



*Specification:*

**STANDARD ENVIRONMENTAL  
SPECIFICATION FOR CONSTRUCTION  
(SES)**

Report N<sup>o</sup>  
CDC-OP-SPC-003-13  
Rev 4

**25 May 2015**



## **DOCUMENT INFORMATION SHEET**

**Title of Document** : *Standard Environmental Specification for Construction*

**Type of Document** : *Specification*

**Document Number** : *CDC-OP-SPC-003-13*

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**Business Unit** : *Operations*

**Prepared for** : *CDC*

**Date of Issue** : *25 May 2015*

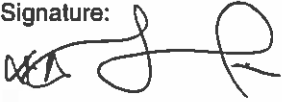


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**STANDARD ENVIRONMENTAL SPECIFICATION FOR CONSTRUCTION  
 (SES)  
 (Specification)**

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## 1 OBJECTIVES

This Specification (SES) covers the requirements for controlling the impact on the environment of construction activities. The SES is applicable to all construction activities undertaken within the Coega IDZ and Coega Development Corporation construction projects that are undertaken outside the IDZ.

## 2 INTERPRETATION

### 2.1. Supporting specifications

Where the Standard Environmental Specification (SES) is required for a project the following supporting specifications shall, where applicable, form part of the Contract Documents:

- (a) Standard Vegetation Specification (SVS);
- (b) Colto or Fidic Equivalent Specification.

### 2.2. Application

This SES contains clauses that are generally applicable to the undertaking of civil engineering works as it is necessary to impose pro-active controls on the extent to which the construction activities impact on the environment. Interpretations and variations of the SES are set out in the Project Environmental Specification (PES).

The SES sets out a minimum standard of environmental compliance which is aligned to the environmental authorizations that are applicable to CDC. The PES should be applicable for specific projects where items are not covered in the SES.

### 2.3. Definitions

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

#### 2.3.1 CDC:

Means Coega Development Corporation (Pty) Ltd.

#### 2.3.2 Cement laden water:

Means water containing cement or concrete arising from the Contractor's activities.

**2.3.3 Contaminated water:**

Means water contaminated by the Contractor's activities such as with hazardous substances, hydrocarbons, paints, solvents and runoff from plant, workshop or personnel wash areas but excludes water containing cement/ concrete or silt.

**2.3.4 Environment:**

Means the surroundings within which human beings exist and these comprise 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.

**2.3.5 His:**

Means his or her is applicable.

**2.3.6 Method Statement: To minimize negative impacts on the environment.**

**2.3.7 Potentially hazardous substance:**

Is a substance, which, in the reasonable opinion of the Consulting Engineer, can have a deleterious effect on the environment. Hazardous Chemical Substances are defined in the Regulations for Hazardous Chemical Substances published in terms of the Occupational Health and Safety Act.

**2.3.8 Reasonable:**

Means unless the context indicates otherwise, reasonable is the opinion of the Consulting Engineer, after he has consulted with CDC Safety, Health & Environment Business Unit.

**2.3.9 Silt laden water:**

Means water containing sand and silt arising from the Contractor's activities and/or as a result of natural run-off.

**2.3.10 Site:**

This is the area in the possession of the Contractor for the construction of the Works. Where the area is not demarcated, it will include all adjacent areas, which are reasonably

required for activities for the Contractor, and approved for such use by the Consulting Engineer.

**2.3.11 Solid waste:**

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

**2.3.12 No-Go Area:**

### **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 Consulting Engineer's approval.

Imported gravel, fill, soil and sand materials shall be free of weeds, alien invasive seed matter, plant material, litter and contaminants and shall be obtained from sources approved by the Consulting Engineer. A Method Statement detailing the source and methods to ensure compliance with this specification shall be submitted to the Consulting Engineer.

#### **3.2. Stockpiling**

Any stockpiling of gravel, cut, fill or any other material including spoil shall be in areas approved by the Consulting Engineer within the defined working area. Any stockpiling outside the defined working area must be approved by the CDC.



The Contractor shall ensure that the material does not blow or wash away. If the stockpiled material is in danger of being washed or blown away, the Contractor shall spray it with Dustex or cover it with a suitable material, such as hessian or plastic. Stockpiles of topsoil shall not be covered with plastic and not exceed 2m in height.

No stockpiling of any material shall be allowed within 20m of any residential areas, "no go" areas or existing facilities. No nuisance or inconvenience shall be caused to any existing facilities.

### **3.3. Solid waste management**

No on-site burning, burying or dumping of any waste materials, litter or refuse shall occur. The Contractor shall provide vermin 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 at least once a day. The waste from bins may be temporarily stored on Site in a central waste area that is weatherproof and scavenger-proof, and which the Consulting Engineer has approved.

Recyclable waste shall be disposed of into separate skips/bins and removed off-site for recycling.

All solid waste shall be disposed of offsite at an approved landfill Site. The Contractor shall supply the Consulting Engineer with the appropriate disposal certificates.

The Contractor shall submit a solid waste management Method Statement to the Consulting Engineer.

