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ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr)

PROPOSED REFURBISHMENT OF THE EXISTING ABSTRACTION WEIR AT THE ESPERANZA RAW WATER PUMP STATION, BELOW THE UMZINTO DAM; AND THE INSTALLATION OF THE V-NOTCH GAUGE TO MEASURE FLOW, UGU DISTRICT MUNICIPALITY, KWAZULU-NATAL

May 2019



DEA Reference Number: 14/12/16/3/3/1/1998

Name of Client:	Umgeni Water
Prepared By:	Afzelia Environmental Consultants (Pty) Ltd

Title and Approval Page

******PLEASE NOTE – ALL TEXT HIGHLIGHTED IN YELLOW REPRESENTS NEW INFORMATION ADDED TO THE FINAL BAR SUBMISSION******

Project Name:	Proposed Refurbishment of the Existing Abstraction Weir at the Esperanza Raw Water Pump Station below the Umzinto Dam and the installation of the V-Notch Gauge to measure flow, Ugu District Municipality, Kwazulu-Natal
Report Title:	Environmental Management Programme (EMPr)
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Client	Umgeni Water
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LIST OF ACRONYMS

ECO	- Environmental Control Officer
DEA	- Department of Environmental Affairs
DWS	- Department of Water and Sanitation
EDTEA	- Economic Development, Tourism and Environmental Affairs
EIA	- Environmental Impact Assessment
EMPr	- Environmental Management Programme
MSDS	- Material Safety Data Sheet
NEMA	- National Environmental Management Act
SAQA	- South African Qualifications Authority
WUA	- Water Use Authorisation
WULA	- Water Use License Authorisation
ULM	- Umdoni Local Municipality
UDM	- Ugu District Municipality

Abbreviations used throughout the EMPr

Abbreviation	Meaning	
PRO	Proponent	Umgeni Water
PM	Project Manager / Project Engineer	Umgeni Water
C	Contractor	To be appointed

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1. DETAILS OF THE ENVIRONMENTAL CONSULTANT

Afzelia Environmental Consultants were appointed by Umgeni Water to undertake the Basic Assessment process for the proposed refurbishment of the existing abstraction weir at the Esperanza Raw Water Pump Station, below the Umzinto Dam; and the installation of the V-Notch gauge to measure flow in accordance with the National Environmental Management Act (Act No. 107 of 1998) and the 2014 Environmental Impact Assessment Regulations, as amended (07 April 2017).

Name and details of the Environmental Practitioner:

This EMPr has been compiled by:

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2 PROJECT SPECIFIC ATTRIBUTES

2.1 Project Background

The El Niño phenomenon experienced in the last few years led to below normal rainfall which, in combination with above-average temperatures, resulted in severe drought in South Africa. This, combined with the increasing demand on the already scarce water resource, amplifies the importance of accurate hydrological information and necessitates that existing water be conserved and managed effectively. KwaZulu-Natal in particular has been affected significantly by the recent drought. Due to this, the low river levels cause severe disruption to life cycles of aquatic organisms on the downstream side. To ensure accurate monitoring of the environmental release, particularly during dry seasons, the request was received by the Engineering Services to refurbish the existing abstraction weir at the Esperanza Raw Water Pump Station below the Umzinto Dam and to install a V-Notch Gauge to measure flow.

The proposed project is located approximately 3 km to the south west of Umzinto, within the KwaZulu-Natal Province and is located in the Pongola – Mtamvuna Water Management Area (WMA), within the U80H quaternary catchment. The project is located on the U80H-5109 Sub Quaternary Reach (SQR). This river reach is a portion of the Mzinto River System. Water from the Umzinto Dam is released into the Umzinto River and abstracted at a weir approximately 9 km downstream of the dam wall, at Esperanza Pump Station. Water from the weir is then pumped to the Umzinto Waterworks and subsequently released to the nearby communities. The normal flow at Esperanza Pump station is 1521m³/ day.

The geographical co-ordinates of the proposed refurbishment of the existing abstraction weir at the Esperanza Raw Water Pump Station, below the Umzinto Dam and the installation of the V-Notch gauge is **30°20'22"S 30°38'38"E**. (Refer to Figure 1: Proposed Esperanza Gauging Weir Site Locality Plan Map and Figure 2: Proposed Esperanza Gauging Weir Locality and Biodiversity Map).

2.2 Proposed Gauging Weir Description

A V-Notch crump weir was selected as the most appropriate solution at Esperanza Pump Station because the pattern of the stream lines over a v-notch crump weir is smooth. A Glass Reinforced Plastic (GRP) weir plate of 10mm thickness will be installed onto the concrete up-stands. There is existing infrastructure to mount the weir plate, at Esperanza Pump Station.

The existing concrete weir, on which the weir plate is going to be fixed, is porous and will be repaired in order to restore its water-tightness. The existing weir will be rehabilitated in order to ensure that the V-Notch weir can gauge the actual amount of water flowing past it. An extra layer of concrete is going to be fixed onto the existing concrete. A 200mm reinforced layer will be added on top of the existing structure to stop water from seeping through.

2.3 Proposed Scope of Work

The scope of activities planned for this project include, *inter alia*:

- Earthworks/platform creation;
- Construction of Cofferdams;
- Construction of minor access road/parking areas;
- Pipe trenching and laying of short sections of pipework;
- Construction of concrete Gauging Weir; and
- Minor electrical and mechanical installation.

