THE UPGRADING OF NATIONAL ROUTE R63 SECTION 13 BETWEEN FORT BEAUFORT (KM 35.77) AND ALICE (KM 58.86) WITHIN THE RAYMOND MH LABA MUNICIPALITY OF THE EASTERN CAPE PROVINCE, SOUTH AFRICA

ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR)

DEA Reference: 14/12/16/3/3/1/1686

Prepared for:

V3 CONSULTING ENGINEERS

On behalf of:

THE SOUTH AFRICAN NATIONAL ROADS AGENCY LTD (SANRAL)

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1 INTRODUCTION

1.1 Objectives of an EMPr

This EMPr has been compiled to provide recommendations and guidelines according to which compliance monitoring can be done during the construction and operation of the road upgrade and re-alignment. The objective of the EMPr is also to ensure that all relevant factors are considered to ensure environmentally responsible development (Figure 1). The purpose of the EMPr is to provide specifications for "good environmental practice" for application during these phases.

![Figure 1. Locality Map of the proposed National Route R63 Section 13 Road Upgrade and borrow pit sites.](image)

This EMPr informs all relevant parties, which are in this case, the Project Coordinator, the Contractor, the Environmental Control Officer (ECO) and all other staff employed by V3 Consulting Engineers and South African National Roads Agency Ltd. (SANRAL) at the site as to their duties in the fulfilment of the legal requirements for the construction and operation of the road upgrade with particular reference to the prevention and mitigation of anticipated potential environmental impacts.

All parties should note that obligations imposed by the EMPr are legally binding in terms of the environmental authorisation granted by the relevant environmental permitting authority.

The objectives of an EMPr are to:

- Ensure compliance with regulatory authority stipulations and guidelines which may be local, provincial, national and/or international;
- Ensure that there is sufficient allocation of resources on the project budget so that the scale of EMPr-related activities is consistent with the significance of project impacts;
- Verify environmental performance through information on impacts as they occur;
- Respond to unforeseen events;
- Provide feedback for continual improvement in environmental performance;
- Identify a range of mitigation measures which could reduce and mitigate the potential impacts to minimal or insignificant levels;
- Detail specific actions deemed necessary to assist in mitigating the environmental impact of the project;
- Identify measures that could optimize beneficial impacts;
- Create management structures that address the concerns and complaints of I&APs with regards to the development;
- Establish a method of monitoring and auditing environmental management practices during all phases of the activity;
- Ensure that safety recommendations are complied with; and
- Specify time periods within which the measures contemplated in the final environmental management programme must be implemented, where appropriate.

1.2 Structure and Function of an EMPr

An EMPr is focused on sound environmental management practices, which will be undertaken to minimise adverse impacts on the environment through the lifetime of a development. In addition, an EMPr identifies what measures will be in place or will be actioned to manage any incidents and emergencies that may occur during operation of the project.

As such the EMPr provides specifications that must be adhered to in order to minimise adverse environmental impacts associated with the construction and operation of the road upgrade and bridge construction. The content of the EMPr is consistent with the requirements as set out in Appendix 4 of the EIA regulations stated below, for the construction and operation phases.
According to APPENDIX 4 of GN R 982, an environmental management programme must include:

(a) Details of –
   (i) The EAP who prepared the environmental management programme; and
   (ii) The expertise of the EAP to prepare an environmental management programme, including a curriculum vitae;

(b) A detailed description of the aspects of the activity that are covered by the draft environmental management programme as identified by the project description;

(c) A map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers;

(d) Information on any proposed management or mitigation measures that will be taken to address the environmental impacts that have been identified in a report contemplated by these Regulations, including environmental impacts or objectives in respect of –
   (i) Planning and design;
   (ii) Pre-construction;
   (iii) construction activities;
   (iv) Rehabilitation of the environment after construction and where applicable post closure; and
   (v) where relevant, operation activities;

(e) A description and identification of impact outcomes required for the aspects contemplated in (d).

(f) A description of proposed impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated in paragraphs (d) and (e) will be achieved, and must, where applicable include actions to –
   (i) Avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;
   (ii) Comply with any prescribed environmental management standards or practices;
   (iii) Comply with any applicable provisions of the Act regarding closure, where applicable;
   (iv) Comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable;

(g) The method of monitoring the implementation of the impact management actions contemplated in paragraph (f);

(h) The frequency of monitoring the implementation of the impact management actions contemplated in (f);

(i) An indication of the persons who will be responsible for the implementation of the impact management actions;

(j) The time periods within which the impact management actions contemplated in paragraph (f) must be implemented;

(k) The mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);

(l) A program for reporting on compliance, taking into account the requirement as prescribed by the regulations;

(m) An environmental awareness plan describing the manner in which –
   (i) The applicant intends to inform his or her employees of any environmental risk which may result from their work; and
   (ii) Risks must be dealt with in order to avoid pollution or the degradation of the environment; and

(n) Any specific information that may be required by the competent authority.

1.3 Legal requirements

Construction must be according to the best industry practices, as identified in the project documents. This EMPr, which forms an integral part of the contract documents, informs the Contractor as to his/her duties in the fulfilment of the project objectives, with particular reference to the prevention and mitigation of
environmental impacts caused by construction activities associated with the project. The Contractor should note that obligations imposed by the approved EMP are legally binding in terms of environmental statutory legislation and in terms of the additional conditions to the general conditions of contract that pertain to this project. In the event that any rights and obligations contained in this document contradict those specified in the standard or project specifications then the latter must prevail.

The Contractor must identify and comply with all South African national and provincial environmental legislation, including associated regulations and all local by-laws relevant to the project. Key legislation currently applicable to the construction and operation phases of the project must be complied with. The list of applicable legislation provided below is intended to serve as a guideline only and is not exhaustive:

- Constitution Act (No. 108 of 1996)
- National Environmental Management: Biodiversity Act (No. 10 of 2004)
- National Water Act (No. 36 of 1998)
- National Environmental Management: Waste Management Act (No. 59 or 2008)
- National Heritage Resources Act (No. 25 of 1999)
- National Forestry Act, 1998 (No. 84 of 1998)

Municipal policy

- Amathole District Municipality Integrated Development Plan (ADM IDP, 2015/2016)
- Nkonkobe Local Municipality Spatial Development Framework (NLM SDF, 2015/2016)
2 DETAILS OF THE ENVIRONMENTAL ASSESSMENT TEAM

According to APPENDIX 4 of GN R 982, an environmental management programme must include:

(a) Details of –
   (i) The EAP who prepared the environmental management programme; and
   (ii) The expertise of the EAP to prepare an environmental management programme, including a curriculum vitae;

2.1 Environmental Consulting Company:

EOH Coastal & Environmental Services
25 Tecoma Street, Berea, East London, 5241
PO Box 8145, Nahoon, East London, 5210
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e-mail: cesel@cesnet.co.za
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EOH was established in 1990 as a specialist environmental consulting company and has considerable experience in terrestrial, marine and freshwater ecology, the Social Impact Assessment (SIA) process, State of Environment Reporting (SOER), Integrated Waste Management Plans (IWMP), EMPs, Spatial Development Frameworks (SDF), public participation, as well as the management and co-ordination of all aspects of the EIA and Strategic Environmental Assessment (SEA) processes.

