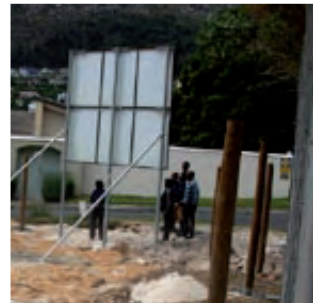


CITY OF CAPE TOWN ENVIRONMENTAL MANAGEMENT PROGRAMME

SPECIFICATION: ENVIRONMENTAL MANAGEMENT

STANDARD ENVIRONMENTAL SPECIFICATION

Revision 2007



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SPECIFICATION ENVIRONMENTAL MANAGEMENT (PSEM)

STANDARD SPECIFICATION

REVISION 2007

The requirement that an Environmental Management Programme (EMP) be developed and enforced for this project is indicative of the City of Cape Town'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. This can be in the form of an Engineer's Representative (ER) and/or an Environmental Officer (EO) for the duration of the Contract. These appointments/definitions can be included in the *Contract Specific Data* of the Contract under *Clause 1: Definitions, Interpretations and General Provisions*. The EO shall be responsible for monitoring compliance with the EMP and all instructions given by the EO shall go through the Engineer's Representative (ER), who will then convey these to the Contractor.

Depending on the nature/environmental sensitivity of the contract the following variations in the organisational structure are possible:

- The ER may work together with an EO; or
- There may be an ER only (for construction projects with low potential for causing significant environmental impacts). In this case the ER has responsibility for the EO's functions.

