



**PROPOSED STRENGTHENING (PARTIAL
RECONSTRUCTION) OF NATIONAL ROUTE R27
SECTIONS 7 & 8 BETWEEN THE
WESTERN/NORTHERN CAPE BORDER (KM 40.0)
AND CALVINIA (KM 70.0)**

**FINAL CONSTRUCTION ENVIRONMENTAL
MANAGEMENT PROGRAMME**

CONTRACT NO: NRA R.027-080-2011/1F

Prepared for:
Department of Environmental Affairs

On behalf of:
**Aurecon SA (Pty) Ltd for
South African National Roads Agency SOC Ltd**

Prepared by:
CCA Environmental (Pty) Ltd





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PROJECT INFORMATION

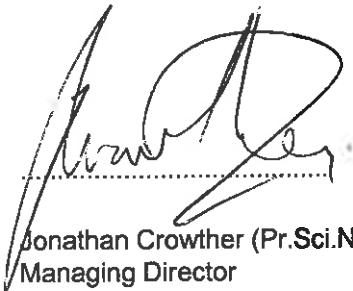
TITLE	Final Construction Environmental Management Programme (EMP) for the proposed strengthening (partial reconstruction) of National Route R27 Sections 7 & 8 between the Western/Northern Cape border (km 40.0) and Calvinia (km 70.0)
APPLICANT	South African National Roads Agency SOC Limited (SANRAL)
ENVIRONMENTAL CONSULTANTS	CCA Environmental (Pty) Ltd
REPORT REFERENCE	AUR02R27/FINAL CONSTRUCTION EMP/1
REPORT DATE	25 October 2011

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REPORT REVIEW BY: Jonathan Crowther



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GLOSSARY OF TERMS

ALIEN INVASIVE PLANTS: Plants that do not naturally occur in an area. These plants may also be referred to as exotic plants, e.g. Lantana (*Lantana camara*).

CONTRACTOR: The natural or juristic person or partnership whose tender has been accepted by or on behalf of the Developer/Employer (after SAICE General Conditions of Contract, 1990).

ENVIRONMENT: The external circumstances, conditions, and objects that affects the existence and development of an individual, organism or group. These circumstances include biophysical, social, economic, historical, cultural and political aspects.

ENVIRONMENTAL MANAGEMENT PLAN: That part of the overall management process which includes organisational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy (DRAFT ISO 14 000, 1995).

ERADICATION PROGRAMME: The organised clearing and rehabilitation of land infested by invasive alien species of plant.

GROUNDWATER: The water that fills the natural openings present in the rock or unconsolidated sands.

HAZARDOUS: Contains an element of risk. Dangerous or toxic to life.

HAZARDOUS SUBSTANCES: This means any substance or mixture of substances, product or material declared to be a hazardous substance under section 2(1) of the Hazardous Substance Act (1973).

HERBICIDE: See 'Pesticide'.

MAINTENANCE: The complete upkeep, support and protection of areas/regions/sites.

METHOD STATEMENTS: Written statements which contain details regarding construction procedures, materials (where applicable), timing, storage methods (where applicable) and sketches of proposed construction. Method Statements shall be submitted for work near environmental sensitive regions of the site. This includes environmentally sensitive aspects of the work such as fencing, cement, poisons and oil storage, treatment of wastewater, provision of ablution facilities, etc.

MITIGATION: The implementation of practical measures to reduce adverse impacts or enhance beneficial impacts of an action.

PESTICIDE: Pesticides are chemicals used by humans to kill organisms that threaten their health and well-being, pets and livestock or cause damage to crops. This includes insecticides, herbicides, fungicides, acaricides, nematocides and rodenticides (after Fuggle et al, 1992).

POLLUTION: The residue of human activity that adversely affects the next user of some environmental resource.

REHABILITATION: To re-establish or restore to a healthy sustainable capacity or state.

LIST OF ACRONYMS

DEA:	Department of Environmental Affairs
DWA:	Department of Water Affairs
ECO:	Environmental Control Officer
EMP:	Environmental Management Plan
EO:	Environmental Officer
MS:	Method Statement
MSDS:	Material Safety Data Sheets
RE:	Resident Engineer
SANRAL:	South African National Roads Agency SOC Limited
SOC:	State owned company

1. INTRODUCTION

1.1 BACKGROUND AND BRIEF PROJECT DESCRIPTION

The South African National Roads Agency SOC Limited (SANRAL) is proposing to strengthen and partially reconstruct the R27, Sections 7 and 8, between the Western / Northern Cape border (km 40.0) and Calvinia (km 70.0) (see Figures A1, A2 and A3 in Appendix A). This would entail road works, rehabilitation of culverts and bridges and the development of borrowpits to provide material for the proposed project. The upgrade is necessary to improve the safety levels and road condition of this section of the R27.

The widening of the four bridges along Section 8 of the R27 and the development of two of the three proposed borrowpits triggered the requirement for compliance with the EIA Regulations 2010 promulgated in terms of Sections 24(5), 24M and 44 of the National Environmental Management Act (No. 107 of 1998) (NEMA), as amended, in Government Notice (GN) No. R543. The development of borrowpits as material sources also requires compliance with the Mineral and Petroleum Resources Development Act (No. 28 of 2002)(MPRDA).

SANRAL appointed Aurecon SA (Pty) Ltd to undertake the design and planning of the project. CCA Environmental (Pty) Ltd was appointed as the independent environmental consultant to undertake the necessary Basic Assessment (BA) and MPRDA process. The compilation of this Construction EMP forms part of the requirements of the EIA Regulations 2010 and compliance with the contents of this report is required during the construction operation.

The following four bridge structures have been earmarked for widening:

- Bridge NB35, known as the Oorlogskloof River Bridge 1, spans the Oorlogskloof River on Section 8 of the R27 at km 22.7, approximately 23 km south-east of Niewoudtville;
- Bridge NB36, known as the Oorlogskloof River Bridge 2, spans the Oorlogskloof River on Section 8 of the R27 at km 34.9. The bridge is situated approximately half way between Niewoudtville and Calvinia at 35 km south-east of the former and 32 km west of the latter;
- Bridge NB37, known as the Oorlogskloof River Bridge 3, spans the Oorlogskloof River on Section 8 of the R27 at km 59.2, approximately 8 km west of Calvinia; and
- Bridge NB38, known as the Oorlogskloof River Bridge 4, spans the Oorlogskloof River on Section 8 of the R27 at km 67.1. This historical bridge dating from 1937-38 is located at the western entrance to Calvinia.

The following three areas have been selected for borrowpit development:

- BP R27-8 km 32.6 RHS 6.2 is situated along the R364 approximately 6 km south-west of the R27, on Portion 1 of Farm Bloedzuigerfontein North 782 ("Merino");
- BP R27-8 km 45.0 RHS 0.2 is situated along the R27 approximately 23 km west of Calvinia, on the Remainder of Portion 1 of Farm Buffelskopfontein 773; and
- BP R27-8 km 61.6 RHS 1.0 is situated approximately 7 km south-west of Calvinia on the Remainder of Portion 1 of Farm Enkelde Wilgenboom 768 near the Calvinia Airfield.

1.2 AIMS OF THE CONSTRUCTION EMP

The purpose of this Construction EMP is to ensure that impacts associated with the construction phase of the project are kept to a minimum. In this regard, the Construction EMP sets environmental targets for the Contractor (defined as the lead Contractor and any nominated or selected Sub-contractors) and reasonable standards against which the Contractor's performance can be measured during construction. This document will form the basis for the environmental specifications that the Contractor, in terms of the construction contract, will be obliged to adhere to during the construction operation. This document will thus form a binding agreement between the Contractor and SANRAL.

1.3 CONTENTS OF THE CONSTRUCTION EMP

The Construction EMP comprises the following sections:

Chapter 1: Introduction: This section includes the project background, aims of this Construction EMP and describes the content of this Construction EMP.

Chapter 2: Administration and regulation of environmental obligations: This section identifies the management structure and responsibilities of the various stakeholders. The procedures for environmental management and monitoring of the construction phase are also presented.

Chapter 3: Environmental specifications: This section presents all the environmental specifications relating to the project.

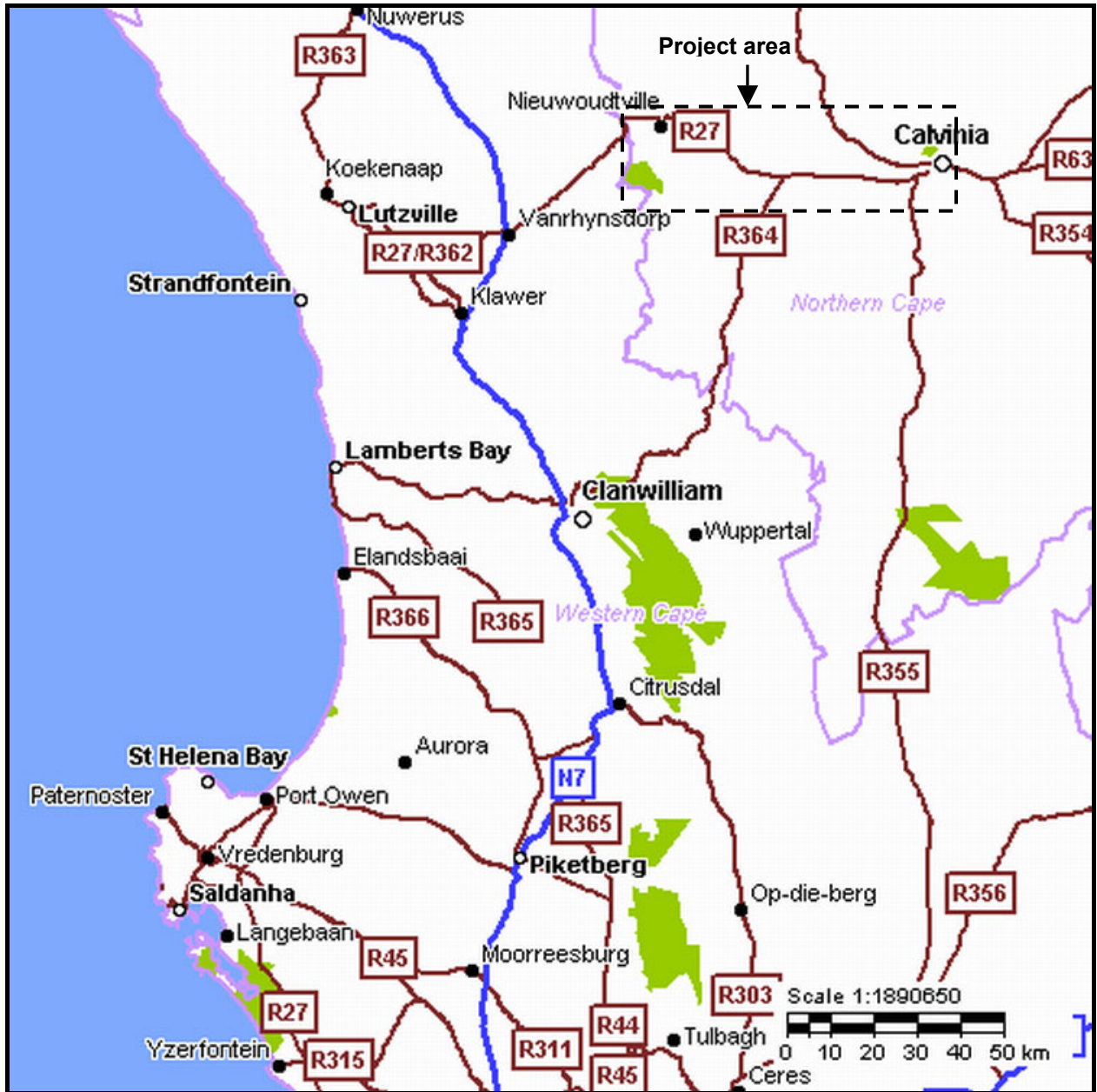


Figure 1: Locality map showing the project area between the Western/Northern Cape border (border shown in purple) and Calvinia along the R27