2.2 Project Team:

- Dr Alan Carter
- Mr Roy de Kock
- Ms Thina Mgweba

**Dr Alan Carter**
Alan is the executive of the CES East London Office. He holds a PhD in Marine Biology and is a certified Public Accountant, with extensive training and experience in both financial accounting and environmental science disciplines with international accounting firms in South Africa and the USA. He has 25 years’ experience in environmental management and has specialist skills in sanitation, coastal environments and industrial waste. Dr Carter is registered as a Professional Natural Scientist under the South African Council for Natural Scientific Professions (SACNASP). He is also registered as an EAP by the Environmental Assessment Practitioners of South Africa (EAPSA).
Mr Roy de Kock
Roy is a Senior Consultant holding a BSc Honours in Geology and an MSc in Botany from the Nelson Mandela Metropolitan University in Port Elizabeth. His MSc thesis focused on Rehabilitation Ecology using an open-cast mine as a case study. He has been working for CES since 2010, and is based at the East London branch where he focuses on Ecological and Agricultural Assessments, Geological and Geotechnical analysis, Environmental Management Plans, mining applications and various environmental impact studies. Roy has worked on numerous projects in South Africa, Mozambique and Malawi. He is registered as a Natural Scientist under the South African Council for Natural Scientific Professions (SACNASP).

Ms Thina Mgweba
Thina is an Environmental Consultant. She holds a B.Sc. in Economics and Environmental Science as well as a BSc honours in environmental science both from Rhodes University. Her honours dissertation investigated climate change resilience and adaptation in the coastal villages of Hamburg, Eastern Cape. Her professional interests include the development of climate change strategies, environmental economic analyses as well as social impact assessments.
3 PROPOSED ACTIVITY

According to APPENDIX 4 of GN R 982, an environmental management programme must include:

(b) A detailed description of the aspects of the activity that are covered by the draft environmental management programme as identified by the project description;
(c) A map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers;

3.1 Description of proposed activity

South African National Roads Agency SOC Ltd. (SANRAL) is proposing the Upgrading of the National Route R63 Section 13 between Fort Beaufort (Km 35.77) and Alice (Km 58.86) within the Raymond Mhlaba Local Municipality (RMLM), previously called Nkonkobe Municipality (NM) in the Eastern Cape Province (Figure 2).

The proposed upgrade starts at the intersection of the R67 and the R63 that leads into the town of Fort Beaufort from the east. The route follows the R63 in an easterly direction and continues through the town of Fort Beaufort towards Alice for approximately 23km. The proposed upgrade ends at the Galloway Bridge just before the four-way stop entering the town of Alice from the west.

The major aspects of this project include the following:

• Increasing road reserve width from 30m to a minimum of 50m wide,
• General widening of the existing road cross section for climbing lanes and 2.5m surfaced shoulders. The main carriageway is 6.4m and needs to be increased to 12.4m. The total width with the addition of passing lanes will be 14.6m.
• Substantial vertical and horizontal geometric improvements from generally a 80km/h to 100/120km/h design speed,
• Rehabilitation of pavement structure on existing alignment and construction of new pavement on new alignment, all for which suitable material will need to be sourced,
• Cut faces (existing and new) requiring stabilisation,
• Widening and/or new construction of existing bridges, agricultural underpass and drainage structures.
• Utilising a current Hard Rock Quarry close to Alice that currently belongs to a Community Trust.
• Opening of 7 new borrow pits (Application to the Department of Mineral Resources (DMR)).
Figure 2: Locality Map of the proposed National Route R63 Section 13 Road Upgrade and borrow pit sites
4 SCOPE OF THE EMPr

In order to ensure a holistic approach to the management of environmental impacts during the construction and operation of the proposed road upgrade, this EMPr sets out the methods by which proper environmental controls are to be implemented by the Contractor and all other parties involved.

The EMPr is a dynamic document subject to influences and changes as are wrought by variations to the provisions of the project specification.

4.1 Layout of the EMPr

The EMPr is divided into three phases of development. Each phase has specific issues unique to that period of the construction and operation. The impacts are identified and given a brief description. The phases of the development are identified as below:

4.1.1 Planning and Design Phase

This section of the EMPr provides management principles for the planning and design phase of the project. Environmental actions, procedures and responsibilities as required from SANRAL during the planning and design phase are specified. These specifications will form part of the contract documentation and therefore the Contractor will be required to comply with these specifications to the satisfaction of the Project Coordinator and ECO.

4.1.2 Construction Phase

This section of the EMPr provides management principles for the construction phase of the project. Environmental actions, procedures and responsibilities as required during the construction phase are specified. These specifications will form part of the contract documentation and therefore the Contractor will be required to comply with these specifications to the satisfaction of the Project Coordinator and ECO.

4.1.3 Operational and Maintenance Phase

This section of the EMPr provides management principles for the operation and maintenance phase of the project. Environmental actions, procedures and responsibilities as required from SANRAL during the operation and maintenance phase are specified.
5 MITIGATION AND/OR MANAGEMENT MEASURES

According to APPENDIX 4 of GN R 982, an environmental management programme must include:

(d) Information on any proposed management or mitigation measures that will be taken to address the environmental impacts that have been identified in a report contemplated by these Regulations, including environmental impacts or objectives in respect of –
   (i) Planning and design;
   (ii) Pre-construction;
   (iii) construction activities;
   (iv) Rehabilitation of the environment after construction and where applicable post closure; and
   (v) where relevant, operation activities;

(e) a description and identification of impact outcomes required for the aspects contemplated in (d).

(f) a description of proposed impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated in paragraphs (d) and (e) will be achieved, and must, where applicable include actions to –
   (i) Avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;
   (ii) Comply with any prescribed environmental management standards or practices;
   (iii) Comply with any applicable provisions of the Act regarding closure, where applicable;
   (iv) Comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable;

Table 5.1: Impacts and Mitigation Measures associated with the road upgrade.

<table>
<thead>
<tr>
<th>Issue</th>
<th>Impact Description</th>
<th>Mitigation</th>
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<tbody>
<tr>
<td>1.1 Eastern Cape Biodiversity Conservation Plan (ECBCP)</td>
<td>The critical biodiversity areas, which occur along the National Route R63 Section 13, could be adversely affected if the planning and design of the proposed development is not consistent with the ECBCP recommendations for Critical Biodiversity Areas (CBAs).</td>
<td>The planning and design of the proposed development must adhere to the recommendations of the ECBCP, where possible.</td>
</tr>
<tr>
<td>1.2 National Environmental Management: Biodiversity Act: Threatened or Protected Species</td>
<td>The inappropriate design of the National Route R63 Section 13 road route could lead to the loss of identified and unidentified plant and animal SCC.</td>
<td>The road route design must avoid areas where plant and animal SCC have been identified. Permits must be obtained from the relevant departments in order to remove plant and animal SCC from the development area prior to construction.</td>
</tr>
<tr>
<td>1.3 Amathole District Municipality (ADM) Integrated Development Plan</td>
<td>The planning and design of the National Route R63 Section 13 should be consistent with the ADM IDP.</td>
<td>The ADM IDP must be considered in the design on the road.</td>
</tr>
<tr>
<td>1.4 Nkonkobe Municipality (NM) SDF and IDP</td>
<td>The planning and design of the National Route R63 Section 13 should be consistent with the Nkonkobe Local Municipality SDF and IDP.</td>
<td>The road route must adhere to the relevant legislation and/or policy.</td>
</tr>
</tbody>
</table>
## 1. PLANNING & DESIGN PHASE

