MAINTENANCE MANAGEMENT PLAN

(MMP)

for the management of activities relating to the protection of the natural environment during maintenance activities of the

THE ROOIKLOOF WATER PIPELINE, CERES, WESTERN CAPE

OCTOBER 2020

Compiled by:

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ROOIKLOOF PIPELINE, CERES

DECLARATION OF UNDERSTANDING

I _____

Representing: _____

Declare that the conditions of the MMP were brought to my attention and that I have read and understood the contents of this Environmental Maintenance Management Plan, of which a copy has been made available to me.

Site: _____

Date: _____

I also declare that I understand my responsibility in terms of enforcing and implementing the Environmental Specifications as set out in this Environmental Maintenance Management Plan.

I also undertake to inform all persons under my supervision of these specifications and the contents of the Environmental Maintenance Management Plan.

Signed: _____

Place: _____

Date: _____

Witness 1: _____

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1. INTRODUCTION

The main purpose of this Environmental Maintenance Management Plan (MMP) is to prevent avoidable damage and/or minimise or mitigate unavoidable environmental damage associated with any maintenance work where there is a risk of environmental damage and to enhance positive benefits of the project.

The MMP forms part of the contractual obligations to which all contractors/employees involved in maintenance work must be committed. It serves as a guideline and baseline information document for the maintenance activities of the project and aims to comply with Section 24N of the National Environmental Management Act (Act no 107 of 1998) also known as NEMA, as well as the Environmental Impact Assessment Regulations, 2014 (Government Notice No R 326) and any additional specific information requested by any State Department, including the Department of Environmental Affairs and Development Planning (D:EA&DP) for specific projects.

This MMP:

- identifies project activities that could cause environmental damage (risks) and provides a summary of actions required;
- identifies persons responsible for ensuring compliance with the MMP and provides their contact information;
- provides standard procedures to avoid and/or minimise the identified negative environmental impacts and to enhance the positive impact of the project on the environment;
- provides site and project specific rules and actions required, including a site plan/s showing:
    - areas where construction, maintenance, or demolition work may be carried out;
    - areas where any material or waste may be stored;
    - allowed access routes, parking and turning areas for maintenance or construction related vehicles;
- forms a written record of procedures, responsibilities, requirements and rules for Contractor/s, their staff and any other person who must comply with the MMP;
- provides a monitoring and auditing programme to track and record compliance and identify and respond to any potential or actual negative environmental impacts; and
- provides a monitoring programme to record any mitigation measures that are implemented;

The MMP is partly prescriptive (identifying specific people or organisations to undertake specific tasks, in order to ensure that impacts on the environment are minimised), but it is also an open-ended document in that information gained during the maintenance activities and/or monitoring of procedures on site could lead to changes in the MMP.

This MMP was compiled by Clinton Geyser who has a MSc. Degree in Environmental Management. He has been working as an Environmental Assessment Practitioner since 2009 and is currently employed at EnviroAfrica cc.

Qualifications:

- BSc. Earth Sciences, Majors in Geology and Geography and Environmental Management (1998 – 2000) and;
- BSc. (hons): Geography and Environmental Management (2001) and;
- MSc. Geography and Environmental Management (2002), all from the University of Johannesburg.

Expertise:
Clinton Geyser has over ten years' experience in the environmental management field as an Environmental Assessment Practitioner and as an Environmental Control Officer, having worked on a variety of projects in the Western, Eastern and Northern Cape.

1.1 PURPOSE

The purpose of the MMP is to give direction and guidance to all responsible parties, which are in turn expected to co-operate closely to minimise or avoid unnecessary environmental impacts or delays.

This MMP binds all contractors, sub-contractors and other persons working on the site to adhere to the terms and conditions of the MMP throughout any maintenance activities of the project**.**

Approval of the Maintenance Management Plan does not absolve the owner, contractor or any other parties of the general "duty of care" set out in Section 28(1) of the NEMA which states that "Every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment." (Cognisance must be taken of the principles of sustainability as contained in Section 2 of the NEMA).

1.2 LEGISLATIVE FRAMEWORK

The following specific environmental legislative is applicable to this **Maintenance Management Plan:**

- This Maintenance Management plan is to be approved in terms of the **NEMA EIA** Regulations 2014 (as amended) and only relates to **Activity 27, Listing Notice 1 (GN R.327) and Activity 12, Listing Notice 3 (GN R.324)*;**
- The requirements of the **National Water Act 36 of 1998** (as amended);
- The requirements of the **National Environmental Management: Biodiversity Act 10 of 2004 (NEMBA**) in terms of:
    - National list of ecosystems that are threatened and in need of protection (GN 1002 of 9 December 2011).
    - Alien and invasive species list 2016 (GN R. 864 of 29 July 2016).
- **Conservation of Agricultural Resources Act 43 of 1983**, as amended (CARA) in terms of:
    - Combating/preventing erosion; and
    - Combating weeds and invader plants

Overview of other applicable legislation:

- **Constitution of the Republic of South Africa (1996)**: of special relevance in terms of environment is section 24
- **Conservation of Agricultural Resources Act 43 of 1983 (CARA)**: supports conservation of natural agricultural resources (soil, water, plant biodiversity) by maintaining the production potential of the land and combating/preventing erosion; for example, by controlling or eradicating declared weeds and invader plants.
- **Fertilizer, Farm Feeds, Agricultural Remedies and Stock Remedies Act (Act No. 36 of 1947),** to control the sell, purchase, use and disposal of agricultural or stock remedies.
- **Hazardous Substances Act 15 of 1973**: to control substances that may cause injury, ill-health, or death through their toxic, corrosive, irritant, strongly sensitizing or flammable nature, or by the generation of pressure
- **National Environmental Management Act 107 of 1998 (as amended):** replaces the Environmental Conservation Act (ECA) and establishes principles for decision-making on matters affecting the environment, and for matters connected therewith.
- **Environmental Impact Assessment Regulations**: identifying activities (listed activities) for which environmental authorisation must be obtained.

- **National Environmental Management: Biodiversity Act 10 of 2004 (NEMBA):** supports conservation of plant and animal biodiversity, including the soil and water upon which it depends.
- **National list of ecosystems that are threatened and in need of protection** (GN 1002 of 9 December 2011).
- **Alien and invasive species list 2016** (GN R. 864 of 29 July 2016).
- **National Environmental Management: Protected Areas Act 57 of 2003 (as amended Act 31 of 2004) (NEMPAA):** To provide for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes.
- **National Environmental Management: Waste Act 59 of 2008 (NEMWA):** To reform the law regulating waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development.
- **List of Waste Management Activities that have, or are likely to have a detrimental effect on the environment**: Identifies activities in respect of which a waste management license is required.
- **National Forests Act 84 of 1998 (as amended)**: supports sustainable forest management and the restructuring of the forestry sector.
- **List of protected tree species** (GN 716 of 7 September 2012)
- **National Heritage Resources Act 25 of 1999**: supports an integrated and interactive system for the management of national heritage resources, including supports soil, water and animal and plant biodiversity.
- **National Veld and Forest Fire Act 101 of 1998 (NVFFA):** protects soil, water and plant life through the prevention and combating of veld, forest, and mountain fires
- **National Water Act 36 of 1998 (NWA):** promotes the protection, use, development, conservation, management, and control of water resources in a sustainable and equitable manner.

***Please note that any expansion of the pipeline and/or construction of any further infrastructure associated with the Rooikloof pipeline that triggers any other listed activities in terms of the NEMA EIA Regulations 2014 would require a NEMA Application and Environmental Authorisation.**

1.3 PROJECT SITE LOCATION AND DESCRIPTION

The Rooikloof Pipeline is located on Portion 2 of Farm 384 and on Farm 385 (Ben Etive Nature Reserve), Ceres. Part of the pipeline is located within the Ben Etive Nature Reserve.

The is located approximately 14km east of Ceres. See Figure 1 and 2 below.

The pipeline is an approximately 4.1km long, ø600mm steel pipe that takes water from the Rooikloof dam to users, mostly for agricultural irrigation.

It must be noted that only the 4.1km long section of the Rooikloof Pipeline is to be cleaned, rehabilitated and relined in phases. General maintenance will also be conducted during the lifespan of the pipeline.

Site co-ordinates:

Start of pipeline (Rooikloof Dam): 33^{O} 25' 13,55"S, 19^{O} 28' 41,63"E

End of pipeline section: 33^{O} 23' 14,22"S, 19^{O} 28' 12,56"E

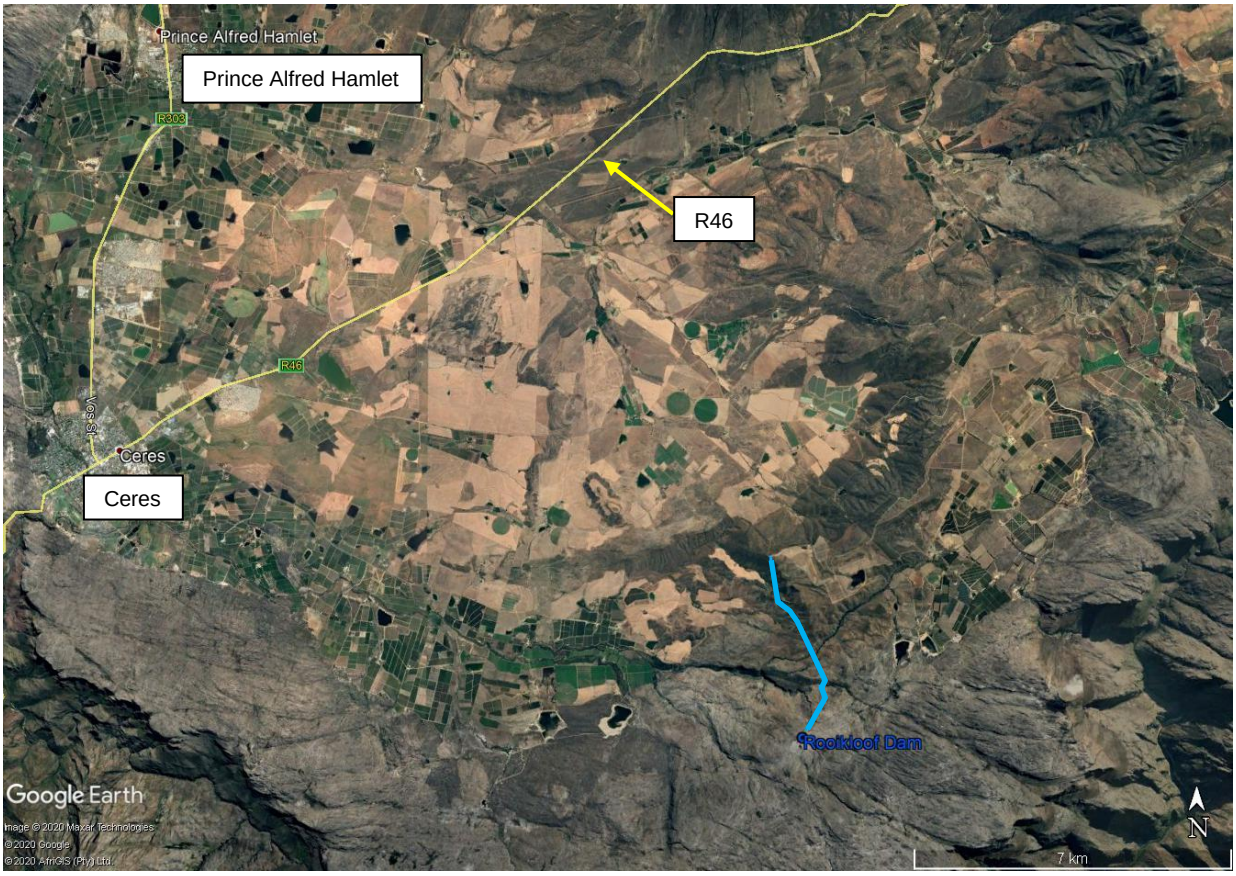

Figure 1: Google Earth Image of the site location (Rooikloof Pipeline indicated by the blue line)

Figure 2: Google Earth Image of the pipeline route (blue line)

1.4 ACCESS

Existing farm roads and construction tracks should be used as far as possible. Any new tracks or access roads will need to be constructed taking the mitigation measures below in consideration. Any new access tracks or roads must not exceed a width of 4m.

1.5 THE RECEIVING ENVIRONMENT

The Rooikloof Pipeline is located on Portion 2 of Farm 384, Farm 474 and on Farm 385 (Ben Etive Nature Reserve), 14km east of Ceres.

The area is generally undeveloped and natural, with very little disturbance. Approximately 460m of the pipeline is within the Ben Etive Nature Reserve.

1.5.1 VEGETATION TYPES EXPECTED

The pipeline is located on two broad vegetation types, namely Ceres Shale Renosterveld and North Hex Sandstone Fynbos, none of which is listed as Critically Endangered or Endangered in the List of Threatened Terrestrial Ecosystems in South Africa (Government Gazette, 2011).

The pipeline route is located in an area identified as a terrestrial Critical Biodiversity Area (CBA).

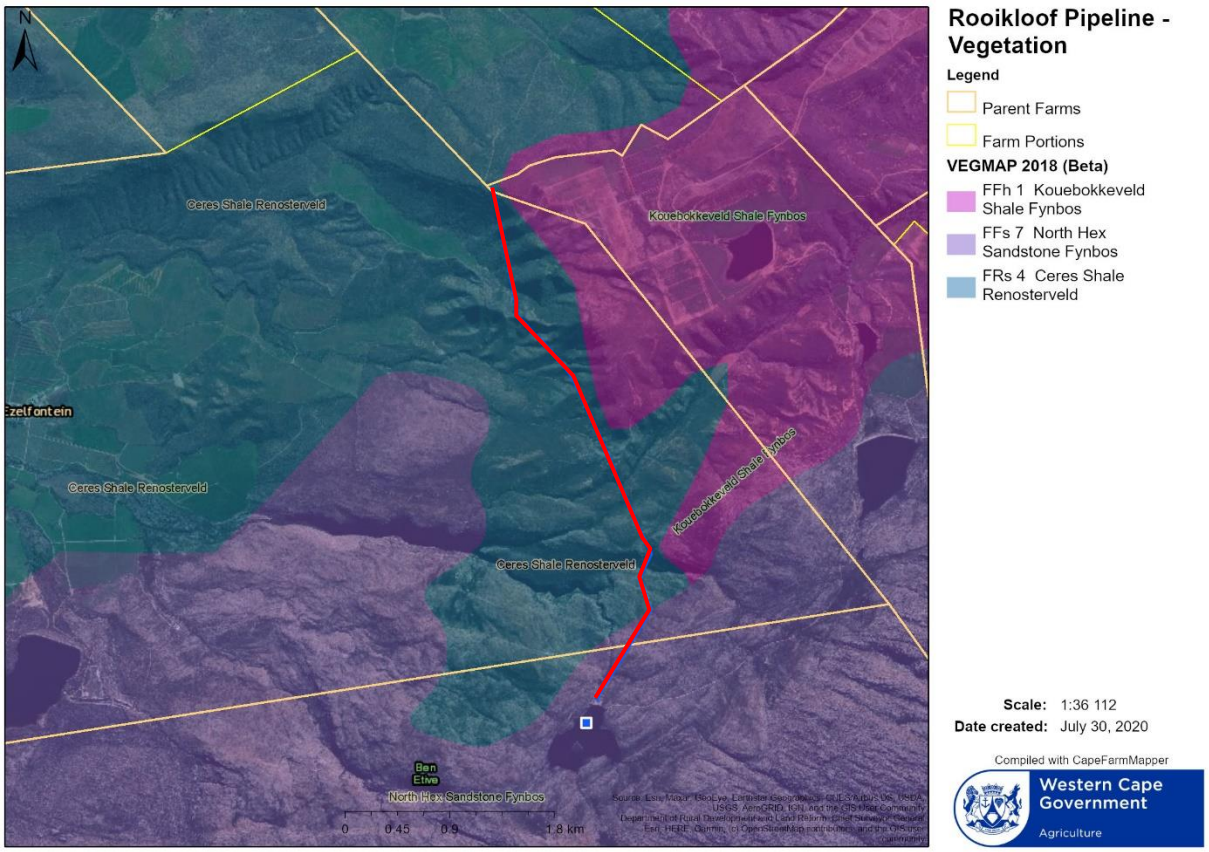

Figure 3: Vegetation map of the pipeline route (red line) (Source: CapeFarmMapper).