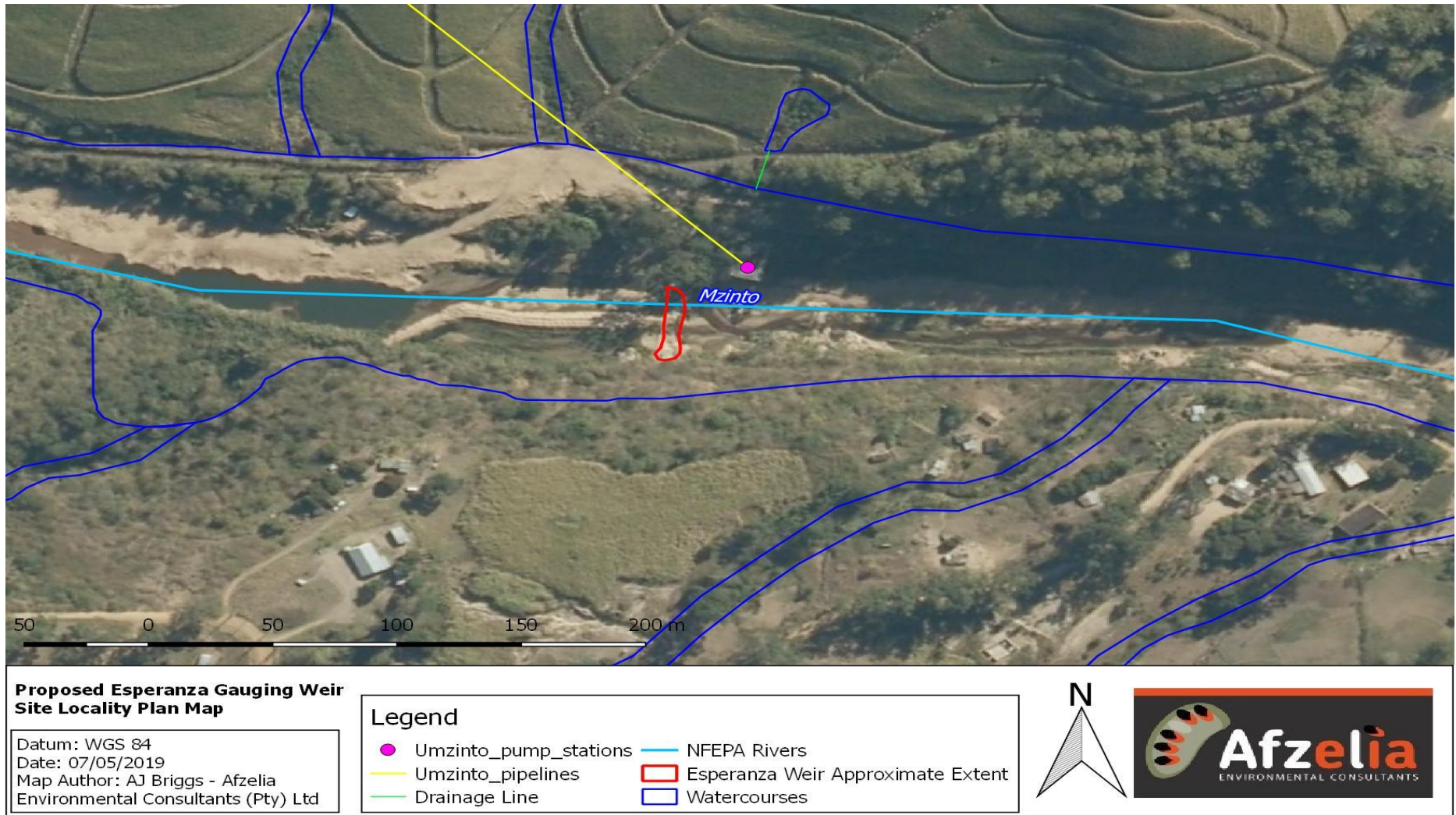


Figure 1: Proposed Esperanza Gauging Weir Site Locality Plan Map

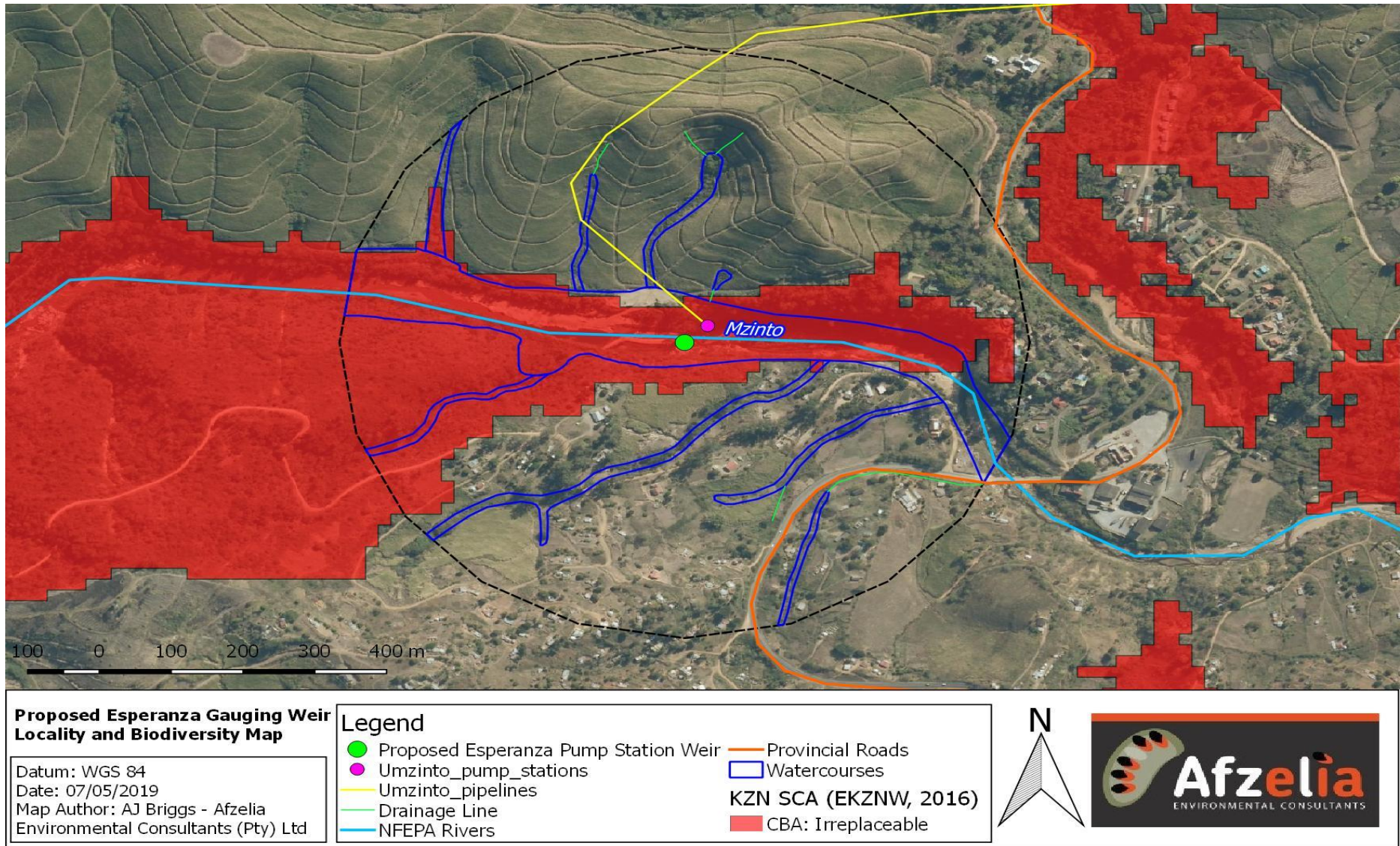


Figure 2: Proposed Esperanza Gauging Weir Locality and Biodiversity Map



Figure 3: Position for the Proposed V-Notch Weir

3 SUMMARIES OF THE RECEIVING ENVIRONMENT

The area surrounding the Esperanza gauging weir site comprises of very steep slopes, the study area is also comprised primarily of riverine areas and drainage lines. The land use within the proposed study area is made up of coastal forest that is surrounded by intensive sugar cane agriculture.

The proposed project is located in the Pongola – Mtamvuna Water Management Area (WMA), within the U80H quaternary catchment. The project is located on the U80H-5109 Sub Quaternary Reach (SQR). This river reach is a portion of the Mzinto River System.

The mean annual precipitation is ~1011.3mm and the potential evaporation is ~1161.1mm with a simulated mean annual run-off of ~260.7mm. Rain fall occurs primarily in early summer and late summer with highly infrequent winter rainfall. The maximum temperatures vary between 24-28°C in February and 20-24°C in July whilst the minimum temperatures are between 16-20°C in February and 6-10°C in July.

According to National Classification and Status - The proposed site is located within the KwaZulu-Natal Coastal Belt (CB3).

The KwaZulu-Natal Coastal Belt Grassland (CB3) is characterised by undulating coastal plains. It is comprised mainly of a mosaic of sugarcane fields, timber plantations, thickets, coastal thornveld and secondary *Aristida* grasslands. This vegetation type is considered endangered with at least 50% already transformed by cultivation and urban sprawl (Mucina and Rutherford, 2006; Scott-Shaw and Escott, 2011) According to the National List of Threatened Ecosystems, the KwaZulu-Natal Coastal Belt is listed as a vulnerable ecosystem (RSA 2011).

The provincial vegetation classification according to Scott-Shaw & Escott, 2011 states that the proposed site comprises of KwaZulu-Natal Coastal forest: Southern Mesic Coastal Lowlands Forest and are regarded as Critically Endangered.

According to Driver *et al.*, 2011; the wetland vegetation for the proposed site comprises of the Indian Ocean Coastal Belt Group 2 and is regarded as Critically Endangered and moderately protected.

The majority of the wetland vegetation, however, includes a mix of obligate wetland vegetation including *Leersia hexandra*, *Cyperus dives* and *Ludwigia octovalvis*. Soils within the wetland units generally include medium grey loamy sand with a moderate abundance of orange mottles at a depth of approximately 20cm-50cm.

The NFEPA project aims to produce maps that provide strategic spatial priorities for conserving South Africa's freshwater ecosystems and support sustainable use of water resources. However, as this information is based on broad scale assessments, it is critical that ground-truthing is undertaken to verify the existence and status of any NFEPA wetlands in an area. **Examination of the NFEPA GIS database identified no NFEPA Wetlands located within the proposed project site.**

The wetland delineation assessment identified two wetlands within a 500m radius of the proposed Esperanza Pump Station gauging weir site. These wetlands are located a considerable distance upslope of the proposed weir site (>80m) and therefore will not derive any impacts from the proposed gauging weir construction and operation, which alleviates the requirement for an impact or risk assessment.

4 NEGATIVE ENVIRONMENTAL IMPACTS ASSOCIATED WITH CONSTRUCTION ACTIVITIES/ ASPECTS

The upgrade of existing roads and bridges have substantial environmental impacts and therefore such work must be controlled by an Environmental Management Programme (EMPr) that recognises and addresses construction related aspects and their impacts on the natural and social environment.

Table 1: Environmental Impacts associated with construction activities

Feature	Impact
Topography of the site	<ul style="list-style-type: none"> ➤ Visual impacts during construction. ➤ Crossing of watercourses (topographic features). ➤ Erosion of affected areas.
Geohydrology of the site.	<ul style="list-style-type: none"> ➤ Groundwater pollution due to the occurrence of any spillages on site. ➤ Poor construction practices.
Surface Water	<ul style="list-style-type: none"> ➤ Increased stormwater runoff on site. ➤ Water leakages.
Geology and Soil	<ul style="list-style-type: none"> ➤ Loss of topsoil. ➤ Soil erosion through the clearance of areas and construction activities. ➤ Soil pollution through construction related activities. (cement spillages, diesel or oil spillages, chemical spillages, etc). ➤ Contamination of soil through the incorrect storage, handling, disposal of hazardous waste on site. ➤ The contamination of soil through spillages and leakages that occur on site. ➤ Soil contamination due to the incorrect or the mismanagement storage of hazardous chemicals. ➤ Poor stormwater control measures during construction.
Flora	<ul style="list-style-type: none"> ➤ The loss of sensitive vegetation. ➤ The loss of sensitive habitats.
Fauna	<ul style="list-style-type: none"> ➤ Loss of habitats during the site clearing process. ➤ Loss of habitats during construction. ➤ The illegal poaching or hunting of mammals. ➤ Killing of snakes during the construction phase due to lack of or poor environmental education procedures. ➤ Potential illness and or death of fauna due to pollution and or littering. ➤ Damage or clearance of habitats of conservation importance. ➤ The obstruction to the corridors of movement that are used by animals.
Noise	<ul style="list-style-type: none"> ➤ Localised noise increase. ➤ Increase in noise levels. ➤ Noise nuisance.

Aesthetics	<ul style="list-style-type: none"> ➤ Reduction in visual quality of the area.
Air Quality	<ul style="list-style-type: none"> ➤ Increase in dust levels. ➤ Greenhouse gas emissions.
Transportation	<ul style="list-style-type: none"> ➤ Construction related traffic. ➤ Increase in traffic on the local road network.
Socio-economic (positive)	<ul style="list-style-type: none"> ➤ Generation of employment opportunities for the local community. ➤ Contribution to the local community.
Socio-economic (negative)	<ul style="list-style-type: none"> ➤ Safety and security issues. ➤ Conflicted land uses. ➤ Nuisance from noise and dust.
Waste Management	<ul style="list-style-type: none"> ➤ The generation of waste from site preparations. ➤ Hazardous waste, such as contamination of soil by spillages from chemicals, oil / diesel, cement etc. ➤ The disposal of excess spoil material (rock and soil) that is generated as part of the earthworks. ➤ Land, air and water pollution through poor waste management practices.
Water Users	<ul style="list-style-type: none"> ➤ Water quality deterioration and disturbance to the flow caused by construction activities may adversely affect downstream water users. ➤ Water that will be abstracted from watercourses for construction purposes.
Riparian Habitat	<ul style="list-style-type: none"> ➤ The loss of riparian and instream vegetation with the construction footprint. ➤ The change in the morphological characteristics of the river. ➤ The destruction of wetland or aquatic habitat units. ➤ Soil erosion.
Aquatic Ecology	<ul style="list-style-type: none"> ➤ Disruptions to the aquatic biota community due to water contamination. ➤ Disruption to the aquatic biota community due to the alteration of the flow. ➤ Disturbance to the aquatic biota community during construction activities. ➤ Alteration to habitat. ➤ The loss of aquatic -dependant biodiversity.
Flow Regime	<ul style="list-style-type: none"> ➤ Alteration to the flow. ➤ The effect on aquatic biodiversity.
Water Quality	<ul style="list-style-type: none"> ➤ The release of contaminants from equipment and concreting activities. ➤ Water quality impacts due to siltation and pollution. ➤ The inflow of contaminated stormwater. ➤ Impacts on water quality due to poor construction activities. ➤ Impacts to the water quality due to spillages (cement, diesel / oil).

5 PURPOSE AND OBJECTIVES OF THE EMPr

The purpose of an Environmental Management Programme (EMPr) is “to describe how negative environmental impacts will be managed, rehabilitated and monitored and how positive impacts will be maximised” (Integrated Environmental Management Guidelines, 1992) and Integrated Environmental Management Guideline Series 9 (Notice 891 of 2014).