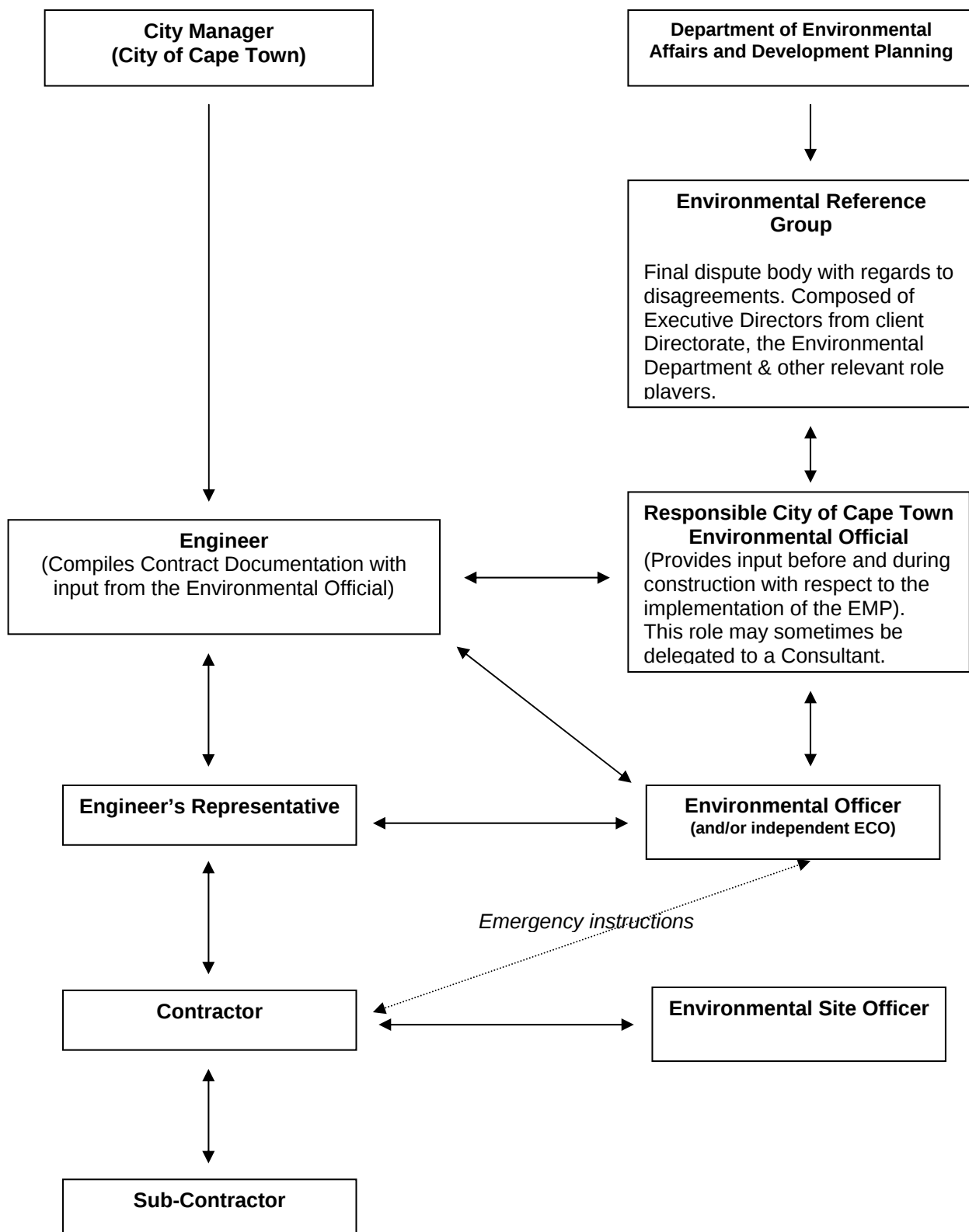
Table 1: Contract Team Organogram

(Source: DEADP (2007) Generic Environmental Management Plan (EMP) for Pre-Construction and Construction, Department of Environmental Affairs and Development Planning (DEADP), Cape Town.)

CE	Consulting Engineer	Contracted by the City of Cape Town to design and specify the project engineering aspects. Generally the engineer runs the works contract. The CE may also fulfill the role of Project Manager on the proponent's behalf (See PM).
PM	Project Manager	The Project Manager has over-all responsibility for managing the project , contractors, and consultants and for ensuring that the environmental management requirements are met. The CE may also act as the PM. All decisions regarding environmental procedures must be approved by the PM. The PM has the authority to stop any construction activity in contravention of the EMP in accordance with an agreed warning procedure.
ER	Engineer's Representative	The Consulting Engineer's representative on site . The ER has the power/mandate to issue site instructions and in some instances, variation orders to the contractor, following request by the EO or ECO. The RE oversees site works, liaison with Contractor and ECO

EO/ EM	Environmental Officer/ Environmental Manager	Appointed by the Consulting Engineers as their environmental representative on site. The EO is not independent but must rather act on behalf of the consulting engineers with the mandate to enforce compliance under the project contract, which must include the EMP. The EO has the directive to issue non-conformance and hazard certificates. Further, in terms of accepted industry practice the EO could issue the equivalent of a “cease works” instruction only in exceptional circumstances where serious environmental harm has been or is about to be caused i.e. in cases of extreme urgency and then only when the ER is absent. The EO must form part of the project team and be involved in all aspects of project planning that can influence environmental conditions on the site. On certain types of projects, such as linear developments (fences, pipelines, etc), the EO must also be the liaison between the contractor and landowners. The EO must attend relevant project meetings, conduct daily inspections to monitor compliance with the EMP, and be responsible for providing reports and feedback on potential environmental problems associated with the development to the project team and ECO. The EO must convey the contents of this EMP to the Contractor site team and discuss the contents in detail with the Contractor as well as undertake to conduct an induction and an environmental awareness training session prior to site handover to all contractors and their workforce. The EO must be suitably experienced with the relevant qualifications and preferably competent in construction related methods and practices.
ECO	Environmental Control Officer	An independent appointment to objectively monitor implementation of relevant environmental legislation, conditions of Environmental Authorisations (EA’s), and the EMP for the project. The ECO must be on site prior to any site establishment and must endeavour to form an integral part of the project team. The ECO must be proactive and have access to specialist expertise as and when required, these include botanist’s ecologists etc. Further the ECO must also have access to expertise such as game capture, snake catching, etc. The ECO must conduct audits on compliance to relevant environmental legislation, conditions of EA, and the EMP for the project. The size and sensitivity of the development, based on the EIA, will determine the frequency at which the ECO will be required to conduct audits. (A minimum of a monthly site inspection must be undertaken). The ECO must be the liaison between the relevant authorities and the project team. The ECO must communicate and inform the developer and consulting engineers of any changes to environmental conditions as required by relevant authoritative bodies. The ECO must ensure that the registration and updating of all relevant EMP documentation is carried out. The ECO must be suitably experienced with the relevant environmental management qualifications and preferably competent in construction related methods and practices. The ECO must handle information received from whistle blowers as confidential and must address and report these incidences to the relevant Authority as soon as possible. On small projects, where no EO is appointed, the ECO must convey the contents of this EMP to the Contractor site team and discuss the contents in detail with the Contractor as well as undertake to conduct an induction and an environmental awareness training session prior to site handover to all contractors and their workforce.
C	Contractor	The principle contractor, hereafter known as the ‘Contractor’, is responsible for implementation and compliance with the requirements of the EMP and conditions of the EA’s, contract and relevant environmental legislation. The Contractor must ensure that all sub-contractors have a copy of and are fully aware of the content and requirements of this EMP. The contractor is required, where specified, to provide Method Statements setting out in detail how the management actions contained in the EMP will be implemented

