Appendix 7: Environmental Management Programme

ENVIRONMENTAL MANAGEMENT PROGRAMME:

PROPOSED UPGRADE OF TRACK 83887, BHEKULWANDLE, ETHEKWINI METROPOLITAN MUNICIPALITY, KWAZULU-NATAL

MAY 2019

JG Afrika (Pty) Ltd Reference No. 4819

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SYNOPSIS

Environmental Management Programme (EMPr) written in compliance with Appendix 4 of GNR 326, Environmental Impact Assessment (EIA) Regulations (2014) as amended for the proposed upgrade of Track 83887, Bhekulwandle, eThekwini Metropolitan Municipality, KwaZulu-Natal

KEY WORDS:

EMPr, watercourse crossing, eThekwini Municipality.

QUALITY VERIFICATION

This report has been prepared under the controls established by a quality management system that meets the requirements of ISO9001: 2008 which has been independently certified by DEKRA Certification under certificate number 90906882

Verification	Capacity	Name	Signature	Date
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Checked by:	Associate	J. Alletson		01.05.19
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ENVIRONMENTAL MANAGEMENT PROGRAMME: PROPOSED UPGRADE OF TRACK 83887, BHEKULWANDLE, ETHEKWINI METROPOLITAN MUNICIPALITY, KWAZULU-NATAL

1. INTRODUCTION

JG Afrika (Pty) Ltd has been appointed by eThekwini Municipality to compile an Environmental Management Programme (EMPr) for the upgrade of Track 83887, Bhekulwandle, eThekwini Metropolitan Municipality, KwaZulu-Natal.

This EMPr has been compiled in accordance with Government Notice (GNR) 326, Appendix 4 of the Environmental Impact Assessment (EIA) Regulations (2014, as amended). In this regard, the EMPr provides mitigation measures for impacts identified in the Basic Assessment (BA) Report by defining the relevant objectives, outcomes and actions.

In accordance with the Integrated Environmental Management Guidelines published by the Department of Environmental Affairs & Tourism (DEAT) in 1992, the purpose of an EMPr is “to describe how negative environmental impacts will be managed, rehabilitated or monitored and how positive impacts will be maximised”.

Section 28 of NEMA (National Environmental Management Act, Act 107 of 1998) which pertains to “Duty of Care and Remediation of Environmental Damage” states that: "(1) Every person who causes, has caused or may cause significant pollution or degradation of the environment, must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot be reasonably avoided or stopped, to minimise and rectify such pollution or degradation of the environment."

This EMPr must therefore form an integral part of the contract documents between eThekwini Municipality and the appointed contractor during the construction phase of the development, as it outlines the methodology and duties required such that construction can be achieved in an environmentally sustainable manner. The EMPr also provides particular reference to the prevention and mitigation of environmental impacts caused by construction activities associated with the project. Such mitigation measures will have a financial impact on the project’s costings. Furthermore, the EMPr and requirements thereof must form part of any sale / rental / lease agreement entered into, if applicable.

This EMPr is a dynamic document that may need to evolve during its implementation period, such that it recognises any new issues that may arise; or changes in the parameters of identified issues which can be addressed with the required / amended mitigation.

2. ENVIRONMENTAL ASSESSMENT PRACTITIONER

The EMPr was prepared by JG Afrika (Pty) Ltd. The details of the representative Environmental Assessment Practitioners (EAPs) who prepared the report are detailed in Table 1.

TABLE 1: *Details of EAP*

COMPANY NAME: JG AFRIKA (PTY) LTD			
EAP	**Qualifications & professional affiliations**	**Experience at environmental assessments**	**Contact details**
Mr M. van Rooyen Executive Associate	MPhil (Environmental Management), Pr. Sci. Nat; IAIAsa	14 years	JG Afrika (Pty) Ltd Tel: (033) 343 6700 Email: vanrooyenm@jgafrika.com
Ms R. Patak Environmental Scientist	BSc. Hons. Environmental Science, IAIAsa, GISSA	5 years	JG Afrika(Pty) Ltd Tel: (033) 343 6789 Email: patakr@jgafrika.com

3. ACTIVITY INFORMATION

3.1. PROJECT DESCRIPTION

Track 83887 is an existing gravel road which links Road 510137 and Reeves Road. Track 83887 is fairly steep and requires regular maintenance due to constant erosion of the surface. The existing culvert is often silted after heavy rains, resulting in the stream overtopping the culvert thus making the road impassable. It is therefore proposed that the road be upgraded to a concrete surface with associated side drains and a culvert upgrade at the stream crossing.

The proposed development will comprise of the following:

- Upgrading an existing gravel surface to a concrete surface with a crushed stone base,
- Associated stormwater infrastructure
- Upgrading of the existing culvert.

3.2. PROJECT LOCATION

The proposed activity is located within Ward 109 of the eThekwini Metropolitan Municipality. The 21-digit Surveyor General (SG) code for the cadastral land parcel, as well as property details and coordinates, are detailed in Tables 2-3.

TABLE 2*: Location of the proposed watercourse crossing*

CROSSING	
Property Owner	Ingonyama Trust Board
21 digit SG code	N0ET00000000467600000
Physical address / Erf / Farm / Portion	4676
Coordinates (watercourse crossing)	30° 3'5.60"S 30°50'5.31"E

TABLE 3: *Location of the proposed road upgrade*

ROAD	
Property Owner	Ingonyama Trust Board
21 digit SG code	N0ET00000000467600000
Physical address / Erf / Farm / Portion	4676
Coordinates (start)	30° 2'58.85"S 30°50'5.37"E
Coordinates (end)	30° 3'9.23"S 30°50'5.80"E

3.3. PROJECT SPECIFICATIONS

Currently a 900mm pipe is present within the area. The following is proposed for the watercourse crossing:

- 1.5m x 1.5m cast in-situ reinforced concrete box culverts to be placed along the length of the crossing. It is noted that the watercourse crosses the road diagonally and not at a 90° angle. The total length of the watercourse crossing which will be upgraded is therefore 18m;
- 3.6m headwalls will be constructed on either side of the proposed upgrade;
- 2m of reno mattress are proposed to be installed on the downstream portion of the crossing to minimise erosion.

