with less impact), and design (e.g. change the structural design to accommodate flows and continuity).
ii. **Construction:** This may take the form of a process change (e.g. changes in construction methods), siting (e.g. locality to sensitive areas), sequencing and phasing (e.g. construction during seasonal periods).
iii. **Operational:** This may take the form of changes in post management (e.g. change management to match unpredicted impacts), monitoring (e.g. frequent checks by an ECO), rehabilitation (e.g. if mitigation actions are not effective).

An assessment of the potential impacts of the Transnet site was guided by the EKZNW handbook for biodiversity impact assessments (2011). As it is an existing impact, a pre- and post-rehabilitation assessment was undertaken.

3.7 Risk Assessment

The risk assessment matrix assesses the likely impact the proposed development and associated infrastructure/activities may have on the wetland/watercourse. Only Low Risk Activities located within the regulated area of the watercourse will qualify for a GA according to this Notice. Medium and High-risk activities will require a Section 21 (c) and (i) water use licence. The GA for Section 21 (c) and (i) activities has been updated and gazetted as part of Government Gazette No. 4167 of 8 December 2023, and allows for the positive rating of impacts.

The updated criteria, calculations and ranking considered are as follows:

ECOLOGICAL IMPORTANCE OF AFFECTED WATERCOURSE/S	
What is the ecological importance of the watercourse/s, based on the criteria and guidelines provided below?*	
Low EIS; OESAs; presence of species/habitats of Least Concern on the IUCN Red List or on a regional/national Red List and/or species which are common and widespread and/or habitats of low conservation interest	**Low** = 2
Medium EIS; ESAs; presence of species/habitats listed as VU or NT on the IUCN Red List; or listed as VU or NT on a regional/national Red List	**Moderate** = 3
High EIS; CBA2; presence of species/habitats listed as EN or CR on the IUCN Red List; or listed as EN or CR on a regional/national Red List	**High** = 4
Very high EIS; CBA1, NFEPA; presence of species/habitats listed as EN or CR on the IUCN Red List; or listed as EN or CR on a regional/national Red List; KBA or IBAs	**Very high** = 5
* EIS=Ecological Importance and Sensitivity; OESA=Other Ecological Support Areas; IUCN=International Union for Conservation of Nature; ESA=Ecological Support Areas; VU=Vulnerable; NT=Near Threatened; EN=Endangered; CR=Critically Endangered; CBA=Critical Biodiversity Area; NFEPA=National Freshwater Priority Area; KBA=Key Biodiversity Area; IBA=Important Bird Area.	
INTENSITY OF IMPACT	
What is the intensity of the impact on the resource quality (hydrology, water quality, geomorphology, biota)?	
Negative Impacts	
Negligible / non-harmful; no change in PES	0
Very low / potentially harmful; negligible deterioration in PES (<5% change)	+1
Low / slightly harmful; minor deterioration in PES (<10% change)	+2
Medium / moderately harmful; moderate deterioration in PES (>10% change)	+3
High / severely harmful; large detrioration in PES (by one class or more)	+4

Very high / critically harmful; critrical deterioration in PES (to E/F or F class)	+5
Positive Impacts	
Negligible; no change in PES	0
Very low / potentially beneficial; negligible improvement in PES (<5% change)	-1
Low / slightly beneficial; minor improvement in PES (<10% change)	-2
Medium / moderately beneficial; moderate improvement in PES (>10% change)	-3
Highly beneficial; large improvement in PES (by one class or more) and/or increase in protection status	-4
Very highly beneficial; improvement to near-natural state (A or A/B class) and/or major increase in protection status	-5
NOTE: Positive Impacts must be given a negative Intensity Score	
***PES of affected watercourses must be considered when scoring Impact Intensity**	
SPATIAL SCALE (EXTENT) OF IMPACT	
How big is the area that the activity is impacting on, **relative to the size of the impacted watercourses**?	
Very small portion of watercourse/s impacted (<10% of extent)	1
Moderate portion of watercourse/s impacted (10-60% of extent)	2
Large portion of watercourse/s impacted (60-80%)	3
Most or all of watercourse/s impacted (>80%)	4
Impacts extend into watercourses located well beyond the footprint of the activities	5
DURATION OF IMPACT	
How long does the activity impact on the resource quality?	
Transient (One day to one month)	1
Short-term (a few months to 5 years) OR repeated infrequently (e.g. annually) for one day to one month	2
Medium-term (5 – 15 years)	3
Long-term (ceases with operational life)	4
Permanent	5
LIKELIHOOD OF THE IMPACT	
What is the probability that the activity will impact on the resource quality?	
Improbable / Unlikely	20%
Low probability	40%
Medium probability	60%
Highly probable	80%
Definite / Unknown	100%

3.7.1 Rating classes

Rating	Class	Management Description
1 – 29	**(L) Low Risk** **OR** **(+) Positive** **(+ +) Highly positive**	Acceptable as is or with proposed mitigation measures. Impact to watercourses and resource quality small and easily mitigated, or positive.

30 – 60	**(M) Moderate Risk**	Risk and impact on watercourses are notable and require mitigation measures on a higher level, which costs more and require specialist input. Licence required.
61 – 100	**(H) High Risk**	Watercourse(s) impacts by the activity are such that they impose a long-term threat on a large scale and lowering of the Reserve. Licence required.

A low-risk class must be obtained for all activities to be considered for a GA.

3.7.2 Calculations

Intensity = Maximum Intensity Score (negative value for positive impact)	MAX = 5
Severity = Intensity + Spatial Scale + Duration (<Intensity - Spatial Scale - Duration> for positive impact)	MAX = 15 (MIN = -15 for +ve impacts)
Consequence = Severity X Importance rating	MAX = 75
Significance\Risk = (Consequence X Likelihood) X (100/75)	MAX = 100

3.8 Watercourse Buffers

A buffer zone is designed to act as a barrier between anthropogenic activities and sensitive water resources. This allows for the protection of these water resources against adverse negative impacts (Macfarlane *et al*., 2014). Buffer zones promote the maintenance of basic aquatic processes, the reduction of up-stream impacts and the preservation and provision of aquatic species. *Guideline for the Determination of Buffer Zones for Rivers, Wetlands and Estuaries* (Macfarlane *et al*., 2017 was used to determine the buffer zone for wetland types (HGM units) found within the project boundary. The *Buffer Zone Tool for the Determination of Aquatic Impact Buffers and Additional Setback Requirements for Wetland Ecosystems*, funded by The Department of Water and Sanitation and the Water Research Commission, was used in this regard (Macfarlane *et al*., 2014). To properly implement this tool, the following guidelines are recommended (*note that some of these objectives were already undertaken for the WET-Health and PES assessment):

1. Define objectives and scope to determine the most appropriate level of the assessment;
2. Map and categorize water resources in the study area (identify water resource type/boundaries);
3. Refer to the DWA management objectives for mapped water resources or develop surrogate objectives (Present Ecological State, social and economic sensitivity);
4. Assess the risks from proposed developments and define mitigation measures necessary to protect mapped water resources in the study area (lateral land-use inputs);
5. Assess risks posed by proposed development on biodiversity and identify management zones for biodiversity protection (presence of biodiversity elements);
6. Delineate and demarcate recommended setback requirements (map setback requirements/zones for biodiversity protection);
7. Document management measures necessary to maintain the effectiveness of setback areas (buffer zone vegetation, soil characteristics, topography and ecological corridor design); and
8. Monitor implementation of buffer zones (determine monitoring objective/buffer zone effectiveness and design a monitoring programme).

The final buffers derived for the site for the site are as follows:

- All wetlands – 32 meters;



Figure 6: Different systems recorded throughout the site inspection

4. ASSUMPTIONS AND LIMITATIONS

In order to apply generalized and often rigid scientific methods or techniques to natural, dynamic environments, a number of assumptions are made. Furthermore, a number of limitations exist when assessing such complex ecological systems. The following constraints may have affected this assessment –

- A Garmin GPSMAP 64 was used in the mapping of waypoints on-site. The accuracy of the GPS is affected by the availability of corresponding satellites and accuracy ranges from 1 to 3 m after post-processing corrections have been applied.
- A Munsell Soil Colour Chart was used to assess soil morphology post fieldwork. This tool requires that a dry sample of soil be assessed. However, due to in-field time constraints, slightly wet soil samples were assessed. Wet samples would have consistently lower values than dry soils; and this is taken into consideration.
- Although the vegetation was taken into account, protected and threatened species, such as bulbs that have not emerged, may not have been identified. Due to the development extending into sensitive areas (such as buffer areas and the actual watercourse), a vegetation survey was undertaken in a separate study.
- Findings are based on layouts provided by the Client. This report becomes null and void should material changes to the layout occur without prior knowledge of the author / specialist.

5. DESKTOP ASSESSMENT

5.1 Allowable abstractions and legislated limits

Quaternary Catchment (QC) site: U20E (Mgeni). According to GN 538 (2016), the General Authorization (GA) limits for this QC are as follows–

- Abstraction of surface water: **2000 m³ / year @ 1 l/s** for the whole year.
- Storage of water: 2 000 m³.
- Groundwater abstraction: 45 m³/ha/year (allowed under GA).

These limits show that this catchment area has limited surface and groundwater available and water conservation should be applied to reduce stress on the downstream water users. Any volumes exceeding this amount would require a water use license application (WULA).

5.2 Catchment details

The site is located within Quaternary Catchment U20E; falling under the uMvoti to Mzimkulu Management Area (WMA) and the uMgeni waterboard (uMgeni Water). The proposed area sits on a small catchment area of the Umgeni river (FEPA class C: Moderately Modified).

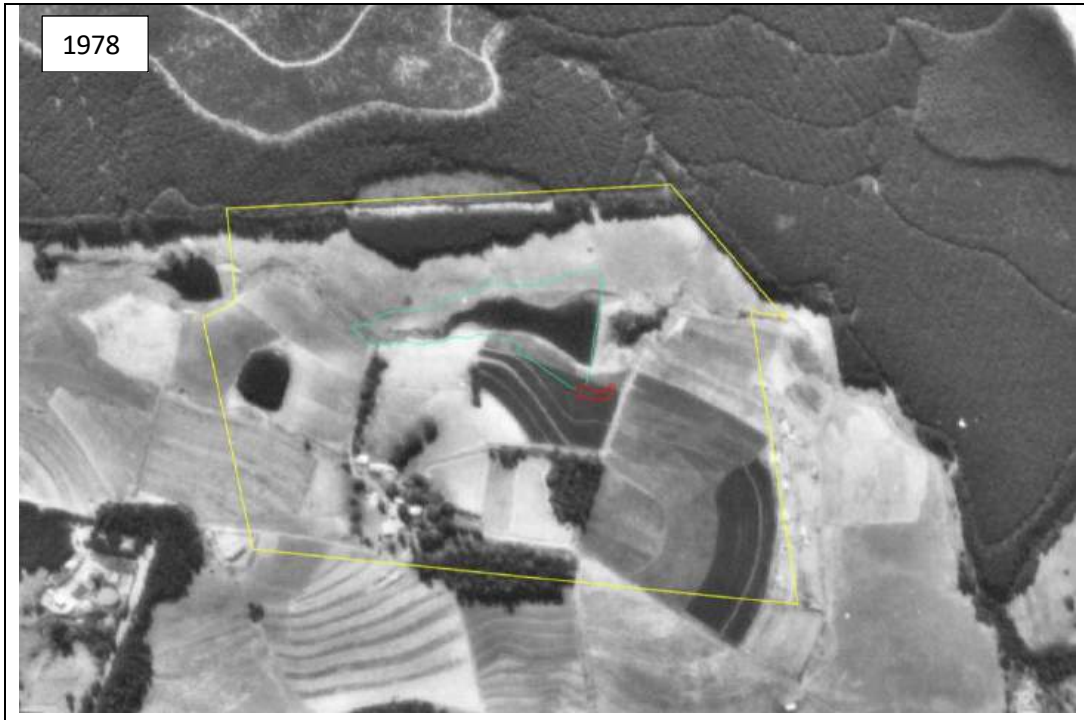
Rainfall in the St Johns region occurs in the summer months (mostly December to February), with a mean annual precipitation of 943 mm (observed from rainfall station 0239421 W). The reference potential evaporation (ET_o) is approximately 1675 mm (A-pan equivalent, after Schulze, 2011) and the mean annual evaporation is between 1200 – 1300 mm, which exceeds the annual rainfall. This suggests a high evaporative demand and a water limited system. Summers are warm to hot and winters are cool. The mean annual temperature is approximately 20.1 °C in summer and 11.7 °C in the winter months (Table 8). The underlying geology of the site is Karoo dolerite and the soils overlain are sandy-clay-loam ranging from Hutton to Clovelly form in this particular area.

Table 8: Mean monthly rainfall and temperature observed at Amber Lee (derived from historical data)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
Mean Rainfall (mm)	143	122	109	48	17	5	6	18	39	86	108	139	943
Mean Temperature (°C)	20.1	20.3	19.4	16.9	14.0	11.7	11.9	13.4	15.7	16.6	18.0	19.5	16.5

5.3 Historical Analysis

The historical analysis prior to the promulgation of NEMA and NWA shows that the Fish Eagle Dam was in existence from as far back as 1978. The surrounding land use appeared to be that of dryland cropping / livestock grazing and timber plantations to the north of site. St Johns Village had not been built in 1996, and there appeared to be no major increase in residential areas by 1996.





- St Johns Villageis not in existence.
- The surrounding farm lands consist of annual dryland crops / grazing and timber plantations to the north of the site.
- A farmhouse is present within the farm parcel.
- Fish Eagle Dam is in existence, as well as the upstream Kingfisher Dam

- An increase in residential areas noted in 1996, however this is still prior to the property boom in the general area.
- St Johns is stillnot in existence and landuse appears to be the same as in 1978.

Figure 7: Historical imagery of the proposed project area.

5.4 NFEPA assessment and SAIIAE WM5

NFEPA graded wetlands are intersected by the site boundary (**Figure 8**). The project intersects with a critically modified (wetland condition of Z2) channelled valley bottom wetland. No NFEPA river or FEPA is present within the 500 m regulated area. According to NFEPA foundational guidelines, rivers and wetlands with a Present Ecological State (PES) of A or B are considered in good condition and act as critical conservation targets; the wetland intersected by the site does not meet this threshold. Furthermore, the project area affects the critically endangered Sub-Escarpment Grassland Group 3 wetland vegetation type. The site does not function as a FEPA fish support area or a migratory fish sanctuary corridor; these are classifications that would signify natural or near-natural ecological conditions essential for the evolutionary processes of threatened aquatic species. The database shows no specific NFEPA fish species as being impacted.

The South African Inventory of Inland and Aquatic Ecosystems (SAIIAE), Wetlands Map 5 (WM5) was queried to check the probability and type of watercourses on site (**Figure 9**). The output showed channelled valley bottom wetlands within the 500 m regulated area.