The aim of this EMPr is to ensure that the design, construction, rehabilitation and operational phases for the proposed project, continue within the principles Integrated Environmental Management, by providing a pro-active, feasible and practical working tool to enable the measurement and monitoring of environmental performance on site.

The EMPr deals with the expected environmental impacts associated with aspects of this project and corrective actions required in preventing or minimising these impacts. The EMPr must be strictly complied with by Umgeni Water and their appointed contractors.

The objectives of this EMPr are to:

- Provide a pro-active, feasible and practical working tool to enable the measurement and monitoring of environmental performance on site;
- Ensure that the construction and operational phases of the project are undertaken within the principles of Integrated Environmental Management;
- Ensure compliance with regulatory authority stipulations and guidelines which may be local, provincial, national and/or international;
- Identify a range of mitigation measures which could reduce the potential impacts to minimal or insignificant levels;
- Identify measures that could optimise beneficial impacts; and
- Specify time periods with which the measures must be implemented.

The EMPr informs the Proponent of their duties in the fulfilment of the project objectives with particular reference to the prevention and mitigation of environmental impacts caused by construction activities associated with the proposed project. This is to include rehabilitation and landscape work which is needed post-construction and which must be carried out by the Contractor or specialist sub-contractor who is appointed to do such work. Areas that have been rehabilitated must be maintained by the Proponent. The provisions of this EMPr are binding to the Contractor and Project Manager during the contract period and the Proponent in the Operational phase.

Any environmental issues that are identified during or after construction must be addressed in consultation with the environmental consultant or ECO. As such, this EMPr must be viewed as a dynamic document that may be required to evolve (updating or revision where necessary) during its implementation period so that it recognises any new issues or changes in the parameters of identified issues that may arise allowing for timeous resolution through amended mitigation measures.

Please note: Whilst activities and earthworks associated with construction must be undertaken in accordance with SANS 1200 and COLTO standards, which deal with guidelines for civil engineering and general construction works, the conditions /requirements of this EMPr will take precedence over any other contractual /tender conditions. The contractor must make allowances to ensure that they are capacitated to comply with this EMPr's requirements at all times.

6 LEGISLATIVE REQUIREMENTS

6.1 Key environmental legislation and policies that are applicable to this EMPr

Environmental legislation applicable to the formulation of an EMPr includes but is not restricted to the following:

- The Constitution of the Republic of South Africa (Act No. 108 of 1996), including the Bill of Rights (Chapter 2, Section 24).
- National Environment Management Act (Act No. 107 of 1998).
- National Water Act (Act No. 36 of 1998).
- National Forests Act (Act No. 84 of 1998).
- National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004).
- Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983).
- Hazardous Substances Act (Act No. 15 of 1973).
- Occupational Health and Safety Act (Act No. 85 of 1993).
- Integrated Environmental Management (IEM).
- National Environmental Management: Waste Act (Act No. 59 of 2008).
- KwaZulu-Natal Nature Conservation Ordinance (No. 15 of 1974).
- Provincial and Local Government Ordinances and Bylaws.

Statutes are amended periodically and it is the Applicant's responsibility to identify legislation relevant to the proposed activity. Once project implementation starts, legislation and all amendments that are current at that time will apply.

6.2 National Environmental Management Act, (Act 107 of 1998) (NEMA): is South Africa's overarching environmental legislation:

Section 28 of NEMA (Act 107 of 1998), in terms of Duty of Care and Remediation of Environmental Degradation states that: *"Every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment"*.

NEMA and its regulations entitle environmental authorities to administer a fine not exceeding R 10 million or 10 years' imprisonment and/or a fine and imprisonment for a person guilty of an unlawful activity. The Act makes allowance for the rectification of the unlawful activity but may charge up to R 2 million administration fees over and above the remediation costs.

Furthermore, NEMA makes provision for damages to be awarded by the courts where loss or damage has occurred as a result of a contravention of certain Environmental Statutes. For example, offences under the National Water Act No. 36 of 1965 and the Environmental Conservation Act No. 73 of 1989 may result in penalties being imposed in terms of NEMA.

Notwithstanding the Companies Act, 2008 (Act No. 71 of 2008), or the Close Corporations Act, 1984 (Act No. 69 of 1984), the directors of a company or members of a close corporation are jointly and severally liable for any negative impact on the environment, whether advertently or inadvertently caused by the company or close corporation which they represent, including damage, degradation or pollution (Section 24N (8) added by Section 5(h) of Act 25 of 2014; Section 24N (8) of Act 62 of 2008).

Importantly, NEMA provides for the liability on conviction of employees, managers, agents as well as directors for any offences resulting from the failure to take all the reasonable steps that were necessary under the circumstances to prevent the commission of an offence.

6.3 The Polluter-Pays Principle

This principle provides for “the costs of remedying pollution, environmental degradation and consequent adverse effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment.” The Polluter Pays Principle will be strictly applied throughout the construction phase of this project.

Also, the Precautionary (Risk Averse) Principle, as stipulated as Section 5 of NEMA must be applied.

The principle is based on the following statement: *When the information available to an evaluator is uncertain as to whether or not the impact of a proposed development on the environment will be adverse, the evaluator must accept as a matter of precaution, that the impact will be detrimental. It is a test to determine the acceptability of a proposed development. It enables the evaluator to determine whether enough information is available to ensure that a reliable decision can be made.*

6.4 Amendments to the EMPr

Any amendments to the EMPr must be in accordance with Regulation 32 of EIA regulations 2014 and may, if substantial, require approval from DEA and/or DWS prior to implementation. A confirmation letter from the relevant Competent Authority (CA) approving the amendments to the EMPr must be attached as addenda.

7 PROJECT ROLES AND RESPONSIBILITIES

Table 2: Project responsibilities

ENTITIES	ROLES & RESPONSIBILITIES
<p style="text-align: center;">Proponent</p>	<ul style="list-style-type: none"> • Must appoint an independent ECO for the purpose of ensuring that the environmental conditions as outlined in this EMPr and the Environmental Authorisation (EA) are implemented by the Contractor; • Responsible for appointing the Contractor/s; • May delegate daily controls on site to a Project Manager or similar responsible person; • Responsible for implementation and operation of the project; and • The ongoing adherence to the EMPr, WUA and conditions as stipulated in the EA during construction and rehabilitation.
<p style="text-align: center;">Project Manager</p>	<ul style="list-style-type: none"> • The Project Manager / Engineer is the administrator of the project during construction; • The Engineer / Project Manager is responsible for all direct communication with the Contractor and is responsible for the overall co-ordination between the Project Engineer, Contractor/s and ECO; • On the recommendation of the ECO to order the Contractor to suspend any or all works on site if the Contractor or Sub-Contractor / Supplier fails to comply with the stipulated practices; and • Maintains a register of complaints and queries by members of the public at the site office. Complaints are to be noted and remedied as soon as possible.
<p style="text-align: center;">Contractor</p>	<ul style="list-style-type: none"> • This refers to the main Contractor(s) appointed by the client for the construction of the project, or portion of the project. The main Contractor(s) are required to adhere to the EMPr and are responsible to ensure that all sub-Contractors, suppliers and staff appointed by them also comply; • The Contractor/s must acknowledge in writing by signing the acknowledgement form (Appendix 1) that they will abide by the contents of EMPr. Copies of the signed acknowledgement form are to be forwarded to the ECO; and • Ongoing environmental training through tool-box talks must take place weekly on site. <p>All contractors must:</p> <ul style="list-style-type: none"> ○ Know and understand the requirements of the EMPr; ○ Instil an awareness of environmental aspects and impacts in site personnel; ○ Are responsible for any contravention/s by construction staff of any non-compliance with the EMPr; ○ Supply method statements for all activities requiring special attention as specified and / or requested by the Project Manager, ECO and / or Engineer during the duration of the Contract; ○ Be responsible to ensure that ECO instructions/advice is implemented within the time period specified; ○ Provide measures for erosion control prior to commencement and throughout construction; ○ Ensure that chances for erosion are minimised, and remedies any erosion timeously; ○ Ensure that storm/surface water controls are established to prevent damage of surrounding areas; ○ Ensure that alien vegetation/weeds are removed completely; this includes existing alien vegetation on site prior to the project commencing; ○ Ensure that all disturbed areas are rehabilitated to the ECO's requirements; ○ Ensure prompt remediation of chemical spills;

ENTITIES	ROLES & RESPONSIBILITIES
	<ul style="list-style-type: none"> ○ Ensure any Sub-Contractors / Suppliers who are utilised within the context of the contract comply with the EMPr. The Contractor will be held responsible for non-compliance on their behalf; ○ Bear the cost of any delays, with no extension of time granted, should the Contractor or Sub-Contractors / Suppliers contravene the said specifications such that the Engineer orders a suspension of work. The suspension will be enforced until such time as the offending party(ies), procedure, or equipment is corrected, and necessary remediation work has been undertaken to the satisfaction of the ECO; ○ Ensure that the Engineer is informed timeously of any foreseeable activities which will require input from the ECO; ○ Minimise social disruption by ensuring adequate and timeous communication with potentially affected parties; and ○ All environmental incidents must be recorded and referred for the attention of the ECO.
ECO	<ul style="list-style-type: none"> ● The ECO must be fully knowledgeable with the contents of the EMPr and the EA conditions; ● The ECO is to have access to the site at all times, to ensure that the environmental conditions of the EMPr and EA are being implemented and adhered to accordingly; ● The ECO must report on the environmental aspects of the contract to the responsible person /Project Manager at agreed intervals; ● The Contractors must have access to the ECO for advice on the environmental aspects of the contract and any other associated information. The need for any deviations or variations in the environmental conditions must be reported to the Project Manager and the ECO prior to these being undertaken and they must also be authorised by the relevant authorities if there are substantial deviations; ● The ECO must assist the Contractor to find environmentally friendly solutions to problematic issues that may arise on site; ● Briefs the Contractor about the requirements of EMPr; ● ECO must train the contractor and PM who must in turn ensure that all workers are trained about the EMPr and its implementation; ● Attends site meetings; ● Provides technical advice relating to environmental issues to the Engineer / Supervisor and Project Manager; ● Secures environmental specialist inputs if required; and ● The ECO has the authority to instruct the Contractor to cease a particular operation causing or liable to cause significant environmental damage, and issue fines or penalties for non-compliance with the EMPr.