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<tr>
<th>Issue</th>
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<tr>
<td>1.5 Legal and policy compliance</td>
<td>During the planning and design phase non-compliance with the laws and policies of South Africa as they pertain to the environment could lead to damage to the aquatic and terrestrial environment, unnecessary delays in construction activities, and potentially criminal cases, based on the severity of the non-compliance, being brought against the proponent and his/her contractors.</td>
<td>All legal matters pertaining to permitting must be completed prior to any construction activity. In particular, all necessary Water Use Licences must be in order for any construction activities within riparian habitat or 100m of a watercourse or 1:100 year flood line. WULA’s must also be obtained for construction activities within 500 m of a wetland. The relevant permits must be obtained from the competent authority in order to remove any protected plant species.</td>
</tr>
<tr>
<td>1.6 Scheduling of construction</td>
<td>During the planning and design phase inappropriate construction scheduling that does not take into account the seasonal requirements of the aquatic environment, e.g. allowing for unimpeded flood events, could lead to short-term (and potentially long-term) impacts on the aquatic environment such as excessive sediment mobilization, etc.</td>
<td>During the planning and design phase Wherever possible, construction activities should be undertaken during the driest part of the year to minimize downstream sedimentation due to excavation, etc. When not possible, suitable stream diversion structures must be used to ensure the river is not negatively impacted by construction activity.</td>
</tr>
<tr>
<td>1.7 Changes to fluvial geomorphology and hydrology</td>
<td>During the planning and design phase incorrect design of bridge pilings or upgraded culverts may result in scouring of the river bed in areas immediately surrounding the pilings or culverts or changes to the hydrology of the river.</td>
<td>Scour countermeasures must be incorporated into the design of the bridge upgrades and all culverts in the study area. Any upgraded culverts must be designed in such a manner so as not to impede or divert baseflows or increase upstream flood inundation. Box culverts should be selected over pipe culverts, if possible, as they are less restrictive in terms of flow and also aid in reducing habitat fragmentation.</td>
</tr>
<tr>
<td>1.8 Stormwater management</td>
<td>During the planning and design phase the inappropriate design of stormwater structures may result in increased levels of erosion, sedimentation and pollution of the watercourses.</td>
<td>Appropriate stormwater structures must be designed to minimise erosion and sedimentation of watercourses. All infrastructure situated on slopes must incorporate stormwater diversion. Flood attenuation and stormwater management plans must be drawn up by a qualified engineer and approved by DEDEAT, the ECO and DWS. Stormwater design must be in line with SANRAL and DWS requirements.</td>
</tr>
<tr>
<td>1.9 Loss of natural vegetation</td>
<td>During the planning and design phase the inappropriate design of the road upgrade will lead to the unnecessary loss of natural vegetation.</td>
<td>The design and layout of the road must have as minimal impact on the natural vegetation as possible.</td>
</tr>
<tr>
<td>1.10 Invasion of alien species</td>
<td>During the planning and design phase, inadequate planning for the removal and management of alien vegetation could result in the invasion of alien vegetation in both terrestrial and riparian areas during the construction and operation phase.</td>
<td>During the planning and design phase A Rehabilitation, Alien Vegetation and Erosion Management Plan must be complied to reduce the establishment and spread of undesirable alien plant species.</td>
</tr>
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## 1. PLANNING & DESIGN PHASE

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<tr>
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<tbody>
<tr>
<td>1.11</td>
<td>Loss of Species of Conservation Concern (SCC)</td>
<td>The inappropriate design and alignment of the National Route R63 Section 13 road route will lead to the loss of identified and unidentified plant and animal SCC. All plant SCC must be relocated to outside the construction footprint prior to commencement of activities. A walkthrough must be done by the ecologist to confirm the occurrence of 64 plant species of conservation in the study area. The relevant permits must be obtained from the competent authority in order to remove any SCC.</td>
</tr>
<tr>
<td>1.12</td>
<td>Erosion</td>
<td>Inadequate planning for the management of erosion could lead to erosion in the study area and surrounding areas. A Rehabilitation, Alien Vegetation and Erosion Management Plan must be compiled during the planning and design phase of the proposed National Route R63 Section 13 road route.</td>
</tr>
<tr>
<td>1.13</td>
<td>Construction vehicles</td>
<td>Construction vehicles will impact the traffic flow. A Traffic Management Plan must be compiled prior to the commencement of the construction phase.</td>
</tr>
<tr>
<td>1.14</td>
<td>Farms: rural agricultural and grazing land</td>
<td>The proposed National Route R63 Section 13 road route upgrade will include the widening of the existing road and this will result in the loss of sections of agricultural farmland. No mitigation.</td>
</tr>
<tr>
<td>1.15</td>
<td>Heritage Sites</td>
<td>The Heritage Impact Assessment identified 58 heritage resources, testimony to the rich Colonial Period cultural landscape which may be affected by the proposed National Route R63 Section 13 road route upgrade. The mitigation measures in the Heritage Impact Assessment (P.12-56), specific to each identified sensitive site, must be considered during the planning and Design phase. Where damage to these sites is unavoidable, permits must be obtained prior to the construction phase.</td>
</tr>
<tr>
<td>1.16</td>
<td>Paleontological findings</td>
<td>The proposed road upgrade of the R63 Section 13 may affected conservation worthy paleontological sites Prior to construction, the ECO and contractor must be made aware of potential new fossil findings. They should familiarise themselves with the sort of fossils they may be found in this area.</td>
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## 2. CONSTRUCTION PHASE

<table>
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<tr>
<th>Issue</th>
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<tr>
<td>2</td>
<td>Policy compliance</td>
<td>During the construction phase failure of the contractor to implement mitigation measures specified in the EMPr and EA could result in fines, overall project failure or delays in construction and undue disturbance to the natural environment. The developer must employ an independent Environmental Control Officer (ECO) for the duration of the construction phase to ensure that construction activities are implemented according to specifications in the EA and EMPr.</td>
</tr>
<tr>
<td>2.1</td>
<td>Job Creation</td>
<td>The proposed National Route R63 Section 13 road route upgrade will create temporary employment opportunities during all phases of development. Where possible, individuals residing in proximity to the proposed road route upgrade should be contracted for unskilled and semi-skilled employment.</td>
</tr>
<tr>
<td>2.2</td>
<td>Air pollution in the form of dust</td>
<td>During the construction phase dust (air) pollution caused by grading and levelling exposed land can cause a nuisance to nearby traffic and neighbouring residential areas. Cleared surfaces must be dampened whenever possible, especially during dry and windy conditions, to avoid excessive dust generation. Any soil excavated, and not utilised for rehabilitation, must be removed from site or covered and no large</td>
</tr>
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## 2. CONSTRUCTION PHASE