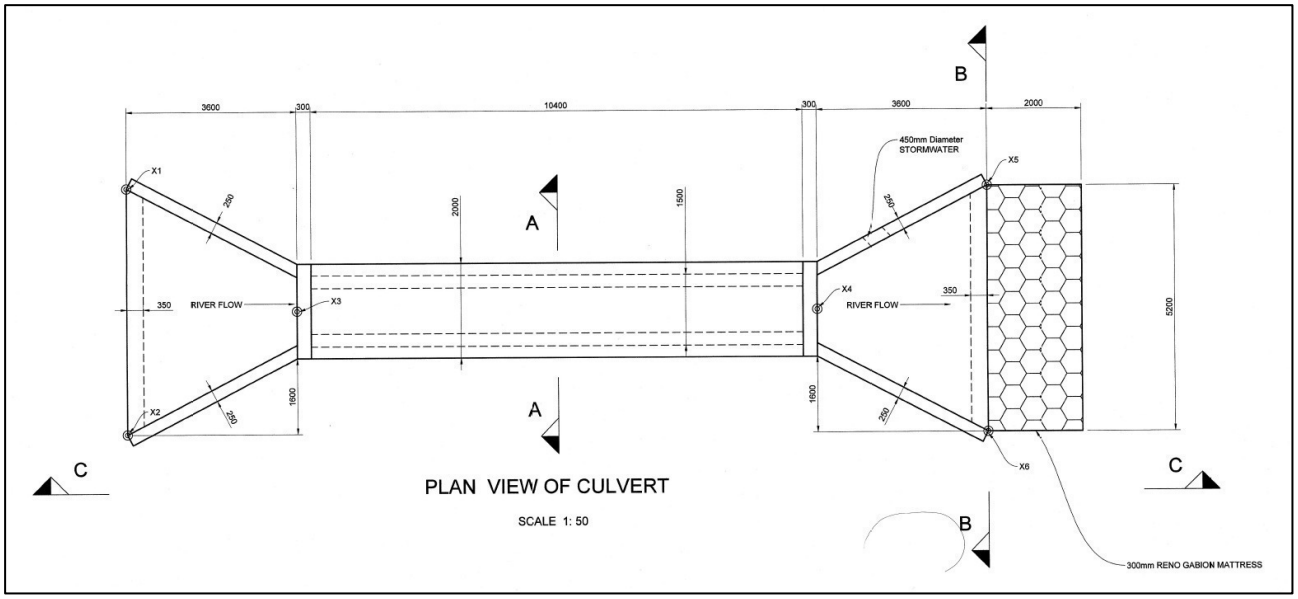

FIGURE 1: *Plan of view of culvert*

The following is proposed for the road upgrade:

- Upgrading of the existing 5m wide gravel road to a 6m wide road with a crushed stone base and concrete surface.
- Installation of v-drains and curbs

