

CITY OF CAPE TOWN ENVIRONMENTAL MANAGEMENT PROGRAMME

SPECIFICATION: ENVIRONMENTAL MANAGEMENT

GUIDELINE DOCUMENT FOR THE CONTRACTOR

Revision 2007



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GUIDELINE DOCUMENT FOR THE CONTRACTOR

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ABBREVIATIONS

The following abbreviations occur in this document:-

- EO – Environmental Officer
- ER – Engineers Representative
- ECO – Environmental Control Officer
- ESO – Environmental Site Officer
- EMP – Environmental Management Programme

INTRODUCTION

The requirement that an Environmental Management Programme be developed and enforced for this project is indicative of the Council's support for best construction practice, which includes ensuring that environmental damage during construction is minimised.

In terms of Clause 2.7 of the General Conditions of Contract 2004, the Engineer has the authority to appoint a representative to act as the Environmental Officer (EO) for the Contract. The EO shall be responsible for monitoring compliance with the EMP. **Except in an emergency situation** (defined as a situation requiring immediate action and where failure to implement appropriate actions timeously may result in environmental damage), where instructions may be given directly to the Contractor, **all instructions given by the EO shall go through the Engineer's Representative, who will then convey these to the Contractor.**

For this project the Engineers Representative shall act as the EO and shall thus be responsible for overseeing the implementation of the EMP for this Contract. **[delete this sentence if there is an EO]**

The purpose of this document is therefore to:

- Emphasise the existence of an EMP and highlight its most salient features;
- Detail the role of the Contractor with respect to the implementation of the EMP for this project;
- Aid the Contractor in his/ her understanding of the EMP.

The successful Contractor shall confirm that he/ she has reviewed and understood the contents of this document by signing the declaration at the end of this document and submitting it to the ER.

ISSUES RELATING TO THE IMPLEMENTATION OF THE EMP

Composition of the EMP

The EMP is composed of three main parts, namely:

Part 1. The "Specification EM: Environmental Management" is a Particular Specification in the Project Construction Contract Document. This Specification sets environmental objectives and targets with which the Contractor shall comply. This Specification is additional to the South African Bureau of Standards (SABS) Standardised Specification for Civil Engineering Contracts and must be read in conjunction with the said Specification. All aspects of these SABS requirements which are relevant to environmental management during construction contracts also apply.

Part 2. The “Project Specification clauses pertaining to Specification EP: Environmental Management Programme” are also part of the EMP and are included in the Contract Document. Interpretations of, and variations to, the Standard Specification are set out in this Project Specification.

Part 3. The “Guideline Document for the Contractor” (this document), which outlines the role of Contractor in the implementation of the EMP, as well as explaining his/ her responsibilities.

Organisational structure

The organisational structure identifies and defines the responsibilities and authority of the various organisations involved in the project. All instructions and official communications regarding environmental matters shall follow the organisational structure shown in Figure 1.

From Figure 1 it can be seen that all instructions that relate to the EMP will still be given to the Contractor via the ER. In an emergency situation, however, the EO may give an instruction directly to the Contractor. [delete this sentence if there is no EO].

The ER and EO (and/or ECO)

Both the ER and EO/ (and/or ECO)¹ The ER [delete the inapplicable phrase] will be responsible for monitoring, reviewing and verifying compliance with the EMP by the Contractor. These parties will keep a written and photographic record of activities, non-compliance and corrective action with regards to the EMP.

The Contractor

The Contractor shall comply with the specifications of the EMP and abide by the ER’s instructions regarding the implementation of the EMP.

Annexure A details some of the main actions required for the EMP by the Contractor, before construction, at initial start up and during construction. The ER and EO will ensure that all of these actions are undertaken timeously and in accordance with the EMP. Annexure A aims to ensure that these main actions are not overlooked, and unnecessary delays do not result, by ensuring that the ER and Contractor are aware of these requirements ahead of time.

