

ENVIRONMENTAL MANAGEMENT PLAN

**FOR THE
MANAGEMENT OF ACTIVITIES RELATING TO THE PROTECTION OF
THE NATURAL ENVIRONMENT DURING THE CONSTRUCTION AND
OPERATIONAL PHASES OF**

CALCUTTA PUBLIC CEMETERY AND MEMORIAL PARK DEVELOPMENT FARM 29, CALCUTTA, STELLENBOSCH MUNICIPALITY

*This EMP is a DEA&DP Requirement,
and is to be presented to contractors at the On Site Start-Up Meeting*

Compiled by

EnviroAfrica CC

May 2019

ENVIRONMENTAL ASSESSMENT PRACTITIONER INDEPENDENCE, CONDITIONS AND DETAILS

EnviroAfrica CC is an independent environmental consulting firm that has no interest in the proposed activity other than fair remuneration for services rendered. Remuneration for services is not linked to approval by decision making authorities and EnviroAfrica has no vested interest in secondary or subsequent development which may result from this project. There are no circumstances that compromise the objectivity of this EMPr.

The findings, results, observations and recommendations given here are based on the best scientific and professional knowledge available from information provided and verified, where required, by site visits.

EnviroAfrica reserves the right to modify aspects of this report, including the recommendations, if new information becomes available which may have a significant impact on the findings of this report.

This EMPr was compiled by Vivienne Thomson in conjunction with Bernard De Witt.

Expertise and *Curriculum Vitae* of Vivienne Thomson and Bernard De Witt:

1. VIVIENNE THOMSON

Nationality	South African
Profession	Environmental Consultant
Specialisation	Environmental Management Systems Environmental Impact Assessments Environmental Licence Applications Environmental Training
Position in Firm	Consultant
Language	Proficient in English and Afrikaans
Years Experience	Since 1999

KEY QUALIFICATIONS

- Establishing and implementing tailored ISO 14001 compliant environmental management systems
- Environmental impact assessments (EIRs and BAs)
- Development of environmental management plans/programmes
- Liaising with regulatory authorities on behalf of clients
- Establishing and implementing tailored ISO 14001 compliant environmental management systems
- Environmental contract management
- Evaluating and facilitating site legal compliance and due diligence
- Specific environmental licence applications related to emissions, water use, waste discharge and waste sites
- On-site training and awareness interventions

EDUCATION AND MEMBERSHIPS

- BSc in Zoology, University of Cape Town (1995)
- Reading towards an MSc (Environmental Science)
- Various environmental related short courses
- Member: National Association for Clean Air
Coal and Ash Association of South Africa

EMPLOYMENT RECORD

September 2004 to date	Environmental Consultant, various - Gauteng, Mpumalanga, Limpopo and Western Cape
September 2000 – August 2004	Lethabo Power Station, Gauteng
June 1999 – August 2000	Duvha Power Station, Mpumalanga
February 1997 – May 1999	Tavistock Collieries Ltd., Mpumalanga

2. BERNARD DE WITT

Nationality	South African
Profession	Environmental Assessment Practitioner
Experience	Environmental Impact Assessments Environmental Management Environmental Planning
Position in Firm	Director
Language	Afrikaans (home); English (fluent)
Years Experience:	Since 1983

KEY QUALIFICATIONS

- Environmental Impact Assessment and Review
- Coordination, conducting and review of Integrated Environmental Management process
- Environmental Planning, Policy formulation and Management
- Environmental Advisory Services
- Facilitation of Public Participation Processes
- Environmental Auditing
- Environmental Management throughout the Project Cycle
- Environmental Management Plans/Programmes & Environmental Control or Site Officer during construction phase

EDUCATION AND MEMBERSHIPS

- BSc in Forestry (Nature Conservation) 1984
- Hons.B (Public management), Stellenbosch University, 1989
- National Diploma in Parks and Recreation Management, Cape Town Technicon
- Member: International Association for Impact Assessment

EMPLOYMENT RECORD

October 1997 till present	EnviroAfrica, Western Cape
July 1989 – July 1997	Cape Nature Conservation
January 1985 – June 1989	Cape Town Municipality (Nature Reserves)
December 1983 – January 1985	Department of Environmental Affairs, Indigenous Forest Section, Knysna

TABLE OF CONTENTS

1.	INTRODUCTION.....	7
1.1	EMPr Circulation List.....	7
1.2	Terms of Reference.....	7
1.3	Purpose of the EMPr	8
1.4	Scope.....	9
1.5	Definitions	9
1.6	Abbreviations	11
2.	COMMENCEMENT OF WORKS	12
3.	PROJECT OVERVIEW	13
3.1	Site Description:	13
3.2	Project Description:	14
3.3	Environmental Sensitivities of the preferred site:	18
3.4	General Legislated Environmental Requirements:.....	19
3.6	Site Specific Environmental Requirements:.....	22
3.7	Recommendations on Impact Minimisation	24
3.8	Note on Approved Authorisations:	26
4.	PRE-DETERMINED ISSUES OF CONCERN	27
5.	ON-SITE START-UP MEETING	28
6.	METHOD STATEMENT	29
7.	ENVIRONMENTAL DECLARATION of UNDERSTANDING	30
8.	PENALTIES.....	30
9.	RESPONSIBILITY OF STELLENBOSCH MUNICIPALITY (as the Applicant)	31
10.	THE SITE ENGINEER / SITE MAIN CONTRACTOR	31
11.	THE CONTRACTOR	32
12.	SITE PERSONNEL: ENVIRONMENTAL AWARENESS TRAINING	33
13.	ENVIRONMENTAL CONTROL OFFICER.....	33
14.	CHANGES TO MANAGEMENT PLAN	35
15.	RECORD KEEPING	36
16.	ENVIRONMENTAL COMPLETION STATEMENT	36
17.	MANAGEMENT SPECIFICATIONS (CONSTRUCTION PHASE)	37
17.1	Fauna and Flora.....	37
17.2	Protection and Rescue of Fauna and Flora	37
17.3	Clearing of Vegetation, Stripping & Conservation of Topsoil.....	38
17.4	Protection of Archaeological & Paleontological Remains.....	38
17.5	Appropriate Use of Machinery	39
17.6	Demarcating and Fencing	39
17.7	“NO-GO” Areas	40
17.8	Water, Storm water, Erosion & Sedimentation Control	40
17.9	Fuel, Tar Compounds and Oil	41

17.10	Hazardous Substances	41
17.11	Concrete Works	42
17.12	Blasting / drilling (if required)	43
17.13	Fires and smoking	43
17.14	Emergency Procedures	43
17.15	Dust Control	44
17.16	Solid Waste Management	44
17.17	Toilets & Ablution Facilities	44
17.18	Stockpiling	45
17.19	Preparation of Building Material	45
17.20	Discharge of Construction Water	45
17.21	Treating (flushing / testing) of Pipelines (if required)	46
17.22	Contractors Temporary Camping Site & Eating Areas	46
17.23	Traffic, Access Routes & Haul Roads	46
17.24	Site Clean Up and Rehabilitation	47
17.25	Land Management	47
17.26	Socio-Cultural Issues	48
17.27	Additional Associated Installations	48
18	MANAGEMENT SPECIFICATIONS (OPERATIONAL PHASE)	48
19	TERMS AND ABBREVIATIONS:	49
20	APPENDICES:	53
	APPENDIX 1: START-UP REPORT	54
	APPENDIX 2: PENALTIES FOR NON-COMPLIANCE	56
	APPENDIX 3: DECLARATION OF UNDERSTANDING	60
	APPENDIX 4: INFORMATION ON METHOD STATEMENTS	62
	APPENDIX 5: EXAMPLE OF METHOD STATEMENT	64
	APPENDIX 6: ENVIRONMENTAL INCIDENT REPORT FORMAT	67
	APPENDIX 7: ENVIRONMENTAL COMPLAINTS REGISTER	69
	APPENDIX 8: EXAMPLE OF METHOD STATEMENT REGISTER	71
	APPENDIX 9: CONTACTOR'S ENVIRONMENTAL WEEKLY CHECKLIST	73
	APPENDIX 10: BASIC RULES OF CONDUCT	75
	APPENDIX 11: ECO/ESO REPORT/CHECKLIST	79
	APPENDIX 12: MAPS AND DRAWINGS	84
	APPENDIX 13: ANY OTHER RELEVANT DOCUMENTS	85
	APPENDIX 13.1 APPROVED ENVIRONMENTAL AUTHORISATION (including approved amended authorisations)	
	APPENDIX 13.2 APPROVED WATER USE LICENCE	
	APPENDIX 13.3 APPROVED FRESHWATER REHABILITATION, MAINTENANCE AND MANAGEMENT PLAN	
	APPENDIX 13.4 BOTANICAL ASSESSMENTS	

**EMPr FOR ACTIVITIES RELATED TO THE PROTECTION OF THE NATURAL
ENVIRONMENT DURING THE CONSTRUCTION AND OPERATIONAL PHASE OF THE
CALCUTTA PUBLIC CEMETERY AND MEMORIAL PARK DEVELOPMENT, FARM 29,
CALCUTTA, STELLENBOSCH MUNICIPALITY**

(This EMPr is a condition as set out in the Environmental Authorisation)

1. INTRODUCTION

This Environmental Management Plan/Programme report (EMPr) forms part of the conditions as set out in the Environmental Authorisation (EA) and recommendations as detailed in the Basic Assessment Report (dated November 2018)

This EMPr binds all contractors, sub-contractors and other persons working on the site to adhere to the terms and conditions of the EMPr throughout the construction of the Calcutta public cemetery and memorial park development and associated infrastructure.

Any other Site Specific additional activities decided and agreed upon at the “On Site Start-Up Meeting” must be included to form part of the EMPr.

1.1 EMPr Circulation List

Full copies of this EMPr will be made for the ECO, Site Engineer and/or Contractor. Appendices will also be made and circulated where relevant.

An Environmental Management Plan or Programme (EMPr) aims to identify actual and potential environmental impacts of the proposed activity and provide a tool to manage these impacts by:

- i. preventing avoidable damage and/or minimising or mitigating unavoidable environmental damage associated with any construction, operation, maintenance, or decommissioning work, where there is a risk of environmental damage and
- ii. enhancing positive impacts associated with the proposed project or activity.

The overall aim of the EMPr is to prevent avoidable damage and/or minimise or mitigate unavoidable environmental damage associated with the construction, and to a lesser degree the operational, phases of the proposed project.

The EMPr 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 a dynamic, evolving document, in that information gained during the various activities and/or monitoring of procedures on site, could lead to changes in the EMPr.

1.2 Terms of Reference

EnviroAfrica CC was appointed by the project applicant, Stellenbosch Municipality, to provide an EMPr for the management of activities relating to the protection of the natural environment during the construction, operation, maintenance and demolition/decommissioning phases of the proposed Calcutta public cemetery and memorial park.

In October 2017, representatives from EnviroAfrica and Stellenbosch Municipality, held a pre-application meeting with the DEA&DP to clarify the way forward with regards to the EA process.

Four public participation processes (PPP) have already taken place:

- the first PPP was conducted mainly to gauge public sentiment and register interested and affected parties (I&APs). It ran from 9 February 2018 and ended on 14 April 2018,
- the second process ran from 15 November 2018 to 14 December 2018 and contained a pre-application draft BAR (BAR) and appendices.
- the next PPP ran from 1 February 2019 to 5 March 2019 and further refined and corrected BAR documents, as well as attempted to address I&APs concerns and comments.
- The fourth PPP was for the (post-application) BAR and ran from 18 April 2019 to 26 May 2019. The post-application BAR contains all updated specialist reports, impact ratings, comment and response trails from the three preceding rounds of public participation, as well as the updated EMPr.

Comments and queries received from the post-application BAR public participation process will be captured and addressed in the final BAR to be submitted to the competent authority (i.e. DEA&DP) for EA decision.

1.3 Purpose of the EMPr

The purpose of this Environmental Management Plan/Programme (EMPr) is to direct and guide all responsible parties, binding all contractors, sub-contractors and all other persons working on the site to adhere to the terms and conditions of the EMPr during the construction, operation, maintenance and anticipated demolition/decommissioning phases of the project. Any additional site specific conditions decided and agreed upon during the "On Site Start-Up Meeting" (OSSM), or any instruction given subsequent to commencement of the works by the regulating authority, must be included to become a part of the EMPr.

This EMPr forms part of the contractual obligations to which all persons including but not limited to, contractors/sub-contractors or employees involved in construction, operation, maintenance or decommissioning work, must be committed. It serves as a baseline information document for the project applicant and any entity working on behalf of the applicant during the various phases of the proposed activity.

It aims to comply with Section 24N of the National Environmental Management Act No. 107 of 1998, as amended (NEMA), as well as any additional specific information requested by any government department, including the regulating authority for this specific project, the DEA&DP.

This EMPr:

- identifies project activities that could cause actual environmental damage (or potential environmental risks) and provides a summary of actions required;
- identifies persons responsible for ensuring compliance with the EMPr;
- 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 construction 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 EMPr;
- 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

1.4 Scope

The scope which is covered by this EMPr, includes the construction, operation and maintenance and eventual demolition/decommissioning (where required), phases of this development and all environmental activities associated with this project.

Compliance to the EMPr must be monitored by an independent Environmental Control or Site Officer (ECO or ESO) who will visit the site on a regular basis during the various phases of the activity (at least once monthly).