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<tbody>
<tr>
<td>2.3 Noise pollution</td>
<td>During the construction phase, construction activities and movement of heavy vehicles could result in an increase in noise levels and could become a nuisance for surrounding residents.</td>
<td>Construction activity close to residential settlements, which includes the movement of construction vehicles, should be restricted to normal working hours (7:00am – 17:00pm).</td>
</tr>
<tr>
<td>2.4 Site contamination due to hazardous substances.</td>
<td>During the construction phase, improper management (usage and storage) of hazardous substances such as cement, tar bitumen, fuel and oil may result in spillages leading to ground and surface water contamination.</td>
<td>Hazardous Chemical Substances Regulations promulgated in terms of the Occupational Health and Safety Act 85 of 1993 and the SABS Code of Practise must be adhered to. This applies to solvents and other chemicals possibly used during the construction process. The individual(s) that will be handling hazardous materials must be trained to do so. All hazardous chemicals must be stored properly in a secure, bunded and contained area. Concrete must not be mixed directly on the ground, or during rainfall events when the potential for transport to the stormwater system is the greatest. Concrete must only be mixed in the area demarcated for this purpose and on an impermeable surface. Oil trays must be placed under stationary construction machinery to avoid soil contamination. Should a spill occur, the individual responsible for or the individual who discovers the petrochemical spill must report the incident to the Project Coordinator, ECO and/or Contractor as soon as reasonably possible. The immediate response must be to contain the spill. Spill kits must be kept on site. Contaminated soil must either be excavated or treated on-site, depending on the nature and extent of the spill. Contaminated remediation materials must be carefully removed from the area of the spill and stored in suitable containers until appropriate disposal.</td>
</tr>
<tr>
<td>2.5 Health and safety risk associated with fires.</td>
<td>During the construction phase, inadequate attention to fire safety awareness and fire safety equipment could result in runaway fires, an unsafe working environment and the loss of property.</td>
<td>The contractor must ensure that operational firefighting equipment is present on site at all times as per Occupational Health and Safety Act. All construction foremen must be trained in fire hazard control and firefighting techniques. All flammable substances must be stored in dry areas which do not pose an ignition risk to the said substances. No open fires will be allowed on site except in a</td>
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## 2. CONSTRUCTION PHASE

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<tbody>
<tr>
<td>2.6</td>
<td>Sanitation and water.</td>
<td>During the construction phase failure to provide adequate onsite sanitation facilities may result in contamination of ground and surface water.</td>
</tr>
<tr>
<td>2.8</td>
<td>Building construction rubble management.</td>
<td>Construction rubble and litter left onsite could pollute the area and encourage the growth of opportunistic alien vegetation.</td>
</tr>
<tr>
<td>2.9</td>
<td>Litter management</td>
<td>Litter on site may attract vermin, detract from the visual appeal of the area, and pollute the surrounding areas.</td>
</tr>
<tr>
<td>2.10</td>
<td>Construction vehicles impacting on the traffic flow.</td>
<td>During the construction phase construction vehicles may increase the traffic volume along the R63; this will negatively impact traffic flow and may result in vehicle collisions.</td>
</tr>
<tr>
<td>2.11</td>
<td>Scheduling of construction.</td>
<td>During the construction phase, inappropriate construction scheduling that does not take into account the seasonal requirements of the aquatic environment, e.g. allowing for unimpeded flood events, could lead to short-term (and potentially long-term) impacts on the aquatic environment such as excessive sediment mobilization, etc.</td>
</tr>
<tr>
<td>2.12</td>
<td>Material Stockpiling</td>
<td>During the construction phase, stockpiling of construction materials close to watercourses could result in erosion and mobilisation of the materials into the nearby watercourse, resulting in sedimentation and a decrease in water quality and aquatic habitat.</td>
</tr>
<tr>
<td>2.13</td>
<td>Water Quality</td>
<td>During the construction phase, accidental contamination of wet concrete (highly alkaline) in the</td>
</tr>
</tbody>
</table>
# 2. CONSTRUCTION PHASE

<table>
<thead>
<tr>
<th>Issue</th>
<th>Impact Description</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>rivers/wetland systems could result in flash kills of macro-invertebrates and fish species in the vicinity (see Aquatic Impact Assessment).</td>
<td>A serviced fire extinguisher (to neutralise pH levels if a spill occurs) must be available on site in the event that wet concrete is accidentally spilled into the river. The mitigation measures in the Aquatic Assessment (Appendix A) must be used in conjunction with this report.</td>
<td></td>
</tr>
<tr>
<td>During the construction phase, accidental chemical spills or other spills (sewage, etc.) in the vicinity of the rivers/wetlands will result in water pollution, adversely affecting the aquatic ecosystem.</td>
<td>During the construction phase no machinery must be parked overnight within 50 m of the rivers/wetlands. All stationary machinery must be equipped with a drip tray to retain any oil leaks. Chemicals used for construction must be stored safely on bunded surfaces in the construction site camp. Emergency plans must be in place in case of spillages onto road surfaces or within water courses. No ablution facilities should be located within 50 m of any river or wetland system. Chemical toilets must be regularly maintained/ serviced to prevent ground or surface water pollution.</td>
<td></td>
</tr>
<tr>
<td>2.14 Stormwater management</td>
<td>During the construction phase the inappropriate routing of stormwater will lead to stream sedimentation, adversely affecting the aquatic environment. Flood attenuation and storm water management plans must be drawn up by a qualified engineer and approved by DWS and then implemented. An Erosion and Sediment Management Plan must be developed and implemented to minimize the ingress of sediment-laden stormwater into the rivers/ wetlands.</td>
<td></td>
</tr>
<tr>
<td>2.15 Riparian vegetation</td>
<td>During the construction phase, the removal of sensitive riparian vegetation for road/bridge widening and upgrading of culverts will adversely affect the aquatic environment (particularly if detours are used when widening bridges). During the construction phase all riparian vegetation removal must take place under supervision of the Environmental Control Officer (ECO). A Rehabilitation and Alien Vegetation Management Plan must be developed and implemented. Banks should be artificially stabilized as soon as possible if significant riparian vegetation is removed.</td>
<td></td>
</tr>
<tr>
<td>During the construction phase, indiscriminate removal of riparian vegetation at water crossing sites, within wetlands or encroachment into surrounding areas could lead to destabilisation of bank structures and an increase in erosion rates.</td>
<td>During the construction phase removal of riparian vegetation must take place under the supervision of the ECO. Removal of the alien invasive vegetation should be prioritised. Banks should be artificially stabilized as soon as possible if significant riparian vegetation is removed. Vehicles and machinery should not encroach into areas outside/surrounding the road upgrade footprint.</td>
<td></td>
</tr>
<tr>
<td>2.16 Hydrology</td>
<td>During the construction phase coffer dams left in place for too long may permanently change the flow dynamics in rivers, exacerbating scour</td>
<td>During the construction phase coffer dams should not be left in place for longer than 30 days. All work within the rivers should be completed during</td>
</tr>
<tr>
<td>Issue</td>
<td>Impact Description</td>
<td>Mitigation</td>
</tr>
<tr>
<td>-------</td>
<td>--------------------</td>
<td>------------</td>
</tr>
<tr>
<td>2.17</td>
<td>Invasion of alien species</td>
<td>During the construction phase the removal of existing natural vegetation (riparian and terrestrial vegetation) creates ‘open’ habitats that will favour the establishment of undesirable species in the area that are typically very difficult to eradicate. This alien vegetation may adversely affect the aquatic ecosystem.</td>
</tr>
<tr>
<td>2.18</td>
<td>Impact on integrity of the dams</td>
<td>During the construction phase inappropriate activities/ encroachment into dam (artificial wetland) areas could affect the water quality and integrity of the dams.</td>
</tr>
<tr>
<td>2.19</td>
<td>Loss of natural vegetation.</td>
<td>During the construction phase the clearing of natural vegetation for construction will lead to the loss of natural vegetation.</td>
</tr>
<tr>
<td>2.20</td>
<td>Loss Species of Conservation Concern</td>
<td>During the construction phase the clearing of natural vegetation may lead to the destruction of habitats and the loss of identified and unidentified plant SCC.</td>
</tr>
<tr>
<td>2.21</td>
<td>Rehabilitation of disturbed areas</td>
<td>During the construction phase a lack of continuous rehabilitation of disturbed areas may lead to the permanent degradation of ecosystems as well as allow alien vegetation species to spread.</td>
</tr>
</tbody>
</table>
### 2. CONSTRUCTION PHASE