ESO	Environmental Site Officer	The ESO is employed by the Contractor as his/her environmental representative to monitor, review and verify compliance with the EMP by the contractor. This is not an independent appointment; rather the ESO must be a respected member of the contractor's management team. Dependent on the size of the development the ESO must be on site one week prior to the commencement of construction. The ESO must ensure that he/she is involved at all phases of the construction (from site clearance to rehabilitation).
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Explanation of margin icons

To expedite the compilation of the Project Specification, generic clauses, appropriate to projects with low or negligible environmental risk have been highlighted using an arrow icon (➔) for several of the detailed specifications. These clauses should be used where the project is of low environmental risk and the issue is relevant to the project at hand. It should be remembered, however, that in addition to these generic clauses, the other clauses should be reviewed to identify any further pertinent issues not covered by the generic clause.

In this way, using the shortlist of specifications and appropriate clauses, the Project Specification is compiled. However, before the Project Specification is included in the Tender Document, it is essential that a suitable qualified documentation engineer review the specification to ensure the use of appropriate terminology and the avoidance of contradiction and ambiguity.

A **flag icon**  (located in the right-hand margin) marks certain clauses within the Standard Environmental Specification. This flag denotes standard clauses that refer specifically to the Project Specification. Accordingly, in compiling the Project Specifications due consideration must be given to these aspects and appropriate clauses included in the specification.

1. SCOPE

This Specification covers the requirements for controlling the impact on the environment of construction activities.

2. INTERPRETATIONS

2.1 Supporting specifications

Where this Specification is required for a project the following specifications shall, inter alia, form part of the Contract Document.

- (a) Project Specification;
- (b) SANS 1200 A or SANS 1200 AA, as applicable;

2.2 Application

This Specification contains clauses that are generally applicable to the undertaking of civil engineering works in areas where it is necessary to impose pro-active controls on the extent to which the construction activities impact on the environment. Interpretations and variations of this Specification are set out in Portion 2 of the Project Specification (see 2.1).



In the event of any difference or discrepancy between the provisions of the Standardised Specifications and the provisions of the Project Specification, the latter shall prevail.

2.3 Definitions

For the purposes of this Specification the definitions and abbreviations given in the applicable specifications listed in 2.1 and the following definitions and abbreviations shall apply:

2.3.1 Environment

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

- i) the land, water and atmosphere of the earth;
- ii) micro-organisms, plant and animal life;
- iii) any part or combination of i) and ii) and the interrelationships among and between them; and
- iv) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

2.3.2 Potentially hazardous substance

is a substance which, in the reasonable opinion of the Engineer/ECO/EO, can have a deleterious effect on the environment.

2.3.3 Method Statement

is a written submission by the Contractor to the Engineer/ECO/EO, in response to the Specification or a request by the Engineer/ECO/EO, setting

out the plant, materials, labour and method the Contractor proposes using to carry out an activity, identified by the relevant specification or the Engineer/ECO/EO when requesting the Method Statement, in such detail that the Engineer/ECO/EO 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/ECO/EO.

2.3.4 Reasonable

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

2.3.5 Solid waste

means all solid waste, including construction debris, chemical waste, excess cement/ concrete, wrapping materials, timber, tins and cans, drums, wire, nails, domestic waste, dead vegetation, asphalt products, etc.

2.3.6 Contaminated water

means water contaminated by the Contractor's activities containing cements, concrete, lime, paint products, thinners, turpentine, chemicals, fuels, oils washing detergents, etc.

2.3.7 Working area

means any area within the boundaries of the Site where construction is taking place

2.3.8 Contractor's camp or construction camp

Means the area designated for all the Contractor's temporary offices, storage areas, plant parking areas, staff welfare facilities etc.

3. MATERIALS

3.1 Materials handling, use and storage

The Contractor shall ensure that any delivery drivers are informed of all procedures and restrictions (including "no go" areas) required to comply with the Specifications. The

Contractor shall ensure that these delivery drivers are supervised during off loading, by someone with an adequate understanding of the requirements of the Specifications.

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

All manufactured and/ or imported material shall be stored within the Contractor's camp, and, if so required by the Project Specification, out of the rain. All lay down areas outside of the construction camp shall be subject to the Engineer/ECO/EO's approval. Provide specifications for location, demarcation, permitted heights, stabilisation, weed-, dust- and erosion control of stockpiles.