The Client, or the Construction Engineer or Project Manager on behalf of the Client, will be responsible to ensure adherence to and implementation of, the requirements of this EMPr by all involved/associated parties.

1.5 Definitions

- Applicant:** the person or responsible person from an organization who applied for the proposed activity described in the EA (or previously called RoD).
- Audit:** environmental evaluation (audit) of compliance of the specific project phase to the conditions of the EA and EMPr (and to be reported to the Competent Authority at the intervals specified by the Authority and/or legislated requirements).
- Bund:** enclosure under / around a storage facility to contain spillage.
- Batch plant:** a concrete or plaster mixing facility and associated equipment and materials.
- Construction:** means the construction period of the project, during which the actual works are carried out and includes site establishment, site preparation, the works, maintenance period and decommissioning and is defined as from commencement of site establishment until site handover (practical completion).
- Construction site:** means the area influenced and affected by the construction activities or under the control of the Contractor often referred to as "the Site".
- Construction Supervisor:** the person responsible (appointed by the owner) to ensure that the construction is carried out to completion on time, within budget and that the Contractor fulfils his obligations in terms of the EMPr.
- 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 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, borrow areas, 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 construction works of their understanding and acceptance of the EMPr and site-specific additions to the EMPr.
- 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 construction activity, product or services that can interact with the environment.
- Environmental Audit Report:** report done by the ECO and submitted by the Applicant to the satisfaction of the Competent Authority (Environmental Affairs), within six months after construction has commenced and been completed and also after the site has been rehabilitated.

- Environmental Control Officer:** 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.
- Environmental Completion Statement:** A report by the ECO to the relevant authorities stating completion of the project and compliance with the EMPr and its conditions.
- Environmental Impact:** Any change to the environment, whether adverse or beneficial, wholly or partially resulting from any construction activity, product or services.
- Environmental Site Officer:** The ESO must be an independent, suitably qualified and skilled person with a sound knowledge of the environment in which the activity will take place, as well as the requirements of the EA and EMPr. The ESO may be appointed by the ECO to conduct routine site inspections (more than once per month) and provide assurance that the conditions of the EA and EMPr are adhered to.
- Method statement:** A statement by the Contractor, describing the construction works step-by-step, in order for the ECO/ESO and Construction Supervisor to understand and comment on, the Contractors' intentions, 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.
- Owner:** The owner, or dedicated person, responsible for the management of the property on which the proposed activity (in terms of the EA) will be performed.
- Stop Works Order:** An order which can be issued either by the ECO, ESO or Construction Supervisor to the Contractor (or any sub-contractor) if serious environmental damage is about to happen or is happening as a result of 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 party issuing the stop works order.
- Site meetings:** Periodic (weekly or monthly) meetings between the ECO and/or , Construction Supervisor and Contractor to discuss construction activities that relate to the environment or any other environmental issues that might arise.
- Works:** The works to be executed in accordance with a contract.
- On site start-up meeting:** a start-up meeting held on site, before any construction has begun to discuss EMPr and determine site specific additions that will be included as the basis for the EMPr.
- Potentially hazardous substance:** is a substance which, by virtue of it's chemical constituents, physical properties or 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 NEMA.
- 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).

1.6 Abbreviations

CARA	Conservation of Agricultural Resources Act, No. 43 of 1983
CN	Cape Nature
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department Environmental Affairs
DEA&DP	Western Cape Department of Environmental Affairs and Development Planning Conservation
DWS	Department of Water and Sanitation
EA	Environmental Authorisation (previously called a Record of Decision) issued by the relevant competent authority for the authorisation to commence construction under certain environmental compliance conditions
EAP	Environmental Assessment Practitioner
ECA	Environment Conservation Act, No. 73 of 1989
ECO	Environmental Control Officer - must be a suitably qualified independent environmental consultant appointed to ensure compliance to the EMPr
EIA	Environmental Impact Assessment
EMPr	Environmental Management Plan or Programme
ER	Engineers representative or main contractors representative
ESO	Environmental Site Officer - must be a person with adequate environmental knowledge to understand and implement the EMPr by conducting onsite inspections determined by the ECO and the client.
FRMMP	Freshwater Rehabilitation, Maintenance and Management Plan
HCS/s	Hazardous Chemical Substance/s
HWC	Heritage Western Cape
MSDS/s	Material Safety Data Sheet/s
NEMA	National Environmental Management Act, No. 107 of 1998.
NEM:AQA	National Environmental Management: Air Quality Act, No. 39 of 2004.
NEM:BA	National Environmental Management: Biodiversity Act, No. 10 of 2004.
NEM:PAA	National Environmental Management: Protected Areas Act, No. 57 of 2003
NEM:WA	National Environmental Management: Waste Act, No. 59 of 2008.
NFA	National Forest Act, No. 84 of 1998.
NHRA	National Heritage Resources Act, No. 25 of 1999.
NVFFA	National Veld and Forest Fire Act, No. 101 of 1998.
NWA	National Water Act, No. 36 of 1998
OSSM	On-site Start-up Meeting
SAHRA	South African Heritage Resources Agency
SALGA	South African Local Government Association
WCDA	Western Cape Department of Agriculture
WUL	Water Use Licence

2. COMMENCEMENT OF WORKS

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

A copy of the EMPr 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 Environmental Contract is signed between the relevant parties
- One week's written notice given to the Department before commencement of any construction activity (as per the EA)
- EMPr has been approved by the relevant authorities
- On-Site Start-Up Meeting has been held
- Site and No-Go areas has been demarcated
- Contractors are in possession of the EMPr and other relevant documentation
- Contractors 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.
- Search and Rescue of important vegetation on site takes place.

NB: Work also refers to camp establishment, earthmoving activities and any preliminary construction activities.

3. PROJECT OVERVIEW

3.1 Site Description:

The proposed Calcutta public cemetery and memorial park aims to promote a novel concept to that of traditional public cemeteries: The memorial park concept is well suited to Stellenbosch Municipality's desire to keep the region 'green' and promote garden/conservation areas.

The Calcutta site is also strategically positioned to meet the community need for a public cemetery and memorial park since it services the **northern** region of the Municipal area and will be relatively convenient for local communities to use.

Currently, the Calcutta site is degraded and heavily infested with alien *Eucalyptus* species and some *Acacia saligna*. Clearance of the property for development will facilitate the reintroduction of indigenous vegetation in landscaped areas. Besides allocating areas for traditional burial methods and a remembrance wall or columbarium, a garden of remembrance will be established where the ashes of a loved one may be buried at the foot of a tree or shrub indigenous to the area, the a means of adding the ashes of other family member. The Garden of remembrance will follow a landscaped plan and patrons may purchase a tree and plaque to serve as a living memory of their deceased loved one. This also serves as greener approach to the establishment of burial grounds, while promoting an alternate, less land demanding options for burial and/or remembrance.

The seasonal stream that runs through the western portion of the proposed development site will be rehabilitated and besides the initial restoration and rehabilitation, access road and wooden pedestrian access bridge and a grass block 'drift'/low water crossing across the watercourse, no other development will take place within the 32m setback required for watercourse conservation.

To the west of the stream, it is proposed that burial free areas which will form of the 'public park' area of the memorial park be established. Conservation and awareness regarding the heritage resources of the site viz. 'outspans' will be undertaken in this region, with information pedestals/boards.

Several walkways and seating benches within the public cemetery and memorial park will be made available particularly, along the south-western section of the property where educational information pedestals/boards regarding the unique 'outspan' heritage of the region will be highlighted to help preserve this part of the region's history – a modern analogy of the resting places the historic 'outspans' provided.

It is proposed that the memorial park be an area where areas of biodiversity and heritage are rehabilitated and preserved, as much as possible as a part of the 'park' aspect of the cemetery/memorial park. In additional, indigenous vegetation reintroduction will be promoted through the landscaping and memorial park/garden of remembrance areas within the proposed public cemetery and memorial park.

Community or social utilisation of the memorial park other than for burial/remembrance purposes is advocated through the rehabilitation and preservation of the 'outspan' heritage significance of particularly the south-western section of the proposed development site, as well as the rehabilitation of the seasonal stream and re-introduction of indigenous riparian habitat within the set back of the currently degraded seasonal stream that runs through the western/south western portion of the property.

3.2 Project Description:

The Applicant, Stellenbosch Municipality, is the owner of the land proposed for this development. The land, remainder of Calcutta Farm No. 29 is currently zoned for Agricultural 1.

The property is approximately 39.64 ha and a maximum of 30 ha is proposed for the development of the public cemetery and memorial park (which includes any buffer/setback areas).

An ephemeral stream runs almost parallel through most of the western boundary portion of the site. The stream is very degraded and will be rehabilitated and restored as part of the development. Associated setbacks and wetland areas will be accommodated as part of the 'park' aspect of the development.

Vehicle access to the development will be made possible with a main access road to the north, possibly crossing the stream. A grass block 'drift' or low river crossing to the south, will also facilitate perimeter fencing inspections and will definitely cross the seasonal stream.

It is proposed that one or two wooden pedestrian walkways/bridges will also cross the stream providing the public with access to the park and heritage areas..

The site co-ordinates are **33° 51' 13.55"S, 18° 48' 35.96"E**.

Please refer to the BAR **Appendix A** (Locality Maps) as well as **Appendix B** (Site Layout Plans) and **Appendix C** for photographs of the site.

Civil Services

Storm water will be transported from hardened surfaces (roofs of buildings and roads) to a storm water attenuation system or retention pond where storm water can be polished and used for irrigation of gardens/trees/park areas.

Storm water from outside the actual developed cemetery footprint within the proposed site i.e. purely from park areas, will be incorporated into the storm water reticulation system leading to the attenuation facility.

The option of providing permeable paving will be investigated in order to transport storm water from the development. It is envisaged that any overflow (however unlikely) from the attenuation facility could be taken to the ephemeral stream on the western boundary.

The provision of a cut off trench facility on the north and eastern boundaries will be investigated during the design phase.

Surface storm water from the areas earmarked for graves and informal areas will be taken via swales or rock lines channels to the storm water reticulation system in order to feed into the attenuation facility.

Subsurface drainage will be provided to minimise the potential negative effects of a possible high-water table in winter months. Soil tests and profiling of the terrain have been performed to establish the exact condition of the in-situ material and water table. The design of pavement structures and other amenities will take cognizance of the prevailing geotechnical conditions.

Electrical Services

It is further proposed that while electricity may be provided by Eskom, wherever possible, electricity supply should be supplied through off-grid electricity resources (e.g. solar panels). The terrain for the development is within the Eskom Provision Area and the option of connecting to Eskom power will be investigated. It is however envisaged that a solar and/or wind turbine system be provided in order to supply electricity to the development.

During winter months sunlight might necessitate the introduction of a wind turbine to provide electricity. The cost of this installation will be compared to the rates from Eskom as a supplier and installation costs. The position of the closest Eskom connecting point will contribute to additional costs, if connecting electrical lines need to be established. During the design phase of the electrical distribution network, both options will be investigated.

Water

There is a Municipal potable water pipeline that runs along the R304 adjacent to the proposed site. A single point tie in will be made to this line for potable water only. Refer to Appendix E5 of BAR (Communication from Stellenbosch Municipality).

Non-potable water for toilets and irrigation will be obtained from the on-site water treatment package plant and reed-bed polishing system i.e. will be recycled. It is proposed that a borehole/s be provided to supply additional (non-potable) water to the development. Initial investigations indicated poor quality of water and the yield of 1 l/s could necessitate more than one borehole. Further study is required to determine the position/s of the borehole/s. During this phase of the project, the detail of water provision will be finalised.

From the boreholes, water will be pumped to the offices and toilets via an underground pipe system. It is foreseen that a network of Ø 110 / Ø 160 mm main feed lines will be provide for the development. Analysis during the design stage, will however verify the required sizes of the water lines.

Sewage

Sewage during construction will be managed via a portable toilet contract with regular servicing.

Sewage during operation will be managed via an on-site sewage/effluent treatment plant.

There is currently no existing sewer network services on the terrain or any municipal reticulation system close to the proposed site for development. It is therefore prosed that a package plant be constructed on site which can treat the effluent from the offices/toilets. It is furthermore proposed that the sewer treatment occurs upstream of the attenuation facility/retention pond which can then contribute to the capacity to irrigate the green areas.

A reticulation underground system will be provided, leading from wet areas to the treatment plan, via sewer pipes and manholes. It is foreseen that a network of 160 mm piping will be adequate with smaller 110mm individual connections to different buildings.

Waste Management

Any solid waste from the activity during construction and operation will be removed to the nearest registered Municipal landfill site, or appropriately registered waste disposal site.

Access

Access to the proposed development site will be from a dedicated, two-way intersection as per the diagram provided in Appendix G11 of the BAR (*Final Traffic Study*) and Appendix G12 of the BAR (*Road Access Possibilities*). According to the Final Traffic Study, a 2012 Arterial Management Plan (AMP) indicated that an intersection off the R304 at \pm km50.58 will be required. The Final Traffic Study proposes that this intersection be relocated to km50.37, allowing for a municipal street to be constructed along the northern boundary of the development site which would provide access to the cemetery.

The proposed access road off the R304 (MR174) should be a Class 3 municipal street which would also serve possible future developments to the east. The distance from the edge of the R304 shoulder to the proposed development's western boundary is approximately 28m. The proposed actual main entrance to the cemetery and memorial park is approximately 460m from the R304. This would ensure that any queuing that may occur at the entrance to the cemetery would not impact the two-way intersection of the access road on MR174. The access road (from and to) the R304 will be stop controlled.