<table>
<thead>
<tr>
<th>Issue</th>
<th>Impact Description</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.22 Stormwater</td>
<td>During the construction phase inadequate provision for the management of stormwater could lead to erosion and stream sedimentation of the surrounding areas during construction.</td>
<td>A Stormwater Management Plan must be compiled during the planning and design phase of the proposed National Route R63 Section 13 road route and implemented during construction.</td>
</tr>
<tr>
<td>2.23 Erosion</td>
<td>During the construction phase inadequate provision for the management of erosion could lead to erosion of the study area and sedimentation of watercourses.</td>
<td>A Rehabilitation, Alien Vegetation and Erosion Management Plan must be compiled.</td>
</tr>
<tr>
<td>2.24 Farms: Cultivated Land</td>
<td>Unnecessary clearing of cultivated land will have adverse effects on the surrounding farms.</td>
<td>Construction activities must only take place within the demarcated areas.</td>
</tr>
<tr>
<td>2.25 Heritage Sites</td>
<td>The sensitive heritage sites could be damaged or destroyed by construction activities during the construction phase.</td>
<td>The mitigation measures in the Heritage Impact Assessment (P.12-56), specific to each identified sensitive site, must be implemented during the construction phase to avoid damage to the sensitive sites. Where damage to these sites is unavoidable, permits must be obtained prior to the construction phase. If human graves or heritage artefacts are uncovered during the construction phase this must be reported to the ECO, heritage specialist and SAHRA.</td>
</tr>
<tr>
<td>2.26 Palaeontological Findings</td>
<td>During the construction phase sensitive paleontological resources may be uncovered and damaged or destroyed.</td>
<td>The EAP as well as the ECO for this project must be made aware of the fact that the Lower Beaufort Group sediments may contain fossil remains, albeit mostly exposed during infrastructure development. Should important new fossil remains be exposed during construction, the contractor must report this to the ECO and ECPHRA immediately.</td>
</tr>
</tbody>
</table>

### 3. OPERATIONAL PHASE

<table>
<thead>
<tr>
<th>Issue</th>
<th>Impact Description</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1 Spillages of harmful substances</td>
<td>During the operational phase, normal vehicle traffic may lead to the spillage of toxic substances (such as heavy metals, hydrocarbons, surfactants and oils) which may negatively impact the surrounding environment and biodiversity.</td>
<td><strong>No mitigation.</strong></td>
</tr>
<tr>
<td>3.2 Control of alien plant species</td>
<td>During the operational phase, the lack of an effective Rehabilitation, Alien Vegetation and Erosion Management Plan post-construction could lead to large scale alien plant invasion during the operational phase.</td>
<td>An Alien Vegetation and Erosion Management Plan must be implemented and run during the operational phase to reduce the establishment and spread of undesirable alien plant species. Alien plants must be removed from site through appropriate methods such as hand pulling, application of chemicals, cutting, etc. This must be done under the supervision of the ECO.</td>
</tr>
<tr>
<td>3.3 Loss of natural vegetation</td>
<td>During the operational phase the clearance of vegetation for maintenance purposes may lead to the unnecessary loss of natural vegetation.</td>
<td>All road maintenance activities must be limited to the road reserve. No activities must occur outside the road reserve.</td>
</tr>
</tbody>
</table>
### 3. OPERATIONAL PHASE

<table>
<thead>
<tr>
<th>Issue</th>
<th>Impact Description</th>
<th>Mitigation</th>
</tr>
</thead>
</table>
| 3.4 Loss of SCC        | During the operational phase, the clearance of vegetation for maintenance purposes may lead to the unnecessary loss of identified and unidentified plant SCC.                                                      | All road maintenance activities must be limited to the road reserve.  
No activities must occur outside the road reserve without prior approval.  
The relevant permits must be obtained from the competent authority in order to remove any SCC should this be required. |
| 3.5 Changes to fluvial geomorphology | During the operation phase, incorrectly designed bridge pilings or upgraded culverts may result in scouring of the river bed in areas immediately surrounding the pilings or culverts or changes to the hydrology of the affected rivers. | The effects of scouring of the river beds should be monitored post construction.                                                                                                                   |
| 3.6 Stormwater management | During the operational phase, inappropriate routing of stormwater will lead to stream sedimentation.                                                                                                                | Stormwater infrastructure should be monitored post construction to ensure rivers and wetlands do not have changes in sediment levels caused by the ingress of sediment-laden stormwater. |

### 6 ENVIRONMENTAL MONITORING

According to APPENDIX 4 of GN R 982, an environmental management programme must include:

*(g) The method of monitoring the implementation of the impact management actions contemplated in paragraph (f);  
(h) The frequency of monitoring the implementation of the impact management actions contemplated in (f);*

A monitoring programme must be implemented for the duration of the construction and operation of the road upgrade. This programme should include:

- Establishing a baseline of pre-construction site conditions validated with photographic evidence.
- Monthly audits will be conducted by an independent ECO for the construction phase to ensure compliance with the conditions stipulated in this EMPr and, where necessary, make recommendations for corrective action. These audits can be conducted randomly and do not require prior arrangement with the Project Coordinator.
- Compilation of an audit report with a rating of compliance with the EMPr. The ECO must keep a photographic record of the demarcated site and construction area. The Contractor must be held liable for all unnecessary damage to the environment. A register must be kept of all complaints from the community. All complaints / claims must be handled immediately to ensure timeous rectification / payment by the responsible party.

### 7 ROLES AND RESPONSIBILITIES

According to APPENDIX 4 of GN R 982, an environmental management programme must include:

*(i) An indication of the persons who will be responsible for the implementation of the impact management actions;*
7.1 Project Coordinator

The Project Coordinator is responsible for overall management of the project and the implementation of the EMPr. The following tasks fall within his / her responsibilities:

- Be familiar with the recommendations and mitigation measures of this EMPr, and implement these measures;
- Monitor site activities on a daily basis for compliance;
- Conduct internal audits of the construction site against the EMPr;
- Confine the construction site to the demarcated areas; and
- Rectify transgressions through the implementation of corrective action.

7.2 Contractor

The Contractor is responsible for the overall execution of the activities envisioned in the construction phase, including the implementation and compliance with recommendations and conditions of the EMPr. The Contractor must therefore ensure compliance with the EMPr at all times during construction activities and maintain an environmental register which keeps a record of all environmental incidents that occur on the site during construction and rehabilitation of the R63. These incidents may include:

- Public involvement / complaints;
- Health and safety incidents;
- Incidents involving Hazardous materials stored on site; and
- Non-compliance incidents.