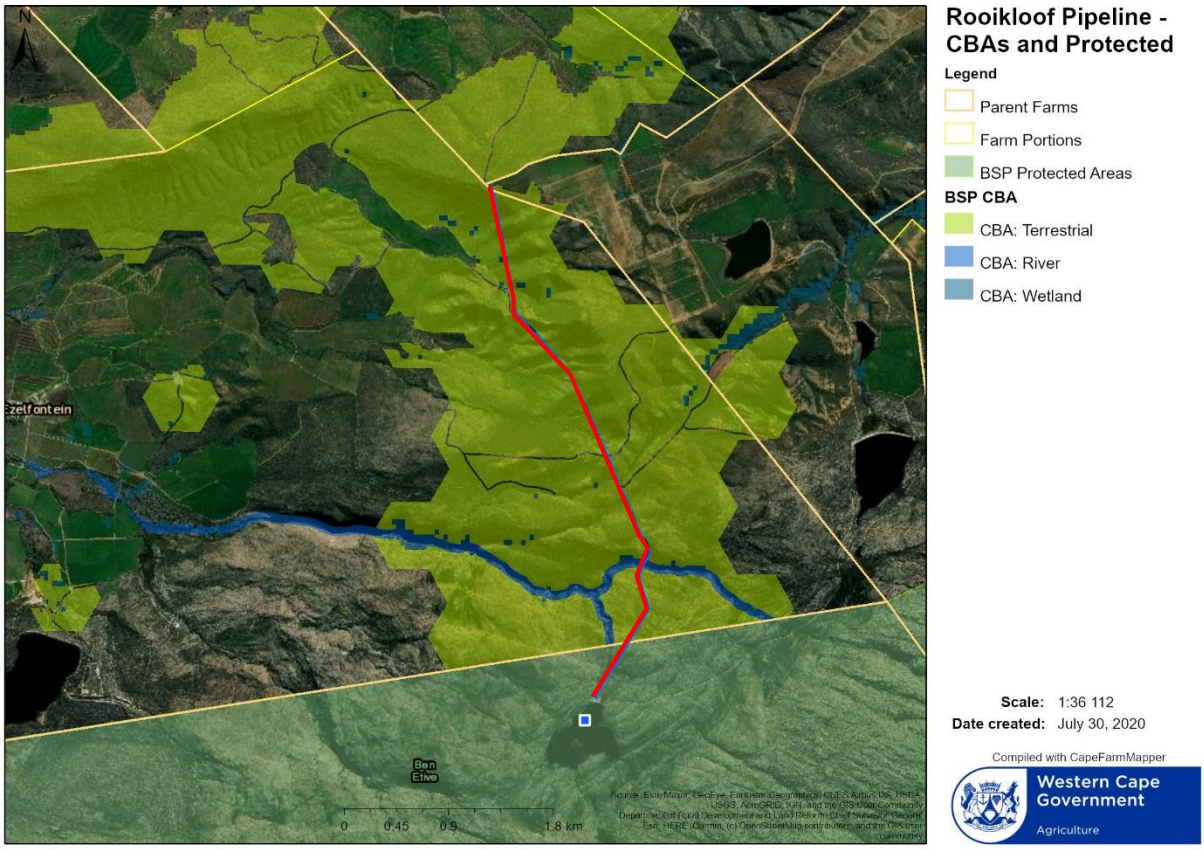

Figure 4: Part of the pipeline route (red line) located within a CBA and nature reserve (Source: CapeFarmMapper).

1.5.2 SURFACE WATER

The pipeline route is undulating, and there are a number of watercourse crossings, both perennial and non-perennial, where the pipeline is elevated over the watercourse (see Figure 5 below).

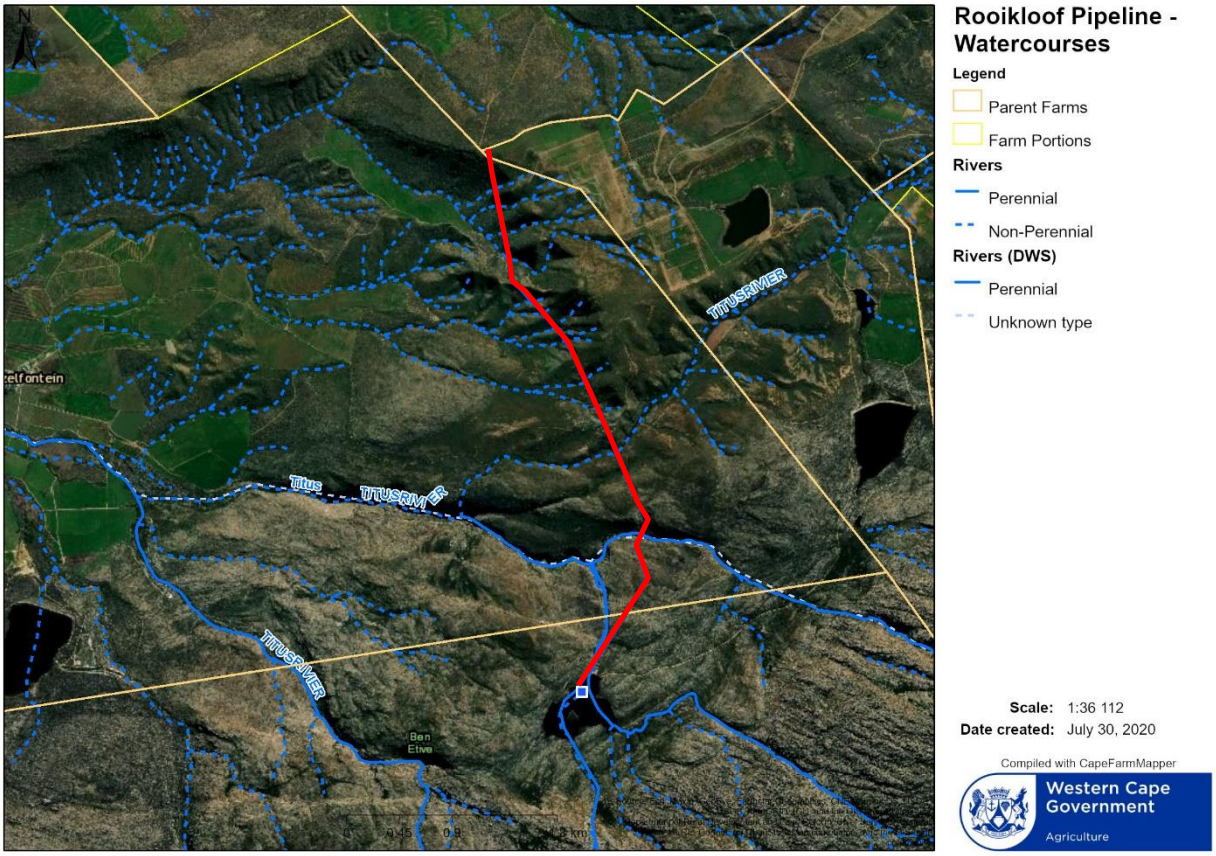

Figure 5: Pipeline route (red line) and watercourses (Source: CapeFarmMapper).

2. DEFINITIONS AND ABBREVIATIONS:

2.1 DEFINITIONS

Audit (Site Completion): Environmental Site Inspection and verification of maintenance activities to MMP

Bund: Enclosure under / around a storage facility to contain any spillage

Batch plant: a concrete or plaster mixing facility and associated equipment and materials.

Contaminated water: means water contaminated by the Contractor's activities, *e.g.* concrete water and runoff from plant/ personnel wash areas.

Contractor: the principal persons / company and all other sub-contractors involved in the maintenance/construction of the project.

Contractor's camp: means the designated and suitably demarcated areas on the Site within which all site offices and staff facilities are situated and within which equipment will be stored, for instance, batching plant, crusher plant, sand washing plant, workshop, offices, rest areas, ablution areas, etc., whichever is applicable.

Declaration of understanding: Form that is signed by all contractors involved in the maintenance works of their understanding and acceptance of the MMP and site-specific additions to the MMP.

Development site: boundary and extent of development works and infrastructure.

Environment: means the surroundings within which humans exist and that are made up of:

- the land, water and atmosphere of the earth;
- micro-organisms, plant and animal life;
- any part of the combination of the above two bullets and the interrelationships between them;
- the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being

Environmental Aspect: Any element of any maintenance or construction activity, product or services that can interact with the environment.

Environmental Control Officer: The registered Environmental Scientist (*in terms of section 20(3) of the Natural Scientific Professions Act, 2003 (Act 27 of 2003)*) responsible for overseeing the environmental aspects of the maintenance activities of the MMP.

Environmental Impact: Any change to the environment, whether adverse or beneficial, wholly or partially resulting from any maintenance and/or construction activity, product or services.

Method statement: A statement by the Contractor, describing the scope of intended maintenance/construction works step-by-step, in order for the Construction Supervisor to understand the Contractors intentions and be able to comment on, so that they could assist with devising mitigating measures should it be necessary to avoid environmental impact.

No-Go Area(s): An area of such (environmental/aesthetical) importance that no person or activity are allowed within a designated boundary surrounding this area.

On-site start-up meeting: a start-up meeting held on site, before any maintenance/construction has begun to discuss MMP and determine site specific additions that will be included as the basis for the MMP.

Potentially hazardous substance: is a substance, which, in the reasonable opinion of the Engineer, can have a deleterious (detrimental) effect on the environment.

Precautionary principle: means the basic principle, that when in doubt or having insufficient or unreliable information on which to base a decision, to then undertake actions that will have minimum risk.

Reasonable: means unless the context indicates otherwise, reasonable in the opinion of the Engineer/Project Leader after he has consulted with a person, not an employee of the client, suitably experienced in "environmental implementation plans" and "environmental management plans", both as defined in the Environmental Management Act (Act No 107, 1998).

Solid waste: means all solid waste, including construction debris, chemical waste, excess cement/concrete, wrapping materials, timber, tins and cans, drums, wire, nails, food and domestic waste (e.g. plastic packets and wrappers).

Stop Works Order: An order which can be issued either by the Construction Supervisor to the Contractor (or any sub-contractor) if serious environmental damage is about to happen or is happening as a result of maintenance/construction activities. On receiving such an order the Contractor must immediately stop all activities (or planned activities) relevant to the specific issue until an environmentally friendly resolution has been approved by the ESO.

Site: means the area influenced and affected by the maintenance activities or under the control of the Contractor often referred to as “the Site”. This includes any work stations cleared along the pipeline route for stockpiling, lay down areas etc.

Works: The works to be executed in accordance with a contract.

2.2 ABBREVIATIONS

CARA	Conservation of Agricultural Resources Act, 1983 (Act no. 43 of 1983)
DEADP	Department Environmental Affairs & Development Planning
ECO	Environmental Control Officer: - Must be a suitably qualified independent environmental consultant appointed to ensure compliance to the EMP
ESO	Environmental Site Officer - Must be a person with adequate environmental knowledge to understand and implement the MMP by conducting on-site inspections determined by the client.
ER	Engineers representative or Main contractors' representative
MMP	Maintenance Management Plan
MSDS	Material Safety Data Sheet(s)
NEMA	National Environmental Management Act, 1998 (Act no. 107 of 1998)
OSSM	On-site Start-up Meeting
SAHRA	South African Heritage Resources Agency

3. MAINTENANCE MANAGEMENT PLAN

3.1 STRUCTURE AND RESPONSIBILITY

Implementation of the MMP and environmental control and management during maintenance work will be achieved through the responsibility structure set out below. The role players include the Owner, the Environmental Control Officer and the Contractor. All role players must familiarize themselves with the prescriptions of the MMP.

3.1.1 THE CLIENT / APPLICANT / OWNER (ROOIKLOOF IRRIGATION BOARD)

The client (or the designated responsible person appointed by him) is responsible for:

- appointing a suitably experienced ECO, the Construction Supervisor and the Contractor for the duration of the maintenance contract, and
- ensuring that the Construction Supervisor and Contractor fulfil their obligations in terms of this MMP.

3.1.2 THE CONTRACTOR

The Contractor shall be responsible to:

- ensure that all sub-contractors, employees, suppliers, agents etc. are fully aware and adhere to the environmental conditions detailed in the MMP;
- liaise closely with the Construction Supervisor and the ECO;
- ensure that works on the site are conducted in an environmentally sensitive manner and in full accordance with the MMP;
- carry out instructions issued in the site instruction book;
- assist with solutions to environmental problems that may arise during the maintenance activities; and
- ensure that all "**No-Go**" areas are adequately fenced off.
- will report any deviation from the requirements of this MMP to the Principal Agent, and any pollution or environmental contaminant spill events.
- agrees to work stoppage as directed by the ECO/Construction Supervisor.
- agrees bear full costs for any work stoppage resulting from contravention of the requirements of this EMP, and/or the costs of remedying environmental damage resulting from their or their sub-contractors or employee's contravention of the requirements of this EMP.

NB: All contractors must sign the "Declaration of understanding" (page ii of this document) of this Environmental Maintenance Management Plan before maintenance activities commence.

3.1.3 THE ENVIRONMENTAL CONTROL OFFICER (ECO)

ECO will be responsible for overseeing the environmental aspects of the maintenance activities and will work in close co-ordination with the Construction Supervisor.