2. ADMINISTRATION AND REGULATION OF ENVIRONMENTAL OBLIGATIONS

2.1 MANAGEMENT STRUCTURE

Details of the management structure are presented below. All official communication and reporting lines including instructions, directives and information shall be channelled according to the organisational structure presented below.

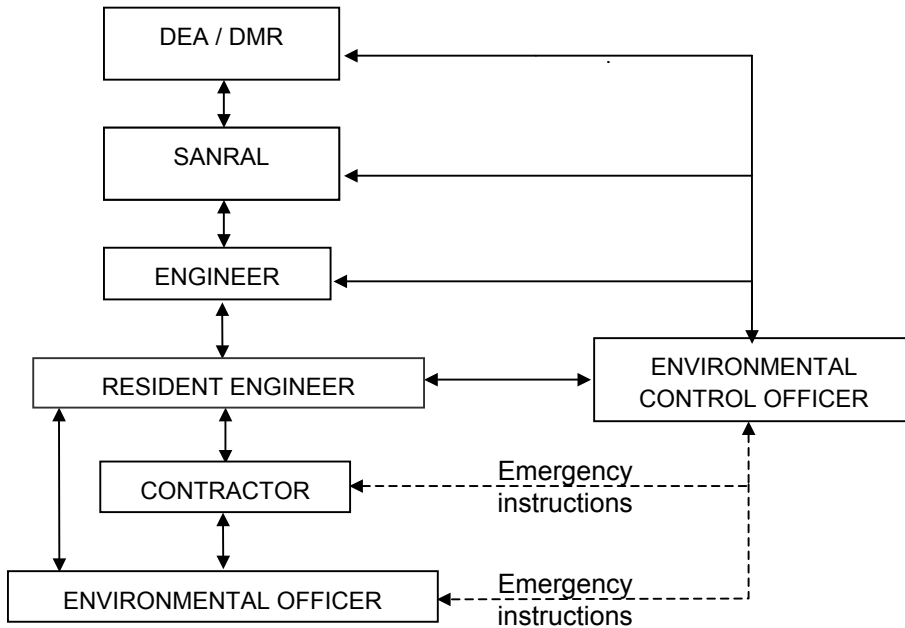


Figure 2: EMP implementation organisational structure

2.2 ROLES AND RESPONSIBILITIES

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

2.2.1 Department of Environmental Affairs (DEA)

DEA is the designated authority responsible for authorising this Construction EMP. DEA has overall responsibility for ensuring that SANRAL complies with the conditions of its environmental authorisation as well as this Construction EMP.

DEA shall also be responsible for approving any amendments that may be required to the Construction EMP. DEA may also perform random site inspections to check compliance with the Construction EMP.

2.2.2 Department of Mineral Resources (DMR)

DMR is the designated authority responsible for authorising the borrowpit development and for the associated EMP. DMR would have overall responsibility for ensuring that the Applicant (SANRAL) complies with the conditions of the borrowpit authorisation as well as the associated EMP.

2.2.3 South African National Roads Agency SOC Limited (SANRAL)

The Applicant is accountable for the potential impacts of activities that are undertaken and is responsible for managing these impacts. SANRAL as the Applicant and Employer therefore has overall environmental responsibility to ensure compliance with the relevant legislation and for the implementation of the Construction EMP and the financial cost of all environmental control measures. SANRAL must ensure that any person acting on their behalf complies with the conditions/specifications contained in this Construction EMP. SANRAL is also responsible for the appointment of the Engineer, Contractor and Environmental Control Officer (ECO).

SANRAL shall address any site problems pertaining to the environment at the request of the Engineer and/or the ECO.

2.2.4 Engineer

The Engineer shall oversee the planning, design and construction phases of the project. The Engineer shall appoint a Resident Engineer or Engineer's Representative (referred to as the RE) to act as the on-site implementing agent.

The Engineer shall address any site problems pertaining to the environment at the request of the RE and/or the ECO.

2.2.5 Contractor

The Contractor shall have the following responsibilities:

- To implement all provisions of the Construction EMP. If the Contractor encounters difficulties with specifications, he must discuss alternative approaches with the RE and/or the ECO prior to proceeding.
- To ensure that all staff are familiar with the Construction EMP.
- To monitor and verify that the environmental impacts are kept to a minimum.
- To make personnel aware of environmental problems and ensure they show adequate consideration of the environmental aspects of the project.
- To prepare the required Method Statements (see Section 2.5).
- To report any incidents of non-compliance with the Construction EMP to the RE and the ECO.
- To rehabilitate any sensitive environments damaged due to the Contractor's negligence. This shall be done in accordance with the Engineer's and ECO's specifications.

Failure to comply with the Construction EMP may result in fines (see Section 2.10) and reported non-compliance may result in the Engineer suspending the operation causing the non-compliance.

2.2.6 Resident Engineer (RE)

The RE would act as SANRAL's on-site implementing agent and has the responsibility to ensure that their responsibilities are executed in compliance with the Construction EMP. Any on-site decisions regarding environmental management are ultimately the responsibility of the Engineer of the RE in accordance with their delegated authorities. The RE shall assist the ECO where necessary and shall have the following responsibilities in terms of the implementation of this Construction EMP:

- Regular site inspections.
- Reviewing and approving the Contractor's Method Statements with input from the ECO where necessary (see Section 2.5).
- Monitoring and verifying that the Construction EMP and Method Statements are adhered to at all times and taking action if specifications are not followed.
- Keeping a photographic record of construction and borrowpit activities on site.
- Assisting the Contractor in finding environmentally responsible solutions to problems with input from the ECO where necessary.
- Recommending to the Engineer the removal of person(s) and/or equipment not complying with the Construction EMP specifications.
- Recommending to the Engineer the issuing of fines for transgressions of the Construction EMP.
- Recommending to the Engineer delaying any construction or borrowpit activity if he/she believes the integrity of the environment has been or is likely to be seriously jeopardised.
- Providing input into the ECO's ongoing internal review of the Construction EMP.
- The RE shall communicate environmental issues to the Environmental Officer.

2.2.7 Environmental Control Officer (ECO)

The appointment of an Environmental Control Officer (ECO) is required. The ECO will be an independent environmental consultant appointed by the Engineer to act as the representative of the Applicant/Employer to monitor and review the on-site environmental management and implementation of this Construction EMP by the Contractor. The ECO shall undertake regular site inspections, as agreed by the Employer, for the duration of the construction contract.

The ECO's duties shall include, *inter alia*, the following:

- Ensuring the necessary environmental authorisations and permits, if any, have been obtained.
- Advising the Contractor and/or the RE on environmental issues within defined construction and borrow areas.
- Reviewing Method Statements (see Section 2.5).
- Undertaking regular site visits to ensure compliance with the Construction EMP and verifying that environmental impacts are kept to a minimum throughout the contract.
- Completing environmental checklists during site visits.
- Keeping a photographic record of progress on site from an environmental perspective.
- Assisting the Contractor and/or the RE in finding environmentally acceptable solutions to construction problems.
- Recommending additional environmental protection measures should this be necessary.
- Keeping a register of complaints and recording and dealing with any community issues or comments pertaining to contract environment issues.
- Providing a report back on the environmental issues to be tabled at site meetings.
- Ensuring that DEA and/or DMR are informed of work progress on site.

- Reporting any incidents that may have caused damage to the environment or breaches of the Construction EMP to DEA and/or DMR.
- Preparing an environmental audit report at the conclusion of the construction phase.

The ECO shall communicate directly with the RE. Should problems arise on site that cannot be resolved between the ECO and the RE, the ECO shall take the matter up with the Engineer and/or SANRAL. If SANRAL does not respond the ECO shall take the matter up with DEA and/or DMR.

2.2.8 Environmental Officer (EO)

The Contractor shall appoint, at own cost, a competent individual as its on-site Environmental Officer (EO) to ensure that the Construction EMP is implemented and that all environmental specifications and Construction EMP requirements are met at all times. The EO shall be responsible for monitoring, reviewing and verifying the Contractor's compliance with the Construction EMP. The EO may also act as a Traffic Safety Officer.

The EO's duties in this regard shall include, *inter alia*, the following:

- Daily site inspections.
- Monitoring and verifying that the Construction EMP and Method Statements are adhered to at all times and taking action if specifications are not followed.
- Monitoring and verifying that environmental impacts are kept to a minimum.
- Assisting the RE and ECO in finding environmentally responsible solutions to problems.
- Inspecting the site and surrounding areas on a regular basis with regard to compliance with the Construction EMP.
- Keeping accurate and detailed records of these inspections.
- Reporting any incidents of non-compliance with the Construction EMP to the RE and/or the ECO.
- Keeping a register of complaints on site and recording community comments and issues, and the actions taken in response to these complaints.

2.3 CONSTRUCTION EMP ADMINISTRATION

Copies of this Construction EMP shall be kept at the construction camp(s) and shall be distributed to the EO and all other senior contract personnel. All senior personnel shall be required to familiarise themselves with the contents of this document.

Any significant revisions to the Construction EMP document must be approved by DEA and DMR before the Construction EMP is revised. The ECO shall be responsible for the implementation of any revisions to the Construction EMP document. Records will be kept in the document indicating changes that have been made. The ECO will be responsible for the distribution of copies of the updated Construction EMP document to all relevant personnel.