The 2012 AMP further concluded the *section of road in which the intersection will occur will require additional through lanes, i.e. two lanes per direction within the next 10 to 15 years and will operate acceptably for the next 30 years under moderate growth scenarios. However, with higher growth, a third through lane per direction will be required in the next 25 to 30 years.*"

It is not anticipated that the signalisation of the intersection on the R304 (MR174) will be required before the dualling of the R304 takes place. The proposed location for the access will still ensure sufficient access spacing to the adjacent accesses/intersections.

Page four of Appendix G12 of the BAR also states that:

- Posted Speed Limit on MR174 (or R304) is 100km/h
- Access only from MR174 (R304) according to AMP
- Shoulder Sight Distance required: 220m (Passenger Vehicle, 15m road width)
- Stopping Sight Distance: 155m (UTG1)
- AADT: \pm 12 900 vpd (15 January 2016)
- Will require right turn lane
- WCG Design Dwg: WCS/11/2/D3
- Access will need to comply with access spacing (MR174 AMP)

Access control to the proposed development will most likely be facilitated via fencing/palisade fencing and a lockable gate with a security guard on duty. This also provides a local employment opportunity.

Based on the specialist reports in Appendix G of the BAR, the proposed Calcutta Public Cemetery and Memorial Park will provide a much-needed service to the regional community whilst also facilitating the rehabilitation and protection of the property in terms of biodiversity and existing water courses.

In addition, the cultural/heritage aspects of the property which have been somewhat neglected and lost, will be rehabilitated and preserved through the proposed development.

The aesthetic impact of the proposed public cemetery and memorial park will improve since the current property is infested with alien plants and is often used as a dumping ground.

The following specialist assessment further highlights the environmental benefits of the proposed development, as indicated below:

- i. **Biodiversity** – the site currently has a low biodiversity significance but can be rehabilitated provided the requirements as detailed in the botanical statement/scan reports (attached as Appendix 12.4 of this EMPr) are taken into account.
- ii. **Freshwater** – the proposed development will likely result in a net positive change from the current land-use (or lack thereof) in terms of freshwater impact, as long as the wetlands and drainage lines, with buffers, are incorporated within the parkland and rehabilitated and the freshwater rehabilitation, maintenance and management plan (to be attached as Appendix 12.3 of the EMPr, are adhered to.
- iii. **Geohydrology** – the majority of the site is classified as having a 'low/medium' groundwater vulnerability rating. The southern portion of the site has been classified as 'medium', grading into a 'very high' vulnerability classification.
- iv. **Geotechnical** – provided the cemetery is sited as recommended in the geotechnical report, the site is considered satisfactory for development of a cemetery.
- v. **Heritage** – The potential impact of the proposed cemetery site on the old outspan is significant in that it is a wholesale change of land use from woodlot to cemetery. However, the draft concept plan has sensitively, if not, fortuitously, allowed for the conservation of the southern outspan site and surrounds in its overall framework. It would now be placed in the buffer informal parkland zone. Were the outspan site and surrounds carefully conserved and landscaped, this would retain a memory of its core purpose and allow for local associations to be retained of the site's outspan purpose and character thus mitigating associative impact and retaining landmark value.
 - a. Archaeology – Archaeological visibility is extremely low due to dense vegetation cover, but indications are that the receiving environment is not a sensitive archaeological landscape.
 - b. Palaeontological – No fossil remains were recorded on Farm Calcutta RE/29 during the short palaeontological site visit. It is concluded that the palaeontological sensitivity of the Memorial Park study area is very low.
 - c. Visual – The proposed development will have a moderate impact on the landscape causing some change to the visual environment. The development's visual impact has site-related to local extent, long term duration, medium intensity, definite probability, and medium significance on the landscape.
- vi. **Socio-economic** – socio-economic costs and benefits were listed in section five of the report. Eleven potentially positive impacts (job and skill levels increase; the creation of a social space; continuation of social networks; equality and exclusivity; employment equity of vulnerable groups; use of social amenities; positive change in the sense of place; preservation of social history; access to leisure opportunities; access to natural resources; sales and GGP) versus three (crime/neglect; individual and family changes; dust and noise levels) potentially negative impacts were listed related to the proposed development.

3.3 Environmental Sensitivities of the preferred site:

Refer to Appendix D in the BAR for Biodiversity sensitivity maps.

A physical site inspection by the biodiversity specialist showed that it appears that 100% of the property has been degraded as a result of dense stands of the alien tree *Eucalyptus*, but with *Acacia saligna* also prominent (Also refer to BAR, Appendix C -Site photographs). Very few remaining natural plant species were observed by the specialist even though a small watercourse crosses the property from north to south along its western boundary.

The proposed development will positively impact and improve the ESA, CBA condition, as well as eliminate the dense infestation of alien trees on the property.

In addition to preserving and promoting the introduction of indigenous vegetation in the area, the proposed public cemetery and memorial park will preserve the cultural heritage of the region's 'outspan' site and possibly provide employment for local individuals, while meeting the need for the essential service of a contextualised public cemetery and memorial park.

3.4 General Legislated Environmental Requirements:

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.

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: Air Quality Act 39 of 2004 (NEMAQA): replaces the Atmospheric Pollution Prevention Act (No. 45 of 1965).

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).

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.

- **Section 21 Listed Activities:** identifying activities for which a water use licence application must be made to the DWS environmental authorisation must be obtained.

3.5 Specific Legislated Environmental Requirements

The National Environmental Management Act No. 107 of 1998 (NEMA), as amended, makes provision for the identification and assessment of activities that are potentially detrimental to the environment and which require authorisation from the competent authority, based on the findings of an Environmental Impact Assessment.

The NEMA is a national act, which is enforced by the national Department of Environmental Affairs (DEA). In the Western Cape, these national powers have been delegated to the Western Cape Department of Environmental Affairs & Development Planning (DEA&DP).

According to the regulations of Section 24(5) of NEMA, authorisation is required for the following listed activities:

Government Notice R327 (Listing Notice 1):

Activity No. 12: “**Development** within a watercourse/32m from a watercourse.”

Activity No. 19: “The **infilling or depositing** of any material of more than **10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse**;

- (a) will occur behind a development setback;
- (b) is for maintenance purposes undertaken in accordance with a maintenance management plan; or
- (c) falls within the ambit of activity 21 in this Notice, in which case that activity applies.”

Activity No. 23: “The **development of cemeteries** of 2500 square metres or more in size.”

Activity No. 24: “The **development of**;

- (i) a road for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Government Notice 545 of 2010; or
- (ii) a road with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres;
but excluding;
 - (a) roads which are identified and included in activity 27 in Listing Notice 2 of 2014; or
 - (b) roads where the entire road falls within an urban area.”

Government Notice R324 (Listing Notice 3):

Activity No. 4: “The **development of a road** wider than 4 metres with a reserve less than 13.5 metres.”

(Possibly) Activity No. 12: “The **clearance of an area** of 300 square metres or more of **indigenous vegetation** except where such clearance of vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.”

To be confirmed after a Spring (August/September) botanical scan is undertaken on the site after alien tree/current plantation removal.

3.6 Site Specific Environmental Requirements:

The purpose of this section of the EMPr is to discuss possible significant environmental impacts that may be encountered. In other words, this section aims to give site specific guidance for impact minimisation in the context of the proposed development.

- i. **Biodiversity** – The site and its immediate surroundings are considered transformed with no natural veld remaining. Only a few hardy indigenous species remains. However implementing the following recommendations can ensure a potential positive environmental impact:
- A suitably qualified Environmental Control Officer must be appointed to monitor the construction phase.
 - All alien plants and all waste must be removed from the site and its immediate surroundings.
 - The small seasonal stream must be demarcated with a suitable buffer zone
 - The buffer zone (ecological support area) should be replanted with suitable indigenous vegetation (riparian vegetation).
 - The seasonal stream and its buffer zone should be incorporated as a feature within the lay-out of the memorial park.
 - Only indigenous plants should be used for any landscaping within the memorial park.
 - All areas impacted as a result of construction must be rehabilitated on completion of the project.
 - Once alien plantation on the proposed site is removed, a Spring (August/September) botanical scan must be undertaken to confirm that there are no indigenous flora which may need to be search out and rescued (to be relocated into the development's indigenous garden areas).

- ii. **Freshwater** – It is proposed that it be made a condition of any approval granted based on the findings of the freshwater assessment attached as Appendix G-3 of the BAR, that the site be revisited for verification of the wetland delineation during the wet season (Jul/August) after site clearing is completed, so that reports can be updated and plans adjusted to accommodate post clearing wetland boundaries.

The proposed layout must avoid infilling of wetlands A and D as indicated in the Freshwater Assessment (Appendix G-3 of the BAR), along with a 15m buffer for each, then the project would represent a significant net positive impact over present conditions.

The Freshwater Rehabilitation, Maintenance and Management Plan, attached as Appendix 13.3 of this EMPr (Appendix G-5 of the BAR), must be implemented as specified to ensure successful rehabilitation of the watercourses/wetlands on site.

- iii. **Geohydrology** – The majority of the site is classified as having a “low/medium” groundwater vulnerability rating. The southern portion of the site has been classified as “medium” grading into a “very high” vulnerability classification.

The likelihood of groundwater contamination is low in the area and is based on the following:

- the nine test pits, the deepest being 3.40m below ground level (bgl), did not intersect groundwater;

- permeability evaluations indicate that majority of the site had semi- to impervious layers with the exception of TP7 which had a porous layer at 0.2m (not a real concern for groundwater);
- the closest neighbours' borehole is located approximately 140m north of the northern boundary. However, the water bearing fractures were reported to be located at depths of 120m to 125m bgl. With a thick clay layer above the granite bedrock it can be assumed that the aquifer is semi-confined in nature. The likelihood of migration to the lower fractured aquifer is low due to the clay layer.

However, since the site is in close proximity to a number of groundwater users that depend on groundwater as a source, it is recommended that three to four monitoring boreholes (110 OD/100 ID mm) be drilled to a depth of at least 12m. If the water table is intersected before 12m, then drilling must continue for 1m past the water table intersect - this should account for season fluctuations.

iv. **Geotechnical** – Sidewall collapse was not observed in any of the trial pits put down and it is therefore assumed that grave excavations will stay open for a reasonable length of time. It must be noted that when the soils are wet by precipitation or otherwise, sidewall collapse is possible. Provided the grave excavation is stable when formed and no groundwater is present, the stand-up time for the sidewalls should be taken as maximum 24 hours, however this would need to be monitored over this period by the grave diggers in the event that rainfall could saturate the soils and cause collapse.

Allowance must always be made for the subsidence of the grave backfill and subsequent releveling before any memorial structure or tombstone is constructed over the grave.

v. **Heritage:**

a. **Archaeology** – With regard to the proposed Calcutta Municipal Cemetery on Farm No. 29 near Stellenbosch, the following recommendations are made:

- No mitigation is required prior to construction activities commencing.
- As a precaution, the site should be scanned for artefactual remains dating from the time of the Calcutta Bos Outspan, once vegetation has been cleared and removed from the site.

b. **Palaeontological** – It is recommended that, pending the exposure of significant new fossils (e.g. mammalian bones and teeth) during construction, exemption from further specialist palaeontological studies and mitigation be granted for this development.

If fossil material is discovered during construction, this should be safeguarded, preferably *in situ*, and the ECO should alert Heritage Western Cape (Tel: 086-142 142. Fax: 021-483 9842. Email: hwc@pgwc.gov.za), so that appropriate mitigation (i.e. recording, sampling or collection) can be taken by a professional palaeontologist. The tabulated 'Chance Fossil Finds Protocol' and associated recommendations, appended to the Heritage Impact Assessment report (Appendix G8 of the BAR) must be implemented.

c. **Visual** – Implementation of a sound visual management and monitoring plan, as per Section 6 of the Visual Impact Assessment (VIA) report attached as Appendix G8 of the BAR, is required.

A summary of the type and frequency of monitoring is further summarised in terms of inspection, observation and review, in Figure 5 (Visual Monitoring Plan, under section 6.3.3. of the VIA).

3.7 Recommendations on Impact Minimisation

- The construction and operational phase of the project must be done in accordance with this EMPr, the aim of which is to minimise environmental impact during the construction and operational phases.
- A suitable qualified ECO must be appointed to oversee the construction phase.
- The following are site specific recommendations, as per the various specialist assessments of the project. Please note that if there is any contradiction between the following specialists recommendations and/or the conditions of the Environmental Authorisation, and the other EMPr recommendations below, the Environmental Authorisation and specialist recommendations take precedent.

- i. **Biodiversity** – The site and its immediate surroundings are considered transformed with no natural veld remaining. Only a few hardy indigenous species remains. However implementing the following recommendations can ensure a potential positive environmental impact:
- A suitably qualified Environmental Control Officer must be appointed to monitor the construction phase.
 - All alien plants and all waste must be removed from the site and its immediate surroundings.
 - The small seasonal stream must be demarcated with a suitable buffer zone
 - The buffer zone (ecological support area) should be replanted with suitable indigenous vegetation (riparian vegetation).
 - The seasonal stream and its buffer zone should be incorporated as a feature within the lay-out of the memorial park.
 - Only indigenous plants should be used for any landscaping within the memorial park.
 - All areas impacted as a result of construction must be rehabilitated on completion of the project.
 - Once alien plantation on the proposed site is removed, a Spring (August/September) botanical scan must be undertaken to confirm that there are no indigenous flora which may need to be search out and rescued (to be relocated into the development's indigenous garden areas).
- ii. **Freshwater** – It is proposed that it be made a condition of any approval granted based on the findings of the freshwater assessment attached as Appendix G3 of the BAR, that the site be revisited for verification of the wetland delineation during the wet season (Jul/August) after site clearing is completed, so that reports can be updated and plans adjusted to accommodate post clearing wetland boundaries.