3.1.3.1 ECO qualifications

The ECO must be independent and suitably qualified (a diploma or degree in environmental management with at least 5 or more years of environmental site management experience) and must have a sound knowledge of the environment in which the activity will take place.

3.1.3.2 ECO duties

An ECO must be appointed for the duration of the maintenance activities. The ECO:

- will be primarily responsible for ensuring the implementation of the MMP and will perform regular site inspections/audits with the specific aim to ensure environmental conformance by the Contractor;
- to visit the site on a regular basis while maintenance is in progress. Frequency of site visits is recommended at 1 x site visit every 2 weeks, or as determined by the Owner;
- will keep environmental records (including photographs) of the maintenance activities;
- must ensure that "No-Go" and "Open Space" areas are adequately protected and adhered to;
- must approve and be present during the demarcation of the necessary areas for storage of materials, ablutions, eating areas of contract workers etc;
- to conduct a start-up meeting before maintenance activities commences and will provide environmental training at the beginning of the project and will provide environmental awareness training throughout the life of the project;
- must be informed of site and technical meetings to be able to comment and report on environmental issues;
- will call for, and approve, method statements for maintenance activities that might pose an environmental impact and must ensure that method statements are approved before commencement of the work;
- must implement immediate mitigating action in the case of critical environmental impacts
- must deal with public complaints/queries regarding environmental issues;
- will record his findings and all environmental non-conformances in an environmental completion report (which will be forwarded to the Client);
- will conduct a closing down visit as soon as possible after completion of the maintenance activities;
- will commission an independent Environmental Compliance Audit within 6 months after completion of the contract.

3.1.3.3 ECO Authority

The ECO has the authority to stop works if there is a serious threat to or impact on, the environment as a direct cause of maintenance activities. However, this authority is limited only to emergency situations where immediate consultation with the Construction Supervisor is not possible.

- The ECO is to inform the owner and site representative of the reasons for the stoppage as soon as possible. A relevant reason should be supplied as soon as possible after stoppage of such works.
- Upon failure by the contractor or his employee to show adequate consideration to the environmental aspects of this contract i.e. wilful destruction of the environment, the ECO may recommend to the client/owner or site representative to have the contractor's representative or any employee(s) removed from the site or work suspended until the matter is remedied.
- No extension of time will be considered in the case of such suspensions and all costs will be borne by the contractor.

3.2 COMMENCEMENT OF WORKS

The site project contractors must timeously receive a copy of the MMP and any other further additional information that pertains to site conditions/amendments or deviations from original site plan.

- This MMP must be included to form part of the Contractors site specification documentation.
- A copy of the MMP must be on site at all times and available for presentation to any authority requesting to see such document.

NO WORK ON SITE MAY TAKE PLACE UNTIL:

- The Declaration of Understanding/Environmental Contract is signed between the relevant parties.
- On-Site Start-Up Meeting has been held
- Site and No-Go areas has been identified **and demarcated**.
- Contractors are in possession of the MMP and other relevant documentation
- Contractors/Sub contractors have signed the Declaration of Understanding
- All mandatory site equipment is in place
- On Site Environmental Education & Awareness training session has taken place with all relevant construction personnel present.

NB: Work refers to: Camp Establishment, Earthmoving activities and any preliminary maintenance activities.

3.3 ISSUES OF CONCERN

Issues of concern must be addressed during the "On Site Start-Up Meeting" and must be included in the On-Site Start-Up Report. Issues of Concern include, but shall not be limited or restricted to, the following:

- Site demarcation
- Waste management and disposal.
- Wastewater management
- Mandatory site equipment.
- Establishment of construction site compound and work-stations.
- Ablution & Toilet Facilities.
- Refuse Management.
- Concrete works & batching plant facilities
- Cement wastewater control
- Soil erosion & sediment control.
- Firefighting equipment & emergency fire reaction plan.
- Rehabilitation

3.4 SITE SPECIFIC ARRANGEMENTS & MAINTENANCE PROCEDURES

3.4.1 ON-SITE START-UP MEETING

The mandatory **On-Site Start-Up Meeting** must be conducted at least **14 days but not less than 5 working days** prior to commencement of any site/camp establishment, earthworks and/or maintenance activities and will relate to additional discussed information that must be complied with during the entire maintenance phase.

On-Site Start-Up Meeting points of discussion are:

- The MMP & other relevant site documents

- Project to be discussed and all uncertainties are cleared
- Method statement/s to be discussed
- Road and work station areas to be demarcated
- Materials stockpile and lay down areas to be demarcated
- Method of stockpiling to be discussed
- Firefighting procedures
- Mandatory firefighting equipment & fire preventative measures
- Solid waste removal intentions
- Placement, type and service of toilets to be agreed on
- Placement and type of rubbish bins and removal of rubbish to be agreed on
- Labour overnight camp to be demarcated and services agreed on
- Environmental Education and awareness training session to all contractors & onsite staff/labour.
- Location & establishment of concrete batching plant facility.

3.4.2 START-UP MEETING PARTICIPANTS

Minutes of the onsite Start-Up Meeting will be condensed to a report format and circulated to all attendees of the above-named meeting for their perusal and comments. The On-site Start-up Meeting report will form part of this MMP. If any discrepancies between the start-up report and the MMP arise then the MMP will take precedence until clarification on the discrepancy is clarified.

Participants to the start-up meeting can include:

- Owner/ Owner's Representative.
- Main Contractor's Representative.
- Resident Engineer
- Site foreman.
- Environmental Control Officer.

NB: It is the responsibility of the main contractors to ensure that all sub- contractors, that work on the site during and after the civils' contract, are informed of the environmental conditions pertaining to the site.

3.5 ENVIRONMENTAL- & AWARENESS TRAINING

3.5.1 ENVIRONMENTAL AWARENESS COURSE

Environmental awareness training courses shall be run for all personnel on site. The ECO will be responsible for the initial awareness course which shall include all relevant management, the Contractor and all foremen. All attendees shall remain for the duration of the course.

The Contractor shall be responsible to ensure that all his personnel and subcontractors (if applicable) are informed and made aware of the environmental constraints and shall also supply the ECO with a monthly report indicating the number of employees used by him. If refresher courses are deemed necessary, for instance, where personnel disregard the requirements of the MMP, the time lost and the cost of the course would be for the account of the Contractor.

3.5.2 SPECIFIC TRAINING

All contractors and workers shall be informed about fire awareness, any special habitat, biodiversity features, vegetation and/or rare plant species that might be present on the site (if applicable).

3.6 METHOD STATEMENTS

Method statements from the contractor will be required for specific sensitive actions on request of the Owner or ECO.

A method statement forms the base line information on which sensitive area work takes place and is a "live document" in that modifications are negotiated between the Contractor and ECO/Owner, as circumstances unfold.

All method statements will form part of the MMP documentation and are subject to all terms and conditions contained within the MMP main document.

These documents must be available to the authorities for inspection or on request.

A method statement describes the scope of the intended work in a step-by-step description in order for the ECO and Owner to understand the contractor's intentions. This will enable them to assist in devising any mitigation measures, which would minimize environmental impact during these tasks.

The Contractor must submit the method statement before any particular maintenance/construction activity is due to start. Work may not commence until the ECO and Owner have approved the method statement.

Method statements need to be compiled by the contractor for approval by Applicant and the ECO. The contractor must submit written method statements to Applicant for the purposes of the environmental specification, a "Method Statement" is defined as a written submission by the contractor to Applicant setting out the plant, materials, labour and method the contractor proposes using to carry out an activity, in such detail that Applicant and the ECO is able to assess whether the contractor's proposal is in accordance with the specifications and/ or will produce results in accordance with specifications.

The method statement must cover applicable details with regard to:

- Maintenance procedures
- Materials and equipment to be used
- Getting the equipment to and from site
- How the equipment/ material will be moved while on site
- How and where material will be stored
- Location & establishment of any concrete batching plant facility.
- The containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material (of any potential hazardous material) that may occur
- Timing and location of activities
- Compliance/ non-compliance with the Specifications, and
- Any other information deemed necessary by the Owner and the ECO.

The Contractor must abide by these approved method statements, and any activity covered by a method statement must not commence until Owner and the ECO has approved of such method Statement.

NB: No work may commence or take place before the Method Statement has been approved by all relevant parties.

List of possible Method statements include but shall not be limited or restricted to:

- Demarcation
- Entrance and haul roads
- A traffic management plan for the site access roads.
- A storm water management plan.
- An erosion management plan.
- Clearing of vegetation & topsoil removal
- Stockpiling

- Temporary storage facilities
- Construction camp, work stations & site offices
- Fuel storage
- Labourer's facilities
- Mandatory site equipment
- Waste control
- Cement mixing & batching areas
- Construction vehicle maintenance
- Heavy earthmoving equipment
- Dust control
- Noise control
- Rehabilitation

3.6.1 ADDITIONAL METHOD STATEMENTS

Any additional method statements (with regards to a specific aspect of maintenance) that may be required must be **submitted** and approved before commencement of the specific works and must be available at the site offices.

3.7 NON-COMPLIANCE

The Owner (on recommendation by the ECO) reserves the right at all times for the duration of this agreement to impose restrictions and associate penalties on the contractor with respect to the specific nature, timing and extent of maintenance activities on environmentally sensitive sites.

3.7.1 CORRECTIVE ACTION INSTRUCTION

The ECO may issue an onsite corrective action instruction to the site agent, or, by means of an entry into the Site Instruction Register for remedial work to be carried out to rectify any non-compliance that has been carried out within a reasonable agreeable time frame to carry out and complete the remedial work.

3.7.2 WRITTEN WARNING

In instances of non-compliance with the MMP by the contractor (or any of their employees) or sub-contractor/s (or any of their employees) that move on or off the site, the onsite ECO must issue a written warning indicating the non-conformance to the contractor.

If repeated instructions by the ECO to the site agent to respond to the corrective action instruction have not been carried out the ECO can issue a Written Warning notation instructing the site agent to timeously carry out the corrective measures as per the original non-compliance.

3.7.3 STOP WORKS

The ECO (after consultation with Owner) may also stop the works or part thereof until the situation is resolved; no extension of time is claimable by the contractor.

These penalties do not preclude any prosecution under any law or regulation.

3.8 CHANGES TO MMP

Although care has been taken to address all known relevant environmental issues for the maintenance activities, it may become necessary to add or amend certain procedures or instructions to improve the efficiency of the Environmental Maintenance Management Plan (MMP).

- Only those additions or amendments of this MMP that will either improve environmental protection or can be proved not to have any negative effect to the immediate and surrounding environment will be considered.
- Changes or deviations have to be motivated in writing by means of a Method Statement and the same procedures for a standard Method Statement have to be followed.
- Any additions or amendments must be submitted by the ECO to the Competent Authority (if so requested) after the ECO has consulted with the Owner.
- No deviation from the contents of the MMP is allowed without the above-named prescribed procedures

3.9 RECORD KEEPING

All records relating to the implementation of this Environmental Maintenance Management Plan must be kept together, be readily retrievable and available for scrutiny by any relevant authority. Records include the following:

- Declarations of understanding;
- ECO Checklist, audits and/or diary;
- Method Statements
- Environmental incident reports
- Photographs (must be taken before, during and immediately after maintenance as a visual reference);
- The Environmental completion statement.

These records must be available for scrutiny by any relevant authorities.

3.10 STANDARD MANAGEMENT PROCEDURES

3.10.1 ACCESS & HAUL ROUTES

The Contractor must control all access (vehicles and plant) to and from the pipeline, including that of his suppliers so that they remain on the pre-approved designated routes. In addition, such vehicles and plant must be so routed and operated as to minimise disruption to regular users of the routes.

- Where heavy duty vehicles and construction plant are required, both the type of vehicles/machinery and the area/s these are to access shall be specified in a Method Statement.
- Access routes/haul roads will utilise only existing roads or tracks, unless such routes are not available or new routes are to be constructed as part of the project, in which case a Method Statement must be submitted for the construction of any new access/ haul roads (including temporary routes).
- No new roads or tracks may be created except where such routes are specifically approved by the ECO, or in this MMP.
- Any new access roads/haul roads must be designed so as to minimise erosion and must run across slopes and not directly up-hill.
- All vehicles and access to the site must remain within demarcated access routes and working areas on site.
- All reasonable measures must be implemented to minimize impacts on local commuters e.g. limiting construction vehicles travelling on public roadways during the morning and late afternoon commute time and avoid using roads through densely populated built-up areas so as not to disturb existing retail and commercial operations.
- On gravel or earth roads on site, the vehicles of the Contractor and his suppliers may not exceed a speed of 25 km/h.
- On public roads adjacent to the site, vehicles will adhere to municipal and provincial traffic regulations.
- Any temporary access routes must be rehabilitated at the end of the contract to the satisfaction of the Owner.

If so required by the owner of the land the following may also apply with regard to access and vehicular movement on site:

- All Contractors, subcontractors and staff shall be identified by clothing with company logos and be in possession of valid SA identity documents.
- Deliveries, removals etc. to be completed during normal working hours (unless otherwise agreed upon by the Owner/Supervisor.

- No personnel shall stay permanently on site, unless permission to stay on site provided as part of the maintenance contract.
- If required, access routes must be demarcated by orange twine/danger tape on steel posts or temporary fencing.
- The Contractor shall at his cost document the existing condition of all access roads prior to commencement.
- Should any damage occur to the access road as a result of the upgrade activities, the road will be rehabilitated to its original state with all costs borne by the contractor.
- Contractor, sub-contractors and staff are to ensure that farm gates are kept closed as required by the landowner

3.10.2 APPROPRIATE USE OF MACHINERY

Contractor must at all times carefully consider what machinery is appropriate to the task while minimizing the extent of environmental damage.

- The contractor may not operate any machinery including a fuel driven compressor outside the demarcated area.
- All vehicles and equipment must be routinely inspected for fuel and oil leaks and kept in good working order and serviced regularly. Leaking equipment must be repaired immediately or removed from the Site. When servicing equipment, drip trays must be used to collect the waste oil and other lubricants. Drip trays must also be provided in works areas for stationary plant (such as compressors) and for "parked" plant (such as scrapers, loaders, vehicles). Drip trays will be kept free of water that will float the oil to overspill. All drip trays / bungs to attain a 120% capacity of the plant fuel / oil capacity.
- Where practical, all maintenance of plant and machinery must be performed off-site. If it is necessary to do maintenance on site, the Contractor must obtain the approval of the Engineer and the ESO prior to commencing activities.
- Appropriate 4.5 kg (minimum requirement) dry powder SABS approved and service certified fire-fighting extinguisher must be a mandatory item on all vehicles working and moving on or off the work site.
- The servicing, repairs and maintenance of all construction machinery must take place at the designated service and maintenance yard and not along the pipeline route or access routes.