¹ An independently appointed Environmental Control Officer (ECO) may, in some cases, be appointed to oversee implementation of the EMP. The ECO fulfils essentially the same roles as the EO. The term ECO has not been included after every mention of the EO but in many cases, particularly in larger projects or those taking place in sensitive environments, there will also be an ECO.

It must be noted, however, that Annexure A does not list all the requirements of the EMP, but rather serves as a guide as to where definite actions are required before certain activities can commence. Annexure A relates to the Standard EMP and should therefore be read in conjunction with the Project Specifications. In addition, Annexure C contains additional issues deemed to form part of the EMP.

Contractor's Environmental Representative (Environmental Site Officer)²

In terms of Subclause 5.3 of the Specification EM, the Contractor shall appoint an Environmental Representative (otherwise known as the Environmental Site Officer). The Contractor's Environmental Site Officer's responsibilities will be to undertake a daily site inspection to monitor compliance with the EMP. The Contractor shall forward the name of the Environmental Site Officer (ESO) to the ER for his approval, prior to the onset of the Environmental Awareness Course.

A daily checklist has been included in Annexure D to facilitate the daily site inspection by the Contractor's Environmental Site Officer. These completed checklists must be submitted to the ER/EO [delete inapplicable] at the end of each week.

Environmental Control Officer

In many projects, it will be a requirement of the project's authorisation, that an Environmental Control Officer (ECO) be appointed to objectively monitor implementation of relevant environmental legislation, the conditions of the environmental authorisation, and the Environmental Management Plan or Programme for the project. On smaller projects, where no Environmental Officer is appointed, the ECO will convey the contents of the EMP to the Contractor site team and discuss the contents in detail with the contractor as well as undertake induction and environmental awareness training sessions prior to site handover to all contractors and their workforce. In many cases, the ECO will also be responsible for approving method statements. The reporting lines and responsibilities of the ECO will in many cases be the same as that of the EO, but the ECO is an independent appointment. ECO responsibilities and reporting lines will be determined on a project by project basis.

Availability of the EMP

Copies of the EMP (Standard Specification together with the Project Specification) shall be available at the offices of the Contractor and on Site. The Contractor shall ensure that all personnel on Site

² The use of the name Environmental Site Officer is given to ensure uniformity with the terms used in the Department of Environmental Affairs and Development Planning's generic guidelines for Environmental Management Programs.

(including Sub-contractors and their staff, and suppliers) are familiar with and understand the requirements of the EMP).

Method Statements

Method statements need to be compiled by the Contractor for approval by the Engineer and the EO. The Contractor shall submit written method statements to the Engineer, as requested in the Project Specification or as directed by the ER. For the purposes of the environmental specification, a method statement is defined as a written submission by the Contractor to the Engineer setting out the plant, materials, labour and method the Contractor proposes using to carry out an activity, identified by the Engineer when requesting the method statement, in such detail that the Engineer is enabled to assess whether the Contractor's proposal is in accordance with the Specifications and/ or will produce results in accordance with Specifications.

The method statement 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, and
- any other information deemed necessary by the Engineer.

The Contractor shall abide by these approved method statements, and an activity covered by a method statement shall not commence until the Engineer has approved of such method. In such cases, the method statement shall be submitted to the Engineer not less than 14 days prior to the intended date of commencement of the activity. Annexure B gives an explanation of method statements and provides a pro forma method statement sheet that must be completed by the Contractor for each activity requiring a method statement as specified in the Project Specification or requested by the ER.

Fines

The ER, at the request of the EO (or ECO if appointed) or of his own conviction, can impose fines on the Contractor for any contraventions of the EMP. The imposition of fines will enable the EO to ensure that the requirements of the EMP are taken seriously by the contractor. The transgressions that will attract fines are listed in the detail specification.

Removal from site, and suspension of the works

Non-compliance with the conditions of the EMP constitutes a breach of Contract. The ER, at the request of the EO or of his own conviction, has the power to remove from Site any person who is in contravention of the EMP, and if necessary, the ER can suspend part or all of the works, as required.