The proposed layout must avoid infilling of wetlands A and D as indicated in the Freshwater Assessment (Appendix G3 of the BAR), along with a 15m buffer for each, then the project would represent a significant net positive impact over present conditions.

The Freshwater Rehabilitation, Maintenance and Management Plan, attached as Appendix 13.3 of this EMPr (Appendix G5 of the BAR), must be implemented as specified to ensure successful rehabilitation of the watercourses/wetlands on site.

- iii. **Geohydrology** – The majority of the site is classified as having a “low/medium” groundwater vulnerability rating. The southern portion of the site has been classified as “medium” grading into a “very high” vulnerability classification.

The likelihood of groundwater contamination is low in the area and is based on the following:

- the nine test pits, the deepest being 3.40m below ground level (bgl), did not intersect groundwater;
- permeability evaluations indicate that majority of the site had semi- to impervious layers with the exception of TP7 which had a porous layer at 0.2m (not a real concern for groundwater);
- the closest neighbours’ borehole is located approximately 140m north of the northern boundary. However, the water bearing fractures were reported to be located at depths of 120m to 125m bgl. With a thick clay layer above the granite bedrock it can be assumed that the aquifer is semi-confined in nature. The likelihood of migration to the lower fractured aquifer is low due to the clay layer.

However, since the site is in close proximity to a number of groundwater users that depend on groundwater as a source, it is recommended that three to four monitoring boreholes (110 OD/100 ID mm) be drilled to a depth of at least 12m. If the water table is intersected before 12m, then drilling must continue for 1m past the water table intersect - this should account for season fluctuations.

- iv. **Geotechnical** – Sidewall collapse was not observed in any of the trial pits put down and it is therefore assumed that grave excavations will stay open for a reasonable length of time. It must be noted that when the soils are wet by precipitation or otherwise, sidewall collapse is possible. Provided the grave excavation is stable when formed and no groundwater is present, the stand-up time for the sidewalls should be taken as maximum 24 hours, however this would need to be monitored over this period by the grave diggers in the event that rainfall could saturate the soils and cause collapse.

Allowance must always be made for the subsidence of the grave backfill and subsequent releveling before any memorial structure or tombstone is constructed over the grave.

v. **Heritage:**

- a. Archaeology – With regard to the proposed Calcutta Municipal Cemetery on Farm No. 29 near Stellenbosch, the following recommendations are made:

- No mitigation is required prior to construction activities commencing.
- As a precaution, the site should be scanned for artefactual remains dating from the time of the Calcutta Bos Outspan, once vegetation has been cleared and removed from the site.

- b. Palaeontological – It is recommended that, pending the exposure of significant new fossils (e.g. mammalian bones and teeth) during construction, exemption from further specialist palaeontological studies and mitigation be granted for this development.

If fossil material is discovered during construction, this should be safeguarded, preferably *in situ*, and the ECO should alert Heritage Western Cape (Tel: 086-142 142. Fax: 021-483 9842. Email: hwc@pgwc.gov.za), so that appropriate mitigation (i.e. recording, sampling or collection) can be taken by a professional palaeontologist. The tabulated ‘Chance Fossil Finds Protocol’ and

associated recommendations, appended to the Heritage Impact Assessment report (Appendix G8 of the BAR) must be implemented.

- c. Visual – Implementation of a sound visual management and monitoring plan, as per Section 6 of the Visual Impact Assessment (VIA) report attached as Appendix G8 of the BAR, is required.

A summary of the type and frequency of monitoring is further summarised in terms of inspection, observation and review, in Figure 5 (Visual Monitoring Plan, under section 6.3.3. of the VIA.

Heritage (additional):

In the event that indicator(s) of heritage resources are identified, the following actions should be taken immediately:

- All construction within a radius of at least 20m of the indicator should cease. This distance should be increased at the discretion of supervisory staff if heavy machinery or explosives could cause further disturbance to the suspected heritage resource.
- This area must be marked using clearly visible means, such as barrier tape, and all personnel should be informed that it is a no-go area.
- A guard should be appointed to enforce this no-go area if there is any possibility that it could be violated, whether intentionally or inadvertently, by construction staff or members of the public.
- No measures should be taken to cover up the suspected heritage resource with soil, or to collect any remains such as bone, ceramics or stone.
- If a heritage practitioner has been appointed to monitor the project, s/he should be contacted and a site inspection arranged as soon as possible.
- If no heritage practitioner has been appointed to monitor the project, SAHRA must be contacted at the SAHRA head office.
- The South African Police Services should be notified by a SAHRA staff member or an independent heritage practitioner if human remains are identified. No SAPS official may disturb or exhume such remains, whether of recent origin or not.
- All parties concerned should respect the potentially sensitive and confidential nature of the heritage resources, particularly human remains, and refrain from making public statements until a mutually agreed time.
- Any extension of the project beyond its current footprint involving vegetation and/or earth clearance should be subject to prior assessment by a qualified heritage practitioner, taking into account all information gathered during this initial heritage impact assessment.
- We recommend the appointment of a Stone Age Specialist if any large finds of stone tools are discovered during construction.

3.8 Note on Approved Authorisations:

It must be noted that should approval to the development be granted by the respective competent authority, **a copy of any approved environmentally related authorisation (and approved authorisation amendment/s) must kept as an appendix to this EMP on site at all times.**

This includes but is not limited to, the EA (approved by the DEA&DP); the FRMMP (approved by the DWS) and the WUL (approved by DWS) confirm their approval of this project in writing and that a copy of the EA is on site during construction.

4. PRE-DETERMINED ISSUES OF CONCERN

Issues of concern that were identified in the EIA process and/or public participation process include but are not restricted to the following:

- Access route
- Demarcation of working footprint and removal and storage of topsoil material
- Waste management
- Mandatory site equipment
- Establishment of construction site compound and fuel stores
- Ablution & toilet facilities
- Refuse management
- Concrete works & batching proposals
- Soil erosion control
- Fire fighting equipment & emergency fire reaction plan
- Alien plant removal/Spring botanical scan after historic plantation clearance
- New access road construction (if required)
- Construction of a walled (not fenced) barrier on the northern boundary of the property

The pre-determined environmental issues and respective activities must be addressed during the “On Site Start-Up Meeting” (OSSM) and reflected in the On-Site Start-Up Report.

Site Specific recommendations as mentioned above and as per conditions of the Environmental Authorisation must also be included and reflected in the On-Site Start-Up Report.

5. ON-SITE START-UP MEETING

The mandatory **on-site start-up** meeting that is conducted preferably **14 days but not less than 5 working days** prior to commencement of any site/camp establishment, earthworks and/or construction activities and will relate to additional discussed information that must be complied with during the entire construction phase.

The ON-SITE START-UP MEETING REPORT to be attached as Appendix 1 to the EMPr. The Start-Up Meeting Report to include all site-specific issues and arrangements as discussed and agreed on at the site start-up meeting.

The On-Site Start-Up Meeting additional information pertains to specific site construction agreements that was discussed on site by all the relevant parties and agreed on and must be included in the On Site Start-Up Meeting Report. **(The arrangements and agreements must fall within the conditions as set out in the EA)**

At the on-site start-up meeting (OSSM), the following issues must be addressed:

- The EMPr & other relevant site documents
- Project to be discussed and all uncertainties are cleared
- Method statement/s to be discussed
- Road (if required) and construction area to be demarcated
- Materials stockpile and lay down areas to be demarcated
- Method of stockpiling to be discussed
- Fire fighting procedures
- Mandatory fire fighting 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 (if required)
- Environmental education and awareness training session for all contractors & onsite staff/labour

The following people must attend the on-site Start-Up Meeting:

- A representative from Calcutta, Stellenbosch Municipality (Applicant)
- Main contractor's representative.
- Site supervisor/foreman
- Environmental consultant (EC/ECO)
- Environmental site officer (ESO)

Minutes of the on-site 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 if needed. A non-response is deemed an acceptance of the contents and agreements of the report. **(Appendix 1)**

The main contractor must provide (i) a list of all sub-contractors and their scope of work for the contract and (ii) a time schedule of works.

The On-site Start-up Meeting report will also form part of this Environmental Management Plan. If any discrepancies between the start-up report and the EMPr arise then the EMPr will take

precedence until clarification on the discrepancy is clarified. If any discrepancies between the EMPr and the EA then the EA will take precedence until clarification on the discrepancy is clarified.

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.

NB! NO WORK WILL START UNTIL THE ABOVE IS IN PLACE AND AGREED ON.

6. METHOD STATEMENT

Method statements from the contractor will be required for specific sensitive actions on request of the authorities, Applicant's representative or the 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/Applicant, as circumstances unfold. All method statements will form part of the EMPr documentation and are subject to all terms and conditions contained within the EMPr 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 the Applicant 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 construction activity is due to start. Work may not commence until the ECO and Applicant have approved the method statement.

Method statements need to be compiled by the contractor for approval by the Applicant and the ECO. The contractor must submit written method statements to the Applicant for the purposes of the environmental specification, a "Method Statement" is defined as a written submission by the contractor to the Applicant setting out the plant, materials, labour and method the contractor proposes using to carry out an activity, in such detail that the 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 contents of the Method Statement cannot be changed or altered.

The Method Statement must cover applicable details with regard to:

- Construction 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
- 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 Applicant and the ECO.

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

NB: No work may commence or take place until all relevant parties have approved the Method Statement.

Explanation of method statements and a pro forma method statement sheet that must be completed by the Contractor for each activity requiring a method is attached as **Appendix 4 & Appendix 5.**

7. ENVIRONMENTAL DECLARATION of UNDERSTANDING

for the Environmental Management Plan/Programme (EMPr)

The purpose of the Environmental Declaration of Understanding agreement between the applicant / client, the engineer, the contractor and the Environmental Consultant is;

1. To enforce compliance by ALL parties with the EA & this EMPr.
2. To maintain proof of compliance with the site EA.
3. Applicant to inform all relevant parties of the EA & EMPr (as per condition of the EA).
4. To protect the ENVIRONMENT of the site against environmental damage;
5. To mitigate and rehabilitate any damage to the ENVIRONMENT.
6. Ensure that all contractors and sub-contractors are familiar with the EMPr & EA and sign the mandatory Declaration of Understanding indicating their undertaking to work within the framework of the environmental requirements.

This agreement outlines the obligations on the ECO to ensure compliance by all parties with the EMPr

8. PENALTIES

The Applicant (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 construction activities on environmentally sensitive sites.

In instances of non-compliance with the EMPr 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 on-site ECO must issue a written warning indicating the non-conformance to the contractor.

The Applicant, in consultation with the Environmental Consultant/ECO must determine the amount of the penalty applicable in accordance with the Penalties for Non-Compliance Schedule of Tariffs (**Appendix 2**).

Such penalty amount must be produced in writing and presented to the contractor within seven (7) days of the written warning. The Applicant may recover penalties by deducting the fine from the offending contractor.

The contractor will be responsible for all costs incurred where emergency procedures are implemented to deal with accidents impacting on the environment as well as the rehabilitation of such damage in conjunction with the ECO and site engineer.

In serious cases, at the discretion of the Applicant and the Environmental Consultant/ECO, any multiple offences can be added together.

The ECO (after consultation with Environmental Consultant/ the Applicant) 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.

This set of procedures must be understood by all relevant onsite project managers / project managers and site workers.

See **Appendix 2** for the Penalties for Non- Compliance.

9. RESPONSIBILITY OF STELLENBOSCH MUNICIPALITY (as the Applicant)

Stellenbosch Municipality (as the Applicant) must be responsible for ensuring compliance with the conditions contained in the EA by any person acting on his behalf, including but not limited to an agent, servant, employee or any person rendering a service to the Applicant in respect of the activity, including but not limited to contractors and consultants.

The Applicant is responsible for appointing the ECO, Site Engineer and Contractor for the duration of the construction contract and for ensuring that the Site Engineer and Contractor fulfil their obligations in terms of this EMPr.

The Applicant and or its representative must notify DEA&DP and any other relevant authority, in writing, within 24 hours thereof if any condition of this authorisation is not adhered to.

10. THE SITE ENGINEER / SITE MAIN CONTRACTOR

The Site Engineer / Site main contractor is responsible for ensuring that the construction contract and daily construction activities as per the original site specifications are implemented in terms of the Environmental Management Plan which includes additional on-site Start-Up Meeting agreements

The Site Engineer and the ECO are expected to develop a close working relationship and to stay in contact with each other.

The Site Engineer issues site instructions to the Contractor and all requests and communications between the ECO and Contractor are via the Site Engineer.

The only exception to this is where the ECO needs to issue a “stop works” order on the Contractor or the Site Engineer if serious environmental harm is about to happen or is happening as a result of construction activity. This “stop-order” must be confirmed by the ECO as soon as practically possible to all affected construction personnel.