8 COMPLIANCE WITH THE REQUIREMENTS OF THE EMPR

8.1 Monitoring and Auditing

Monitoring and auditing must take place within the scope of the NEMA (Act 107 of 1998): EIA Regulations 2014. An Independent ECO with suitable experience must be appointed for the duration of the construction and rehabilitation phases to oversee the construction activities, through monitoring and auditing, and ensure compliance with the EMPr as well as the conditions as stipulated in the Environmental Authorisation and the Water Use License.

- An initial pre-construction workshop must be arranged with the Project Manager, Proponent, all Contractors and employees involved in the project to ensure familiarity with environmental obligations contained within the EMPr as contractually binding documents on all parties involved;
- Site visits must be conducted by the ECO twice a month for the duration of the project. If requested by the engineer more frequent site visits may be required;
- Site Audits must be conducted once (1) every month by an independent ECO;
- Non-compliance must be documented by the ECO and reported to the Project Manager and Competent Authorities in Audit Reports;
- Emergency incidents during the project must be reported to the Competent Authorities, the ECO as well as any other affected parties;
- Records relating to monitoring and auditing must be kept on site and made available for inspection by the Compliance Unit/Environmental Management Inspectorate of the department of DEA and DWS;
- On completion of the project, a post construction environmental audit report that assesses the success of the rehabilitation must be submitted to Umgeni Water; and
- At least 4 post construction audits must be undertaken over the first year of operation post construction.

Please note: the responsibility for ensuring compliance with the EMPr and any other statutory requirements is ultimately that of the Proponent or their appointed project manager/ engineer.

In order to facilitate communication between the ECO, the proponent, project manager/ engineer as well as the contractor, it is vital that a suitable chain of command is structured that will ensure that the ECO's recommendations have the full backing of the project team before being conveyed to the contractor. In this way, penalties as a result of non-compliances with the EMPr may be justified as failure to comply with instruction from the highest authority.

It is assumed that the duration over which the Contractor's controls shall be in place cover the construction period of the project as well as the limited time after the contract completion in the General Conditions of Contract, known as the defect's liability period.

8.2 Signing of the EMPr

The acknowledgement form at the back of the approved EMPr must be signed by the Project Proponent, Project Managers / Engineers, the ECO and all the Contractors. All the Contractors' employees, are to be made aware of the conditions as contained in this EMPr and other contractual conditions relating to the environment

Any emergency incidents during the project must be reported to the Competent Authority and any other affected parties.

8.3 Record keeping

Copies of the EMP, EA, WUA as well as any other required permits and authorisations must be kept on site and made available for inspection to anyone wishing to know the contents.

All environmental incidents (non-compliance with EMP) must be recorded as follows:

- Time, date, location and nature of incident;
- A written record (including photographs) must be kept detailing the incident; and
- Corrective actions taken and by whom

9 NON-COMPLIANCE

A non-compliance is defined as, and will be issued for:

- Any contravention of environmental legislation by the Proponent, Project Manager or a contractor;
- There are deviations from the environmental conditions and requirements as set out in the EA and EMP that has or caused environmental impact;
- Environmental damage due to negligence;
- Any unforeseen environmental impact resulting from direct or indirect actions or activities on site that would be considered as a significant impact. Significance will be determined by the Environmental Control Officer (ECO) but will be informed by geographic extent, duration, magnitude of the impact and extent of remediation to the impact;
- The Contractor failing to effectively implement remedial actions issued by the ECO, PM or Proponent, or within a specified time frame; and
- The contractor failing to respond adequately to complaints from the public or local community.

The contractor / developer / implementing agent must act immediately after a notice of non-compliance is received, and correct the cause for the issuing of the notice. Application of a penalty clause will apply for incidents of non-compliance that have been identified to the contractor but no corrective actions implemented. These will be treated as repeat findings and the penalty fees below shall be applicable as follows:

Incident / Violation	Penalty
Failure to stockpile material correctly	R 5 000
Pollution of water bodies	R 10 000
Failure to control stormwater runoff	R 10 000
Failure to provide adequate sanitation	R 20 000
Unauthorised clearing / removal of vegetation	R 5 000
Failure to provide adequate waste disposal facilities and services	R 15 000
Failure to reinstate disturbed areas within specified time period	R 3 000
Failure to rehabilitate disturbed areas within 3 months of completion	R 5 000
Any other contravention of the environmental management plan	R 2 000

The ECO through the PM will inform the Contractor of the contravention as and when it occurs and shall be entitled to deduct the amount from funds due under the contract for rehabilitation if the non-compliance is not remedied within the specified timeframe provided by the ECO or any other competent authority.

The penalty associated with a chemical spill is not a set amount but will depend on the nature and extent of the spill. Rather than to pay for a set penalty, the Contractor will need to pay for the cost of any soil and/or groundwater remediation required by the ECO / authorities.

The imposition of such penalty shall not preclude the relevant provincial authority from applying an additional penalty in accordance with statutory powers. Failure to redress the cause shall be reported to the relevant authority for them to deal with the transgression, as deemed fit. The polluter-pays principle applies.

10 ENVIRONMENTAL MANAGEMENT PROGRAMME

This section of the EMPr outlines site specific environmental practices and mitigation measures to be adhered to during construction and rehabilitation, in order to limit and/or minimise potential negative impacts and promote sound environmental practices.

10.1. SPECIALIST RECOMMENDATION

The EMPr includes the Wetland specialist recommendations. See Appendices attached for full specialist report

Activity	Responsibility	Frequency / Timing
Pre-Construction Phase		
Environmental Awareness Training and Induction		
a) All contractors and employees should undergo induction which is to include a component of environmental awareness.	Engineer, PM and C	Planned before construction commences and on-going throughout the project.
b) The induction is to include aspects such as the need to avoid littering, the reporting and cleaning of spills and leaks and the general good 'housekeeping'		
Storage and Use of Construction Chemicals and Hydrocarbons		
a) All chemicals and toxicants during construction must be stored in bunded areas	Engineer, PM and C	Planned before construction commences and on-going throughout the project.
b) All machinery and equipment should be inspected regularly for faults and possible leaks, these should be serviced off-site.		
c) No chemicals, building materials hydrocarbons or soils must be stockpiled within the 32m buffer zone.		
Spillages		
a) Have action plans on site, and training for contractors and employees in the event of spills, leaks and other impacts to the aquatic systems.	Engineer, PM and C	Planned before construction commences and on-going throughout the project.

Activity	Responsibility	Frequency / Timing
Construction Phase		
Access, clearing of vegetation and construction activities in areas buffering watercourses for construction purposes and for associated activities		
a) Existing cleared roadways and riparian areas should be utilised for construction activities	Engineer, PM and C	Planned before construction commences.
b) Construction activities to be conducted in the dry season (April – August)		
c) Laydown yards for construction materials should be placed outside a 32m buffer zone from the rivers.		
Instream Construction		
a) Cofferdams are to be constructed to displace water and provide dry access to submerged areas.	Engineer, PM and C	Planned before construction commences and implemented during construction.
b) Ensure that the structures are built to prevent water coming into contact with high impact zones.		
c) Ensure that the amount of sedimentation and pollution is kept minimal or reduced.		
Ablution Facilities		
a) Adequate sanitary facilities and ablutions on the servitude must be provided for all personnel through the project area.	PM and C	Planned before construction commences and on-going throughout the project.
b) Use of these facilities must be clean.		
Hazardous and Non-hazardous Waste		
a) No dumping of construction material on-site may take place.	PM and C	Planned before construction commences and on-going throughout the project.
b) All waste that is generated on site during construction must be adequately managed.		
c) Separation and recycling of different waste materials should be supported		
Loss of Habitat		
a) An alien invasive plant management plan needs to be compiled and implemented prior to construction to control and prevent the spread of alien invasive alien vegetation.	PM and C	Planned before construction commences and on-going throughout the project.
Monitoring		
a) The rehabilitated weir is to be monitored during operation and maintenance.	Pro	Ongoing

10.2 Requirements Stipulated by Department of Water and Sanitation

- No form of secondary pollution should arise from the disposal of sewage and refuse. The contractor must be clearly briefed on the method of disposal of such waste and compliance must be ensured / monitored. Any pollution problems arising from the above project must be addressed immediately by the Applicant;
- Storage of oils, materials, chemicals, fuels etc to be used during the construction phase must not pose a risk to the surrounding environment. Such storage areas must be located out of the 1;100 year flood line of any water course and unauthorised access to these areas must be controlled. Temporary bunds must be constructed around chemical or fuel storage areas to contain possible spillages;
- It is important that any significant spillages of chemicals, fuels etc, during the construction phase are reported to this office and other relevant authorities. In the event of a spill the following steps must be taken:
 - Stop the source of the spill;
 - Contain the spill;
 - All significant spills must be reported to this Department and other relevant authorities;
 - Remove the spilled product for treatment or authorised disposal;
 - Determine if there is any spill, groundwater or other environmental impact;
 - If necessary, remedial action must be taken in consultation with this Department and Department of Economic Development, Tourism and Environmental Affairs; and
 - Incident must be documented.

10.3 PRE-CONSTRUCTION

Activity	Responsibility	Frequency / Timing
a) The DWS, DEA, Umdoni Local Municipality and Ugu District Municipality must be notified in writing fourteen (14) calendar days before commencement of any construction activity.	PRO	Prior to any construction commencing
b) The approved EMPr must be readily available in the construction camp office, at all times.	C, PM, ECO,	Prior to any construction commencing; Ongoing
c) A relevant Water Use Authorisation must be obtained from the Department of Water and Sanitation (DWS) prior to the commencement of construction.	C, PM, ECO,	Prior to any construction commencing
d) A site-specific Rehabilitation Plan for the identified floodplain wetland and riverine corridor must be compiled and submitted to the Department of Water and Sanitation (DWS) for approval.	C, PM, ECO,	Prior to any construction commencing
e) A 20% financial provision, of the total project value, must be allocated in the budget for rehabilitation of disturbed ecosystems.	C, PM, ECO,	Prior to any construction commencing
f) Prior to ground breaking, a Botanical Specialist must be appointed to perform a walkthrough along the riparian zone and wetland areas. All conservation-important species identified must be translocated to suitable areas prior to any construction activities.	C, PM, ECO,	Prior to any construction commencing
g) An Invasive Alien Control Programme must be implemented to prevent the introduction and spread of alien vegetation as per the legislative requirements specified under the Conservation of Agricultural Resources Act, 1983 amended in 2001 and the National Environmental Management: Biodiversity Act 2004 (Act No, 10 of 2004).	C, PM, ECO,	Prior to any construction commencing; Ongoing
h) The wetland and riverine vegetation must be carefully harvested prior to construction activities commencing so that sufficient and appropriate vegetation is available for the rehabilitation of the wetlands and riverine system. It must be noted that the commercial availability of wetland plants is extremely limited. Plants that are harvested must be kept on site in a condition conducive to their continued existence.	C, PM, ECO	Prior to any construction commencing; Ongoing
i) Access roads must be one-way, limited to 3m width and have turning points outside of the riparian zone. Vehicle turning points must be approved by the ECO before commencement of construction.	C, PM, ECO	Prior to any construction commencing; Ongoing
j) All embankments, unless otherwise directed by the Engineer and ECO, must be protected by a cut off drain along the top of all banks to prevent water from gushing down the face of the embankment and causing erosion.	C, PM, ECO	Prior to any construction commencing; Ongoing