Table 9: NFEPA Codes noted within the 500m regulated area of the site

	Yes / No	Type	PES	Condition
NFEPA Wetland	Yes	Channelled Valley Bottom Wetland	Z2	Critically modified
NFEPA River	No	N/A	N/A	N/A
FEPA	No	N/A	N/A	N/A
NFEPA Wetland Vegetation Type	Yes	Sub-Escarpment Grassland Group 3	N/A	Critically Endangered
NFEPA Fish Sanctuaries	No	N/A	N/A	N/A
NFEPA Fish Species	No	N/A	N/A	N/A

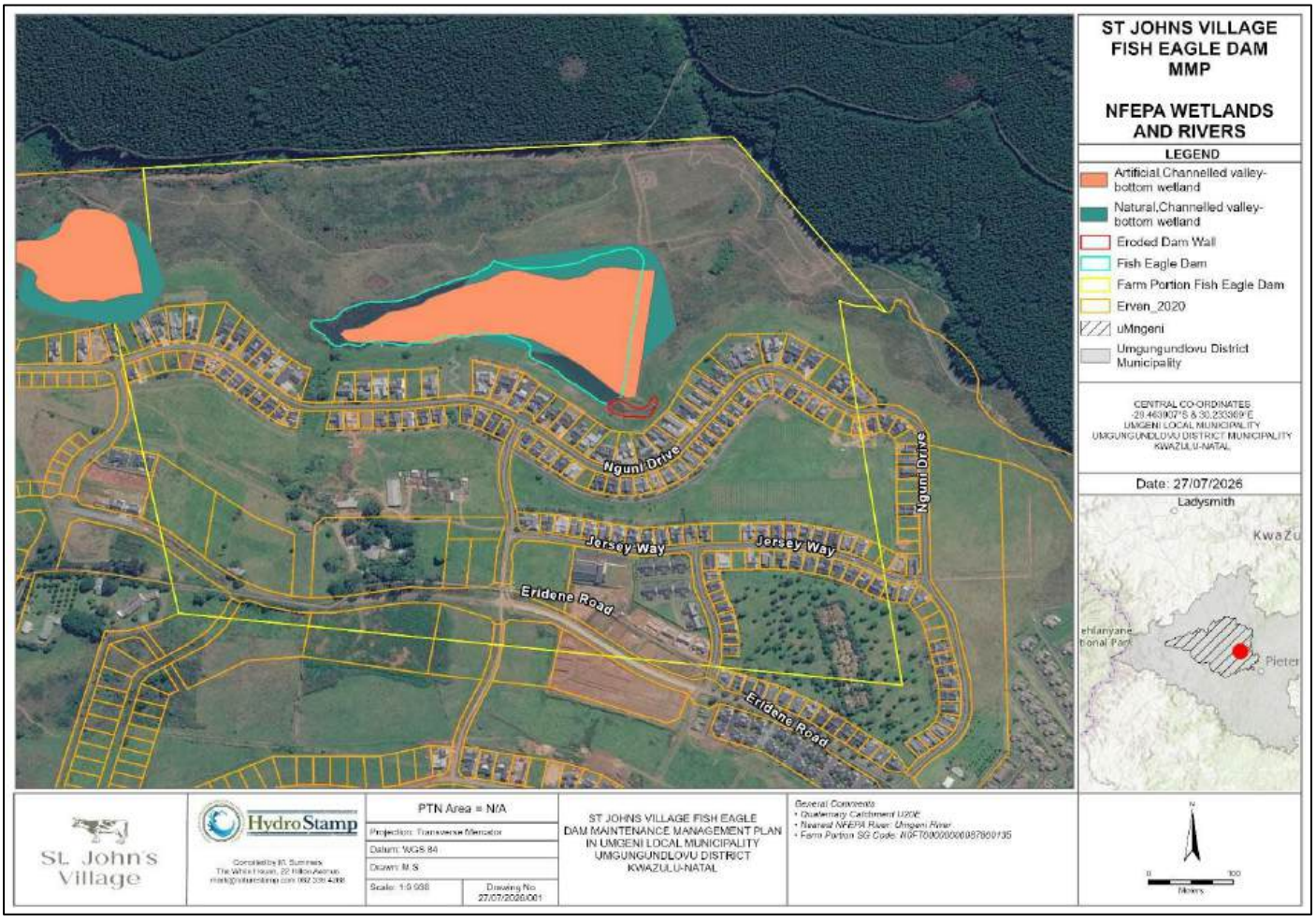


Figure 8: NFEPA wetlands and rivers in proximity to Fish Eagle Dam.

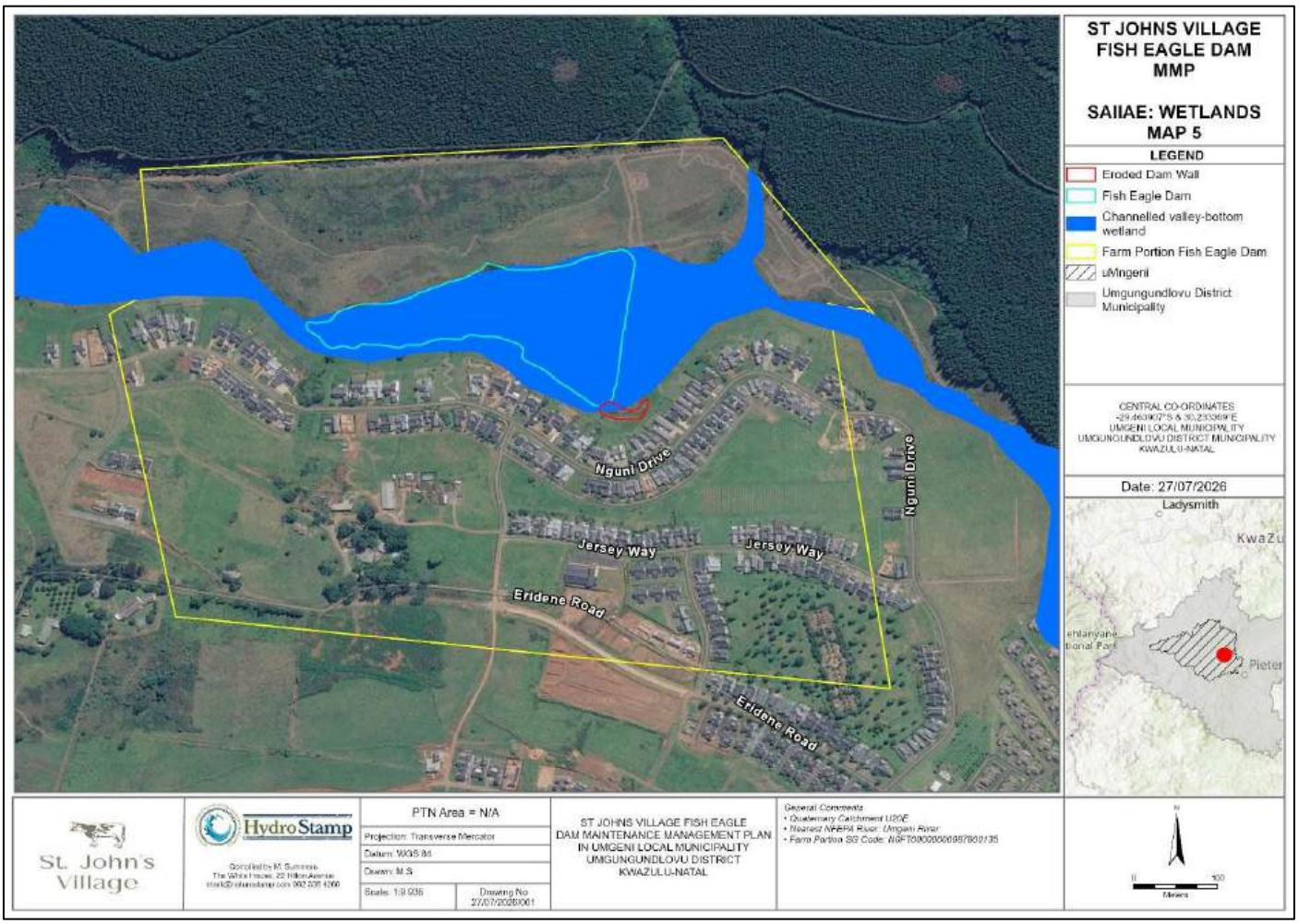


Figure 9: SAIIAE WMP watercourse probability.

5.5 Vegetation

This site is dominated by endangered Midlands Mistbelt grassland (Gs 9, Mucina and Rutherford, 2006). This occurs within the sub-escarpment grassland biome. The desktop analysis revealed that the area is a vulnerable area, with the potential for some flagged fauna and flora (e.g. red data species and endangered wildlife) being found from the C-plan, SEA and MINSET databases. However, this does not necessarily mean that rare or endangered species will occur in the area of interest. The following information was collected for the vegetation unit Gs 9 (Mucina & Rutherford, 2006; Scott-Shaw & Escott, 2011). The characteristics of this grassland are described as:

Distribution: KwaZulu-Natal and Eastern Cape Provinces: KwaZulu-Natal Midlands – scattered in a broad belt in the form of several major patches including Melmoth-Babanango area, Kranskop and Greytown, Howick Lions River, Karkloof, Balgowan, Cedara, Edendale, Hilton, Richmond, the Ixopo-Highflats area, Mount Malowe in the UMzimkhulu enclave of the Eastern Cape Province and the Harding –Weza area. The south-western most section in the Eastern Cape Province falls in the Bulembu, Gxwaleni, Longweni and Flagstaff areas.

Altitude: 760 – 1 400m.

Vegetation & Landscape Features: Hilly and rolling landscape mainly associated with a discontinuous east-facing scarp formed by dolerite intrusions (South of the Thukela River). Dominated by forb-rich, tall, sour *Themeda triandra* grasslands transformed by the invasion of native 'Ngongoni grass (*Aristida junciformis* subsp. *junciformis*). Only a few patches of the aoringanl species-rich grasslands remain

Geology & Soils: Apedal and plinthic soil forms derived mostly form Ecca Group (Karoo Supergroup) shale and minor sandstone and less importantly form Jurassic dolerite and sills. Dominant land type Ac, Followed by Fa.

Climate: Summer rainfall, with MAP of 915 mm, range 730 – 1 280 mm. heavy and frequent occurrence of mist provides significant amounts of additional moisture (Cedara near Pietermaritzburg has 46 misty days per year). Some of the rain is in the form of cold frontal activity, mainly in winter, spring and early summer. Thunderstorms are common in summer and autumn (Cedara: 60 days of thunderstorms per year). Mean annual evaporation 1 463 – 1 797 mm (Camp 1999a). MAT 15.8°C, absolute minimum temperature was recorded in this region in June (-10.8°C). Frosts are generally, moderate, but occasional severe frost may also occur. Further climatic conditions include short-term drought spells, hail and hot north western berg winds occurring particularly in spring and early summer.

Important Taxa Graminoids: Andropogon appendiculatus (d), Aristida junciformis subsp. galpinii (d), Diheteropogon filifolius (d), Eragrostis plana (d), Hyparrhenia hirta (d) , Sporobolus africanus (d), Themeda triandra (d), Tristachya leucothrix (d), Alloteropsis semialata subsp. eckloniana, Andropogon schirensis, Brachiaria serrata, Cymbopogon caesius, C. nardus, Digitaria, diagonalis, D. tricholaenoides, Diheteropogon amplectens, Elionurus muticus, Eragrostis capensis, E. curvula, E. racemosa, Eulalia villosa, Harpochloa falx, Heteropogon contortus, Loudetia simplex, Microchloa caffra, Monocymbium ceresiiforme, Panicum aequinerve, P. ecklonii, P. natalense, Paspalum dilatatum, P. scrobiculatum, P. urvillei, Setaria nigrirostris, S. sphacelata, Sporobolus centrifugus, Trachypogon spicatus. Herbs: Acalypha glandulifolia, Acanthospermum austral, Berkheya rhapontica subsp. aristosa, B. setifera, Commelina Africana, Conyza pinnata, Eriosema salignum, Helichrysum cephaloideum, H. simillimum, Indigastrum fastigiatum, Kohautia amatymbica, Nidorella auriculata, Pentanisia prunelloides subsp. latifolia, Sebaea sedoides var. schoenlandii, Spermacoce natalensis, Thunbergia atriplicifolia, Vernonia dregeana, V. natalensis, Wahlenbergia undulate. Herbaceous Climber: Vigna nervosa. Geophytic Herbs: Pteridium aquilinum (d), Corycium nigrescens, Drimia macrocentra, Eriospermum ornithogaloides, Gladiolus ecklonii, Habenaria dives, H. dregeana, Hypoxis multiceps, H. rigidula var. pilosissima, Rhodohypoxis baurii var. baurii, R. baurii var. platypetala, Satyrium longicauda. Low Shrubs: Helichrysum sutherlandii, Leonotis ocymifolia, Otholobium caffrum.

Biogeographically Important Taxa (both Southern distribution limit) Herb: Anisopappus smutsii. Succulent Herb: Aloe kniphofioides.

Endemic Taxa Herbs: Acalypha entumenica, Selago longiflora. Geophytic Herbs: Asclepias woodii, Albuca xanthocodon, Dierama luteoalbidum, Kniphofia latifolia, Pachycarpus rostratus, Watsonia canaliculata. Low Shrubs: Helichrysum citricephalum, Syncolostemon latidens.

Conservation: Endangered (one of the most threatened vegetation types of KwaZulu-Natal). Target 23%. Only a small fraction (0.5%) statutorily conserved in number of reserves such as Ngeli, Impendle, Blinkwater, Qudeni, Doreen Clark, Karkloof and Queen Elizabeth Park – still heavily underrepresented in conservation plans (see also analysis of ' Natal Mistbelt' by Scott-Shaw et al. (1996). More than half already transformed for plantations, cultivated land or by urban sprawl. Uncontrolled fires and poorly regulated grazing by livestock add to threats to this unique grassland. Some aliens (including Solanum mauritianum, species of Rubus, Acacia, Pinus and Eucalyptus) are of concern in places. Erosion is very low (68%) and low (24%).

5.6 Terrain/Catchment Analysis

The terrain, as identified through a desktop analysis had a slope of between 3-15° along the slope. The terrain was uneven due to drainage lines perpendicular to the slope. Numerous soil profiles were identified throughout the site. All of the non-wetland soils consisted of an Orthic A-horizon underlain by either a yellow a-pedal B-horizon (unconsolidated) or red a-pedal B-horizon. Most of the area was characterized by red clays (Hutton formation).

ArcGIS Pro and ArcScene Terrain layers were used to derive the Digital Elevation Model and was exaggerated 3 times (x3). The soils and geology were obtained from GIS layers obtained from national databases and are summarized as follows:

Geology:

- Mainly shale and sandstone of the Volksrust Formation, Ecca Group, with small areas of dolerite.

Soils:

- Plinthic catena: dystrophic and/or mesotrophic; red soils not widespread, upland duplex and margalitic soils rare.

The South African National Land Cover database was queried to confirm what landcover classes form the catchment area of Fish Eagle Dam. The catchment is dominated by commercial plantation forestry, which accounts for the majority of the contributing area to the catchment land cover. The remaining land cover is made up of built-up and settlement classes, rain-fed and non-pivot irrigated annual crops, artificial dams and canals. Natural and semi-natural cover is limited to 6.5% of the landcover area. Approximately 93.5% of the catchment has therefore been transformed from its natural state, and the catchment must be regarded as heavily impacted rather than natural. The dominance of plantation forestry is of particular hydrological relevance, as afforestation is a declared streamflow reduction activity and reduces both baseflow and total runoff to the dam, while tree-felling cycles, forestry road networks and the limited cultivated and residential areas elevate the risk of sediment and nutrient delivery to the system. The narrow riparian and wetland remnants that persist within the catchment consequently carry a disproportionate share of the residual ecological and water-quality buffering function.



Figure 10: Exaggerated (x3) Digital Elevation Model (DEM) of the catchment area around the site.