The Contractor is also responsible for the implementation of corrective actions issued by the ECO and Project Coordinator within a reasonable or agreed upon period of time.

7.3 Environmental Control Officer

For the purposes of implementing the conditions contained herein, SANRAL must appoint an ECO for the contract. The ECO must be the responsible person for ensuring that the provisions of the EMPr and that any necessary environmental authorisations are complied with during the construction period. The ECO’s duties in this regard will include, but are not limited to, the following:

- Conduct regular site visits to be able to report on and respond to any environmental issues;
- Report compliance and non-compliance issues to the competent authority;
- Advise the Contractor on environmental issues within the defined work areas;
- Review access and incident records that may pertain to the environment and reconcile the entries with the observations made during site inspection, monitoring and auditing;
- Recommend corrective action when required for aspects of non-compliance within the EMPr;
- Take immediate action on site where clearly defined and agreed upon “no-go” areas are violated or in danger of being violated, inform a SANRAL representative of the occurrence immediately and take action; and
- Be contactable by the public regarding matters of environmental concern as they relate to the operation of the works.

8 COMPLIANCE WITH THE EMPr

According to APPENDIX 4 of GN R 982, an environmental management programme must include:
A copy of the EMPr must be kept on site at all times during the construction period. The EMPr will be binding on all contractors operating on the site and must be included within the Contractual Clauses.

It should be noted that in terms of Section 28 of the National Environmental Management Act (No. 107 of 1998): those responsible for environmental damage must pay the repair costs both to the environment, human health and the preventative measures to reduce or prevent further pollution and/or environmental damage (The ‘polluter pays’ principle).

8.1 Non-compliance

The contractors must act immediately when notice of non-compliance is received and take corrective action. Complaints received regarding activities on the construction site pertaining to the environment must be recorded in a dedicated register and the response(s) noted with the date and action taken. The ECO should be made aware of any complaints.

Any non-compliance with the agreed procedures of the EMPr is a transgression of the various statutes and laws that define the manner by which the environment is managed. Failure to redress the cause must be reported to the competent authority for them to deal with the transgression, as it deems fit.

The Contractor is deemed not to have complied with the EMPr if, inter alia:

- There is evidence of contravention of the EMPr specifications within the boundaries of the construction site and site extensions;
- There is contravention of the EMPr specifications which relate to activities outside the boundaries of the construction site;
- Environmental damage ensues due to negligence;
- Construction activities take place outside the defined boundaries of the site; and/or
- The Contractor fails to comply with corrective or other instructions issued within a specific time period.

It is recommended that the Contractors institute penalties for the following less serious violations and any others determined during the course of work, as detailed below:

- Littering on site.
- Lighting of illegal fires on site.
- Persistent or unreppaired fuel and oil leaks.
- Any persons, vehicles or equipment related to the Contractor’s operations found within the designated “no-go” areas.
- Excess dust or excess noise emanating from site.
- Possession or use of intoxicating substances on site.
- Any vehicles being driven in excess of designated speed limits.
- Removal and/or damage to fauna, flora, cultural or heritage objects on site.
- Urination and defecation anywhere except at designated facilities.

8.2 Emergency preparedness
The Contractor must compile and maintain environmental emergency procedures to ensure that there will be appropriate responses to unexpected or accidental actions or incidents that will cause environmental impacts, throughout the construction period. Such activities may include, *inter alia*:

- Accidental waste water discharges to water and land.
- Accidental fires.
- Accidental spillage of hazardous substances.
- Specific environmental and ecosystem effects from accidental releases or incidents.

These plans should include:

- Emergency organisation (manpower) and responsibilities, accountability and liability.
- A list of key personnel and contact details.
- Details of emergency services available (e.g. the fire department, spill clean-up services, etc.).
- Internal and external communication plans, including prescribed reporting procedures where required by legislation.
- Actions to be taken in the event of different types of emergencies.
- Incident recording, progress reporting and remediation measures required to be implemented.
- Information on hazardous materials, including the potential impact associated with each, and measures to be taken in the event of accidental release.
- Training plans, testing exercises and schedules for effectiveness.

The Contractor must comply with the emergency preparedness and incident- and accident-reporting requirements, as required by the Occupational Health and Safety Act (No. 85 of 1993), the NEMA (No. 107 of 1998) and the National Water Act (No. 36 of 1998) as amended and/or any other relevant legislation.

### 8.3 Incident reporting and remedy

If a leakage or spillage of hazardous substances occurs on site, the local emergency services must be immediately notified of the incident. The following information must be provided:

- the location;
- the nature of the load;
- the extent of the impact; and
- the status at the site of the accident itself (i.e. whether further leakage is still taking place, whether the vehicle or the load is on fire).

Written records must be kept on the corrective and remedial measures decided upon and the progress achieved therewith over time. Such progress reporting is important for monitoring and auditing purposes. The written reports may be used for training purposes in an effort to prevent similar future occurrences.

### 8.4 Penalties

Where environmental damage is caused or a pollution incident, and/or failure to comply with any of the environmental specifications contained in the EMPr, SANRAL and/or the Contractor will be liable.

The following violations, and any others determined during the course of work, should be penalised:

- Hazardous chemical/oil spill and/or dumping in non-approved sites.
- Damage to sensitive environments.
- Damage to cultural and historical sites.
- Unauthorised removal/damage to indigenous trees and other vegetation, particularly in identified sensitive areas.
- Uncontrolled/unmanaged erosion.
- Unauthorised blasting activities *(if applicable).*
• Pollution of water sources.
• Unnecessary removal or damage to trees.

The following steps will be followed by the ECO, on behalf of SANRAL, when observing a transgression:

1. **Transgression observed**: Give a warning to the Contractor, with time to remedy the situation. Report transgression and agreed remedial action to SANRAL.

2. **Transgression not remedied**: Report the Contractor directly to SANRAL and issue a financial penalty to the Contractor with an agreed time period to remedy the situation with the assistance of SANRAL *if necessary*.

3. **Failure to remediate**: Depending on the severity and impact significance of the transgression, which must be assessed and discussed with SANRAL prior to reporting to the competent authority, the ECO may report directly to DEA (Compliance) recommending that for:

   • **HIGH impact**: DEA to issue a notice to cease construction;
   • **MEDIUM impact**: DEA to issue a notice instructing SANRAL to implement recommended remedial action; and/or
   • **LOW impact**: ECO to notify, but up to discretion of DEA to apply sanction.

In all cases, however, non-compliance must be reported to DEA in the monthly audit reports. However, the ECO will also report on corrective actions proposed and implemented.

The following schedule of fines for environmental damage or EMPr transgressions have been adapted from the City of Cape Town: Standard Environmental Specifications.