When the ECO is not on site, the resident engineer will be responsible for implementation of the EMPr. Any construction and construction related activities that might lead to damage to the environment should be immediately brought to the attention of the site ECO.

The site engineer or the appointed engineer’s representative must complete the “**ENVIRONMENTAL WEEKLY CHECKLIST**” (see Appendix 9)

11. THE CONTRACTOR

The Contractor must ensure that all of its sub-contractors, employees, suppliers, agents, etc., are fully aware of the environmental issues detailed in the site EMPr. The Contractor must liaise closely with the Site Engineer and the ECO and must ensure that the works on site are conducted in an environmentally sensitive manner and fully in accordance with the requirements of the EMPr, at all times.

Any main bulk service providers must be advised of the construction activities as well as the requirements of this EMPr and the Contractor must be responsible for their activities conducted within their work areas.

All contractors working on site must have proper and competent contractor supervision during their time of contract.

If more than one contractor work on the site simultaneously then the responsibility lies on each contractor to adhere to the conditions of the EMPr and related documents.

This is for the duration of the contract.

The supervisors must work closely with the appointed environmental officer and discuss the daily programme with the appointed environmental officer. Any problems that might lead to damage to the environment must be discussed prior to commencement of the activity.

THE ECO MUST ENSURE THAT ALL CONTRACTORS / SUB-CONTRACTORS HAVE SIGNED THE “DECLARATION OF UNDERSTANDING” (Appendix 3) IN THIS CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN BEFORE CONSTRUCTION COMMENCES.

12. SITE PERSONNEL: ENVIRONMENTAL AWARENESS TRAINING

All daily site construction personnel must attend an on-site Induction Environmental Education and Awareness training (E&AT) session together with any site-specific environmental training they may require to carry out their duties.

All contractor and sub-contractor teams involved in work on site must be briefed on their obligations towards environmental controls and methodologies in terms of this EMPr prior to commencement of any construction and construction related activities

The on-site Environmental Education and Awareness Training session must take the form of an on-site environmental talk and where necessary relevant demonstrations conducted by the ECO.

The on-site Environmental Education and Awareness Training session must be aimed at all levels of site contractors, sub-contractors and related site workers & site management.

In the case of new workers coming on site throughout the construction programme, the site contractor is responsible to ensure all new labour arriving on site is made aware of the contents of the EMPr and is briefed on the E&AT.

13. ENVIRONMENTAL CONTROL OFFICER

13.1 Frequency of site visits

An ECO must be appointed for the duration of the construction phase (as required by the EA). The ECO must comply with the following:

- Conduct a start-up meeting before construction commences
- ECO to monitor the development at least twice a month until the development is completed
- Conduct a closing down visit as soon as possible after completion of the Development
- Conduct an environmental compliance audit within 6 months after completion of the civil contract.

13.2 Requirements for the Posts

Environmental Control Officer (ECO)

- A recognised environmental practitioner with a degree in environmental management and a sound knowledge of the environment and environmental management principles.
- An independent person with 5 or more years of environmental site management and able to ensure EMPr compliance monitoring experience on construction projects.

13.3 Monitoring responsibilities of the ECO

- The ECO will undertake regular site inspections and to monitor and assist in environmental tasks he/she must compile a weekly report/checklist and submit to EnviroAfrica/the Applicant
- Is to ensure that the mitigation/rehabilitation measures and recommendations referred to in the Environmental Authorisation are implemented and to ensure compliance with the provisions of the EMPr.
- Must notify DEA&DP and any other relevant authority, in writing, within 24 hours thereof if any condition of the EA is not adhered to.
- Is responsible for the environmental issues involved with the construction phase of the project;
- Co-ordinating any aspect of site activity that may have an effect on the environment;
- Must work in close conjunction with the Applicant /Site representative, contractors and sub-contractors
- Must identify and demarcate the impact area i.e. construction footprint area before any construction activities commence
- Must demarcate the necessary areas for storage of materials, ablutions, eating areas of contract workers, etc.
- Must identify 'No-go' areas and areas sensitive to erosion and have these areas demarcated. Environmental awareness of the workers is essential. This must be in the form of an on-site talk and must be conducted at an appropriate technical level
- The ECO will keep a site inspection diary. The purpose of the site diary is to record construction progress and environmental compliance. This information is then recorded in the form of an ECO checklist and/or diary entries and photographic records for visual reference. (Appendix 8).
- These documents must be available to the authorities for inspection or on request. The diary must include meetings/discussions with the contractor and must reflect environmental queries, agreed actions and dates of eventual compliance. These must form part of the official environmental record

13.4 Authority of the ECO

The ECO has the authority to stop works if in his/her opinion there is a serious threat to or impact on the environment caused directly from the construction operations.

This authority is to be limited to non-compliance to the EMPr and emergency situations where consultation with the Environmental Consultant is not immediately available.

The ECO is to inform the Environmental Consultant of the reasons for the stoppage as soon as possible. A relevant reason should be supplied to the Applicant/Site representative 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 Applicant/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

13.5 Appointment of an Environmental Site Officer (ESO)

When necessary the ECO may appoint an ESO to carry out the site inspections and the following will apply:

- The ESO is appointed prior to commencement of construction activities, site inspections are decided upon between the Applicant and the ECO depending on the environmental sensitivity of the construction areas and site location.
- The frequency of site inspections is also determined prior to commencement of works but can change if the need arises.

13.5 Qualifications of an ESO

The appointed ESO must fulfil the following criteria:

- Have at least 5 years' experience as an ESO.
- Have a sound understanding of the contents of the EMPr.
- Must be able to enforce compliance to all relevant site documents.
- Have a basic knowledge of the NEMA and other relevant information.
- A construction background would be an advantage.
- Must be able to work with site personnel and resident engineers.

14. CHANGES TO MANAGEMENT PLAN

Although care has been taken to address all known relevant environmental issues for the construction phase, it may become necessary to add or amend certain procedures or instructions to improve the efficiency of the EMPr.

Only those additions or amendments of this EMPr that will either improve environmental protection or can be proven 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 DEA&DP after the ECO has consulted with the Environmental Consultant and the Applicant. Please note that any additions or amendments to this EMPr must be approved by DEA&DP before they are implemented.

No deviation from the contents of the EMPr is allowed without the above-named prescribed procedures.

15. RECORD KEEPING

All records relating to the implementation of this management plan (e.g. Declaration of Understanding, ECO Checklist and/or diary, Method Statements, etc.) must be kept together and can be retrieved easily. These records must be available for scrutiny by any relevant authorities.

Photographs are to be taken of the site prior to, during and immediately after construction, as a visual reference. These photographs must be stored with other records related to this EMPr.

Any environmental non-compliances reported must have the support of sufficient photographic proof to mitigate the non-compliance report.

16. ENVIRONMENTAL COMPLETION STATEMENT

An Environmental Completion Statement is a report by the ECO/EC to the relevant authorities stating completion of the project and compliance with the EMPr and conditions.

The following environmental statements must be completed on completion of all site construction activities and submitted in line of sequence to the relevant office for perusal and reference.

16.1 ESO: ENVIRONMENTAL CLOSING STATEMENT

The ESO must submit an **environmental closing statement** on completion of the construction phase of the development. The environmental closing statement must cover all aspects of daily/weekly construction activities that took place during the ESO site inspections.

16.2 ECO: ENVIRONMENTAL COMPLETION STATEMENT

The ECO must submit an **environmental closing statement** relating to all environmental and technical issues that occurred on site as well as any conclusions regarding incidents such as written warnings, stoppages of works and penalty fines.

16.3 ENVIRONMENTAL AUDIT REPORT

An Environmental Audit Report by the ECO must be submitted by the Applicant to the satisfaction of the Department of Environmental Affairs and Development Planning, within six months after construction has been completed and also after the site has been rehabilitated.

Auditing and reporting as detailed in the Freshwater Rehabilitation Maintenance and Management Plan attached as Appendix 13.1 of this EMPr must be adhered to.

17. MANAGEMENT SPECIFICATIONS (CONSTRUCTION PHASE)

(This EMP is additional to conditions as set out in the EA)

17.1 Fauna and Flora

The Contractor must not deface, paint, damage or mark any natural features (e.g. trees, rock formations, buildings, etc.), if these should be 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.

Except to the extent necessary for the carrying out of the works, flora must not be removed, damaged or disturbed nor must any vegetation be planted. Any removal of vegetation that is necessary should be kept strictly to the demarcated area. Indigenous vegetation patches surrounding the proposed site, if any, should be established as no-go areas.

No bush or brush clearing to be undertaken without the knowledge of the ECO. Before an area is cleared, a Spring (August/September) botanical scan must be undertaken to ensure that any plants requiring search and rescue are accounted for, as per the Cape Nature's March 2019 comment on the development proposal (see Appendix E4 of BAR).

Trapping, poisoning and/or shooting of animals is strictly forbidden. No domestic pets or livestock are permitted on Site. Should the control of vermin or extra-limital species be required, the correct permits/licences must be in place before such animal control takes place.

Where the use of herbicides, pesticides and other poisonous substances are to be used, the Contractor must submit a Method Statement which must be in line with the Botanical Assessments and Table 1 of the Freshwater Rehabilitation Maintenance and Management Plan, recommendations.

All incidents of harm to any animal or natural vegetation (apart from the agreed upon areas) must be reported to the ECO.

17.2 Protection and Rescue of Fauna and Flora

If any indigenous general vegetation can be salvaged can also be used for landscaping purposes in the 'green park/open spaces' of the development. Before an area is cleared, a Spring (August/September) botanical scan must be undertaken to ensure that any plants requiring search and rescue are accounted for, as per the Cape Nature's March 2019 comment on the development proposal (see Appendix E4 of BAR).

If any fauna removal from the site is required, it must be done in accordance with the requirements of the Nature Conservation Ordinance regulating these activities and should be conducted by a suitably qualified and experienced person. The necessary permits that may be required from Cape Nature must first be obtained.

If required, any flora identified during construction to be rescued must be removed and placed in an area specifically allocated for these plants to ensure that the necessary care thereof will take place until being relocated and planted in designated areas.

Any areas of vegetation that are to be protected during construction must 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 fencing for protection of the conservation areas.

17.3 Clearing of Vegetation, Stripping & Conservation of Topsoil

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 ECO.

Cleared vegetation may be used for mulch or slope stabilisation of the Site. Should bulk vegetation be removed from the designated working areas (foot print area) then tall vegetation shall first be removed through brush cutting and chipping of larger shrub material. If approved by the ECO, 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.

Larger, alien invasive/plantation trees to be removed will be replaced with indigenous (and water wise vegetation) where possible in the landscaping. Clearance of the alien vegetation on site will be in conjunction with the Municipality's annual plan of operation for alien invasive plant removal as co-ordinated by the Community Services Department.

Prior to any activities within the demarcated work areas, topsoil material shall be removed to a depth of 300mm or deeper if specified by botanical specialist in consultation with the ECO and engineer, and stockpiled in a designated area for use in rehabilitation of the site post construction. Any area where the topsoil will be impacted by construction 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.

Should the topsoil layer in any area be less than 300mm, or in areas where it is not possible to remove the topsoil, the depth/amount of topsoil to be removed will be up to the discretion and approval of the ECO (in conjunction with the botanical specialist, if needs be).

Topsoil storage areas must be convex and should not exceed 2m in height. The Contractor must ensure that the material does not blow or wash away. 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.

Topsoil from different soil types must be stockpiled separately and replaced in the same areas from which they were taken if possible. 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.

17.4 Protection of Archaeological & Paleontological Remains

If remains or artefacts are discovered on Site during earthworks, work in the vicinity must cease and the Contractor must immediately inform the Engineer and the ECO who must contact Heritage Western Cape and/or the South African Heritage Resources Agency (SAHRA) for information on the appropriate course of action to be taken. SAHRA Contact: 021 - 462 4502. Heritage Western Cape Contact: 021 - 483 9682.

In the event that previously unknown archaeological features are exposed during the construction phase, the Contractor should inform the Engineer and the ECO who will advise the Applicant on the necessary course of action.

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.

17.5 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.

Where practical, all maintenance of plant and machinery on Site must be performed in workshops. If it is necessary to do maintenance outside of a workshop area, the Contractor must obtain the approval of the Engineer and the ECO prior to commencing activities

All vehicles and equipment must be routinely inspected for fuel and oil leaks, 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 construction 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.

Appropriate 2.5kg (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 construction site.

17.6 Demarcating and Fencing

Final site demarcation must be carried out with all relevant parties (who will be responsible) present for the day-to-day activities on the site, they include;

Applicant	Stellenbosch Municipality Representative
Environmental Consultant	Environmental Consultant Representative
Main Contractor	Project Site Manager
Sub-contractor	Project contractor
ECO/ESO	Environmental Control Officer or Site Officer

The proposed site will be demarcated prior to the commencement of any construction activities whatsoever, this includes site establishment, the moving of construction material or any other items onto the site, etc.

The site will be demarcated with appropriate strong steel 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)

The construction area i.e. road, stockpile areas and development footprint etc. must be demarcated and fenced off with steel 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.

NB. Steel dropper poles and orange baler twine has proven to be the most environmentally friendly means of on-site demarcation.

In the event that sensitive features are threatened by construction activities, temporary fencing off of these areas (for individual areas such as trees or rocks) or the construction area (when working in a mainly natural environment) is recommended.

The Contractor must maintain in good order all demarcation, fencing and barriers for the duration of construction activities, or as otherwise instructed. 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.