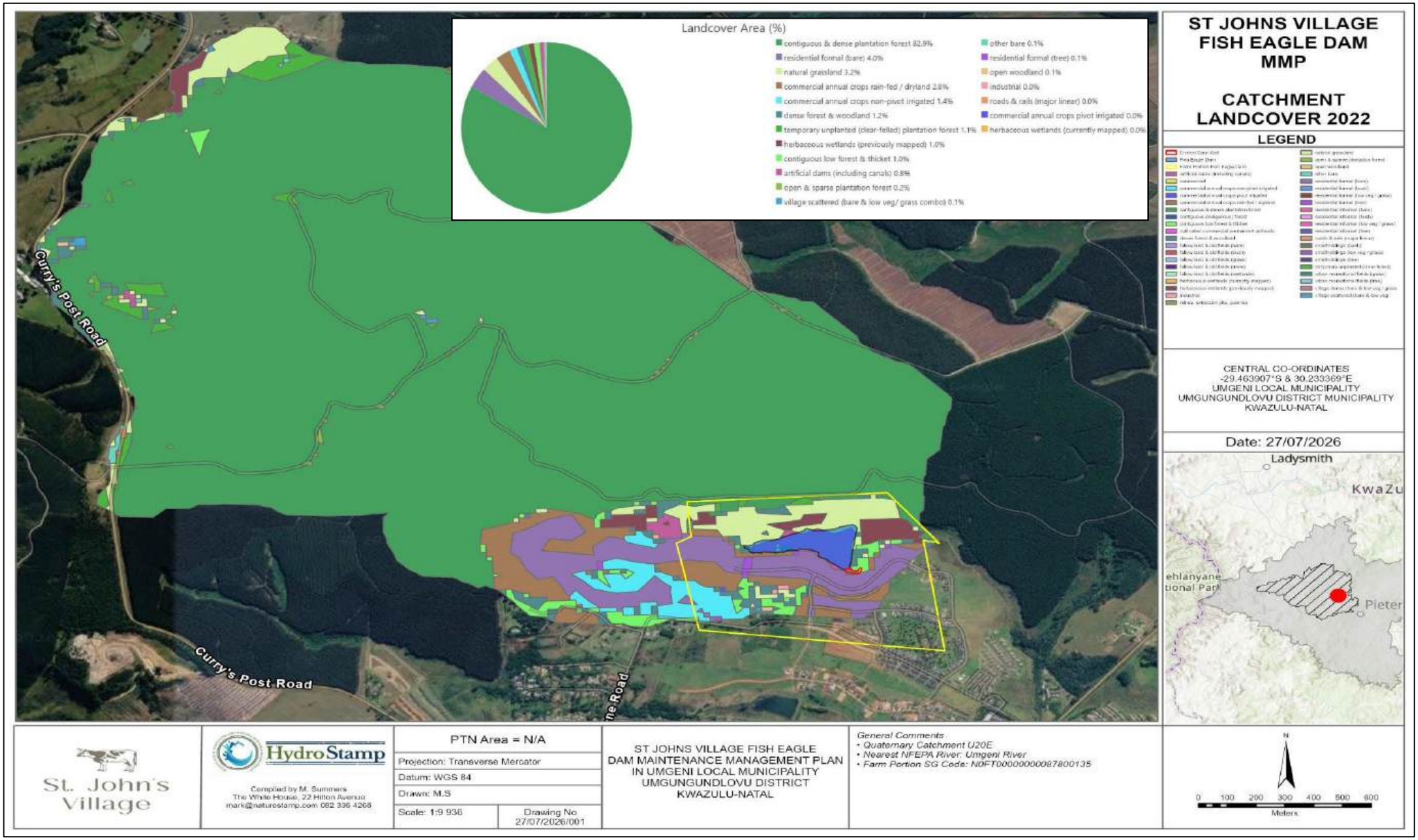


Figure 11: Landcover within the greater catchment surrounding site.

5.7 Site Sensitivity Verification

A site sensitivity verification was undertaken on the 25th August 2026 to confirm or dispute the identified sensitivity as determined through the screening tool.

5.7.1 Identified Theme Sensitivities (DFFE Screening Tool)

The site sensitivity as identified by the National Web-Based Environmental Screening Tool Shows that the site is noted to be of Very High Sensitivity within the Fish Eagle Dam extent and greater area. Interrogation of the various databases confirms that this designation aligns with the NFEPA wetland designation and the Strategic Water Source Area (SWSA), particularly the Southern Drakensberg SWSA, which feeds major river systems, including the uMngeni catchment and supplies water directly to major economic hubs like Durban, Pietermaritzburg, and Port Shepstone. The entire footprint area falls within a very high sensitivity area (**Figure 12**).

While there may be temporary impact to the watercourse on site during the repair and maintenance of the Fish Eagle Dam (such as localized sediment disturbance or temporary flow alterations), the long-term benefits of the repair align directly with the goals of protecting a Strategic Water Source Area, such as:

1. Prevents catastrophic water loss: an eroding dam wall risks failure or severe leaking. Repairing it ensures the dam retains its intended capacity, securing the water supply that the SWSA is meant to provide to downstream populations and industries.
2. Halts artificial sedimentation: an eroding wall washes unnatural amounts of sediment downstream. This siltation degrades water quality, chokes natural river ecosystems, and reduces the storage capacity of downstream reservoirs. Fixing the wall stops this destructive cycle.

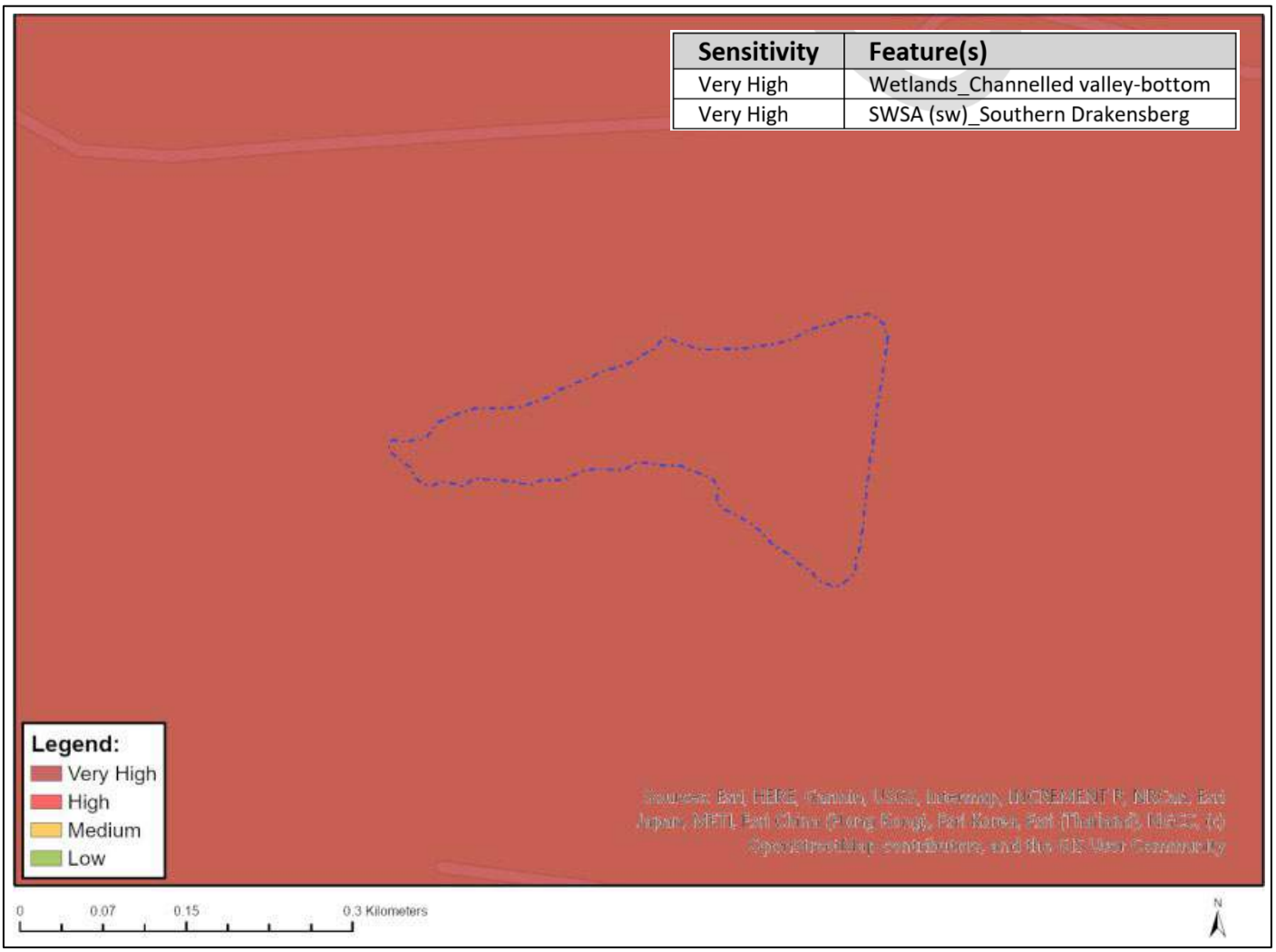


Figure 12: DFFE Screening Tool Aquatic Sensitivity output.

6. SITE INSPECTION

The following wetland/riparian systems were identified within 500 m of the study area. Each system was grouped into Hydrogeomorphic units (HGMs):

- HGM Units 1: Channeled Valley Bottom Wetland.
- HGM Units 2 and 3: Seep Wetlands.
- HGM Units 4: Spring
- HGM Unit 5: Fish Eagle Dam.

Wetlands were identified and delineated as "no-go" areas and have been avoided by the layouts. No hydric soil characteristics were found outside of the wetland/riparian areas. The hydric soils, identified by gleyed or mottled characteristics, were found at a depth of 0-20 cm along the modified edges of the visibly clear wetland areas. Please see **Figure 13** for delineations of on site surface water features. Recent burns meant that the vegetation was very difficult to identify.

Table 10: Description of HGM units

Feature	Wetland/Riparian/Artificial	Description & Vegetation	Soil Characteristics	On-site images
(HGM 1)	Channeled Valley Bottom Wetland	Valley bottom system both with a defined channel emanating from upstream drainage / overland flow, and fed by seep wetlands. Additional inputs frm stormwater from St Johns is visible, however the largest modification is the Fish Eagle Dam which is situated in the system. Numerous wetland obligate species noted including *Typha capensis*. The ripiarian zone is maintained and limited in woody plants, however some alien and invasives noted below the dam wall.	Mottle % - 2-5% Hue – 7.5YR Value – 5 Chroma – 1 (Dark Gray) Depth sampled: 0-0.5m High Organic matter content in the upper layer	
(HGM 2 and 3)	Seep Wetland	Hillslope seep wetlands draining towards and adjoining CVB wetlands. Systems have been protected from stream flow reduction activities by being part of the buffer zones / conservation zones around St Johns. Species composition matches that of the CVB wetlands.	Mottle % - 2-5% Hue – 7.5YR Value – 5 Chroma – 1 (Dark Gray) Depth sampled: 0-0.5m High Organic matter content in the upper layer	
(HGM 4)	Spring	Spring bubbling into the seep area to the south east of site. System fed by groundwater expressing at the surface. Vegetation as per the above descriptions	Mottle % - 2-5% Hue – 7.5YR Value – 5 Chroma – 1 (Dark Gray) Depth sampled: 0-0.5m High Organic matter content in the upper layer	

(HGM 5)	Fish Eagle Dam	Wetlands forming on the edge of Fish Eagle Dam, resulting in clear wetland obligate species present such as Typha capensis, Cyperus dives, Isolepsis spp, and Juncus effusus.	Artificial	

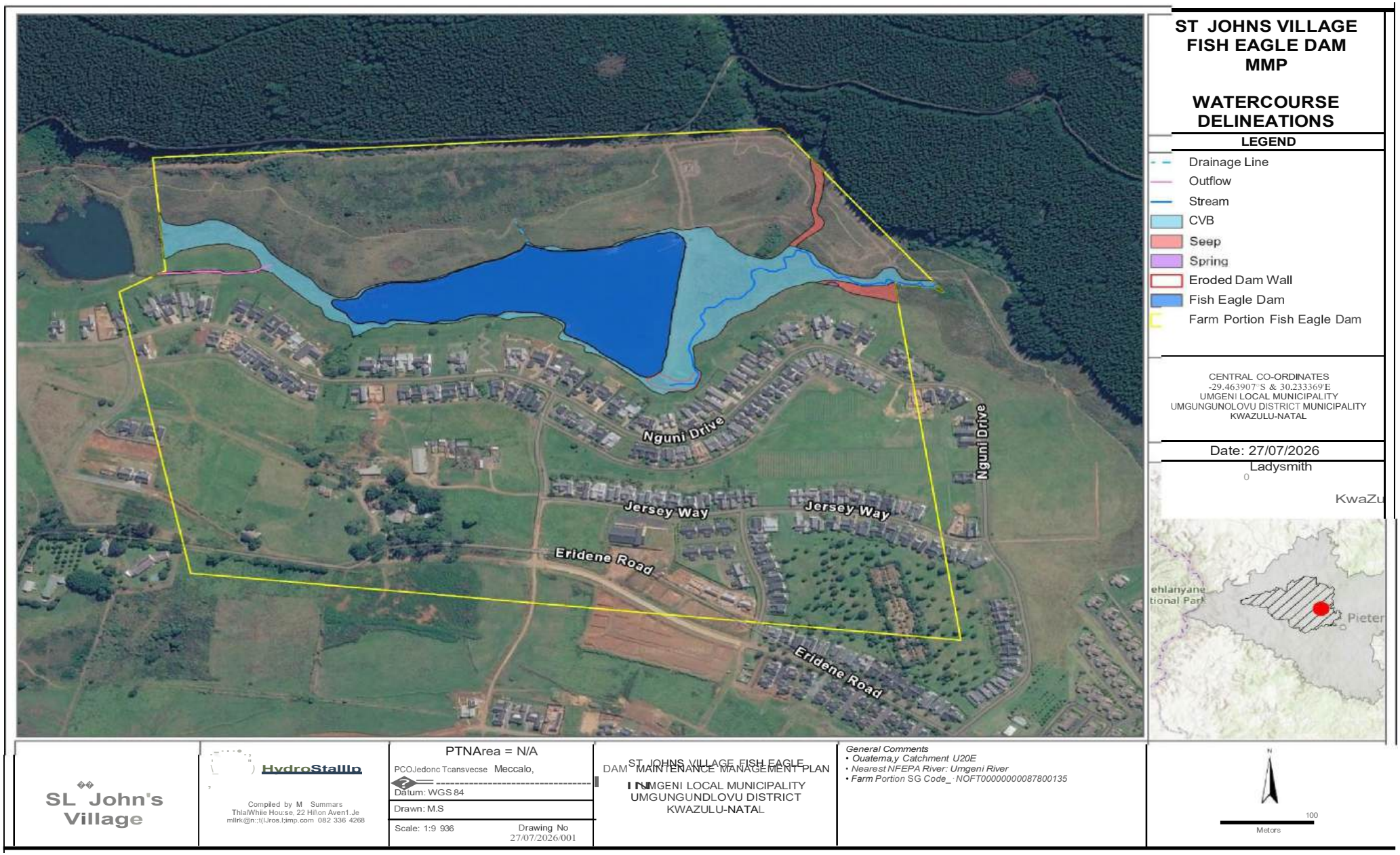


Figure 13: Delineated surface water features at Fish Eagle Dam.

6.1 Site sensitivity verification statement

The proposed activity comprises the repair and maintenance of the existing Fish Eagle Dam wall situated within a CVB wetland (HGM 1) that is fed by adjoining hillslope seep wetlands (HGM 2 and 3) and a groundwater-fed spring (HGM 4), all located downstream of the dam. The works are confined to the existing wall and its immediate surrounds and no new footprint is proposed within the seep wetlands, the spring or the upstream channelled valley bottom wetland. The wetland units remain in a moderately modified state, with a PES category of C for CVB wetlands (the impacted wetland). This falls within NFEPA-designated wetlands as well as the Southern Drakensberg SWSA, which feeds the uMngeni catchment and supplies the Durban and Pietermaritzburg.

The motivation for the project is the progressive erosion and deterioration of the existing dam wall, which presents a risk of partial or complete failure. Continued deterioration would result in the uncontrolled release of water and the mobilisation of accumulated sediment into the downstream channelled valley bottom wetland, with consequent loss of wetland habitat, smothering of wetland vegetation, incision of the downstream channel and a decline in downstream water quality. Repair and maintenance of the wall therefore carries a clear net environmental benefit in that it restores the structural integrity and intended storage capacity of the dam, prevents water loss from a system located within a SWSA and halts the artificial sedimentation and bank erosion currently generated by the eroding wall, thereby reducing risk to downstream users and ecosystems. This benefit is reinforced by the condition of the contributing catchment, of which approximately 93.5% has been transformed, predominantly by commercial plantation forestry (a declared streamflow reduction activity), leaving the remaining wetland and riparian remnants to carry a disproportionate share of the flow and water-quality buffering function.

Taking the above into consideration, **the Very High sensitivity designation provided by the DFFE Screening Tool is agreed with, particularly in light of the NFEPA wetland designation and the Southern Drakensberg SWSA designation**. The impacts associated with the repair and maintenance activities are, however, temporary, localised and largely confined to an existing artificial structure, and are of a fundamentally different character to activities that result in the permanent loss of wetland extent or function. **This report has therefore been drafted as a full assessment as per the protocols, given the Very High sensitivity designation of the site**.

Impacts are considered to be medium during the repair and maintenance phase from a risk perspective (Section 21 (c) and (i)), which is addressed in Section 8. Should the mitigation measures provided in Sections 8 and 9 and the EMPr be implemented, the residual site risk for the project is considered to be low, and the long-term post-repair condition of the system is expected to represent an improvement on the current baseline.