**Table 9.1. List of fines for transgressions or resultant environmental damage**

<table>
<thead>
<tr>
<th>TRANSGRESSION OR RESULTANT ENVIRONMENTAL DAMAGE</th>
<th>Min. fine</th>
<th>Max. fine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failure to comply with prescriptions regarding ECO appointment and monitoring of EMPr</td>
<td>R1 000</td>
<td>R2 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions regarding environmental awareness training</td>
<td>R2 000</td>
<td>R10 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions regarding method statements</td>
<td>R2 000</td>
<td>R10 000</td>
</tr>
<tr>
<td>Failure to report environmental damage or EMPr transgressions to the ECO</td>
<td>R1 000</td>
<td>R2 000</td>
</tr>
<tr>
<td>Failure to carry out instructions of the DEO/ECO regarding the environment of the EMPr</td>
<td>R1 000</td>
<td>R2 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions posting of emergency numbers</td>
<td>R2 000</td>
<td>R10 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions regarding information boards</td>
<td>R1 000</td>
<td>R2 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions regarding a complaints register</td>
<td>R1 000</td>
<td>R2 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions regarding site demarcation and enforcement of “no go” areas</td>
<td>R2 000</td>
<td>R10 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions regarding site clearing</td>
<td>R2 000</td>
<td>R10 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions for the storage of imported materials within a designated Contractors yard</td>
<td>R1 000</td>
<td>R2 000</td>
</tr>
<tr>
<td>Failure to comply with prescribed administration, storage or handling of hazardous substances</td>
<td>R1 000</td>
<td>R2 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions regarding equipment maintenance and storage</td>
<td>R1 000</td>
<td>R2 000</td>
</tr>
<tr>
<td>Failure to comply with fuel storage, refuelling, or clean-up prescriptions</td>
<td>R1 000</td>
<td>R2 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions regarding procedures for emergencies (spillages and fires)</td>
<td>R2 000</td>
<td>R10 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions regarding construction camp</td>
<td>R2 000</td>
<td>R10 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions for the use of ablution facilities</td>
<td>R1 000</td>
<td>R2 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions regarding water provision</td>
<td>R1 000</td>
<td>R2 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions for the use of designated eating areas, heating source for cooking or presence of fire extinguishers</td>
<td>R1 000</td>
<td>R2 000</td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>Failure to comply with prescriptions regarding fire control</td>
<td>R2 000</td>
<td>R10 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions for solid waste management</td>
<td>R2 000</td>
<td>R10 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions to prevent water pollution and sedimentation</td>
<td>R2 000</td>
<td>R10 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions to the protection of natural features, flora, fauna and archaeology</td>
<td>R2 000</td>
<td>R10 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions regarding speed limits</td>
<td>R1 000</td>
<td>R2 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions regarding noise levels of construction activity</td>
<td>R2 000</td>
<td>R10 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions regarding working hours</td>
<td>R2 000</td>
<td>R10 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions regarding aesthetics</td>
<td>R1 000</td>
<td>R2 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions regarding dust control</td>
<td>R1 000</td>
<td>R2 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions regarding security and access onto private property</td>
<td>R1 000</td>
<td>R2 000</td>
</tr>
<tr>
<td>Failure to comply with prescriptions regarding cement and concrete batching</td>
<td>R2 000</td>
<td>R10 000</td>
</tr>
</tbody>
</table>

### 9 REPORTING

According to APPENDIX 4 of GN R 982, an environmental management programme must include:

1. A program for reporting on compliance, taking into account the requirement as prescribed by the regulations;

#### 9.1 Administration

Before the construction activities commence, the Contractor must provide the ECO and SANRAL with a written method statement setting out the following:

- Details of the construction activities;
- Location where the activity will take place;
- Identification of impacts that might result from the activity;
- Identification of activities that may cause impacts;
- Methodology and/or specifications for impact prevention for each activity or aspect;
- Methodology and/or specifications for impact containment for each activity or aspect;
- Emergency/disaster incident and reaction procedures; and the
- Treatment and continued maintenance of the impacted environment.

The Contractor should provide such information in advance of any or all construction activities provided that new submissions are given to the ECO whenever there is a change or variation to the original.

The ECO should provide comment on the methodology and procedures proposed by the Contractor but he/she will not be responsible for the Contractor’s chosen measures of impact mitigation and emergency/disaster management systems.

#### 9.2 Good housekeeping

The Contractor must undertake “good housekeeping” practices during construction. This will help avoid disputes on responsibility and allow for the smooth running of the contract as a whole. Good housekeeping extends beyond the wise practice of construction methods to include the care for and preservation of the environment within which the construction is situated.
9.3 Record keeping

The ECO must continuously monitor the Contractor’s adherence to the approved impact prevention procedures and the ECO must issue the Contractor with a notice of non-compliance whenever transgressions are observed. The ECO should document the nature and magnitude of the non-compliance in a designated register, the action taken to discontinue the non-compliance, the action taken to mitigate its effects and the results of the actions. The non-compliance should be documented and reported to SANRAL in the monthly report. These reports must be made available to DEA when requested.

9.4 Document control

The Contractor is responsible for establishing a procedure for electronic document control. The document control procedure should comply with the following requirements:

- Documents must be identifiable by organisation, division, function, activity and contact person.
- Every document should identify the personnel and their position(s), who drafted and compiled the document(s), who reviewed and recommended approval, and who finally approved the document for distribution.
- All documents should be dated, provided with a revision number and reference number, filed systematically, and retained for a five year period.

The Contractor must ensure that documents are periodically reviewed and revised, where necessary, and that current versions are available at all locations where operations essential to the functioning of the EMPr are performed. All documents must be made available to the ECO and other independent external auditors.

10 ENVIRONMENTAL AWARENESS

According to APPENDIX 4 of GN R 982, an environmental management programme must include:

(m) An environmental awareness plan describing the manner in which –

(i) The applicant intends to inform his or her employees of any environmental risk which may result from their work; and

(ii) Risks must be dealt with in order to avoid pollution or the degradation of the environment; and

The Contractors must ensure that their employees and any third party, who carries out all or part of the Contractors’ obligations, is adequately trained with regard to the implementation of the EMPr and the general environmental legal requirements and obligations. Training should be conducted by the ECO where necessary.

Environment and health awareness training programmes should be targeted at three distinct levels of employment, i.e. the executive, middle management and labour. Environmental awareness training programmes should contain the following information:

- The names, positions and responsibilities of personnel to be trained;
- The framework for appropriate training plans;
- The summarised content of each training course; and
- A schedule for the presentation of the training courses.

The ECO must ensure that records of all training interventions are kept in accordance with the record keeping and documentation control requirements as set out in this EMPr. The training records must verify each of the targeted personnel’s training experience.
The Developer must ensure that adequate environmental training takes place. All employees must be given an induction presentation on environmental awareness and the content of the EMPr. The presentation needs to be conducted in the language of the employees to ensure it is understood. The environmental training must, as a minimum, include the following:

- The importance of conformance with all environmental policies;
- The environmental impacts, actual or potential, of their work activities;
- The environmental benefits of improved personal performance;
- Their roles and responsibilities in achieving conformance with the environmental policy and procedures and with the requirement of the Agency’s environmental management systems, including emergency preparedness and response requirements;
- The potential consequences of departure from specified operating procedures;
- The mitigation measures required to be implemented when carrying out their work activities;
- Environmental legal requirements and obligations;
- Details regarding floral/faunal species of special concern and protected species, and the procedures to be followed should these be encountered during the construction of approach roads or construction camps;
- The importance of not littering;
- The importance of using supplied ablution facilities;
- The need to use water sparingly;
- Details of and encouragement to minimise the production of waste and re-use, recover and recycle waste where possible; and the
- Details regarding archaeological and/or historical sites which may be unearthed during construction and the procedures to be followed should these be encountered.