3.2 Hazardous substances

Hazardous chemical substances (as defined in the Regulations for Hazardous Chemical Substances) used during construction shall be stored in secondary containers. The relevant Material Safety Data Sheets (MSDS) shall be available on Site. Procedures detailed in the MSDSs shall be followed in the event of an emergency situation.

If potentially hazardous substances are to be stored on site, the Contractor shall provide a Method Statement detailing the substances/ materials to be used, together with the storage, handling and disposal procedures of the materials. Hazardous substances shall be stored out of flood risk areas and disposal of these substances shall be at a licensed waste disposal facility.

4. PLANT

4.1 Fuel and oil

Unless allowed by the Project Specification, fuel shall not be stored on site but shall be transported to the site as and when required.



Where reasonably practical, plant shall be refuelled at a designated re-fuelling area or at the workshop as applicable. If it is not reasonably practical then the surface under the temporary refuelling area shall be protected against pollution to the reasonable satisfaction of the Engineer/ECO/EO prior to any refuelling activities. The Contractor shall ensure that there is always a supply of absorbent material (not saw dust) readily available to absorb/ breakdown and where possible is designed to encapsulate minor hydrocarbon spillage. The quantity of such materials shall be able to handle a minimum of 200l of hydrocarbon liquid spill. This material must be approved by the Engineer/ECO/EO prior to any refuelling or maintenance activities.

A Method Statement must be provided detailing how these liquids will be stored, handled and disposed of. The Municipal Fire Chief must be informed and consulted into Fire Regulations. SANS 10131: Installation of above-ground tanks must be adhered to.

4.2 Ablution facilities

Washing, whether of the person or of personal effects and acts of excretion and urination are strictly prohibited other than at the facilities provided. A Method Statement shall be provided, including the provision, location, and maintenance of ablution facilities.

Provision shall be made for employee facilities including: shelter, toilets and washing facilities. Toilet facilities supplied by the Contractor for the workers shall occur at a maximum ratio of 1 toilet per 30 workers (preferred 1:15). Sanitation facilities shall be located within 100 m from any point of work, but not closer than 50 m to any water body. {distances can be modified depending on the nature of the project}. Toilets shall be within the Contractor's Camp and at work areas more than 50m from the Contractor's Camp. All temporary/ portable toilets shall be secured to the ground to the satisfaction of the Engineer/ECO/EO to prevent them toppling due to wind or any other cause. These facilities shall be maintained in a hygienic state and serviced regularly. Toilet paper shall be provided. Discharge of waste from toilets into the environment and burial of waste is strictly prohibited.

4.3 Eating areas

The Contractor shall designate eating areas, subject to the approval of the Engineer/ECO/EO. These shall be clearly demarcated. The feeding or leaving of food for any animal is strictly prohibited. Sufficient bins as specified in Section 4.4 of this Specification shall be present in this area.

Any cooking on Site shall be done on well-maintained gas cookers with fire extinguishers present.

4.4 Solid waste management

The site shall be kept neat and clean at all times. Littering is prohibited.

No on-site burying or dumping of any waste materials, vegetation, litter or refuse shall occur. The Contractor shall provide scavenger and weatherproof bins with lids of sufficient number and capacity to store the solid waste produced on a daily basis. The lids shall be kept firmly on the bins at all times. Bins shall not be allowed to become overfull and shall be emptied regularly, at least once a week. Waste from bins may be temporarily stored on Site in a central waste area that is weatherproof and scavenger-proof, and which the Engineer/ECO/EO has approved.

All solid waste shall be disposed of off site at an approved landfill site. The Contractor shall supply the Engineer/ECO/EO with a certificate of disposal.

4.5 Contaminated Water Management

Potential pollutants of any kind and in any form shall be kept, stored, and used in such a manner that any escape can be contained and the water table not endangered. Water containing such pollutants as cements, concrete, lime, chemicals and fuels shall be discharged into a conservancy tank for removal from the site to a licensed disposal facility. This particularly applies to water emanating from concrete batching plants and concrete swills, and

to runoff from fuel depots/workshops/truck washing areas. Wash down areas shall be placed and constructed in such a manner so as to ensure that the surrounding areas are not polluted.

Should it be necessary to dispose of contaminated water into the municipal sewer or stormwater system, written permission is required from the Engineer/ECO/EO/relevant Municipal Official.

Should contaminated water be released into the environment, specifically into a water course, monitoring thereof shall commence in accordance to the National Water Act, 1998 (Act 36 of 1998) Section 21(f) – refer to GN 399 (26 March 2004). Contaminated water must not be released into the environment without authorisation from the relevant authority.

A Method Statement is required from the Contractor detailing the management of contaminated water.