10.4 CONSTRUCTION PHASE

Activity	Responsibility	Frequency / Timing
A.1 Access to site		
a) The construction work face / servitude must have strict access control to reduce vehicular movement and pedestrians on site.	C & PM	Before moving onto site and ongoing
b) Disturbance of indigenous vegetation must be kept to a minimum during construction.	C, PM, ECO,	During surveys, preliminary investigations & ongoing
c) Machine / vehicle operators must receive clear instructions to remain within demarcated work areas.	C & PM	Before commencement of construction & ongoing
d) Access to all facets of the site and work servitude may only be via access roads approved by the ECO and PM.	C & PM	Before commencement of construction & ongoing
e) Drivers of construction vehicles must exercise care when travelling to and from the site as well as within the work servitude – and must adhere to speed limit requirements.	C & PM	On-going monitoring
A.2 Permit Requirements		
a) Necessary permits must be obtained prior to the commencement of any activities requiring such a permit. These could include: <ul style="list-style-type: none"> • Impacting on water resources (Department of Water and Sanitation). 	C & PM	Before moving onto site and commencement of construction
A.3 Education, Environmental Awareness & Employee Conduct		
a) All employees working on site must be familiar with the requirements of the EMPr, conditions of the EA, WUA, all permits pertaining the projects. They must also have a basic level of Environmental Awareness Training.	C & PM	Before moving onto site and commencement of construction
b) Staff operating equipment must be adequately trained and sensitised to potential hazards associated with their tasks.	C, PM	During staff induction & On-going monitoring
c) Use of environmental awareness posters on site is advocated.	C & PM	On-going
d) No alcohol / drugs to be present on site; no vehicles or machinery are to be operated whilst under the influence of alcohol or drugs.	C	On-going
e) Construction staff must make use of facilities provided for them, and not ad-hoc alternatives (e.g. fires for cooking, the use of surrounding bush as a toilet facility is strictly forbidden).	C	On-going
f) Environmental issues must be discussed at least once every week during toolbox talks. <ul style="list-style-type: none"> • A signed register of attendees containing topics discussed for each toolbox talk must be prepared. <p>An example of tool box talk topics are:</p> <ul style="list-style-type: none"> – Explanation of what is meant by “environment” and why the environment needs to be protected and conserved; 	C	On-going

<ul style="list-style-type: none"> - How construction activities can impact on the environment, and what measures can be taken to mitigate against these impacts; - Awareness of emergency and hazardous spills response provisions; - Prevention of pollution and litter control and the minimization of disturbance to sensitive areas; - The need for a “clean site” policy also needs to be conveyed to construction workers; - Worker conduct on site which encompasses a general regard for the social and ecological wellbeing of the site and adjacent areas. 	C	On-going
g) Trespassing on private properties (i.e. adjoining or nearby) is forbidden.	C	On-going
h) The staff conduct rules are described in a separate table of rules in this EMPr. This is aimed at providing staff with the basic information regarding worker conduct on site. Please refer to Section 11 for a comprehensive list.	C & PM	On-going
A.4 Construction Camp site and Storage Areas		
a) The Engineer and ECO must approve the location of the construction camp site and equipment storage areas.	C, PM & ECO	Before moving onto site
b) The Contractor must attend to, monitor and manage drainage of the camp site. Run-off from the camp site must not discharge into neighbouring properties. The PM must conduct weekly inspections of the construction site.	C & PM	Before moving onto site & ongoing
c) A small area must be allocated to house any plant material gathered from the site. The plant maintenance area will need to facilitate the effective maintenance of recovered plant material for the duration of the contract. A full-time staff member must to be allocated to care for rescued plants.	C, PM & ECO	Before moving onto site & ongoing

Activity	Responsibility	Frequency / Timing
d) No vehicle / machinery maintenance or servicing is permitted in the construction camp site.	C & PM	On-going
e) Adequate parking must be provided for site staff and visitors, within the construction campsite.	C & PM	During site establishment and On-going
f) The construction camp must be properly fenced and secured with a 1.8 m high Bonnox (or similar type) fence and locked after construction hours. It must be kept in a clean and orderly state at all times.	C & PM	During site establishment and On-going
g) No refuse storage or storage of equipment or construction material outside the camp site is permitted.	C	On-going
A.5 Ablutions		
a) Temporary chemical toilets must be provided by a company approved by the PM, at a ratio of 1 toilet per 7 workers . The use of open areas, surrounding bush, rivers or degraded areas as a toilet facility is strictly forbidden.	C	During site establishment & on-going monitoring
b) Females must have a separate toilet from male workers and must be positioned apart from each other.	C	During site establishment & on-going monitoring
c) Temporary chemical toilets must be placed 50m away from the River buffer.	C, ECO & PM	During site establishment & on-going monitoring
d) Ablution facilities need to be monitored and cleaned daily to ensure maintenance of high hygienic standards and must be serviced once a week or more often if deemed necessary by the ECO. Servicing must be undertaken by a reputable company. Waybills must be retained for proof of servicing. Toilet paper must be provided at all times.	C & PM	On-going
e) The use of mobile, chemical toilet facilities during the construction phase of this project must not cause any pollution to any water resources as well as pose a health hazard. In addition, these toilets must be situated out of the 1:100 year flood line of any watercourse. Furthermore, a maintenance plan for the service of these toilets must be drawn up and strictly adhered to in order to prevent malfunctioning and neglect	C & PM	On-going
A.6 Traffic Management		
a) All construction vehicles must be in a roadworthy condition.	C & PM	On-going
b) Loose materials transported within, to or from site must be secured or covered.	C & PM	On-going

c) Construction warning signs must be utilised along the routes affected. If necessary, traffic control point's personnel must be stationed at relevant points.	C & PM	On-going
Activity	Responsibility	Frequency / Timing
A.7 Waste Management		
a) Waste skips/bins must be provided throughout the work front and within the construction camp.	C, PM, ECO	During site establishment & on-going
b) Litter must be collected daily from the work front and moved to the camp site waste storage area ready for disposal. Waste bins must be adequately covered at all times.	C, PM, ECO	On-going
c) Waste skips/bins must be regularly emptied so as to prevent overfilling and disposed of at a registered landfill site.	C, PM, ECO	During site establishment & on-going
d) The mixing of hazardous and non-hazardous waste is strictly prohibited.	C, PM, ECO	On-going
e) Chemical waste must be stored in appropriate containers and disposed of at licensed hazardous waste disposal facilities. Used absorbent material must be treated as hazardous waste. All empty chemical packaging associated with the storage of hazardous material must be returned to the supplier, if possible, sent to a drum reconditioning company or disposed of as a hazardous waste as a last resort.	C, PM, ECO	On-going
f) A bunded area must be provided for the storage of hazardous waste.	C, PM, ECO	On-going
g) A sump must be created for any concrete waste. This is to be desludged regularly and the cement waste must be removed to a landfill as approved by the local authority.	C, PM, ECO	On-going
h) All solid waste material generated must be disposed of a permitted landfill site that is authorised to accept such waste. Safe disposal certificate must be kept on record	C, PM, ECO	On-going
i) Contaminated soil or other hazardous material must be disposed of at a permitted hazardous landfill site that is authorised to accept the said material.	C, PM, ECO	On-going
j) All waste that is generated from this project must be disposed of in a suitable manner so as not to cause any surface and groundwater pollution or health hazard	C, PM, ECO	On-going
k) Water containing waste must not be discharged into the natural environment	C, PM, ECO	On-going

l) Measures to contain the water containing waste and safely dispose of it must be implemented	C, PM, ECO	On-going
Activity	Responsibility	Frequency / Timing
A.8 Stormwater Management		
a) The use and application of the principles and designs of Sustainable Urban Drainage Systems (SUDS) is advocated as this is a more acceptable, environmentally sustainable and friendly solution to stormwater control. Please refer to Appendix D of this EMPr.	C & PM	On-going
b) To prevent stormwater damage, the increase in stormwater runoff resulting from the construction activities must be estimated and the drainage system assessed accordingly.	C & PM	Before moving onto site and on-going
c) The stormwater management plan must ensure that stormwater flow and surface flow does not result in negative impacts on the receiving environment and downstream properties.	C, PM, ECO	On-going
d) Surface flow must be channelled to avoid erosion. Erosion protection measures, such as rock check dams, sandbags must also be used to help prevent erosion.	C, PM, ECO	On-going
e) Where surface runoff is concentrated (e.g. along exposed tracks), flow must be slowed by the use of contours, berms, sand bags and cut-off drains at regular intervals.	C, PM, ECO	On-going
f) Should rock check dams be used, stones must stand at 100-150mm high to decrease the flow velocity and discharging impact rate. This must be discussed with and approved by the PM.	C & PM	On-going
g) The use of high velocity stormwater pipelines is not supported; open, high friction, semi-permeable channels must be used instead.	C & PM	On-going
h) The Engineer and Contractor must ensure that only clean stormwater runoff enters the environment	C & PM	On-going
i) Drainage must be controlled to ensure that runoff from the project area does not culminate in off-site pollution, flooding or result in any damage to properties downstream of any stormwater discharge point (s)	C & PM	On-going