The Engineer may order the Contractor to suspend part of the works if the Contractor fails to comply with the specifications set out in the Construction EMP and Method Statements supplied by the Contractor and any Sub-contractors. Such suspension will be enforced until compliance is achieved.

2.4 INFORMATION BOARD(S)

The Contractor shall be responsible for erecting a general information board on site. The general information board (in English & Afrikaans) shall provide the name and contact number of the ECO, to ensure that the public has access to the ECO to request information and/or to lodge any complaints. This board should be erected at the Construction Camp.

2.5 METHOD STATEMENTS

The Contractor shall submit written Method Statements to the RE and ECO for all environmentally sensitive aspects of the work. As a minimum the following method statements are required:

- MS1:** Location of construction camp(s) (Section 3.1.1)
- MS2:** Lay-out and establishment of borrowpits (Section 3.2.2)
- MS3:** Location and demarcation of No-go areas (Section 3.2.3)
- MS4:** Invasive vegetation eradication plan (Section 3.3.1)
- MS5:** Debris, silt and other obstructions (Section 3.3.2)
- MS6:** Storage of construction materials and hazardous substances (Section 3.4.2)
- MS7:** Solid waste (Section 3.7.2)
- MS8:** Wastewater (Section 3.7.3)
- MS9:** Erosion and sedimentation control (Section 3.8)
- MS10:** Access to floodplain and watercourse (Section 3.9)
- MS11:** Water diversion/drainage (Section 3.10)
- MS12:** Protection of natural features (Section 3.11.1)
- MS13:** Fire control (Section 3.12)
- MS14:** Cement and concrete batching/on-site mixing (Section 3.17)
- MS15:** Plastering/packing (Section 3.18)
- MS16:** Location and operation of spoil sites (Section 3.19.3)
- MS17:** Road surfacing (Section 3.20)
- MS18:** Asphalt plant and site (Section 3.21)
- MS19:** Vegetation rehabilitation plan (Section 3.23.7)

The RE and/or the ECO shall specify any additional Method Statements that may be required.

A Method Statement Control Sheet, signed by the Contractor, must accompany each Method Statement (a pro forma Control Sheet is provided in Appendix B). Method Statements shall cover applicable details with regard to:

- Construction procedures;
- Materials and equipment to be used;
- Getting equipment to and from site;
- How the equipment/material will be moved while on site;
- How and where material will be stored;
- The containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
- Timing and location of activities;
- Compliance/non-compliance with the Specifications; and
- Any other information deemed necessary by the Engineer/RE/ECO.

Method Statements shall be submitted to the RE and ECO **at least five (5) days prior** to the commencement of operations. It should be noted that Method Statements must contain sufficient information and detail to enable the RE and ECO to apply their minds to the potential impacts of the works on the environment. The Contractor will also need to thoroughly understand what is required of him/her in order to undertake the works.

Work shall not commence until the Engineer has accepted Method Statements. Failure to submit Method Statements may cause the Engineer to order the Contractor to suspend part or all of the works concerned until a Method Statement has been submitted and accepted. Failure to submit Method Statements at least five days prior to commencing the relevant activity may result in a fine (see Section 2.10). Any damage caused to the surrounding environment by work done without prior acceptance shall be rehabilitated at the Contractor's cost.

2.6 ENVIRONMENTAL AWARENESS TRAINING

Before the commencement of any work on site, the Contractor's site management staff shall attend an environmental awareness-training course, presented by the ECO and RE. The Contractor shall liaise with the ECO prior to the commencement date to fix a date and venue for the course. The Contractor shall provide a suitable venue with facilities, and ensure that the specified employees attend the course.

The information presented at the course shall be communicated by the Contractor to the rest of his employees on the site, to any new employees coming onto site after the initial training course and to his/her suppliers. The presentation shall be conducted, as far as is possible, in the employees' language of choice. As a minimum, training shall include:

- Explanation of the importance of complying with the Construction EMP;
- Discussion of the potential environmental impacts of construction activities;
- Explanation of the management structure of individuals responsible for matters pertaining to the Construction EMP.
- 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 the Construction EMP and its specification; and
- Explanation of the Environmental Do's and Don'ts (see Appendix B).

The Contractor shall keep records of all environmental training sessions, including names of attendees, dates of their attendance and the information presented to them. Records of environmental training sessions shall be submitted to the ECO.

2.7 MEETINGS

The ECO shall meet (or otherwise) with the RE and EO on a monthly basis, or more frequently as may be required during the initial stages of the project. The ECO shall prepare a feedback report (refer to Section 2.2.7 bullet point 6) to be tabled at monthly site meetings and is not required to physically attend scheduled construction site meeting (Contractor/Engineer/RE/EO) throughout the contract period.

2.8 INSPECTION PROCEDURES

The day-to-day monitoring and verification that the Construction EMP is being adhered to shall be undertaken by the RE and the EO.

The ECO shall visit and inspect the site on a monthly basis to ensure that correct operational procedures are being implemented and that the Contractor is complying with the environmental specifications in the Construction EMP. Additional site inspections by the ECO may be needed during the initial stages of the project. The ECO shall address any queries to the RE. If the queries cannot be resolved at this level, they will be referred to the Engineer, and, if necessary, to SANRAL.

2.9 RECORD OF ACTIVITIES

The RE, ECO and EO shall keep a record of activities on site, including but not limited to meetings attended, Method Statements received and accepted, issues arising on site, cases of non-compliance with the Construction EMP, penalties issued and corrective action taken to solve problems that arise. In addition, the Contractor shall keep a record of complaints from interested and affected parties.

The RE shall undertake photographic monitoring of the contract. This shall include a photographic record of all areas that will be impacted by the construction activities prior to construction activities commencing. The ECO shall monitor all sensitive work environments, which may also include photographic monitoring.

2.10 FINES

A system of fines shall be implemented to ensure compliance with the Construction EMP (see Appendix C). Where the Contractor inflicts non-repairable damage upon the environment or fails to comply with any of the environmental specifications of the Construction EMP the Contractor may be liable to pay a fine. The Contractor is deemed not to have complied with the Construction EMP if:

- There is evidence of contravention of the Construction EMP specifications, including any non-compliance with an approved Method Statement;
- Construction activities take place outside the defined boundaries of the site;
- Environmental damage ensues due to negligence;
- The Contractor fails to comply with corrective or other instructions issued by the RE within a specific time period; and/or
- The Contractor fails to respond adequately to complaints from the public.

If excessive infringement with regard to any of the above is registered, then SANRAL reserves the right to terminate the Contractor's contract.

The system of fines shall be implemented in the following way:

- Fines shall be issued per incident at the discretion of the Engineer.
- Fines shall be issued in addition to any remedial costs incurred as a result of non-compliance with the environmental specifications.
- The Engineer shall inform the Contractor of any contravention, the contravening individual's identity and the amount of the fine, and will deduct the total amount from the amounts due to the Contractor.
- Where there are ranges for fees shown in Appendix C, the amount shall depend on the severity and extent of the damage done to the environment.

Failure by any employee of the Contractor or their Sub-contractors to show adequate consideration to the environmental aspects of the contract shall be considered sufficient cause for the ECO to recommend to the RE to have that employee removed from the site. The ECO may, through the Engineer, also order the removal of equipment that is causing continual environmental damage.

2.11 INTERNAL REVIEW AND AUDITING

The Contractor and EO shall establish an internal review procedure to monitor the progress and implementation of the Construction EMP.

Where necessary, and upon the recommendation of the RE and/or the ECO, procedures that require modification will be changed to improve the efficiency of the Construction EMP. All significant modifications to the Construction EMP shall be approved by DEA and/or DMR before these changes or adjustments to the Construction EMP are implemented. Any changes or adjustments to the Construction EMP shall be registered in the daily records of the RE. Adjustment and update of the original Construction EMP document is not required when these *ad hoc* changes are made.

At the conclusion of the project an environmental audit report shall be compiled and submitted to DEA and DMR. This report will be compiled by the ECO, in collaboration with the RE, EO and the Contractor. It will outline the implementation of the Construction EMP, and highlight any problems and issues that arose during the construction period to report, on a formal basis, the lessons learned on this project.

3. ENVIRONMENTAL SPECIFICATIONS

3.1 CONSTRUCTION CAMP(S)

3.1.1 Location of construction camp(s)

The "Construction Camp" refers to all storage stockpile sites, site offices, container sites and rest areas for workmen.

The construction camp(s) shall be located at an easily accessible point and within an area of low environmental sensitivity. No camp establishment shall be allowed within 32 m or below the 1:10 year flood line (where defined) of any watercourses, floodplains or drainage channels. The Contractor, RE and ECO shall agree on mutually acceptable locations for the establishment of the camp(s). The RE and ECO shall approve the final location of all camps prior to their establishment.

The construction camp shall be demarcated by a fence, the position of which will be agreed by the RE, ECO and the Contractor. Suitable signs must be erected to clearly demarcate these areas. The area outside the construction camp(s) fence is considered to be a No-go area. Undertaking activities in these areas without the RE's or ECO's permission may result in a fine (refer to List of Fines, Appendix C).

MS1: The Contractor shall submit a Method Statement indicating the location, preparation and layout of the construction and all pilot camps.

3.1.2 Toilet Facilities

The Contractor shall provide suitable sanitary arrangements (e.g. chemical toilets) at each construction site as per building guidelines (SABS 0400). There should be one toilet for every 15 workers on site. Toilet(s) must be easily accessible and shall be secured in order to prevent them from blowing over.

Toilet(s) shall not be sited within watercourses, floodplains or drainage channels, and shall be sited in consultation with the RE and ECO. The Contractor shall consider placing toilet(s) on a trailer so that they can be removed from each site and taken to the construction camp on a daily basis. Alternatively toilets shall be secured in order to prevent them from blowing over.

Toilets shall be chemical and shall be emptied on a regular basis. The Contractor shall ensure that there is no spillage when the chemical toilets are cleaned or during normal operation and that the contents are properly removed from site.

The Contractor shall be responsible for enforcing the use of the facilities. Performing ablutions outside of established toilet facilities is strictly prohibited.

3.1.3 Eating Areas

The Contractor shall establish eating areas, as agreed with the RE. These areas shall provide adequate temporary shade to ensure that employees do not move off site to eat.

The Contractor shall provide adequate refuse bins at all eating areas to the satisfaction of the RE and shall ensure that all eating areas are cleaned up on a daily basis. Collected waste shall be stored in a central waste area within the construction camp that has been approved by the RE and ECO.

Any cooking of food on site shall be done using gas cookers. Rivers shall not be used for washing of pots and plates.

3.1.4 Provision of water

The Contractor shall be responsible for ensuring that there is access to clean drinking water for all employees on site. The use of water in rivers as a drinking water supply is strictly forbidden.