3.10.3 "NO-GO" AREAS

Specifications of the Environmental Maintenance Management Plan (MMP) or the On Site Start-Up Meeting (OSSM) can require that certain areas are to be considered as "No go" areas as a result of their environmental significance or proximity to environmental significant features.

- No-Go areas will be demarcated and indicated on a site plan.
- A Method Statement is to be submitted to the ECO by the Contractor, detailing the method of demarcating No-go areas.
- No-Go areas are out of bounds to the Contractor and his staff, sub-contractors and their staff or suppliers and their staff or any other person involved in the project, without the written permission specified by the ECO.
- The Contractor must ensure that, insofar as he has the authority, no person, machinery, equipment or material enters the designated "No Go" areas at any time.
- All contractors must be made aware of the importance of these features and the consequences of non-compliance.

- All private property/farms outside of the works area are considered "no-go" areas, unless permission has been received from the ECO and written permission has been received from the land owner.
- Natural vegetation outside of the works areas will be considered no-go areas, unless for the purposes of constructing work-stations for equipment and machinery, laydown areas etc.
- A Method Statement is to be submitted to the ECO by the Contractor, detailing these work-stations.
- The work-stations must be demarcated before any clearance of vegetation and removal of topsoil.

3.10.4 RESTRICTION OF WORKING AREAS

The approved layout plans will be used to establish the site demarcation (footprint). All relevant parties responsible for the day-to-day activities on the site will be present and made aware of the implication of the site demarcation. They include the:

- Principle Agent
- Main Contractor: Project Site Manager
- Sub-contractor: Project contractor
- ECO: Environmental Control Officer

The proposed works areas will be demarcated prior to the commencement of any clearance of vegetation or workstations, this includes site establishment, the moving of construction material or any other items onto the site, etc.

- The site will be demarcated with appropriate dropper poles. A single strand of orange baler twine is to be attached to the dropper poles to indicate boundaries and no-go areas for site personnel and vehicular movement. (Alternative fencing may be decided upon dependent on-site requirements). Other demarcation measures can be used if approved by the ECO.
- The works area i.e. road, stockpile areas and workstations etc. must be appropriately demarcated and fenced off with dropper poles and orange baler twine approximately 1m high is considered adequate. The demarcation will be agreed on during the start-up meeting.
- All fencing and fence placement / positioning must be approved by the ECO on site.
- Work areas and access routes must be clearly demarcated to minimise environmental impact.
- In the event that sensitive features are threatened by maintenance activities or clearing of workstations, temporary fencing off of these areas (for individual areas such as trees or rocks) or the works area (when working in a mainly natural environment) is recommended.
- NB: Also note the requirements discussed under the following paragraphs: 3.10.2; 3.10.5; 3.10.6; 3.10.7;.
- The Contractor must maintain in good order all demarcation, fencing and barriers for the duration of maintenance activities, or as otherwise instructed.
- Demarcation may not be moved, re-located or altered or changed without the approval of the ECO.
- Any temporary fencing removed for the execution of any portion of the works is to be reinstated by the Contractor as soon as practicable.
- The Contractor at the end of the contract must remove all demarcation, fencing or barriers not forming part of the final works on Site.

3.10.5 PROTECTION OF NATURAL VEGETATION

Habitat fragmentation is usually defined as a landscape-scale process involving both habitat loss and the breaking apart of habitat. Habitat loss has large, consistently negative effects on biodiversity. Habitat fragmentation per se has much weaker effects on biodiversity, but could be just as negative. As such the

maintenance activities must endeavour to minimise its impact on any remaining natural features and natural corridors.

- Except to the extent necessary for the carrying out of the works, no natural indigenous flora may be removed, damaged or disturbed;
- Any areas of vegetation that are to be protected during maintenance activities must be demarcated and indicated as "No-Go" areas on a site plan.
- Trapping, poisoning and/or shooting of animals is strictly forbidden. No domestic pets or livestock are permitted on Site;
- Where the use of herbicides, pesticides and other poisonous substances are to be used, the Contractor must submit a Method Statement;
- The Contractor may not deface, paint, damage or mark any natural features, if these should occur (e.g. trees, rock formations, buildings, etc.) situated in or around the Site for survey or other purposes unless agreed beforehand with the Engineer and the ECO. Any features affected by the Contractor in contravention of this clause must be restored/rehabilitated to the satisfaction of the Engineer and the ECO.
- No indigenous vegetation, including dead trees, outside the limits of disturbance indicated in the site plans must not be removed from the area. No harvesting of indigenous plants and animals in and adjacent to the works area is allowed.
- Alien and invader vegetation must not be allowed to further colonise the area.
- Alien vegetation must be cleared from the workstations or any other maintenance areas and removed from site
- All incidents of harm to any animal or natural vegetation (apart from the agreed upon areas) must be reported to the ECO.
- Also refer to the requirements of the rehabilitation and restoration guidelines (Refer to paragraph 3.10.23).

3.10.6 PROTECTION OF FAUNA AND AVI-FAUNA

Trapping, poisoning and/or killing of animals and birds is strictly forbidden. No domestic pets or livestock are permitted on Site. Many slow-moving animals, local amphibian and other species follow instinctive movements along roadside corridors where they travel from place to place.

- Every effort must be implemented on a daily on-going basis by the contractor to ensure that the works areas have been checked for any animals and to ensure their removal and protection from direct and in-direct impacts during any maintenance activities.
- The removal of fauna from the site must be done in accordance with the requirements of the Nature Conservation Ordinance regulating these activities.
- Environmental corridors and "No-Go" areas must be demarcated and protected.

3.10.7 CLEARING OF VEGETATION, STRIPPING & CONSERVATION OF TOPSOIL

The contractor shall take all reasonable steps to minimise the impact of his activities on the environment. If natural vegetation has to be removed for maintenance purposes, the natural vegetation shall be rescued, re-used (e.g. stabilizing the area after maintenance activities or re-vegetating other impacted areas) in such a way that it enhances the remaining natural veld. By the same principle topsoil (which contains the remaining natural seed store as well as possibly many bulb species) must be carefully removed and stored or re-used for rehabilitation or impacted areas in the immediate vicinity.

Vegetation clearing:

- A Method Statement must be submitted detailing the methods to be used for vegetation clearing.

- All cleared areas must be stabilised as soon as possible.
- Burning of cleared vegetation on site is prohibited.
- The burying of cleared vegetation or use as part of backfill or landscape shaping is prohibited unless written approval is obtained from the ESO.
- Cleared vegetation may be used for mulch or slope stabilisation of the Site.
- Should bulk vegetation be removed from the designated working areas (footprint area) then tall vegetation shall first be removed through brush cutting and chipping of larger shrub material; this may be added to the topsoil material stockpiles as mulch.
- Unless otherwise agreed upon, only indigenous plant material shall be used for this purpose.

Topsoil removal (if required)

- Prior to any activities within the demarcated work areas, topsoil material shall be removed to a depth of 50 mm or deeper if specified by the engineer in consultation with the ECO, and stockpiled in a designated area for use in rehabilitation of the site post maintenance activities.
- Topsoil from the still relatively natural area (the top 15 -20 cm) should be removed and be used for rehabilitation after maintenance on site or in the immediate vicinity of the site.
- Any area where the topsoil will be impacted by maintenance activities, including the construction offices and storage areas, must have the topsoil stripped and removed and covered with herbaceous vegetation (other than alien species), overlying grass and other fine organic matter and stockpiled for subsequent use in rehabilitation.
- Topsoil storage areas must be convex and should not exceed 2 m in height. The Contractor must ensure that the material does not blow or wash away. The use of a bund wall should be considered, if appropriate, for the storage of the topsoil.
- The topsoil should be stored outside the 1:50 flood level within demarcated area.
- Topsoil shall be kept separate from overburden and shall not be used for building or maintenance of access roads.
- Topsoil must be treated with care, must not be buried or in any other way be rendered unsuitable for further use (e.g. by mixing with spoil) and precautions must be taken to prevent unnecessary handling and compaction.
- In particular, topsoil must not be subject to compaction greater than 1 500 kg/m² and must not be pushed by a bulldozer for more than 50 m. Trucks may not be driven over the stockpiles.
- Soil that have become compacted through the activities must be loosened to an appropriate depth to allow seed germination before replacing topsoil.
- Disturbed areas must be shaped to the natural form and allow to follow the original contour while bank stabilisation measured must be implemented
- Topsoil from different soil types must be stockpiled separately and replaced in the same areas from which they were taken if this proves to be the case. Specific attention should be given to the areas that may house rare and threatened species.
- Topsoil areas must be demarcated in order to ensure the safekeeping of topsoil and to separate different stockpile types.

3.10.8 EROSION & SEDIMENTATION CONTROL

The Contractor must take appropriate on-going and active measures to prevent erosion resulting from his own maintenance activities and operations as well as storm water control measures to the satisfaction of the ECO. During maintenance works the Contractor must protect areas susceptible to erosion by installing all the necessary temporary and permanent drainage works as soon as possible.

In order to achieve erosion and sediment control, the following are applicable to all sites:

- All areas susceptible to erosion must be protected and it must be ensured that there is no undue soil erosion resultant from activities within and adjacent to construction camp and work areas.
- Install erosion and sediment controls before work starts and maintain these features throughout the maintenance activities (as applicable).
- Leave as much vegetation as possible.
- Install temporary fences to define "No Go" areas in those areas that are not to be disturbed.
- Divert run-off from upslope away from the site, but ensure that it does not cause downstream erosion. For example, dig drainage channels (catch drains sized to accommodate the upslope catchment).
- Install sediment controls down slope of the site to catch sediment (if applicable).
- Inspect and maintain erosion and sediment controls regularly.
- Limit vehicle movement to the site and control access points. Clearly mark such access points and inform all suppliers.
- Save and re-use topsoil during revegetation. Never store topsoil around trees as this may kill them. Spread the topsoil back when the work is finished and revegetate the site as soon as possible to control erosion. Remove the sediment and erosion controls only after revegetation was successfully implemented.
- Store all stockpiles and building materials behind sediment fences. Cover them with plastic to prevent erosion by wind.
- If required, build a dam below any areas used for cutting tiles, concrete and bricks. Surround the wash-out area with a sediment fence that slows down the water flow. Filter or settle-out all water pumped off the site. The water must be clear before it enters the storm water system or creeks. Gypsum can be applied to muddy (turbid) water to help clay particles settle.
- Fill in all trenches immediately after services have been laid.

3.10.9 PROTECTION OF WATERCOURSES

The contractor shall take all reasonable steps to minimise the impact of his activities on the watercourses, both perennial and non-perennial, along the pipeline route.

- No clearing of natural indigenous vegetation may take place within any watercourses.
- In cases where the access pipe points are near a watercourse, workstations have to be placed such that a distance of at least 35m on either side of the watercourse, including riparian vegetation, be left protected and undisturbed.
- Construction camps, work stations, toilet facilities, equipment and material stockpiles must be located outside the extent of the watercourse and must be recovered and removed within one month after completion of activity. Toilets must be located at least 50m from the edge of the watercourse.
- Construction or maintenance in rainy season should be prevented, if not, increased runoff due to vegetation clearance and/or soil compaction must be managed and steps must be taken to ensure that storm water does not lead to bank instability and excessive levels of erosion and silt entering the watercourses.
- Natural drainage lines and wetlands outside structure footprint must be treated as sensitive areas with highly restricted use. Permissible activities inside these areas must be clearly stipulated and treated as unique situations and exceptions. Any activities in watercourses must be discussed with and approved by the ECO.
- It is illegal to discharge water into a public stream if the quality does not conform to the required health or water standards. Other measures as may be necessary must be taken to prevent the surface water from being concentrated in streams and from scouring the slopes, banks or other areas. Any potential hazardous fluids / materials must be protected from the rain to prevent them being washed into storm water channels. All such measures must be discussed with and approved by the ECO.

3.10.10 PROTECTION OF ARCHAEOLOGICAL & PALEONTOLOGICAL REMAINS

Archaeological remains are ancient man-made objects, structures, or ancient burials that have been preserved on the earth's surface, underground, or underwater and serve as the historical sources that make it possible to reconstruct the past history of human society, including mankind's prehistory. Palaeontology is the study of prehistoric life. It includes the study of fossils to determine organisms' evolution and interactions with each other and their environments (their paleoecology). Palaeontology lays on the border between biology and geology, and shares with archaeology a border that is difficult to define.

- Basic archaeological remains include work tools, weapons, domestic utensils, clothing, and ornaments; settlements including campsites, fortified and unfortified settlements, and separate dwellings; ancient fortifications; the remains of ancient hydraulic structures; ancient agricultural fields; roads; mining pits and workshops; ancient burial grounds and various burial and religious structures (stelae, stone figurines, stone fish monoliths (vishaps), menhirs, cromlechs, dolmens, sanctuaries); drawings and inscriptions carved into individual stones and cliffs; and architectural monuments. Archaeological remains also include ancient ships and their cargoes that sank in rivers and seas and settlements that came to be underwater as a result of shifts in the earth's crust
- Should any archaeological remains (including but not limited to fossil bones and fossil shells, coins, indigenous and/or colonial ceramics, any articles of value or antiquity, stone artefacts and bone remains, structures and other built features, rock art and rock engravings) are discovered during maintenance they must immediately be reported to HWC and must not be disturbed further until the necessary approval has been obtained from HWC.
- Should any human remains/burial or archaeological material be disturbed, exposed or uncovered during maintenance, these should immediately be reported to the South African Heritage Resources Agency (021 462 4502) and Heritage Western Cape (021 483 9685). The Owner and ECO is also to be informed. An archaeologist will be required to remove the remains at the expense of the developer
- Note that the Contractor may not, without a permit issued by the responsible heritage resource authority; destroy, damage, excavate, alter, deface or otherwise disturb any archaeological site or archaeological material. The latter is a criminal offence under the Heritage Resources Act.

3.10.11 STORAGE OF CONSTRUCTION MATERIAL & STOCKPILING

The Contractor must provide a method statement (for approval by the ECO) of the maintenance activities which will indicate:

- the type and quantity of material to be stored;
- whether any oil contaminated/containing equipment will be stored;
- how (including what type of vehicles will be required) it will be deliver the material on site at the necessary storage area; and
- whether there is any risk of spill or runoff of any building materials or chemicals and how this is to be mitigated.
- No material is to be stored or stockpiled within any riparian zones.

In addition:

- The Contractor must ensure that any delivery drivers are informed of all procedures and restrictions (including "no go" areas) required to comply with the Specifications. The Contractor must ensure that these delivery drivers are supervised during off-loading, by someone with an adequate understanding of the requirements of the Specifications.
- All manufactured and/or imported material must be stored within the demarcated area, and, if so required, out of the rain. All lay down areas outside of the workstation/construction camp must be subject to the Engineer and the ECO's approval in such a way as not to cause a nuisance or environmental damage.