Activity	Responsibility	Frequency / Timing
A.9 Conservation and Management of Soil Resources		
a) Topsoil is to be conserved when establishing access to the site and setting up the camp.	C, PM, ECO	On-going
b) Once approved areas have been cleared of trees, large shrubs and /or alien vegetation, the top soil layer of not less than 200 mm (or as per geotechnical soil profiling result) must be removed and stockpiled not higher than 2 m in a designated area for use during progressive rehabilitation. Stockpiling must occur for the shortest possible time.	C, PM, ECO	On-going
c) Topsoil stripped from the construction camp and other construction areas must be stockpiled away from any potential disturbances	C & PM	On-going
d) Stockpiles of topsoil stripped from different sites must be stored separately, for reapplication during rehabilitation and must be area specific.	C	On-going
e) Do not strip topsoil when it is wet.	C	On-going
f) Soil erosion onsite must be prevented at all times – i.e. pre, during and post construction activities. Erosion control measures must be implemented in areas prone to erosion such as near water supply points, edges of slopes etc. These measures could include the use of sand bags, retention or replacement of vegetation	C	On-going
A.10 Protection of Slopes		
a) Cut slope gradients must not exceed the natural angle of repose for the particular soil type.	C & PM	
b) The ECO may identify additional cut and fill areas in need of protection and in consultation with the PM. A solution in terms of the most appropriate approved method and technology will be specified.	C & PM	
c) All fill material must be compacted. Suitable geotextile bags/sheets must be used to prevent erosion.	C, PM & ECO	
d) Create cut off drains in areas above cut slopes. Ensure that cut off drains are aligned in such a way that they do not create additional problems.	C, PM & ECO	
e) Cut and fill slopes must be left as roughened surfaces which emulate the natural surroundings and will assist in accumulating soil and the re-establishment of vegetation	C, PM & ECO	
A.11 Hazardous Substances and materials		
a) Areas used to store hazardous substances must be suitably signed, fenced and access controlled.	C & PM	On-going

Activity	Responsibility	Frequency / Timing
A.12 River Protection		
a) Infill any soil excavations/disturbances across river banks with sufficiently sized sediments and by rapidly re-establishing dense vegetal growth in order to minimize the risk of bank erosion.	C, PM & ECO	On-going
b) Erosion upstream and downstream of the road and bridge must be monitored at regular intervals in order to assess whether further river bank protection works are required.	C, PM & ECO	On-going
A.13 Conservation of Natural Resources		
a) No natural vegetation must be cleared during construction without the prior permission from the ECO. The ECO must be given an opportunity to mark vegetation such as indigenous trees (where applicable) that are to be conserved before the Contractor starts to clear the site.	C, PM & ECO	Before commencement of the project
b) Smaller plants, shrubs, grasses and bulbous species must be carefully removed (with root ball / tubers / bulbs intact) from the work servitude and camp site area prior to these areas being stripped of topsoil. These plants may either be immediately translocated or must be placed in black potting bags for safe keeping in a designated-on site nursery. The ECO is to supervise this activity. A full-time staff member must be allocated to ensure that the plants are kept in a healthy and viable condition for re-use in the rehabilitation of the work servitude and camp site areas.	C, PM & ECO	Before commencement of the project
c) Care must be taken to avoid the introduction of alien plant species to the site and surrounding areas. Particular attention must be given to imported materials.	C & PM	On-going
d) An alien invasive plant management plan for the construction zone must be developed and implemented by the Contractor for the duration of the contract. An example of such a plan is included in Appendix C.	C & PM	Before commencement of the project

Activity	Responsibility	Frequency / Timing
A.14 Dust / Air Pollution		
a) It must be ensured that during transport, loads of loose material (such as sand etc.) on trucks, is covered and/or dampened.	C & PM	On-going
b) Do not exceed the freeboard levels when transporting construction related materials.	C & PM	On-going
c) Vehicles travelling on the construction site must adhere to speed limits so as to avoid generating excessive dust. A speed limit of 30km/h must be adhered to on all un-surfaced roads.	C & PM	On-going
d) The site must be effectively dampened with a water bowser to minimise dust problems.	C, PM & ECO	On-going
e) Fires are not permitted on site.	C, PM & ECO	On-going
A.15 Noise		
a) Operational hours (of construction) must be limited to between 07h00 and 17h00 to avoid sleep/rest disruption and general disturbance of adjacent land users. Notify adjacent land owners and ECO of after-hours construction work and of any other activity that could cause nuisance.	C, PM & ECO	Before commencement of the project & on-going
A.16 Work servitudes		
a) A working servitude of 6m must be established to avoid excess trampling and damage to the site. The construction site, including the working servitude must be properly demarcated using orange hazard fencing or concrete/yellow barriers.	C, PM & ECO	Before commencement of the project & on-going
b) Pedestrian activity surrounding the construction sites must be controlled and demarcated during construction activities. Pedestrian thoroughfares immediately surrounding/through the construction areas must be established and demarcated to avoid any injury or inconvenience to local residents.	C, PM & ECO	Before commencement of the project & on-going
c) All work servitudes must not interfere with private properties and fence lines.	C, PM & ECO	Before commencement of the project & on-going
d) All work servitudes must be rehabilitated as stated in Section 10.5 below.	C, PM & ECO	Progressively during construction

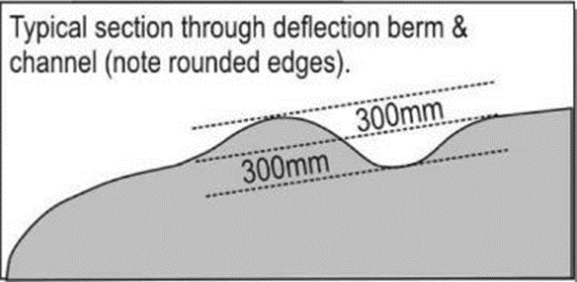
10.5 PROGRESSIVE REHABILITATION AND POST CONSTRUCTION PHASE

Activity	Responsibility	Frequency / Timing
B.1 Rehabilitation of the Construction Camp & Work Servitude		
a) All structures comprising the construction camp are to be removed from site	C, PM & ECO	Project Completion
b) The area that housed the construction camp is to be checked for spills of substances such as oil, paint and fuels etc. and these must be cleaned up.	C, PM & ECO	Project Completion
c) All hardened surfaces within the construction camp area must be ripped, all imported materials removed, and the area must be top-soiled and re-vegetated. ECO / Rehabilitation specialist to give advice as to suitably appropriate species to be planted.	C, PM & ECO	Project Completion
d) The contractor must arrange the cancellation of all temporary services.	C	Project Completion
e) The site must be cleared of all rubble and domestic waste must be disposed of at a registered waste disposal site. All temporary bunds / spill trays must be removed from the site. Materials that will not be used again must be disposed of as hazardous waste.	C, PM & ECO	Project Completion
f) All temporary works and stockpiles must be removed.	C, PM & ECO	Project Completion
g) No temporary works, stockpiles or other circumstances must exist that impede natural water movements or act to concentrate run-off.	C, PM & ECO	Project Completion
h) All temporary bunds / spill trays must be removed from the site. Materials that will not be used again must be disposed of as hazardous waste.	C, PM & ECO	Project Completion
i) All temporary sanitary infrastructure and waste water disposal systems must be removed from the site. Care must be taken to avoid leaks, overflows and spills.	C, PM & ECO	Project Completion
j) The Contractor must repair any damage that the construction works has caused to adjacent areas.	C, PM & ECO	Project Completion
k) Fences, barriers and demarcations associated with the construction phase are to be removed from the site unless stipulated otherwise by the Engineer.	C, PM & ECO	Project Completion
l) All areas where temporary services that were installed are to be rehabilitated to the satisfaction of the Engineer and ECO.	C, PM & ECO	Project Completion
B.2 Re-vegetation		
a) Replace topsoil to a minimum depth of 200-300mm on slopes and 150mm on flat areas (areas with less than 1:15 slope ratio) disturbed by construction activities (campsite and work servitudes).	C, PM & ECO	Project Completion

Activity	Responsibility	Frequency / Timing
b) All exposed earth (within the bridge upgrade area) must be rehabilitated promptly with suitable vegetation to protect the soil. Necessary rehabilitation and landscaping measures (e.g. seeding, removing alien plants etc.) must be undertaken to ensure species composition reverts to a more natural state. Indigenous vegetation with deep set root systems is advisable in order to limit further soil loss on site.	C, PM & ECO	Progressively throughout construction
c) Planting must be carried out as soon as possible after construction in order to prevent soil erosion and the invasion of alien plant species onto the site. The ethos of progressive rehabilitation must be adopted; and only indigenous plants may be used.	C, PM & ECO	Progressively throughout construction
d) The Contractor is to water and maintain all planted vegetation until the end of the defects liability period, and is to submit a method statement regarding this to the Site Manager & Environmental Control Officer.	C, PM & ECO	Throughout construction and rehabilitation
e) Source indigenous plant material from within a 50km radius.	C, PM & ECO	Throughout construction and rehabilitation
f) All rehabilitated areas must be maintained through weekly inspections until 85% ground cover success rate has been achieved.	C	Throughout construction and rehabilitation
g) Trees lost due to construction activities are to be replaced at a 1:4 ratio, i.e. four trees planted for everyone tree cut down. Therefore, trees that area cut must be counted.	C, PM & ECO	Throughout construction and rehabilitation
h) Holes must be well watered prior to the trees being planted in them.	C, PM & ECO	Throughout construction and rehabilitation
i) Unless otherwise specified by the ECO, excavate square holes of 800mm x 800mm x 800mm on average for trees and 500mm x 500mm x 500mm on average for shrubs.	C, PM & ECO	Throughout construction and rehabilitation
j) A raised circular 200mm high subsoil berm, placed 500mm (shrubs) to 750mm (trees) from the plant's stem must be provided for the watering. Do not simply leave the excavated plant hole partially backfilled for this purpose – the berm must be raised above the natural soil level.	C, PM & ECO	Throughout construction and rehabilitation
B.3 Land Rehabilitation		
a) Erosion gullies and rills within the construction site must be rehabilitated immediately and the cause of the erosion dealt with simultaneously.	C, PM & ECO	At the time of occurrence and ongoing
b) The site is to be cleared of all litter and rubble.	C, PM & ECO	On-going

Activity	Responsibility	Frequency / Timing
c) Rip and / or scarify all disturbed (and other specified) areas of the construction site, compacted during the execution of the Works, in order to facilitate binding of topsoil. Embankments re-vegetated by hydro seeding ¹ with a relevant indigenous grass mix.	C, PM & ECO	On-going
d) Rip and / or scarify all areas at 300 mm intervals (but not more than 400 mm intervals), ensuring that the lines overlap.	C, PM & ECO	On-going
e) Do not rip and / or scarify areas under wet conditions, as the soil will not break up.	C, PM & ECO	On-going
f) Rip and / or scarify along the contour to prevent the creation of down-slope channels.	C, PM & ECO	On-going
g) Lightly hand-scarify all areas following the application of topsoil to facilitate mixing of the upper most layers. The ECO will specify whether scarifying is necessary, based on the site conditions immediately before this works begin.	C, PM & ECO	On-going
h) Execute top soiling activity prior to the rainy season or any expected wet weather conditions. There may be a possible need for soil enhancers such as organic fertilisers, compost and well-rotted manure to improve soil quality and to aid in the rehabilitation of the site.	C, PM & ECO	On-going
i) Rehabilitation must be executed in such a manner that surface runoff will not cause erosion of disturbed areas during and after rehabilitation.	C, PM & ECO	On-going
j) For rehabilitation in wetlands a wetland rehabilitation specialist must be retained to manage this specific rehabilitation. If the ECO has experience in wetland rehabilitation, then they can manage this activity.	C, PM & Wetland rehabilitation specialist/ECO	Progressively throughout construction

¹ Hydroseeding is a process of applying a mixture of water, seed, fertilizer and mulch to the ground by means of direct spraying using hydromulch equipment. The mixture temporarily protects soils from water and wind erosion, allowing seeding to take root. See Methodology attached as Appendix C.