If water is stored on site, drinking water and multi-purpose water storage facilities shall be clearly distinguished and demarcated.

3.1.5 General Aesthetics

All construction areas shall be kept neat and tidy at all times. Different materials and equipment must be kept in designated areas and storing/stockpiling shall be kept orderly.

3.1.6 Lights

The Contractor shall ensure that any lighting installed on the site for his/her activities does not interfere with road traffic or cause a reasonably avoidable disturbance to the surrounding community.

3.2 SITE DEMARCATION AND NO-GO AREAS

3.2.1 Lay-out and establishment of construction sites

The 'site' refers to the total area where the contract awarded to the Contractor will take place and any other area reasonably required by the Contractor to undertake the construction activities in order to fulfil the contract.

In order to limit the impact of construction activities, the Contractor shall limit activities to work spaces as agreed with the RE and ECO.

Since it would not be feasible to fence off the entire construction operation at each bridge location, the Contractor would not need to demarcate each site with a fence. However, since the project occurs in environmentally sensitive areas, the Contractor shall not cause any physical damage to any aspects of a watercourse and floodplain or road reserve vegetation, other than that necessary to complete the works.

The Contractor shall be responsible for any clean-up and/or rehabilitation of all areas impacted by construction and borrowpit activities (see Section 3.23).

3.2.2 Lay-out and establishment of borrowpits

The layout and extent of the borrowpits shall be planned, designed and managed in such a manner that environmental impacts are minimised. Temporary structures and facilities shall be decommissioned to the satisfaction of the Engineer and the ECO and clean-up after construction shall be effectively undertaken.

Care shall be taken to limit the extent of the area disturbed during material removal activities. In this regard, the borrow area site and associated activities and infrastructure shall be carefully planned, to ensure that the footprint is kept to a minimum.

Where possible, existing infrastructure or previously disturbed areas shall be utilised for the construction of facilities. Care shall be taken to ensure that the placement of infrastructure does not adversely affect the environment or result in soil erosion.

The borrowpits shall be shaped so that they have slopes no steeper than 1:3 (vertical:horizontal). The slope changes shall be finished off so that flowing curves that blend with the surrounding landscape are formed in preference to sharp angles, to the satisfaction of DMR (see Section 3.23.5).

The borrowpit sites, access points and newly constructed access roads shall be properly demarcated and fenced off. No personnel shall be allowed outside the fenced off area. Vehicle movement shall be limited to defined tracks and areas that will be excavated.

Land disturbed by material removal activities shall be rehabilitated as described in Section 3.23.

MS2: The Contractor shall submit a Method Statement indicating the lay-out and preparation of each borrowpit.

3.2.3 No-go areas

Areas where construction activities (including traffic accommodation) are prohibited are referred to as No-go areas and shall be demarcated to ensure that environmentally sensitive areas are not impacted by the construction activities. In the case of borrow areas, No-go areas include all areas outside of the fenced-off borrowpit site.

Appropriate No-go areas or special features identified by the RE and/or the ECO shall be marked on a site layout plan prior to any works commencing on site. Such No-go areas shall be demarcated by means of droppers and highly visible safety fence (orange plastic) of at least 1.6 m height. The removal, damage or disturbance of flora, fauna, avifauna, outcrops or any other natural features shall be forbidden in all demarcated No-go areas or specified environmentally sensitive areas, unless prior permission has been given by the RE and the ECO. The RE may declare No-go areas at any time during the construction phase as deemed necessary and/or at the request of the ECO.

A botanical specialist should be appointed to identify the areas to be demarcated as No-go areas in relation to the specific vegetation types listed below.

Specified environmentally sensitive No-go areas shall include (but not be limited to) the following:

- (1) Remaining areas/patches of Bokkeveld Sandstone Fynbos in the road reserve on both sides of Section 7 of the R27 between the Vanrhyn's Pass and the R357/R27 intersection (near Nieuwoudtville), approximately between km 40 and 50.2.
- (2) Remaining areas/patches of natural Hantam Karoo vegetation in the road reserve on both sides of Section 8 of the R27 identified as in fair to good condition, approximately between km 6.0 and 67.

The RE shall arrange for the implementation of an appropriate educational programme with the Contractor and workforce to impress upon them the importance of conserving remaining natural vegetation along the R27.

Specific No-go areas shall be demarcated by means of highly visible safety fence (orange plastic) of at least 1.6 m height, securely attached to droppers, the position of which will be agreed by the RE and ECO, and appropriate signage. The Contractor shall maintain demarcation fencing in good repair for the full duration of the construction phase activities in that particular area. Entry into these areas without the ECO's permission may result in a penalty (refer to List of Fines, Appendix C).

The Contractor shall be responsible for any clean-up and/or rehabilitation of all areas impacted by construction activities.

MS3: The Contractor shall submit a Method Statement indicating the location of demarcated No-go areas prior to the commencement of each phase of works.

3.3 SITE CLEARING AND EXCAVATION

3.3.1 Vegetation clearing

Before clearing of vegetation, the Contractor shall ensure that all litter and organic material is removed from the area to be cleared. No vegetation clearing shall take place without the prior approval of the RE.

All invasive (indigenous or exotic) plants and weedy species should be removed from the road reserve and the bridge and borrowpit sites prior to construction to inhibit further spread of these species in these areas as a result of the construction and borrowpit activities. Weedy species to be removed and controlled include *Galenia africana* (kraalbos), *Atriplex semibaccata*, *Atriplex lindleyi* subsp. *Inflate* (blasiebrak), *Prosopis glandulosa* (mesquite) and especially *Salsola kali* (Russian tumbleweed; rolbos). Any individual trees within the site area/road reserve obstructing the flow of the river or stream shall be removed from within the watercourse or floodplain. Trees to be removed shall be marked with hazard tape or paint by the RE to ensure that only those trees requiring removal are cut down.

Any existing patches of invasive vegetation shall be removed by manual cutting of plants to ground level or to below the water level. The Contractor shall not use heavy machinery to remove such patches of vegetation.

The Contractor shall compile an invasive vegetation eradication plan to the RE for approval. The plan shall indicate the locations, methods and frequency of invasive vegetation control throughout the duration of the contract, including the defects notification period. It is recommended that the Contractor appoint a Landscaping Contractor/Horticulturalist who will undertake the final rehabilitation of construction and borrowpit areas (see Sections 3.23.3 and 3.23.7).

Vegetation clearing shall take place in a phased manner in order to retain vegetation cover as long as possible. This approach is necessary in order to reduce the size of areas where dust can be generated by wind and sediment runoff may take place.

All cut vegetation shall be disposed of off-site at an approved disposal site. Stockpiling of cut vegetation shall only be permitted in areas indicated by the RE and/or the ECO. No cut vegetation shall be burnt on site.

MS4: The Contractor shall submit an invasive vegetation eradication plan, detailing the locations, methods and frequency of invasive vegetation control throughout the duration of the contract

3.3.2 Debris, silt and other obstructions

Any debris, silt or other obstructions shall be removed from the river in the bridge site area/road reserve before the onset of construction activities. Such material shall where possible be removed by hand. Vegetation matter (e.g. logs and branches) too large to be removed by hand shall be cut up into manageable size pieces.

Silt and other obstructions removed from underneath bridges shall be disposed of outside the watercourse and floodplain area in an area agreed to with the RE and ECO. If silt is to be stockpiled, the Contractor shall ensure that minimal amounts of silt are lost due to erosion, either by wind or water. This can be facilitated through covering and/or grassing of stockpiles.

MS5: Where the Contractor believes that it is necessary to enter a watercourse or floodplain with a vehicle/machinery in order to remove debris, silt or other obstructions, a Method Statement shall be submitted prior to the anticipated activity for consideration by the RE and the ECO.

3.3.3 Topsoil

For borrowpits topsoil shall be removed up to a depth of 300 mm depending on the actual topsoil present and stockpiled (not exceeding 2 m in height) separately from overburden and other material for use during rehabilitation of the site. The locations of topsoil stockpiles should be clearly indicated on the final site layout plans for borrowpits.

Topsoil stockpiles shall, where necessary, be protected from wind and water erosion by seeding or placement of hay bales or shade cloth screens or covered with hessian or geofabric. Berms or cut-off trenches shall be considered for the prevention of erosion, if necessary. Stockpiles shall not be covered with plastic sheets that may cause it to compost or kill the seed bank. Stockpiles shall not be left for more than eight months before being used for rehabilitation, as soil chemistry and natural processes decline after time, resulting in poor rehabilitation success.

Any topsoil contaminated by hazardous substances shall not be used but shall be disposed of at a landfill site approved by the Department of Water Affairs (DWA).

Material that cannot be used in the proposed road rehabilitation project shall be removed and retained in uncompacted stockpiles. This material shall be used for the reshaping of the area before topsoil is spread during rehabilitation.

3.3.4 Archaeological material

If any archaeological material, paleontological artefacts or human remains are discovered during earth moving activities, all construction activities must be stopped immediately and the site clearly demarcated. The Contractor must inform the RE and ECO as soon as possible in order to establish relevant procedures for notifying Ngwao Boswa Kapa Bokone (Heritage Northern Cape). Should any unmarked human remains be disturbed, exposed or uncovered during construction or borrowpit operations, these should be reported to the South African Heritage Resources Agency (SAHRA) and Heritage Northern Cape.

The Contractor will be required to abide by the specifications as set out by SAHRA and Heritage Northern Cape or the heritage specialist appointed to investigate the find.

The Contractor may not, without a permit issued by the relevant heritage resources authority, move, destroy, damage, excavate, alter, deface or otherwise disturb archaeological material.

3.4 MATERIALS HANDLING AND STORAGE

The potential environmental impact of handling, use, storage and disposal of materials used during construction shall be minimised.

3.4.1 Transportation and handling of material

The Contractor shall ensure that all suppliers and their delivery drivers are aware of procedures and restrictions (e.g. No-go areas) in terms of this Construction EMP.

The Contractor (and suppliers) shall ensure that all materials are appropriately secured to ensure safe passage between destinations. Loads including, but not limited to sand, stone chip, fine vegetation, refuse, paper and cement, shall have appropriate cover to prevent them spilling from the vehicle during transit. The Contractor shall be responsible for any clean-up resulting from the failure by his employees or suppliers to properly secure transported materials. The Contractor shall ensure that these delivery drivers are supervised during offloading.

The movement of construction vehicles should be limited to daylight hours as far as possible. The dangers associated with the movement of large haulage vehicles shall be clearly sign-posted in both directions leading up to the proposed borrow area.

Vehicles leaving borrowpits shall not deposit/shed mud or sand as they drive to the area under construction. Loads shall be covered with a tarpaulin or similar to prevent nuisances to other road users on days when winds are strong.