Once in place the demarcation barriers may not be moved or altered without consultation with the site ESO and the main contractor.

17.7 “NO-GO” Areas

“NO-GO” areas, if so designated by the EMPr, EA or ON SITE START-UP MEETING, are certain pre-determined areas where construction activities are prohibited. The contractor must ensure that no person, machinery and/or equipment enter the “NO-GO” areas at any time during the contract period. If so required by specifications in the EMPr, certain areas must be "No-go" areas. 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.

Areas of special importance will be decided upon between the Engineer, Contractor and the ECO and demarcated as “No-go” areas on a site plan and fenced off. Such areas are out of bounds to the Contractor and his staff, sub-contractors and their staff or suppliers and their staff and to any other person involved in the construction, without the written permission specified by the ECO.

All private property outside of the construction areas as set out in the site layout plan shall be considered no-go areas.

17.8 Water, Storm water, Erosion & Sedimentation Control

The Contractor must take appropriate and active measures to prevent erosion resulting from his own construction activities and operations as well as storm water control measures to the satisfaction of the ECO.

Occupants on site must have access to safe drinking water. Water to be supplied by the contractor shall be from a legal source and comply with recognised standards for potable and other uses.

During construction, the Contractor must protect areas susceptible to erosion by installing all the necessary temporary and permanent drainage works as soon as possible.

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. All potential hazardous fluids / materials must be protected from the rain to prevent them being washed into storm water channels or any aquatic ecosystems. All such measures must be discussed with and approved by the ECO.

17.9 Fuel, Tar Compounds and Oil

Basic guidelines to follow if any fuels are to be stored are as follows:

- These areas must comply with general fire safety requirements.
- 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. Drip trays are to be used in these storage areas to prevent contamination of the ground in the event of spillages or leaks.
- All plants / fuel tanks must have a drip tray present to use in the event off accidental spillage of oils and fuels and must contain a capacity level of 120% of the capacity of the plant fuel and oil tanks.
- Drip trays must be used when refuelling plant or equipment.
- A suitable leak proof container for the storage of oiled equipment (filters, drip tray contents and oil changes etc.) must be established.
- 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 spills are to be recorded in the ESO diary.
- A bioremediation/ hydrocarbon spill remediation product approved by the ECO must be stored on site and near the fuel stores for any emergencies such as spills. Once a purpose manufactured hydrocarbon spill remediation product has been used or has been used to treat contaminated materials (soil, rubble etc.), it can be disposed of as per general waste provided this is not in excessive quantities.

Fuel Storage proposals must be cleared by the ECO before any storage or stockpiling takes place.

17.10 Hazardous Substances

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

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: - Any Hazardous building materials (e.g. asbestos, fibre claddings, refrigerants, coolants, sub-station cooling oils, etc.) 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.

Hazardous materials should be stored under lock and key in designated areas with properly displayed and visible warning signs.

17.11 Concrete Works

The Engineer (in collaboration with the ECO) must indicate the permitted location of batching plants (including the location of cement stores and sand and aggregate stockpiles), if these are to be present on Site, on a site plan. A Method Statement indicating the layout and preparation of such facilities must be submitted.

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. Used cement bags must be stored in weatherproof containers to prevent wind dispersion and water contamination. 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.

Disposal of cement bags on site must be arranged with the site ECO.

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.

The following recommendations must be implemented to minimise impact.

- The concrete mixing must take place on top of boarding and/or impermeable sheeting to protect the ground. This board and or sheeting must be removed from the site once the mixing is complete
- Concrete batching to take place at identified areas only in consultation with the ECO.
- Cement contaminated water may not enter a natural or man-made (e.g. trench / sloop 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.
- If possible/appropriate ready mix concrete must be used.
- Cement bags are to be stored securely out of harm's way from the elements (wind and rain). Bags has to be covered and placed on plastic sheeting
- Sand and stone to be stored on plastic if it is stored outside the future fenced off site.
- Excess or spilled concrete must be confined within the works area and then removed to a waste site.

- Wash-down areas must be confined to within the concrete batching area only.

NB: In the event of Ready Mix concrete deliveries taking place on site the site foreman, must ensure that no wash-down of ready mix trucks takes place on or around the site, except at the concrete batching area where concrete wastewater may be contained in the existing bunding pit. Any alternative method of disposal must have to approval of the site ECO.

17.12 Blasting / drilling (if required)

In the unlikely event where blasting or rock drilling is required, the following recommendations must be implemented:

- A Method statement must be provided for each case separately **prior** to commencement of blasting works.
- The contractor must take all necessary precautions to prevent damage to special features and the general environment, which includes the removal of fly rock.
- The contractor must ensure that no pollution results from drilling operations, either as a result of oil and fuel drips, or from drilling fluid. The contractor must take all reasonable measures to limit dust generation as a result of drilling operations.
- The ECO must be given 24-hour notice before blasting events.

17.13 Fires and smoking

No fires are allowed on site.

If Smoking is allowed on site then arrangements to be made for disposal of cigarette buds. No smoking will be allowed outside the agreed upon areas.

Adequate fire fighting equipment according to the fire hazard during the construction period must be available on site and in good working order (at least one type ABC (all-purpose) 2.5 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 or cutting of metal will only be permitted inside the working areas.

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 Applicant.

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 land-owner.

17.14 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.

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.

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.

17.15 Dust Control

The Contractor must take all reasonable measures to minimize the generation of dust as a result of construction activities (including dust generated on haul roads) to the satisfaction of the ECO and Local Authority

17.16 Solid Waste Management

No on-site burying or dumping of any waste materials, vegetation, litter or refuse must occur.

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 at least once a day. 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 solid waste must be disposed of off-site 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. All hazardous waste must be disposed of at a licensed hazardous waste 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.

The Contractor must be responsible for the establishment of a refuse control system that is acceptable to the ECO.

Disposal arrangements must be made in advance and cleared with the ECO before construction starts.

17.17 Toilets & Ablution Facilities

The Contractor must provide suitable sanitary arrangements near the construction 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.

Disposal arrangements must be made in advance and cleared with the ECO before construction 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. Toilets should be properly screened from the adjacent properties.

NB. NO BURYING OR BURNING OF ANY WASTE MATERIAL ON OR NEAR THE CONSTRUCTION SITE NOR ANYWHERE ON THE SURROUNDING PROPERTY IS PERMITTED.

17.18 Stockpiling

Any stockpiling of gravel, cut, fill or any other material including spoil must only be allowed in degraded areas or areas below the future cover of buildings and tar or paved parking surface. The Contractor must indicate the proposed areas for such operations and method of undertaking such operations in a Method Statement to be submitted to the ECO for approval before any such activity begins. 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 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.

17.19 Preparation of Building Material

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 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, and this must be approved by the Engineer / ECO.

17.20 Discharge of Construction 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 fuel depots/workshops/truck washing areas. Wash down areas must be placed and constructed in such a manner to ensure that the surrounding areas are not polluted.

Contaminated water includes water that is carrying excess sediment due to construction activities. 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. 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.

17.21 Treating (flushing / testing) of Pipelines (if required)

Cleaning/sterilization/flushing of pipelines shall not impair surrounding environmental quality. Any contaminated water from such activities shall be contained until it complies with the standards contained in the National Water Act or other relevant Acts, as well as those laid down by the Local Authority. Alternatively, it shall be removed from site and disposed of at an approved waste disposal site.

17.22 Contractors Temporary Camping Site & Eating Areas

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. The feeding or leaving of food for animals is 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.

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 is allowed.

17.23 Traffic, Access Routes & Haul Roads

The Contractor must control the movement of all vehicles and plant including that of his suppliers so that they remain on designated routes. In addition, such vehicles and plant must be so routed and operated as to minimise disruption to regular users of the routes not on the Site. On gravel or earth roads on Site, the vehicles of the Contractor and his suppliers must not exceed a speed of 25 km/h. On public roads adjacent to the Site, vehicles will adhere to municipal and provincial traffic regulations.

As far as possible, any access routes/haul roads must utilise existing roads or tracks. 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 temporary access routes must be rehabilitated at the end of the contract to the satisfaction of the ECO.

Method Statements for any new access/ haul roads must be submitted

17.24 Site Clean Up and Rehabilitation

The Contractor must ensure that all structures, equipment, materials and facilities used or created on site for or during construction activities are removed once the project has been completed. The construction site must be cleared, and cleaned to the satisfaction of the ECO.

Immediately after the demolition of the campsite, the contractor shall restore the site to its original state, paying particular attention to its appearance relative to the general landscape.

The contractor's procedure for rehabilitation shall be approved by the ECO and Engineer.

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
- 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.

17.25 Land Management

Vehicles accessing the construction site must be made aware of driving in hazardous road conditions, sharp bends, narrow roads, bad weather, 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 construction property must be damaged. All access gates to the property (construction site) 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 construction areas must always be closed.

Soil erosion must be prevented at all times along the access roads and around construction areas.

No bush or brush clearing to be undertaken without the knowledge of the ECO / Engineer. Before an area is cleared, a botanical scan must be undertaken in Spring to ensure that any plants requiring search and rescue are accounted for, as per the Cape Nature's March 2019 comment on the development proposal(see Appendix E4 of BAR).

Larger, alien invasive/plantation trees to be removed will be replaced with indigenous (and water wise vegetation) where possible in the landscaping. Clearance of the alien vegetation on site will be in conjunction with the Municipality's annual plan of operation for alien invasive plant removal as co-ordinated by the Community Services Department.

17.26 Socio-Cultural Issues

Adjacent and nearby property owners or property occupiers must be treated with respect and courtesy at all times.

The cultural lifestyles of the communities living in close proximity to the construction areas must be respected. In that regard, the provision of a walled/solid barrier on the northern perimeter of the development has been recommended in the BAR to accommodate local farm-worker beliefs on the adjacent property. Inspections to ensure the robustness of this barrier once it is constructed, must form part of the ECO and operation management inspections.

17.27 Additional Associated Installations

17.27.1 Construction of new access roads (if required)

In the event of the construction of a new access road to the site, the access route is pre-determined prior to the On Site Start-Up Meeting.

Discussions pertaining to the “Access Road Start-Up Meeting” include the following but not restricted to;

- EMPr and contents thereof
- Demarcation of the access route
- Containment of soil and rock from excavations
- Transit areas for excess excavation road materials
- Stockpile areas for sub-base and surface material
- Earthmoving machinery for specific tasks
- Mandatory Site Equipment
- Placing of on-site toilet facilities
- Specific requests from land-owners
- Dust Pollution
- Post construction erosion methods
- Site Specific agreements emanating from the Start-Up Meeting

18 MANAGEMENT SPECIFICATIONS (OPERATIONAL PHASE)

The most important part of the operational phase will be to ensure that the site is meticulously maintained and that the operations are carefully monitored. The applicant will remain overall responsible for the environmental performance of the site and must be aware of the legal requirements and obligations. The applicant must also be aware of the legal action that can be taken against him as a person with regards to negligence leading to environmental pollution.

This section of the Environmental Management Programme report (EMPr) is required to address the protection and ongoing management of the natural resources both on and off the site during the operational stages of the development to guide the Property Owner/Property Owners Association (POA) to manage activities on site on an ongoing basis in an environmentally sustainable manner. The overarching goal is to ensure that undue or reasonably avoidable impacts of the proposed development are avoided and that positive impacts of the development are enhanced.

The following points of action must be considered during the operational phase (maintenance activities) to avoid any environmental impacts:

- All maintenance activities will consider the environment.
- The POA will ensure that any maintenance activities that are undertaken are carried out in line with the specifications and recommendations set out in section 17 of this document.
- Any incidents that have resulted in a large negative impact on the environment are to be reported to DEA&DP.

19 TERMS AND ABBREVIATIONS:

The following definitions and abbreviations are applied:

CMC	Cape Metropolitan Council
DEA	Department of Environmental Affairs and Tourism
DEA&DP	Department Environmental Affairs & Development Planning
DWA&F	Department of Water Affairs and Forestry
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme report, although the term Environmental Management <i>Plan</i> is often used interchangeable with <i>Programme</i> .
EMS	Environmental Management System
IEM	Integrated Environmental Management
*ECO	Environmental Control Officer
*ESO	Environmental Site Officer
ER	Engineer's Representative
HWC	Heritage Western Cape
I&AP	Interested & Affected Party
OSSM	On Site Start-Up Meeting
POA	Property Owners Association
SAHRA	South African Heritage Resources Agency

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.

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

Method Statement is a written submission by the Contractor to the Engineer or relevant responsible person such as the Project Leader, in response to the Specification, or a request by the Engineer/Project Leader, setting out the plant, materials, labour, method, responsible persons and timeframe that the Contractor proposes using to carry out an activity, identified by the relevant specification or the Engineer/Project Leader when requesting the Method Statement, in such detail that the Engineer/Project Leader is enabled to assess whether the Contractor's proposal is in accordance with the Specifications and/or will produce results in accordance with the Specifications.

The Method Statement shall cover applicable details with regard to:

- construction 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;
- the containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
- timing and location of activities;
- compliance/non-compliance with the Specifications;
- any other information deemed necessary by the Engineer/Project Leader.

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).

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

construction site means the area influenced and affected by the construction activities or under the control of the Contractor, often referred to as "the Site".

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, borrow areas, batching plant, crusher plant, sand washing plant, workshop, offices, rest areas, ablution areas, etc., whichever is applicable.

construction means the period of the project during which the actual works are carried out, deemed to include site establishment, site preparation, the works, maintenance period and decommissioning.