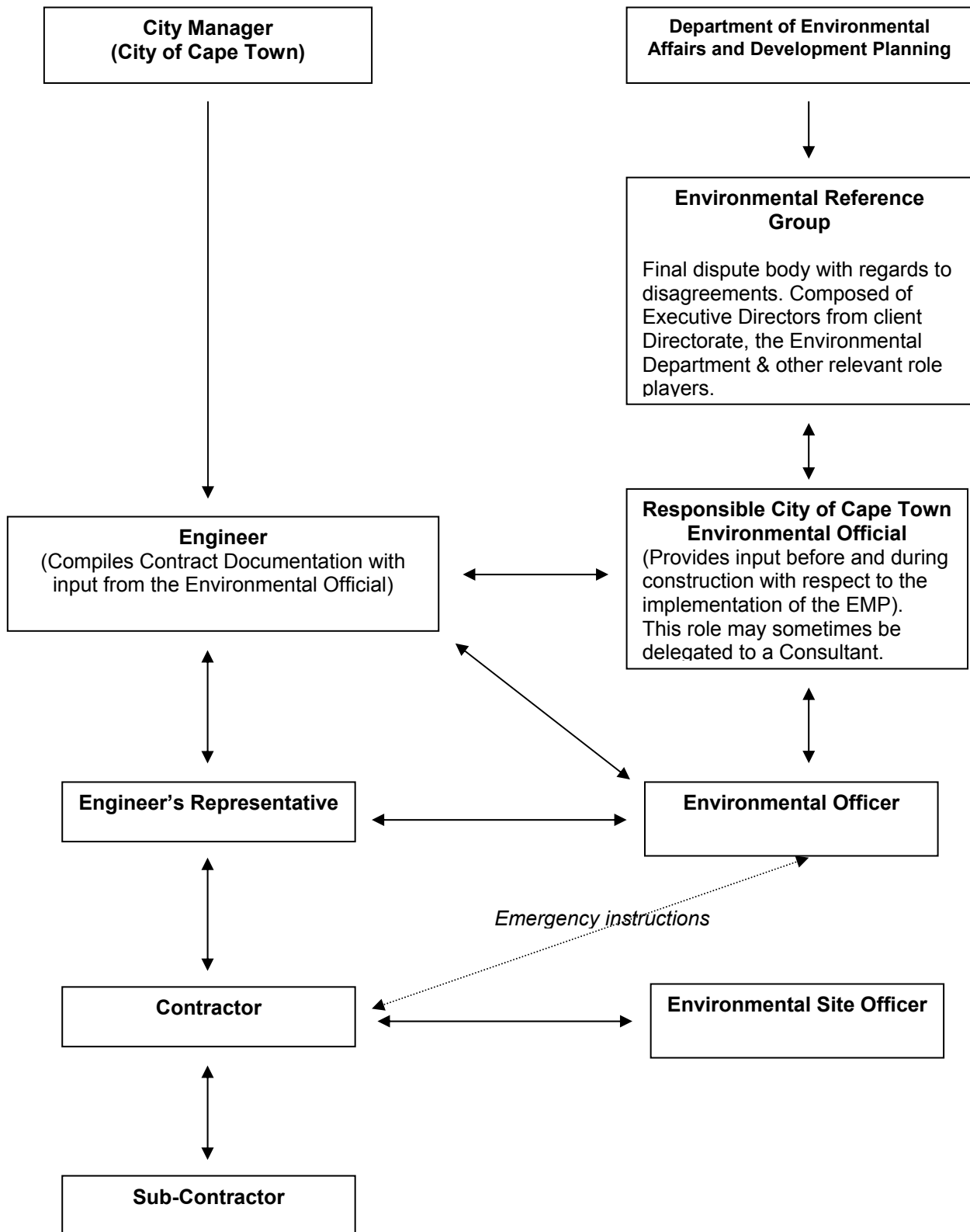
Measurement and payment

It needs to be emphasised that compliance with the environmental requirement of this project may entail costs over and above those of the civil requirement. The Contractor shall recognise this and make provision for it in his tender. However, by virtue of their nature, it is often difficult to attach a monetary value to environmental considerations, and accordingly it is not always possible to cost each requirement of the EMP. In order to ensure those items within the EMP which cannot be priced are not overlooked during the contract, a "lump sum" has been allocated for the management of the Environmental Specifications.