3.4.2 Storage of construction materials and hazardous substances

The storage of any materials (e.g. cement, oil, fuel, herbicides, etc.) shall not take place within 32 m of any watercourses, floodplains or drainage channels.

All fuel, oil and other hazardous substances (i.e., fuel, poisons, etc.) shall be confined to demarcated, adequately bunded areas within the construction camp and stored in suitable containers.

Hazard signs indicating the nature of the stored materials shall be displayed on the storage facility or containment structure. Fuel shall be stored in steel tank(s) supplied and maintained by the fuel suppliers. Tank(s) shall be adequately bunded (110% of volume). The floor and wall of the bund area shall be impervious to prevent infiltration of any spilled/leaked fuel, oil or hazardous substance into the soil. Suitable fire fighting equipment shall be supplied and installed by the Contractor in the hazardous substances storage area.

The relevant Material Safety Data Sheets for all hazardous chemical substances (as defined in the Regulations for Hazardous Chemical Substances) shall be submitted to the RE. The Contractor shall have a copy of the Material Safety Data Sheets readily available and ensure that he/she or his/her employees who are required to use such substances are fully conversant with the safe handling precautions, protective equipment to be used and storage precautions to be taken.

The Contractor shall ensure that run-off from any fuel/oil or hazardous substance storage area is contained and does not pollute the ground or enter the streams or watercourses in the project area.

MS6: The Contractor shall submit a Method Statement detailing the location of storage, methods intended for storage of oil, fuel, herbicides, pesticides and other hazardous/poisonous substances. This Method Statement should also detail precautions that shall be implemented to limit spills and leakage of these substances (see Section 3.5.1 and 3.6).

3.4.3 Storage of equipment

All plant, construction equipment, vehicles or other items shall be stored within the construction camp, unless prior arrangements have been made with the RE or ECO.

Drip trays shall be provided for stationary plant (such as compressors, pumps, generators, etc.) and for "parked" plant (e.g. mechanised equipment).

3.5 REFUELLING AND MAINTENANCE

3.5.1 Refuelling

Where reasonably practical, plant and vehicles shall only be refuelled in a demarcated refuelling/servicing area within the construction camp as agreed to with the RE and ECO. If this is not reasonably practical, then the surface under the temporary refuelling area shall be protected against pollution (e.g. the use of drip trays) to the reasonable satisfaction of the RE and/or the ECO prior to any refuelling activities. No refuelling shall be permitted within 20 m of the watercourses or local drainage channels.

The Contractor shall ensure that there is always a supply of absorbent material readily available to absorb/breakdown spills and where possible is designed to encapsulate minor hydrocarbon spillage. The quantity of such materials shall be able to handle the total volume of the hydrocarbon/hazardous substance stored on site. This material must be accepted by the RE prior to any refuelling or maintenance activities.

3.5.2 Maintenance

All vehicles and equipment shall be kept in good working order and serviced regularly. Leaking equipment shall be repaired immediately or removed from the site.

Where reasonably practical, maintenance activities shall only be undertaken in a demarcated maintenance area (as agreed to with the RE and ECO). No maintenance activities shall be allowed within 32 m of the watercourses or any local drainage channel, unless this is absolutely necessary.

When servicing equipment, drip trays shall be used to collect the waste oil and other lubricants. All hazardous waste from maintenance activities shall be disposed of as specified in Section 3.7.1.

The washing of equipment shall be restricted to urgent maintenance requirements only. All washing shall be undertaken in the maintenance area, and these areas must be equipped with suitable wastewater collection measures. The use of detergents for washing shall be restricted to low phosphate and nitrate containing, low sudsing-type detergents.

3.6 ACCIDENTAL LEAKS AND SPILLS

The Contractor shall prevent pollution of surface or groundwater, which could result from their activities. Such pollution could result from the release, accidental or otherwise, of oils, fuels, sewage, etc.

The Contractor shall ensure that his/her employees are aware of the procedure to be followed for dealing with spills and leaks. Any accidental leak and spill of fuel, oil or other hazardous substances is to be reported to the RE or ECO immediately so that the best remediation method can be quickly implemented.

Drip trays shall be used for all pumps, generators, etc. in order to prevent water contamination as a result of fuel spills or leaks. The Contractor shall ensure that the necessary materials and equipment for dealing with spills and leaks is available on site at all times.

In the event of a hydrocarbon spill, the source of the spillage shall be isolated and the spillage contained. The area shall be cordoned off and secured. The Contractor shall ensure that there is always a supply of absorbent material readily available to absorb/breakdown and where possible is designed to encapsulate minor hydrocarbon spillage. The quantity of such materials shall be able to handle the total volume of the hydrocarbon/hazardous substance stored on site. Prior to any refuelling or maintenance activities the RE must accept this material. Hydrocarbon contaminated material/soil shall be collected and stored in a bunded area until future disposal.

The relevant Material Safety Data Sheets (MSDSs) for all hazardous chemical substances (as defined in the Regulations for Hazardous Chemical Substances) shall be on site. Procedures detailed in the MSDSs shall be followed in the event of an emergency situation.

The Contractor shall be liable to arrange for professional service providers to clear the area affected by the spill, if required.

The Contractor shall submit a Method Statement detailing the precautions that shall be implemented to limit spills and leakage of these hydrocarbons and other hazardous substances (see Section 3.4.2 and 3.5.1).

3.7 WASTE MANAGEMENT

3.7.1 Hydrocarbon and hazardous Waste

All hydrocarbon (e.g. fuel, oils and contaminated soil/materials) and other hazardous waste resulting from spills, refuelling and maintenance activities shall be disposed of in a formally licensed hazardous waste site or, where possible, sold to an approved used-oil recycling company. The Contractor shall provide disposal certificates issued by the hazardous waste disposal facility to the RE. In addition, disposal certificates shall be kept at the site office for inspection by any relevant authority.

Used oil, lubricants, cleaning materials, etc. from the maintenance of vehicles and machinery may be collected in holding tanks prior to disposal.

No hydrocarbon and hazardous waste shall be burnt or buried on site. Under no circumstances shall the spoiling or burial of tar or bituminous products be allowed on site. Unused or rejected tar or bituminous products shall be returned to the supplier's production plant.

3.7.2 Solid waste

Solid waste includes all construction waste (cement bags, old cement, tags, wrapping materials, timber, cans, wire, nails, etc.) and surplus food, food packaging, organic waste, etc. The Contractor shall be responsible for the establishment of a solid waste control and removal system that is acceptable to the RE and ECO in order to prevent the spread of waste in, and beyond, the construction site. Wherever possible, an integrated waste management approach shall be used, based on the principles of waste minimisation, reduction, reuse and recycling of materials. Containers for glass, paper, metals and plastics shall be provided. The construction camp area(s) are particularly suited for this purpose.

The Contractor shall provide vermin and weatherproof bins (with lids) of sufficient number and capacity to store solid waste produced on a daily basis. The lids shall be kept firmly on the bins at all times. Bins are to be located outside floodplains and/or drainage lines, with waste to be removed from the waste bins weekly, or as required, and disposed of at the construction camp. The Contractor shall ensure that each site (i.e. at each bridge) is cleaned up on a daily basis. The general cleanliness of the site shall form part of the RE's and ECO's inspections.

All solid waste at the construction camp shall be temporarily stored in a demarcated area, which meets the satisfaction of the RE. All solid waste shall be disposed of off site at an approved landfill site. The stockpiling of construction rubble, cut vegetation or other material shall only be permitted in areas indicated by the ECO.

No waste material or litter shall be burnt or buried on site.

MS7: The Contractor shall submit a Method Statement detailing a solid waste control system (storage, provision of bins, site clean-up schedule, bin clean-out schedule, etc.).

3.7.3 Wastewater

The Contractor(s) shall prevent pollution of surface or groundwater from the release, accidental or otherwise of contaminated water (including contamination with chemicals, oils, fuels, cement, sewage, construction water, water carrying products, etc.) as a result of construction activities.

The Contractor shall be responsible for the construction and operation of necessary collection facilities in order to prevent such pollution and/or settlement of suspended matter, and shall dispose of the collected waste as approved by the RE. Water from any kitchen, showers, laboratories, sinks, etc. shall be discharged into a conservancy tank for removal from the site.

The Contractor shall ensure that water runoff from fuel depots, workshops, truck washing areas and concrete swills passes through a oil separation/settlement system before being released or alternatively is directed into a conservancy tank for disposal at a site approved by the ECO and local authority.

Temporary stormwater drainage and detention from the works shall be designed in collaboration with the RE and ECO.

No wastewater shall be disposed of directly into any surface water bodies.

MS8: The Contractor shall submit a Method Statement detailing how wastewater would be collected from all wastewater generating areas, as well as storage and disposal methods to the RE and ECO.

3.8 EROSION AND SEDIMENTATION CONTROL

The Contractor shall, as an ongoing exercise, provide sedimentation and erosion control when working within the river, river floodplain and along a riverbank, to the satisfaction of the RE and ECO. During construction the Contractor shall protect areas susceptible to erosion by installing necessary temporary and permanent drainage works as soon as possible and by taking other measures necessary to prevent the surface water from being concentrated in streams and from scouring the slopes, banks or other areas.

Lateral excavation of the riverbanks shall be isolated from the low flow channel by a wall of sandbags (woven, not plastic) where a risk of siltation is present. If necessary, sediment traps/screens shall be placed downstream of the construction activities to reduce sedimentation downstream. During construction the Contractor shall implement measures to prevent the migration of material (fines) from the works into the river. This may include the use of cut-off trenches, straw bales or geofabric siltation barriers constructed across the site at specific points.

The Contractor shall ensure that any water pumped from foundation excavation, flooded works, etc., passes through a sediment settling facility which is specifically designed by specialists to ensure that acceptable water quality limits are achieved below the bridges.

Any runnels or erosion channels developed during the construction period shall be backfilled and compacted, and the areas restored to a proper condition. Stabilisation of cleared areas to prevent and control erosion and/or sedimentation shall be actively managed. The method of stabilisation shall be determined in consultation with the RE and ECO. Consideration and provision shall be made for the following methods (or combination thereof):

- Brushcut packing (although no alien plant material may be used for this purpose);
- Mulch or chip cover (although no alien plant material may be used for this purpose);
- Straw stabilising (at a rate of one bale/m² rotated into the top 100 mm of the completed earthworks – only straw bales held with string (not wire) may be used);
- Watering;
- Planting/sodding;
- Hand seeding/sowing;
- Application of soil binders and anti-erosion compounds; and/or
- Mechanical cover/packing structures (including the use of Geofabric, hessian cover, log/pole fencing).