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

Applicant	The person/organisation (usually the holder of the Environmental Authorisation) with rights to undertake the development of the site.
Audit/Monitoring	Regular inspection and verification of construction activities for degree of compliance to the Environmental Management Programme.
Bund	Enclosure under/around a storage facility to contain any spillage – the storage capacity of the bund must be 120% of the total capacity of the possible spillage amount
Batch plant	Machinery used on site for the large-scale mixing and production of concrete or plaster and associated equipment and materials.
Construction phase	The construction phase period of a cellular communications Construction site is defined as from the commencement of site establishment up to and including the practical site handover.
Contract	An accepted offer to execute specified work within a stated time for a monetary reward. It takes the form of all the documents and drawings issued when tenders are invited (in which the nature and quantity of the work to be executed are set out), the schedules of which documents have been priced by the contractor for completion within a stated time, and the acceptance, in writing, of the Contractor's price) (source: SABS 0120; 1986). OR The General Conditions of Contract and Special Conditions, Specifications, Drawings, Tender, written records of matters agreed after the submission of the Contractor's tender, Letter of Acceptance and Agreement, together with other documents which the parties have agreed in writing shall form part of the Contract and such amendments or additions to the Contract as may be agreed in writing between the parties (source: GCC, 1990).
Contractor	The natural or juristic person or partnership whose tender has been accepted by, or on behalf of the Employer and where applicable, includes the Contractor's heirs, executors, administrators, trustees, judicial managers or liquidators, as the case may be.
Declaration of Understanding	Form that is signed by all contractors involved in the construction works of their understanding and acceptance of the CEMPr and site-specific additions to the CEMPr.

Development site	The boundary and extent of development works and infrastructure.
Developer	The developer is the person/body responsible for the development of the project and could be the same as, or different to the Applicant.
Emergency	A situation requiring immediate action and where failure to implement appropriate actions timeously may result in environmental damage.
Engineer	A person who represents the Applicant and is responsible for the technical, environmental and contractual implementation of the works to be undertaken.
Engineer's Representative	<p>The person appointed from time to time by the Engineer in terms of the General Conditions of Contract. The Engineer's Representative shall:</p> <ul style="list-style-type: none"> • Observe the execution of the Works, examine and test materials and workmanship and receive from the Contractor such information as he shall reasonably require. • Have the authority: <ul style="list-style-type: none"> ○ Given to him by any provisions of the Contract. ○ Given to him by the Engineer. ○ To deliver to the Contractor oral or written communications from the Engineer. ○ To receive on behalf of the Engineer oral or written communications from the Contractor. <p>The powers and authority of the Engineer's Representative would be subject to certain conditions.</p>
Environmental Awareness Course	An environmental education course for the Contractors management staff and labour force which informs them of the requirements of the EMPr.
Environmental Completion Statement	A report document submitted to the relevant authority showing that the EMPr environmental controls were appropriately implemented on a project.
Environmental Completion Audit	Similar to an Environmental Completion Statement but it is more detailed and will contain detailed information regarding controls and their effectiveness. This document would be required for large projects normally where a professional environmental scientist was appointed as the ECO.
Environmental Management Programme:	<p>A programme for managing potential impacts identified during the approval process. It could consist of one or more of the following components, depending on necessity dictated by the nature of the development:</p> <ul style="list-style-type: none"> • Standard Environmental Specification • Detailed Environmental Specification • Guideline documents and tools for implementation by the different role players • The Environmental Education Course • Standard Revegetation Specification • Detailed Revegetation Specification <p>As mentioned earlier, the term Environmental Management <i>Plan</i> is often used interchangeable with Environmental Management <i>Programme</i>, and for the purposes of this document will be assumed to have the same definition.</p>
Environmental Authorisation	Environmental Authorisation issued by DEADP for the authorisation to commence construction under certain environmental compliances.
*ESO (Environmental Site Officer)	Designation is reserved for suitably qualified environmental site managers, who are to be appointed by the Engineer, and are mainly associated with large and complex developments.
*ECO (Environmental Control Officer)	Designation is reserved for suitably qualified authority or officer acting on their behalf. The ECO is usually a professionally registered Environmental Scientist.
Environmental Specification	For the purposes of this study, this designation is reserved for the combination of the Standard Environmental Specifications and the Detailed Environmental Specifications.
ECO vs. ESO	ECO might also mean the ESO but the ESO does not mean the ECO. The ESO is responsible to the ECO
General Conditions of Contract	A document that sets out the general rights and obligations of the parties to a contract, on such matters as sureties, quality of work, program, supervision, insurance, co-operation with others, provision of plant, material and labour, the regulation of wages, samples, tests, examination, commencement and completion of work, penalties for delay, requirements for maintenance, methods of dealing with defects, variations, measurements and payments, and the settlement of disputes. In South Africa, the most widely accepted general conditions of contract for general civil engineering works is the SAICE General Conditions of Contract for Works of Civil Engineering Construction (sixth edition, 1990).
No Go Areas	Areas identified as being environmentally sensitive in some manner and delineated on plan, and on the site with pegs or fencing and which are out of bounds to

	unauthorised persons. Authorisation must be obtained from the Engineer/Project Leader prior to entry.
Particular Specification	A specification that covers construction work involving a specialist type of operation that is not adequately covered in a Standardized Specification.
Project Specification	A specification that describes the Works in general terms (including the locality, the conditions on Site, the extent of the Contract, the construction programme, and the service facilities available and to be taken into consideration) and that may include clauses that amend or amplify or add to any requirement(s) of a standardized specification (or standard or particular specification) in the sequence in which the requirements and specifications occur in the contract documents.
Reference Group:	The funding body and major role-players (including the environmental authorities) who may resolve environmental disputes, which could arise between the different role-players on site.
Revegetation Specification	This designation is reserved for the combination of the Standard Revegetation Specifications and the Detailed Revegetation Specifications.
Site	The boundary and extent of development works and infrastructure, including any areas off the main site on which works are to be carried out in order to allow the development to proceed successfully.
Specification	A technical description of the standards of materials and workmanship that the Contractor is to use in the Works to be executed, the performance of the Works when completed and may include the manner in which payment is to be made. It is essential for the specifications to be clear, concise and to the point, and use should not be made of ambiguous terms or phraseology.
Standard Specification	An established or accepted model specification. In South Africa the most widely accepted standard specification for general civil engineering works is the set of SABS 1200 Standardized Specifications (refer to definition below), however, other Standard Specifications such as BS, AAWA and Standard Water Specifications are also used.
Standardized Specification	A specification that is published by the South African Bureau of Standards (SABS) and that so covers a particular class of civil engineering construction that the specification is generally applicable throughout the Republic of South Africa.
Top material	This refers to any surface material in the construction area, whether it is soil, fine material or stones including vegetation.
Works	The works to be executed in accordance with a contract.

20 APPENDICES:

APPENDIX 1: START-UP REPORT	54
APPENDIX 2: PENALTIES FOR NON-COMPLIANCE	56
APPENDIX 3: DECLARATION OF UNDERSTANDING	60
APPENDIX 4: INFORMATION ON METHOD STATEMENTS.....	62
APPENDIX 5: EXAMPLE OF METHOD STATEMENT	64
APPENDIX 6: ENVIRONMENTAL INCIDENT REPORT FORMAT	67
APPENDIX 7: ENVIRONMENTAL COMPLAINTS REGISTER	69
APPENDIX 8: EXAMPLE OF METHOD STATEMENT REGISTER	71
APPENDIX 9: CONTACTOR'S ENVIRONMENTAL WEEKLY CHECKLIST	73
APPENDIX 10: BASIC RULES OF CONDUCT.....	75
APPENDIX 11: ECO/ESO REPORT/CHECKLIST	79
APPENDIX 12: MAPS AND DRAWINGS.....	84
APPENDIX 13: ANY OTHER RELEVANT DOCUMENTS	85
APPENDIX 13.1 APPROVED ENVIRONMENTAL AUTHORISATION (including approved amended authorisation/s)	
APPENDIX 13.2 APPROVED WATER USE LICENCE	
APPENDIX 13.3 APPROVED FRESHWATER REHABILITATION, MAINTENANCE AND MANAGEMENT PLAN	
APPENDIX 13.4 BOTANICAL ASSESSMENTS/SCANS	

APPENDIX 1: START-UP REPORT

To be included after start-up meeting

APPENDIX 2: PENALTIES FOR NON-COMPLIANCE

PENALTIES FOR NON-COMPLIANCE

The contractors / sub-contractors must contact the ECO at any stage if unsure about any matter, or if a pollution incident occurs, or vegetation or animals are damaged.

ECO = Environmental Control Officer ESO= Environmental Site Officer

PHASE		
PRE-CONSTRUCTION PHASE	Penalty for Non-compliance	
	Bottom range	Top Range*
Construction area to be marked off before construction starts.		5000
The demarcated area must be maintained throughout the construction phase	500	1000
Site area for stock piling of building material must be demarcated	500	5000
Site area for storing of waste material must be demarcated	500	5000
Fencing off the construction site with mesh fencing of 1.8m, where necessary or other suitable material as agreed on by ECO	500	1000
Sitting of access road/s to be approved by ECO & demarcated with stakes before any construction starts (if applicable)		5000
Temporary route used for construction must be determined on site with ECO (if applicable)	1000	5000
Telecommunications & AC power routes must be determined with the ECO (if applicable)	1000	5000
Sensitive features that may be harmed must be clearly marked or demarcated.	500	2000
Vegetation that may not be removed must be clearly marked or demarcated.	500	5000
Contractor must make the Construction team and all sub-contractors aware of all environmental aspects that could lead to imposition of penalties	100	5000
Contractor to sign Declaration of understanding (DOU) before construction starts		5000
Contractor to assure that all subcontractors be informed and signed DOU	1000	5000
Method statements must be provided on request by the ECO. No work may commence until the Method Statement is accepted by the ECO and Engineer	1000	5000
CONSTRUCTION PHASE		
Information		
A copy of the EMPr & Record of Decision with all the conditions of approval and the relevant Method Statements must be at site at all times.	200	5000
Construction crew behaviour		
Construction crews may not overnight on site.	200	5000
No amplified music allowed on site	100	200
Construction crew must stay within the demarcated construction area. (Applicable in sensitive sites)	50	500
Eating of meals only allowed in demarcated area	50	500
No pets permitted on site		100
Driving, Parking & Storing of machinery and vehicles are only allowed inside demarcated areas and existing roads	1000	5000
Machinery may only be used on the road and may not disturb the vegetation on the sides of the road except if cleared by ECO. Machinery used must be carefully considered to limit environmental damage	500	5000
No vegetation other than that agreed on may be damaged - i.e. no access to areas outside construction area.	500	2000
No individual may cause unnecessary damage to flora and fauna on, around or near the site	20	2000
No littering allowed (incl. cigarette butts)	50	500

Excavations		
No topsoil may be removed or altered outside the demarcated area and/or which was not specified.		2000
Commercial sources of sand, rock and gravel to be cleared with ECO	200	5000
All surplus material to be taken off-site and be disposed of at approved site	500	5000
Toilets		
Sufficient ablution facilities must be provided		3000
Toilets to be secured to prevent them from falling or blowing over.	100	1000
They must be serviced regularly, (according to the manufacturer's instructions) and kept clean.	100	1000
Everybody on site must make use of ablution facilities	50	1000
Fire Prevention		
All mandatory fire fighting equipment (as specified at start-up) must be on site at all times	500	4000
Fire fighting equipment to be in good working order and serviced.	500	2000
No fires, including cooking fires, allowed on site	1000	5000
Concrete & Cement Activities		
Wash-down site of Ready Mix delivery trucks must be pre-determined prior to commencement of the activity.	500	5000
Concrete may only be mixed within the boundaries of the bunding area or demarcated area and/or where was agreed on by the ECO.	500	5000
All excess cement & concrete mixes to be contained on construction site and removed from site when necessary or requested by the ECO	200	5000
Any cement / concrete spillage to be cleaned up immediately.	500	5000
Mixing and storage areas must be appropriately located in demarcated area or as agreed upon at the on-site Start-Up Meeting	500	1000
Dust pollution control		
Ensure that loose building material is covered to prevent dust pollution	100	1000
Water run-off		
Contamination of water bodies, rivers, dams or wetlands must be prevented at all cost	500	5000
Rainwater from construction & building site/s must be channelled, contained & allowed to dry out, so as not to transport any pollutants into the surrounding area. Temporary trenches, straw stabilising, brush cutting can be used	500	5000
Waste control		
Sufficient refuse bins must be placed on site	500	2000
Refuse bins must be cleaned on a regular basis	100	1000
General litter / building refuse must be cleaned up on a regular basis from the site	500	3000
Cement-contaminated water; paint; oil; cement slurries etc. must be stored in watertight containers or as agreed with ECO	500	5000
Store all refuse & waste material in wind & animal proof containers	100	1000
Waste must be disposed of at an official waste deposit site on a regular basis.	500	5000
The absence of or inadequate drip trays or bunding facilities	500	5000
Failure to address oil/fuel leaks from on-site machinery	200	5000
Herbicides		
No indiscriminate use of herbicides or pesticides may be used. Where the use of herbicides, pesticides and/or other poisonous substances are to be used, a Method Statement in line with the Botanical Assessments and Table 1 of the Freshwater Rehabilitation Maintenance and Management Plan, must be in place prior to use and must be strictly adhered to.	200	2000
Construction road		
Road must be upgraded to prevent degradation and erosion of the road and surrounds.	500	5000
Power and Telecommunications supply		
Demarcate power supply route	500	5000
No vehicles to drive through vegetation unless authorised by ECO	500	5000

Storage of equipment may only take place at an area demarcated by the ECO.	500	5000
Working must be done in phases to prevent trampling of vegetation	N/A	
Use of generators and fuel powered equipment		
A watertight cover must be place under the power generator equipment to prevent accidental spillage of fuel & oil seeping into the soil.	500	5000
Drip tray must be able to take 120% of fuel on site	500	5000
All waste material generated from the use of this equipment must be contained and removed from the site	500	5000
Mobile fuel powered equipment must be well maintained and must not have any fuel or oil leaks.	200	5000
Soil Stabilisation		
Ensure that soil material for filling and stabilisation comes from a source that does not contain seeds alien to the area. The source must be cleared with the ECO.	100	2000
Rehabilitation		
Remove rocks and stones and stock pile in area recommended by ECO	500	5000
Remove all plants that can be used for rehabilitation and store on- or off-site in appropriate manner as agreed with ECO	200	5000
Removal of all old concrete and alien materials from site	500	5000
Site must be cleared of all waste and building material	500	5000

*(Large scale / repeated offence)

APPENDIX 3: DECLARATION OF UNDERSTANDING

CALCUTTA PUBLIC CEMETERY AND MEMORIAL PARK FACILITY

DECLARATION OF UNDERSTANDING

I, _____

Representing _____

Declare that the conditions of the authorisation were brought under my attention and that I have read and understood the contents of the Environmental Management Plan (which includes all documents as per the Environmental Authorisation).