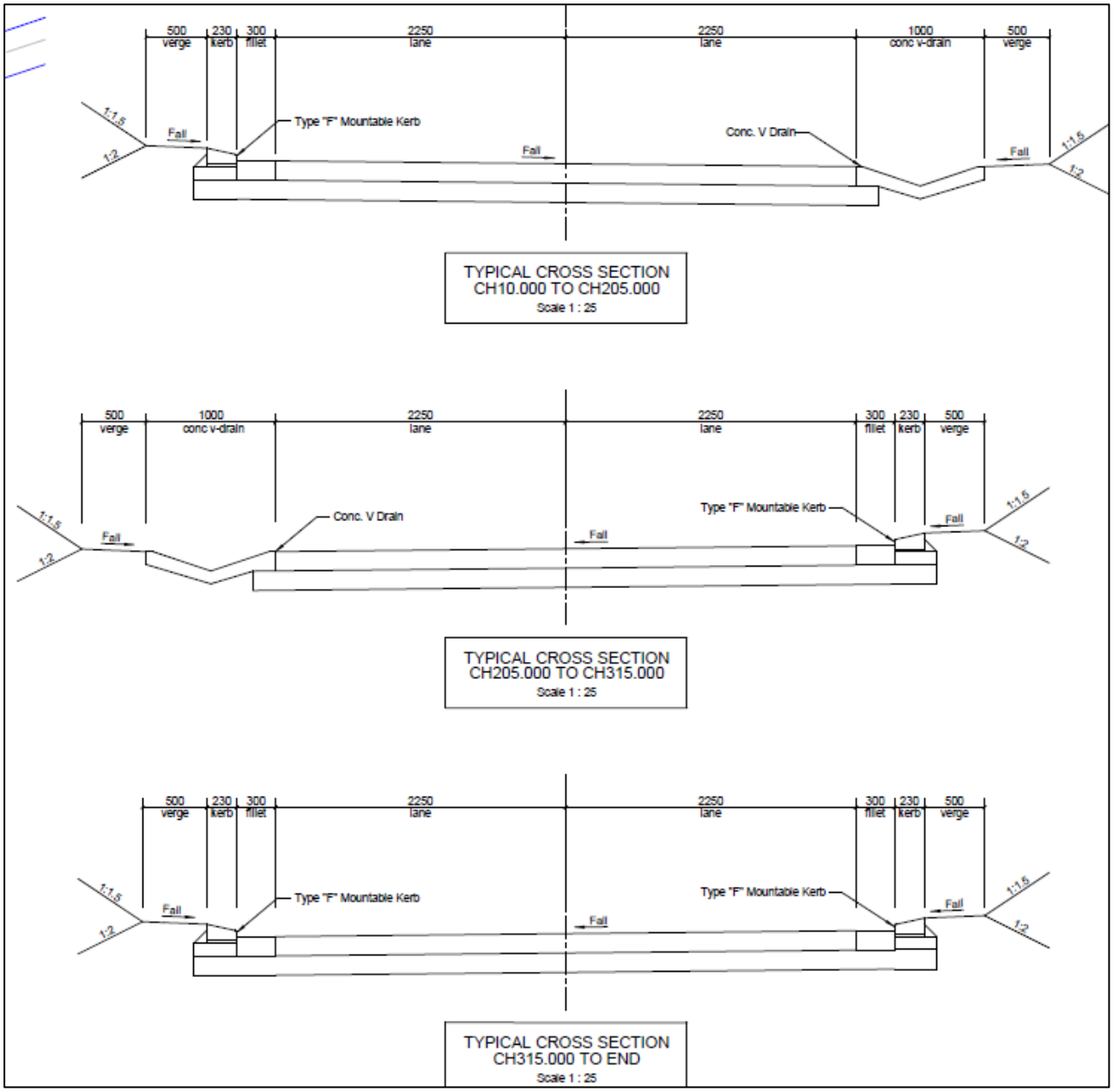

FIGURE 2: *Cross section of Road*

FIGURE 3: *Site Plan*

3.4. SITE ACCESS

The site is accessible utilizing the following directions:
On the N2, take exit 137 for Kingsborough / Seadoone Road. Turn right onto Seadoone Road. Continue onto School Road which becomes Seldoome Road which becomes Wanda Cele Road. Turn left onto Reeves Road and continue onto Reeves road for 2.7km before turning right onto Track 83887. As the proposed development will entail the upgrade of the existing road, the road will not be accessible to vehicles during the construction phase.

3.5. CONSTRUCTION CAMP

Based on the presence of the wetland system within the site, careful cognisance must been taken regarding the placement of the construction camp. The exact location of the site camp must be approved by the Engineer, ECO and EDTEA prior to establishment.
The site construction camp must be appropriately fenced and sign-posted to prevent public access, as well as to provide adequate details of the construction project and contractor.

3.5.1. CONSTRUCTION REQUIREMENTS

The following activities will be undertaken during upgrade:

- Establishment of the site camp;
- Earthworks associated with the road widening;
- In-situ box culvert;
- Upgrading of the headwall; and
- Rehabilitation of the site on completion of the project.

Construction vehicles may need to access the drainage line and wetland system during the construction of the headwall at the discharge point. Any construction within wetlands and drainage lines must be supervised by the Engineer or ECO.

3.5.2. ACTIVITIES TO BE UNDERTAKEN POST-CONSTRUCTION

Once construction is complete, the working area will be rehabilitated. The area occupied by the site camp will be re-grassed. Should any indigenous flora need to be removed during the construction of the headwalls, then this must be replaced during the rehabilitation phase.

4. LEGISLATIVE CONTEXT

4.1. APPLICABILITY OF EIA REGULATIONS (2014)

In terms of the EIA Regulations (2014, as amended), promulgated under the National Environmental Management Act (Act No. 107 of 1998) (NEMA), certain Listed Activities are specified for which either a BA (GNR 327 and GNR 324) or a full Scoping and EIA (GNR 325) is required.

The following Listed Activities in GNR 327 (Listing Notice 1) are applicable to the upgrade of the crossing and road.

TABLE 4: *Applicable Listed Activities as per NEMA (Act 107 of 1998): EIA Regulations (2014, as amended)*

LISTING NOTICE & ACTIVITY	LISTED ACTIVITY AND TRIGGER AS PER THE PROJECT DESCRIPTION
GNR 327 (Listing Notice 1): **Activity 19**	*"The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse.* - *This Listed Activity is relevant as the proposed upgrading of the watercourse crossing and portion of the road will require earth moving activities, which will involve the movement of more than 10m^3 of soil from the banks of watercourses.*

4.2. THE POLLUTER-PAYS PRINCIPLE

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

4.3. PROGRESSIVE REHABILITATION

Progressive rehabilitation must be undertaken throughout the construction phase of the project where areas have been impacted. Rehabilitation should commence as soon as construction is completed in the specific area and not at the end of the entire project.

5. MONITORING

5.1. METHOD AND FREQUENCY OF MONITORING

- An independent, external ECO must audit the construction site during the construction phase of the project on a monthly basis, unless otherwise specified by the Competent Authority, namely the Department of Economic Development, Tourism and Environmental Affairs (EDTEA);
- A monthly construction Environmental Audit Report is to be drafted by the ECO and submitted to the Applicant / Employer for review and implementation prior to the following site audit; and
- The relevant party (be it the ECO / Applicant, as per directive from EDTEA) has the responsibility to submit the site audit report to the EDTEA: Compliance and Monitoring Department for the duration of the construction period.

5.2. ROLES AND RESPONSIBILITIES

The implementation of this EMPr requires the involvement of several stakeholders, each fulfilling a different, but vital role to ensure sound environmental management during the construction phase. The stakeholders are discussed below.

5.2.1. DEPARTMENT OF ECONOMIC DEVELOPMENT, TOURISM AND ENVIRONMENTAL AFFAIRS (EDTEA)

EDTEA is the designated provincial authority responsible for authorising the environmental application EMPr related to the project. EDTEA has overall responsibility for ensuring that the Applicant complies with the Conditions of EA and EMPr.

5.2.2. APPLICANT: ETHEKWINI MUNICIPALITY

Under South African environmental legislation, the Applicant/Employer is accountable for the potential impacts of the activities that are undertaken and is responsible for managing these impacts. The eThekwini Municipality as the Applicant/Employer therefore has overall environmental responsibility to ensure that the implementation of this EMPr complies with the relevant legislation and the Conditions of the EA. The Employer has appointed the contractor to undertake the contract on a design and construct basis.