The EO shall demarcate stabilised areas with painted stakes or hazard tape. Traffic and movement over stabilised areas shall be restricted and controlled by the EO, and damage to stabilised areas shall be repaired and maintained by the Contractor to the satisfaction of the RE and ECO.

During borrowpit activities the Contractor shall implement measures to prevent the migration of material (fines) from the works into drainage lines and stormwater and sewage systems. This may include the use of a cut-off trench, straw bales or geofabric siltation barriers constructed across the site at specific points.

In areas where borrowpit activities have been completed and where no further disturbance would take place, rehabilitation and revegetation should commence as soon as possible.

MS9: Method Statements shall be developed and submitted to the RE and ECO to deal with erosion and sedimentation issues.

3.9 ACCESS TO FLOODPLAIN AND WATERCOURSE

As far as is reasonably possible, work in the river shall take place outside of the expected rainy season when flow is at its lowest (summer months) and allow sufficient time for rehabilitation processes to be effected before the rains commence. The normal flow in the river may only be impeded as broadly noted below.

The Contractor shall only use access routes to floodplains and watercourses accepted by the RE and ECO. The Contractor, RE and ECO shall agree on how and where to access a floodplain and river area. In determining the location of the access into a floodplain and river area, cognisance must be taken of sensitive areas (e.g. surface water, natural vegetation, steep banks, etc.). The Contractor shall ensure that minimal damage is caused to river and floodplain banks. As far as possible, the Contractor shall use existing access paths, tracks and roads to access a floodplain and river area.

Where the Contractor believes that it is necessary to enter a river area with a vehicle, a Method Statement must be submitted prior to the anticipated activity for consideration by the RE and ECO. The Method Statement shall include a motivation for the need of mechanised work in the river and measures that will be adopted to reduce the impact of such activity. If machinery is to be used in the river, it should not cross over the low flow area any more than absolutely necessary. Any work requiring the fording of the river by machinery and vehicles shall be undertaken at slow speed and with clean vehicles (no leaks, etc.) and along a single track.

The Contractor shall not divert, dam or modify any watercourse or stream without the approval of the RE and ECO. All temporary and permanent fill used adjacent to or within the riverbed shall be comprised of clean sand or larger particles. Silts, clays, granitic sands and boulders, shall not be permitted in the fill.

River banks shall be suitably stabilised incrementally immediately after construction. Stabilised facilities shall be continuously maintained.

The Contractor shall not modify the bed of the rivers or cause any physical damage to any aspects of a watercourse other than that necessary to complete the works as specified and in accordance with the accepted Method Statement(s).

Construction may not permanently alter the surface or subsurface flow of water through any aquatic ecosystem.

MS10: A Method Statement shall be prepared and submitted to the RE and ECO detailing how work in the river areas shall be undertaken (including timing and phasing of activities, diversion, etc.). The Method Statement shall include a motivation for the need of mechanised work in the river and measures that will be adopted to reduce the impact of such activity.

3.10 WATER DIVERSION/DRAINAGE

The Contractor shall ensure uninterrupted flow of surface water past the construction works to the satisfaction of the RE and ECO. This shall be done by draining/diverting water away from the damaged area (e.g. using shuttering, sand bags, etc.) to minimise contamination of the water.

Contaminated water (silt-laden, cement-contaminated, etc.) pumped from the works area shall be pumped into a settlement pond to reduce the level of suspended sediments before re-entry to the river.

In the case of borrowpits, the Contractor shall shape the borrowpit floors in accordance with the borrowpit layout plans to ensure that water does not accumulate within the borrowpits.

MS11: The Contractor shall submit a Method Statement at least **10 days prior** to commencing with construction within the water of a watercourse as to how the water shall be drained/diverted around the area of concern.

3.11 PROTECTION OF NATURAL FEATURES, FLORA AND FAUNA

3.11.1 Protection of natural features

The Contractor shall not deface, paint, damage or mark any natural features situated in or around the site for survey or other purposes unless agreed beforehand with the RE. Any features affected by the Contractor in contravention of this clause shall be restored/rehabilitated to the satisfaction of the RE and ECO.

No river boulders/rock shall be removed from the river without the Contractor first submitting a Method Statement. Only stones from dry cobble beds may be removed.

MS12: A Method Statement shall be prepared and submitted to the RE and ECO detailing the removal of boulders/rock from the river. The Method Statement shall detail the source of boulders/rock and removal methodology.

The Contractor shall not permit his employees to make use of any natural water sources (e.g. springs, streams, open water bodies) for the purposes of swimming, personal washing and the washing of machinery or clothes.

3.11.2 Protection of flora and fauna

The removal, damage or disturbance of flora, fauna or avifauna is forbidden outside the immediate construction area without the written approval of the RE. The clearing of vegetation within and along riverbanks shall be undertaken as specified in Section 3.3.1.

The Contractor shall ensure that no hunting, trapping, shooting, poisoning or otherwise disturbance of any fauna takes place. The feeding of any wild animals is prohibited. No domestic pets or livestock are permitted on site.

The use of herbicides and pesticides is prohibited unless approved by the RE.

Land disturbed during borrowpit development shall be rehabilitated as described in Section 3.23.

3.12 FIRE CONTROL

No open fires shall be allowed on site for the purpose of cooking or warmth. *Bona fide* braai fires (such braai fires shall be limited to the traditional "week or month end" braais and not individual daily cooking fires) may be lit within the construction camp.

The Contractor shall take all reasonable steps to prevent the accidental occurrence or spread of fire. The Contractor shall appoint a fire officer who shall be responsible for ensuring immediate and appropriate

action in the event of a fire. The Contractor shall ensure that all site personnel are aware of the procedure to be followed in the event of a fire.

The Contractor shall ensure that there is basic fire-fighting equipment on site at all times. This equipment shall include fire extinguishers and beaters. The Contractor shall pay the costs incurred by organisations called to put out fires started by himself/herself, his/her staff or any sub-contractor. The Contractor shall also pay the costs incurred to reinstate burnt areas as deemed necessary by the RE.

Any work that requires the use of fire may only take place at that designated area and as approved by the RE. Fire-fighting equipment shall be available in these areas.

The Contractor shall ensure that the telephone numbers of the local Fire and Emergency Service are displayed at the site offices.

The Contractor shall ensure compliance with the requirements of the Veld and Forest Fires Act (Act 101 of 1998) in terms of establishing a Fire Protection Association with immediate and adjacent landowners.

In order to reduce the risk of fires, smoking is not allowed on site, other than at designated smoking points where the fire risk is considered to be acceptably low.

MS13: Prior to the commencement of construction activities, the Contractor is to ascertain the fire requirements of the local authority and must submit a fire contingency plan Method Statement to the RE.

3.13 DUST CONTROL

The Contractor shall ensure that the generation of dust is minimised and shall implement a dust control programme to maintain a safe working environment, minimise nuisance for surrounding agricultural activities, residential areas/dwellings, etc. The Contractor shall take all reasonable measures to minimize the generation of dust as a result of construction activities. Appropriate dust suppression measures, to the satisfaction of the RE, shall be used when dust generation is unavoidable, particularly during prolonged periods of dry weather. Such measures shall also include the use of temporary stabilising measures (e.g. chemical soil binders, straw, brush packs, chipping etc.).

The Contractor shall ensure that exposed areas and material stockpiles are adequately protected against erosion (whether by wind or water). A water tanker shall be continuously available for the control of dust while other options such as covering of material stockpiles should be considered. The location of stockpiles shall take into consideration the prevailing wind directions and locations of sensitive receptors.

Material loads shall be suitably covered and secured during transportation. Construction vehicles shall comply with speed limits and haul distances shall be minimised.

Vegetation clearing shall take place in a phased manner in order to retain vegetation cover for as long as possible in order to reduce the size of areas where dust can be generated by wind.

3.14 NOISE AND HOURS OF OPERATION

The Contractor shall be familiar with and adhere to, any local by-laws and regulations regarding the generation of noise and hours of operation. In addition, the provisions of SABS 1200A Subclause 4.1

regarding "built-up areas" shall apply to all areas within audible distance of residents whether in urban, peri-urban or rural areas.

The Contractor may not work outside of "normal working hours" without prior approval of the Engineer. The Contractor shall negotiate for any permits requiring deviation from local by-laws and/or regulations with the local authority. However, the Contractor shall advise the RE and ECO in writing of such intention prior to negotiating for these permits. The Contractor shall be held responsible for any complaints received from the authority and/or public with respect to any contravention of the agreed conditions.

3.15 ACCESS ONTO PRIVATE PROPERTY

The Contractor shall contact and notify the landowner(s) prior to undertaking any construction activities on his/her property as per the defined works.

3.16 SECURITY IN ADJACENT PRIVATE PROPERTIES

The Contractor shall ensure that his/her staff does not enter private properties adjacent to the construction site under any circumstances except on official business.

3.17 CEMENT AND CONCRETE BATCHING/ON-SITE MIXING

Concrete batching activities and mixing shall be located in areas of low environmental sensitivity to be identified and accepted by the RE and ECO. Concrete mixing shall take place outside the floodplain area. Concrete mixing directly on the ground shall not be allowed and shall take place on impermeable surfaces to the satisfaction of the RE.

There shall be no washing out of concrete trucks drums on site. All washing, if necessary, shall be undertaken within the construction camp, and these areas must be equipped with suitable wastewater collection measures. The use of detergents for washing shall be restricted to low phosphate and nitrate content, low sudsing-type detergents.

All cement-contaminated runoff from batching/mixing areas shall be strictly controlled. The Contractor shall be responsible for the implementation of the necessary collection facilities in order to prevent cement-contaminated water runoff and/or settlement of suspended matter. Once settled, the clean water may be decanted off for reuse. At the end of the contract, the pond shall be dried out and the solids disposed of via the solid waste management system (see Section 0).

Unused (full) cement bags shall be stored out of the rain and where runoff will not affect them. Used (empty) cement bags shall be collected and stored in weatherproof containers to prevent wind blown cement dust and water contamination. Used cement bags shall not be used for any other purpose and shall be disposed of on a regular basis via the solid waste management system (see Section 0).

All excess concrete and aggregate shall be removed from site on completion of concrete works and disposed of. Washing of excess concrete into the ground is prohibited.

MS 14: The Contractor shall submit a Method Statement detailing cement storage, concrete batching areas and methods, method of transport of cement and concrete, storage and disposal of used cement bags, etc. for each concrete batching/on-site mixing operation.

3.18 PLASTERING/PACKING

Where plastering and/or concrete packing under a bridge takes place sheeting shall be in place to ensure that excess concrete does not end up in a watercourse.

Excess concrete shall be disposed of via the solid waste management system (see Section 0).

MS15: The Contractor shall submit a Method Statement detailing plastering and/or packing of concrete when working over or in a watercourse.