6.2 Present Ecological State (PES)

6.2.1 Index of Habitat Integrity for riparian areas

The IHI (Index of Habitat Integrity), version 2 (Kleynhans, 2012) is used in order to determine both riparian and wetland habitat integrity of the CVB Wetland (via desktop) and wetland units. As part of the IHI assessment a specific set of defined impact indicators are assessed qualitatively for both the instream and riparian components of the river unit.

The results for the HGM units around site show a PES category for wetlands of C (79.08: Table 11). C is described as "the modifications are present at a small number of localities and the impact on habitat quality, diversity, size and variability is also limited". The key change is the impact of flow modification, channel modification, bed modification and exotic macrophytes due to the Fish Eagle Dam.

Table 11: PES score using the Index of Habitat Integrity tool (Kleynhans, 2012) for the identified wetlands.

Criterion	CVB HGM Unit 1
Water Abstraction	8
Flow Modification	8
Bed Modification	6
Channel Modification	8
Water Quality	2
Inundation	7
Exotic Macrophytes	3
Exotic Fauna	0
Solid Waste Disposal	0
Category	**79.08**
Integrity Class	**C**

6.2.2 WET-Health (Macfarlane et al., 2020) of wetlands

A WET-Health assessment was undertaken for the channelled valley bottom wetland (HGM 1, 3.3 ha) within which the Fish Eagle Dam is situated. Wetlands that are part of the same system but have split due to historical changes were grouped together in the health assessments. Wetlands of the same type were classified together unless significant differences were noted.

- *Hydrology*

The present hydrological state of the channeled wetland was given a score of **C (impact score 3.9; 61%), meaning that the system is "Moderately modified. A moderate change in ecosystem processes and loss of natural habitats has taken place but the natural habitat remains predominantly intact.**" The MAP: PET ratio indicates that these wetlands are dependent on direct precipitation falling onto the wetland more than inflows from upstream catchments. The trajectory of change if the status quo remains is noted to remain the same (→).

The key factor influencing hydrological impacts on the wetland is the Fish Eagle Dam impoundment itself, which alters natural water distribution, retention and flow timing within the channelled valley bottom system. Commercial plantation forestry within the contributing catchment, a declared streamflow reduction activity, and stormwater inflows from the surrounding development further modify water inputs to the system.

- *Vegetation*

The present state of wetland vegetation of the channeled valley bottom wetlands has been given a class of **B (impact score 1.0; 90%); "Largely natural with few modifications. A slight change in ecosystem processes is discernable and a small loss of natural habitats and biota may have taken place."** This classification reflects a largely intact wetland vegetation community dominated by wetland obligate species, including Typha capensis, Cyperus dives, Isolepis spp. and Juncus effusus, with alien and invasive species restricted to localised patches below the dam wall. The trajectory of change if the status quo remains is noted to remain the same (→).

- *Geomorphology*

The overall geomorphological health of the channeled valley bottom wetlands was classified as B (impact score 1.6; 84%), which is "Largely natural with few modifications. A slight change in ecosystem processes is discernable and a small loss of natural habitats and biota may have taken place." This reflects localised sediment retention behind the dam wall and minor bank erosion below the wall, with sediment distribution and retention patterns elsewhere in the system remaining largely unaltered. The trajectory of change if the status quo remains is likely to remain stable (→).

- *Water Quality*

The overall water quality for the channelled valley bottom wetland is noted to be B (impact score 1.9; 81%), largely natural with few modifications, with a slight change in ecosystem processes discernable. No major point source pollutants were noted on site, however diffuse inputs from the transformed catchment and stormwater from the surrounding development are likely. The trajectory of change if the status quo remains is likely to remain stable (→).

- *Overall Health*

The overall health based on the **combined impact score of 2.3 (77%) is C – Moderately Modified. "A moderate change in ecosystem processes and loss of natural habitats has taken place but the natural habitat remains predominantly intact.**" The natural habitat therefore remains predominantly intact. The primary impact upon this system is the inundation and flow modification associated with the Fish Eagle Dam, supported by catchment-scale streamflow reduction from commercial plantation forestry.

The goal is to maintain the state but still address the changes identified below:

- Ensure no change in water quality of these systems;
- Manage water quality from development areas;
- Ensure developments avoid wetlands; and
- Ensure preservation of the wetlands by applying a suitable buffer.

Table 12: Summarized PES for wetlands for all modules for the site.

	Wetland PES Summary			
Wetland name	**HGM 1**			
HGM type	Channelled VB wetland laterally maintained (i.e. with substantial lateral inputs)			
Wetland area (Ha)	3.3 Ha			
Final (adjusted) Scores				
PES Assessment	**Hydrology**	**Geomorphology**	**Water Quality**	**Vegetation**
Impact Score	3.9	1.6	1.9	1.0
PES Score (%)	61%	84%	81%	90%
Ecological Category	**C**	**B**	**B**	**B**
Trajectory of change	→	→	→	→
Confidence (revised results)	Medium	Medium	High	High
Combined Impact Score	2.3			
Combined PES Score (%)	77%			
Combined Ecological Category	**C**			
Hectare Equivalents	2.6 Ha			

6.2.3 Wet EcoServices (EIS)

The WET-EcoServices output indicates a system whose value lies primarily in biodiversity maintenance, recreational and the regulation of downstream flow, rather than in provisioning or water treatment services (**Figure 14**). The highest supply scores belong to Biodiversity maintenance (3.85), Tourism and recreation (3.06) and Water for human use (3.00), with Stream flow regulation, Sediment trapping and Carbon storage all supplied at moderate levels (2.00 to 2.33). This confirms that the channelled valley bottom wetland and the impoundment act as a habitat refuge within a heavily transformed catchment, as a sustained source of downstream flow, and as a central landscape and recreational feature of the estate. Demand is highest for Biodiversity maintenance, Tourism and recreation and Carbon storage. Erosion control is the only service for which demand materially exceeds supply, which is consistent with the eroding dam wall and the bank erosion recorded below it. In the context of the repair and maintenance of the wall, the services most sensitive to disturbance are therefore biodiversity maintenance, flow regulation and recreational amenity, all of which depend on the continued integrity of the impoundment, while the works themselves directly address the one service currently in deficit.

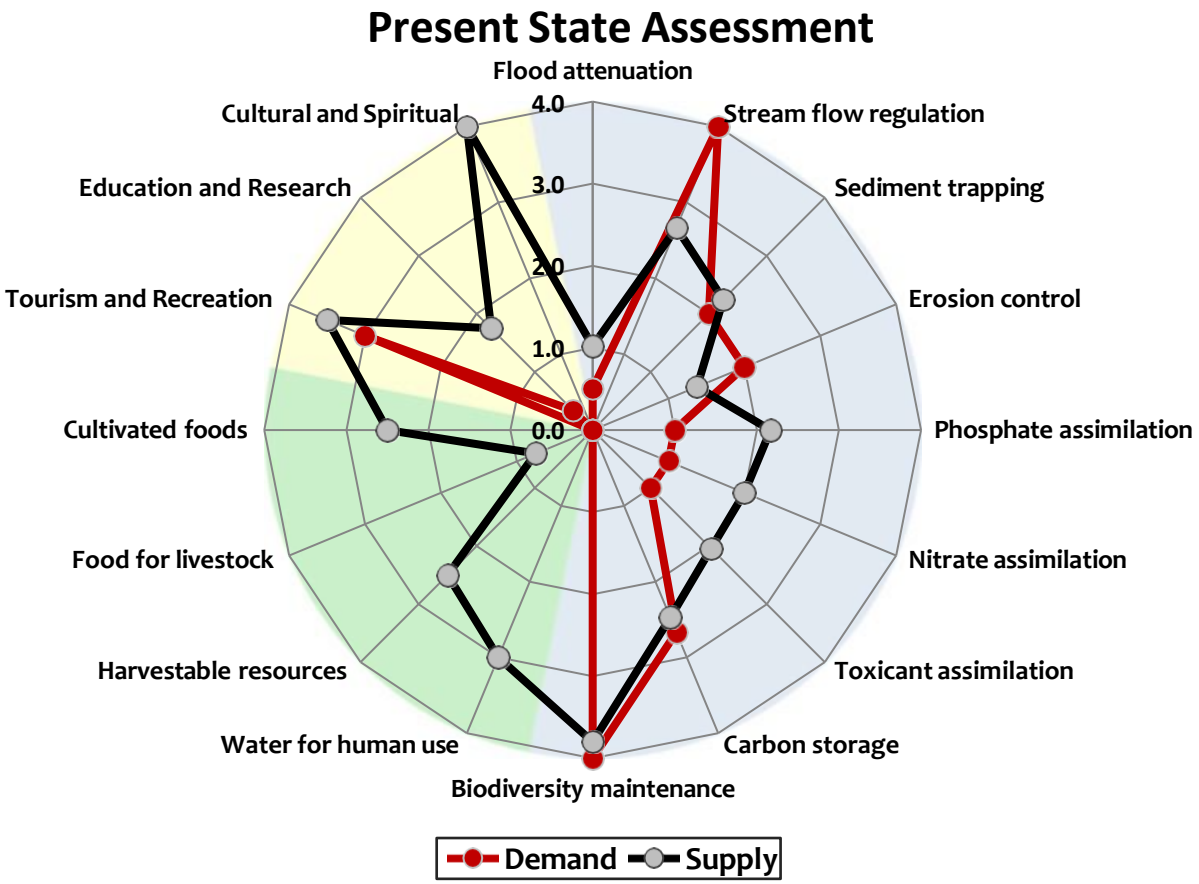


Figure 14: Wetland ecosystem services supply and demand output for HGM 1 (channelled valley bottom wetland).

6.3 Final Buffer Areas

As per Section 3.8, a range of watercourse buffers have been proposed, however onl the 32m NEMA buffer zone is applicable due to the project being for repair and maintenance. The higher the sensitivity of the area, the greater the proposed buffer. These areas show 'no-go' areas, where further developments should avoid as much as possible. Considering that the activities have taken place and the PES of the systems on site, a 32m standard NEMA buffer should be placed around all watercourse for any future development (**Figure 15**).

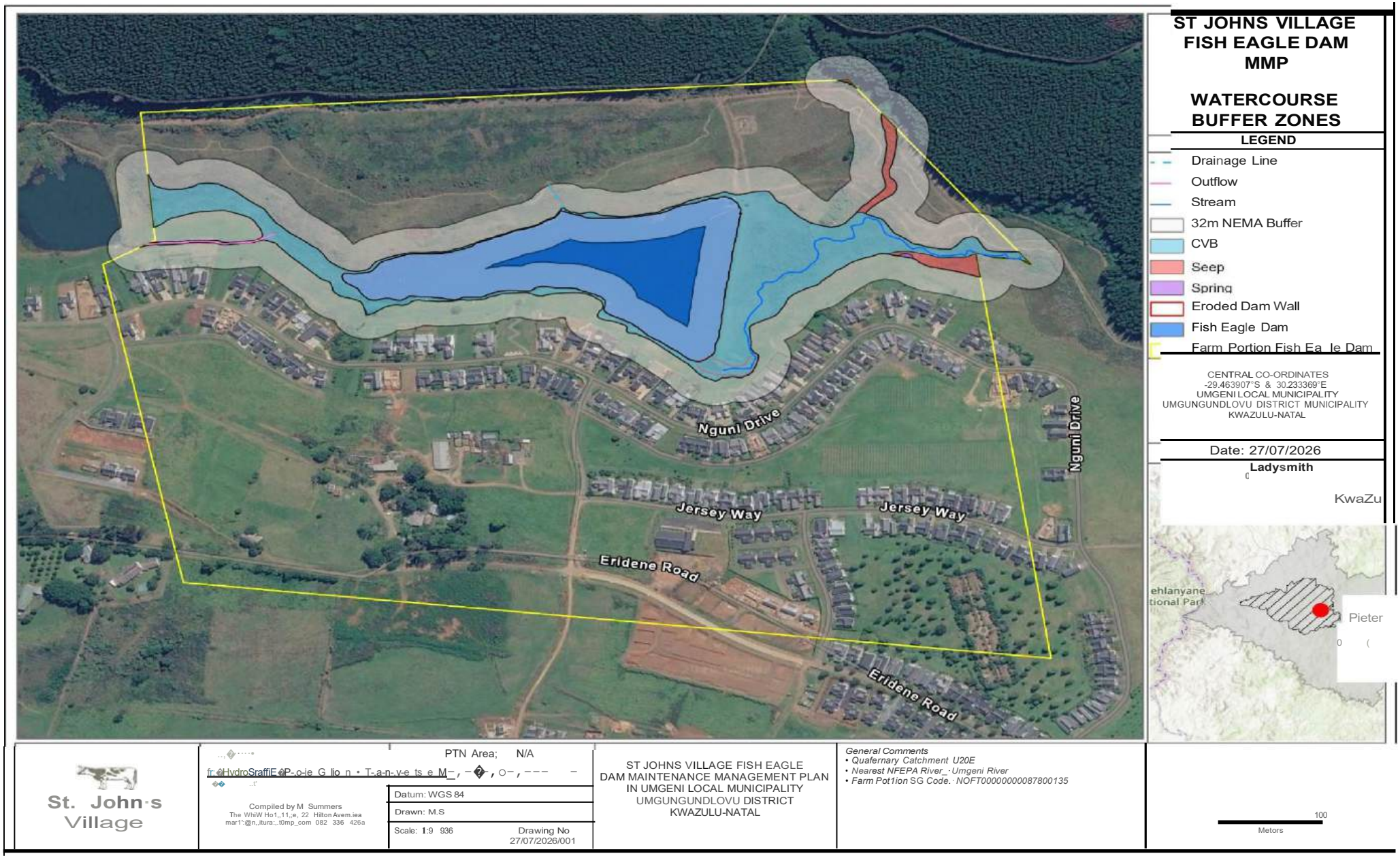


Figure 15: HGM buffers derived for the project

6.4 Water Quality Results

The DWS General Limits for wastewater discharge into a water resource (as per the National Water Act General Authorisations) are effluent discharge standards and do not formally apply to ambient in-stream water quality; no point-source discharge is associated with the proposed works. They are used here as a screening benchmark only, to place the ambient results in a familiar regulatory context. On that basis, most determinands fall well within the general limits (**Table 13**). Two determinands sit above the screening values:

- Suspended Solids (Upstream): The upstream sample shows a concentration of 82 mg/l. This exceeds the standard DWS General Limit of 25 mg/l. This is high due to low flow conditions and stirring up of sediments during sampling rather than project related impacts.
- Dissolved Manganese (Downstream): The downstream sample recorded dissolved manganese at 306 µg/l (or 0.306 mg/l), above the screening value of 0.1 mg/l (100 µg/l). This is consistent with manganese mobilisation under the lower pH and anaerobic conditions typical of accumulated dam sediments, and is a baseline characteristic of the impoundment rather than a discharge-related effect.

Overall, the water quality above and below Fish Eagle Dam shows distinct variations between the upstream and downstream sampling points. The most significant finding is the high load of Suspended Solids entering the system upstream (82 mg/l), however this can be attributed to low flow and stirring up of sediments to get enough water to sample. Conversely, while suspended solids settle or dilute downstream (<18 mg/l), the downstream water experiences a notable pH drop (to 5.8) and an increase in dissolved manganese (306 µg/l), which exceeds standard general discharge limits. This mobilization of manganese is frequently correlated with lower pH environments or anaerobic conditions in dam sediments. Nutrient levels (ammonia, nitrates, orthophosphates) and organic loading (COD) remain comfortably low and undetected across both sites.

Table 13: Water Quality Results upstream and downstream of Fish Eagle Dam at St Johns.