5.2.3. ENVIRONMENTAL CONTROL OFFICER (ECO)

The independent ECO appointed will monitor and review the on-site environmental management and implementation of this EMPr by the contractor throughout the project. This will be done by conducting site audits and issuing monthly audit reports to the Applicant and EDTEA's Compliance Monitoring and Enforcement Section.

The EDTEA requires that the ECO be at the forefront of all environmental management issues.

5.2.4. ENVIRONMENTAL MANAGER / HEALTH, SAFETY AND ENVIRONMENTAL OFFICER (HSE)

The Environmental Manager, or his appointee, will conduct daily inspections of the site and plant, to identify potential non-compliances and potential negative impacts to the environment. The inspections will take the form of an inspection sheet and will be kept as a record. Findings thereof will be made available to the ECO and raised in construction meetings for mitigation or avoidance measures.

5.2.5. CONTRACTOR

This refers to the main contractor(s) appointed by the Employer for the construction of the project, or a portion of the project. The main contractor(s) will be responsible for complying with the EMPr commitments and any other legislative requirements, as applicable to the contractors' appointment for the proposed road upgrade. The contractor/s will also be responsible for drafting method statements appropriate to activities under his direct control (see Section 4.3).

The contractor must ensure that all employees under their appointment receive appropriate training prior to the commencement of construction, taking cognisance of this EMPr and the Conditions of the EA.

5.2.6. ORGANISATIONAL STRUCTURE

Details of the organizational structure are presented in Figure 4. The structure illustrates the reporting procedures for all stakeholders responsible in the implementation of this EMPr.

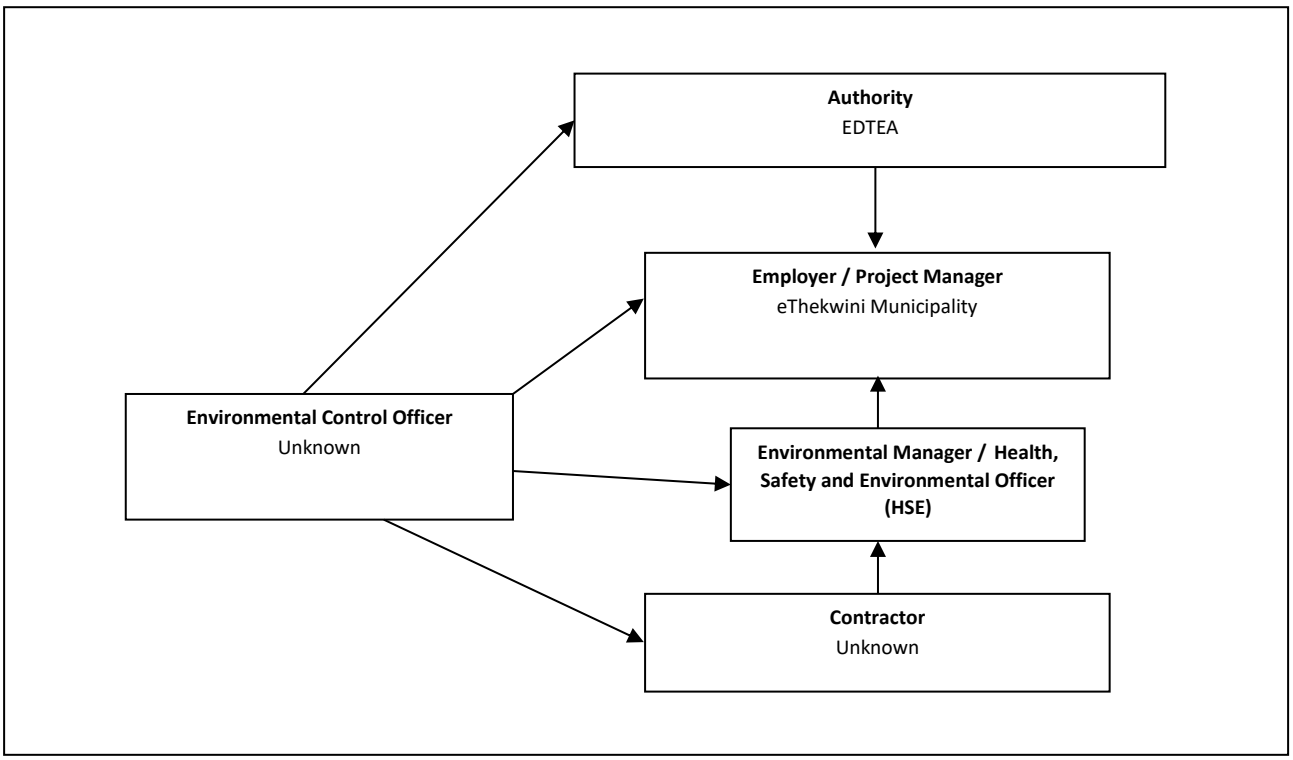

FIGURE 4: *Organisational Structure*

5.3. METHOD STATEMENTS

Method Statements are written submissions by the contractor to the ECO in response to the requirements of this EMPr, or to a request by the ECO. The contractor shall be required to prepare Method Statements for several specific construction activities and/or environmental management aspects.

The contractor shall not commence the activity for which a Method Statement is required until the ECO has approved the relevant Method Statement.

Method Statements must be submitted at least 20 working days prior to date on which approval is required by the ECO. The ECO must in turn accept or reject the Method Statement within 10 working days of receipt.

Failure to submit a Method Statement may result in suspension of the activity concerned until such time as a Method Statement has been submitted and approved.

An accepted Method Statement shall not absolve the contractor from any of his obligations or responsibilities in terms of the contract. However, any damage caused to the environment through activities undertaken without an approved Method Statement shall be rehabilitated at the contractor's expense.

The Method Statements shall cover relevant details with regard to:

- Construction procedures and location of the construction site;
- Start date and duration of the procedure;
- Materials, equipment and labour to be used;

- How materials, equipment and labour would be moved to and from the site, as well as on site during construction;
- Storage, removal and subsequent handling of all materials, excess materials and waste materials of the procedure;
- Emergency procedures in case of any reasonably potential accident/incident which might occur during the procedure; and
- Compliance/non-compliance with the EMPr specification and motivation if non-compliant.