B.4 Slope Protection		
a) Install sand bags and silt fences along slopes at regular contours/spacing (2-5m depending on slope angle) to slow down the flow of water. If sandbags are to be left on site after construction activities have ceased, then such bags must be made of a material that will naturally decompose such as hessian – the use of polyethylene bags for this purpose is prohibited.	C, PM & ECO	On-going
b) Construct stormwater diversion berms to divert water away from slopes to well vegetated areas. See next page.	C, PM & ECO	On-going
<p>Typical section through deflection berm & channel (note rounded edges).</p> 		
B.5 Road Maintenance and Repair		
a) Once commissioned, the completed weir must be inspected by Umgeni Water once a year.	PRO	Project Completion and Ongoing
B.6 General Remediation		
a) A meeting is to be held on site between the Engineer, ECO and the Contractor to approve all remediation activities and to ensure that the site is restored to a condition approved by the Engineer and the ECO.	PM, C & ECO	Project Completion
b) A post construction audit must be conducted on site by the ECO in the company of the Engineer and the Contractor to approve all remediation activities and to ensure that the site has been restored to a condition approved by the ECO.	PM, C & ECO	Project Completion

10.6 OPERATIONAL PHASE

This pertains to all environmental impacts associated with the operational phase of the proposed and associated structures.

Activity	Responsibility	Frequency / Timing
C.1 Vegetation		
a) A minimum basal cover of 85% comprising indigenous vegetation must be maintained at all times. This must be monitored by a trained vegetation rehabilitation expert. In areas flagged as requiring further intervention, a suitable replanting / re-vegetation programme must be implemented. This must comprise a mix of rapidly germinating indigenous wetland/riparian species, shrubs and trees naturally occurring in the affected habitat and adapted to stabilising areas.	Umgeni Water	Throughout the life span of the Gauging Weir
b) The Alien Plant Control Programme implemented during the construction phase must be ongoing throughout the operational phase of the project. The programme must be undertaken at least 4 times a year during the first 5 years and thereafter twice yearly for the lifespan of the project.	Umgeni Water	Throughout the life span of the Gauging Weir.
C.2 Aquatic Habitats		
a) Areas sensitive to erosion must be identified and monitored to ensure that erosion risks are minimised.	Umgeni Water	Throughout the life span of the Gauging Weir
C.3 General		
a) Emergency response procedures and services must be established to deal with containment and clean-up of hazardous spills during road accidents and breakdowns.	Umgeni Water	Throughout the life span of the Gauging weir

11. STAFF CONDUCT CONTROL AND INFORMATION SHEET

ALL STAFF MUST OBEY THE FOLLOWING RULES	
1	DO NOT tamper with or destroy nesting sites, lairs or any other form of animal shelter.
2	DO NOT feed the native animals.
3	DO NOT leave the construction site untidy and strewn with rubbish that will attract animal pests.
4	DO NOT bring your pets to the construction site.
5	DO NOT trespass on private properties not linked to the project.
6	DO NOT set fires unnecessarily.
7	DO NOT cause any unnecessary disturbing noise at the construction site or at any designated worker collection/drop off points.
8	DO NOT drive a vehicle under the influence of alcohol.
9	DO NOT exceed the national speed limits on public roads or exceed the recommended speed limits in this management plan (where applicable)
10	DO NOT drive a vehicle that is generating excessive noise (noisy vehicles must be reported and repaired as soon as possible).
11	DO NOT litter along the roadsides, including both public and private roads.
12	DO NOT remove or destroy vegetation at the construction camp / construction site without the prior consent of the Contractor and Environmental Control Officer.
13	DO NOT tamper with, destroy or remove vegetation from any areas that have been fenced off or marked.
14	DO NOT pollute watercourses, whether flowing or not.
15	DO NOT drive through the watercourses.
16	DO NOT operate critical items of mechanical equipment without having been trained and certified.
17	ALL employees must undergo the necessary safety training and wear the necessary protective clothing at all times.
18	NO unsocial behaviour will be permitted e.g., excessive shouting, hooting etc.
19	NO ad-hoc activities are to be undertaken e.g. fires for cooking, the use of surrounding bush as a toilet facility is strictly forbidden
20	NO trespassing on private / commercial properties adjoining the site.
21	NO worker may be forced to do work that is potentially dangerous or for what he / she is not trained to do.

** A Zulu version of the Staff Conduct and Information Sheet is available and must be used during environmental training.*

APPENDIX A: ENVIRONMENTAL AWARENESS

The Proponent or their appointed representative/s must conduct adequate inductions and trainings prior to commencing the proposed refurbishment of the existing abstraction weir at the Esperanza Raw Water Pump Station, below the Umzinto Dam; and the installation of the V-Notch gauge to measure flow. The aim of Environmental Awareness Training is to provide contractors and their construction workers with the knowledge to identify environmental issues associated with their activities and best practice methods to minimise environmental impacts. Furthermore, it outlines environmental legal obligations relevant to construction activities.

Environmental awareness training must include the following:

- What is meant by “environment”;
Environment” means the surroundings within which humans exist and that are made up of (i) the land, water and atmosphere of the earth; (ii) micro-organisms, plant and animal life; (iii) any part or combination of (i) and (ii) and the interrelationships among and between them; and (iv) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing.

- Why the environment needs to be protected and conserved;
- How construction activities can impact the environment;
- What can be done to mitigate against such impacts;
- Awareness of emergency and spills response provisions;
- Social responsibility during construction e.g. being considerate to local residents;
- Understanding of common environmental terms;
- Understanding of legal obligations and responsibilities in relation to environmental legislation;
- Recognition of common environmental impacts on construction sites and potential impacts resulting from the individual's work activities;
- Identification of accepted current environmental management best practices for relevant workplace activities;
- Identification of situations which require further advice about appropriate work practices to minimise environmental damage – such as river crossings and working in or near wetlands; and
- Understanding the link between various construction activities and the potential for these activities to impact on the environment.

It is the responsibility of the Proponent or their appointed representative/s to provide the Contractor/s with no less than 1 day's environmental training and to ensure that the Contractor/s has sufficient understanding to pass this information onto the construction staff. Translators are to be used for the training of staff, where necessary. The Engineer / ECO must be on hand to explain more difficult/ technical issues and to answer questions which may be raised. Use must be made of environmental awareness posters on site. The use of pictures and real-life examples is encouraged as these tend to be more easily remembered.

The induction must include the following:

- Identification of the extent of the construction area/ work servitude and those areas that are to remain undisturbed;
- Identify the limit of vegetation clearance, significant vegetation, and other 'no-go' areas;
- Identification of locations for stockpiles, equipment lay-down areas, construction camp, and access roads;
- Identification of sensitive adjacent areas e.g. existing residential areas; wetlands; rivers;
- A presentation of the EMPr and its associated implications;
- It must be emphasised that the PM or ECO must be contacted in instances where clarity is required; and
- Examples of environmental incidents, and how to deal with them, *inter alia*:
 - significant spill of fuel or oil;
 - significant chemical spill;
 - severe erosion from flooding;
 - fire (on site or from off-site);
 - damage to a heritage site; and
 - destruction of a rare plant outside the defined construction zone.

It is important to be aware of site instruction(s) dealing with such emergencies. Prompt and effective action will significantly reduce the environmental impact. Any such action must not endanger the health and / or safety of any of the site workers. Staff members must be made aware of all emergency plans by the site supervisor.

Foremen and workers must be made aware of the following requirements prior to commencing any work:

- They must check for areas which may have been marked to indicate that construction activity therein is excluded; and
- They must check with the supervisor if unsure about anything.

Environmental awareness training must be on-going throughout the construction period; aspects must be included in weekly tool-box talks.

APPENDIX B: SPILL RESPONSE PLAN

1. INTRODUCTION

The purpose of this Spill Response Plan (SRP) is to develop and highlight the appropriate procedures to follow in the event of a spill to minimise the potential to harm either employees or the environment.

In the event of a spill occurring on the site, this SRP provides a guideline to the process that must be undertaken to ensure that the spill is contained in a manner which is safe for the employees on site and prevents harm to the surrounding environment.

2. CLEAN-UP PROCEDURES

Spilled chemicals must be effectively and quickly contained and cleaned up. Employees may only clean up spills themselves if properly trained and protected. Employees who are not trained in spill clean-up procedures must report the spill to the relevant emergency staff, warn other employees, and leave the area.

The following general guidelines must be followed for evacuation, spill control, notification of ECO & proper authorities, and general emergency procedures in the event of an incident in which there is potential for a significant release of hazardous materials.

2.1 Evacuation

A spill response team must be formed for the project and must be trained on hazardous chemical substances, handling of hazardous chemical substances as well as how to perform clean-ups. The spill response team must only be used for “small” spills. “Medium” spills and “large” spills must be handled by a reputable spill response company i.e. Drizit or EnviroServe.

Persons in the immediate vicinity of a spill must immediately evacuate the premises (except for employees with training in spill response). If the spill is of “medium” or “large” size, or if the spill is deemed hazardous, immediately notify emergency response personnel.

2.2 Spill Control Techniques

NOTE: *Treat all residual chemical and clean-up materials as hazardous waste.*

Spill control equipment must be located wherever significant quantities of hazardous materials are received or stored. MSDSs, absorbents, over-pack containers, container patch kits, spill dams, shovels, floor dry, acid/base neutralizers, sealable containers to receive the contaminated spill material and “caution-keep out” signs are common spill response items that must be present.

2.3 Spill Response and Clean-up

All spill incidents must be reported to the ECO immediately.