SITE: _____

Environmental Authorisation ref: _____

I also declare that I understand my responsibilities in terms of enforcing and implementing the Environmental Specifications as set out in the various documents for the aforementioned site.

I also undertake to inform all persons under my supervision of such specifications and contents of the documents.

Signed: _____

Place: _____

Date: _____

Witness 1: _____

Witness 2: _____

APPENDIX 4: INFORMATION ON METHOD STATEMENTS

INFORMATION ON METHOD STATEMENTS

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 ESO'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 EMPr.

APPENDIX 5: EXAMPLE OF METHOD STATEMENT

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) APPLICANT/REPRESENTATIVE

The works described in this Method Statement are approved.

(Signed) (Print name) (Designation)

Dated: _____

4) APPROVING AUTHORITY

The works described in this Method Statement are approved.

(Signed) (Print name) (Designation)

Dated: _____

APPENDIX 6: ENVIRONMENTAL INCIDENT REPORT FORMAT

ENVIRONMENTAL INCIDENT REPORT

No. _____

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:	<input type="checkbox"/> FIRST OFFENCE	<input type="checkbox"/> ECOND OFFENCE	<input type="checkbox"/> THIRD OFFENCE
SIGNATURE OF SITE AGENT:	_____	DATE	_____
SIGNATURE OF ECO/ESO	_____	DATE	_____

REMEMBER TO BE FACTUAL WHEN DESCRIBING THE INCIDENT

APPENDIX 7: ENVIRONMENTAL COMPLAINTS REGISTER

COMPLAINTS REGISTER FORM

[illegible]

APPENDIX 8: EXAMPLE OF METHOD STATEMENT REGISTER

STATEMENT REGISTER	SITE AGENT:		PROJECT NAME:		
	CONTRACTOR:		PROJECT LOCATION:		
STATEMENT ACTIVITY CE	DATE CREATED	DATE RECEIVED	CREATED BY	ACCEPTED / REJECTED	D APPR
on					
f vegetation and topsoil removal					
y storage facilities					
on camp and site offices					
ge					
facilities					
nd haul roads					
site equipment					
hagement/control					
ixing and batching areas					
on vehicle maintenance					
ol					
ntrol					
rol					
gical and heritage finds					
ion					

APPENDIX 9: CONTACTOR'S ENVIRONMENTAL WEEKLY 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 EMPr 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 Control Officer (ECO)

Received by:

Environmental Site/Control Officer: Sign:.....

Date:.....

APPENDIX 10: 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:

1. Must any animals such as tortoises, chameleons or snakes be encountered then do not harm them. The ESO or ER must be contacted to remove these safely. The harming of any animal will result in disciplinary action.
2. 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.
3. Alien plant clearing and control work teams must be closely supervised/monitored by the Municipal Community Services Department.

BASIESE GEDRAGSKODES

Die volgende lys vertenwoordig 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 – RAPPOORTEER 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.
- RAPPOORTEER ALLE BRANDSTOF- EN OLIE STORTINGS ONMIDDELLIK – STOP VERDERE STORTING.
- WEES VERSIGTIG MET DIE WEGDOEN VAN SIGARETTE EN VUURHOUTJIES. (rommelstrooi is 'n oortreding.)
- BEPERK WERKAKTIVITEITE 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.
- RAPPOORTEER BESEERDE DIERE.
- RY SLEGS OP AANGEWEESE 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 RONDLEË NIE.

Notas:

1. 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.
2. 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.
3. Streng toesig moet gehou word oor indringerplantbeheerspanne.

EZIPPHAMBILI EKUNYANZELEKILEYO UKUBA ZENZIWE

Zonke ezi zinto zilandelayo zizinto ekufuneka zenziwe nekufuneka zingenziwanga. Wonke umntu ofikayo kufuneka 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 ZINGALAHLELWA NJE
- SUKUQHUBA NGESANTYA ESIPHAKAMILEYO
- SUKUGALELE NAYIPHI INTO PHAYA EMLANJENI
- SUKUQUBHA EDAMENI Q OQOSHA YONK INKUKUMA

APPENDIX 11: ECO/ESO REPORT/CHECKLIST

ECO / ESO SITE VISIT CHECKLIST / REPORT

PROJECT NAME:
PROJECT & PHASE:

DATE:
LOCATION:

ENVIRONMENTAL COMPLIANCE RATING SCORECARD:

Compliance Rating 0/3/4/5/6 0 = Poor / 3 = Average / 4 = Good / 5 = Very Good / 6 = Excellent				
Item No.	Description/ Environmental Aspect	Environmental Comments and Audit Findings	Score	Environmental Rating
1	DEMARCATION	METHOD STATEMENT Boundaries of “no go” areas, construction sites, offices, temporary storage areas as well as labourer’s facilities must be demarcated (EMPr and ECO requirements) and maintained for the length of the construction period.		
2		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 construction sites and access roads to be regarded as NO-GO areas unless otherwise agreed upon with the client and ECO. All flora identified to be rescued must be removed and placed/planted in an area specifically allocated and taken care of until re-used in a pre-approved way. Identified areas with significant vegetation must be protected as NO-GO areas.		
3	CLEARING OF VEGETATION & TOPSOIL REMOVAL	METHOD STATEMENT Before any construction or earthworks, topsoil must be stripped to at least a depth of 300mm (or more as per the botanical specialist’s and /or ECO recommendation and with the site engineers approval) and stockpiled for rehabilitation/ landscaping. Stockpiles: must be protected (may not blow or wash away or gets compacted) and must be stored separately from other soils). 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.		
4	STOCKPILING	METHOD STATEMENT Top- and subsoil’s from trenches must be located within site boundaries, stabilised and may not exceed 2m in height.		
5	TEMPORARY STORAGE FACILITIES	METHOD STATEMENT Must be demarcated, organised, neat and tidy and of acceptable standards.		
6	CONSTRUCTION CAMP & SITE OFFICES	METHOD STATEMENT Must be demarcated, organised and free of day-to-day litter		

		(maintaining good housekeeping standards).		
7	FUEL STORAGE	<p>Fuel storage areas must be situated within the demarcated construction camp site (or an area approved by the ECO).</p> <p>Bunds must be built (EMPr and ECO requirements) around larger fuel storage areas (accidental spillages).</p> <p>Drip trays must be used (in accordance with EMPr) at all fuel and oil storage and refilling sites and must be cleaned regularly, especially after rain.</p>		
8	LABOURER'S FACILITIES	<p>METHOD STATEMENT</p> <p>Facilities must be of acceptable standards suitably demarcated, well maintained, neat and tidy and with adequate ablution facilities.</p>		
9	ENTRANCE AND HAUL ROADS	<p>METHOD STATEMENT</p> <p>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 ECO.</p>		
10	MANDATORY SITE EQUIPMENT	<p>METHOD STATEMENT</p> <p>Mandatory site equipment must be in place, well maintained and in accordance with EMPr and ECO requirements.</p> <p>Sufficient refuse bins must be on site (well placed and conspicuous) and must be cleaned regularly.</p> <p>Fire extinguishers must be readily available, maintained and functional.</p> <p>Drip trays must be used (in accordance with EMPr) at all fuel and oil storage and refilling sites and must be cleaned regularly, especially after rain.</p> <p>Toilets and sanitation facilities must be kept clean neat and hygienic (toilet paper must be available).</p>		
11	WASTE CONTROL	<p>METHOD STATEMENT</p> <p>The contractor is expected to control all construction related waste material and general litter on actual construction sites and its immediate surroundings.</p> <p>Waste management must be in accordance with the EMPr, of acceptable standards, with regular removal of general waste, hazardous waste as well as construction waste (e.g. concrete waste and spoil).</p>		
12	CEMENT MIXING & BATCHING AREAS	<p>METHOD STATEMENT</p> <p>Mixing areas must be approved by the ECO, suitably demarcated and may not result in pollution.</p> <p>Polluted cement water may only be released into sedimentation ponds.</p> <p>Sedimentation ponds must be maintained and cleaned regularly (and reinstated after use).</p>		
13	CONSTRUCTION VEHICLE MAINTENANCE	<p>METHOD STATEMENT</p> <p>Construction vehicles must be in good working order and well maintained to prevent oil and fuel leakages and to reduce noise levels.</p> <p>Maintenance areas must be approved by ECO.</p> <p>Refuelling must be done in accordance with the EMPr, using drip trays.</p>		
14	HEAVY EARTHMOVING EQUIPMENT	<p>Construction vehicles and equipment may only operate <u>within</u> the demarcated site boundaries (and approved access roads), especially heavy earthmoving vehicles.</p>		
15	DUST CONTROL	METHOD STATEMENT		

		<p>Adequate control measures must be in place to prevent dust pollution as a result of construction activities (especially with regard to entrances/exits, haul roads and exposed surfaces).</p> <p>Areas of concern must be watered regularly during construction AND periods of strong winds, BUT must take water saving into account.</p>		
16	EROSION CONTROL	<p>METHOD STATEMENT</p> <p>Erosion resulting from works must be controlled .</p> <p>Temporary and permanent drainage works must be maintained.</p> <p>Erosion damage and damage in drainage courses must be reinstated.</p>		
17	NOISE CONTROL	<p>METHOD STATEMENT</p> <p>Effective noise control measures must be in place and acceptable working hours must be kept (deviations must be approved by the ECO).</p>		
18	ENVIRONMENTAL CONDUCT	<p>Environmental conduct of construction 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).</p>		
19	ARCHAEOLOGICAL & HERITAGE FINDS	<p>METHOD STATEMENT</p> <p>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.</p>		
20	REHABILITATION	<p>METHOD STATEMENT</p> <p>On completion of the project or phase, all areas impacted by the construction activities must be reinstated and/or rehabilitated to the satisfaction of the ECO with emphasis on the following:</p> <p>Site offices must be removed and the areas rehabilitated or reinstated to the satisfaction of the ECO.</p> <p>Labourer's facilities must be removed and the areas rehabilitated or reinstated to the satisfaction of the ECO.</p> <p>All construction site areas must be rehabilitated or reinstated to the satisfaction of the ECO.</p> <p>All temporary fencing and demarcation must be removed and the areas reinstated to the satisfaction of the ECO.</p> <p>Temporary storage areas must be rehabilitated or reinstated to the satisfaction of the ECO.</p> <p>All remaining construction material must be removed and the areas rehabilitated or reinstated to the satisfaction of the ECO.</p> <p>Any additional disturbed areas must be rehabilitated or reinstated to the satisfaction of the ECO.</p>		
21	ADDITIONAL METHOD STATEMENTS	<p>Method statements must be submitted and approved before commencement of the works and must be available at the site offices.</p>		
22	ENVIRONMENTAL CHECKLIST	<p>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.</p>		
23	SPOT FINES & PENALTIES	<p>Spot fines and penalties must be recorded and documented by the ECO (in accordance with the EMPr).</p>		
24	FIXED POINT PHOTOS	<p>Photographs must be taken by the ECO, Site Engineer and or Site Manager, prior to, during and immediately after construction as visual reference. These photographs must be stored with other records relating to the EMPr.</p>		
			Total Score	out of/100 = %

$$+$$

ECO: _____

ECO SIGNATURE: _____

DATE: _____

APPENDIX 12: MAPS AND DRAWINGS

APPENDIX 13: ANY OTHER RELEVANT DOCUMENTS

APPENDIX 13.1 - APPROVED ENVIRONMENTAL AUTHORISATION (and approved amendments)

APPENDIX 13.2 - APPROVED WATER USE LICENCE

APPENDIX 13.3 - APPROVED FRESHWATER REHABILITATION, MAINTENANCE AND MANAGEMENT PLAN

APPENDIX 13.4 – BOTANICAL ASSESSMENTS