5.3.1. REQUIRED METHOD STATEMENTS (MS)

Based on the specifications in this EMPr, the following Method Statements (MS) are required as a minimum:

MS1: Site layout and establishment
MS2: Hazardous substances
MS3: Traffic accommodation
MS4: Solid waste control system
MS5: Wastewater control system
MS6: Stormwater Control
MS7: Fire control and emergency procedures
MS8: Cement / concrete batching

6. IMPACT MANAGEMENT OBJECTIVES, ACTIONS AND OUTCOMES

GNR 326, Appendix 4 of the Environmental Impact Assessment (EIA) Regulations (2014, as amended), notes that the identified impacts of development are to be presented with the management actions and outcomes. Table 5 presents the recommendations made by Specialists which must be adhered to in order to minimise potential environmental impacts identified. Table 6 presents the required information, together with the responsible person and the frequency to which the management objectives must be monitored. In this regard, the contractor, a designated on-site Environmental Manager (EM) / Health, Safety and Environmental Officer (HSE), an independent Environmental Control Officer (ECO) and the Employer are the custodians of this EMPr.

TABLE 5: *Specialist recommendations*

Wetland and Vegetation Assessment	• Special care to see that the handling and removal of rubble and other construction wastes are done properly. • A post-construction monitoring programme must be set in place. It will include examination of at least the following items: **Alien weed invasion.** No alien weed invasion may be tolerated within a year of completion of the project. This point is of particular importance as the area is so prone to alien weed invasion. **Rehabilitation of the road verges**. The road verges must be revegetated with either the recommended grass or with salvaged plants which are demonstrably viable. This is necessary to prevent soil erosion. **Rehabilitation of the working servitude**. The working servitudes at all sites, whether road or wetland crossing, must be returned to their pre-construction condition or better. **Stability of wetland banks**. The banks must be left in a stable condition. • The stormwater management system on the road must be set in place at an early stage of the construction process. This includes constructing side drains or herringbone drains at regular intervals. • Stormwater must be prevented from collecting and running down unprotected channels into the wetland. • Soil erosion. No soil erosion anywhere in the working area, including the site camp and laydown areas, may be accepted. • All bare areas must be rehabilitated with a grass cover as soon as possible. The grass recommended is Coastal Buffalo Grass (*Stenotaphrum secundatum)*. • The inlet to the culvert must <u>not</u> be lower than the inlet of the existing concrete pipe. The reason for this stipulation is to avoid any draining of the wetland area upstream of the culvert. The area has good biodiversity and must be sustained as a functional wetland. • The construction work on the culvert must be done in the dry (winter) season. • The working area within the wetland must be contained within a coffer dam or similar structure. • Uncured cement or concrete must not be allowed to percolate into the downstream wetland since they are toxic to aquatic life. It

	must be noted that concrete will be used, not only in the wetland crossing, but also as the road surface. • The downstream side of the culvert must be well protected by a mattress or by a concrete slab. This structure must be at least five to six metres wide and must slope gently downwards so that no waterfall is created. The reason for this is to prevent erosion of the wetland floor. • All rubble and refuse, including the remains of the old crossing, must be removed from the site.

TABLE 6: *Construction Management Actions and Outcomes*

Impact management objectives of an EMPr	Impact management actions of an EMPr	Impact management outcomes of an EMPr	Monitoring	
	The process of doing something, typically to achieve an aim	*The way a thing turns out; a consequence*	*Responsibility*	*Frequency*
PRE-CONSTRUCTION - Actions to be completed prior to construction				
Compliance with environmental legislation and policy	• All relevant legislation and policies must be consulted and the Applicant is to ensure that the project is compliant. - Failure to comply with existing policies and / or legislation could lead to the project failure or delays and undue disturbance to the natural environment. • The contractor must prepare a Construction Site Development Plan to be approved by the ECO prior to establishing on site. This plan must indicate: - The boundaries of the site that encompass all construction related activities; - Vehicle and pedestrian access points and routes; - Laydown area/s, offices, stockpile areas, storage areas, etc.; and - Environmental training must be held to ensure all construction personnel are aware of the provisions contained in the EMPr.	– Avoid conflict with local, provincial and national policies and legislation. – Ensure environmental awareness amongst employees.	**Implementation**: Contractor **Inspection**: EM / HSE **Verification**: ECO	**Implementation**: Ongoing and during rehabilitation **Inspection**: Ad hoc and weekly as a minimum. **Verification**: Monthly
Site establishment	• The construction camp is to be demarcated prior to construction to ensure that the footprint of the impact is limited; • Topsoil and grass are to be removed during the establishment of the construction camp andare to be stockpiled and demarcated;	– Limit impact on the receiving environment. – Ensure materials are available for the rehabilitation of the construction	**Implementation:** Contractor **Inspection:** EM / HSE	**Implementation:** Ongoing and during rehabilitation