Determinand	Units	Upstream (021747/26)	Downstream (021748/26)
pH at 25°C	pH units	7.2	5.8
Electrical Conductivity at 25°C	mS/m	15	10
Suspended Solids at 105°C	mg/l	82	<18
Chemical Oxygen Demand (Total)	mg O2/l	<34	<34
Dissolved Calcium	mg Ca/l	14.1	6.99
Dissolved Magnesium	mg Mg/l	6.96	4.69
Dissolved Sodium	mg Na/l	100	77
Dissolved Iron	µg Fe/l	44	16.2
Dissolved Manganese	µg Mn/l	23	**306**
Dissolved Zinc	µg Zn/l	17.1	<5
Total Boron	µg B/l	61	31
Total Ammonia	mg N/l	<0.25	<0.25
Nitrate/Nitrite	mg N/l	<0.5	<0.5
Orthophosphate	mg P/l	<0.1	<0.1
Total Oil & Grease*	mg/l	15 <	<1s
Faecal Coliforms*	MPN/100ml	66	<1 (Not detected)

7. ASSESSMENT OF IMPACTS

The primary surrounding impacts are noted at the eroding dam wall, from stormwater inflows off the surrounding estate, and from alien woody species within the riparian zone below the wall. Historical analysis showed no evidence of cultivation or artificial drainage of the wetland systems on site. The repair and maintenance of the dam wall will involve localised earthworks on and immediately around the existing wall, which may lead to sediment wash, temporary flow alteration and localised disturbance of marginal wetland vegetation. The geomorphology is in a largely natural state.

The primary direct impact to the channelled valley bottom wetland and the adjoining seep wetlands would be related to the repair and maintenance of the dam wall and its associated water uses on the hydrology, geomorphology and vegetation of the system. A temporary increase in vehicle movements will be experienced during the works, limited to the existing estate access roads.

A summary of impacts was compiled to allow for a risk assessment to be undertaken for wetlands within 500m of the proposed development footprint. The risk assessment informs the level of water use authorisation, if any, that DWS may consider necessary for the works.

7.1 Present Impacts

Within and around the respective study area buffers, the existing impacts on the watercourses and respective catchment areas include -

- The clearance of natural habitat for commercial plantation forestry, residential development and estate infrastructure;
- Stormwater discharge from the surrounding developed areas;
- Impoundment of the channelled valley bottom wetland by the Fish Eagle Dam;
- Streamflow reduction associated with commercial plantation forestry in the catchment;
- Sedimentation of the wetland and dam basin from erosion of the dam wall and catchment;
- Alien and invasive plant encroachment within wetlands and buffer zones;
- Concentrated flow paths from forestry roads, estate hardstanding and stormwater outlets;
- Dumping of litter,

In the broader Water Management Area (i.e. local scale), some impacts are present as noted for the site. Additional existing impacts on the watercourses and respective catchment areas include -

- Infrastructure development within wetland systems (wetland encroachment) or river banks – leading to a direct loss of wetland systems and decrease in provision of ecosystem services;
- Agricultural activities such as irrigated pivots, dryland crops, poultry farming - increased nutrients in the watercourses, dams and altered hydrological regime;
- Illegal and unregulated abstraction of water from major water resources;
- Expansion of tourism and rural areas resulting in an increased water demand and an increase in water pollution;
- Informal and formal watercourse crossings – leading to the change in hydrological regime;
- Litter and solid waste disposal – direct water pollution; and
- Poor or absent sanitation – direct water pollution.

7.2 Potential Impacts During Construction

Some impacts are likely during construction. These include -

Table 14: Impact Drivers and Description

ACTIVITY / DRIVER OF IMPACT	IMPACT	DESCRIPTION OF HOW IMPACT OCCURS
Increased sediments/spoil sites	**Enhanced erosion potential**	• The reduction in vegetation cover results in open bare soil therefore reducing the surface roughness and increasing the erosive potential to the elements (wind and rain). Sheet wash, rill and gully erosion is likely and may lead to the collapse or slumping of downstream wetland/stream bank areas that would bury marginal wetland habitat. • An increase in compaction of the soils along the edge of the site where heavy machinery traverses may lead to an increase in the runoff.
	Decrease in water quality	• Sedimentation wash into the wetland and dam basin from earthworks at the dam wall. • As a result of contaminants from heavy machinery (oil, fuel) infiltrating / washed into the system as well as sediments from the implementation area.
	Spread of alien invasives	• As these plants colonise stockpiles and spoil sites / spoil sites given their easily dispersed seed.
	Continued alteration of flow pattern	• A result of concentrated flow from modified surfaces and storm water channels. A general change in flow regimes. • Due to works undertaken directly within the watercourse at the dam wall
Excavation and reprofiling at the dam wall	**Direct loss of wetland and riparian areas**	• Direct disturbance of wetland and riparian vegetation within the immediate working area at the dam wall and its existing access route.
Alteration of hydrology	**Alteration of flow patterns**	• Temporary increase in surface runoff from compacted and disturbed working surfaces during the works. • Increase in the erosion potential due to concentrated flow paths. • Increase in the flood peak due to a quicker response time. • Increase risk of pollutants being washed into the system. • Alteration of streamflow and baseflow during temporary drawdown of the impoundment for the duration of the works
Clearance of vegetation	**Loss of wetland area and marginal vegetation**	• Direct removal of marginal indigenous species within the working area and material laydown area at the wall. • The removal of indigenous species and further ruderal and alien plant invasion will occur. This may also further • Increase the rate of erosion. • The likely introduction of alien seeds in spoil obtained from nearby areas. • Exposed slopes will result in erosion and sedimentation of downstream wetlands
High activity of heavy machinery and construction staff on-site	**Air pollution affecting wetland fauna**	• As a result of excessive air emissions from heavy machinery and equipment. • As a result of dust from the implementation working area.
	Noise and disturbance affecting wetland fauna	• Excessive noise emissions from heavy machinery and equipment. • Operation of plant during the repair works.
	Decrease in water quality **(impact to aquatic flora and fauna; and water supply)**	• As a result of potential leaks of fuel, grease and oil from the heavy machinery. Wash related to the above-mentioned changes during rainfall events will lead to the movement of these substances into the soil and the watercourse systems. • As a result of improper storage and handling of hazardous chemicals such as fuel and oil as well as chemicals relating to staff ablution facilities. • As a result of any spills during implementation. • Due to sedimentation and dust from the increase in vehicular traffic during the works. • Due to mixing of the instream sediments, impacting upon aquatic biodiversity and downstream water quality.

7.3 Potential Impacts During Operation

The majority of the impacts will be during construction. However, some impacts are likely during operation. These include -

- **Increase in pollution:** an increase in pollution around the site including petro-chemicals from vehicle/transport and human waste during maintenance activities;
- **Increase in overall edge effects on wetland:** heightened activity in the area.
- **Impact on surface and groundwater resources:** altered inundation levels behind the repaired wall potentially affecting recharge of the adjoining seep wetlands;

Table 15: Impact Drivers and Description – Operation Phase

ACTIVITY / DRIVER OF IMPACT	IMPACT	DESCRIPTION OF HOW IMPACT OCCURS
Discharge over and below the repaired dam wall	**Erosion of the wetland channel below the wall**	• Removing sand alters the channel's morphology, which increases the speed of flowing water. This leads to accelerated erosion of riverbanks, enhanced flood scouring, and sinking water tables
Discharging of water / waste water into the environment	**Untreated waste water being discharged into water resources**	• On site ablution facilities may release chemicals into the surrounding watercourse resulting in a change in the chemical and biological characteristics of the water resources
Disturbance of accumulated sediment at the dam wall	**Increased sedimentation**	• Disturbance of sediment accumulated behind the wall results in suspended sediments being released into the channel below the wall, changing the water quality and impacting upon the aquatic biodiversity. • Turbidity clogs aquatic environments and smothers the instream spawning habitats of fish and benthic macroinvertebrates. It can also mobilize buried toxicants or result in chemical spills from heavy machinery.
Stormwater runoff along the disturbed working surfaces and cut-off drains	**Soil wash**	• Disturbance of the soil profile and vegetative cover may prompt a change in flow path, with surface runoff running in rills along the edges. • The risk on natural wetlands within 500 m of the site is low but measures should be taken to manage storm water.
Greater human/vehicle movement through the site	**Increase in pollution**	• An increase of machine operation may lead to further pollution such as noise, dust, oil and similar hazardous materials.

7.4 Impacts associated with Climate Change Projections

The following potential impacts may arise as a result of climatic changes in the future, which would possibly effect the watercourses and surrounding environment:

- Increase in extreme weather events such as powerful rain/thunderstorms, strong winds, intense heat waves, severe coldness and increased lightning strikes.
- This would likely cause flooding within the watercourses, as well as fallen trees which would damage the surrounding environment and on site infrastructure.
- The risk of contamination of watercourses would increase due to significantly greater volumes of runoff, which may lead to disease outbreaks and human health problems.
- The changing environmental conditions within the study area could potentially increase the invasion of alien plants species within and surrounding watercourses due to newly suitable temperature and weather conditions.
- Alien vegetation uses more water than indigenous vegetation, therefore reducing natural water supplies / choking natural watercourses. Alien plants have the ability to overpower indigenous vegetation and becoming overgrown within rivers and streams.

7.5 Alternatives

No alternatives have been provided, as the activity is the repair and maintenance of an existing structure in its current position. Retaining the existing dam wall alignment and footprint, with the watercourse delineations and associated buffer zones observed for the duration of the works, is deemed the preferred alternative.

7.6 No Go alternative

The 'no-go' alternative is the option of not constructing the project, where the status quo of the current land use will occur. In this case the continued erosion and deterioration of the dam wall would persist, with an ongoing risk of partial or complete wall failure, uncontrolled release of impounded water and mobilisation of accumulated sediment into the downstream channelled valley bottom wetland. The 'no-go' alternative is therefore not preferred from a watercourse perspective, and the repair and maintenance of the wall is considered acceptable.

7.7 Impact Ratings

The impacts identified in Sections 7.1 to 7.4 have been rated using the impact assessment methodology presented in Annexure G. Each impact is rated before and after mitigation.

The recommended mitigation measures below are drawn from, and must be read together with, the EMPr input in Section 8 (Table 16) and the rehabilitation actions in Section 9 (Table 17). Where a measure originates in the EMPr, the relevant phase is cited.

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S
Construction Phase																				
Loss and disturbance of wetland and riparian vegetation	Direct disturbance and removal of marginal wetland and riparian vegetation within the working area at the dam wall and along the existing access route, introduction and spread of alien and invasive species on disturbed surfaces, and temporary noise, dust and disturbance to wetland fauna.	1	4	1	2	2	3	30	-	Medium	• Works and laydown confined to the existing wall and adjacent working area; upstream wetland, seeps and spring demarcated no-go (Section 8, planning). • 32 m no-go buffer pegged out; machinery confined to designated access points (Section 8, operation). • Monthly alien and invasive control; compacted areas ripped and seeded with an indigenous grass mix (Section 8, construction). • Topsoil stripped, stockpiled and replaced in its horizon; margins replanted with wetland species and a veld and sedge mix (Section 9.2).	1	3	1	1	1	2	14	-	Low

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S
Erosion, sedimentation and decrease in surface water quality	Exposed and compacted soils at the wall reduce surface roughness and increase erosive potential, with sheet wash, rill and gully erosion delivering sediment to the channelled valley bottom wetland. Suspended sediment is released from material accumulated behind the wall, and hydrocarbon, cement and sanitation related contamination may arise from plant and site facilities.	2	4	1	2	2	3	33	-	Medium	• In-channel works restricted to the dry season, with silt curtains or earth berms isolating the working area (Section 8, operation). • Silt fencing and hessian nets along the working area; stormwater outflows protected with cut-off berms (Section 8, construction). • Spoil and material stockpiles kept outside the wetland buffer and bermed or silt fenced (Section 8, operation). • Drip trays, spill contingency plan, fuel storage bunded to 110%, and no refuelling, cement mixing or ablutions within 100 m of the watercourse (Section 8, construction).	1	3	1	1	1	2	14	-	Low
Alteration of flow regime and temporary drawdown of the impoundment	Temporary drawdown and diversion of flow to allow works on the wall alters flow timing, volumes and	2	4	1	2	1	3	30	-	Medium	• Works completed in winter or low flow, so that drawdown coincides with the	1	4	1	1	1	2	16	-	Low

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S
	inundation levels within HGM 1 and the adjoining seep wetlands and spring.										lowest inflow (Section 8; Section 9.1). • Drawdown limited to the minimum level and duration required, with flow released downstream throughout. • Stormwater structures to promote infiltration and dissipate flow, with wetland species planted in drains (Section 8, construction). • Surface flows into the wetland reinstated and compaction prevented on completion (Section 9.2).									
Operational Phase																				
Erosion of the wetland channel below the repaired wall	Discharge over and below the repaired wall concentrates flow and energy in the channel below the structure, with potential for bank erosion and channel incision.	2	3	1	2	3	3	33	-	Medium	• Reno-mattresses and gabion baskets keyed into natural ground at discharge points, with no flow paths around them (Section 8, construction). • Stormwater infrastructure maintained;	1	2	1	1	2	2	14	-	Low

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S
											disturbed areas monitored monthly through the first wet season (Section 8, operation). • Steep drops reshaped to 1:3 and stabilised with coir logs or geotextiles, then planted with indigenous riparian species (Section 8, operation). • Obligate wetland species planted below the wall to increase roughness and slow flows (Section 9.2).									
Altered inundation levels affecting the adjoining seep wetlands and spring	Restoration of the design storage level alters the inundation regime at the dam margins and may affect the groundwater relationship that supports the adjoining hillslope seep wetlands (HGM 2 and 3) and the spring (HGM 4).	1	3	2	2	3	2	22	-	Low	• Impoundment restored to its original design level, with no raising of the full supply level. • Seeps and spring retained within the existing demarcated buffer and conservation zones. • Wetland extent, vegetation and hydric soils at the seeps and spring	1	3	1	1	3	2	18	-	Low

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S
											monitored post-rehabilitation.									
Pollution and stormwater impacts from ongoing maintenance	Periodic maintenance of the wall and its surrounds introduces hydrocarbons from vehicles and plant, human waste and litter, while disturbed and compacted surfaces around the wall increase localised runoff, edge effects and the risk of pollutants being washed into the system.	1	3	1	1	2	2	16	-	Low	• Oils, fuels and hazardous substances stored beyond 100 m of the watercourse in a bunded area, with spill kits on site (Section 8, construction). • Plant checked for leaks before entry and serviced away from the watercourse and its buffer (Section 8, construction). • Stormwater structures maintained to promote infiltration; litter and solid waste removed (Section 8, operation).	1	2	1	1	2	1	7	-	Low
Restored integrity of the dam wall and avoided catastrophic failure	Repair of the eroding wall removes the risk of partial or complete wall failure, the uncontrolled release of impounded water and the mobilisation of accumulated sediment into the downstream	2	4	1	1	3	3	33	+	Medium	• Repair designed to restore full structural integrity and storage capacity, and to pass the 1:100 year flood (Section 8, planning). • Inspection and maintenance of the wall and stormwater structures carried into	2	4	1	1	3	4	44	+	High

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S
	channelled valley bottom wetland, and secures the assurance of supply that the Southern Drakensberg Strategic Water Source Area is intended to provide to downstream users and ecosystems.										the EMPr (Section 8, operation). • Disturbed margins rehabilitated to reinstate the wetland environment around the wall (Section 9.2).									
Decommissioning Phase																				
Decommissioning	No decommissioning phase is proposed. The activity is the repair and maintenance of an existing dam wall, which will remain in place for the operational life of the estate. Should the impoundment be decommissioned in future, the impacts would be equivalent to the construction phase impacts assessed above, and the same mitigation measures, together with the rehabilitation actions in Section 9, would apply.	-	-	-	-	-	-	-	-	-	As per the construction phase measures above and Section 9.	-	-	-	-	-	-	-	-	-
Residual Impacts																				
Retained impoundment of the channelled	The impoundment of HGM 1, and the associated loss of	2	4	3	2	4	2	30	-	Medium	• The repair does not increase the impoundment extent,	2	3	2	2	3	2	24	-	Low

ENVIRONMENTAL PARAMETER	ISSUE / IMPACT / ENVIRONMENTAL EFFECT/ NATURE	ENVIRONMENTAL SIGNIFICANCE BEFORE MITIGATION									RECOMMENDED MITIGATION MEASURES	ENVIRONMENTAL SIGNIFICANCE AFTER MITIGATION								
		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S		E	P	R	L	D	I / M	TOTAL	STATUS (+ OR -)	S
valley bottom wetland	hectare equivalents (2.6 ha of the 3.3 ha unit), is a permanent, pre-existing modification which the repair retains rather than creates.										inundated area or footprint within the wetland (Section 6.1). • Trajectory of change assessed as stable across all four WET-Health modules (Section 6.2.2). • Buffer and conservation zones maintained to protect the residual wetland extent (Section 6.3).									

8. ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr) INPUT

The objectives of the EMPr is to ensure that any impacts remain at the lowest possible risk/sensitivity.

Table 16: Rehabilitation actions for inclusion into the EMPr

Phase	Activity / Impact	Mitigation	Timing
Planning and design	Repair works within wetland and riparian areas	• Site camp, stockpile areas and ablution facilities should be located outside of the delineated watercourses and associated buffer zone. • Ensure all structures are outside of 1:100 year flood event or watercourse buffers. • High-sensitivity zones such as floodplain wetlands must be buffered. • Works must be restricted to the existing dam wall and the immediately adjacent working area, and may not extend into the upstream wetland, seeps or spring.	Prior to construction
Construction Phase	Impacts associated with levelling, compaction and excavation of wetland soils, and the potential increased run-off, erosion and sedimentation impacts knock-on effects	• Excavations must be limited to the existing dam wall and its immediate surrounds, and may not be undertaken within the upstream channelled valley bottom wetland, the seep wetlands, the spring or their buffer zones. • All watercourse areas outside of the demarcated working area must be considered no-go areas.	Continually during construction and operation
Construction Phase	Ensure surface and groundwater quality is not impacted upon	• Ensure drip trays are used under vehicles/machinery and erosion control measures are implemented. • Ensure a spill contingency plan is put into place. • In the event of an uncontained spill, the source must be identified and contained immediately, and contaminated material must be removed and disposed of at an appropriately authorised waste disposal facility. The ECO must assess the extent of contamination and determine whether further investigation, remediation or water-quality monitoring is required, with specialist input obtained where necessary. Significant pollution incidents must be reported to the relevant authorities in accordance with applicable legislative requirements. • All oils, fuels and hazardous substances or liquids must not be stored within 50m of the delineated watercourses. Where these items are stored within the proposed development area, a designated storage area will be required and the storage area must be adequately bunded to contain any spillage from containers. Emergency spill kits must be available to clean up and remove accidental spills. • All vehicles and machinery operating on the site are to be checked for oil, fuel or any other fluid leaks before entering the nearby construction area. All vehicles and machinery must be regularly serviced and maintained before being allowed to enter the construction area. No fuelling, or re-fuelling, vehicle and machinery servicing or maintenance is to take place within 50m of the delineated watercourses. • The construction site is to contain sufficient safety measures throughout the construction process. Safety measures include (but are not limited) oil spill kits and the availability of	Continually during construction and operation

		fire extinguishers. Additionally, fuel, oil or hazardous substances storage areas must be bunded to 110% capacity to prevent oil or fuel contamination of the ground and / or nearby wetlands and the associated buffer zones. • No cement mixing is to take place in the watercourses and the associated buffer zones. In general, any cement mixing in the construction area is to take place over a bin lined (impermeable) surface or alternatively in the load bin of a vehicle to prevent the mixing of cement with the ground. Cement / concrete can also be trucked in by readymix cement vehicles. Importantly, no mixing of cement or concrete is allowed directly within the wetland and associated buffer zone. • No "long drop" toilets are allowed on the study site. Suitable temporary chemical sanitation facilities are to be provided. Temporary chemical sanitation facilities must be placed at least 50 meters from the watercourses and the associated buffer zones. Temporary chemical sanitation facilities must be checked regularly for maintenance purposes and cleaned often to prevent spills. • Adequate structures must be put into place (temporary or permanent where necessary in extreme cases) to deal with sedimentation. The use of silt fencing and potentially sandbags or hessian "sausage" nets along the boundaries of the construction area can be used to prevent and / or reduce sediments entering the watercourses and the associated buffer zone.	

Phase	Activity / Impact	Mitigation	Timing
Construction Phase	Manage stormwater outlets to avoid erosion from dewatering or rainfall events	• Ensure storm water structures promote infiltration. • Ensure appropriate storm water infrastructure is installed to dissipate flow and direct away from concentrated paths through erosion prevention berms on steep sections of the working area. Berms must be directed into the natural vegetation. • Use erosion protection measures such reno-mattresses and gabion baskets when placing pipelines through low points and preferential flow paths. The erosion protection measures must be keyed into the natural ground and may not allow for concentrated flow paths around the outside of the gabion baskets. • Where practical, plant obligate wetland species or dissipation structures in drains around the structures.	Continually during construction and operation
Construction Phase	Manage watercourse vegetation areas	• Ensure wetland buffers are marked so that activities do not occur near them. • Remove alien species and manage indigenous species as per the vegetation component. • Compacted areas must be ripped and seeded immediately. An indigenous grass seed mix should be used as recommended by a wetland specialist.	Continually during construction and operation

Phase	Activity / Impact	Mitigation	Timing
		• Where necessary, use of hydroseeding and geofabrics must be used when natural rehabilitation has not been successful.	
Operation Phase	Maintenance of the repaired dam wall to promote wetland areas and buffer zones.	• The disturbed areas should be monitored for erosion once a month during the first wet season after construction. • Monthly monitoring and control of alien and invasive species must be undertaken. • Stormwater infrastructure must be maintained to prevent erosion of discharge points into wetland areas.	During maintenance activities of the operational phase
Operation Phase	Maintenance works within the watercourse areas	• Works in the active channel should be restricted to the dry season (low flow). Less water flow means less energy to transport disturbed sediment downstream. • Spoil and material stockpiles must be kept well outside the wetland and its buffer zone, and surrounded by earth berms or silt fences to prevent heavy rains from washing loose material back into the watercourse.	Throughout operational phase
Operation Phase	Managing bank erosion	• A rigid no-go buffer (32 m) must be pegged out between the edge of the watercourse/riparian zone and the laydown and access areas, other than where works must be undertaken at the wall itself. Heavy machinery must operate from designated access points and may not traverse the vegetated wetland margins. • Maintain a single access point. • Once works are complete in an area, any steep vertical drops left by excavators must be mechanically reshaped to a gentle, stable slope (typically a 1:3 gradient) to prevent slumping. • Reshaped banks must be immediately stabilized. This is done using biodegradable materials like coir logs or geo-textiles, followed by active planting of deep-rooted, indigenous riparian vegetation	Throughout operational phase

9. REHABILITATION PLAN & MONITORING PROGRAMME

9.1 Objectives of rehabilitation

The objective is the safeguarding of the watercourse and associated vegetation. To this end the following interventions are required. These objectives can be categorized into:

1. **Primary intervention:** any excavation or disturbance of the dam wall and the immediately adjacent wetland margins, including uncovering of the wall and the establishment of temporary works around these repairs. This activity must be completed in winter or "low flow" periods. The activity will see the placement of temporary containment works in the working area, which will also act as a sediment retention system. Once this is complete, other tasks may be performed to "rehabilitate" the bed and surrounds.

2. **Bed restoration**. Infilling and reinstatement around the repaired wall should take place to reinstate the "wetland" environment. To this end it is proposed to:
    a. Utilise washed river sand for infilling
    b. Compact behind structures

3. **Rehabilitation and Restoration of banks**: Tasks to be performed in the rehabilitation of the wetland margins and channel banks around the repaired wall are:

a. Rake over embankments to appropriate grade.
b. Fence rehabilitation area to prevent encroachment by pedestrians and estate traffic
c. Establish grass turf cover using appropriate grasses
d. Revegetation of the dam crest, downstream slope, stability berm, and auxiliary spillway shall be strictly restricted to indigenous sod-forming grasses and shallow-rooted sedges. No woody shrubs or trees may be established within 10 m of engineered earthfill.
e. Undertake broad based management of area which would include weed control and monitoring of water flow:

The overarching intent of wetland rehabilitation is to ensure the values, attributes and functions of the wetland are enhanced and conserved. Wetland rehabilitation efforts must work with natural processes at all times and consideration must be given to the fact that rehabilitation is a *process* and not an *endpoint*. Continued follow-up and ongoing care is required to ensure the desired outcome is achieved and maintained.

The objectives are required to offset the hydrological, ecological and geomorphological impact created as a result of the proposed repair and maintenance of the dam wall.

9.2 Actions to meet objectives

The dam wall and associated water uses where repair works are to be undertaken require actions to meet the rehabilitation objectives.

Table 17: Rehabilitation actions

Objective	Action	Result	Timing
Restore hydrology of the wetland portion	Any disturbed material (soils) from the activity restored: • Return embankment to appropriate grade. • Prevent pedestrians from entering the rehabilitation area. • Re-establish natural vegetation where possible (open soil).	Restore surface flows into the wetland. Prevent compaction of the system.	With immediate effect During construction and operation phase
	Areas surrounding the repaired dam wall should reinstate the "wetland" environment: • Utilise washed river sand for infilling • Compact behind structure • Use of bidim may be required to prevent sediment transport through the repaired wall.	Encourage slow, dissipated flows towards the stream/wetland. Ensure the longevity/integrity of the repaired dam wall.	Ongoing During construction and operation phase
Restore indigenous wetland vegetation	Remove alien plants within buffer zone through either manual or chemical control.	Improve biodiversity	Ongoing
	Plant this zone/buffer with indigenous veld and sedge mix.	Restore integrity of the wetland buffer. Increase surface roughness to slow down surface flows entering the wetland.	Planted in spring or summer months to ensure plant survival, after material has been removed.
	Where practical, plant obligate wetland species within permanent wetland zones. The wetland species would include: *Cyperus, Juncus, Kniphofia and Phragmites.*	Encourage dense stands of robust wetland vegetation to assist in water purification. A vegetation list can be obtained from the municipality which provides a list of recommended indigenous species for the proposed rehabilitation. The reinstating of indigenous vegetation would be through an indigenous grass mix	With immediate effect, preferably in the summer months.

		appropriate to Midlands Mistbelt Grassland and shallow-rooted sedges. Combat alien plant invasion.	
Manage soil/erosion at the structures and cement/chemicals	The topsoil must be removed from the full extent of the working area and not spoiled. Top and sub-soil stockpiles to be on opposite sides of the trench. Naturally occurring vegetation removed by site clearance operations may be grubbed in with the topsoil for stockpiling. Topsoil stripping shall not occur in wet weather and during stripping and stockpiling, the topsoil shall not be subject to a compaction force greater than 1 500kg/m² (or otherwise stipulated by the Engineer) and shall not be pushed for more than 50m. Topsoil shall also only be handled twice, once to strip and stockpile, and secondly to replace, level, shape and scarify. Top soil stockpiles must be protected against erosion and a record kept of all top soil quantities and should there be shortfalls of topsoil required for rehabilitation, adequate replacement material from commercial sources should be obtained as approved by the Engineer (preferably from areas identified with sourced excess topsoil).	Less erosion and soil loss. Reduced sedimentation in the watercourse	During construction and maintenance

9.3 Water quality monitoring programme

Considering the likely related impacts of the various activities, the following activities are proposed as a Water Quality Monitoring Programme (WQMP) for the site and its operations:

1. Construction materials needed for the infrastructure must not be stockpiled within the watercourse buffer. This would assist in preventing substances such as sand, cement, bricks or rubble from being washed into the watercourses.
2. Adequate stormwater containment structures must be designed and built to prevent stormwater runoff from the construction zone entering any watercourses.
3. Any removal of existing materials must be done with careful consideration for the surrounding / adjacent watercourses. This is to avoid spilling substances such as rubble and concrete into the watercourses, which would then be washed downstream.
4. Any existing material that is removed from the project area must be placed outside of the buffer area of the watercourse and should be removed from the site area within 72 hours (3 days).
5. Construction vehicles should not be parked within the watercourse buffer, unless specifically needed at that point in time for construction activities taking place around the watercourse.
6. Appropriate ablution facilities as well as abundant supplies of waste collection bins must be provided for construction workers on site. This will prevent the watercourses from becoming degraded and contaminated with both organic effluent and inorganic litter / rubbish.
7. Any concrete mixing taking place on site must be conducted on impermeable plastic sheets to prevent cement from entering watercourses through seepage or accidental spillage. Alternatively, cement mixing can take place within the footprint where permanent concreting will occur.
8. Infrastructure must have the following:
    - Completely lined infrastructure (concrete bunded area), with the capacity to contain 110% of the total amount of petrochemicals stored within a specific tank. This excludes partially pervious areas that do not store chemicals;
    - Spills must be completely removed from the site unless an oil separator is installed;
    - Valves / taps to contain or release any spillage collected from storage tanks; and
    - Fire extinguisher equipment installed within each facility.
9. Follow up water quality assessments during the construction phase as well as the operational phase to ensure that the watercourses within the project area are not being polluted as a result of the proposed development activities. Refer to **Table 18** for timeframes. The primary benchmark for these assessments is the completed baseline sampling round assessed as the difference between the downstream and upstream results; the DWS South African Water Quality Guidelines (Volume 7:

Aquatic Ecosystems) and the DWS General Limits are applied as secondary screening references, whilst the RQO's for U20E catchment have been provided for in **Table 19**.

10. Should monitoring indicate a deterioration in water quality downstream of the working area relative to the upstream sample and the baseline, the cause must be investigated and source-based corrective action implemented followed by re-sampling to confirm recovery. Results and corrective actions must be recorded by the ECO and reported to DWS where a material or sustained deterioration is confirmed.

It is imperative that the conditions of the WQMP are incorporated into the Environmental Management Programme and Environmental Authorisation (should it be granted) in order to ensure the adequate protection of watercourses on site. The WQMP must likewise be implemented in accordance with the general duty of care under Section 19 of the NWA and Section 28 of NEMA, together with any further requirements identified by DWS. Follow-up assessments are key to determining if the development is having an impact, in which case, additional mitigation measures need to be adopted.

In order to reduce the potential impact of spills on site the following must be adhered to:

- Emergency numbers are provided on site – e.g. Spilltech, fire department, ambulance, etc.;
- Spill cleaning kits such as a Drizit kit are available on site;
- All chemicals on site are recorded in the inventory of hazardous substances;
- Equipment, machinery and vehicles are regularly checked and maintained in good order;
- Machinery and equipment maintenance is undertaken in designated areas;
- Drip trays are to be placed underneath machinery and equipment during maintenance;

In the instance of a spill on site the following procedure must be followed:

1. Locate the source of the spill;
2. Stop the spill and prevent further spreading;
3. The appropriate oil sponge, absorbent or spill kit (e.g. DriZit) can then be used to clean and remove the spilled substance(s);
4. Spills from trucks/tractors must be contained within a concreted site area and prevented from spreading;
5. Spilled petrochemicals can then be cleaned up and removed using the appropriate oil sponge, absorbent or spill kit (e.g. DriZit);
6. The spill must be reported to the site manager / supervisor and ECO;
7. Depending on the significance of the spill, the incident may also need to be reported to the DEDTEA and DWS.

Table 18: Water quality sampling timeframes for the Fish Eagle Dam repair

Phase	CVB entering Fish Eagle Dam	CVB downstream of working area	Timing
Baseline	16 determinands	16 determinands	Complete
Ongoing Construction	6 determinands	6 determinands	Once off
Operation	6 determinands	6 determinands	Every 6 months for one year

Table 19: Determinands to be measured against for Catchment U20E (G. N. No. 1386 of December 2017)

Determinand	Narrative RQO	Numerical RQO
Nutrients: orthophosphate (PO_4-P)	Tolerable	50th percentile of the data must be < 0.075 mg/L PO_4-P (aquatic ecosystems: driver)
Nutrients: Total Inorganic Nitrogen (TIN-N)	Acceptable	50th percentile of the data must be < 0.85 mg/L TIN-N (aquatic ecosystems: driver)
Electrical Conductivity (salts)	Ideal	95th percentile of the data must be ≤ 30 mS/m (aquatic ecosystems: driver)
Faecal coliforms and E. coli	Recreation (full or partial contact)	Meet targets for recreational / other use (see Note 1)

Toxics: ammonia, aluminium, lead	Tolerable	95th percentile of the data must be within the D category in DWAF (2008)
Other toxics	Ideal	95th percentile of the data must be within ideal limits or A categories (DWAF, 2008) or the TWQR for toxics in DWAF (1996a)

9.4 Final monitoring

In order to assess the success of rehabilitation, post rehabilitation monitoring is required. The PES/EIS is unlikely to change as a result of the works, the system already being impounded and the disturbance being temporary and confined to the existing wall. The wetland is expected to remain in a moderately modified state (PES C, 77%), with a good probability of recovery of the disturbed margins. However, the proposed rehabilitation measures must be followed to ensure its success.