- All building materials are to be prepared at the batching plant, to enable the effects of cement and other substances, and the resulting effluent to be more easily managed.
- It is essential that any imported material i.e. base material for road works, building sand, bedding base sand for pipe / cable lines etc. must be screened and of which the origins must be identified prior to arriving at the receiving environment, this must be approved by the Engineer / ECO.
- Special care must be taken to prevent bringing in materials contaminated with seed of Invasive Alien Plants. Contractors shall not import construction materials such as sand, gravel or fill contaminated with seed of Invasive Alien Plants, or quarried from areas surrounded by Invasive Alien plant species such as Port Jackson or Rooikrans.
- The Contractor must negotiate appropriate space for this purpose on an area away from natural vegetation and any wetland habitat with the ECO.
- The Contractor must ensure that all staff, contractors and subcontractors are aware of and keep material within these designated storage areas.
- Contractors will not be allowed to store new construction material on the sides of the access road, or within natural vegetation or next to the existing access road.
- Stockpiling of gravel, cut, fill or any other material including spoil should only be allowed in degraded areas or areas within the development footprint.
- Any area used for stockpiling and not covered by building development must be returned to at least the state they were in before stockpiling and it must be ensured that the erosion potential of these areas is not increased.
- The Contractor must ensure that the material does not blow or wash away (especially into riparian zones) or mix with each other. If the stockpiled material is in danger of being washed or blown away, the Contractor must cover it with a suitable material, such as hessian, netting or plastic.
- Also refer to the traffic- and transportation management plans and their requirements.

3.10.12 OIL STORAGE AND MANAGEMENT

An important potential environmental impact is oil spills from any oil filled equipment and machinery that may occur during transportation, operation or storage. The following conditions shall apply:

- Vehicles must be checked for oil leaks prior to going on site
- Care should be taken to prevent any potential oil spillage during upgrading activities.
- Sufficient measures should be put in place to ensure that any potential oil spills are mitigated.
- An oil spill kit should be available on site at all times during the maintenance activities;
- Oil containment facilities should be provided for any oil filled equipment onsite;
- All oil spills must be reported to the ECO within 24 hours, indicating the containment and rehabilitation measures implemented

Oil spill kits are available from:

- Drizit (021) 531 5335
- Enretech (021) 683 1858
- Pinelands Environmental Technology (021) 531 3749

3.10.13 STORING OF PETROLEUM PRODUCTS

Petroleum fuels contain harmful substances known to cause health problems and can easily have adverse effects on water quality, and the environment. Petroleum spills can move rapidly into the soil and quickly contaminate drinking water. In order to prevent pollution it is important to, use proper methods when handling, using, and storing diesel fuel, gasoline, kerosene, or other petroleum products.

Fuel bowser/tanks/drums

Any fuel storage proposals must be cleared by the ECO before any storage or stockpiling takes place. Installation of above-ground fuel storage tanks for use during maintenance activities will not be allowed. Fuel may be brought onto site and stored within a portable fuel bowser, or 200l drums. Fuel storage following basic requirements must be adhered to:

- A Method Statement, explaining the method of storage and mitigation measures to prevent spillages must be submitted to the ECO and accepted prior to the installation of such a fuel storage facility (please note that storage of any dangerous goods/fuel of 30 cubic meters or more require environmental authorisation).
- The fuel drums/bowsers must be placed within a completely sealed bund (containment structure) which must be able to contain at least 120% of the total capacity of the fuel tank.
- The bunded area should be built to be at least a third wider (on all sides) than the base of the fuel tank in order to maximise its capability to contain spillages and leakages.
- The fuel distributor must also be located within bunded area to better prevent against accidental spillages during refuelling.
- In addition, drip trays are to be used during refuelling.
- All vehicles, equipment, fuel and petroleum services and containers must be maintained in a good condition that prevents leakage and possible contamination of soil or water supplies.
- Fuel storage areas must comply with general fire safety requirements.
- Fuel storage areas must be at least 100m from any watercourses.
- Vehicles should preferably be fuelled offsite before coming to site.

Storing of smaller quantities of fuel or oil

Any fuel storage proposals must be cleared by the ECO before any storage or stockpiling takes place. If the contractor proposes to use only small fuel storage facilities (< 200 litres) the following basic requirements must be adhered to:

- Fuels and oils must be safely located out of harm's way from the elements and safety and fire prevention must be strictly adhered to.
- All fuel oil containers must be placed within suitable drip trays to prevent accidental spillage of oils and fuels.
- A suitable leak proof container for the storage of oiled equipment (filters, drip tray contents and oil changes etc.) must be established.
- All spills are to be recorded in the ECO diary.

3.10.14 STORING OF HAZARDOUS SUBSTANCES (IF REQUIRED)

If potentially hazardous substances are to be stored on site, the Contractor must submit a Method Statement detailing the substances and/or materials to be used, together with the storage, handling and disposal procedures of the materials to the ECO.

- Hazardous materials must be stored under lock and key in designated areas with properly displayed and visible warning signs.
- No works related to the submitted Method Statement may commence until the Method Statement has been studied and approved in writing.
- An effective monitoring system to detect any leakage or spillage of all hazardous substances during their transportation, handling, use and storage must be implemented. This must include precautionary measures to limit the possibility of oil and other toxic liquids from entering the soil or storm water systems.

- Measures to protect hydrological features such as streams, rivers, pans, wetlands, dams and their catchments, and other environmental sensitive areas from maintenance impacts including the direct or indirect spillage of pollutants must be implemented.
- **Paints: -** No paint products may be disposed of on Site and brush/roller wash facilities must be established to the satisfaction of the Engineer and the ECO. Oil based paints and chemical additives and cleaners such as thinners and turpentine must be strictly controlled. A Method Statement detailing the paint management procedures is required.
- **Hazardous building materials: -** Hazardous building materials must be identified and dealt with in accordance with the relevant safety and health legislation. All such material must be separated on Site and disposed of at appropriate licensed disposal sites. The Contractor must supply the ECO with a certificate of disposal.

3.10.15 USE OF CEMENT OR CONCRETE

The Contractor is advised that cement and concrete are highly hazardous to the natural environment because of the high pH levels of the material, and the chemicals contained therein. Wash-out water with high pH is the number one environmental issue for the ready-mix concrete industry. The alkalinity levels of wash water can be as high as pH 12, which is toxic to fish and other aquatic life.

The Site Supervisor or Contractor must indicate the need for and the proposed location of concrete batching plants which includes the location of cement stores, sand and aggregate stockpile areas. A Method Statement indicating the layout, type of concrete batching preparation (dry or wet mix). The site agent must indicate on the Method Statement proposed total volume of concrete that is needed for the completion of the entire project.

Concrete/cement mixing:

- Concrete and cement may only be mixed on existing hard surfaced areas, or edged mortar boards or a suitable container. Concrete may not be mixed or stored directly on the ground under any circumstances;
- The visible remains of the batch and concrete, either solid, or from washings, must be physically removed immediately and disposed of as hazardous waste.
- Washing of equipment shall be done in a container to prevent any runoff of contaminated washing water.
- Extreme care must be taken to limit the amount of water contaminated by washing equipment. Water from concrete washing can be re-used in concrete mixes or must be stored in drums, then removed from the site and disposed of at a licensed municipal dump site.

Concrete batching plants (if required)

The following procedures must be implemented to control wastewater run-off from concrete batching plant locations:

- The location of concrete batching areas must be approved by the ECO (if possible/appropriate, the use of ready-mix concrete is preferred).
- Concrete batching facilities must have suitable bunding methods in place to ensure minimal wastewater run-off occurs during batching operations.
- Contaminated water may not enter a natural or man-made (e.g. trench / sloot or dam) water system. Preventative measures include establishing sumps from where contaminated water can be either treated in situ or removed to an appropriate waste site.
- Dry mixing batching areas to be carefully placed in consultation with the ECO.

- Cement bags are to be stored securely out of harm's way from the elements (wind and rain). Bags have to be covered and placed on plastic sheeting. Used cement bags must be disposed of on a regular basis via the solid waste management system, and must not be used for any other purpose.
- Sand and stone used for cement or concrete batching must be stored on plastic layers (or on ECO approved disturbed areas) in order to prevent contamination of the natural environment.
- Cleaning of equipment and flushing of mixers must not result in pollution of the surrounding environment. All wastewater resulting from batching of concrete must be disposed of *via* the contaminated water management procedure.
- Excess or spilled concrete must be confined within the works area and all visible remains of excess concrete must be physically removed and disposed of on completion of cement work. Washing the remains into the ground is not acceptable. All excess aggregate must also be removed.
- Wash-down areas must be confined to within the concrete batching areas only.

3.10.16 FIRE FIGHTING

Adequate fire-fighting equipment according to the fire hazard during the maintenance/construction period must be available on site and in good working order (at least one type ABC (all purpose) minimum 4.5 kg extinguisher and 3 fire beaters per working area). The persons on site must be trained in the use of such equipment.

- The main contractor must provide a list of all authorities involved in fire-fighting in the region. This list must include emergency contact numbers and must be visible at the site office.
- Welding, gas cutting, grinding or cutting of metal will only be permitted inside the working areas. A designated, trained staff with fire-fighting equipment at hand must be monitoring and present during such activities.
- The Contractor must pay the costs incurred to organizations called to put out any fires started by him. The Contractor must also pay any costs incurred to reinstate burnt areas as deemed necessary by the land owner.
- It is required that contractors have available the emergency telephone numbers of the nearest local Fire Fighting Station and that an emergency fire-fighting re-action plan has been drawn up with on-site workers and the resident land-owner / farmer.
- No on site fires are permitted.
- No firewood may be collected on site or from the surrounding natural area.

3.10.17 EMERGENCY PROCEDURES

It is the responsibility of the contractor to assess the potential risks to the environment as a result of the project. As such, the contractor must have the necessary standard emergency operating procedures in place to deal with any potential emergency such as oil spills or fire.

- All staff should be made aware of the necessary basic emergency procedures in the event of an emergency including injuries to staff. The appropriate equipment and identified personnel to deal with such basic emergencies should be available on site.
- All staff on site should wear hi-viz vests when on site.
- **Fire:** The Contractor must advise the relevant authority of a fire as soon as one starts and must not wait until he can no longer control it. The Contractor must ensure that his employees are aware of the procedure to be followed in the event of a fire.
- **Hazardous Material Spills**: The Contractor must ensure that his employees are aware of the procedure to be followed for dealing with spills and leaks, which must include notifying the Engineer, the ECO

and the relevant authorities. Treatment and remediation of the spill areas must be undertaken to the reasonable satisfaction of the ECO and Local Authority.

3.10.18 SOLID WASTE MANAGEMENT

Waste refers to all solid waste, including domestic waste, hazardous waste and construction debris. The Contractor are responsible for the establishment of a refuse control system (which must consider recycling wherever possible) that is acceptable to the ECO. Disposal arrangements must be made in advance and cleared with the ECO before maintenance starts.

- No littering or on-site burying or dumping of any waste materials, vegetation, litter or refuse may occur.
- All solid waste must be disposed of offsite at an approved landfill site in terms of section 20 of the Environment Conservation Act (Act No. 73 of 1989). The Contractor must supply the ECO with a certificate of disposal.
- The Contractor must provide problem animal- and weatherproof bins with lids of sufficient number and capacity to store the solid waste produced on a daily basis. The lids must be kept firmly on the bins at all times. Bins must not be allowed to become overfull and must be emptied regularly.
- Waste from bins may be temporarily stored on Site in a central waste area that is weatherproof and scavenger proof and which the Engineer and the ECO has approved.
- All hazardous waste must be disposed of at a registered hazardous waste disposal site and certificates of safe disposal must be obtained.
- Solid bitumen waste from the cleaning of the pipeline must be consolidated and removed from site. No burying of bitumen waste allowed on site. The bitumen waste is to be disposed of at an appropriate licenced waste facility. Options for the reuse and recycling of the solid bitumen waste can also be considered, but this must be agreed upon by the ECO.
- All waste generated during maintenance activities must be removed by the Contractor as soon as possible, and within the period specified and disposed of at a registered landfill site.
- The Contractor must make provision for workers to clean up the Contractor's camp and working areas on a daily basis so that no litter is left lying around and so that the site is in a neat and tidy state. The Contractor must remove from site the refuse collected at least once a week.
- Waste and any excess material should not be dumped into any riparian zones.

3.10.19 TOILETS & ABLUTION FACILITIES

The Contractor must provide suitable sanitary arrangements at designated points of the work site for all site employees. A minimum of one toilet must be provided per 15 persons at each working area (station) or as stipulated in the Management plan.

- The toilet must be within easy reach (max 300m) of the working area and be in good working condition and cleaned on a daily basis. Toilet paper must be provided. The toilets must be emptied on a weekly basis or when full or when instructed by the ECO on site.
- Toilets should be placed at least 50m from any watercourses.
- Toilets should be adequately screened from any public areas.
- Disposal arrangements must be made in advance and cleared with the ECO before maintenance starts. Sanitation provision and servicing must be to the satisfaction of the ECO.
- The Contractor must ensure that toilets are emptied prior to any builders' holidays, and/or weekends.
- Toilets must be of a neat construction and must be provided with doors and locks and must be secured to prevent them blowing over.

- NB: No burying of any waste material on or near the works site nor anywhere on the surrounding property is permitted.

3.10.20 DISCHARGE OF CONSTRUCTION/CLEANING WATER

Potential pollutants of any kind and in any form must be kept, stored, and used in such a manner that any escape can be contained, and the water table not endangered. This particularly applies to water emanating from runoff from works areas/fuel depots/workshops/truck washing areas.

- The contractor, being responsible for the construction and effective containment and maintenance of settlement ponds must ensure that the surrounding environment is not adversely affected as a result of construction activities.
- The wastewater from cleaning of the pipeline will be accumulated at the lower opening, via gravitation, into containers such as 'JoJo' tanks. This must be removed from the site and disposed of at the nearest licenced and approved waste disposal site.
- Wash down areas must be placed and constructed in such a manner so as to ensure that the surrounding areas are not polluted. Contaminated water includes water that is carrying excess sediment due to construction or maintenance activities.
- Contaminated water storage facilities must not be allowed to overflow and appropriate protection from rain and flooding must be implemented.
- Contaminated water that is removed from site must be disposed of at a facility approved by the ECO and Local Authority.
- No contaminated water that does not meet the water quality standards and criteria under the National Water Act may be released into a natural system, whether it is to surface or groundwater.
- All cement effluent from mixer washings, and run-off from batching areas and other work areas must be contained in suitable sedimentation ponds.
- Sedimentation ponds must be allowed to dry out on a regular basis to allow for solid material to be removed.
- This material must be disposed of in a suitable manner, depending on the nature of the material, and to the discretion of the ECO.