Impact management objectives of an EMPr	Impact management actions of an EMPr	Impact management outcomes of an EMPr	Monitoring	
	The process of doing something, typically to achieve an aim	*The way a thing turns out; a consequence*	*Responsibility*	*Frequency*
	• The contractor is required to liaise with Umgeni Water and eThekwini Municipality for the location of the existing services prior to any construction work commencing; and • Indigenous trees located within the footprint of the construction camp are to be demarcated. These trees are not to be removed / cut down.	camp.	**Verification:** ECO	**Inspection:** During site establishment **Verification:** Monthly
CONSTRUCTION - Actions to be completed during construction				
Traffic management	• Timeous notification must be given to surrounding businesses and stakeholders regarding the nature and timeframes for any traffic impacts; • Employ flag personnel to regulate traffic; • Warning signs must be erected indicating the presence of construction vehicles along the envisaged routes; • Speed limits must be adhered to; • Ensure that construction vehicle traffic which may obstruct normal traffic flow is scheduled outside of peak travelling time; • Ensure that heavy / large load traffic is appropriately routed and appropriate safety precautions are taken to prohibit road collisions and traffic incidents; • Ensure that vehicle operators are suitably licensed, have had appropriate environmental and safety induction, are aware of specific site procedures, and are well rested and cognisant when operating heavy or unsafe vehicles / machinery.	– The prevention / mitigation of the impedance of traffic. – Ensuring public health and safety.	**Implementation**: Contractor **Inspection**: EM / HSE & ECO **Verification**: ECO	**Implementation**: Daily and ad hoc **Inspection**: Ad hoc and weekly as a minimum **Verification**: Monthly
Contamination of Soil / sand	• Hazardous materials must be stored in a clearly marked, lockable, designated storage area; • Hazardous material must be stored within a 110% bunded area or on an impermeable surface; • When decanting hazardous substances, drip trays must be used; • Decanting is not to take place within any wetland system or	– Avoidance of soil loss. – Re-use of viable soils in rehabilitation. – Avoidance of dispersal of hazardous waste.	**Implementation**: Contractor **Inspection**: EM / HSE **Verification**: ECO	**Implementation**: Ongoing **Inspection**: Ad hoc and weekly as a minimum.

Impact management objectives of an EMPr	Impact management actions of an EMPr	Impact management outcomes of an EMPr	Monitoring	
	The process of doing something, typically to achieve an aim	*The way a thing turns out; a consequence*	*Responsibility*	*Frequency*
	drainage line; • Should a spillage occur, absorbent material must be spread on areas wherethe spills have occurred. The contaminated soil must be lifted and be stored within a high-density plastic bag; • Should a spill occur within the wetland area, the contaminated sand is to be collected and removed from the wetland immediately; • Oil-contaminated soils are to be removed to a contained storage area and disposed of at a licensed facility; and • All disturbed areas must be rehabilitated, using the stockpiled soil/sand as required. A rehabilitation plan must be compiled towards the end of the construction period.			**Verification**: Monthly
Biodiversity	• All construction areas must be demarcated prior to construction to ensure that the footprint of the impact is limited (including areas where vehicles may traverse); • Only where necessary should any indigenous vegetation be disturbed or temporarily removed; and • No animal, reptile or bird of any sort found on site may be killed.	– Prevention of the introduction and spread of alien invasive species in the area due to construction activities. – Limiting loss of indigenous species.	**Implementation**: Contractor **Inspection**: EM / HSE **Verification**: ECO	**Implementation**: Ongoing and during rehabilitation **Inspection**: Ad hoc and weekly as a minimum. **Verification**: Monthly
Surface and groundwater	• Provision must be made for stormwater management measures that will ensure effective run-off control and prevent the present backwater effect. • Any contaminated water associated with construction activities must be contained in separate areas or receptacles such as Jo-Jo tanks or waterproof drums, and must not be allowed to enter the natural system; • Suitable ablution facilities must be provided for workers. These facilities must be regularly serviced to reduce the risk of surface or	– Prevent ponding and backwater effect of stormwater. – Any spills from construction are adequately remediated. – Pollution prevention.	**Implementation**: Contractor **Inspection**: EM / HSE **Verification:** ECO	**Implementation**: Ongoing **Inspection**: Ad hoc and weekly as a minimum **Verification**: Monthly

Impact management objectives of an EMPr	Impact management actions of an EMPr	Impact management outcomes of an EMPr	Monitoring	
	The process of doing something, typically to achieve an aim	*The way a thing turns out; a consequence*	*Responsibility*	*Frequency*
	groundwater pollution. • Sound waste management practices (including hazard classification, separation, storage, handling, transport, recycling, reduction, clean-up and disposal) must be implemented during construction so as not to cause any ground or surface water pollution or a health hazard. Waste must be disposed of to a licenced landfill site; • No maintenance or servicing of vehicles is to take place on site; • All construction vehicles must be inspected regularly for oil leaks. Such leaks are to be repaired before further use of the vehicle and under no circumstances will said vehicles be allowed on the site until repairs are completed; • Drip trays must be placed underneath all stationery plant; • Drip trays must be used where fuel is transferred; • All spillages must be cleaned in accordance with contractor's spill contingency procedure; • Incidents related to the contamination of surface water must be communicated to ECO, eThekwini Municipality, EDTEA and the Department of Water and Sanitation; • On completion of the project, the appointed contractor must ensure that all structures, equipment, materials, waste, rubble used during construction are removed. All construction waste must be disposed off-site at an approved landfill site; • Cement and concrete batching, as per MS8, is to include details relating to the handling of concrete at the construction site and the spoiling of waste concrete and concrete washout. If the Contractor is not batching concrete but rather receiving ready mix, then the MS needs to address matters pertaining to the timing of deliveries, routing, and pedestrian safety; • All concrete mixing must take place on a designated, impermeable surface. No cement runoff is to enter any wetlands or drainage			