The Contractor shall notify the Engineer/ECO/EO immediately of any pollution incidents on Site.

4.6 Site structures

All site establishment components (as well as equipment), shall be positioned to limit visual intrusion on neighbours and the size of area disturbed. The type and colour of roofing and cladding materials to the Contractor's temporary structures shall be selected to reduce reflection.

4.7 Lights

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

Lighting installed shall, as far as practically possible, be energy efficient. Lighting utilised on site shall be turned off when not in use.

4.8 Workshop, equipment maintenance and storage

Where practical, all maintenance of equipment and vehicles on Site shall be performed in the workshop. If it is necessary to do maintenance outside of the workshop area, the Contractor shall obtain the approval of the Engineer/ECO/EO prior to commencing activities.

The Contractor shall ensure that in his workshop and other plant maintenance facilities, including those areas where, after obtaining the Engineer/ECO/EO 's approval, the Contractor carries out emergency plant maintenance, there is no contamination of the soil, water sources or vegetation. The workshop shall have a smooth impermeable floor either constructed of concrete or thick plastic covered with sufficient sand to protect the plastic from damage. The floor shall be bunded and sloped towards an oil trap or sump to contain any spillages of substances (e.g. oil). The Engineer/ECO/EO must approve a Method Statement detailing the design and construction of the workshop. When servicing equipment, drip trays shall be used to collect the waste oil and other lubricants. Drip trays shall also be provided in construction areas for stationary plant (such as compressors) and for "parked" plant (such as scrapers,

loaders, vehicles). Drip trays, sumps and bunds must be emptied regularly, especially before a known rain event and after a rain event, and the contents disposed of at a licensed disposal facility.

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

The washing of equipment shall be restricted to urgent or preventative maintenance requirements only. All washing shall be undertaken in the workshop or maintenance areas, and these areas must be equipped with a suitable impermeable floor and sump/oil trap. The use of detergents for washing shall be restricted to low phosphate/ nitrate and low sudsing-type detergents.

4.9 Noise

The Contractor shall limit noise levels (e.g. install and maintain silencers on machinery). The provisions of SANS 1200A Subclause 4.1 regarding "built-up areas" shall apply to all areas within audible distance of residents whether in urban, peri-urban or rural areas.

Appropriate directional and intensity settings are to be maintained on all hooters and sirens.

No amplified music shall be allowed on Site. The use of radios, tape recorders, compact disc players, television sets etc shall not be permitted unless the volume is kept sufficiently low as to avoid any intrusion on members of the public within range. The Contractor shall not use sound amplification equipment on Site unless in emergency situations.

Construction activities generating output levels of 85 dB (A) or more, in residential areas, shall be confined to the hours 08h00 to 17h00 Mondays to Fridays. Should the Contractor need to work outside normal working hours, the surrounding communities shall be informed prior to the work taking place.

5. CONSTRUCTION

5.1 Method Statements

The Contractor shall not commence the activity until the Method Statement has been approved and shall, except in the case of emergency activities, allow a period of two weeks for approval of the Method Statement by the Engineer/ECO/EO. Such approval shall not unreasonably be withheld.

The Engineer/ECO/EO may require changes to a Method Statement if the proposal does not comply with the specification or if, in the reasonable opinion of the Engineer/ECO/EO, the proposal may result in, or carries a greater than reasonable risk of, damage to the environment in excess of that permitted by the Specifications.

Approved Method Statements shall be readily available on the site and shall be communicated to all relevant personnel. The Contractor shall carry out the Works in accordance with the approved Method Statement. Approval of the Method Statement shall not absolve the Contractor from any of his obligations or responsibilities in terms of the Contract.

5.2 Environmental Awareness Training

It is a requirement of this contract that environmental awareness training courses are run for all personnel on site. All employees who spend more than 1 day a week or four days in a month on Site must attend the training. Two types of course shall be run: one for the Contractors and Subcontractors management and one for all site staff and labourers. Courses shall be run during normal working hours at a suitable venue provided by the Contractor. All attendees shall remain for the duration of the course and sign an attendance register that clearly indicates participants names on completion, a copy of which shall be handed to the Engineer/ECO/EO. The size of each session shall be limited to the numbers shown in the Project Specification and the Contractor shall allow for sufficient sessions to train all personnel. Subsequent sessions shall be run for any new personnel coming onto site. A Method Statement with respect to the organisation of these courses shall be submitted. Conduct revised training as and when required.

Notwithstanding the specific provisions of this clause it is incumbent upon the Contractor to convey the sentiments of the EMP to all personnel involved with the works.