10. CONCLUSION & IMPACT STATEMENT

The project proponents must note that watercourses are protected by various Acts and Ordinances in South Africa, which verifies that both national and provincial authorities recognise these systems as highly valuable multiple-use resources and are committed to their conservation.

The DFFE screening tool sensitivity predicted a Very High Sensitivity due to the site occurring within an NFEPA-designated wetland and the Southern Drakensberg Strategic Water Source Area. The assessment showed that the aquatic features on site to be of **very high sensitivity without mitigation measures**. Assuming that the works remain confined to the existing dam wall and its immediate surrounds, and that the delineated watercourses and their buffer zones are observed, the impact of the project would typically be medium on watercourse systems, reducing to low with mitigation. If the works are not confined in this manner, the impact of the project is considered to be high.

A PES and EIS assessment was undertaken for the Wetlands on site. The results show that the channelled valley bottom wetland is in a present ecological state of C: moderately modified, and it is anticipated that this will still be the case after the repair works and during operation. An impact assessment was undertaken and showed that the project presents a medium impact on watercourses on site before mitigation, reducing to low where the mitigation measures are implemented.

Through this investigation, the following was identified:

- Watercourses (a channelled valley bottom wetland, hillslope seep wetlands, a spring and the artificial Fish Eagle Dam) were identified during the site visit.
- These systems are modified by the impoundment of the valley bottom wetland and by stormwater inflows from the surrounding estate, but are otherwise well vegetated and largely intact.
- An NFEPA-designated wetland is located within the project boundary, in a critically modified state, with the critically endangered Sub-Escarpment Grassland Group 3 wetland vegetation type present. The NFEPA wetland designation and the Southern Drakensberg Strategic Water Source Area result in the site being designated as Very High Sensitivity in terms of the DFFE protocols. No NFEPA river, FEPA, fish sanctuary or fish species is triggered.
- The wetlands identified on site retain their hydric soil indicators and wetland obligate vegetation, and flow regimes are functioning, albeit modified by the impoundment of the valley bottom system.
- Limited grazing and no cultivation occurs within the access-controlled estate. The contributing catchment is largely transformed and dominated by commercial plantation forestry, a declared streamflow reduction activity.
- These systems are well vegetated, however some alien and invasive species are established in the riparian zone below the dam wall.
- Overall PES in terms of WET-Health is noted to be a C, moderately modified, for the wetland which may be directly impacted upon by the proposed project, with the trajectory of change assessed as stable across all four modules.

- The WET-EcoServices output identifies biodiversity maintenance, stream flow regulation and tourism and recreation as the services of highest value, and erosion control as the only service for which demand exceeds supply.
- The repair and maintenance of the dam wall will have a medium negative impact on wetlands and watercourses within the site boundary. These impacts can be reduced to low if the mitigation measures are implemented, which include the 32 m NEMA buffer around on-site watercourses.
- The repair also carries a positive impact, of medium significance before and high significance after enhancement, in that it prevents partial or complete wall failure, the uncontrolled release of impounded water and the mobilisation of accumulated sediment into the downstream wetland.
- Water quality sampling recorded suspended solids of 82 mg/l upstream and dissolved manganese of 306 µg/l downstream, both above the DWS General Limits screening values, together with a pH drop to 5.8 downstream. The General Limits are effluent discharge standards applied here as a screening reference only; the suspended solids result was measured where water enters the site and is low flow stirring up of sediments during sampling derived, and the manganese is consistent with mobilisation under the lower pH and anaerobic sediment conditions of the impoundment. Nutrient and organic loading are low across both sampling points.
- Impacts have been identified with proposed mitigation measures. Should these measures be adhered to, the development area for the respective project would be of low to medium sensitivity.

NatureStamp is of the opinion that the impacts of the proposed repair and maintenance of the Fish Eagle Dam wall would be **acceptable** with the mitigation measures stated in this report, and hence the required environmental authorisation(s) should be granted for the respective project.

11. REFERENCES

1. BEGG, G.W. (1978) The estuaries of Natal. Natal Town and Regional Planning Report No. 41. Pietermaritzburg, South Africa.
2. BOK A, Kotze P, Heath R & Rossouw J 2007. Guidelines for the Planning, Design and Operation of Fishways in South Africa. WRC Report No. TT287/07. Water Research Commission, Pretoria.
3. BRAACK, A.M. (Mondi Wetlands Programme) D. Walters (Mondi Wetlands Programme) D.C. Kotze (University of Natal) (undated). *Practical Wetland Management.*
4. COWLING, R.M, Pressey, R.L, Rouget, M. & Lombard, A.T. (2003). *A conservation plan for a global biodiversity hotspot - the Cape Floristic Region, South Africa. Biological Conservation 112, 191-216.*
5. COLLINS, N.B. 2018. Free State Province Biodiversity Plan: Technical Report v1.0. Free State Department of Economic, Small Business Development, Tourism and Environmental Affairs. Internal Report.
6. CSIR (Council for Scientific and Industrial Research). 2010. National Freshwater Ecosystem Priority Areas (NFEPA). Council for Scientific and Industrial Research, Pretoria, South Africa.
7. DALLAS HF 2007. River Health Programme: South African Scoring System (SASS) data interpretation guidelines. The River Health Programme, Department of Water Affairs & Forestry, Water Research Commission and Department of Environmental Affairs and Tourism
8. http://www.dwa.gov.za/iwqs/rhp/methods/SASS%20Interpretation%20Guidelines.pdf
9. DICKENS CWS & GRAHAM PM, 2002. The South African Scoring System (SASS) Version 5 Rapid Bioassessment for Rivers. African Journal of Aquatic Science 27: 1–10
10. DWA (2010) Department of Water Affairs, Hydrological Information System. http://www.gov.za/Hydrology/ (Accessed 15 July 2010).
11. Department of Water Affairs and Forestry, South Africa. (2007) DWAF report No. N/0000/00/WEI/0407. Manual for the assessment of a Wetland Index of Habitat Integrity for South African floodplain and channelled valley bottom wetland types by M. Rountree (ed); C.P. Todd, C. J. Kleynhans, A. L. Batchelor, M. D. Louw, D. Kotze, D. Walters, S. Schroeder, P. Illgner, M. Uys. and G.C. Marneweck.
12. DWA (2008). Updated Manual for the Identification and Delineation of Wetlands and Riparian Areas (DRAFT), prepared by M. Rountree, A. L. Batchelor, J. MacKenzie and D. Hoare. Stream Flow Reduction Activities, Department of Water Affairs and Forestry, Pretoria, South Africa.
13. DWA (2005). A practical field procedure for identification and delineation of wetlands and riparian areas, Pretoria, South Africa.
14. http://www.dwaf.gov.za/iwqs/gis_data/RHPdata.htm
15. KLEYNHANS, C.J., THIRION, C. & MOOLMAN, J. (2005) A level I river ecoregion classification system for South Africa, Lesotho and Swaziland. Report No. N/0000/00/REQ0104. Resource Quality Services, Department of Water Affairs and Forestry, Pretoria.
16. KLEYNHANS, C.J. (1996). A qualitative procedure for the assessment of the habitat integrity status of the Luvuvhu River. Journal of Aquatic Ecosystem Health 5: 41 - 54.
17. KLEYNHANS CJ, LOUW MD, GRAHAM M, (2008). Module G: Eco Classification and Eco Status determination in River Eco Classification: Index of Habitat Integrity (Section 1, Technical manual) Joint Water Research Commission and Department of Water Affairs and Forestry report. WRC Report No. TT 377-08.
18. KEMPER, N. 1999: Intermediate habitat integrity assessment for use in the rapid and intermediate assessments. IWR Environmental
19. MACFARLANE, D.M., BREDIN, I.P., ADAMS, J.B., ZUNGU, M.M., BATE, G.C. and DICKENS, C.W.S. 2014. Preliminary guideline for the determination of buffer zones for rivers, wetlands and estuaries. Final Consolidated Report. WRC Report No TT 610/14, Water Research Commission, Pretoria.
20. MBONA N, JOB N, SMITH J, NEL J, HOLNESS S, MEMANI S and DINI J (2015) Supporting better decision-making around coal mining in the Mpumalanga Highveld through the development of mapping tools and refinement of spatial data on wetlands. WRC Report No. TT 614/14. Water Research Commission, Pretoria.
21. MOOLMAN, J. (2006) Slope classification of southern African Rivers.

22. MUCINA, L. and RUTHERFORD C (2006). The Vegetation of South Africa, Lesotho and Swaziland. SANBI.
23. Ramsar Convention, 2008
24. SANBI 2009. Further Development of a proposed National Wetland Classification System for South Africa.
25. SCHULZE, RE. (2011) Atlas of Climate Change and the South African Agricultural Sector: A 2010 Perspective. Department of Agriculture, Forestry and Fisheries, Pretoria, RSA. pp 387.
26. SCOTT-SHAW, C.R and ESCOTT, B.J. (Eds) (2011) KwaZulu-Natal Provincial Pre-Transformation Vegetation Type Map – 2011. Unpublished GIS Coverage [kznveg05v2_1_11_wll.zip], Biodiversity Conservation Planning Division, Ezemvelo KZN Wildlife, P. O. Box 13053, Cascades, Pietermaritzburg, 3202.
27. WHITFIELD A.K. (1992) A characterisation of southern African estuarine systems. South African Journal of Aquatic Science 18: 89-103
28. WRC (2008). WET-Eco-Services A technique for rapidly assessing ecosystem services supplied by wetlands, prepared by D. Kotze, G. Marneweck, A. Batchelor, D. Lindley and N. Collins, Pretoria, South Africa.
29. WRC (2008). WET-Health A technique for rapidly assessing wetland health, prepared by DM. Macfarlane, DC. Kotze, WN. Ellery, D. Walters, V. Koopman, P. Goodman and C. Goge, Pretoria, South Africa.
30. WRC, Driver, A, Nel, JL, Snaddon, K, Murray, K, Roux, KJ, Hill, L, Swartz, ER, Manuel, J, Funke, N (2011) Implementation Manual for Freshwater Ecosystem Priority Areas, SANBI.

ANNEXURE A CURRICULUM VITAE

ANNEXURE B DECLARATION OF INDEPENDENCE

ANNEXURE C CLASSIFICATION STRUCTURE FOR INLAND SYSTEMS UP TO LEVEL 4

WETLAND / AQUATIC ECOSYSTEM CONTEXT		
LEVEL 1: SYSTEM	**LEVEL 2: REGIONAL SETTING**	**LEVEL 3: LANDSCAPE UNIT**
Inland Systems	DWA Level 1 Ecoregions OR NFEPA WetVeg Groups OR Other special framework	Valley Floor
		Slope
		Plain
		Bench (Hilltop / Saddle / Shelf)

FUNCTIONAL UNIT		
LEVEL 4: HYDROGEOMORPHIC (HGM) UNIT		
HGM type	Longitudinal zonation/ Landform / Outflow drainage	Landform / Inflow drainage
A	B	C
River (Channel)	Mountain headwater stream	Active channel
		Riparian zone
	Mountain stream	Active channel
		Riparian zone
	Transitional stream	Active channel
		Riparian zone
	Upper foothill rivers	Active channel
		Riparian zone
	Lower foothill rivers	Active channel
		Riparian zone
	Lowland river	Active channel
		Riparian zone
	Rejuvenated bedrock fall	Active channel
		Riparian zone
	Rejuvenated foothill rivers	Active channel
		Riparian zone
	Upland floodplain rivers	Active channel
		Riparian zone
Channelled valley-bottom wetland	(not applicable)	(not applicable)
Unchannelled valley-bottom wetland	(not applicable)	(not applicable)
Floodplain wetland	Floodplain depression	(not applicable)
	Floodplain flat	(not applicable)
Depression	Exorheic	With channelled inflow
		Without channelled inflow
	Endorheic	With channelled inflow
		Without channelled inflow
	Dammed	With channelled inflow
		Without channelled inflow
Seep	With channelled outflow	(not applicable)
	Without channelled outflow	(not applicable)
Wetland flat	(not applicable)	(not applicable)

Note: 2nd row of Table provides the criterion for distinguishing between wetland units in each column

ANNEXURE D WETLAND AND SOIL CLASSIFICATION FIELD DATASHEET EXAMPLE

Sampling Sheet Summary	
Wetland	Fish Eagle Dam – HGM 1 (Channelled Valley Bottom Wetland)
Area (ha)	<5
Indicator	Soil and vegetation
Connectivity (level 1)	Inland
Eco region (level 2)	South Eastern Uplands
Landscape setting (level 3)	Riparian system
HGM Type (level 4A)	Valley Bottom
Longitudinal zonation (level 4B)	With channel
Hydrological regime	Frequent Inundation
Soil characteristics	Hue – Gley 2 to 5YR Value – 4 Chroma – 2 (Dark Brown) Depth sampled: 0-0.5m
Comment	No change in soil characteristics

ANNEXURE E STEPS FOR RIPARIAN DELINEATION

Steps for Riparian Delineation in the field

To delineate riparian areas, use the terrain unit indicator, vegetation indicator species, soil wetness indicator, combined with

- Geomorphology of the banks; and
- Extent of riparian vegetation.

Evidence of alluvial deposits can also be used.

STEPS to delineating the riparian zone:

I. Is the site relatively undisturbed (banks have not been extensively engineered, and the site is predominantly indigenous, naturally occurring vegetation)? If yes, proceed to step II. If no, proceed to step V.

II. Starting at the edge of the channel, use the regional riparian vegetation indicator list, identify the edge of the zone of (obligate) riparian plants.

III. At this point, check:

a. If there are any hydric indicators in the soil (refer to Wetland Delineation component).
b. If you are still in a zone of unconsolidated recent alluvial sediment.

If yes for either **a** or **b**, proceed outwards from the channel to identify the edge of these zones.

Once the answer to **a** and **b** are no, follow the same steps (II and III) using preferential and/or facultative riparian plant species *(Refer to the steps 1 to 12 from the vegetation assessment section below for further detail).*

Following completion of the above, proceed to step IV.

IV. Examine the geomorphology (shape) of the channel and banks. After moving away from the channel during steps II and III, you should be at or close to the edge of the top of the "macro-channel" bank (in the case of erosive rivers) or the edge of the active floodplain or flood zone (in the case of alluvial depositional rivers). At, or close to, this point you should see an inflection point (change in slope) between the riparian area and the upland (terrestrial) slopes. This can be taken as the edge of the riparian zone.