Impact management objectives of an EMPr	Impact management actions of an EMPr	Impact management outcomes of an EMPr	Monitoring	
	The process of doing something, typically to achieve an aim	*The way a thing turns out; a consequence*	*Responsibility*	*Frequency*
	lines; • No vehicles transporting concrete to the site may be washed on-site; and • Runoff from concrete batching areas must be collected into a conservancy tank and disposed of by a registered service provider at the nearest hazardous landfill site or other landfill sites capable of dealing with waste of this nature.			
Air quality	• Heavy vehicles and machinery must be serviced regularly to minimise exhaust fume pollution; • All machinery/plant must be serviced and lubricated regularly to ensure good working order; and • Contractors' vehicles must be fitted with effective exhaust silencers and must comply with Road Traffic Act (Act 29 of 1989) when any such vehicle is operated on a public road.	– No fugitive dust exceeding the South African National Standard (SANS) regulations or creating nuisance conditions.	**Implementation**: Contractor **Inspection**: EM /HSE & ECO **Verification**: ECO	**Implementation**: Monthly or at the prescribed vehicle/plant manufacturers specifications. **Inspection**: Ad hoc and weekly as a minimum. **Verification**: Monthly
Noise	• If possible, construction activities must be restricted to the hours of 08h00 to 17h00 to limit noise impacts to neighbouring communities; • Any noise complaints received from the community/surrounding businesses must be documented in a dedicated register (maintained at the construction camp) and responded to by the eThekwini Municipality (i.e. employer) who will identify the noise source and implement appropriate noise reduction management techniques; and • All of the contractor's equipment must be fitted with effective exhaust silencers and must comply with the South African Bureau of Standards recommended code of practice and the SANS Code	– No ambient noise impacts relating to plant operations. – Compliance to municipal by-laws. – Limited nuisance conditions created.	**Implementation**: Contractor **Inspection**: EM / HSE & ECO **Verification**: ECO	**Implementation**: Monthly or at the prescribed vehicle/plant manufacturers specifications **Inspection**: Ad hoc and weekly as a minimum **Verification**:

Impact management objectives of an EMPr	Impact management actions of an EMPr	Impact management outcomes of an EMPr	Monitoring	
	The process of doing something, typically to achieve an aim	*The way a thing turns out; a consequence*	*Responsibility*	*Frequency*
	0103:1983, for construction plant noise generation.			Monthly
Visual	• During construction, litter control measures must be implemented to ensure the site is maintained in a neat and tidy condition; • The erection of lighting (if required) must be undertaken in such a manner as to preclude the lighting from becoming intrusive; • Screening of highly reflective material must be undertaken; and • Housekeeping, particularly within the construction camp, must be continuously maintained.	– The prevention or the mitigation of unsightliness.	**Implementation**: EM & Contractor **Inspection**: EM / HSE & ECO **Verification**: ECO	**Implementation**: Ad hoc and daily **Inspection**: Ad hoc and daily **Verification**: Monthly
Waste management	• Designated skips/litter bins must be provided for hazardous waste and must be kept in a bunded area in the construction camp; • Contaminated construction and maintenance waste must be removed to an appropriate registered waste disposal site; • Refuse and litter must be removed from the construction footprint continuously; and • The recycling of waste should be practiced, with separate drums provided for paper and cardboard, glass, plastics, metals etc.	– The prevention or the mitigation of the spread of waste and/or contamination.	**Implementation**: Contractor **Inspection**: EM / HSE & ECO **Verification**: ECO	**Implementation**: Daily and ad hoc **Inspection**: Ad hoc and weekly as a minimum **Verification**: Monthly
Hazardous substances	• Hazardous substances and materials are those that are potentially poisonous, flammable, carcinogenic or toxic. Examples of these include: diesel, petroleum, oil, bitumen, solvent based paints and lubricants. Such substances must be managed appropriately; • A register of all hazardous substances relating to the project and stored at the construction camp site must be maintained; • All hazardous substances are to be stored in a covered, lockable bunded area and handled in accordance with the relevant MSDS; • Spill-sorb or a similar type of product must be used to absorb hydrocarbon spills in the event that such spills should occur; • Should a spill occur within the wetland area, the contaminated soil is to be collected and removed from the wetland immediately;	– Ensure all hazardous substances is handled in accordance with the material safety data sheets (MSDS).	**Implementation**: Contractor **Inspection**: EM / HSE & ECO **Verification**: ECO	**Implementation**: Daily and ad hoc **Inspection**: Ad hoc and weekly as a minimum **Verification**: Monthly

Impact management objectives of an EMPr	Impact management actions of an EMPr	Impact management outcomes of an EMPr	Monitoring	
	The process of doing something, typically to achieve an aim	*The way a thing turns out; a consequence*	*Responsibility*	*Frequency*
	• Significant spills must be reported to the ECO, EDTEA, eThekwini Municipality and DWS as per legal requirements. Contamination assessments must follow significant spillage events to determine specific risks, impacts and mitigation actions; and • In the event of a fire, the appropriate fire management system, as per the MSDS and onsite emergency response plan, must be implemented.			
Cultural environment	Amafa aKwaZulu-Natali's standard conditions are applicable to the site: • Any items of archaeological interest that are found must be reported to Amafa aKwaZulu-Natali or a qualified archaeologist for comment; • The Engineer is to be informed of the find immediately and work in the immediate vicinity must be stopped; and • Work may only resume once clearance is given in writing by Amafa aKwaZulu-Natali.	– The prevention or the mitigation of the loss of heritage artefacts.	**Implementation**: Contractor **Inspection**: EM & ECO **Verification**: ECO	**Implementation**: Daily and ad hoc **Inspection**: Ad hoc and weekly as a minimum. **Verification**: Monthly.
Health and safety	• The area is to be cordoned off from the public, including the site construction camp; • Care must be taken to ensure any bulky or dangerous materials are secured when transporting them along the road. No residents / pedestrians are to be in close proximity to the material when being transported or off-loaded, in the instance that materials are dislodged; • The appropriate contractor's safety procedures and Personal Protective Equipment (PPE) must be used at all times by workers and visitors to the site; • Ensure that a First Aid kit is available on site; • In the event of an emergency, the contractor's emergency procedure must be followed and the relevant emergency services	– Provide a safe and efficient system for all vehicles, pedestrian and workmen. – Proactive measure to prevent accidents.	**Implementation**: Contractor **Inspection**: EM / HSE & ECO **Verification**: ECO	**Implementation**: Daily and ad hoc **Inspection**: Ad hoc and weekly as a minimum. **Verification**: Monthly

Impact management objectives of an EMPr	Impact management actions of an EMPr	Impact management outcomes of an EMPr	Monitoring	
	The process of doing something, typically to achieve an aim	*The way a thing turns out; a consequence*	*Responsibility*	*Frequency*
	must be contacted.			
REHABILITATION - Actions to be completed post-construction				
Rehabilitation of the site	• On completion of the project, the appointed contractor must ensure that all structures, equipment, materials, waste, rubble, notice boards and temporary fences used during construction are removed; • All construction waste / debris must be removed from within the construction footprint and disposed off-site at an approved landfill site; • All necessary infrastructure contained within the construction camp must be removed and traffic circle rehabilitated to its previous state.	– Rehabilitated construction camp	**Implementation**: Contractor **Inspection**: EM & ECO **Verification**: ECO	**Implementation**: Post-construction **Inspection**: Duration of rehabilitation period **Verification**: Monthly.