3.10.21 EATING FACILITIES

The Contractor must designate eating areas for the approval of the ECO, which must be clearly demarcated. No eating of meals must take place outside these designated areas without the approval of the Contractor/ECO.

- Eating areas that are allocated for workers must be established in an environmentally acceptable manner and in line with all OH&Safety Act regulations. All on site and on route workers temporary eating areas must be have acceptable toilet and refuse management systems in place and these areas must have suitable refuse receptacles' available for the containment and disposal of general litter and refuse.
- The feeding, or leaving of food for animals are strictly prohibited.
- Sufficient waste bins must be present in this area and emptied regularly.
- The contractor must supply cooking facilities that are suitable for the environment and are not liable to cause the outbreak of fires.
- The contractor must supply all staff with adequate clean water, and may not be sourced from surrounding farms/ landowners, unless written permission is granted by the landowner.
- No overnight camping/stay on site allowed. If overnighting is necessary for security purposes then it must be cleared with the ECO on site.

- No washing in dams or streams are allowed.

3.10.22 DUST CONTROL

The Contractor must take all reasonable measures to minimize the generation of dust as a result of maintenance/construction activities resulting from along-construction-route activities (but must also take into account possible water constrictions of the area).

- The onsite construction site agent must take into account prevailing wind strength and wind direction and must have preventative measures on standby to minimize dust pollution that may cause damage to people and property.
- The liberation of dust into the surrounding environment shall be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents. The speed of haul trucks and other vehicles must be strictly controlled to avoid dangerous conditions, excessive dust or excessive deterioration of the road being used.

3.10.23 RESTORATION AND REHABILITATION

The Contractor must ensure that all structures, equipment, materials and facilities used or created on site for or during maintenance activities are removed once the project has been completed. On completion of the project or phase, all areas impacted by the maintenance activities must be reinstated and/or rehabilitated to the satisfaction of the ECO with emphasis on the following:

- Immediately after the demolition of the camp site, workstation or once maintenance has been completed, the contractor shall restore the site to its original state, paying particular attention to its appearance relative to the general landscape. This must be done as soon as possible after maintenance/construction has ended to ensure no possible environmental degradation of the site as a result of erosion, alien vegetation establishment etc.
- The contractor's procedure for rehabilitation shall be approved by the ECO and Engineer.
- Site offices must be removed and the areas rehabilitated or reinstated to the satisfaction of the ECO.
- Labourer's facilities (if applicable) must be removed and the areas rehabilitated or reinstated to the satisfaction of the ECO.
- All workstation areas must be rehabilitated or reinstated to the satisfaction of the ECO.
- All temporary fencing and demarcation must be removed and the areas reinstated to the satisfaction of the ECO.
- Temporary storage areas must be rehabilitated or reinstated to the satisfaction of the ECO.
- All remaining construction material must be removed and the areas rehabilitated or reinstated to the satisfaction of the ECO.

Any additional **disturbed** areas must be rehabilitated or reinstated to the satisfaction of the ECO. This shall include but not be limited to:

- Earthworks to reinstate the physical characteristics of the site. Here attention to the natural vertical and lateral heterogeneity in landform shall guide the reinstatement of natural areas.
- Replacement of topsoil material – care shall be taken to ensure that the same material that was removed from each area is replaced there, since this will carry the seed complement appropriate for re-establishment of each plant community type.
- Soil that have become compacted through the activities must be loosened to an appropriate depth to allow seed germination before replacing topsoil.
- Disturbed areas must be shaped to the natural form and allow to follow the original contour while bank stabilisation measured must be implemented.

- Final landscaping by machine, but landscaping by hand may be required in many areas under rehabilitation.
- Re-seeding and / or replanting of rehabilitated areas.
- The Contractor shall not be permitted to use fertilisers or pesticides.
- It is imperative that any potential erosion problems are addressed. This may require subsequent site visits to monitor the efficacy of erosion control measures.

3.10.24 LAND MANAGEMENT

- Vehicles accessing the works site must be made aware of driving in hazardous road conditions, sharp bends, narrow roads, bad weather, on or near children or domestic animals along the road.
- Vehicle movements should be kept to a minimum during rain to avoid damage to access roads.
- No fences or gates on the relevant property must be damaged. All access gates to the property to be kept closed at all times to prevent domestic and or wild animals from getting out. Access by unauthorised personnel should be controlled. The access gates to the works areas must always be closed.
- Soil erosion must be prevented at all times along the access roads and around works areas.

3.10.25 SOCIO-CULTURAL ISSUES

- Neighbouring community, adjacent land owners and occupiers etc. must be treated with respect and courtesy at all times.
- The cultural lifestyles of the communities living in close proximity to the works areas must be respected.
- Hours of work on the site shall be limited to normal working hours, as accepted by the local authority.
- Should maintenance/construction be required outside of these times, permission is to be obtained from the local municipality, in consultation with the ECO and the surrounding landowners.

3.11 EMERGENCY PREPAREDNESS & RESPONSE

The following potential emergency situations have been identified and include the procedure for responding to, and for preventing and mitigating the environmental impacts that may be associated with them (also refer to Penalties and Fines).

3.11.1 ACCIDENTAL FIRES

Fire safety in Fynbos Area is a very real risk and must be stringently controlled. No fires will be permitted on site for any reason. If required, a designated smoking area will be provided, and clearly demarcated and signposted, with a facility for safe containment and disposal of cigarette butts.

The following measures must be implemented:

- Adequate fire-fighting equipment must be available on site and in good working order (including at least one type ABC (all purpose) minimum 4.5 kg fire extinguisher and 3 fire beaters per working area). The persons on site must be trained in the use of such equipment.
- The main contractor must provide a list of all authorities involved in fire-fighting in the region. This list must include emergency contact numbers and must be visible at the site office.
- The contractors must establish an emergency procedure (with contact numbers) to the satisfaction of ECO (whenever work is done in any fire prone areas).

3.11.2 HYDROCARBON SPILLS

The following must be observed:

- Vehicles will arrive on site already fuelled for the project.
- If additional fuel is needed, it will be brought in as needed (minimal volumes) and refuelling will be done using a pump and not a funnel (to minimize the risk of spills).
- Spill trays shall be used during re-fuelling.
- In the case of accidental spillages or leakage, the contractor will be responsible for immediate containment and corrective action (e.g. stopping the leakage), and to inform the Construction Supervisor and ECO.
- The ECO will recommend the best possible environmental solution.
- The Contractor will be liable for any costs incurred.

3.11.3 CONCRETE/CEMENT SPILLAGES

The Contractor/supplier will be liable for the safe and correct deliverance of substantial loads of concrete or cement.

- Should a spill occur the Contractor/supplier will be liable for all costs of the rehabilitation needed.

4. IMPACT MANAGEMENT OUTCOMES

Impact Management Outcomes

Planning and Pre-Maintenance					
Impact	**Management Outcomes**	**Management Actions**	**Responsible Person/Party**	**Implementation Monitoring Method**	**Monitoring Frequency**
Demarcation of work areas	Prevent impacts on undisturbed areas and natural vegetation	• The site will be demarcated with appropriate dropper poles. Alternative fencing may be decided upon dependent on-site requirements). Other demarcation measures can be used if approved by the ECO • Work areas and access routes must be clearly demarcated to minimise environmental impact • No work stations/areas within 35m of a watercourse	Contractor	Method Statement/ ECO	Once-off, at each works area
Demarcation of no-go areas	Prevent impacts on sensitive features on site and natural vegetation on or adjacent to the site	• No-Go areas will be demarcated and indicated on a site plan • Natural vegetation outside of the development area will be considered no-go areas, unless for the purpose of alien vegetation clearing.	Contractor	Method Statement/ ECO	Once-off
Site camp establishment and access roads	Prevent unnecessary impacts on natural vegetation through the establishment and operations of the site camp and access roads.	The site camp, lay down areas, and access roads must be clearly defined on a plan, taking no-go areas into consideration, as well as proximity to water resources.	Contractor	Method Statement/ ECO	Once-off

Fuel Storage	Prevention of fuel spillages and contamination of the soil and/or water resources	• The fuel tank must be placed within a completely sealed bund • All fuel oil containers must be placed within suitable drip trays to prevent accidental spillage of oils and fuels. • A suitable leak proof container for the storage of oiled equipment (filters, drip tray contents and oil changes etc.) must be established. • Fuel storage areas must be at least 100m from any watercourses.	Contractor	Method Statement/ ECO	Once-off
Mandatory site equipment	Ensure the correct equipment is on site to meet environmental requirements as per the EMP	• Adequate fire-fighting equipment must be available on site and in good working order (including at least one type ABC (all purpose) minimum 4.5 kg fire extinguisher and 3 fire beaters per working area • Drip trays to be used during refuelling or storage of small quantities of fuel on site • Adequate toilet and ablution facilities must be provided on site. Toilets should be placed at least 50m from any watercourses. Toilets are to be serviced and cleaned on a regular basis • Adequate waste bins to be provided on site	Contractor	Method Statement/ ECO	Once-off
Waste Management	To prevent and minimise waste generation and contamination of the site and surrounding areas	• No littering or on-site burying or dumping of any waste materials, vegetation, litter or refuse may occur. • All solid waste must be disposed of offsite at an approved landfill site in terms of section 20 of the Environment Conservation Act (Act No. 73 of 1989). The Contractor must supply the ECO with a certificate of disposal. • The Contractor must provide problem animal- and weatherproof bins with lids of sufficient number and capacity to store the solid waste produced on a daily basis. The lids must be kept firmly on the bins at all times. Bins must	Contractor	Method Statement/ ECO	Weekly

		not be allowed to become overfull and must be emptied regularly.			
Fire Management	Prevent unnecessary fires which may cause damage and risk to the environment, property and human health, and adequately deal with any fires that may occur on site	• Adequate fire-fighting equipment according to the fire hazard during the maintenance period must be available on site and in good working order (at least one type ABC (all purpose) minimum 4.5 kg extinguisher and 3 fire beaters per working area). The persons on site must be trained in the use of such equipment. • The main contractor must provide a list of all authorities involved in fire-fighting in the region. This list must include emergency contact numbers and must be visible at the site office. • No on site fires are permitted.	Contractor	Method Statement/ ECO	Continuous

Maintenance					
Impact	**Management Outcomes**	**Management Actions**	**Responsible Person/Party**	**Implementation Monitoring Method**	**Monitoring Frequency**
Topsoil removal	Topsoil to be removed (if necessary), protected and stockpiled for rehabilitation after maintenance activities	• Prior to any activities within the demarcated work areas, topsoil material shall be removed to a depth of 50 mm or deeper if specified by the engineer in consultation with the ECO, and stockpiled in a designated area for use in rehabilitation of the site post maintenance. • Topsoil from the still relatively natural area (the top 15 -20 cm) should be removed and be used for rehabilitation after maintenance	Contractor	Method Statement/ ECO	Once-off, at each work area

		activities on site or in the immediate vicinity of the site.			
Stockpile Management	Avoid impacts on natural areas and watercourses from stockpiling of material, waste etc.	• Topsoil stockpiles to be separated from waste, building material etc. stockpiles • Stockpile areas to be demarcated prior to maintenance activities.	Contractor	Method Statement/ ECO	Once-off
Erosion Management	Prevent erosion as a result of maintenance activities on site	• Install erosion and sediment controls before work starts and maintain these features throughout the maintenance activities. • Leave as much vegetation as possible. • Implement the Stormwater Management Plan. Adherence to the MMP & Implementation of Standard Management Procedures in terms of erosion and sedimentation	Contractor	Method Statement/ ECO	Continuous
Cement mixing	Prevent contamination from cement mixing and cement wastewater on the natural environment, particularly water resources. Due to the high alkaline pH of cement, it is highly hazardous to the natural environment	• Concrete and cement may only be mixed on existing hard surfaced areas, or edged mortar boards or a suitable container • The visible remains of the batch and concrete, either solid, or from washings, must be physically removed immediately and disposed of as hazardous waste. • Washing of equipment shall be done in a container to prevent any runoff of contaminated washing water. • Extreme care must be taken to limit the amount of water contaminated by washing equipment. Water from concrete washing can be re-used in concrete mixes or must be stored in drums, then removed from the site and disposed of at a licensed municipal dump site. • Concrete batching facilities must have suitable bunding methods in place to ensure minimal wastewater run-off occurs during batching	Contractor	Method Statement/ ECO	Continuous

		operations • Cleaning of equipment and flushing of mixers must not result in pollution of the surrounding environment. All wastewater resulting from batching of concrete must be disposed of *via* the contaminated water management procedure.			
Dust Control	Prevent and minimise dust generation on site which can become a nuisance to neighbouring land owners and residents, as well as being a health risk	• The Contractor must take all reasonable measures to minimize the generation of dust as a result of maintenance activities resulting from along-construction-route activities (but must also take into account possible water constrictions of the area). • The onsite construction site agent must take into account prevailing wind strength and wind direction and must have preventative measures on standby to minimize dust pollution that may cause damage to people and property. • The liberation of dust into the surrounding environment shall be effectively controlled by the use of, inter alia, water spraying and/or other dust-allaying agents. The speed of haul trucks and other vehicles must be strictly controlled to avoid dangerous conditions, excessive dust or excessive deterioration of the road being used.	Contractor	Method Statement/ ECO	Continuous

Rehabilitation					
Impact	**Management Outcomes**	**Management Actions**	**Responsible Person/Party**	**Monitoring Method**	**Monitoring Frequency**
Rehabilitation of the Works Areas	Rehabilitation of areas impacted by maintenance activities	• All structures, equipment, materials and facilities used or created on site for or during maintenance activities are removed once the project has been completed. On completion of the project or phase, all areas impacted by the maintenance activities must be reinstated and/or rehabilitated to the satisfaction of the ECO • Immediately after the demolition of the camp site or once maintenance activities has been completed, the contractor shall restore the site to its original state, paying particular attention to its appearance relative to the general landscape. This must be done as soon as possible after maintenance activities has ended to ensure no possible environmental degradation of the site as a result of erosion, alien vegetation establishment etc. • The contractor's procedure for rehabilitation shall be approved by the ECO and Engineer. • Site offices must be removed and the areas rehabilitated or reinstated to the satisfaction of the ECO. • Earthworks to reinstate the physical characteristics of the site. Here attention to the natural vertical and lateral heterogeneity in landform shall guide the reinstatement of natural areas. • Replacement of topsoil material – care shall be taken to ensure that the same material that was removed from each area is replaced	Contractor	Method Statement/ ECO	Once-off, at end of maintenance activities

		there, since this will carry the seed complement appropriate for re-establishment of each plant community type. • Final landscaping by machine, but landscaping by hand may be required in many areas under rehabilitation.			