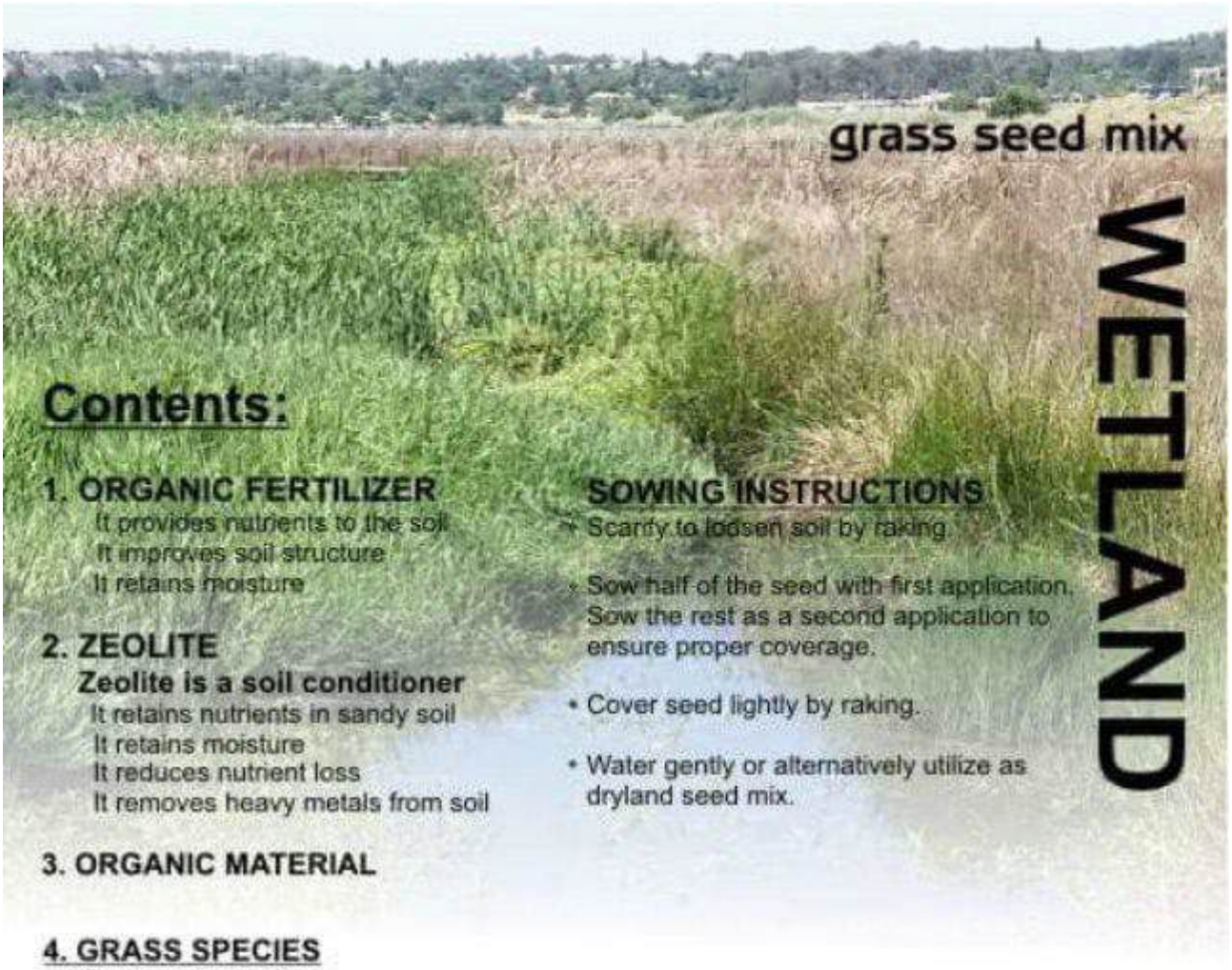
Using Reference Sites:

V. For sites which have been heavily disturbed (i.e. where there is almost no indigenous vegetation remaining, and/or where the banks have been heavily engineered such that it is no longer possible to identify the original morphology of the banks), then a REFERENCE site will need to be located. The Reference site will need to be close by on the same or a similar sized river system, in an area of similar topography. The Reference Site can be used to provide an indication of the likely riparian extent prior to disturbance. Once the reference site is located, proceed with step II.

Where problems may be encountered:

On floodplains, it is important to check whether the floodplain is active (i.e. regularly flooded under the current climatic regime) or a relict floodplain (meaning that the floodplain depositional area formed due to a wetter historical climate and now is no longer regularly flooded). The type of vegetation on the floodplain surface, presence of soil wetness indicators and the presence of ox-bows and other riparian and wetland features would provide the indications of the current levels of flooding/inundation/saturation.

ANNEXURE F WETLAND VEGETATION MIX



4. GRASS SPECIES

Contents may vary

Andropogon eucomus
Aristida junciformis
Chloris gayana
Cynodon dactylon
Diandrochloa namaquensis
Digitaria eriantha
Eragrostis capensis
Eragrostis gummiflua
Imperata cylindrica
Ischaemum fasciculatum
Panicum coloratum
Schizachyrium sanguineum
Setaria incrassata
Sporobolus africanus
Sporobolus fimbriatus

Application

100g / 25 m2 (5m x 5m)	☐
500g / 125 m2 (11m x 11m)	☐
1kg / 250 m2 (16m x 16 m)	☐
5 kg / 1250 m2 (35m x 35m)	☐

WARNING

Selected seed treated.
Do not use seed for:
food, feed or consumption.

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emulating nature ... protecting biodiversity

Annexure G: Environmental impact assessment (EIA) methodology

The Environmental Impact Assessment (EIA) Methodology assists in evaluating the overall effect of a proposed activity on the environment. Determining of the significance of an environmental impact on an environmental parameter is determined through a systematic analysis.

Determination of Significance of Impacts

Significance is determined through a synthesis of impact characteristics which include context and intensity of an impact. Context refers to the geographical scale (i.e. site, local, national or global), whereas intensity is defined by the severity of the impact e.g. the magnitude of deviation from background conditions, the size of the area affected, the duration of the impact and the overall probability of occurrence. Significance is calculated as shown in **Table 1**.

Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The total number of points scored for each impact indicates the level of significance of the impact.

Impact Rating System

The impact assessment must take account of the nature, scale and duration of effects on the environment and whether such effects are positive (beneficial) or negative (detrimental). Each issue / impact is also assessed according to the various project stages, as follows:

- Planning;
- Construction;
- Operation; and
- Decommissioning.

Where necessary, the proposal for mitigation or optimisation of an impact should be detailed. A brief discussion of the impact and the rationale behind the assessment of its significance has also been included.

The significance of Cumulative Impacts should also be rated (As per the Excel Spreadsheet Template).

Rating System Used to Classify Impacts

The rating system is applied to the potential impact on the receiving environment and includes an objective evaluation of the possible mitigation of the impact. Impacts have been consolidated into one (1) rating. In assessing the significance of each issue the following criteria (including an allocated point system) is used:

Table 20: Rating of impacts criteria

ENVIRONMENTAL PARAMETER
A brief description of the environmental aspect likely to be affected by the proposed activity (e.g. Surface Water).
ISSUE / IMPACT / ENVIRONMENTAL EFFECT / NATURE

Include a brief description of the impact of environmental parameter being assessed in the context of the project. This criterion includes a brief written statement of the environmental aspect being impacted upon by a particular action or activity (e.g. oil spill in surface water).		
EXTENT (E)		
This is defined as the area over which the impact will be expressed. Typically, the severity and significance of an impact have different scales and as such bracketing ranges are often required. This is often useful during the detailed assessment of a project in terms of further defining the determined.		
1	Site	The impact will only affect the site
2	Local/district	Will affect the local area or district
3	Province/region	Will affect the entire province or region
4	International and National	Will affect the entire country
PROBABILITY (P)		
This describes the chance of occurrence of an impact		
1	Unlikely	The chance of the impact occurring is extremely low (Less than a 25% chance of occurrence).
2	Possible	The impact may occur (Between a 25% to 50% chance of occurrence).
3	Probable	The impact will likely occur (Between a 50% to 75% chance of occurrence).
4	Definite	Impact will certainly occur (Greater than a 75% chance of occurrence).
REVERSIBILITY (R)		
This describes the degree to which an impact on an environmental parameter can be successfully reversed upon completion of the proposed activity.		
1	Completely reversible	The impact is reversible with implementation of minor mitigation measures
2	Partly reversible	The impact is partly reversible but more intense mitigation measures are required.
3	Barely reversible	The impact is unlikely to be reversed even with intense mitigation measures.
4	Irreversible	The impact is irreversible and no mitigation measures exist.
IRREPLACEABLE LOSS OF RESOURCES (L)		
This describes the degree to which resources will be irreplaceably lost as a result of a proposed activity.		
1	No loss of resource.	The impact will not result in the loss of any resources.
2	Marginal loss of resource	The impact will result in marginal loss of resources.
3	Significant loss of resources	The impact will result in significant loss of resources.
4	Complete loss of resources	The impact is result in a complete loss of all resources.
DURATION (D)		
This describes the duration of the impacts on the environmental parameter. Duration indicates the lifetime of the impact as a result of the proposed activity.		

1	Short term	The impact and its effects will either disappear with mitigation or will be mitigated through natural process in a span shorter than the construction phase (0 – 1 years), or the impact and its effects will last for the period of a relatively short construction period and a limited recovery time after construction, thereafter it will be entirely negated (0 – 2 years).
2	Medium term	The impact and its effects will continue or last for some time after the construction phase but will be mitigated by direct human action or by natural processes thereafter (2 – 10 years).
3	Long term	The impact and its effects will continue or last for the entire operational life of the development, but will be mitigated by direct human action or by natural processes thereafter (10 – 50 years).
4	Permanent	The only class of impact that will be non-transitory. Mitigation either by man or natural process will not occur in such a way or such a time span that the impact can be considered transient (Indefinite).
INTENSITY / MAGNITUDE (I / M)		
Describes the severity of an impact (i.e. whether the impact has the ability to alter the functionality or quality of a system permanently or temporarily).		
1	Low	Impact affects the quality, use and integrity of the system/component in a way that is barely perceptible.
2	Medium	Impact alters the quality, use and integrity of the system/component but system/ component still continues to function in a moderately modified way and maintains general integrity (some impact on integrity).
3	High	Impact affects the continued viability of the system/component and the quality, use, integrity and functionality of the system or component is severely impaired and may temporarily cease. High costs of rehabilitation and remediation.
4	Very high	Impact affects the continued viability of the system/component and the quality, use, integrity and functionality of the system or component permanently ceases and is irreversibly impaired (system collapse). Rehabilitation and remediation often impossible. If possible rehabilitation and remediation often unfeasible due to extremely high costs of rehabilitation and remediation.
SIGNIFICANCE (S)		

Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. This describes the significance of the impact on the environmental parameter. The calculation of the significance of an impact uses the following formula:

Significance = (Extent + probability + reversibility + irreplaceability + duration) x magnitude/intensity.

The summation of the different criteria will produce a non-weighted value. By multiplying this value with the magnitude/intensity, the resultant value acquires a weighted characteristic which can be measured and assigned a significance rating.

Points	Impact Significance Rating	Description
5 to 23	Negative Low impact	The anticipated impact will have negligible negative effects and will require little to no mitigation.
5 to 23	Positive Low impact	The anticipated impact will have minor positive effects.
24 to 42	Negative Medium impact	The anticipated impact will have moderate negative effects and will require moderate mitigation measures.
24 to 42	Positive Medium impact	The anticipated impact will have moderate positive effects.
43 to 61	Negative High impact	The anticipated impact will have significant effects and will require significant mitigation measures to achieve an acceptable level of impact.
43 to 61	Positive High impact	The anticipated impact will have significant positive effects.
62 to 80	Negative Very high impact	The anticipated impact will have highly significant effects and are unlikely to be able to be mitigated adequately. These impacts could be considered "fatal flaws".
62 to 80	Positive Very high impact	The anticipated impact will have highly significant positive effects.

APPENDIX F: PRE-APPLICATION MEETING MINUTES

GREEN CHOICE CONSULTING

ST. JOHN'S LIFESTYLE VILLAGE

FISH EAGLE DAM REPAIR WORKS: MAINTENANCE MANAGEMENT PLAN

PRE-APPLICATION MEETING MINUTES

Attendees:	Sarah Stalberg – Green Choice Consulting (Registered EAP) Dr. Bruce Scott-Shaw – NatureStamp Mavis Padayachee – EDTEA Aphelele Ngubane – EDTEA Nonto Mvelase – EDTEA Mapule Mdletshe – EDTEA Owen Greene – Applicant representative
Meeting Date & Time:	19 June 2026, 10h00
Platform:	MS Teams

1. Purpose of the Meeting

The purpose of the meeting was to present the proposed Fish Eagle Dam repair works, confirm the applicability of the Maintenance Management Plan (MMP) process, discuss environmental sensitivities associated with the site, and obtain guidance from the Department regarding public participation and submission requirements.

2. Project Presentation

Sarah Stalberg presented an overview of the proposed repair works and the rationale for proceeding via an MMP process.

The following was noted:

- The Fish Eagle Dam was constructed in 1970 and serves as a landscaping and maintenance feature within St. John's Lifestyle Village.
- A Dam Safety Evaluation undertaken in 2024 identified deficiencies associated with spillway capacity, outlet works and dam safety infrastructure.

The proposed repair works include:

- Upgrading the spillway capacity;

- Stabilization of the outlet works area;
- Extension and upgrading of outlet infrastructure; and
- Raising the dam crest by approximately 400 mm.
    - The proposed works are intended to address dam safety concerns and maintain the safe operation of the existing dam.
    - No increase in dam storage capacity is proposed.
    - No expansion of the existing impoundment footprint is proposed.
    - Specialist aquatic and watercourse input will be provided by NatureStamp.

3. Project Team

Green Choice Consulting (Registered EAP) will be managing the MMP process in collaboration with NatureStamp (SACNASP registered Ecologist).

Green Choice Consulting will be undertaking the following tasks:

- Compile the Draft MMP.
- Undertake a public participation process including newspaper advertisements and site notices.
- Circulate the Draft MMP to relevant authorities and stakeholders.
- Obtain comments from organs of state.
- Compile a Comments and Responses Report.
- Finalize the MMP for submission to EDTEA.

NatureStamp will be responsible for the following scope of work:

- Undertake specialist aquatic and watercourse assessment.
- Prepare impact and risk assessment.
- Develop method statements.
- Compile rehabilitation and monitoring requirements.

4. Applicability of the MMP Process

The Department confirmed that the proposed works are considered appropriate for assessment through a Maintenance Management Plan process, provided that:

- The works remain within the existing footprint of the dam and associated infrastructure;
- No increase in storage capacity is proposed;
- No new infrastructure or expansion beyond the existing footprint is undertaken; and
- The works are limited to maintenance, repair and upgrading of existing infrastructure.

The Department indicated that replacement and upgrading of existing infrastructure within the same location and footprint is consistent with the definition of an MMP.

5. Public Participation Requirements

The proposed public participation approach was discussed. The Department advised that the public participation process should follow the same principles as a Basic Assessment process and should include:

- Newspaper advertisements;
- Site notices;
- Notification of Interested and Affected Parties (I&APs);
- Consultation with relevant organs of state;
- Consultation with neighbouring landowners and stakeholders;
- A review period for the Draft MMP; and
- Compilation of a Comments and Responses Report.

The Department confirmed that newspaper advertisements and site notices should serve as a call for Interested and Affected Parties to register and participate in the process.

6. Consultation with Organs of State

The Department emphasised the importance of obtaining comments from relevant organs of state. Particular emphasis was placed on consultation with:

- Department of Water and Sanitation (DWS);
- Ezemvelo KZN Wildlife (EKZNW);
- uMngeni Local Municipality; and
- uMgungundlovu District Municipality.

The Department noted that comments from DWS and EKZNW would be particularly important given the aquatic environment, biodiversity sensitivities and watercourse-related nature of the proposed works.

7. Specialist Input & Method Statements

The Department advised that the MMP should contain detailed method statements describing how the proposed maintenance and repair works will be undertaken. The MMP should clearly describe:

- Existing site conditions;
- The proposed repair methodology;
- Equipment and machinery to be utilised;
- Vegetation clearing requirements (if any);
- Environmental management measures;
- Rehabilitation measures; and
- Monitoring requirements.

The Department further noted the importance of specialist aquatic and watercourse input due to the environmental sensitivities associated with the site.

8. Submission Process

Sarah Stalberg requested clarification regarding submission requirements. The Department advised that:

- The prescribed application form should be submitted to EDTEA;
- A Draft MMP should be circulated to I&APs and organs of state for review and comment;
- A copy of the Draft MMP should also be provided to EDTEA for review and comment;
- Specialist studies should be included within the Draft MMP process; and

- The MMP process should proceed similarly to a standard environmental assessment process, with comments incorporated prior to finalisation.

9. Conclusion

The Department confirmed that the proposed repair works may proceed via a Maintenance Management Plan process, provided that the works remain within the existing footprint, do not increase storage capacity, and are limited to maintenance and repair of existing infrastructure.

The meeting was concluded with agreement on the proposed way forward and the public participation requirements to be followed.

With no other queries raised and attendees satisfied that all aspects of the proposed project had been discussed and clarified, the meeting was closed at 10h23.

Signed in agreement with minutes –

Scriber (S. Stalberg)
22/06/2026

Approved (Aphelele Ngubane - EDTEA)
22/06/2026