7. NON-COMPLIANCES

The contractor shall comply with the environmental specifications and requirements on an on-going basis. Should the ECO find that the contractor is not in compliance, the ECO shall report and discuss the issue with the Project Manager, who if in agreement with the ECO, will issue an instruction to the contractor to ensure the issue is resolved.

In the case of non-compliance giving rise to physical environmental damage or destruction, the Project Manager, in consultation with the ECO and the eThekwini Municipality: Environmental Planning and Climate Protection Department (EPCPD), shall be entitled to undertake, or to cause to be undertaken, such remedial works as may be required to make good such damage and to recover from the contractor the full costs incurred in doing so. All parties, however, must be mindful of the fact that any remedial work may trigger a separate Listed Activity not included in the initial application for Environmental Authorisation and therefore may require its own separate environmental assessment prior to implementation.

In the event of a dispute or difference of opinion between any parties arising out of the interpretation of the conditions of the EMPr, or a disagreement regarding the implementation or method of implementation of conditions of the EMPr, the Project Manager will act as the arbitrator, unless the Project Manager feels the need to seek specialist advice.

The Project Manager shall at all times have the right to stop work and/or certain activities on site in the case of non-compliance or failure to implement remediation measures.

7.1. INDICATIVE LIST OF TRANSGRESSIONS

The contractor is deemed not to have complied with this EMPr if:

- Within the boundaries of the site, site extensions and haul/access roads there is evidence of contravention of the EMPr;
- Environmental damage ensues due to negligence on the contractor's and/or his/her sub-contractor's part;
- The contractor and/or his/her sub-contractor fail to comply with the corrective or other instructions issued by the Project Manager within a specific time; or
- The contractor and/or his/her sub-contractor fail to respond adequately to complaints from the public.

7.2. ENVIRONMENTAL AWARENESS TRAINING

The contractor shall ensure that adequate environmental awareness training of senior site personnel takes place and that all construction workers receive an induction presentation on the importance and implications of the EMPr and Conditions of the EA.

The presentation shall be conducted, as far as possible, in the employees' language of choice.

As a minimum, training shall include:

- Explanation of the importance of complying with the EMPr;

- Discussion of the potential environmental impacts of, and environmental risks presented by, construction activities;
- Employees' roles and responsibilities, including emergency preparedness;
- Explanation of the mitigation measures that must be implemented when carrying out their activities;
- Explanation of the specifics of this EMPr; and
- Explanation of the management structure of individuals responsible for matters pertaining to the EMPr.

The contractor shall keep records of all environmental training sessions, including names, dates and the information presented. These records will be presented to EDTEA and the ECO on request during audits.

APPENDIX 1: ACCEPTANCE OF EMPr

ENVIRONMENTAL MANAGEMENT PROGRAMME: PROPOSED UPGRADE OF TRACK 83887, BHEKULWANDLE, ETHEKWINI METROPOLITAN MUNICIPALITY, KWAZULU-NATAL

To whom it may concern

This is to state that the undersigned have received a copy of the Environmental Management Programme (EMPr) developed for this site by JG Afrika (Pty) Ltd dated April 2019. The undersigned do hereby agree to abide by the requirements of the Environmental Management Programme (EMPr). Any contravention of the EMPr will be recorded and corrective action will be carried out.

Any changes to the EMPr must be approved by the *Environmental Control Officer (ECO)*, Engineer and the relevant authority. Such changes are to be made in writing and a record must be maintained.

As Agreed on this day _____ of _____(Month) _____(Year)

Environmental Control Officer (ECO)

Name _____

Company _____

Signed _____

Contractor

Name _____

Company _____

Signed _____

Engineer

Name _____

Company _____

Signed _____

APPENDIX 2: Example of Emergency Incident Report

Source: https://www.environment.gov.za/documents/forms

NB! Please ensure that all the information is completed before submitting this report to the all the Authorities.

This form provides a template for the emergency incident report required in terms of section 30(5)

	Document Type:	**Emergency Incident Report**	
	Title for the incident:		
	Date of the incident :		
Reference:		**Initial Submission Date:**	
Revision No.:	1	**Compiled by:**	

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. 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 one (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**	
2.25 **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. Name and contact details:

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			
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. 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

4.6. 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

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

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

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;

1.1 Minor injuries	
1.2 Reportable injuries	
1.3 Hospitalisation	
1.4 Fatalities	
1.5 Biological impacts	
1.6 Impact area	
8.1. Data	

9. EXISTING PREVENTION PROCEDURES AND/OR SYSTEMS	
9.1. Foresight	
9.2. Procedures and/or systems	
9.3. Procedure and/or systems failures	
9.4. Technical measures	
9.5. Technical failure	

10. INITIAL INCIDENT MANAGEMENT	
In terms of NEMA section 30(5)(c), the responsible person must report on initial measures taken to minimise impacts.	
1.7 Evacuation	
1.8 Technical measures	
10.1. Mitigation measures	
10.2. Emergency Services	

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. clean-up and/or decontamination	

11.2.Permissions and Instructions

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

11.3. Type	11.4. Statute	11.5. Issued By	11.6. Name and contact details

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

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

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

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**

***None**

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

***None**

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.