3.19 EARTHWORKS AND LAYERWORKS

This section includes all construction activities that involve the removal or mining of all materials, and their subsequent placement, stockpile, spoil, treatment or batching, for use in the permanent works, or temporary works in the case of deviations. Before any stripping prior to the commencement of construction, the contractor shall have complied with the requirements of Sections 3.2 and 3.3. In addition, the contractor shall take cognisance of the requirements set out below.

3.19.1 Borrowpits

Before establishment of a borrowpit, an EMP for the establishment, operation and closure of the borrowpit shall have been approved by DMR. It is the responsibility of the Contractor to ensure that he is in possession of the approved EMP or a copy thereof, prior to commencement. The conditions imposed by the EMP are legally binding on the Contractor and may be more extensive and explicit than the requirements of this specification. In the event of any conflict occurring between the requirements of the Borrowpit EMP and these specifications, the former shall apply.

3.19.2 Excavation, hauling and placement

The Contractor shall provide the RE with detailed plans of the intended construction processes prior to starting any cut or fill or layer. The plans shall detail the number of personnel and plant to be used and the measures by which the impacts of pollution (noise, dust, litter, fuel, oil, sewage), erosion, vegetation destruction and deformation of landscape will be prevented, contained and rehabilitated. Particular attention shall also be given to the impact that such activities will have on the adjacent built environment. The Contractor shall demonstrate his "good housekeeping", particularly with respect to closure at the end of every day so that the site is left in a safe condition from rainfall overnight or over periods when there is no construction activity.

3.19.3 Spoil sites

The Contractor shall be responsible for the safe siting, operation, maintenance and closure of any spoil site used during the contract period, including the defects notification period. This shall include existing spoil sites that are being re-entered. Before spoil sites may be used proposals for their locality, intended method of operation, maintenance and rehabilitation shall be given to the RE for approval. The location of these spoil sites shall have signed approval from the affected landowner before submission to the RE. No spoil site shall be located within 500 m of any watercourse. A photographic record shall be kept of all spoil sites for monitoring purposes. This includes before the site is used and after revegetation.

The use of approved spoil sites for the disposal of hazardous or toxic wastes or solid waste generated from the various camp establishments shall be prohibited.

Spoil sites will be shaped to fit the natural topography. These sites shall receive a minimum of 75 mm topsoil and be grassed with the recommended seed mixture. Slopes shall not exceed a vertical: horizontal ratio of 1:3. Only under exceptional circumstances will approval be given to exceed this ratio. Appropriate grassing measures to minimise soil erosion shall be undertaken by the contractor. This will include both strip and full sodding. The Contractor may motivate to the RE for other acceptable stabilising methods. The Engineer may only approve a completed spoil site at the end of the defects notification period upon receipt from the contractor of a landowner's clearance notice and an Engineer's certificate certifying slope stability. The Contractor's costs incurred in obtaining the necessary certification for opening and closing of spoil sites shall be deemed to be included in the tendered rates for spoiling.

MS16: The Contractor shall submit a Method Statement detailing the location and operation of spoil sites **at least 10 days prior to** commencing with the above construction activity.

3.19.4 Stockpiles

The Contractor shall plan his activities so that materials excavated from borrowpits and cuttings, in so far as possible, can be transported direct to and placed at the point where it is to be used. However, should temporary stockpiling become necessary, the areas for the stockpiling of excavated and imported material shall be indicated and demarcated on the site plan submitted in writing to the RE for approval, together with the Contractor's proposed measures for prevention, containment and rehabilitation against environmental damage. No material of any description shall be stockpiled in any wetland area.

The areas chosen shall have no naturally occurring indigenous trees and shrubs present that may be damaged during operations. Care shall be taken to preserve all vegetation in the immediate area of these temporary stockpiles. During the life of the stockpiles the contractor shall at all times ensure that they are:

- (1) Positioned and sloped to create the least visual impact;
- (2) Constructed and maintained so as to avoid erosion of the material and contamination of surrounding environment; and
- (3) Kept free from all alien/undesirable vegetation.

After the stockpiled material has been removed, the site shall be re-instated to its original condition. No foreign material generated/deposited during construction shall remain on site. Areas affected by stockpiling shall be landscaped, top-soiled, grassed and maintained until clearance from the Engineer and the relevant authority is received.

Material milled from the existing road surface that is temporarily stockpiled in areas approved by the Engineer within the road reserve, shall be subject to the same condition as other stockpiled materials. Excess materials from windrows, *in situ* milling or any detritus of material from road construction activities may not be swept off the road and left unless specifically instructed to do so in the contract drawing or under instruction from the RE.

In all cases, the RE shall approve the areas for stockpiling and disposal of construction rubble before any operation commences and shall approve their closure only when they have been satisfactorily rehabilitated.

3.20 ROAD SURFACING

Over spray of bitumen products outside the road surface and onto roadside vegetation shall not be allowed.

When heating of bitumen products, the Contractor shall take cognisance of appropriate fire control measures (see Section 3.12).

Stone chip/gravel excess shall not be left on road/paved area verges. This shall be swept/raked into piles and removed to an area accepted by the RE.

Water quality from runoff from any fresh bitumen surfaces shall be monitored by the RE and remedial actions taken where necessary.

MS17: The Contractor shall submit a Method Statement for review **at least 10 days prior to** commencing with the above construction activity.

3.21 ASPHALT PLANT AND SITE

Asphalt plants are considered scheduled processes listed in the second schedule to the Atmospheric Pollution Prevention Act, 1965 (Act No. 45 of 1965). Should the use of an asphalt plant be considered on site, the Contractor shall be responsible to obtain the necessary permit from DEA, regardless of where they are sited. Crushing plants and concrete batching plants, whether sited inside or outside of defined quarry or borrow pit areas, shall be subject to the requirements of DMR legislation as well as the applicable industrial legislation that governs gas and dust emissions into the atmosphere.

The sites will be subject to regular inspections by the relative authorities during the life of the project. In addition, the selection, entry onto, operation, maintenance, closure and rehabilitation of such sites shall be the same as for stockpiles (see Section 19.3.4), with the exception that the Contractor shall provide additional measures to prevent, contain and rehabilitate against environmental damage from toxic/hazardous substances. In this regard the Contractor shall provide plans that take into account such additional measures as concrete floors, bunded storage facilities, linings to drainage channels and settlement dams.

MS18: The Contractor shall submit a Method Statement for review **at least 10 days prior to** commencing with the above construction activity.

3.22 TRAFFIC ACCOMMODATION

The EO may also act as a Traffic Safety Officer (TSO). The TSO shall be required to ensure that construction/borrowpit activities do not obstruct traffic and that adequate traffic accommodation measures are put in place. Warning signs and traffic control notifications shall be displayed well in advance on either side of the construction activities. In general, the TSO shall ensure that regular road users are not unreasonably delayed due to construction/ borrowpit activities.

The TSO shall make adequate provision to accommodate cyclists and pedestrian traffic where appropriate.

3.23 SITE DECOMMISSIONING AND REHABILITATION

The objectives during decommissioning of the construction sites and borrowpits are to restore disturbed areas as closely to their original state (whether natural or agricultural) as possible through rehabilitation.

3.23.1 Infrastructure areas

On completion of the project, the Contractor shall ensure that all structures, equipment, materials, waste, rubble, notice boards and temporary fences used during the construction operation are removed with minimum damage to the surrounding area. The Contractor shall clean and clear the site to the satisfaction of the RE.

All waste is to be disposed of at a licensed waste disposal site. In the case of accidental spills of oil or chemicals in the construction camp, the affected soil shall be dug out and removed from site for disposal at a hazardous waste site and replaced with fresh topsoil.

After closure, access roads established specifically for the project shall be rehabilitated by scarifying the surface and rehabilitating the areas to the recommended specification, provided the landowner does not require future use of the roads.

3.23.2 Borrowpit residue deposits

No residue deposits shall be left at borrowpit sites. Stockpiled overburden shall be used to re-shape the site to blend in with the surrounding environment and topsoil will be spread over the site.

3.23.3 Final rehabilitation

It is recommended that a Landscaping Contractor/Horticulturist be appointed to undertake the rehabilitation and revegetation of all borrowpits and temporary access roads as well as any construction areas where natural vegetation has been disturbed, as identified by the RE in consultation with the ECO.

3.23.4 Timing and implementation

The rehabilitation programme shall be implemented as soon as possible after completion of each phase of the construction and borrowpit operations. As much of the revegetation as possible shall take place at the start of the rainy season to maximise water availability and minimise the need for watering. If revegetation takes place during the dry season, irrigation of planted areas may be necessary.

3.23.5 Slope and contouring

The Contractor shall grade the slopes at the bridge construction sites and the borrowpits to blend in with the natural slope of the surrounding area. All slope changes shall be finished-off so that flowing curves that blend into the surrounding landscape are formed in preference to sharp angles. The surface of the borrowpit and access roads shall be ripped to a depth of at least 30 cm. All overburden material shall be levelled and reshaped so as to correspond with the surrounding landscape. Topsoil (which includes mulched vegetation material removed during vegetation clearing, but excluding invasive species),

removed and stockpiled during operation, shall be spread evenly over the disturbed areas to a depth of at least 10 cm.

The Contractor shall obtain written confirmation from DMR that they are satisfied with the final shaping of all borrowpits prior to completion of the works and/or de-establishment of earthmoving plant.

3.23.6 Erosion control measures

Precautions should be taken to prevent soil erosion during rehabilitation. Erosion control measures (e.g. application of straw mulches or soil binders to exposed soil) shall be put in place in all rehabilitated areas, including access roads, stockpiles and any other disturbed areas associated with the construction and borrowpit operations. If necessary, wind protection measures such as shade cloth screens shall be erected to protect the soil and vegetation.

3.23.7 Revegetation

It is recommended that the Contractor should appoint a suitably experienced Landscaping Contractor/Horticulturist who is familiar with the local vegetation. His/her appointment must be approved by the RE. The Landscaping Contractor/Horticulturist shall compile a vegetation rehabilitation plan that shall detail search and rescue, seed collection, seed mixing, seeding methods, planting and vegetation establishment in all borrowpit and relevant construction areas. The recommended method for rehabilitating disturbed areas is by collecting seed from plants in the same community in nearby undisturbed vegetation for sowing on disturbed areas. Hydroseeding using commercially available seed must be avoided.

The Contractor shall submit the vegetation rehabilitation plan to the RE for approval. The RE shall consult a botanical specialist for expert advice on the appropriateness of the rehabilitation plan. The same procedure shall apply in the cases of construction areas identified for specific revegetation identified by the RE in consultation with the ECO.