Recommended Environmental Education Material is provided in Appendix 1.

10.1 Monitoring of environmental training

The Contractor must monitor the performance of construction workers to ensure that the points relayed during their introduction have been properly understood and are being followed. If necessary, the ECO and / or a translator should be called to the site to further explain aspects of environmental or social behaviour that are unclear. Toolbox talks are recommended
11 CLOSURE PLANNING

Final site cleaning - the contractor must clear and clean the site and ensure that all equipment and residual materials not forming part of the permanent works is removed from site before issuing the completion certificate or as otherwise agreed.

Rehabilitation - the contractor (landscape architect/horticulturist) must be responsible for rehabilitating and re-vegetation of all areas disturbed/areas earmarked for conservation during construction to the satisfaction of the engineer and ECO.

11.1 Post-construction audit

A post-construction audit must be carried out and submitted to DEA at the expense of SANRAL. Objectives should be to audit compliances with the key components of the EMPr, to identify main areas requiring attention and recommend priority actions. The audit should be undertaken annually and should cover a cross section of issues, including implementation of environmental controls, environmental management and environmental monitoring.

Results of the audits should inform changes required to the specifications of the EMPr or additional specifications to deal with any environmental issues which arise on site and have not been dealt with in the current document.

11.2 General review of EMPr

The EMPr will be reviewed by the ECO on an on-going basis. Based on observations during site inspections and issues raised at site meetings, the ECO will determine whether any procedures require modification to improve the efficiency and applicability of the EMPr on site.

Any such changes or updates will be registered in the ECO’s record, as well as being included as an annexure to this document. Annexures of this nature must be distributed to all relevant parties.

12 CONCLUSIONS

All foreseeable actions and potential mitigations and/or management actions are contained in this document; the EMPr should be seen as a day-to-day management document. The EMPr thus sets out the environmental and social standards, which would be required to minimise the negative impacts and maximise the positive benefits of the construction activities. The EMPr could thus change daily, and if managed correctly lead to a successful construction and operation phases.

All attempts should be made to have this EMPr available, as part of any tender documentation, so that the Contractors are made aware of the potential cost and timing implications needed to fulfil the implementation of the EMPr, thus adequately costing for these.
WHAT IS THE ENVIRONMENT?

- Soil
- Water
- Plants
- People
- Animals
- Air we breathe
- Buildings, cars and houses
WHY MUST WE LOOK AFTER THE ENVIRONMENT?

- It affects us all as well as future generations
- We have a right to a healthy environment
- A contract has been signed
- Disciplinary action (e.g. construction could stop or fines issued)

HOW DO WE LOOK AFTER THE ENVIRONMENT?

- Report problems to your supervisor/foreman
- Team work
- Follow the rules in the EMP
WORKING AREAS

Workers & equipment must stay inside the site boundaries at all times

RIVERS & STREAMS

- Do not swim in or drink from streams
- Do not throw oil, petrol, diesel, concrete or rubbish in the stream
- Do not work in the stream without direct instruction
- Do not damage the banks or vegetation of the stream
ANIMALS

- Do not injure or kill any animals on the site
- Ask your supervisor or Contract’s Manager to remove animals found on site

TREES AND FLOWERS

- Do not damage or cut down any trees or plants without permission
- Do not pick flowers
SMOKING AND FIRE

• Put cigarette butts in a rubbish bin
• Do not smoke near gas, paints or petrol
• Do not light any fires without permission
• Know the positions of fire fighting equipment

• Report all fires
• Do not burn rubbish or vegetation without permission

PETROL, OIL AND DIESEL

• Work with petrol, oil & diesel in marked areas
• Report any petrol, oil & diesel leaks or spills to your supervisor
• Use a drip tray under vehicles & machinery
• Empty drip trays after rain & throw away where instructed
DUST

Try to avoid producing dust - Use water to make ground & soil wet

NOISE

• Do not make loud noises around the site, especially near schools and homes
• Report or repair noisy vehicles
TOILETS

- Use the toilets provided
- Report full or leaking toilets

EATING

- Only eat in demarcated eating areas
- Never eat near a river or stream
- Put packaging & leftover food into rubbish bins
RUBBISH

- Do not litter – put all rubbish (especially cement bags) into the bins provided
- Report full bins to your supervisor
- The responsible person should empty bins regularly

TRUCKS AND DRIVING

- Always keep to the speed limit
- Drivers – check & report leaks and vehicles that belch smoke
- Ensure loads are secure & do not spill
EMERGENCY PHONE NUMBERS

Know all the emergency phone numbers:

- Local Municipality:
- Ambulance:
- Fire:
- Police:

FINES AND PENALTIES

- Spot fines of between

  To be confirmed by the Engineer

- Your company may be fined
- Removal from site
- Construction may be stopped
PROBLEMS - WHAT TO DO!

- Report any breaks, floods, fires, leaks and injuries to your supervisor
- Ask questions!
APPENDIX B

ENVIRONMENTAL AUTHORISATION
APPENDIX C

PRO-FORMA: PROTECTION OF THE ENVIRONMENT

To be signed by Contractors
PRO FORMA

Employer ________________________________
Contract No ________________________________
Contract title ________________________________

PROTECTION OF THE ENVIRONMENT

The Contractor will not be given right of access to the site until this form has been signed.

I/ we ________________________________ (Contractor) record as follows:

1. I/ we, the undersigned, do hereby declare that I/ we am/ are aware of the increasing requirement by society that construction activities must be carried out with due regard to their impact on the environment.

2. In view of this requirement of society and a corresponding requirement by the Employer with regard to this Contract, I/ we will, in addition to complying with the letter of the terms of the Contract dealing with protection of the environment, also take into consideration the spirit of such requirements and will, in selecting appropriate employees, plant, materials and methods of construction, in so far as I/ we have the choice, include in the analysis not only the technical and economic (both financial and with regard to time) aspects but also the impact on the environment of the options. In this regard, I/ we recognise and accept the need to abide by the “precautionary principle” which aims to ensure the protection of the environment by the adoption of the most environmentally sensitive construction approach in the face of uncertainty with regard to the environmental implications of construction.

3. I/ we acknowledge and accept the right of ________________________________ to deduct, should they so wish, from any amounts due to me/us, such amounts (hereinafter referred to as fines) as the Resident Engineer and Environmental Site Officer must certify as being warranted in view of my/ our failure to comply with the terms of the Contract dealing with protection of the environment, subject to the following:

   3.1 The Resident Engineer and Environmental Officer, in determining the amount of such fine, must take into account inter alia, the nature of the offence, the seriousness of its impact on the environment, the degree of prior compliance/non-compliance, the extent of the Contractor’s overall compliance with environmental protection requirements and, in particular, the extent to which he considers it necessary to impose a sanction in order to eliminate/reduce future occurrences.

   3.2 The Resident Engineer and Environmental Officer must, with respect to any fine imposed, provide me/ us with a written statement giving details of the offence, the facts on which the Resident Engineer and Environmental Officer has based his assessment and the terms of the Contract (by reference to the specific clause) which has been contravened.

Signed ____________________________________________
CONTRACTOR

Date ________________________________