Environmentally friendly products

Annexure E contains a list of suppliers who advertise environmentally friendly products and which have been used successfully in practice. It should be noted that this list is by no means exclusive, and that other bio-remediation measures and environmentally friendly products should also be investigated.

Figure 1: Organogram



This organogram represents official contractual channels of communication. It does not imply that there will be no non-official communication where arrows are not indicated.

DECLARATION OF UNDERSTANDING

I, _____

representing _____

declare that I have read and understood the contents of the Environmental Management Programme (which includes the Standard Environmental Specification, the Project Specifications and this guideline document) for

Contract _____

I also declare that I understand my responsibilities in terms of enforcing and implementing the

Environmental Specifications for the aforementioned Contract.

Signed: _____

Place: _____

Date: _____

Witness 1: _____

Witness 2: _____

ANNEXURE A

MAIN ACTIONS REQUIRED BY THE CONTRACTOR FOR COMPLIANCE WITH THE EMP

1. PRIOR TO COMMENCEMENT

1.1 Method Statements

Where relevant, method statements, as detailed in the Project Specification, shall be provided by the Contractor within 14 days of receipt of the Letter of Acceptance.

All activities which require method statements may only commence once the method statements have been approved by the Engineer.

1.2 Environmental Awareness Course preparation

The Contractor shall organise and finalise the logistics and date of the Environmental Awareness Course with the Engineer before the Commencement Date. A method statement is required to this effect.

1.3 Environmental Awareness Course

The Contractor shall ensure all management staff attend the awareness course to be held not less than one week before the Commencement Date.

1.4 Contractor's Environmental Representative

The Contractor shall appoint an Environmental Representative (Environmental Site Officer).

2. SITE ESTABLISHMENT

2.1 Demarcation of the Site

Where required, one of the first actions to be undertaken by the Contractor shall be to erect and maintain a temporary fence along the boundaries of the Site, and around any no-go areas, to the satisfaction of the Engineer.

2.2 Environmental Awareness Course and Follow-on

The Contractor shall be responsible for ensuring that the Environmental Awareness Course and the requirements in the EMP are presented to the rest of the staff including all labour and mechanical staff as well as to Sub-contractors and their staff. During construction, if new personnel arrive onto Site, the Contractor shall be responsible for providing environmental awareness training and thus ensuring that these personnel are aware of the environmental specifications on Site.

2.3 Method statement awareness

Where applicable, the Contractor shall provide job-specific training on an *ad hoc* basis when workers are engaged in activities, which require method statements.

2.4 Contractor's Environmental Site Officer

The Contractor's Environmental Site Officer is to undertake a daily site inspection. The completed checklists shall be submitted to the ER/EO [delete inapplicable] at the end of each week.

3. DURING THE CONSTRUCTION PERIOD

3.1 Copy of the EMP and familiarisation thereof

A copy of the Specification EP and its relevant Project Specification clauses, along with the rest of the Contract Document, shall be available on Site, and the Contractor shall ensure that all the personnel on Site (including Sub-contractors and their staff) as well as suppliers, are familiar with and understand the specifications contained in the Specification EP (as amended by the Project Specification).

3.2 Method Statements

Other method statements, which are required during construction, must be submitted to the Engineer for approval prior to the proposed commencement of the activity. This may include emergency construction method statements.

3.3 Watchmen

Where applicable, the Contractor shall ensure that a watchman is present on Site during all non-working hours, including public holidays.

3.4 Materials handling, use and storage

The Contractor shall ensure that any materials delivery drivers are informed of all procedures and restrictions (e.g. which access roads to use, no go areas, speed limits, noise, etc) required by the EMP before they arrive at Site and off load any materials.

3.5 Contractor's Environmental Representative (Environmental Site Officer)

The Contractor's Environmental Site Officer undertakes a daily site inspection. The completed checklists are submitted to the ER/EO [delete inapplicable] at the end of each week.

4. AFTER CONSTRUCTION IS COMPLETE

4.1 Site clean-up

The Contractor shall clear and clean the Site and ensure that everything not forming part of the Permanent Works is removed from Site.

4.2 Revegetation and rehabilitation

The Contractor shall be responsible for rehabilitating and revegetating all areas to the satisfaction of the Engineer as detailed in the Revegetation Specification and project specifications.

ANNEXURE B

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 ER\EO. [delete inapplicable]

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 ER\EO [delete inapplicable] 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 ER\EO [delete inapplicable], 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 ER\EO [delete inapplicable] 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 EO'S SATISFACTION. The page overleaf provides a *pro forma* method statement sheet, which needs to be completed for each activity requiring a method statement in terms of the EMP.

METHOD STATEMENT

CONTRACT:..... **DATE:**.....

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

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 OFFICER/ ENGINEERS REPRESENTATIVE [select correct term]**

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)

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 EO and ER will audit my compliance with the contents of this Method Statement

(signed)

(print name)

Dated: _____

3) APPROVING AUTHORITY (Engineer)

The works described in this Method Statement are approved.

(signed)

(print name)

(designation)

Dated: _____

ANNEXURE C

ADDITIONAL ENVIRONMENTAL ISSUES DEEMED TO FORM PART OF THE EMP

Listed below are issues pertaining to the environment that form part of the Contract Document. The clause references relate to the SAICE General Conditions of Contract 2004 (GCC). They are listed here to emphasise that they form part of the environmental considerations and requirements for this project.

Any additional conditions are presented in the Additional Conditions of Tender in Tender Data section of the Contract.

Engineer's authority to delegate

In terms of Subclause 2(7) the Engineer has the authority to appoint a representative to act as the Environmental Officer for the Contract. The EO shall be responsible for monitoring compliance with the EMP, and may be the Engineer's Representative or any other person responsible to the Engineer.

Compliance with the Engineer's Instructions

Subclause 4(3) requires that the Contractor comply with the Engineer's instructions on any matter relating to the Works. Moreover, Subclause 6(4) and 4(4) ensures that the Contractor only takes instructions from the Engineer, the Engineer's Representative or other person authorised by the Engineer in terms of Subclause 2(7).

Access to the Works

Subclause 24(1) makes provision for the Engineer to authorise access to the Works by the ER/EO.

Copy of Documents on Site

Clause 13 requires the Contractor to keep a copy of all documents constituting the Contract (including the environmental specifications) available on Site.

Method Statements and Programme

Subclause's 12(2) and 12(3) make provision for the Engineer to request documents concerning the Contractors arrangements and methods of carrying out the Works. In the case of the environmental specifications, these would be submitted as Method Statements.

Subclause 12(2) also makes provision for the Engineer to request the programme for carrying out the Works.

Compliance with other legislation

Subclause 4(5) requires that the Contractor comply with all applicable laws in the performance of the Contract.

Health and Safety

Subclauses 4(5) of GCC remind the Contractor of his obligations in terms of the Occupational Health and Safety Act, No. 85 of 1993.

Subclause 5.7 of SABS 1200A reinforces these requirements through the observation of proper and adequate safety arrangements.

Monitoring

Subclause 2(1) – 2(3) makes provision for the Engineer to undertake such duties and functions as are required in terms of the Contract, including the monitoring of any environmental variables.

Public Nuisance, and Pollution

Subclause 17(1) of GCC requires that all operations necessary for the execution of the Works be carried out so as not to cause unnecessary noise or pollution, or to interfere unnecessarily or improperly with public services, or the access to, use and occupation of public or private roads and footpaths or properties.

Subclause 5.6 of SABS 1200A further requires the Contractor to minimise dust nuisance and pollution of streams and inconvenience to or interference with the public.

Dust

Subclause 17(1) requires that all operations necessary for the execution of the Works be carried out so as not to cause unnecessary air pollution.

Subclause 5.6 of SABS 1200A requires that the Contractor take all reasonable measures to minimise any dust nuisance.

Noise

Subclause 17(1) of GCC requires that all operations necessary for the execution of the Works be carried out so as not to cause unnecessary noise pollution.

Subclause 4.1 of SABS 1200A requires that when working in built-up areas, the Contractor shall provide and use suitable and effective silencing devices for pneumatic tools and other plant that would otherwise cause a noise level exceeding 85dB.

Protection of Archaeological/ Palaeontological remains

Clause 15(1) requires the Contractor to take reasonable precautions to prevent any person from removing or damaging any archaeological or palaeontological artefact, or other articles of value and requires that he inform the Engineer and follow any instructions issued in this regard.

Hours of Operation

Subclause 38.1.1 – 38.1.4 restricts the Contractors hours of operation to between sunrise and sunset from Monday to Saturday unless otherwise approved by the Engineer.

Subclause 40(2) further requires that in the event that permission is granted for night working then such work will be carried out without unreasonable noise and disturbance.

Housing, Food and Transport

Subclause 20(1) requires the Contractor to provide adequate payment, housing, feeding and transport for his employees on Site.

Subclause 4.2 of SABS 1200A further requires that facilities provided comply with local authority regulations and are maintained in a clean and sanitary condition.

Protection of Existing Environment

Subclause 17(2) requires that the Contractor uses every reasonable means to prevent damage to roads and bridges communicating with or in the vicinity of the Site.

Removal from Site

Clause 21(1) makes provision for the Engineer to instruct the removal of any persons who in his opinion is guilty of misconduct; or is incompetent, negligent, or constitutes an undesirable presence on site.

Subclause 23(2) requires that all Plant be in good working order. Accordingly, the Engineer may order that any Plant not complying with the environmental specifications be removed from Site.

Competence

Subclause 21(1) requires that all persons employed on site are careful, competent, and efficient. These attributes embrace knowledge of the environmental matters and issues dealt with in the EMP.

Reinstatement

Clauses 33 makes provision for the Contractor to make good any damage, due to negligence on the part of himself or his employees, to the satisfaction of the Engineer, and bear any costs associated with such reinstatement.

Suspension of Works

Subclause 39(1) enables the Engineer to suspend the progress of the Works or any part thereof as a result of some default or breach of the Contract on the part of the Contractor.

Site Clean Up

Subclause 19(1) and 19(2) requires that as part of the completion of the Works or any portion thereof, the Contractor shall clear away and remove from the Site all Construction Plant, surplus materials, rubbish and Temporary Works of every kind and leave the whole Site and Permanent Works clean and tidy. If the Contractor fails to comply, the Employer may have the site cleared and recover the cost from the Contractor.

ANNEXURE D

CONTRACTOR'S ENVIRONMENTAL REPRESENTATIVE: DAILY CHECKLIST

Contract:

ENVIRONMENTAL ASPECT	YES/ NO (✓ or X)	COMMENTS
• All new personnel on site are aware of the contents of the EMP and have been through the environmental awareness course.		
• Contractor's camp is neat and tidy and the labourers' facilities are of an acceptable standard.		
• Sufficient and appropriate fire fighting equipment is visible and readily available in the appropriate places, e.g. next to the fuel depot or where "hot work" is underway.		
• Waste control and removal system is being maintained.		
• Boundary and other fences are being maintained.		
• 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 are visible from construction vehicles		
• Refuelling of vehicles is occurs within the workshop or, if outside the workshop, drip trays are being used.		
• 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) are in place and are working effectively.		
• Erosion control measures (if necessary) are in place and are effective in controlling erosion.		
• Stockpiles of topsoil are located within the boundary of the site, do not exceed 2 m in height and are protected from erosion.		
• Spoil 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 Officer (EO) or the Engineer's Representative (ER). **[select correct term]**

ANNEXURE E

ENVIRONMENTALLY FRIENDLY PRODUCTS

It should be noted that this list is by no means exclusive, and that other bio-remediation measures and environmentally friendly products should also be investigated.

BIO-PRODUCTS

1. ENRETECH

Environmental Remediation Technology

Glynda Behrens

Tel: (021) 709 0547 Cell: 082 677 4505

glynda@oilspills.co.za

Anton Behrens

Anton@oilspills.co.za

Tel 083 790 4161

Fax: 086 616 8406

Products:

- ENRETECH 1, microbial bioremediation product for oil and fuel spills on soil and shale. Will bioremediate most hydrocarbons in-situ or ex-situ.
- ENRETECH PREMIUM FLOOR SWEEP, premium oil and hydrocarbon absorbent for spills on hard surfaces (e.g. industrial workplaces, highways and petrol stations)
- ENRETECH CELLUSORB FIBRE, petroleum hydrocarbon absorption on water. Rapid absorption of oil or fuels on the water's surface.
- BOOMS AND PILLOWS, (cellusorb-filled Cotton-cloth Casings), absorbent materials for spill containment and absorption
- G-TEC H.D SPRAY & WIPE, general purpose clear liquid for effective cleaning of almost any hard surface. Biodegradable.
- G-TEC H.D. DEGREASOL, heavy duty all-purpose industrial cleaner/degreaser for effective cleaning of petroleum & vegetable oils
- G-TEC WATERLESS HANDCLEANER GEL, handcleaner
- SPILL RESPONSE KITS, compact kits designed to be carried in vehicles to clean up spills of hydraulic oil, diesel or any other leak or spill from that vehicle

Services

Oil spill clean-ups – 24-hour response team

2. PINELAND ENVIRONMENTAL TECHNOLOGY

Chris Davidson

Tel: (021) 531 3749/50 Fax: (021) 531 3903/ 531 3003 cell: 082 464 1074

Products:

- CHEMCAP, oil dispersant & degreaser / encapsulator
www.chemcap.com
- TSW, asbestos encapsulation
- DUSTEX, dust binder, dust suppressant

3. ZORBIT TECHNOLOGIES CAPE CC

Tel: (021) 535 5165 or 54 6363/4/5/6 Fax: (021) 54 6367

Products:

- PEAT SORB, microbial bioremediation product for spills on soil and shale

4. DYNACHEM (PTY) LTD

Chemical Speciality and Detergent Manufacturers

- Mr. Trevor
Tel: (021) 948 6180 Fax: (021) 948 6190 cell: 082 469 0366
www.spillsorb.com

Products:

- SPILL SORB

5. BIO-SYSTEMS SA.

Bio-Augmentation for: Municipal Industrial and Commercial use

Europe@biobugs.com

6. IBA ENVIRONNEMENT SA

Institiut de Biotehnologie Appliquee

Barbara Court

Tel: (021) 858 1510 Fax: (021) 858 1004 Cell:082 682 7866

e-mail: ambico@iafrica.com

SAFETY PRODUCTS

1. PIENAAR BROS. (PTY) LIMITED

Industrial Safety & Supplies (Protective Equipment)

Contact: Melvin Johnson

Tel: (021) 511 8131 **Fax:** (021) 511 2464

pb@iafrica.com

SANITARY PRODUCTS

1. SANNI TREE WATERLESS.CO.1996

Tel. (021) 788 1573