The vegetation rehabilitation plan shall include the following:

- Seed requirements, harvesting methods and locations, seed storage methods;
- Search and rescue;
- Handling of plant material rescued (translocation areas, propagation, etc.);
- Establishment and maintenance of a project-specific nursery, if required;
- Topsoil, mulch, fertiliser, soil stabiliser and irrigation requirements and application;
- Landscaping and revegetation methods for each area, i.e. hydromulching, planting, including locations and timing;
- Procurement requirements and a list of species of plants to be procured, if any;
- Vegetation establishment and maintenance requirements (irrigation, etc.) for all revegetated areas; and
- The use of any herbicides, pesticides and other poisonous substances, if required.

MS19: The Contractor shall submit a vegetation rehabilitation plan, detailing search and rescue, seed collection, seed mixing, seeding methods, planting and vegetation establishment in all borrowpit and relevant construction areas.

3.23.8 Maintenance and monitoring

The disturbed areas at the bridge sites shall be monitored to prevent infestation of invasive alien plant growth after the construction phase is complete.

Borrowpit sites require ongoing maintenance and monitoring until formal closure is obtained in compliance with the MPRDA.

The borrowpit sites shall remain fenced off until the rehabilitation process is complete. The areas shall not be grazed until such time as the area is stabilised.

The invasion of alien vegetation shall be monitored and controlled by undertaking an alien eradication programme up until the end of the Contractor's defects notification period. This shall apply to the borrowpit sites and areas at the bridge sites that have been rehabilitated after completion of construction. The frequency of the eradication programme shall be a minimum of annually or more frequently as determined in consultation with the Engineer and ECO.

After the Contractor's defects notification period, SANRAL shall be responsible for the alien eradication programme until borrowpit closure is obtained. The frequency of the eradication programme shall be at least annually. It is recommended that the responsibility for the alien eradication programme is included in the ongoing road maintenance contract for the road section.

Ongoing and regular (annual) monitoring of the rehabilitation programme shall be undertaken and a performance assessment report shall be prepared in terms of Regulation 55 of the MPRDA. Monitoring shall take place until closure has been obtained.

APPENDIX A

METHOD STATEMENT CONTROL SHEET

**PROPOSED STRENGTHENING (PARTIAL RECONSTRUCTION) OF NATIONAL
ROUTE R27 SECTION 7 & 8 BETWEEN THE WESTERN/NORTHERN CAPE
BORDER (KM 40.0) AND CALVINIA (KM 70.0)**

Contract No. _____

METHOD STATEMENT CONTROL SHEET

[THIS CONTROL SHEET IS TO BE ATTACHED TO ALL METHOD STATEMENTS]

MS Number:

THIS SECTION TO BE COMPLETED BY CONTRACTOR/METHOD STATEMENT AUTHOR ONLY

TITLE:
DESCRIPTION:
SUBMITTED BY:

DATE REQUESTED BY RE: DATE SUBMITTED:

DATE RESPONSE REQUIRED BY: DATE WORK START:

REVIEW SCHEDULE		
DATE	AUTHORITY	COMMENTS

DISTRIBUTION AND AUTHORISATION			
	RE	ECO	CONTRACTOR
Name			
Signature			
Date			

CONTRACTOR NOTE: METHOD STATEMENTS SHOULD ADDRESS THE FOLLOWING:			
WHAT	Brief description of the work to be undertaken		
HOW	Detailed description of the process of work, methods and materials		
WHERE	Description/sketch/map of locality of work (where applicable)		
WHEN	Due	commencement	date and completion date estimate (day/night work)

APPENDIX B
ENVIRONMENTAL DO'S AND DON'TS

MOETS EN MOENIES

Werkers en gereedskap moet ten alle tye binne die terreingrense bly.

Moenie van strome drink of daarin swem nie.

Moenie olie, petrol, diesel, sement of rommel in strome gooi nie.

Moenie in strome werk sonder direkte instruksie nie.

Moenie stroomoewers en plantegroei beskadig nie.

Beskerm diere op die konstruksieterrein.

Vra u toesighouer of Kontrakteur om diere van die terrein te verwyder.

Moenie enige plante of bome beskadig of afsny sonder toestemming nie.

Moenie blomme pluk nie.

Gooi sigaretstompies in 'n asblik.

Moenie rook naby gas, verf of petrol nie.

Moenie sonder toestemming enige vure maak nie.

Weet waar brandbestrydingstoerusting gestoor word

Meld alle vure onmiddellik aan.

Moenie rommel verbrand sonder toestemming nie.

Werk slegs in gemerkte areas met petrol, olie & diesel.

Meld alle petrol, olie en diesel lekkasies aan.

Gebruik 'n drupbak onder voertuie en masjienerie.

Maak drupbakke leeg na reën, maar nie in riviere nie

Probeer om nie stof te maak nie.

Maak droë grond nat met water.

Moenie harde geluide maak op die terrein nie, veral naby skole en huise.

Meld raserige voertuie aan of herstel dit.



Gebruik die toilette wat voorsien is.
Meld vol of lekkende toilette aan.



Eet slegs in gemerkte gebiede.

Moenie naby riviere of strome eet nie.

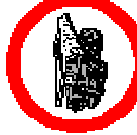
Gooi verpakking en orige kos in vullisblikke.



Moenie vullis rondstrooi nie - gooi alle vullis (veral sementsakke) in vullishouers.

Miel vol vullishouers aan by u toesighouer.

Vullishouers moet gereeld leeggemaak word.



Moet nooit die speedpark oorskry nie.

Bestuurders - gaan voertuie na en meld

lekkasies of rokerige voertuie aan.

Maak seker dat alle vragte stewig is en nie mors nie.



Maak seker dat u alle nood telefoonnommers ken.



Boetes tussen R20 en R2000

Verwydering vanaf die konstruksieterrein.

Konstruksie mag gestop word.



Meld alle brekasies, vure, vloede, lekkasies en beserings aan by u toesighouer.

Vra vraal

DO'S AND DON'T'S

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

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

Protect animals on the site

Ask your supervisor or Contract's Manager to remove animals found on site

Do not damage or cut down any trees or plants without permission

Do not pick flowers

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/ vegetation without permission

Work with petrol, oil & diesel in marked areas

Report any petrol, oil & diesel leaks or spills

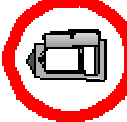
Use a drip tray under vehicles & machinery

Empty drip trays after rain & throw away where instructed

Try to avoid producing dust - wet dry ground & soil

Do not make loud noises around the site, especially near schools and homes

Report or repair noisy vehicles



Use the toilets provided
Report full or leaking toilets



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



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



Always keep to the speed limit
Drivers - check & report leaks
Ensure loads are secure & do not spill



Know all the emergency phone numbers




Spot fines of between R20 and R2000
Removal from site
Construction may be stopped



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

EMAZENZIWE NE MAZINGENZIWA


- 

Abasebenzi nezixhobo abazisebenzisayo mabangaphumi nazo ngaphaya kwesayithi
- 

Sukuqubha okanye usale a manzi omlambo
Sukugalela ioil, petrol, diesel, concrete okanye inkukuma emlanjeni
Sukonakalisa iindonga (zomlambo) okanye izintyalo
- 

Khusele izilwanyana ezilapho esayithini
Xelela isupervisor ukuba zimkiswa ezozilwanyana
- 

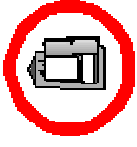
Ungonakalisi okanye ugawule imithi ngaphandle kwemvume
Sukwamba izityalo
- 


Xa ugqibile ukutshaya galela engqomeni (izitimpi zecuba)
Sukutshaya kufuphi negesi, ipeyinti ne petroli
Sukubasa umlilo ngaphandle kwe mvume
Zazi izicima milo apho zikhoyo
Sukutshisa inkunkuma naaphandle kwemvume
- 


Sebenzisa ipetroli, oil ne diesel endaweni yayo
Faka isitya sokuhongozela phansi kwe mashini
Ungagaleli oil emlanjeni
- 

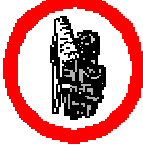
Zama ungenzi uthuli fefa ngamanzi emhlabeni
- 


Sukwenza ingxolo eshayithini ngakumbi kufuphi nesikolo nezi ndlu
Yazisa ulungise isithuthi esonakeleyo


- 


Sebenzisa itoilet (izindlu zangasese)
Xela xa zizeleyo
- 

Tyela kwindawo eyenzelwe oko
Sukutyela kufuphi nomlambo
Lahla emgqomeni yonke inkukuma
- 

Sulahla inkukuma phantsi
Galela emgqomeni yonke inkukuma xela xa izele imigqomo
Xela xa umgqomo uzele
- 

Geina isantya
umqhubi makayilungise inqwelo xa yonakele
Qonononisa umthwalo ubotshiwe enqwelweni
- 

Zazi inombolo zengozi
- 

Inlawulo ngokwaphula umthetho yi R20 - R2000
Okanye ugxothwe emsebenzini
Contract leyo imiswe
- 

Ripota wonke unanakalo ofana nokuqhekeza, isiphango umlilo, ukukuza kwemashini nengozi kwi supervisor
Buza xa unombuzo

APPENDIX C

LIST OF FINES

LIST OF FINES

SCHEDULE OF FINES FOR ENVIRONMENTAL DAMAGE OR CONSTRUCTION EMP TRANSGRESSIONS		
CEMP TRANSGRESSION OR RESULTANT ENVIRONMENTAL DAMAGE	MIN. FINE	MAX. FINE
Failure to report environmental damage or CEMP transgressions to the ECO or RE	R1000	R2000
Failure to carry out instructions of the ECO or RE regarding the environment or the CEMP	R2000	R4000
Failure to comply with prescribed administration, storage or handling of hazardous substances	R500	R1000
Failure to comply with fuel storage, refuelling, or cleanup prescriptions	R500	R4000
Failure to comply with prescriptions for solid waste management (incl. paint chips, cement and concrete)	R500	R5000
Failure to comply with prescriptions to prevent water pollution	R1000	R5000
Failure to comply with prescriptions regarding silt, debris and other obstruction removal	R500	R5000
Failure to comply with prescriptions regarding water diversion and drainage	R500	R5000
Failure to comply with prescriptions regarding erosion and sedimentation control and scour protection	R500	R5000
Failure to comply with prescriptions regarding tree and vegetation removal/damage	R5000	R20000
Failure to comply with prescriptions regarding method statements	R500	R5000
Failure to comply with prescriptions regarding demarcation and enforcement of 'No-go' areas	R500	R5000
Failure to comply with prescriptions regarding control of vehicles and plant on access routes	R500	R1000
Failure to comply with prescriptions regarding protection of natural features	R500	R5000

For each subsequent similar offence committed by the same individual, the fine shall be doubled in value to a maximum value of R50,000.