5.2.1 Training course for management and foremen

The environmental awareness training course for management shall include all management and foremen. The course, which shall be presented by the Engineer/ECO/EO or his designated representative, is of approximately one-hour duration. The initial course shall be undertaken not more than 7 days prior to commencement of work on site.

5.2.2 Training course for site staff and labour

The environmental awareness training course for site staff and labour shall be presented by the Contractor from material provided by the Engineer/ECO/EO unless otherwise indicated in the Project Specification. The course is approximately one-hour long. The course shall be run not more than 7 days after commencement of work on site with sufficient sessions to accommodate all available personnel.

5.3 Contractor's Environmental Representative

The Contractor shall appoint an environmental representative (called an Environmental Site Officer) who shall be responsible for undertaking a daily site inspection to monitor compliance with this Specification and the relevant Project Specification. The Contractor shall forward the name of the environmental representative to the Engineer/ECO/EO for his approval seven days prior to the date of the environmental awareness training course. The Contractor's environmental representative shall complete daily Site Inspection Forms and these shall be submitted to the Engineer/ECO/EO once a week.

5.4 Site division, demarcation and no go areas

The Contractor shall restrict all his activities, materials, equipment and personnel to within the area specified. The area of the site shall be fenced where possible.

A Method Statement detailing the layout and method of establishment of the construction camp (including all buildings, hostels, offices, lay down yards, vehicle wash areas, fuel

storage areas, batching areas and other infrastructure required for the running of the project) shall be provided.

As required by the Project Specification, the Contractor shall erect and maintain permanent and/ or temporary fences of the type and in the locations directed by the Engineer/ECO/EO. Such fences shall, if so specified, be erected before undertaking designated activities.

If so required by the Project Specification, certain areas shall be "no go" areas. The Contractor shall ensure that, insofar as he has the authority, no person, machinery, equipment or material enters the "no go" areas at any time.

5.5 Access routes/ haul roads

On the Site, and, if so required by the Project Specification, within such distance of the Site as may be stated, the Contractor shall control the movement of all vehicles and plant including that of his suppliers so that they remain on designated routes, are distributed so as not to cause an undue concentration of traffic and that all relevant laws are complied with. In addition such vehicles and plant shall 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 and within 500m of the Site, the vehicles of the Contractor and his suppliers shall not exceed a speed of 45 km/hr. as far as possible the Contractor shall use existing access and haul routes. Damage to the existing access roads as a result of construction activities shall be repaired to the satisfaction of the Engineer/ECO/EO, using material similar to that originally used. The cost of the repairs shall be borne by the Contractor.

5.6 Construction personnel information posters

As required by the Project Specification, the Contractor shall erect and maintain information posters for the information of his employees depicting actions to be taken to ensure compliance with aspects of the Specifications. Such posters shall be erected at the eating areas and any other locations specified by the Engineer/ECO/EO.

5.7 Fire control

No fires may be lit on site. Any fires, which occur, shall be reported to the Engineer/ECO/EO immediately. Smoking shall not be permitted in those areas where it is a fire hazard. Such areas shall include the workshop and fuel storage areas and any areas where the vegetation or other material is such as to make liable the rapid spread of an initial flame. In terms of the National Environmental Management: Air Quality Act and Community Fire Safety Bylaw, burning is not permitted as a disposal method.

The Contractor shall appoint a Fire Officer who shall be responsible for ensuring immediate and appropriate actions in the event of a fire and shall ensure that employees are aware of the procedure to be followed. The Contractor shall forward the name of the Fire Officer to the Engineer/ECO/EO for his approval.

The Contractor shall ensure that there is basic fire-fighting equipment available on Site at all times. This shall include at least rubber beaters when working in urban open spaces and fynbos areas, and at least one fire extinguisher of the appropriate type when welding or other "hot" activities are undertaken.

1. The Contractor shall ensure that the basic fire-fighting equipment is to the satisfaction of the Local Fire Services.
2. The Contractor shall supply all living quarters, site offices, kitchen areas, workshop areas, materials, stores and any other areas identified by the Engineer/ECO/EO with tested and approved fire fighting equipment.
3. Fire and “hot work” shall be restricted to a site approved by the Engineer/ECO/EO.
4. A braai facility may be considered at the discretion of the Engineer/ECO/EO.