Chemical spills are divided into three categories: Small, Medium and Large. Response and clean-up procedures vary depending on the size of and the type of spill.

Small Spills:

Definition: Any spill where the major dimension is less than 50cm in diameter.

Small spills are generally handled by internal personnel and usually do not require an emergency response by police or fire department teams.

- Quickly control the spill by stopping or securing the spill source. This could be as simple as up-righting a container and using floor-dry or absorbent pads to soak up spilled material. Wear gloves and protective clothing, if necessary.
- Put spill material and absorbents in secure containers.
- Consult with the Operational Health and Safety (H&S) representative and the MSDS for spill and waste disposal procedures.
- In some instances, the area of the spill must not be washed with water. Use Dry Clean-up Methods and never wash spills into the natural environment.
- Both the spilled material and any absorbent may be considered hazardous waste and must be disposed of in compliance with municipal, provincial and national regulations.

Medium Spills:

Definition: Spills where the major dimension exceeds 50cm but is less than 2m.

Outside emergency response personnel (police and fire department teams) must usually be called for medium spills. Common sense, however, will dictate when it is necessary to call them.

- Immediately try to contain the spill at its source by simple measures only; up righting a container, or putting a lid on a container, if possible. Use absorbent material. Once you have made a quick attempt to contain the spill, or once you have quickly determined you cannot take any containment measures, leave the area and alert emergency response personnel (police and fire department teams). Give personnel accurate information as to the location, chemical, and estimated amount of the spill.
- Evaluate the area outside the spill. Engines and electrical equipment near the spill area must be turned off and if necessary electricity must be cut. This eliminates various sources of ignition in the area. Do not go back into the spill area once you have left.
- Help emergency response personnel by advising as to how to turn off engines or electrical sources.
- If emergency responders evacuate the spill area, follow their instructions in leaving the area.
- After emergency response personnel have contained the spill, be prepared to assist them with any other information that may be necessary, such as MSDSs and questions about the facility. Emergency response personnel or trained personnel with proper personal protective equipment will then clean up the spill residue. Do not re-enter the area until the emergency response personnel in charge gives the all clear. Be prepared to assist these persons from outside the spill area with MSDS, absorbents, and containers.
- Reports must be filed with proper authorities. It is the responsibility of the contractor to inform the emergency response personnel as to what caused the spill. The response for large spills is similar to the procedures for medium spills, except that the exposure to danger is greater.

Large Spills:

Definition: Any spill involving flammable liquid where the major dimension exceeds 2m in diameter; and any “running” spill, where the source of the spill has not been contained or flow has not been stopped.

- Leave the area and notify emergency response personnel. Give the operator the spill location, chemical spilled, and approximate amount.
- From a safe area, attempt to get MSDS information for the spilled chemical for the emergency response personnel to use. Also, be prepared to advise emergency response personnel as to any ignition sources, engines, electrical power, or air conditioning/ventilation systems that may need to be shut off. Advise emergency response personnel of any absorbents, containers, or spill control equipment that may be available. This may need to be done from a point some distance from the spill site.
- Only emergency response personnel, in accordance with their own established procedures, may handle spills greater than 2m in any dimension or that are continuous. Remember, once the emergency response personnel are on the job cleaning up spills or putting out fires, the area is under their control and no one may re-enter the area until the emergency response personnel in charge gives the all clear.
- Provide information for reports to supervisors and emergency response personnel, just as in medium spills.

3. REPORTING SPILLS

All chemical spills, regardless of size, must be reported as soon as possible to the appropriate official/department, who should be in a position to determine whether the spill has the potential to affect the environment outside of the facility. If required, either the spill response team or a spill company must be contacted.

Examples of spills that could affect the outside environment, include spills that are accompanied by fire or explosion and spills that could reach nearby water bodies.

In the event of a significant spillage that cannot be contained and which poses a serious threat to the local environment, the following departments must be informed within 6 (six) hours of the incident and in accordance with the Section 30 of the National Environmental Management Act, Act 107 of 1998:

- The Local Municipality - Municipal Manager (Umdoni Local Municipality and Ugu District Municipality).
- Department of Water and Sanitation.
- The Local Fire Department.
- Municipal Disaster Management Team.
- ECO and Engineer.

APPENDIX C: ALIEN VEGETATION CONTROL PLAN

1. INTRODUCTION

Invasive alien plants (IAPs) are plant species that have been introduced, to South Africa, either intentionally or unintentionally. They can reproduce rapidly in their new environments and out-compete indigenous plants for both nutrients and water thereby destroying whole eco-systems. They are usually “water-hungry” plants/shrubs/trees resulting in a much higher use of precious ground water.

2. LEGISLATIVE AND POLICY FRAMEWORK GOVERNING IAP CONTROL

National Environmental Management: Biodiversity Act No. 10 of 2004 (NEMBA)

The National Environmental Management: Biodiversity Act (NEMBA) regulates all invasive organisms in South Africa, including a wide range of fauna and flora. Regulations were published in Government Notices R.506, R.507, R.508 and R.509 of 2013 under NEMBA.

Conservation of Agricultural Resources Act No. 43 of 1983 (CARA)

Regulation 15 of CARA regulates and restricts the propagation, harbouring and sale of invasive alien plant and weed species listed in a set of Regulations published in terms of the Act. All listed Invasive Alien Plants are divided into three categories which are:

Category 1 – Prohibited Plants.

Category 2 – Invader plants with commercial or utility value.

Category 3 – Primarily ornamental or ‘exotic’ horticultural plants.

3. ALIEN PLANT CONTROL

Benefits of control

- Reduction of spread of alien plant species into non-affected areas.
- Improvement of water quality and quantity.
- Legal compliance (landowners are required to eradicate, or control declared weed and alien invader plants in terms of the Conservation of Agricultural Resources Act 43 of 1983 and National Environmental Management: Biodiversity Act 2004 (Act No. 10 of 2004) as amended from time to time).
- Improvement of biodiversity in and around the construction area.
- Reduction in soil erosion. Certain species of alien invader plants reduce soil cover, leading to increased erosion.

Important factors influencing the effectiveness of a control programme

- Timely implementation of control operations is important as alien plants are more susceptible to herbicides when they are young and lower herbicide rates can be used with less chance of accidental drift occurring.
- Selective broadleaf herbicides must be chosen where it is the intention to achieve rapid colonisation of the site by grasses. Care must be taken when applying herbicides and label prescriptions must be strictly adhered to. The Environmental Control Officer (ECO) is to advise.
- Operations must be directed towards eradicating alien vegetation.
- A reputable company must be hired to undertake herbicide application. The ECO must be available to monitor this activity.

Requirements for an effective alien vegetation control programme

- Identify the problem: extent, location and species of problem plants.
- Identify any sensitive ecosystems, rare or endangered plants etc. which may be affected by a control programme. Identify the original ecosystem applicable to the area. The method of control will be influenced by the type of vegetation to which the area must revert.
- Identify an appropriate control method: mechanical or chemical, type of herbicide, application etc. (mechanical and biological methods are preferred, compared to chemical methods).
- Make provision for a number of follow up operations. The initial clearing operation is only part of the total programme. Failure to follow up will result in a failure of the entire programme.

APPENDIX D: HYDROSEEDING

DEFINITION:

Hydroseeding is a process of applying a mixture of water, seed, fertilizer and mulch to the ground by means of direct spraying using hydromulch equipment. The mixture temporarily protects soils from water and wind erosion, allowing seeding to take root. Hydroseeding is also referred to as hydraulic seeding, hydra-seeding or hydro-mulching.

USE:

Hydroseeding is applied on disturbed soil areas requiring temporary protection until permanent vegetation is established. Hydroseeding can be used for veld reclamation, turf seeding and erosion, sediment and dust control. Hydroseeding can also be used to provide temporary cover to disturbed soils that will be rehabilitated at a later stage. Hydroseeding can cover large and inaccessible areas within a short space of time.

PROCESS:

The seeding process involves the use of highly specialised equipment, including four-wheel drive vehicles that can access almost any type of terrain. The slurry is transported in a Hydroseeding Unit, either truck or trailer-mounted and sprayed over a prepared soil surface in an even layer. Powerful pumps and extension hoses generate a spray range in excess of 100 meters. In general, hydroseeding is a dry land rehabilitation method, which does not require any form of additional irrigation. The use of scarifying drills, soil binder and mulch will retain the application slurry in situ, binding the surface layer. A micro-climate forms as the climate and soil moisture conditions for germination improves, and vegetation establishes.

BENEFITS:

Time and Cost effective

The mixture used for the hydroseeding process is relatively cheaper than traditional broadcast seeding and sodding. When the process is carried out correctly, hydroseeding is time efficient as large and/or inaccessible areas of land can be covered within short spaces of time. An area of up to four hectares can be completed per hydroseeding unit in a single day. This results in a high production rate, particularly where dust pollution and erosion control are of concern.

As germination occurs rapidly, maintenance is nominal.

Faster effects

As a site-specific hydro-mulch mixture is used, hydroseeding vegetation generally comes in quicker than comparative broadcast seeding and sodding. Early growth is usually visible within five to six days. Furthermore, initial weed growth is restricted. Suitable grass cover is established within two to three months.

Limitation of stress caused by varying surface temperatures due to depth of seedbed

This also ensures successful germination of seedlings. This also limits the loss of seed and material by wind and water erosion.

Erosion control

Hydroseeding offers built in erosion control. Erosion issues are often addressed by simple application of the hydroseeding mixture, as the mulch and slurry harden, erosion issues are contained until seed establishes itself and becomes a permanent erosion inhabitant.

APPENDIX E: EMPR ACKNOWLEDGEMENT FORM

**PROPOSED REFURBISHMENT OF THE EXISTING ABSTRACTION WEIR AT THE ESPERANZA RAW
WATER PUMP STATION, BELOW THE UMZINTO DAM; AND THE INSTALLATION OF THE V-NOTCH
GAUGE TO MEASURE FLOW, UGU DISTRICT MUNICIPALITY, KWAZULU-NATAL**

Record of signatures providing acknowledgment of being aware of and committed to complying with the contents of this Environmental Management Programme (EMPr), which relates to the environmental management, mitigation and rehabilitation measures for the project outlined above, and the environmental conditions contained in the civil and other construction contract documents.

PROJECT MANAGER – UMGENI WATER:

Signed:

Date:

CONTRACTOR:

Signed:

Date:

ENVIRONMENTAL CONTROL OFFICER:

Signed:

Date: