ENVIROPRO

IN ASSOCIATION WITH INKANYEZI YETHU

JULY 2020
ENVIRONMENTAL MANAGEMENT PROGRAMME MPOLWENI AND THOKOZANI WATER SUPPLY SCHEME
UMSHWATHI LOCAL MUNICIPALITY
EIA REF NO: DC22/0009/2020

EVP1258

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SECTION 1: INTRODUCTION, PROJECT AND SITE DESCRIPTION

1.1. Background

The uMgungundlovu District Municipality proposes to upgrade and construct the Mpolweni and Thokozani Water Supply Scheme (WSS) within Wards 1, 9 and 10 of the uMshwathi Local Municipality. Although there is an existing bulk pipeline in place, the reticulation network does not service all the communities in each of these areas due to ongoing expansion of settlements. The project will address two specific areas namely Mpolweni and Thokozani. The Mpolweni project area is located within Wards 9 and 10 and encompasses an area measuring approximately 16.3km^2. The centre point of this project area is 29°25'17.65"S; 30°28'55.12"E and includes the areas of Emvundlweni, Newtown, Emseni, Ekukhuleni, Vundla Road, Ematshali Ext 1 and Kogcwabaza. The Thokozani project area is located within Ward 1 next to the Albert Falls Dam and covers an area of approximately 2.66km^2. The centre point of this project area is 29°25'33.95"S; 30°26'3.67"E and includes the area of Thokozani.

1.2. Scope of Work

Prepare a site-specific EMPr for the Thokozani WSS to manage and mitigate potential environmental impacts during construction and operation. The provisions of this EMPr are binding on the contractor and applicant throughout the life-span of the contract and WSS respectively.

1.3. General Principles and Purpose of This EMPr

The purpose of this EMPr is to guide all contractors and site workers on how to operate responsibly to achieve these goals and ensure that the requirements of the legislation are met. This EMPr is a working document to be used during construction and has been generated to ensure that:

- The protection of the environment during the construction period and the operation phase.
- All emissions to air water and soil are controlled and managed to mitigate their impacts on the environment and surrounding communities.
- Nuisance factors associated with construction are controlled as far as is reasonably possible.
- The correct principles are followed from the very beginning during site set up, thereby reducing frustrations on the part of the contractor when asked to comply with the strictures of the EMPr and relevant environmental legislation.
- The post-construction clean-up is carried out correctly to avoid environmental impacts and meet the legislated requirements.

This EMPr is subject to change as brought about by variations in the project specification, and any changes must be approved by the relevant authorities.

1.4. Responsibilities

The Project Applicant (uMgungundlovu District Municipality) is responsible for:

- Ensuring that the engineer and contractors comply with the approved EMPr.
- Ensuring compliance with the provisions for duty of care and remediation of damage per section 28 of the National Environmental Management Act (NEMA), (No. 107 of 1998) and its obligations regarding the control of emergency incidents in terms of Section 30 of NEMA.
- Notifying the relevant authorities (EDTEA) of any incident as defined in subsection 30(1) (a) of NEMA.
- Ensuring that the construction mitigation measures to address environmental impacts identified are carried out by the contractor.
- Ensuring that the operational mitigation measures to address the environmental impacts identified are carried out.

The Project Manager or Engineer (Escongweni BPH Engineers (Pty) Ltd) is responsible for:

- Appointing a qualified contractor and ensuring that they have read and understood the EMPr.
- Ensuring all work undertaken is per the EMPr.
- Ensuring adherence to safety, health and environment (SHE) standards and ensuring the construction activities comply with the EMPr.
- Arranging for the site to be monitored daily to ensure compliance with the EMPr.
- Overall responsibility and accountability for the site during the construction phase.
- Mitigating impact on the environment through responsible operation and adherence to the EMPr.
- Ensuring transparency in their operation and environmental management of the site.
- Managing the contractor to ensure that they adhere to the EMPr and ensuring that all necessary documentation is maintained on-site.
- Ensuring that the contractor has a copy of the EMPr and Method Statements.

The Site Contractor(s) is/are responsible for:

- Providing a suitable person to operate as Environmental Officer (EO) to undertake the monitoring of the day to day requirements of the EMPr.
- Operating per the EMPr and carrying out construction activities with due care and diligence.
- Ensuring that any communications from stakeholders are reported to the Environmental Control Officer (ECO).
- Maintaining relevant documentation for review by the ECO.
- Undertaking the mitigation measures to address the environmental impacts identified.

The Environmental Officer (EO) or designated Safety Health Environment (SHE) officer is responsible for:

- Daily compliance monitoring of construction against the requirements set out in this EMPr, and the environmental authorisation.
- Undertaking the mitigation measures to address the environmental impacts identified.
- Ensuring that all site staff are adequately trained in environmental matters.
- Liaising with site staff and I&APs through the Community Liaison Officer (CLO), if required.
- Must be conversant with the applicable legislation pertaining to the environment.
- Liaise directly with the ECO on the monthly audit findings.
- Identification of possible areas of improvement during construction.
- Monitoring the construction site regularly and recording key findings.
- Advising the Project Manager and the contractors on environmental matters.
- Provide recommendations to address and rectify these matters.
- Monitoring implementation of the EMPr by the contractor.
- Work hand in hand with the health and safety officer.
- Maintain records pertaining to the requirements of the EMPr.

The Environmental Control Officer (ECO or Independent environment practitioner) is responsible for:

- Conducting regular auditing against the requirements of the EMPr and Environmental Authorization.

- Liaising directly with the EDTEA and supplying them with copies of the audit reports.
- Liaising directly with the contractor and EO and supplying them with a copy of the audit reports.

1.5. Monitoring

The key to a successful EMPr is effective monitoring and review to ensure the effective functioning of the EMPr and to identify and implement corrective measures in a timely manner. The EO must be responsible for day-to-day monitoring and reporting while the ECO must undertake to monitor the site on a monthly basis. The day-to-day monitoring must be conducted by the EO in conjunction with the contractor and the engineer. The monthly audit report by the ECO can then be used to provide external monitoring and reporting to EDTEA Compliance and Enforcement. Paramount to the reporting of non-conformances or incidents is that corrective and preventive action plans are developed and adhered to. Photographic records of all incidents and non-conformances must be retained. Non-compliances identified by the ECO must be resolved within fourteen days of being noted, incidents that are deemed by the ECO to have a large environmental impact must be resolved immediately.

1.6. Applicable Legislation

The site engineer must be aware of any compliance issues raised by the EO and ECO and must ensure that the necessary corrective measures are implemented. As per the National Environmental Management Act No 107 of 1998 (Section 28), offending parties may be held financially accountable for any pollution or environmental damage.

The following environmental legislation must be adhered to:

- The Constitution of South Africa (No. 108 of 1996)
- National Environmental Management Act (Act 107 of 1998)
- National Water Act (Act 36 of 1998)
- National Environmental Management: Waste Act (Act 59 of 2008)
- National Environmental Management: Air Quality Act (Act 39 of 2004)
- National Environmental Management: Protected Areas Act (Act 57 of 2003)
- National Environmental Management: Integrated Coastal Management Act (Act 24 of 2008)
- National Forest Act (Act 84 of 1998)
- Environmental Conservation Act (Act 43 of 1996)
- National Environmental Management: Biodiversity Act (Act 10 of 2004)
- National Heritage Resources Act (Act 25 of 1999)
- KwaZulu-Natal Heritage Act (Act 4 of 2008)
- Mineral & Petroleum Resources Development (Act 28 of 2002)
- Occupational Health and Safety Act (Act 181 of 1993)
- Hazardous Substances Act (Act No. 15 of 1973)
- National Building Regulations and Building Standards Act (Act 103 of 1977)
- Relevant local bylaws

This EMPr meets the requirements of the stipulations provided in Appendix 4 of NEMA, 1998 (Act No. 107 of 1998) Environmental Impact Assessment Regulations,

2014 with regards to the content of EMPr. This EMPr has been developed to specifically address the impacts related to this project in each phase of development.

1.7. The layout of the EMPr

The EMPr is divided into five sections dealing with an Introduction and description of the proposal and the site, Pre-Construction and Site Set Up, Construction Activities and Post Construction, Rehabilitation and Operation Activities. Sections 4 and 5 provide definitions and records that can be used to record training, incidents, and complaints. Under the construction section, each section deals with a specific aspect of the development, i.e. administration and records. Within these sections, the specific activity is described, and the mitigation action required is provided. The tables have been set up to enable ease of auditing with a section for the EO/SHE officer or ECO to state whether mitigation measures have been put in place and to make a comment about any problems noted.

1.8. Project Details

The uMgungundlovu District Municipality proposes to upgrade and construct the Mpolweni and Thokozani Water Supply Scheme (WSS) within Wards 1, 9 and 10 of the uMshwathi Local Municipality. Although there is an existing bulk pipeline in place, the reticulation network does not service all the communities in each of these areas due to ongoing expansion of settlements. The project will address two specific areas namely Mpolweni and Thokozani. The Mpolweni project area is located within Wards 9 and 10 and encompasses an area measuring approximately 16.3km2. The centre point of this project area is 29°25'17.65"S; 30°28'55.12"E and includes the areas of Emvundlweni, Newtown, Emseni, Ekukhuleni, Vundla Road, Ematshali Ext 1 and Kogcwabaza. The Thokozani project area is located within Ward 1 next to the Albert Falls Dam and covers an area of approximately 2.66km2. The centre point of this project area is 29°25'33.95"S; 30°26'3.67"E and includes the area of Thokozani.

There is an existing water supply scheme in place including a bulk pipeline and some reticulation, but it does not supply the entire community due to the ever-expanding nature of the settlement and the ever-growing demand. The existing water supply is a mixture of the following:

- Yard connections to a single homestead - A single metered connection is provided to a property with one homestead
- Yard connections to multiple homesteads – A metered connection is provided to a property with one homestead with multiple homesteads making use of the supply
- Community standpipes – The standpipe is not located within a property and homeowners are required to walk a distance to access the standpipe
- No water connection – There is no formal/informal water connection. Homeowners receive a supply through JoJo Tanks or from other sections with access to water.

Taking into consideration the existing water supply, the following constraints and objectives have been identified for the two project areas:

- Mpolweni Project Area
  - This area has insufficient reticulation and does not have suitable household connections. 30% of the area has water supply by means of the existing reticulation however there are sporadic metering points which are not allocated to individual households. The network needs to be expanded and optimised against all design criteria parameters as identified in Table 1. It is noted that an existing bulk line is already servicing this area.
- Thokozani Project Area
  - This area has insufficient reticulation as there are growing numbers of illegal connections due to the high growth of the settlement. The network needs to be regularised so that it can be managed with revenue collection in mind. The reticulation also needs to be expanded and optimised against all design criteria parameters as identified in Table 1. It is noted that an existing bulk line is already servicing this area.

Table 1: Engineering design parameters

Description	Design Parameter
Design horizon	20 years
Population Census	Census 2011, Aerial Images, House Counts
House Occupancy	8 people per household
Growth Rate	1.5% per annum
Design Water Usage	80, 120 and 150 l/c/d
Conveyance Losses	15%
Summer Peak Factor	1.5

The uMgungundlovu District Municipality propose to incorporate the existing reticulation network into the new system. The new reticulation will include both HDPe and uPVC pipelines which will range in diameter between 25mm Ø to 250mm Ø. Steel pipes will be used for river crossings, rough terrain and where the operating pressures do not permit use of plastic pipes. The proposed reticulation pipe lengths have been tabulated in Table 2. In addition, two new reservoirs with a capacity of 200kl and 150kl respectively will be constructed in the Mpolweni project area. These reservoirs will aid in maintaining pressure within the system.

Table 2: Proposed reticulation lengths

Project Area	Reticulation Pipe Length (m)
Mpolweni	203 770
Thokozani	48 260
Total	252 030

The existing reticulation network supply varies from “no access” to “metered yard connections”, therefore a uniform level of service will be provided throughout the project which will consist of “metered house connections”. Saddle valves will be used as the take-off from all reticulation pipelines and all house connections will have a new 25mm water meter assembly installed thereon. Figure 4 and Figure 5 below provide an overview of the proposed new pipe reticulation that will be constructed within the two project areas.

Pipelines will be buried below ground when crossing watercourses to avoid the obstruction of the natural stream flow. Where feasible, the pipeline will be placed along the existing roads and on visible tracks. There are however two major watercourses which will need to be crossed along the proposed pipeline route. Both crossing points are along the a Mpolweni River. At these points the pipeline will be strapped to the existing bridge structures. In these two instances where the pipeline crosses a watercourse above ground, HDPe/uPVC pipes will be changed to steel pipes for the crossing and will then be changed back to HDPe/uPVC after crossing the watercourse.

1.9. Construction Methodology

Trench excavations will be carried out in accordance with SABS 1200, DB Earthworks (pipe trenches) and pipe bedding in accordance with SABS 1200, LB Bedding (pipes). The topsoil will be removed along the proposed pipeline route and stockpiled separately from the other excavated material. The trench width will be the outside diameter of the pipe plus 150mm either side. The minimum trench width will be 450mm. The minimum trench width and depth will be reduced for smaller diameter pipes i.e. house connections, in line with the EPWP programme. The trench depths, as per the Red Book will be as follows:

- Road Crossings: Pipe diameter + Bedding + 0.8m
- Otherwise: Pipe diameter + Bedding + 0.6m

The pipe bedding will consist of selected granular bedding material of a thickness at least 100mm beneath and on top of the pipe, with a 200mm layer of selected fill material on top of the granular material and beneath the trench backfill material. This is in accordance with Drawing LB – 2 in SABS 1200, LB. The trench will be excavated by hand to grade out all local high and low points to minimise the need for air and scour valves.

After pipe laying, backfilling and compacting of the trench material, the topsoil will be reinstated and lightly compacted. On downhill slopes the trench will also be backfilled so that the backfill material forms cut off berms at regular intervals. These will need to beat least 150mm higher than the ground either side of the trench to prevent surface water from running along the trench and eroding the backfilled material.

Finally, rehabilitation / re-vegetation will be undertaken of all areas affected by the construction activities using intensive grass sod planting or hydroseeding with a suitable indigenous grass seed mix. The indigenous grass seed mix will be approved by the ECO.

1.10. Impact Management Outcomes

The overall impact management outcome for the Mpolweni and Thokozani WSS is for all wetlands, riparian areas and open spaces in the study area to continue function at either their Present Ecological State or at an improved level post construction. The specific impact management outcomes are provided above the impact management actions in sections 2, 3 and 4 but are summarised below for ease of reference:

#	Impact Management Outcome	Phase of Development
1.	Vegetation clearing to be restricted to the authorized development footprint.	Construction
2.	Prevent disturbance to wetlands and riparian areas which would result in a reduction in wetland functionality during the construction of WSS.	Construction
3.	Prevent disturbance and direct moralities to the local faunal community.	Construction
4.	To prevent erosion and safety hazards due to poor trenching methodology.	Construction
5.	Prevent alien vegetation from gaining a foothold on site.	Construction
6.	Prevent the impact of features with heritage value	Construction
7.	To increase employment for residents.	Construction
8.	Prevent alien vegetation from gaining a foothold on-site within the disturbed footprint	Operation
9.	Prevent long term erosion within watercourses	Operation
10.	Prevent permanent impact on the flow regime of the watercourses.	Operation
11.	Prevent the failure of the WSS resulting in flooding, erosion and loss of water supply	Operation
12.	Prevent cumulative impacts on the receiving environment	Operation
13.	Impacts on the environment are minimised during site establishment.	Pre-Construction
14.	All on-site staff are aware and understand the individual responsibilities in terms of the EMPr	Pre-Construction
15.	The impact on sensitive social and environmental areas on-site is minimised during construction across the site	Construction
16.	Wastes are appropriately stored, handled and safely disposed of at a recognised waste facility.	Construction
17.	Construction activities managed to prevent any nuisance to neighbours	Construction
18.	Minimise impact on the environment through the management of construction vehicles on site.	Construction
19.	Soil, surface water and groundwater contamination are minimised during construction.	Construction

20.	To ensure there are no long-lasting impacts on the environment remaining once construction is complete.	Post-construction
21.	To improve the functionality of the wetlands, riparian areas and open spaces on and around the site.	Rehabilitation post-construction
22.	No environmental degradation to occur during the operational phase of the Mpolweni and Thokozani WSS.	Operation

Figure 1: Aerial photograph showing the Mpolweni project area with the proposed reticulation.

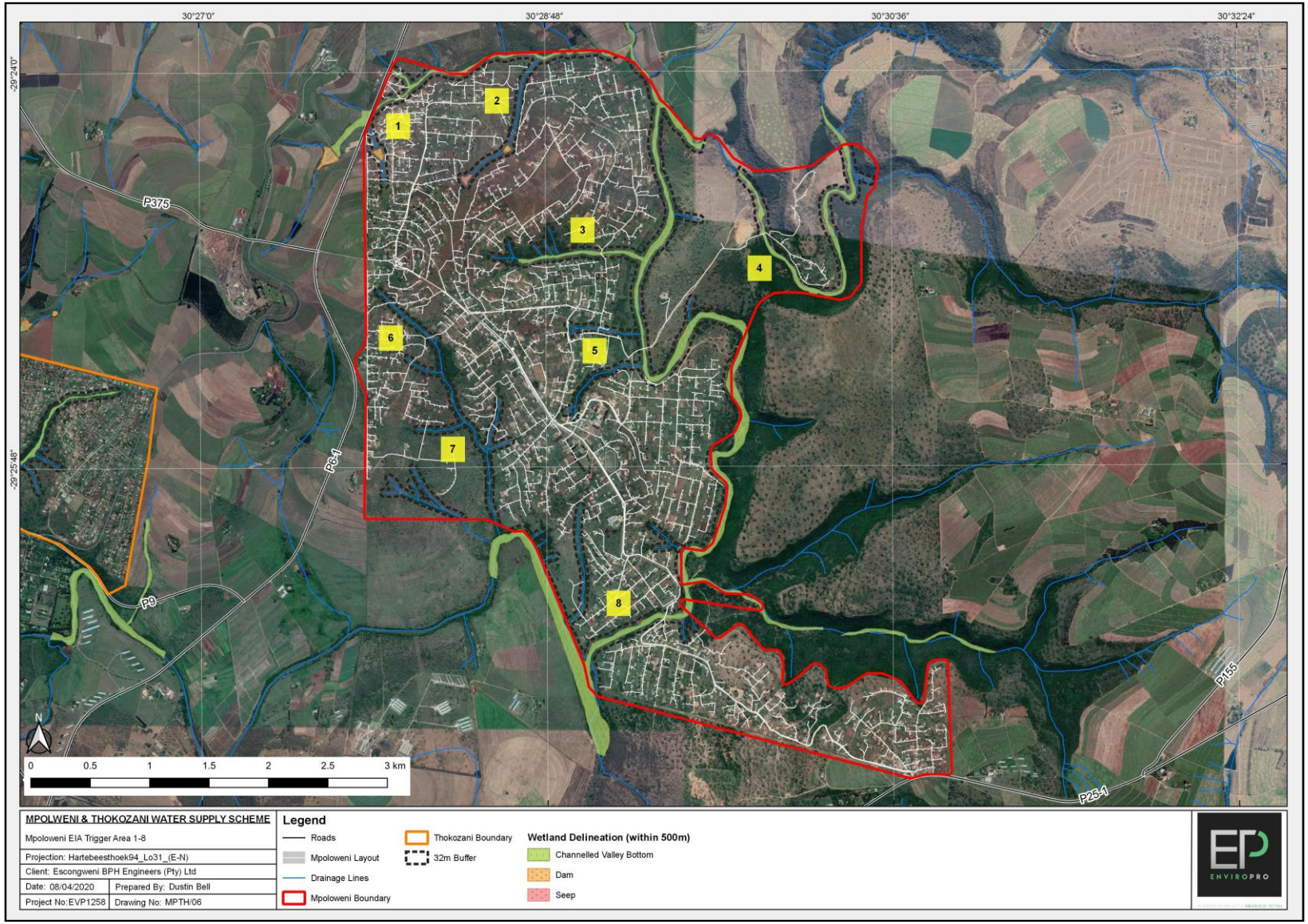
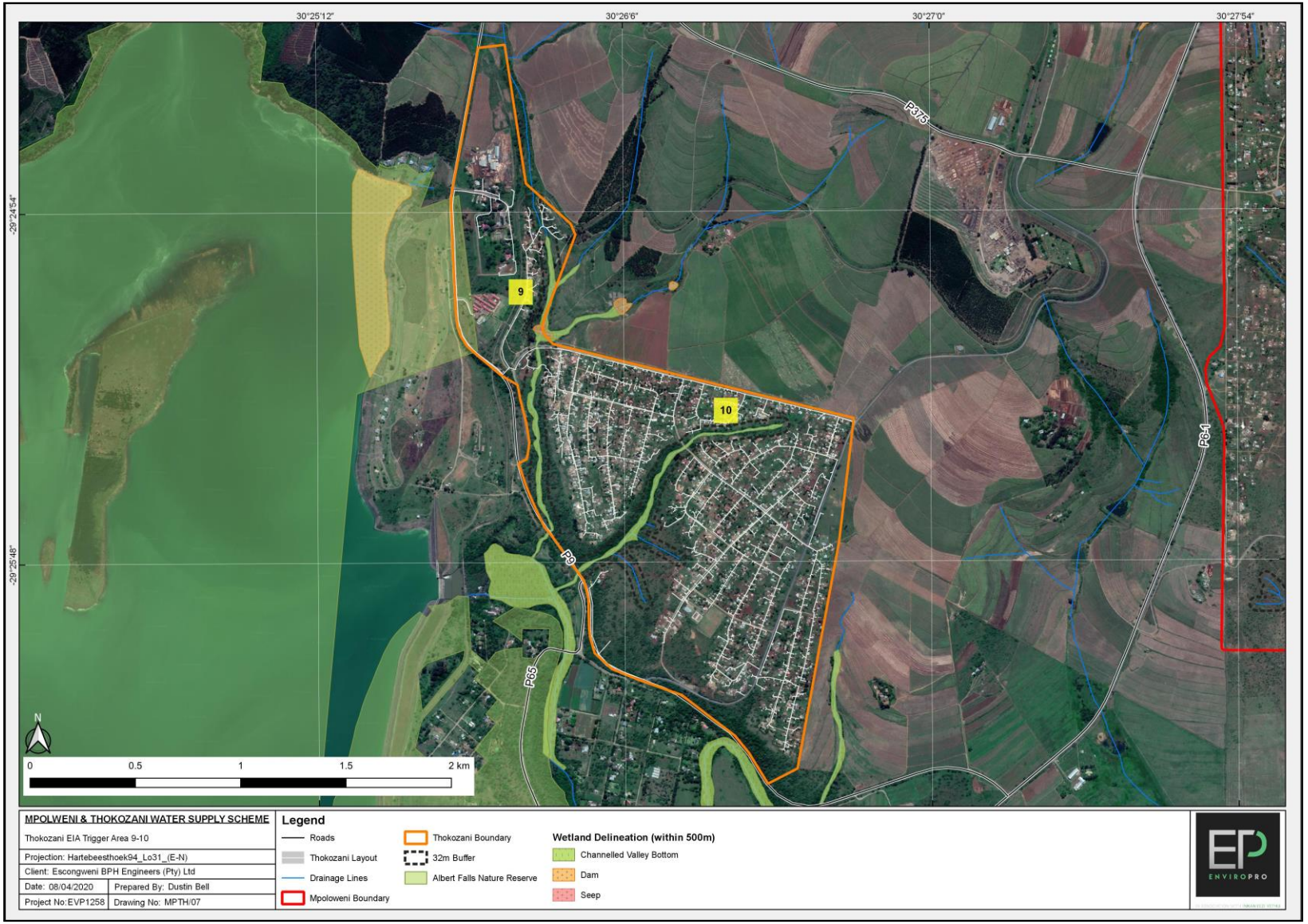


Figure 2: Aerial photograph showing the Thokozani project area with the proposed reticulation.



1.11. Table of Responsibilities

This is to state that the undersigned have received a copy of the Environmental Management Plan (EMPr) developed for this site by *EnviroPro* dated June 2020. Any contravention of the EMPr must be recorded, and corrective action must be carried out. Any changes to the EMPr must be approved by the *Environmental Control Officer (ECO)*, the consultant *EnviroPro* and the relevant authority. Such changes are to be made in writing, and a record must be maintained.

The undersigned do hereby agree to abide by the structures of the Environmental Management Plan (EMPr) and accept responsibility for ensuring adherence to the Construction EMPr as it relates to the following areas:

Table of Responsibilities				
Job description / title	**Scope of work or area of responsibility i.e. camp drainage, construction camp, housekeeping etc.**	**Responsible person (Name)**	**Signature**	**Date**

1.12. Names and Telephone Numbers of Contact Persons

The following list of contacts must be printed and made clearly visible on the site.

Contact List			
Designation	**Organisation**	**Name**	**Contact number**
Applicant	uMgungundlovu District Municipality		
Engineer/Project Manager	Escongweni BPH Engineers (Pty) Ltd	Nishal Ramsaran	031 003 0920
Independent Environmental Practitioner and ECO	EnviroPro	Josette Oberholzer Iain Jourdan	031 765 2942
Environmental Authority (Enforcement & Compliance)	EDTEA	Compliance Officer	
Reporting for Incidents involving Watercourses	DWS	Compliance Officer	
Wildlife Related Incident	Ezemvelo KZN Wildlife	Dominic Wieners	033 845 1455
Heritage Resources	AMAFA	Weziwe Tchabalala	033 394 6543
Fire Emergency	Fire Department	-	10111
Crime Emergency	Police	-	10111

1.13. Fines/Penalties

Fines/penalties will apply to the Contractors responsible for the maintenance or repair work, should they fail to comply with the provisions of the EMPr and EA. Penalties for non-compliance need to be discussed with the Contractor on appointment. The Contractor must make every effort to ensure that staff members comply with the EMPr, and enforce non- compliance penalties. Allowances must be made for the contractor to rectify all non-compliances, prior to issuance of penalties/fine.

The Contractor will comply with the requirements of this EMPr on an ongoing basis, any failure on their part to do so will entitle the Project Manager, in consultation with the ECO to certify the imposition of a fine. The value of the fine will be agreed between the Project Manager and ECO based on the nature, extent and duration of the offence and subsequent environmental damage and will be within the confines of the contractual arrangements. Such penalties shall be payable in addition to any remediation costs for correction of environmental damage as a result of noncompliance to this EMPr, that will also be for the Contractor's account. Time penalties may also be awarded by the contract's manager where the contractors do not comply. These details are to be included in the contracts.

The Contractor is deemed NOT to have complied with the EMPr if:

a) Within the boundaries of the site, site extensions and haul/ access roads there is evidence of contravention of the EMPr confirmed and verified by the ECO;
b) Environmental damage ensues due to non-compliance of EMPr requirements;
c) The Contractor fails to comply with corrective or other instructions issued within a specific time;
d) The contractor fails to comply with a site instruction given by the Engineer based on the ECO report;
e) The Contractor fails to respond adequately to complaints from the public in line with requirements of this EMPr; and
f) Legal action is instituted against the proponent in terms of Environmental laws.

SECTION 2: SITE-SPECIFIC IMPACTS AND MITIGATIONS AS IDENTIFIED IN THE BAR

Figure 3: (a) The southern delineated wetland within the Thokozani project area with the P9 road in the background; (b) A proposed watercourse crossing point within the Thokozani project area along a footpath; (c) A footpath within the Thokozani project area where the pipeline will be placed.

Figure 4: (a) A watercourse crossing within the Mpolweni project area along an existing footpath; (b) A heavily disturbed watercourse which will be used as a crossing point for the pipeline within the Mpolweni project area; (c) A watercourse crossing point following an existing footpath within the western portion of the Mpolweni project area.

Nature and Consequences of impact	Proposed mitigation and Extent to which impact can be reversed/avoided, managed or mitigated:	Person	In place (Yes / No)	Comments
CONSTRUCTION				
1. Impact Management Outcome: Vegetation clearing to be restricted to the authorized development footprint				
Activity: Clearing of vegetation *Impact:* Resulting in erosion in and around the Mpolweni and Thokozani WSS construction footprint causing sedimentation within the delineated wetlands, drainage lines and the associated buffers thereby decreasing functionality.	The following measures must be carried out to mitigate against erosion on the site: • The footprint area of the pipeline must be kept to a minimum and must be demarcated to avoid unnecessary disturbances to adjacent areas. • The areas outside the construction footprint must be demarcated as 'no-go' areas. The 22m watercourse buffer must be strictly adhered to. • Areas exposed to erosion must be protected through the use of sandbags, berms and efficient construction processes i.e.: limiting the extent (footprint) and duration period that areas are exposed. • No excavated material or fill material may be stored within the 22m watercourse buffer. • The footprint area must be aligned in existing road reserves wherever possible. Disturbed areas must be sought as the preferred alignment area. • When a pipeline spans a drainage line or wetland, it should be attached to any existing crossing or bridge structures. This will limit the need to disturb new areas of the system with the construction of new structures. • During the excavation of trenches, flows should be diverted around active work areas where required. Water diversion must be temporary and re-directed flow must not be diverted towards any stream banks that could cause erosion. •	CON/EO		
2. Impact Management Outcome: Prevent disturbance to wetlands and riparian areas which would result in a reduction in wetland functionality during the construction of WSS.				
Activity: Construction activities for the placement of the water pipeline within the delineated wetlands, drainage lines and associated buffer areas. *Impact:* Causing degradation and destruction of indigenous vegetation within the identified watercourse and buffers.	The following measures must be carried out to mitigate against excessive vegetation clearing/damage: • No construction activity and/or construction-related activity may be undertaken within a 22m buffer area. The sensitive watercourse habitats must be clearly demarcated and regarded as a 'no-go' area i.e. construction staff must not be permitted access to these areas. • Areas to be developed must be specifically demarcated during the construction phase, preventing movement of workers into sensitive surrounding environments. Only the demarcated areas must be impacted upon. • Areas must be cleared and excavated on a need basis only, limiting the overall extent of the disturbed area. Areas must be cleared and excavated only as the project progresses. • All lay down, storage areas etc must be restricted to within the construction footprint area.	CON/EO		

Nature and Consequences of impact	Proposed mitigation and Extent to which impact can be reversed/avoided, managed or mitigated:	Person	In place (Yes / No)	Comments
	• Rehabilitation of the disturbed areas existing in the project area must be made a priority. Topsoil must also be utilised, and any disturbed area must be re-vegetated with plant and grass species which are endemic to this vegetation type. • Progressive rehabilitation will enable topsoil to be returned more rapidly, thus ensuring more recruitment from the existing seed bank. Any woody material removed can be shredded and used in conjunction with the topsoil to augment soil moisture and prevent further erosion. • If woody material does not meet the quality requirements for other works, the material must be disposed of at a relevant waste disposal site. • Once a rehabilitation method statement has been established and undertaken, monitoring activities must be put in place to verify the progress made on the rehabilitation objectives and targets. • An Invasive Alien Plant Control included in the EMPr must be implemented.			
Activity: Construction of the Mpolweni and Thokozani WSS across wetlands. *Impact:* Temporary loss of wetland areas during excavation for pipework crossings.	The following measures must be carried out to mitigate against excessive temporary loss of wetland: • All areas outside the construction footprint must be demarcated as no-go areas; • Heavy vehicles are not permitted in the 22m watercourse buffer unless required for construction activities. • The recommended buffer must also be imposed for all other construction activities.	CON/EO		
Activity: Operation of vehicles and machinery around the construction site *Impacts:* Damage to the delineated wetlands and drainage lines which will decrease biodiversity and functionality.	The following measures must be carried out to mitigate against careless damage to the surrounding habitats: • All areas outside the construction footprint must be demarcated as no-go areas; • Heavy vehicles are not permitted in the 22m watercourse buffer unless required for construction activities. • The recommended buffer must also be imposed for all other construction activities.	CON/EO		
3. Impact Management Outcome: Prevent disturbance and direct moralities to the local faunal community.				
Activity: Construction disturbances i.e. noise, dust and vibration associated with the Mpolweni and Thokozani WSS.	The following measures must be carried out to mitigate against the excessive impact on fauna: • If any indigenous faunal species are recorded during construction, activities must temporarily cease to allow fauna to move off. In the event that fauna does not voluntarily move away, an appropriate specialist must be consulted to identify the correct course of action.	CON/EO		

Nature and Consequences of impact	Proposed mitigation and Extent to which impact can be reversed/avoided, managed or mitigated:	Person	In place (Yes / No)	Comments
Impact: Displacement of the faunal community and/or direct mortalities.	• Fauna species such as frogs and reptiles that have not moved away must be carefully and safely removed to a suitable location beyond the extent of the development footprint by a suitably qualified ECO, trained in the handling and relocation of animals. • The duration of the construction must be minimised to as short-term as possible, in order to reduce the period of disturbance on fauna. • Any open trenches that are left open for more than two hours, must have at least one end that is sloped/tapered, in order to allow animals that fall in, to escape. If this is not possible, then branches must be placed inside the trenches allowing small animals to climb out. • Prior and during vegetation clearance, any larger fauna species noted must be given the opportunity to move away from the construction machinery. • No trapping, killing or poisoning of any wildlife is to be allowed on-site, including snakes, birds, lizards, frogs, insects or mammals. • During the construction phase, noise and vibrations must be kept to a minimum to reduce the impact on the fauna. • During the construction phase, no construction is to occur at night to minimise all possible disturbances to amphibian species possibly inhabiting the wetland. • Staff must be educated about the sensitivity of faunal species and measures must be put in place to deal with any species that are encountered during the construction process.			
4. Impact Management Outcome: To prevent erosion and safety hazards due to poor trenching methodology.				
Activity: Incorrect filling of trenches on completion. *Impact:* The creation of points of erosion, especially on slopes and near watercourses.	The following measures must be carried out to mitigate against incorrect filling of trenches: • Care must be taken to ensure that when closing trenches, soil is compacted sufficiently and left so that the level of the trench is slightly higher than the surrounding land, to allow for settling. Should soil settle below the level of the surrounding land, it will leave a depression along which water will travel and this could create a focal point for erosion. This can often occur on sloped sections where water will follow the depression along the pipeline route, building up speed down steeper sections and creating furrows. If this occurs near watercourses, it will erode the river banks and cause them to collapse. • Rehabilitation through replanting of indigenous grass species soon after closure will aid in stabilising soil, preventing erosion and will also assist in dust control.	CON/EO		
Activity: Trenches remaining open for long periods of time.	The following measures must be carried out to mitigate hazards related to open trenches: • Trenches must not remain open indefinitely. • Trench work must be completed in sections and then closed once the pipe has been laid in that section.			

Nature and Consequences of impact	Proposed mitigation and Extent to which impact can be reversed/avoided, managed or mitigated:	Person	In place (Yes / No)	Comments
Impacts: Collapsed trenches may create an erosion and safety hazard.	• Small inspection holes may be left open along the route but the rest of the trench must be closed. • Cleared areas must not be left exposed for long periods of time and must be re-vegetated as each stage of pipework is completed. • Trenches must not remain open during building shut down periods i.e. over Christmas and Easter. Trench work must be planned so that trenches are closed before these shut down periods as there is a risk that the trenches will either collapse or fill with water if left unattended and this can create a hazard for children and animals. • All trenches must be demarcated. • During the excavation of trenches, flows must be diverted around active work areas where required. Water diversion must be temporary and re-directed flow must not be diverted towards any stream banks that could cause erosion.			
5. Impact Management Outcome: Prevent alien vegetation from gaining a foothold on site.				
Activity: Clearing of vegetation within the construction footprint. *Impact:* The disturbance will act as a driver for exotic species and result in proliferation of exotic weeds i.e. Castor Oil.	The vegetation of the site is already highly invaded. • Alien vegetation must not be allowed to encroach onto the site and must be continually removed during construction. • Construction must not promote further alien plant disturbances in the surrounding area.	CON/EO		
6. Impact Management Outcome: Prevent the impact of features with heritage anvalue				
Activity: Excavations within the community *Impact:* Impact on features with heritage value (i.e. graves).	Since the pipeline will be placed in areas previously disturbed by roads, footpaths and current pipeline routes, it is not anticipated that there are heritage or cultural significant aspects associated with the project area. However: • Should any graves be identified within the project area, a 30m buffer must be maintained around the grave. • A 30m buffer must be maintained around the Mpolweni cemetery. • Construction workers must be cautioned to operate with care on site and should a culturally sensitive aspect be discovered on site, that has not been previously identified, construction activities must stop temporarily and the issue assessed and the authorities (AMAFA) notified if need be.	CON/EO		

Nature and Consequences of impact	Proposed mitigation and Extent to which impact can be reversed/avoided, managed or mitigated:	Person	In place (Yes / No)	Comments
7. Impact Management Outcome: To increase employment for residents.				
Activity: Employment demand *Impact:* Job creation for the local community.	This is a positive impact.	CON/EO		
OPERATION				
8. Impact Management Outcome: Prevent alien vegetation from gaining a foothold on-site within the disturbed footprint				
Activity: Long term effects as a result of vegetation disturbance during construction. *Impact:* Continued encroachment and establishment of alien species into the disturbed areas within the WSS construction footprint.	There is currently alien vegetation located within the surrounding area. • Alien vegetation must not be allowed to encroach onto the site and must be continually removed during operation. • Maintenance activities must not promote further alien plant disturbances in the surrounding area.	APP		
9. Impact Management Outcome: Prevent long term erosion within watercourses				
Activity: In-complete trenching and rehabilitation of the site. *Impact:* Long-term erosion around watercourses and damage to watercourse banks where pipe crossings have been placed.	The following measures must be carried out to mitigate against long term erosion: • Trench rehabilitation must be effectively carried out before contractors leave the site. • Soil in the trenches must be compacted effectively to the same level or slightly higher than the surrounding land to prevent settling which could create depressions for water to travel along, creating erosion funnels and exposing the pipeline. • Indigenous vegetation must be planted after the soil has been compacted. The vegetation must have taken successfully before contractors leave the site.	APP		

Nature and Consequences of impact	Proposed mitigation and Extent to which impact can be reversed/avoided, managed or mitigated:	Person	In place (Yes / No)	Comments
10. Impact Management Outcome: Prevent permanent impact on the flow regime of the watercourses.				
Activity: Improper placement of pipes in the beds of watercourses. *Impact:* Permanent impact on the flow regime of the watercourses.	Please note, due to the small size of the pipes and tributaries as well as the placement of the pipeline underneath the bed of the watercourses, the pipelines will not impact the flow regime of the rivers during operation. The pipes will be tied to existing structures where possible, or placed underneath the stream bed.	APP		
11. Impact Management Outcome: Prevent the failure of the WSS resulting in flooding, erosion and loss of water supply				
Activity: Failure of the water pipes *Impact*: Localised flooding and erosion.	Various measures to ensure pipe integrity must be implemented including: • Scour valves will be used to control the supply of water. These are used to stop supply when any repairs are carried out on a section of pipeline. • Isolating Valves will be placed along the pipeline length which effectively break the line into smaller sections thereby decreasing the overpressures. These valves have been designed for placement on long pump mains. • Air valves will be installed at all local high points and at 600m maximum spacing along flat pipe runs in bulk mains. • Pressure Reducing Valves (PRV's) will be situated where the pressure in the reticulation mains exceeds 7.5 bar.	APP		
Activity: Illegal connections *Impact:* Damage to pipework, flooding, erosion and loss of water supply.	Since most of the households in the area will have easy access to water, there are unlikely to be illegal connections, however the pipeline will be laid in trenches at least 1m deep. The water service provider must monitor the pipeline through routine inspections with any leaks being repaired as soon as they are reported.	APP		
12. Impact Management Outcome: Prevent cumulative impact on the receiving environment				
Activity: Construction related erosion *Impact:* Increased sedimentation within the catchment	Provided that the Contractor is compliant with the measures included in the attached EMPr, waste management and erosion control will be sufficiently managed to prevent this cumulative impact.	APP		
Activity: Increased water demand	The project will increase the demand for potable water in the region. Raw water is collected at Midmar Dam which is the source water to the Upper Mgeni System. The raw water is treated at DV Harris Wastewater Treatment Works then distributed to the project area. Umgeni Water who are the custodians of Midmar Dam are responsible	APP		

Nature and Consequences of impact	Proposed mitigation and Extent to which impact can be reversed/avoided, managed or mitigated:	Person	In place (Yes / No)	Comments
Impact: Pressure on water resources in the Umgeni Catchment	for the distribution and conservation of this water and have committed the bulk water supply to Mpolweni and Thokozani for the next 20 years. This commitment is in line with Umgeni Water's long-term planning to ensure sustainable use of water.			

SECTION 3: CONSTRUCTION MITIGATION MEASURES

13. Impact Management Outcome: Impacts on the environment are minimised during site establishment

3.1. Site Camp, Storage & Handling of Hazardous and Non-Hazardous Materials & Stockpiling

Activity	Required Action / remediation to control environmental impact	Person	In place (Yes / No)	Comments
Location & Establishment of the construction camp	• The construction camps must be marked out with the approval of the ECO.	CON		
	• The site camps must be located on a flat transformed portion of land. • Do not set up the construction camps within 22m of any watercourse or within an area that will be flooded should water levels rise. • Do not set up construction camps within 22m of any watercourse.	CON		
	• The site camps must be demarcated and fenced off to prevent illegal entry.	CON		
	• The following areas must be demarcated and marked within the construction camps: ○ **A waste storage area** ○ **A materials storage area** ○ **Areas for fuel and hazardous chemical / flammable goods** ○ **Stockpile areas** ○ **Vehicle servicing and wash bay areas (if required)** ○ **Parking area**	CON		
Establishing storage areas & Stockpiles	• **A waste storage area** must be demarcated, and suitable and sufficient waste bins must be provided within the camps. Storage of waste must be on a hard surface, and undercover. Liquid waste must be situated within a bunded area. ○ Liquid waste and accumulated waste must be removed from the site monthly by a recognised Waste Contractor.	CON		

	• **A materials storage area** must be identified and designated within the construction camps, which must be located more than 16m from any watercourse. Materials, specifically liquid and potentially environmentally hazardous materials must be stored within a bunded area (110% capacity of the largest container) and on a hard surface. The storage area must be undercover.	CON		
	• **Areas for fuel and hazardous chemical / flammable goods** must be identified and signposted within the construction camps. An inventory of the materials and volumes stored must be maintained and updated once a week. These areas must be located within a bunded, hard-surfaced impermeable area.	CON		
	• **Bulk fuel storage:** No bulk fuel storage to occur on any of the sites.	CON		
	• **Designated areas for stockpiling of raw materials** must be demarcated within the construction camps. No stockpiling is to occur on or near slopes where they could be washed into the surrounding properties or the rivers. All stockpiling areas must be approved by ECO and must be located more than 16m from the edge of any watercourse.	CON		
	• **Parking:** The contractor must designate parking areas on the sites and ensure that only these parking areas are used. • Vehicles must not park within 16m of any watercourse.	CON		
	• **Vehicle servicing and washing:** only emergency (breakdown where equipment is no longer mobile) and minor maintenance (e.g. greasing) may be done on the sites. ○ A designated area must be set aside for this, which must be hard-surfaced and bunded. ○ If emergency repairs are required, this must not be conducted within 16m of any watercourse, riparian zone or wet area. ○ Drip trays must be used. ○ Any other planned or required maintenance must be done off-site at a suitable location. ○ Vehicle washing must also be conducted off-site at a designated vehicle wash bay, the wash bay must be lined with an impermeable material and must drain to a sump to ensure	CON		

	hydrocarbons, and other contaminants are separated before remaining runoff being discharged into the municipal sewer system. ○ No cement vehicles may be washed on site.			
Handling of liquids on site	• Decanting of any liquids/chemicals paints etc. must be done within the confines of a drip tray or on a hardened surface within a bunded area. • This must not be carried out within 20m of the delineated wetland or 30m of any riparian area.	CON		
	• Decanting from large containers (e.g. 210L drums) must be done using a hand pump, where possible. If no hand pump is available, liquids must be decanted on a drip tray using a funnel. • This must not be carried out within 22m of any watercourse.	CON		
	• All handling of hazardous materials, including cement, must take place on a hardened surface or within a drip tray or cement mixing tray. • This must not be carried out within 22m of any watercourse.	CON		
	• Decanting of hazardous materials must take place within the site camp above drip trays or containers to prevent the potential spillage into these areas.	CON		
Inventory and record of substances stored on site	• A full inventory of hazardous substances and Material Safety Data Sheet (MSDS) for each substance stored on site must be maintained, and each substance must be stored and managed per the MSDS.	CON		
Storage of hazardous materials	• Hazardous materials and liquids to be stored in the assigned storage area as per Section 3.0 of this EMPr.	CON		

3.2. Administration & Records				
Activity / Document	**Required Action**	**Person**	**In place (Yes / No)**	**Comments**
Site-Specific EMPr	• Keep a hard copy of the Site-Specific EMPr on-site and ensure that it has been signed and received by the contractor and engineer.	CON		
	• All contractors, the engineers and the ECO must have a copy of the EMPr before coming on to the site.	ECO/ ENG		
Records	• Keep records and proofs of all agreements, meetings etc. to demonstrate compliance with this EMPr.	CON		
Proof of raw material sourcing and resource use	• Proof of sustainable source of all materials used must be obtained and documented, especially for raw material i.e. topsoil, sands, natural gravels, crushed stone, clay liners, timber etc. In other words, documented proof that materials have been sustainably sourced must be maintained on-site for review by EDTEA. ○ E.g., sand may only be obtained from approved sand winning operations, which is licensed by the Department of Mineral Resources (DMR) and has an approved EMPr for operation. ○ Where materials are borrowed (mined), proof must be provided of authorisation to utilise these materials from the landowner/mineral rights owner and the Department of Minerals and Energy.	CON/ EO		
Water abstraction for dust suppression	• Water used on site must be obtained from a municipal source. If this is not available and water needs to be obtained from a nearby water resource, then the following will apply: ○ If water is to be extracted it must be from an approved source, and permission from the landowner must be obtained. ○ If water is extracted no more than 50 000l per day may be extracted. All water use must be registered with DWS. ○ If water is extracted, a daily record of the volume of water extracted must be retained and: ▪ The driver must record each truckload that is removed, and this will be used to determine the volume of water extracted.	CON/ EO		

	▪ These records must be provided to the ECO for record and review. ▪ The ECO must monitor volumes to ensure that usage remains below 50 cubic metres per property per day or that abstracted amounts remain within those allowed by the permit that must then need to be applied for. ○ Water use must be controlled and reduced wherever possible.			
Maintenance of the extraction point	• One point of entry must be established and approved by the ECO. Multiple entry points and pathways must not be permitted. • Multiple abstraction points are not permitted. • The abstraction point must not be established within wetland areas or in areas thickly vegetated by riparian vegetation. • The abstraction point must be easily accessible and where possible, located in close proximity to an established road to avoid the creation of additional tracks. • The abstraction area must not be located on steep slopes where the point may become eroded. • Vehicles approaching the extraction point must remain 22m from any watercourse except where required to pump directly from the stream/river. • No vehicle repairs or maintenance or refuelling may be conducted at the abstraction point. • Damage to the banks of any water resource must not take place. • Should the area become damaged or eroded, erosion protection measures such as sandbags or hessian sheeting must be put in place to allow the re-establishment of vegetation and stabilisation of the area. • Once an abstraction point is no longer being used, the area must be rehabilitated to its former state.	CON/ EO		
Proof of training	• Keep training attendance registers on file at all times.	EO		
Incident records & Photographs	• Keep records of incidents that have occurred and how they were remediated. It is a good idea to take photographs when incidents occur and then to take follow up pictures to demonstrate remediation and keep these on record.	EO		

	• These records must be kept on-site for review by EDTEA.			
Appointment of ECO / EO	• Appoint an ECO (Environmental Control Officer) before the commencement of construction to monitor the entire construction phase.	ENG		
	• Keep proof of appointment and contact details as well as dates of audits.	APP		
Emergency response plan	• An emergency response plan must remain on-site as must a copy of the EMPr and the Environmental Authorization.	ECO		
Audits	• A record of audits conducted on the site as well as findings must be kept on site.	CON/ EO		
Permits & Approvals	• Keep all necessary permits and approvals on file, i.e. construction licences etc. • These must be kept on-site for review by EDTEA.	CON		
MSDSs	• Material Safety Data Sheets (MSDSs) are to be kept on-site for all hazardous materials.	CON		

14. Impact Management Outcome: All on-site staff are aware and understand the individual responsibilities in terms of the EMPr

3.3. Training & Awareness				
Activity	**Required Action / remediation to control environmental impact**	**Person**	**In place (Yes / No)**	**Comments**
Who should be trained & Frequency of training	• All construction staff must have basic environmental awareness training, which can be conducted at the same time as the required health & safety training.	EO		
	• Staff must be trained on their environmental responsibilities before commencing work and refresher sessions can be conducted during toolbox talks on specific areas causing problems.	EO		
	• Staff must sign a training register and Records of training must be kept.	EO		

	• These records must be maintained on-site for review by EDTEA.			
Training Content and staff conduct	• Training must include 1. The definition of environment (people + air + soil + water +business); 2. Reasons for conserving and protecting the environment; 3. How the following activities can impact the environment: - Not using assigned ablutions, hazardous materials, uncleaned spills, mixing of cement or paint on soil or grass surfaces, waste management, i.e. use of waste receptacles and waste separation for recycling, vehicle washing polluting soil & groundwater; litter; 4. What to do to prevent the above impacting the environment i.e. assign impermeable mixing areas, no vehicle washing on-site, use of waste receptacles and separation of waste to allow for recycling, how to respond in an emergency and deal with a spill; 5. Consideration of neighbours. 6. Do not play music or create any other disturbance to neighbours. 7. Use only the chemical toilets provided. 8. No dumping to occur in sensitive areas on site. 9. Use waste bins provided. 10. Use drip trays provided. 11. Do not build fires for any purpose on the site. 12. Behave in a socially acceptable manner and do not use drugs or alcohol on site. 13. There is to be no hunting of wildlife on the site and no setting of snares or traps. No animals are to be harmed or harassed.	EO		
Neighbours & Working hours	• Local community members must be notified of the project through community leaders and must be notified of the existence of any hazardous storage areas as well as the type of chemicals being used on site. This can be achieved through the placement of signboards.	CON		
	• Limit hours of operation to weekdays 7-5 pm and Saturday mornings 7 - 12 pm. Neighbours to be notified before construction on weekends take place.	CON		

	• Advise the adjoining neighbours of the work and hours of work at least one week before commencement. This can also be indicated on the signboards.	CON		
	• Neighbours to be advised before periods where work will be done outside normal working hours.	CON		

15. Impact Management Outcome: The impact on sensitive social and environmental areas on-site is minimised during construction across the site

3.4. Sensitive Social Areas, Environmental Areas, Vegetation and Vegetation Clearing and Wildlife

Activity	Required Action / remediation to control environmental impact	Person	In place (Yes / No)	Comments
Community	• The surrounding stakeholders must be made aware of the commencement of construction 30 days before construction. Alternate temporary access routes must be determined before the commencement of the construction.	CON		
Topsoil	• Topsoil removed during the excavations must be kept to one side (stored more than 22m from any watercourse). • This must then be re-used for rehabilitation purposes. The soil must be replaced in the same area that it was excavated from. Much of this topsoil, especially the top 30cm, will retain grass and vegetation seeds. • Soil stockpiles must not exceed 2m in height, must be covered, or grassed to prevent erosion caused by exposure to heavy wind or rain.	CON/ EO		
Cultural and Heritage items	• Should any items with historical or archaeological value be found during construction, these must be reported to AMAFA and work in the affected area must be stopped immediately.	CON		
Paleontological Monitoring Programme	• The Monitoring Programme for Palaeontology must commence once construction has commenced. - The following procedure is only required if fossils are seen on the surface and when excavations commence. - When excavations begin, the rocks must be given a cursory inspection by the environmental officer or designated person.	CON/ EO		

	Any fossiliferous material (wood, plants, insects, bone, coal) must be put aside in a suitably protected place. This way, the project activities will not be interrupted. - Photographs of similar fossil plants must be provided to the developer to assist in recognising the fossil plants in the shales and mudstones. This information will be built into the EMP's training and awareness plan and procedures. - Photographs of the putative fossils can be sent to the palaeontologist for a preliminary assessment. - If there is any possible fossil material found by the developer/environmental officer, then the qualified palaeontologist sub-contracted for this project must visit the site to inspect the selected material and check the dumps where feasible. - Fossil plants or vertebrates that are considered to be of good quality or scientific interest by the palaeontologist must be removed, catalogued and housed in a suitable institution where they can be made available for further study. Before the fossils are removed from the site, a SAHRA permit must be obtained. Annual reports must be submitted to SAHRA as required by the relevant permits. - If no good fossil material is recovered, then the site inspections by the palaeontologist will not be necessary. - If no fossils are found and the excavations have finished, then no further monitoring is required.			

3.5. Soil, Stormwater Runoff; Erosion				
Activity	**Required Action / remediation to control environmental impact**	**Person**	**In place (Yes / No)**	**Comments**
Stormwater system	• Temporary stormwater protection measures must be established before construction activities commence.	CON		
	• No contaminated runoff or greywater is allowed to be discharged from the Site Camps into any watercourse or surrounding environment.	CON		
	• Stormwater must not be allowed to flow into surrounding properties and must enter existing stormwater channels.	CON		
Stormwater Quality	• Only clean stormwater maybe diverted to a watercourse, and associated wetlands and then precautions must be in place to prevent erosion of the riverbanks. These precautions can include gabion baskets, berms or diversion ditches, sandbags	CON		
	• Washings from any vessels or any containers must not enter the watercourse. These washings are to be contained and removed as waste.	CON		
Incidents	• The entry of any substance (i.e. any material or substance that is not clean stormwater) into the stormwater or a water body is considered an incident and must be reported to the ECO **immediately** to maintain the site's incident records.	CON/ EO		
Stormwater flow	• The drainage system must be regularly checked to ensure unobstructed water flow.	CON		
Erosion Control	• Install erosion barriers (gabion baskets, berms or diversion ditches, sandbags) and other sediment control structures (grates or grids, geofabric) before clearing in order to prevent substances from entering exposed drains or channels.	CON		
	• Identify any steeper areas where erosion is more likely to occur. These areas must be protected from erosion. This can be achieved through the planting of vegetation, placement of berms or use of hessian material.	CON/ EO		
	• Regularly check and clean material from behind erosion barriers.	CON/ EO		

	• Sediment/soil must not be permitted to enter the watercourses. The contractor must install erosion barriers (gabion baskets, berms or diversion ditches, sandbags) and other sediment control structures (grates or grids, geofabric).	CON/ EO		

16. Impact Management Outcome: Wastes are appropriately stored, handled and safely disposed of at a recognised waste facility.

3.6. Housekeeping, Waste Storage Handling and Disposal				
Activity	**Required Action / remediation to control environmental impact**	**Person**	**In place (Yes / No)**	**Comments**
General Waste Storage	• The waste area to be designated and demarcated within the construction camp (as per section 3).	CON		
	• Solid waste must be stored in covered, tip-proof metal drums to be collected and disposed of by a certified waste contractor. • Proof of safe disposal of solid waste must be documented, and these records must be maintained on-site for review by EDTEA.	CON		
Hazardous waste	• Hazardous materials that require disposal (cement, paints, solvents, old fuel/oil etc.) must be disposed of at a registered hazardous landfill site.	CON		
	• These materials must be removed by a hazardous waste contractor. Proof of disposal must be available to the ECO for scrutiny and kept on record. • Proof of safe disposal of solid waste must be documented, and these records must be maintained on-site for review by EDTEA.	CON		
Waste from Chemical toilets	• Install chemical toilets and ensure disposal of waste at a licenced disposal facility. Proof of disposal must be kept on-site at all times.	CON		
	• Waste from the toilets must be collected weekly by a registered and reputable company.	CON		
	• Safe disposal certificates for toilet waste must be obtained and kept on-site as assurance that the waste was properly disposed of.	CON		

	• Toilets must not be situated on slopes or within 20m of the delineated wetland or 30m of any riparian area and must be secured to prevent them from tipping over.	CON		
	• Staff must use facilities provided and are not permitted to use any other areas on-site as toilet facilities.	CON		
	• Chemical toilets must be checked daily and cleaned.	CON		
Waste storage and handling	• No waste may be buried or burned on-site or dumped on surrounding properties and farmland. All waste must be disposed of at a licences waste disposal facility. Proof of disposal must be kept on-site at all times.	CON		
	• All skips must be covered to contain odours and prevent waste from blowing around the site.	CON		
	• A register of all waste generated and disposed of must be maintained.	CON/EO		
	• No dumping is permitted. There must be no dumping on site under any circumstances. The contractor is liable to a fine should there be any evidence of illegal dumping. • The ECO to review the damage and advise on rehabilitation measures if required.	CON		
	• Do not place waste containers, skip bins or building materials on steep slopes or within 20m of the delineated wetland or 30m of any riparian area.	CON/EO		
	• Waste accumulated on-site must be removed weekly. The waste must be moved to a licenced waste disposal facility.	CON		
	• Provide litter bins throughout the site for use by all staff on site.	CON		
Waste separation	• **Hazardous:** Hazardous waste must be stored separately from general waste. o Hazardous waste must be disposed of at an approved hazardous waste landfill, and safe disposal certificates must be obtained. o Hazardous waste includes used oils, lubricants, solvents, solvent-based paints, concrete waste, and cement.	CON/EO		

	• **Oils** must be within a bunded storage area and treated as flammable waste. ○ Where possible used oils must be recycled. ○ Safe disposal certificates must be kept on-site demonstrating disposal or recycling of the used oils. ○ Solid paint waste may be disposed of as general waste.	CON/EO		
	• **Concrete waste:** ○ Return excess concrete with the delivery truck to the supplier for recycling or proper disposal. ○ Any other excess concrete, i.e. on-site mixed concrete, can be stored in a lined bin for eventual recycling or disposal.	CON/EO		

17. Impact Management Outcome: Construction activities managed to prevent any nuisance to neighbours

3.7. Noise				
Activity	**Required Action / remediation to control environmental impact**	**Person**	**In place (Yes / No)**	**Comments**
Noise Generation and suppression	• All construction vehicles must be fitted with standard silencers and be well maintained.	CON		
	• Workers must be trained regarding noise on-site, and construction hours must be kept to working hours (07h00 to 17h00).	CON		

3.8. Dust & Emissions				
Activity	**Required Action / remediation to control environmental impact**	**Person**	**In place (Yes / No)**	**Comments**
Dust from stockpiles	• Cover any stockpiled fine material that may release dust with plastic.	CON		

Dust from surfaces	• Damp down surfaces and stockpiles as required to reduce windblown dust.	CON		
	• A water cart may be used which must remain on designated roadways if required.	CON		
	• If dust from the site is likely to create problems for nearby residents, these areas must be shielded with shade cloth.	CON		

18. Impact Management Outcome: Minimise impact on the environment through the management of construction vehicles on site

3.9. Vehicle Maintenance, Operation, Driving On-Site and Vehicle Washing				
Activity	**Required Action / remediation to control environmental impact**	**Person**	**In place (Yes / No)**	**Comments**
Access points	• Haulage roads must be demarcated at the site set up.	CON		
	• Turning areas must be located within the construction footprint and must be designated.	CON/ EO		
	• Temporary access roads must not be located within adjoining properties.	CON/ EO		
	• No ad hoc haulage roads or turning areas may be created.	CON/ EO		
	• Limit vehicle entry point to the designated access point and ensure no other point of entry is used.	CON/ EO		
	• All vehicles to remain in the parking area designated within the construction site.	CON/ EO		
Vehicle Servicing and repairs	• No major equipment or vehicle servicing to occur on-site, i.e. major disassembly and repair work, clutch replacements and oil or lubricant changes must be carried out at a suitably equipped workshop.	CON		

	• Only minor emergency repairs, i.e. those necessary to get the vehicle moving so that it can be taken to a repair facility to be carried out, i.e. stopping of oil leaks, lubricating of hydraulics, changing of buckets/breakers on Excavators and TLBs or changing of tyres. This must be carried out in designated workshop areas within the allowed construction camps. These areas to be hard-surfaced and bunded.	CON		
	• Drip trays are to be used by all leaking vehicles and equipment.	CON/ EO		
	• All vehicles to be equipped with drip trays.	CON/ EO		
	• All small machinery used on site must be situated on a drip tray (i.e. pumps, generators, compressors etc.).	CON/ EO		
	• All vehicles to be regularly maintained and maintenance records must be made available on request.	CON/ EO		
	• No leaking vehicles to be allowed on site.	CON/ EO		
	• Any vehicles that are leaking must not be allowed entry to the site.	CON/ EO		
	• No vehicles to be washed on-site - cement trucks are not permitted to wash out cement mixers on site.	CON/ EO		
	• Only emergency (breakdown where equipment is no longer mobile) and minor maintenance (e.g. greasing) may be done on-site. Any other planned or required maintenance must be done offsite at a suitable location.	CON		

19. Impact Management Outcome: Soil, surface water and groundwater contamination are minimised during construction.

3.10. Incidents, Spills and Emergency Response				
Activity	**Required Action / remediation to control environmental impact**	**Person**	**In place (Yes / No)**	**Comments**
Spill kits	• Adequate spill kits and containers for spilt and contaminated material to be on standby on site.	CON/EO		
	• Keep marked booms and/or absorbent material on-site to contain spills if they occur.	CON/ EO		
	• All staff must be trained on how to react in the case of an emergency.	CON-SHE		
	• If a spill occurs, stop the source, contain it, clean up as per MSDSs and notify relevant authorities.	CON/ EO		
	• Make staff aware of emergency phone numbers to use in the case of a large spill.	CON/ EO		
Definition of incidents	• All incidents are to be recorded.	CON/ EO		
	• **Minor incidents**: small spills less than 5 l that do not enter stormwater or the stream/river, minor non-compliance with EMPr that does not cause major environmental impact, i.e. housekeeping issues etc. ○ **Action:** Supervisor and staff on-site to record and address and notify ECO. Take photos of the spill. Prevent spill from spreading and contain. Collect spilt material and contaminated soil and place in a sealed container for disposal. ECO to advise on remediation measures and to follow up on actions taken to address the incident. ○ **Records:** On-site incident register.	CON/ EO		

	• **Major incidents:** Large spills or any spills that enter stormwater or the stream/river, fires, explosions. Please see the definition of a reportable incident provided below.
	  ○ **Action:** Report immediately to ECO, action to be taken to prevent further damage and incident to be reported to authorities. ECO to advise on remediation measures and to follow up on actions taken to address the incident.
	  ○ **Records:** On-site incident register and report to authorities.
		CON/ EO		

3.11. Sewage and Grey Water Management				
Activity	**Required Action / remediation to control environmental impact**	**Person**	**In place (Yes / No)**	**Comments**
Sewage	• Adequate toilet facilities (such as chemical toilets) sufficient in number to cater for the number of staff on-site must be provided. One toilet per 15 staff must be provided.	CON		
	• Waste must be managed as per section 3.5, namely removed by a licensed contractor, and safe disposal certificates retained to prove proper disposal. • Safe disposal certificates must be kept on-site for review by the EDTEA.	CON/ EO		
Greywater/wash water	• Greywater must not be permitted to enter the surrounding properties or stormwater.	CON/ EO		
	• Vehicles, especially cement trucks, must not be washed on site these must be washed at a wash bay facility off-site.	CON/ EO		
	• Alternately the wash water can be collected and returned with the supplier's truck for disposal by the supplier.	CON/ EO		

SECTION 4: POST CONSTRUCTION, REHABILITATION AND OPERATION

20. Impact Management Outcome: To ensure there are no long-lasting impacts on the environment remaining once construction is complete.

4.1. Post Construction Activities

Activity	Required Action / remediation to control environmental impact	Person	In place (Yes / No)	Comments
Post Construction Audit	• Clearance from the ECO must be obtained to ensure the all of the requirements of the EMPr have been complied with.	ECO		
Stormwater	• The Contractor must check that the stormwater channels are free from building rubble, spoil materials, and waste materials.	CON		
	• Ensure that in the long term; stormwater is protected from ingress by potential pollutants.	CON		
Waste & Spills	• All spillages must be cleaned and contaminated soil must be removed and disposed of.	CON/ EO		
	• All remaining waste bins and/or skips must be removed and disposed of. Records of disposal must be retained.	CON/ EO		
	• All excess concrete must be removed from the site on completion of works and disposed of. Washing of the excess into the ground is not allowed.	CON/ EO		
	• All excess aggregate must also be removed.	CON		
	• Used oil must have been collected by a registered used oil contractor and documentation to this effect provided.	CON		
	• Surfaces are to be checked for waste products from activities such as concreting are cleared in a manner approved by the ECO.	CON		

	• No litter must be left on site.	CON/EO		
Structures, materials and stockpiles	• Any fences, barriers, or demarcations utilised for the construction phase must be removed and disposed of.	CON		
	• All structures and imported materials within the construction camp must be removed.	CON		
	• The remaining building materials must be removed from the site.	CON		
Damage	• Any damage incurred on the neighbouring homesteads by the contractor must be repaired by the contractor.	CON		
	• Any damage to existing infrastructure must be repaired or replaced on completion of the upgrade.	CON		
Close Out	• A meeting must be held between Engineer, the ECO, and the contractor to approve all remediation activities and ensure that the site has been restored to a condition, which has been approved by the Engineer.	ENG		
Vegetation	• All vegetation planting must be completed and any areas that have been disturbed or cleared must have been rehabilitated and revegetated.	ECO		
	• Re-vegetation of cleared land must utilise only 100% locally indigenous plant material to ensure no erosion occurs once the site is vacated.	CON/EO		
	• Ensure that no sensitive habitats have been damaged during the construction phase.	ECO		
	• Where habitats have been damaged, these must be reported to the ECO and procedures for rehabilitation of these habitats must be undertaken.	CON/EO		
Erosion	• Any eroded soil on paths/roadways/ other areas must be collected and replaced in the area from which it was eroded. These high-risk erosion areas must be protected from further soil erosion.	CON/EO		

21. Impact Management Outcome: To improve the functionality of the wetlands, riparian areas and open spaces on and around the site.

4.2. Rehabilitation				
Activity	**Required Action / remediation to control environmental impact**	**Person**	**In place (Yes / No)**	**Comments**
Rehabilitation of areas surrounding the construction footprint	• Cleared areas to be re-grassed on completion. Indigenous grasses to be used and the use of vetiver or kukuyu grass is not supported. Rather an indigenous grass seed mix must be used to rehabilitate the site. Species within this mix should include *Urochloa panicoides* (Garden Signal Grass), *Pogonarthria squarrosa* (Herringbone grass), *Eragrotis curvula* (Weeping Love Grass) and *Chloris gayana* (Rhodes Grass). • Where possible, vegetation that was removed during clearing must be kept aside and re-used. This can be kept on-site in nursery areas or if the replanting occurs within a few days of clearing, can be kept to one side and immediately re-planted. • Grass can be reintroduced by Hydroseeding or planting of grass plugs. • Cleared areas must not be left exposed for periods longer than two weeks and must be revegetated in stages as each section is completed. • Where serious habitat damage has taken the damaged must be reported to the ECO. Consultation between the ECO, contractor, and engineer must take place. Whereby the contractor must develop and suitable method statement which must focus on the rehabilitation of the damaged area. This method statement must be approved by both the ECO and engineer. The contractor must then implement this method statement under the supervision of the ECO.	CON/ EO		
Top Soil	• Topsoil removed during the excavations must be kept to one side (stored more than 20m of the delineated wetland or 30m of any riparian area) and re-used in the same area that it was excavated	CON/ EO		

	from. Much of this topsoil, especially the top 30cm will retain grass and vegetation seeds. • This topsoil to be used when re-vegetating and rehabilitating areas cleared for construction/ excavation.			
Rehabilitation of eroded areas	• Any erosion damage caused during construction must be repaired. The affected area must be reshaped, and the soil replaced. • The eroded area must be re-vegetated or measures put in place to control further erosion. The contractor must install erosion barriers (gabion baskets, berms or diversion ditches, sandbags) and other sediment control structures (grates or grids, geofabric).	CON/ EO		
Removal of alien invasive plants	• Alien invasive species must be removed on an on-going basis. • Use of chemical pesticides must be avoided, and mechanical removal by hand is preferred.	CON/ EO		
Damage to any watercourse	• Where any watercourse has been damaged, the following measures are to be taken to ensure restoration of the habitat: ○ ECO must assess the damaged area ○ Any construction debris or contaminants within the watercourse must be removed ○ Original soil structure must be restored ○ Any impedance or diversion to water flow must be removed ○ The area must be vegetated with suitable riparian or wetland species • No loose soil or damaged banks can be left behind after construction.	CON/ EO		

22. Impact Management Outcome: No environmental degradation to occur during the operational phase of the Mpolweni and Thokozani WSS

4.3. Operation				
Activity	**Required Action / remediation to control environmental impact**	**Person**	**In place (Yes / No)**	**Comments**
Maintenance of the WSS	• The WSS will require maintenance during operation. This work must be undertaken by municipal appointed staff. This EMPr must be used to mitigate against any potential risks to the environment. The following mitigation measure must be implemented on-site during all inspections and maintenance work: ○ All maintenance vehicles and machinery must make use of existing access routes; ○ Laydown yards, camps, and storage areas must be more than 22m from any watercourse; ○ All machinery and equipment must be inspected regularly for faults and possible leaks, these must be serviced off-site ○ The contractors used for the maintenance must have spill kits available to ensure that any fuel or oil spills are clean-up and discarded correctly; ○ Uncontrolled access of vehicles through any watercourse must not be permitted; ○ Adequate sanitary facilities and ablutions must be provided for all personnel on-site. Use of these facilities must be enforced; ○ All removed soil and material must not be stockpiled more than 22m from any watercourse. All stockpiles must be protected from erosion, stored on flat areas where run-off will be minimised, and be surrounded by bunds; ○ No dumping of construction material on-site may take place; ○ An on-site environmental file must be maintained. The following documents must remain on site: ○ Environmental Authorisation	CON/ EO		

	○ EMPr ○ Audit reports ○ Waste register with safe disposal certificates ○ Proof of toolbox talks. ○ Any other documents requested by the ECO. ○ The waste hierarchy must be implemented on-site, reduce, reuse and recycle. All waste generated on-site during construction must be adequately managed. Separation and recycling of different waste materials should be supported. Safe disposal certificates must be obtained and kept on file for review. ○ Toolbox talks must be conducted on a regular basis which must cover environmental topic dealing with but not limited to, waste management, conservation of water, protection of fauna and flora and good housekeeping. ○ An ECO (Environmental Control Officer) must be appointed before the commencement of construction to monitor the entire construction phase. The ECO must undertake an audit every month during maintenance activities. ○ Keep proof of appointment and contact details as well as dates of audits. ○ All audit report must be sent to the compliance division of EDTEA for review.			
Soil Erosion	• The erosion protection features installed on the site must be checked to ensure, they continue to perform their function during the operational phase of the project.	APP		
Vegetation	• Alien vegetation must be monitored and removed on an on-going basis. • Indigenous vegetation planting must continue on an on-going basis if it is required.	APP		

SECTION 5: DEFINITIONS

Stormwater
Clean rainwater, must be allowed to enter the stormwater system or natural water bodies without causing erosion. Stormwater must not be contaminated with any other substance including soaps, washings, hazardous materials, soil etc.

Greywater
This is wash water that may contain non-hazardous soaps, i.e. bathwater, vehicle wash water etc. This must not be permitted to enter the stormwater system but can be disposed of in the sewage system or as effluent. If no sewage system is available on site, the greywater must be collected and disposed of.

Sewage
Human excrement from chemical toilets.

Raw materials for which source statement must be obtained
Topsoil, sands, natural gravels, crushed stone, asphalt, clay liners, timber etc. E.G., sand may only be obtained from approved sand winning operations, which is licensed and has an approved EMPr for operation.

Incidents
All incidents must be recorded. Minor incidents could include small spills of less than 5l that do not enter a water body or any stormwater drains, as well as housekeeping issues and general small non-compliances with the requirements of the EMPr. Major incidents are those that must be reported to the authorities and include all incidents involving contamination of a water body or stormwater or other reportable incidents as defined below.

Reportable incident is defined as 'an unexpected sudden occurrence, including a major emission, fire or explosion leading to serious danger to the public or potentially serious pollution of or detriment to the environment, whether immediate or delayed' NEMA Section 30, 'includes any incident or accident in which a substance (a) pollutes or has the potential to pollute a water resource; or (b) has, or is likely to have, a detrimental effect on a water resource.' NWA Section 20.

SECTION 6: RECORDS

Training Register – Record any training that has taken place.		
Training Conducted:		
Training provided by:		
Date of Training	**Name**	**Signature**

Non-conformance Record – Record any non-conformances i.e. small spills, overflowing waste bins etc.				
Date of Non-conformance	**Details of non-conformance**	**Mitigation required**	**Corrective action taken**	**Date action completed**

Complaints register – Record any complaints received from neighbours or the public regarding dust or pollutions, noise or nuisance.					
Date of complaint	**Complainant's Name**	**Complainants Contact Number**	**Details of complaint**	**Corrective action taken**	**Date action completed**

Environmental Emergency Response and Definition of an Incident

Aim of this document	• To effectively manage the response to emergency incidents and control these incidents should they occur. • To ensure that such incidents are recorded and, where possible, all measures are taken to prevent them from re-occurring. • To provide a definition for what would be considered a reportable incident in terms of the environmental legislation. Activities covered in this procedure include: • Identification and definition of an incident and whether or not it needs to be reported to the authorities. • Reporting to the relevant authorities if a reportable incident occurs • Procedure to follow in the event of a spill or fire.
Personnel Duties and Responsibilities	The contractor is responsible for: • Ensuring all activities are carried out as per this procedure and that the company complies with relevant legislation. • Maintaining a register of all incidents as well as ensuring that an incident report is generated for each incident, including details of the incident and how it was closed out. • Ensuring that safe disposal certificates are obtained for any waste materials generated as a result of an incident and that this waste is recorded. • Providing the necessary spill kit equipment and drums for storage of contaminated soil etc.
Training Requirements	• All personnel and workforce to undergo a site safety and environmental induction before starting work on site. All employees to be trained on how to respond to an environmental incident and whom to contact in order to ensure that the incident is addressed and recorded and if necessary reported.
Definition of a "reportable incident"	• In terms of the National Environmental Management Act, major incidents must be reported to the authorities. In terms of the National Water Act, any incident involving a substance which has the potential to pollute a water resource must be reported, i.e. any spill of into a watercourse or the stormwater system must be reported. The relevant sections from the legislation are provided below:
National Environmental Management Act	*As defined by NEMA, section 30 "Control of emergency incidents".* *(1) In this section—* *(a) "incident" means an unexpected sudden occurrence, including a major emission, fire or explosion leading to serious danger to the public or potentially serious pollution of or detriment to the environment, whether immediate or delayed;* *(b) "responsible person" includes any person who—* *(i) is responsible for the incident;* *(ii) owns any hazardous substance involved in the incident; or* *(iii) was in control of any hazardous substance involved in the incident at the time of the incident;* *(c) "relevant authority" means—* *(i) a municipality with jurisdiction over the area in which an incident occurs;* *(ii) a provincial head of department or any other provincial official designated for that purpose by the MEC in a province in which an incident occurs;* *(iii) the Director-General;* *(iv) any other Director-General of a national department.*

National Water Act	*As defined by the National Water Act section 20 "Control of emergency incidents"* *(1) In this section ``incident'' includes any incident or accident in which a substance -* *(a) pollutes or has the potential to pollute a water resource; or* *(b) has, or is likely to have, a detrimental effect on a water resource.*
Reporting to the authorities	If a reportable incident occurs, the Site Agent / Project Manager and Environmental Control Officer must be notified immediately. No site staff may communicate directly with the authorities. The relevant sections from the legislation are included below: As taken from NEMA, section 30: Control of Emergency Incidents: *(3) The responsible person or, where the incident occurred in the course of that person´s employment, his or her employer must forthwith after knowledge of the incident, report through the most effective means reasonably available—* *(a) the nature of the incident;* *(b) any risks posed by the incident to public health, safety and property;* *(c) the toxicity of substances or byproducts released by the incident; and* *(d) any steps that should be taken in order to avoid or minimise the effects of the incident on public health and the environment too—* *(i) the Director-General;* *(ii) the South African Police Services and the relevant fire prevention service;* *(iii) the relevant provincial head of department or municipality; and* *(iv) all persons whose health may be affected by the incident.* *(4) The responsible person or, where the incident occurred in the course of that person´s employment, his or her employer, must, as soon as reasonably practicable after knowledge of the incident—* *(a) take all reasonable measures to contain and minimise the effects of the incident, including its effects on the environment and any risks posed by the incident to the health, safety and property of persons;* *(b) undertake cleanup procedures;* *(c) remedy the effects of the incident;* *(d) assess the immediate and long term effects of the incident on the environment and public health.* *(5) The responsible person or, where the incident occurred in the course of that person´s employment, his or her employer, must, within 14 days of the incident, report to the Director-General, provincial head of department and municipality such information as is available to enable an initial evaluation of the incident, including—* *(a) the nature of the incident;* *(b) the substances involved and an estimation of the quantity released and their possible acute effect on persons and the environment and data needed to assess these effects;* *(c) initial measures taken to minimise impacts;* *(d) causes of the incident, whether direct or indirect, including equipment, technology, system, or management failure; and* *(e) measures taken and to be taken to avoid a recurrence of such incident.*

	(6) A relevant authority may direct the responsible person to undertake specific measures within a specific time to fulfil his or her obligations under subsections (4) and (5): Provided that the relevant authority must, when considering any such measure or time period, have regard to the following: *(a) the principles set out in section 2;* *(b) the severity of any impact on the environment as a result of the incident and the costs of the measures being considered;* *(c) any measures already taken or proposed by the person on whom measures are to be imposed, if applicable;* *(d) the desirability of the State fulfilling its role as custodian holding the environment in public trust for the people;* *(e) any other relevant factors.* *(7) A verbal directive must be confirmed in writing at the earliest opportunity, which must be within seven days.* *(8) Should—* *(a) the responsible person fails to comply, or inadequately comply with a directive under subsection (6);* *(b) there be uncertainty as to who the responsible person is; or* *(c) there be an immediate risk of serious danger to the public or potentially serious detriment to the environment, a relevant authority may take the measures it considers necessary to—* *(i) contain and minimise the effects of the incident;* *(ii) undertake cleanup procedures; and* *(iii) remedy the effects of the incident.*
National Water Act section 20: Control of emergency incidents	*(2) In this section, ``responsible person'' includes any person who -* *(a) is responsible for the incident;* *(b) owns the substance involved in the incident, or* *(c) was in control of the substance involved in the incident at the time of the incident.* *(3) The responsible person, any other person involved in the incident or any other person with knowledge of the incident must, as soon as reasonably practicable after obtaining knowledge of the incident, report to -* *(a) the Department;* *(b) the South African Police Service or the relevant fire department; or* *(c) the relevant catchment management agency.* *(4) A responsible person must -* *(a) take all reasonable measures to contain and minimise the effects of the incident;* *(b) undertake to clean-up procedures;* *(c) remedy the effects of the incident; and* *(d) take such measures as the catchment management agency may either verbally or in writing direct within the time specified by such institution.*
Spill response	
Responsible Person/s	The spill is reported to the site foreman who must notify his superior. All employees must be made aware of the procedure in case of a spill.

Procedure	1. Identify the nature of the spill, e.g. paint, oil or lubricants 2. Locate spill kit 3. Contain spill according to the training provided 4. Where necessary, contact external spill control contractors 5. Ensure spill does not cause any external contamination (such as storm/groundwater or soil) 6. Ensure that cleanup measures are taken if any contamination has occurred 7. Record in emergency response record the: • Nature of incident • Cause of incident • Clean up measures • Mitigation measures are taken 8. Record in non-conformance register 9. The ECO and Project Manager will determine if the event qualifies as an incident and take steps to report the incident to the necessary authorities, i.e. EDTEA and DWS. 10. The ECO shall review all spill reports
Fire	
Responsible Person/s	The fire is reported to the site foreman All employees must be made aware of the procedure in case of fire.
Procedure	1. Identify the source and nature of fire. 2. In case of small fire extinguish with material appropriate to the nature of the fire 3. In case of a large fire contact Fire Department 4. In the site camp, seal off exposed stormwater drains to ensure firewater does not cause any external contamination. If on-site, take measures to prevent firewater from entering any water body. 5. Ensure that clean-up measures are taken if any contamination has occurred 6. Record in emergency response record the: • Nature of incident • Cause of incident • Clean up measures • Mitigation measures are taken 7. Record in non-compliance register 8. The ECO and Project Manager will determine if the event qualifies as an incident and take steps to report to the authorities. 9. The EO shall review incident/nonconformance reports 10. Adjustments will be made, if necessary, to the operational and emergency procedures and the Environmental Management System to prevent future occurrences
Explosion	
Responsible Person/S	The explosion is reported to the site foreman who must notify his superior. All employees must be made aware of the procedure in case of an explosion.
Procedure	1. Identify the source and nature of the explosion.

	2. In case of small fire as a result of the explosion, extinguish with material appropriate to the nature of the fire 3. In case of a large fire as a result of the explosion contact Fire Department 4. In the site camp, seal off exposed stormwater drains to ensure firewater does not cause any external contamination. If on-site, take measures to prevent firewater from entering any water body. 5. Ensure that clean-up measures are taken if any contamination has occurred 6. Record in emergency response record the: • Nature of incident • Cause of incident • Clean up measures • Mitigation measures are taken 7. Record in non-compliance register 8. The ECO and Project Manager will determine if the event qualifies as an incident and take steps to report the incident to the necessary authorities, i.e. EDTEA and DWS. 9. The ECO shall review spill reports
Resource Requirements	
Materials	• Separate drums for contaminated soil. • Spade and clean soil • Fire equipment

Alien Plant Control Plan

Alien Plant Control Plan	
Activity	**Site Mitigation Measures to control alien plants**
Training and expertise of personnel involved in Alien plant management on site	• It is rare that a contractor has employees or members with good knowledge of alien plants and their eradication, who can then eradicate these plants effectively and on a near-complete basis. Partial knowledge means that some alien species are missed or ignored or indigenous plants harmed. Partial work or work that is not sustained is also ineffective in the long run as any residual presence can regenerate and expand quickly, particularly if live material or many seeds still in the ground. • As a result, the contractor must continually train their works as to the importance of alien plant control and at the same time providing them with the correct knowledge as to which plant must be removed and what method must take place.
Alien Invasive Plant Management in the construction area	• The construction area must be kept free of alien invasive plants. Regular inspections of the site must take place. The following methods of alien plant control can be adapted: o Mechanical Control ▪ Hand pulling ▪ Manual removal using hand tools ▪ Manual removal using mechanised tools o Chemical Control ▪ Foliar spraying ▪ Handheld spraying ▪ High-pressure spraying • The construction area must be rehabilitated immediately following the completion of construction to ensure that alien invasive plants do not become established. • The construction area must be regularly inspected following rehabilitation and alien invasive plants removed if they have become established.
Responsible Use of herbicides	• Problem plants in construction areas usually short-lived weeds for which mechanical methods alone are not successful. Some use of herbicides may be unavoidable. The following must be followed during the use of herbicides: o Do not spray herbicides in windy conditions o Preferably spray in dry conditions and not before any predicted heavy rainfall as most pesticide movement either to the surface or to the groundwater will occur in the first major storm event after application. Heavy losses are reported when application occurs immediately before a major storm. o A buffer zone which must remain untreated must be retained around any watercourse. A minimum buffer of 10m must be retained. This will have to be managed by mechanical means. o Empty containers or unused herbicides must be disposed of correctly and may not be dumped on site.

Section 30: Emergency Incident Report

NB! Please ensure that all the information provided in brackets are removed before submitting this report to all the Authorities.

environmental affairs Department: Environmental Affairs REPUBLIC OF SOUTH AFRICA ENVIRONMENTAL MANAGEMENT INSPECTORATE	**Document Type:**	**Emergency Incident Report**	
	Title for the incident:		
	Date of the incident:		
Reference:		**Initial Submission Date:**	
Revision No.:		**Compiled by:**	

This form provides a template for the emergency incident report required in terms of section 30(5) of the National Environmental Management Act (Act No. 107 of 1998) (hereinafter "NEMA") in which the responsible person or, where the incident occurred in the course of that person´s employment, his or her employer, must, within 14 days of the incident, report to the Director General, provincial head of department and municipality such information as is available to enable an initial evaluation of the incident, including: (a) the nature of the incident; (b) the substances involved and an estimation of the quantity released and their possible acute effect on persons and the environment and data needed to assess these effects; (c) initial measures taken to minimise impacts; (d) causes of the incident, whether direct or indirect, including equipment, technology, system, or management failure; and (e) measures taken and to be taken to avoid a recurrence of such incident.

In terms of section 30(1)(a) of NEMA, an "incident" means an unexpected sudden occurrence, including a major emission, fire or explosion leading to serious danger to the public or potentially serious pollution of or detriment to the environment, whether immediate or delayed.

In line with section 24 of the Constitution of the Republic of South Africa (Act No. 108 of 1996), "serious" is taken to be a measure of the impact of an incident where such an incident has had, could have had, is having, or will have a negative impact on human health or well-being.

1. RESPONSIBLE PERSON

In terms of section 30(1)(b) of NEMA, the "responsible person" includes any person who: (i) is responsible for the incident; (ii) owns any hazardous substance involved in the incident; or (iii) was in control of any hazardous substance involved in the incident at the time of the incident

1.1. Name:		*1.2. Designation:*	
1.3. Postal Address:		*1.4. Physical Address:*	
1.5. Telephone (B/H):		*1.6. Telephone (A/H):*	
1.7. Fax:			
1.8. E-mail:			
1.9. Nature of Business:			

2. Emergency Incident Summary Information

Mark the appropriate boxes

2.1. Fire:		*2.2. Spill:*		*2.3. Explosion:*		*2.4. Gaseous Emission:*	
2.5. Injuries		*2.6. Reportable injuries:*		*2.7. Hospitalisation:*		*2.8. Fatalities:*	
2.9. Open water impacts:		*2.10. Ground water impacts:*		*2.11. Atmospheric impacts:*		*2.12. Soil impacts:*	
2.13. Own emergency response involved		*2.14. Fire prevention services involved*		*2.15. Government hazardous materials emergency response involved*		*2.16. More than 1 governmental emergency response service involved*	
2.17. Emission of non-toxic substances at low concentrations		*2.18. Emission of non-toxic substances at high concentrations*		*2.19. Emission of toxic substances at low concentrations*		*2.20. Emission of toxic substances at high concentrations*	
2.21. No evacuation required		*2.22. Immediate area evacuated*		*2.23. Immediate surrounds evacuated*		*2.24. Evacuation of the general public*	
4.4. Others							

3. INITIAL EMERGENCY INCIDENT REPORT

In terms of section 30(3) of NEMA, the responsible person or, where the incident occurred in the course of that person´s employment, his or her employer must forthwith after knowledge of the incident, report through the most effective means reasonably available: (a) the nature of the incident; (b) any risks posed by the incident to public health, safety and property; (c) the toxicity of substances or byproducts released by the incident; and (d) any steps that should be taken in order to avoid or minimise the effects of the incident on public health and the environment to: (i) the Director General; (ii) the South African Police Services and the relevant fire prevention service; (iii) the relevant provincial head of department or municipality; and (iv) all persons whose health may be affected by the incident.

3.1. Description	*3.2. Date:*	*3.3. Time:*	*3.4. Medium:*	*3.5. 3.5. Name and contact details:*
Relevant fire prevention service: (in case of fire)	[submission date]	[submission time]	[Fax, phone, SMS, letter, etc.)	[Who was the report made to?]
LOCAL:				
PROVINCIAL: **(Those deal with Environmental issues)**				
DIRECTOR GENERAL: (Department of Environmental Affairs)				
Any other Director General of National Department, E.g. Department of Water Affairs				

4. INCIDENT DETAILS

In terms of NEMA section 30(5)(a) and (d), the responsible person must report on the nature of the incident as well as the causes of the incident, whether direct or indirect, including equipment, technology, system, or management failure			
4.1. Location of the incident	[Provide physical address of the location where the incident happened including the GPS co-ordinates]		
4.2. Incident start date and time:		*4.3. Incident duration:*	
4.4. Duration of exposure:			
4.5. Incident description:			
Background of the incident: **Operation:** **Incident type:** **Root Cause of the incident**: **Contributory Factors to the incident**: **Conclusion:**			
4.6. Wind speed and direction		*4.7. Ambient air temperature*	
4.8. Weather conditions		*4.9. Other relevant meteorological conditions*	

5. POLLUTANTS RELEASED DURING INCIDENT

In terms of NEMA section 30(5)(b), the responsible person must report on the substances involved and an estimation of the quantity.

List all the pollutants directly released during the incident (i.e. exclude those pollutants that resulted from mitigation measures, e.g. flaring, treatment, dilution etc.)

5.1. Substance or mixture of substances	*5.2. Reference Number*	*5.3. Phase eg solid, liquid or gas*	*5.4. Total Quantity emitted/released*	*5.5. Units eg Kg, L etc*	*5.6. Nature of emission/release*
[The name recognised by any national or internationally recognised chemical referencing system]	[Reference to any national or internationally recognised chemical referencing system]	[solid, semi-solid, liquid or gas]	[the total measured or estimated quantity released into the environment]	[the unit of measure in respect to the quantity]	[Emitted from truck, underground pipe, stack, etc.]

6. SECONDARY POLLUTANTS RESULTING FROM INCIDENT

In terms of NEMA section 30(5)(b), the responsible person must report on the substances involved and an estimation of the quantity released.

List all the pollutants that resulted from mitigation measures, e.g. flaring, treatment, dilution etc.

6.1. Substance or mixture of substances	*6.2. Reference Number*	*6.3. Phase*	*6.4. Total Quantity emitted/released*	*6.5. Unit*	*6.6. Nature of emission*
[The name recognised by any national or internationally recognised chemical referencing system]	Reference to any national or internationally recognised chemical referencing system]	[solid, semi-solid, liquid or gas]	[the total measured or estimated quantity released into the environment]	[the unit of measure in respect to the quantity]	[Emitted from truck, underground pipe, stack, etc.]

7. POLLUTANT CONCENTRATIONS

In terms of NEMA section 30(5)(b), the responsible person must report on the substances involved and an estimation of the quantity released.

List all the pollutants detailed in previous section:

7.1. Substance or mixture of substances	*7.2. Reference Number*	*7.3. Estimated pollutant concentration on different radius*			
		7.3.1. 10m	*7.3.2. 100m*	*7.3.3. 500m*	*7.3.4. >2000m*
[The name recognised by any national or internationally recognised chemical referencing system]	[Reference to any national or internationally recognised chemical referencing system]	[estimate the concentration of the pollutant in water, soil and/or air within a 10m radius of the epicentre of the incident] [provide the units used in a case of estimating concentration (e.g. ppm]	[estimate the concentration of the pollutant in water, soil and/or air within a 100m radius of the epicentre of the incident] [provide the units used in a case of estimating concentration (e.g. ppm)]	[estimate the concentration of the pollutant in water, soil and/or air within a 500m radius of the epicentre of the incident] [provide the units used in a case of estimating concentration (e.g. ppm)]	[estimate the concentration of the pollutant in water, soil and/or air within a > 2000 m radius of the epicentre of the incident] [provide the units used in a case of estimating concentration (e.g. ppm)]

[1] Concentration at the plume

[2] Concentration that was falling on the ground

8. INCIDENT IMPACT	
In terms of NEMA section 30(5)(b), the responsible person must report on possible acute effects on persons and the environment and the responsible must provide data needed to assess these effects;	
8.1. Minor injuries	[Describe the number and types of any minor injuries that resulted from the incident or efforts to manage the incident or the impacts thereof]
8.2. Reportable injuries	[Describe the number and types of any injuries requiring statutory reporting that resulted from the incident or efforts to manage the incident or the impacts thereof]
8.3. Hospitalisation	[Describe the number and types of any injuries that required professional medical care that resulted from the incident or efforts to manage the incident or the impacts thereof]
8.4. Fatalities	[Describe the number and cause of any fatalities that resulted from the incident or efforts to manage the incident or the impacts thereof]
8.5. Biological impacts	[Describe any impacts on biological life, other than human life, e.g. fish kills, plant mortality, etc.]
8.6. Impact area	[Describe the area possibly affected by the incident or the impacts thereof including: (i) size of the area; (ii) socio-economic context; (iii) population density; (iv) sensitive environments (if any), etc.]
8.7. Data	Attach relevant impact reports, medical reports, death certificates, post mortem reports, environmental monitoring data, etc. as Annexes C1, C2,… to this report

9. EXISTING PREVENTION PROCEDURES AND/OR SYSTEMS	
9.1. Foresight	[Briefly describe whether the incident could have, or had, been foreseen, e.g. was it included in any environmental impact assessment, risk assessment, health and safety plan, etc.]
9.2. Procedures and/or systems	Attach any relevant safety, health and environmental plans (including any statutory planning requirements) that detail what actions should be taken in the event of the incident that is the subject of this report
9.3. Procedure and/or systems failures	[Describe any failures or shortfalls in procedures and/or systems that may have contributed to the incident] ***All procedures and checklist in place and signed off.***
9.4. Technical measures	[Describe any technical measures, equipment, 'fail-safe' devices, etc. that are in place to prevent the occurrence of the incident] Communications & discussions in place.
9.5. Technical failure	[Describe any failures of technical measures, equipment, 'fail-safe' devices, etc. that are in place to prevent the occurrence of the incident]

10. INITIAL INCIDENT MANAGEMENT	
In terms of NEMA section 30(5)(c), the responsible person must report on initial measures taken to minimise impacts.	
10.1. Evacuation	[Describe any evacuation activities including information on the number of people evacuated and whether these people were staff or otherwise]
10.2. Technical measures	[Describe all technical measures taken to address the incident]
10.3. Mitigation measures	[Describe all measures taken to minimize the impact] ***SOPEP gear activated***
10.4. Emergency Services	[Describe any governmental emergency services involvement] ***SAMSA/TNPA advised***

11. CLEANUP AND/OR DECONTAMINATION	
In terms of NEMA section 30(5)(c), the responsible person must report on initial measures taken to minimise impacts.	
11.1. Cleanup and/or decontamination	*[Report on initial cleanup and or decontamination (remediation) measures taken to minimise the impact of the incident on human health and the environment. Provide copy of safe disposal certificate (if any)]*

11. CLEANUP AND/OR DECONTAMINATION

In terms of NEMA section 30(5)(c), the responsible person must report on initial measures taken to minimise impacts.

11.2. Permissions and Instructions

Provide details of any permission and/or instructions received from any organ of state during initial incident management, cleanup and/or decontamination

11.3. Type	*11.4. Statuate*	*11.5. Issued By*	*11.6. Name and contact details*
[Describe the nature or type of permission or instruction]	[Provide a reference to the legal mandate for the permission or instruction]	[Provide contact details for the permitting or instructing authority]	[provide a summary of the activities carried out in terms of the permission or instruction]

12. MITIGATION MEASURES

In terms of NEMA section 30(5)(e), the responsible person must report on measures taken and to be taken to avoid a recurrence of such an incident.

12.1. Measure	*12.2. Objective*	*12.3. Cost*	*12.4. Timing*
[Briefly describe each of the measures taken, and to be taken, to avoid a recurrence of such incident]	[Briefly describe the objective of the measure, i.e. the desired outcome of the measure]	[Estimate the cost of the measure in terms of capital costs and/or recurrent costs]	[Provide information on the timing for the full implementation of the measure]

13. AUTHORISATIONS

Provide details on all authorisations (including permits, licenses, certificates, etc.) in respect of the activity to which this incident relates.

13.1. Type	*13.2. Statute*	*13.3. Issued By*	*13.4. Issue & Expiry Date*
[Describe the nature or type of authorisation, e.g. Registration Certificate]	[Provide the reference for the authorisation, e.g. section X of the National Environmental Management Act (Act No. 107 of 1989)]	[Provide contact details for the issuing authority]	[provide the date of issue and expiry]

14. HISTORY

Provide details of all similar incidents involving the responsible person in the past (i.e. from 1998). Similar incidents include those that: (i) involved similar circumstances; (ii) involved similar emissions; (iii) involved similar personnel; and/or (iv) involved similar impacts.

14.1. Incident title	*14.2. Report reference*	*14.3. Date of incident*	*14.4. Summary of event*
[Provide the title used in the relevant emergency incident report]	[Provide the reference in respect of the relevant emergency incident report]	[Date of incident]	[Provide a summary of the event]

Signed by, or as a mandated signatory for, the responsible person:		Date:	

APPENDIX 1
List of affected people as results of the incident

NAME	ADDRESS	PHONE	FAULT	REMARKS

APPENDIX 2
Layout map of the area likely to be affected or affected as a result of the incident

Disclaimer

Any other information not covered in the reporting template must be included.

CAUTION

In terms of section 30 (11) of NEMA as amended, it is an offence not to report an incident and liable on convection to a fine not exceeding R 1 million or imprisonment for a period not exceeding 1 year, or to both such a fine and such imprisonment.