5.8 Emergency procedures

The Contractor shall submit Method Statements to the Engineer/ECO/EO covering the procedures for the following emergencies:

i) Fire

The Contractor shall advise the relevant authority of a fire as soon as one starts and shall not wait until he can no longer control it. The Contractor shall ensure that his employees are aware of the procedure to be followed in the event of a fire.

ii) Accidental leaks and spillages

The Contractor shall ensure that his employees are aware of the procedure to be followed for dealing with spills and leaks, which shall include notifying the Engineer/ECO/EO and telephoning 107 or 021 480 7700 (from a cellphone) and the relevant authorities. The Contractor shall ensure that the necessary materials and equipment for dealing with spills and leaks is available on Site at all times. Treatment and remediation of the spill areas shall be undertaken to the reasonable satisfaction of the Engineer/ECO/EO.

In the event of a hydrocarbon spill, the source of the spillage shall be isolated, and the spillage contained. The area shall be cordoned off and secured. The Contractor shall ensure that there is always a supply of absorbent material readily available to absorb/ breakdown and where possible is designed to encapsulate minor hydrocarbon spillage. The quantity of such materials shall be able to handle a minimum of 200 l of hydrocarbon liquid spill.

5.9 Safety

Telephone numbers of emergency services, including the local fire fighting service, shall be posted conspicuously in the Contractor's office near the telephone. In the event of an emergency, the Contractor shall contact the City of Cape Town's Emergency Call Centre by telephoning 107 or 021 480 7700 (from a cellphone).

No unauthorised firearms are permitted on Site.

5.10 Community relations

If so required by the Project Specification, the Contractor shall erect and maintain information boards in the position, quantity, design and dimensions specified. Such boards shall include contact details for complaints by members of the public in accordance with details provided by the Engineer/ECO/EO.



The Contractor shall keep a "Complaints Register" on Site. The Register shall contain all contact details of the person who made the complaint, and information regarding the complaint itself.

5.11 Protection of natural features

The Contractor shall not deface, paint, damage or mark any natural features (e.g. rock formations) situated in or around the Site for survey or other purposes unless agreed beforehand with the Engineer/ECO/EO. Any features affected by the Contractor in contravention of this clause shall be restored/ rehabilitated to the satisfaction of the Engineer/ECO/EO .

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

5.12 Protection of flora and fauna

Except to the extent necessary for the carrying out of the Works, flora shall not be removed, damaged or disturbed nor shall any vegetation be planted.

Trapping, poisoning and/ or shooting of animals is strictly forbidden. No domestic pets or livestock are permitted on Site.

Where the use of herbicides, pesticides and other poisonous substances has been specified, the Contractor shall submit a Method Statement.

5.13 Erosion and sedimentation control

The Contractor shall take all reasonable measures to limit erosion and sedimentation due to the construction activities and shall, in addition, comply with such detailed measures as may be required by the Project Specification. Where erosion and/or sedimentation, whether on or off the Site, occurs despite the Contractor complying with the foregoing, rectification shall be carried out in accordance with details specified by the Engineer/ECO/EO. Where erosion and/or sedimentation occur due to the fault of the Contractor, rectification shall be carried out to the reasonable requirements of the Engineer/ECO/EO.

Any runnels or erosion channels developed during the construction period or during the vegetation establishment period shall be backfilled and compacted, and the areas restored to a proper condition. Stabilisation of cleared areas to prevent and control erosion shall be actively managed. The method of stabilisation shall be determined in consultation with the Engineer/ECO/EO.

5.14 Aesthetics

The Contractor shall take reasonable measures to ensure that construction activities do not have an unreasonable impact on the aesthetics of the area.

5.15 Recreation

If so required by the Project Specification, the Contractor shall take measures to reduce disruption to recreational users of the area abutting the Site.



5.16 Temporary site closure

If the Site is closed for a period exceeding one week, the Contractor in consultation with the Engineer/ECO/EO shall carry out the checklist procedure required by the Project Specification. In the event of temporary site closure the Contractor's Safety Officers (as defined by the Occupational Health and Safety Act) shall check the site, ensure that the conditions contained in the Detailed Specification.



6. TOLERANCES

Environmental management is concerned not only with the final results of the Contractor's operations to carry out the Works but also with the control of how those operations are carried out. Tolerance with respect to environmental matters applies not only to the finished product but also to the standard of the day-to-day operations required to complete the Works.

It is thus required that the Contractor shall comply with the environmental requirements on an ongoing basis and any failure on his part to do so will entitle the Engineer/ECO/EO to certify the imposition of a fine subject to the details set out in the Project Specification.



7. TESTING

Void

8. MEASUREMENT AND PAYMENT¹

8.1 Basic principles

Except as noted below and in PSEM8 / C3.7 Clause 8 as Scheduled Items, no separate measurement and payment will be made to cover the costs of complying with the provisions of this specification and such costs shall be deemed to be covered by the rates tendered for the items in the Schedule of Quantities completed by the Contractor when submitting his tender.

8.2 Scheduled items

8.2.1 The environmental awareness training course

The provision of a venue and attendance at the environmental training course will be measured as a lump sum.

¹ Delete Measurement and Payment if not applicable to Contract Document.

The sum shall cover all costs incurred by the Contractor in providing the venue and facilities as detailed in the Project Specification and in ensuring the attendance of all relevant employees and sub-contractors, at the meeting.

8.2.2 Method Statements: Additional Work

No separate measurement and payment will be made for the provision of Method Statements but, where the Engineer/ECO/EO requires a change on the basis of his opinion that the proposal may result in, or carries a greater than warranted risk of damage to the environment in excess of that warranted by the Specifications, then any additional work required, provided it could not reasonably have been foreseen by an experienced contractor, shall be valued in accordance with GCC 90 Clause 40.

A stated sum is provided in the Schedule of Quantities to cover payment for such additional work.

8.2.3 Work "required by the Project Specification"

Where a clause in this Specification includes a requirement as "required by the Project Specification", measurement and payment for compliance with that requirement shall be in accordance with the relevant measurement and payment clause of the Project Specification.



PRO FORMA

Employer
Contract No
Contract title

PROTECTION OF THE ENVIRONMENT²

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

I/ we,.....{Contractor} record as follows:

1. I/ we, the undersigned, do hereby declare that I/ we am/ are aware of the increasing requirement by society that construction activities shall be carried out with due regard to their impact on the environment.
2. In view of this requirement of society and a corresponding requirement by the Employer with regard to this Contract, I/ we will, in addition to complying with the letter of the terms of the Contract dealing with protection of the environment, also take into consideration the spirit of such requirements and will, in selecting appropriate employees, plant, materials and methods of construction, in-so-far as I/ we have the choice, include in the analysis not only the technical and economic (both financial and with regard to time) aspects but also the impact on the environment of the options. In this regard, I/ we recognise and accept the need to abide by the "precautionary principle" which aims to ensure the protection of the environment by the adoption of the most environmentally sensitive construction approach in the face of uncertainty with regard to the environmental implications of construction.
3. I/we have signed the Declaration of Understanding with respect to the Environmental Management Programme
4. I/ we acknowledge and accept the right of the Employer to deduct, should he so wish, from any amounts due to me/ us, such amounts (hereinafter referred to as fines) as the Engineer shall certify as being warranted in view of my/ our failure to comply with the terms of the Contract dealing with protection of the environment, subject to the following:
 - 4.1 The Engineer, in determining the amount of such fine, shall take into account *inter alia*, the nature of the offence, the seriousness of its impact on the environment, the degree of prior compliance/non-compliance, the extent of the Contractor's overall compliance with environmental protection requirements and, in particular, the extent to which he considers it necessary to impose a sanction in order to eliminate/reduce future occurrences
 - 4.2 The Engineer shall, with respect to any fine imposed, provide me/ us with a written statement giving details of the offence, the facts on which the Engineer has based his assessment and the terms of the Contract (by reference to the specific clause) which has been contravened.

Signed
CONTRACTOR

Date.....

² Declaration of Understanding and Protection of the Environment Agreements can be inserted in Section C1.6 and C1.7 in the Contract Document.

The following clauses must be added to the Special Conditions of Contract/Contract Data section of the Tender Document.

Additional clause

6(6) COMPLIANCE WITH APPLICABLE LAWS

The Contractor shall, within the time stated in the Appendix, deliver to the Employer a Protection of the Environment form (See Pro Forma: **Protection of the Environment** bound in the Tender Documents.)

12(1) COMMENCEMENT OF WORKS

Add to Sub-Clause 12(1):

"In the event that the Contractor fails to provide a Protection of the Environment form in terms of Sub-Clause 6(5), the Engineer shall be entitled to delay the order to commence the Works (and thus the Commencement Date) beyond the 28 days, stipulated in Sub-Clause 12(2), by the period that the Contractor is late in submitting the required form."

45(1) TIME FOR COMPLETION

Add to Sub-Clause 45(1)

"The Time for Completion of the Works shall be reduced by the amount of delay, if any, in the issue of the notice requiring the Contractor to commence with the execution of the Works occasioned by the failure of the Contractor to submit a Protection of the Environment form, in terms of Sub-Clause 6(5), within the stipulated time."

Appendix

The following clause must be added to the Appendix section (GCC/ SCC) section of the Tender Document together with the Pro Forma.

Time within which Protection of the Environment form to be provided	6(5)	14 days after receipt of Letter of Acceptance
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