5. MAINTENANCE ACTIVITIES

REMOVAL OF PIPELINE SECTIONS				
LOCATION	**EQUIPMENT REQUIRED/ TO BE USED**	**ACTIVITY DESCRIPTION**	**RESPONSIBLE PERSON/PARTY**	**TIMEFRAME**
On all sections of the pipeline that need to be relined (Sections to be done in phases).	Telehandler used to remove pipeline sections	See Method Statement 2 and 4	Contractor	Repeated for each section of pipeline to be relined. Continuous during duration of relining maintenance activities (approximately 6 months)

CLEANING OF PIPELINES				
LOCATION	**EQUIPMENT REQUIRED/ TO BE USED**	**ACTIVITY DESCRIPTION**	**RESPONSIBLE PERSON/PARTY**	**TIMEFRAME**
On all sections of the pipeline that need to be relined (Sections to be done in phases).	High-pressure cleaners, winch	See Method Statement 2 and 4	Contractor	Repeated for each section of pipeline to be relined. Continuous during duration of relining maintenance activities (approximately 6 months)

RELINING OF PIPELINE				
LOCATION	**EQUIPMENT REQUIRED/ TO BE USED**	**ACTIVITY DESCRIPTION**	**RESPONSIBLE PERSON/PARTY**	**TIMEFRAME**
On all sections of the pipeline that need to be relined (Sections to be done in phases).	Cement mixer and sprayer (one unit)	See Method Statement 1, 3 and 4	Contractor	Repeated for each section of pipeline to be relined. Continuous during duration of relining maintenance activities (approximately 6 months)

GENERAL PIPELINE MAINTENANCE				
LOCATION	**EQUIPMENT REQUIRED/ TO BE USED**	**ACTIVITY DESCRIPTION**	**RESPONSIBLE PERSON/PARTY**	**TIMEFRAME**
Entire length of the pipeline	General tools	See Method Statement 5	Owner/Contractor	Ongoing. Duration of operational phase of the pipeline

6. METHOD STATEMENTS

The following Method Statements are for specific maintenance activities on the pipeline. General Method Statements, including site establishment, demarcation, waste control, mandatory site equipment etc. must be submitted as per Section 3.6.

Method Statement 1: Cement Mixing and Relining of Pipes

Method Statement 2: Pipe Cleaning

Method Statement 3: Cement Cleaning

Method Statement 4: Pipe Rehabilitation

Method Statement 5: General Pipe Maintenance

METHOD STATEMENT 1: Cement Mixing & Relining of pipes

WHAT WORK IS TO BE UNDERTAKEN:

Cement Mixing at workstations for relining of pipes

WHERE ARE THE WORKS TO BE UNDERTAKEN:

At Work Stations along the pipeline as work progresses

START AND END DATE OF THE WORKS FOR WHICH THE METHOD STATEMENT IS REQUIRED:

Duration of Relining and Maintenance activities

HOW ARE THE WORKS TO BE UNDERTAKEN:

Cement Mixing:

- all cement mixing equipment (including mixer) to stand on black plastic layer with sand berms around to protect soil from spillage
- cement, water and sand will be mixed into mixer according to prescribed ratios
- water will be supplied by water tanks which will be filled from Rooikloof dam and pipeline
- from mixer it will be pumped and sprayed against pipe wall

Relining:

- after cleaning the pipe sections it will be relined with cement mix
- install & fit all relining equipment (system) according to detailed Method Statement (refer John Davies)
- transfer the cement mix into hopper which is connected to a national pump
- then hose into pipe via pneumatic air motor mounted on a momentum trolley and followed by a drag trowel
- the system/machine is pulled by winch from lowest to highest point
- cement lining dries as liner progresses, no bebris from pipe
- excess cement is pumped onto plastic in heaps that will harden overnight
- harden excess cement will be removed from site weekly to a registered building dumpsite
- all empty cement bags to be collected & packed into designated bulk bags immediately after use and to be weekly disposed of by truck to registered dumpsite

METHOD STATEMENT 2: Pipe Cleaning

WHAT WORK IS TO BE UNDERTAKEN:

High-pressure pipe cleaning with water (500bar pressure)

WHERE ARE THE WORKS TO BE UNDERTAKEN:

At Work Stations along the pipeline as work progresses

START AND END DATE OF THE WORKS FOR WHICH THE METHOD STATEMENT IS REQUIRED:

Duration of Relining and maintenance activities

HOW ARE THE WORKS TO BE UNDERTAKEN:

- Remove pipe section & install high pressure cleaning frame into pipe
- Connect to winch cable and then connect to high pressure hose from high pressure cleaning machine
- Start cleaning from highest point and work 'downhill', the winch pulls the cleaning machine to lowest point whilst cleaning
- water containing bitumen waste will be collected in cofferdam made of straw bales and layered with bidum to filter bitumen solids
- thus the clean water will gravitate slowly through hay bales onto surface
- High Pressure cleaning machine is equiped with its own water tank that will be filled daily from Rooikloof pipe or dam

METHOD STATEMENT 3: Cement Cleaning

WHAT WORK IS TO BE UNDERTAKEN:

Cleaning of Cement Mixing Machinery and Equipment

WHERE ARE THE WORKS TO BE UNDERTAKEN:

At Work Stations along the pipeline as work progresses

START AND END DATE OF THE WORKS FOR WHICH THE METHOD STATEMENT IS REQUIRED:

Duration of Relining activities

HOW ARE THE WORKS TO BE UNDERTAKEN:

- all cement mixing equipment including hose and mixer will be rinsed with water supplied by water tanks
- water tanks will be filled from Rooikloof dam and pipeline
- dirty and contaminated rinse water will be collected via temporary chute/funnel made of hay bales covered with plastic and top layer of bidum, into cofferdam, also made of hay bales and lined with plastic
- the bidum will remove most of the cement particles and solid waste which will be bagged in bulk bags to be removed weekly from site to registered builders dump site
- the contaminated water will be collected in cofferdam which will act as evaporation dam
- all dry cement waste from coffer dam will be removed with the cemented bidum layers

METHOD STATEMENT 4: Pipe Rehabilitation

WHAT WORK IS TO BE UNDERTAKEN:

Pipe Rehabilitation:
1) Pipe Cleaning
2) Video (camera)
3) Relining

WHERE ARE THE WORKS TO BE UNDERTAKEN:

At Work Stations along the pipeline as work progresses; the process will consist of a chain reaction of the above 3 steps and will move along the pipeline

START AND END DATE OF THE WORKS FOR WHICH THE METHOD STATEMENT IS REQUIRED:

Duration of Pipeline relining activities

HOW ARE THE WORKS TO BE UNDERTAKEN:

Set up Work Station of ±100m²
Dismantling the pipe segments at the couplings up- & downstream of the pipe sections to be rehabilitated
Old bitumen liner inside the pipe will be stripped/cleaned with high pressure water cleaning system
Camera 'video'ing will following to confirm the quality of work
A new cement liner will be sprayed on inside of the pipe and left to dry as work progresses down the pipe
Quality check
Demolishing of Work Station

METHOD STATEMENT 5: General Pipe Maintenance

WHAT WORK IS TO BE UNDERTAKEN:

Pipe Maintenance:

1. Scour Valve Maintenance / Repairs / Replace
2. Air Valve Maintenance / Repairs / Replace
3. Concrete Pillar Repairs
4. Pipe Segment Maintenance / Repairs / Replace
5. Fire Belts along Pipe route

WHERE ARE THE WORKS TO BE UNDERTAKEN:

Along pipe route, as required

START AND END DATE OF THE WORKS FOR WHICH THE METHOD STATEMENT IS REQUIRED:

On-going

HOW ARE THE WORKS TO BE UNDERTAKEN:

Nr's 1-4: Air-, Scour Valve & Pipe Segments:

- Access via existing roads with maintenance vehicle (& pick-up truck if required)
- Dismantling the pipe segments at the couplings up- & downstream of the pipe sections to be repaired/maintained
- repair / replace or maintain parts as necessary (keeping all chemicals contained and/or work on plastic cover in case of oils, sealant or paint etc)
- concrete works (&mixing) to be done according Method Statement (MS 05 & MS 07)
- When welding & grinding is involved, Method Statement (MS 04) will be followed

Nr 5: Fire Belt:

- a 3-4m belt will be brush-cut regularly to protect the pipe and also to prevent fire spreading in general.

7. PHOTOGRAPHS

Photograph 1: General view of the pipeline looking north.

Photograph 2: General view of the pipeline looking north.

Photograph 3: General view of the pipeline looking south.

Photograph 4: General view of the pipeline looking north, including removal of a pipeline section for inspection.

Photograph 5: Removal of a pipeline section for inspection.

Photograph 6: General view of pipeline section and pillar

APPENDIX 1: MAPS AND DRAWINGS

APPENDIX 2: START-UP REPORT

APPENDIX 3: INFO ON METHOD STATEMENTS

INFORMATION ON METHOD STATEMENT

Method Statements are to be completed by the person undertaking the work (i.e. the Contractor). The Method Statement will enable the potential negative environmental impacts associated with the proposed activity to be assessed.

The Method Statement can only be implemented once approved by the ECO

The Contractor (and, where relevant, any sub-contractors) must also sign the Method Statement, thereby indicating that the works will be carried out according to the methodology contained in the approved Method Statement.

The ECO will use the Method Statement to audit compliance by the Contractor with the requirements of the approved Method Statement.

Changes to the way the works are to be carried out must be reflected by amendments to the original approved Method Statement; amendments require the signature of the ECO denoting that the changed methodology or works are necessary for the successful completion of the works, and are environmentally acceptable. The Contractor will also be required to sign the amended Method Statement thereby committing him/herself to the amended Method Statement.

This Method Statement MUST contain sufficient information and detail to enable the 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.

THE TIME TAKEN TO PROVIDE A THOROUGH, DETAILED METHOD STATEMENT IS TIME WELL SPENT. INSUFFICIENT DETAIL WILL RESULT IN DELAYS TO THE WORKS WHILE THE METHOD STATEMENT IS REWRITTEN TO THE ER'S AND ECO'S SATISFACTION.

The page overleaf provides a *pro forma* method statement sheet, which needs to be completed for each activity requiring a method statement in terms of the EMP.

APPENDIX 4: EXAMPLE OF METHOD STATEMENT

PRO-FORMA METHOD STATEMENT

CONTRACT:…….. **DATE:**……..

PROPOSED ACTIVITY (give title of method statement and reference number):

WHAT WORK IS TO BE UNDERTAKEN (give a brief description of the works):

WHERE ARE THE WORKS TO BE UNDERTAKEN (where possible, provide an annotated plan and a full description of the extent of the works):

START AND END DATE OF THE WORKS FOR WHICH THE METHOD STATEMENT IS REQUIRED:

Start Date:	End Date:

HOW ARE THE WORKS TO BE UNDERTAKEN (provide as much detail as possible, including annotated maps and plans where possible):

Note: please attach extra pages if more space is required

DECLARATIONS

1) ENVIRONMENTAL CONSULTANT AND/OR ENVIRONMENTAL CONTROL OFFICER

The work described in this Method Statement, if carried out according to the methodology described, is satisfactorily mitigated to prevent avoidable environmental harm:

_____ _____

(Signed) (Print name)

_____ _____

(Signed) (Print name)

Dated: _____

2) PERSON UNDERTAKING THE WORKS

I understand the contents of this Method Statement and the scope of the works required of me. I further understand that this Method Statement may be amended on application to other signatories and that the ECO will audit my compliance with the contents of this Method Statement

_____ _____

(Signed) (Print name)

Dated: _____

3) THE APPLICANT

The works described in this Method Statement are approved.

_____ _____ _____

(Signed) (Print name) (Designation)

Dated: _____

APPENDIX 5: CONTACTOR ENVIRONMENTAL CHECKLIST

CONTACTOR/S REPRESENTATIVE: ENVIRONMENTAL WEEKLY CHECKLIST

SITE: _____

PHASE OF WORK AND % OF COMPLETION: _____

ENVIRONMENTAL ASPECT	YES/ NO (✓ or X)	COMMENTS
How many workers are on site		
All new personnel on site are aware of the contents of the EMP and have been through the environmental awareness course.		
Contractor's camp is neat and tidy and the labourers' facilities are of an acceptable standard.		
Sufficient and appropriate fire fighting equipment is visible and readily available.		
Waste control and removal system is being maintained.		
Refuse bins in place and maintained		
Toilets are in place and clean		
Demarcation and other fences are being maintained.		
What machinery are on site		
Drip trays are being utilised where there is a risk of incidental spillage		
Bunds/ drip trays are being emptied on a regular basis (especially after rain).		
No leakages (oil & fuel) are visible from construction vehicles		
No go areas, remaining natural features and trees have not been damaged.		
Dust control measures (if necessary) are in place and are effectively controlling dust.		
Noise Control measures (if necessary) is in place and is working effectively.		
Erosion control measures (if necessary) are in place and are effective in controlling erosion. (Access road, site areas etc.)		
Stockpiles are located within the boundary of the site, do not exceed 2 m in height and are protected from erosion.		

Completed by:…… Sign:…….. Date:……

To be submitted at the end of each week to the Environmental Site Officer (ESO)

Received by:

Environmental Site Officer: :…… Sign: Date:……

APPENDIX 6: BASIC RULES OF CONDUCT

BASIC RULES OF CONDUCT

The following list represents the basic Do's and Don'ts towards environmental awareness, which all participants in this project must consider whilst carrying out their tasks. These are not exhaustive and serve as a quick reference aid.

NOTE: **ALL new site personnel must** attend an environmental awareness presentation. Please inform your foreman or manager if you have not attended such a presentation or contact the ESO.

DO:

- Use the toilet facilities provided – report dirty or full facilities
- Clear your work areas of litter and building rubbish at the end of each day – use the waste bins provided and ensure that litter will not blow away.
- Report all fuel or oil spills immediately & stop the spill continuing.
- Dispose of cigarettes and matches carefully. (Littering is an offence.)
- Confine work and storage of equipment to within the immediate work area.
- Use all safety equipment and comply with all safety procedures.
- Prevent contamination or pollution of streams and water channels.
- Ensure a working fire extinguisher is immediately at hand if any "hot work" is undertaken e.g. welding, grinding, gas cutting etc.
- Report any injury of an animal.
- Drive on designated routes only.
- Prevent excessive dust and noise.

Do not:

- Remove or damage vegetation without direct instruction.
- Make any fires.
- Injure, trap, feed or harm any animals – this includes birds, frogs, snakes, lizards etc.
- Enter any fenced off or marked area.
- Allow cement or cement bags to blow around.
- Speed or drive recklessly
- Allow waste, litter, oils or foreign materials into the stream
- Swim in the dam.
- Litter or leave food laying around

Notes:

If any animals such as tortoises, chameleons or snakes be encountered then do not harm them. The ESO or Site Supervisor must be contacted to remove these safely. The harming of any animal will result in disciplinary action.

Construction and heavy machine operators must be particularly sensitive to staying within access routes and prevention of unnecessary damage. Dust and noise is also of particular concern. Ensure that vehicles and machinery do not leak fuel or oils. Refuelling or maintenance must be done within the maintenance camp area only.

Alien plant clearing and control work teams must be closely supervised.

BASIESE GEDRAGSKODES

Die volgende lys vertenwoordige die moets en moenies vir omgewingsbewustheid wat alle deelnemers aan hierdie projek in ag moet neem tydens die uitvoer van hul take. Hierdie lys is nie volledig nie en dien slegs as 'n vinnige verwysing.

Nota: **alle nuwe terreinpersoneel moet** 'n aanbieding ten opsigte van omgewingsbewustheid bywoon. Indien u nog nie so 'n aanbieding bygewoon het nie, lig asseblief u voorman of bestuurder in of kontak die omgewings terreinbeampte.

Moets:

- Gebruik die beskikbare toilet-geriewe – rapporteer vuil of vol geriewe.
- Maak u werkplek skoon van rommel of bourommel aan die einde van elke dag – gebruik beskikbare vullisdromme en verseker dat rommel nie rondwaai nie.
- Rapporteer alle brandstof- en olie stortings onmiddellik – stop verdere storting.
- Wees versigtig met die wegdoen van sigarette en vuurhoutjies. (rommelstrooi is 'n oortreding.)
- Beperk werkaktiwiteite en die stoor van toerusting tot die onmiddellike werkarea.
- Gebruik veiligheidstoerusting en voldoen aan alle veiligheids-maatreëls.
- Voorkom besoedeling van strome en waterbane
- Verseker dat 'n brandblusser in werkende toestand byderhand is wanneer "warm" werk verrig word bv. Sweis, wegslyp, gasny, ens.
- Rapporteer beseerde diere.
- Ry slegs op aangewese roetes.
- Voorkom oormatige stof en geraas.

Moenie:

- Plantegroei verwyder of beskadig sonder direkte instruksie nie.
- Enige vure maak nie.
- Enige diere dood, beseer, vang of voer nie, insluitende voëls, paddas, slange, akkedisse, ens.
- Enige omheinde of afgesperde areas binnetree nie.
- Sement of sementsakke laat rondwaai nie.
- Vinnig of roekeloos bestuur nie.
- Enige rommel, afval, olie or enige vreemde materiaal in strome laat beland nie.
- In die dam swem nie.
- Rommelstrooi of kos laat rondlê nie.

Notas:

Indien enige diere soos skilpaaie, verkleurmannetjies of slange teëgekom word, moet hulle nie beseer of dood nie. Kontak die otb of ri om hulle veilig te verwyder. Die besering van diere sal lei tot dissiplinêre optrede.

Operateurs van konstruksie- en swaar masjiene moet veral versigtig wees om binne toegangsroetes te bly en om enige onnodige skade te voorkom. Verseker dat voertuie en masjiene nie olie of brandstof lek nie. Brandstofaanvulling en voertuigonderhoud mag slegs binne die onderhoudsarea gedoen word.

Streng toesig moet gehou word oor indringerplantbeheerspanne.

EZIPPHAMBILI EKUNYANZELEKILEYO UKUBA ZENZIWE

Zonke ezi zinto zilandelayo zizinto ekufuneka zenziwe nekufuneka zingenziwanga.

Wonke umntu ofikayo kufuncka afundiswe ngemigaqo kupala. Needa yazisa iforman yakho ikuba awukhange uye kufundiswa.

Izinto emazenziwe

- Sebenzisa izindlu zangasese, yazisa xa kukho umonakalo.
- Zama ukucoca apho ubusebenza khona.
- Sebenzisa imigqomo yenkukuma ungayeki iphaphtieke.
- Yazisa xa ubona ioil echithskalayo okanye ipetrol.
- Cima lozoli cigarette xa ugqibibile ukutshaya
- Zonke izixhobo usebenza zibuyisele apho zihlaka khona xa ucgibile apho zihlala khona xa ugqibile ukuzisebenzisa.
- Zisebenzise izikhuselixa uzinkiwe.
- Sukugalela izinto emlanjeni.
- Masibekho isicima mlilo xausebenza ngomlilo.
- Yazisa msinyane xa ubone isilwanyana ezonzakeleyo.
- Xauqhuba isithuthi hamba endleleni qha ungafathulinje.
- Naphina zamaungenzi thuli okanye ingxolo xa usebenza.

Emazingenziwa

- Sukususa nesiphina isityalo ungakhange uxelelwe
- Sukwenza mlilo nokuba sekubanda
- Amagqara ukubulala izilwanyana nokuzifida akuvumelekanga
- Sukungena xa kuvaliwe ngaphandle kwe mvume
- Ingxowa zesamente mazincedwe zingalahlwa nje
- Sukuqhuba ngesantya esiphakamileyo
- Sukugalele nayiphi into phaya emlanjeni
- Sukuqubha edameni q oqosha yonk inkukuma

APPENDIX 7: ESO REPORT/CHECKLIST

ESO SITE VISIT CHECKLIST / REPORT:

PROJECT NAME: DATE

PROJECT & PHASE: LOCATION

ENVIRONMENTAL ASPECT		ENTS
Note: 1 = Poor, 2 = Average, 3 = Good NA = Not Applicable		
DEMARCATION **METHOD STATEMENT** **Boundaries of "no go" areas, work stations, offices, temporary storage areas as well as labourer's facilities must be demarcated (MMP and ESO requirements) and maintained for the length of the maintenance period.**		
NO-GO AREAS/PROTECTION OF FAUNA & FLORA **Identified "No-Go Areas", remaining natural veld and indigenous- or significant trees are protected features and must be demarcated for protection from construction damage (including secondary impact).** **All areas outside of the demarcated works stations and access roads to be regarded as NO-GO areas unless otherwise agreed upon with the client and ESO.** **All flora identified to be rescued must be removed and placed in an area specifically allocated and taken care off until re-used in pre-approved way.** **Identified areas with significant vegetation must be protected as NO-GO areas.**		
CLEARING OF VEGETATION & TOPSOIL REMOVAL **METHOD STATEMENT** **Before any maintenance activities or earthworks, topsoil must be stripped (>150mm) and stockpiled for rehabilitation/ landscaping. Stockpiles:** **must be protected (may not blow or wash away or gets compacted) and stored separately.** **may not be moved further than 50m or mixed with any other soil.** **must be convex and should not exceed 2m in height.** **In addition:** **Cleared areas must be stabilized.** **Burning or burying of cleared vegetation is prohibited, but may be used for mulch or slope stabilisation on site.**		
STOCKPILING **METHOD STATEMENT** **Top- and subsoil's from trenches must be located within site boundaries, stabilised and may not exceed 2m in height.**		
TEMPORARY STORAGE FACILITIES **METHOD STATEMENT** **Must be demarcated, organised, neat and tidy and of acceptable standards.**		
SITE CAMP, WORK STATIONS & SITE OFFICES **METHOD STATEMENT** **Must be demarcated, organised and free of day-to-day litter (maintaining good housekeeping standards).**		

ENVIRONMENTAL ASPECT		ENTS
Note: 1 = Poor, 2 = Average, 3 = Good NA = Not Applicable		
FUEL STORAGE **METHOD STATEMENT** **Fuel storage areas must be situated within the demarcated maintenance camp site (or an area approved by the ESO).** **Bunds must be built (EMP and ESO requirements) around larger fuel storage areas (accidental spillages).** **Drip trays must be used (in accordance with EMP) at all fuel and oil storage and refilling sites and must be cleaned regularly, especially after rain.**		
LABOURER'S FACILITIES **METHOD STATEMENT** **Facilities must be of acceptable standards suitably demarcated, well maintained, neat and tidy and with adequate ablution facilities.**		
ENTRANCE AND HAUL ROADS **METHOD STATEMENT** **Only approved entrance and haul roads may be used (existing roads and infrastructure). No new roads or parking areas may be developed without written approval from the ESO.**		
MANDATORY SITE EQUIPMENT **METHOD STATEMENT** **Mandatory site equipment must be in place, well maintained and in accordance with MMP and ESO requirements.** **Sufficient refuse bins must be on site (well placed and conspicuous) and must be cleaned regularly.** **Fire extinguishers must be readily available, maintained and functional.** **Drip trays must be used (in accordance with MMP) at all fuel and oil storage and refilling sites and must be cleaned regularly, especially after rain.** **Toilets and sanitation facilities must be kept clean neat and hygienic (toilet paper must be available).**		
WASTE CONTROL **METHOD STATEMENT** **The contractor is expected to control all maintenance/construction related waste material and general litter on actual construction sites and its immediate surroundings.** **Waste management must be in accordance with the MMP, of acceptable standards, with regular removal of general waste, hazardous waste as well as construction waste (e.g. concrete waste and spoil).**		
CEMENT MIXING & BATCHING AREAS **METHOD STATEMENT** **Mixing areas must be approved by the ESO, suitably demarcated and may not result in pollution.** **Polluted cement water may only be released into sedimentation ponds.** **Sedimentation ponds must be maintained and cleaned regularly (and reinstated after use).**		

ENVIRONMENTAL ASPECT		ENTS
Note: 1 = Poor, 2 = Average, 3 = Good NA = Not Applicable		
CONSTRUCTION VEHICLE MAINTENANCE **METHOD STATEMENT** **Construction vehicles must be in good working order and well maintained to prevent oil and fuel leakages and to reduce noise levels.** **Maintenance areas must be approved by ESO.** **Refuelling must be done in accordance with the EMP, using drip trays.**		
HEAVY EARTHMOVING EQUIPMENT **Construction vehicles and equipment may only operate <u>within</u> the demarcated site boundaries (and approved access roads), especially heavy earthmoving vehicles.**		
DUST CONTROL **METHOD STATEMENT** **Adequate control measures must be in place to prevent dust pollution as a result of maintenance activities (especially with regard to entrance-, haul roads and exposed surfaces).** **Areas of concern must be watered regularly during maintenance AND periods of strong winds, BUT must take water saving into account.**		
EROSION CONTROL **METHOD STATEMENT** **Erosion resulting from works must be controlled.** **Temporary and permanent drainage works must be maintained.** **Erosion damage and damage in drainage courses must be reinstated.**		
NOISE CONTROL **METHOD STATEMENT** **Effective noise control measures must be in place and acceptable working hours must be kept (deviations must be approval by the ECO).**		
ENVIRONMENTAL CONDUCT **Environmental conduct of personnel must be acceptable (e.g. no burning or burying of refuse; no littering and no cement bags or other construction waste material lying around).**		
ARCHAEOLOGICAL & HERITAGE FINDS **METHOD STATEMENT** **Should any archaeological or heritage remains be exposed during excavations or any activity on site, these must immediately reported to The site agent/engineer, the ECO HWC or SAHRA.**		
REHABILITATION **METHOD STATEMENT** **On completion of the project or phase, all areas impacted by the maintenance activities must be reinstated and/or rehabilitated to the satisfaction of the ECO with emphasis on the following:** **Site offices must be removed and the areas rehabilitated or reinstated to the satisfaction of the ECO.** **Labourer's facilities must be removed and the areas rehabilitated or reinstated to the satisfaction of the ECO.** **All works stations and site areas must be rehabilitated or reinstated to the satisfaction of the ECO.**		

ENVIRONMENTAL ASPECT		ENTS
Note: 1 = Poor, 2 = Average, 3 = Good NA = Not Applicable		
All temporary fencing and demarcation must be removed and the areas reinstated to the satisfaction of the ECO. **Temporary storage areas must be rehabilitated or reinstated to the satisfaction of the ECO.** **All remaining construction material must be removed and the areas rehabilitated or reinstated to the satisfaction of the ECO.** **Any additional disturbed areas must be rehabilitated or reinstated to the satisfaction of the ECO.**		
ADDITIONAL METHOD STATEMENTS **Method statements must be submitted and approved before commencement of the works and must be available at the site offices.**		
ENVIRONMENTAL CHECKLIST **The contractor must ensure that the weekly environmental checklist is completed at the end of each week and it must be available at the site offices.**		
SPOT FINES & PENALTIES **Spot fines and penalties must be recorded and documented by the ECO (in accordance with the EMP).**		
FIXED POINT PHOTOS **Photographs must be taken by the ECO, Site Engineer and or Site Manager, prior to, during and immediately after maintenance as visual reference. These photographs must be stored with other records relating to the EMP.**		

ESO:

ESO OBSERVATION SHEET

APPENDIX 8: METHOD STATEMENT REGISTER

METHOD STATEMENT REGISTER		Principle Site Agent:			Project Name:		
		Main Contractor:			Project location:		
No.	METHOD STATEMENT ACTIVITY REFERENCE	DATE CREATED	DATE RECEIVED	CREATED BY	ACCEPTED / REJECTED	DATE approved	Approved By
1	Demarcation						
2	Clearing of vegetation and topsoil removal						
3	Stockpiling						
4	Temporary storage facilities						
5	Work stations, site camp and site offices						
6	Fuel storage						
7	Labourer's facilities						
8	Entrance and haul roads						
9	Mandatory site equipment						
10	Waste management/control						
11	Cement mixing and batching areas						
12	Construction vehicle maintenance						
13	Dust control						
14	Erosion control						
15	Noise control						
16	Archaeological and heritage finds						
17	Rehabilitation						
18							
19	**Additional MS**						
20							
21							
22							

APPENDIX 9: ENVIROMENTAL INCIDENT REPORT FORM

ENVIRONMENTAL INCIDENT REPORT

PROJECT NAME: _____

PROJECT LOCATION: _____

SITE AGENT: _____

DATE OF INCIDENT: _____ **TIME:** _____

BRIEF DESCRIPTION AND CAUSE OF INCIDENT:

WHAT IMMEDIATE ACTIONS/CONTROL MEASURES WERE TAKEN:

WHAT CORRECTIVE ACTIONS WERE TAKEN TO ENSURE NO REPEATS OF THE INCIDENT:

ECO/ESO RESPONSE TO INCIDENT AND RECOMMENDATIONS:

IS THIS INCIDENT A: o **FIRST OFFENCE** o **SECOND OFFENCE** o **THIRD OFFENCE**

SIGNATURE OF SITE AGENT: _____ **DATE:** _____

SIGNATURE OF ECO/ESO: _____ **DATE:** _____

REMEMBER: TO BE FACTUAL WHEN DESCRIBING THE INCIDENT.

APPENDIX 10: COMPLAINTS REGISTER FORM

COMPLAINTS REGISTER FORM

(To be completed by Site Agent/Supervisor)

NO.	DATE	NAME OF COMPLAINANT	CONTACT NO.	NATURE OF COMPLAINT	ACTION TAKEN TO RECTIFY COMPLAINT