### **3.4. Water use**

All sources of water for construction purposes must be approved by the Consulting Engineer in writing before any such sources can be used to obtain water.

### **3.5. Hazardous substances**

The transportation and handling of hazardous substances must comply with the provisions of the Hazardous Substances Act (Act No.187 of 1993) and associated regulations as relevant sensed code. The Contractor shall also comply with all other applicable regional and local legislation and regulations with regard to the transport,

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. The Contractor shall be responsible for the training and education of all personnel on Site who will be handling hazardous materials about their proper use, handling and disposal.

If potentially hazardous substances are to be stored or used on Site, the Contractor shall submit a Method Statement to the Consulting Engineer detailing the substances/materials to be used, together with the transport, storage, handling, and disposal procedures for the substances. As a minimum requirement, all hazardous material shall be stored in bunded weatherproof facilities in suitably labelled containers.

### **3.6. Contaminated water**

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 that the water table is not endangered. Water containing such pollutants as chemicals, washing detergents, sewerage, fuels, paints and solvents and hydrocarbons shall be contained and discharged into an impermeable storage facility for removal from the site or for recycling. This particularly applies to runoff from fuel depots/workshops/truck washing areas. The Contractor may direct contaminated water into a sewerage main, provided that authorization has been obtained from the local authority and that the Consulting Engineer has provided written permission for this action.

Wash down areas shall be placed and constructed in such a manner so as to ensure that the surrounding areas are not polluted. The Contractor shall notify the Consulting Engineer immediately of any pollution incidents on Site.

The Contractor shall submit a Method Statement to the Consulting Engineer detailing how the contaminated water will be managed on Site.

### **3.7. Cement and concrete batching/mixing**

The proposed location of batching areas (including the location of cement stores and sand and aggregate stockpiles) shall be indicated on the Site layout plan and approved by the Consulting Engineer. Batching areas shall not be located within 150m of the Coega River or any no go areas, unless written approval has been granted by the Consulting Engineer.

All wastewater generated from the operation and cleaning of concrete batching equipment shall be passed through a concrete wastewater settlement system as depicted in the appropriate drawing. The water from this system shall not be allowed to flow into any "no go" area or water course. The accumulated sludge in the settlement system must be regularly cleaned out and appropriately disposed of as solid waste.

The Contractor shall ensure that minimal water is used for washing of concrete batching equipment.

Used cement bags shall be disposed of in weatherproof bins on site to prevent the generation of windblown cement dust and the bags from blowing away.

During construction, the contractor must ensure that concrete is mixed on a suitable impermeable surface from which there is no run off. All visible remains of concrete are removed and disposed of as waste and that all surplus aggregate is removed. Provision must be made for cleaning of concrete and cement contaminated tools and equipment. No concrete or cement laden water shall be released onto the ground.

A Method Statement detailing all actions to be taken to comply with the cement and batching requirements shall be submitted to the Consulting Engineer.

## **4 PLANT**

### **4.1. Fuel (petrol and diesel) and oil**

#### **4.1.1 Fuel Storage**

Fuel can be stored on site. The location of the fuel storage area will be approved by the Consulting Engineer and will be situated at least 50m away from any major drainage systems, residential areas or "no go" areas. All necessary approvals with respect to fuel storage and dispensing shall be obtained from the appropriate authorities. Symbolic safety signs depicting "No Smoking", "No Naked Lights" and "Danger" conforming to the

requirement of SABS 1186 shall be prominently displayed in and around the fuel storage area. There shall be adequate fire-fighting equipment at the fuel storage area.

The Contractor shall ensure that all liquid fuels and oils are stored in tanks or containers with lids, which are kept firmly shut and under lock and key at all times. The capacity of the tank shall be clearly displayed and the product contained within the tank clearly identified using the emergency information system detailed relevant sensed code. Fuel storage tanks shall have a capacity not exceeding 9000 litres and shall be kept on site only for as long as fuel is needed for construction activities, on completion of which they shall be removed.

Tanks on site shall not be linked or joined via any pipe work, but shall remain as separate entities. The tanks shall be situated on a smooth impermeable base with a bund wall. The volume inside the bund shall be 110% of the total capacity of the largest storage tank. The base may be constructed of concrete, or of plastic sheeting with impermeable joints with a layer of sand over to prevent perishing. The impermeable lining shall extend to the crest of the bund. The floor of the bund shall be sloped to enable any spilled fuel and/or fuel-contaminated water to be removed. Appropriate material, approved by the Consulting Engineer that absorbs/ breaks-down or encapsulates minor hydrocarbon spillage and which is effective in water shall be installed in the sump.

If any water does collect in the bunded area it shall be removed within a day of this occurring and taken off Site to a disposal site approved by the Consulting Engineer, and the material that absorbs/ breaks-down or encapsulates minor hydrocarbon spillage shall be replenished. Any valves from the bunded area shall be kept closed to ensure that no contaminated water shall be released onto the ground.

Adequate precautions shall be provided to prevent spillage during the filling of any tank and during the dispensing of the contents. The dispensing mechanism for the fuel storage tanks shall be stored in a waterproof container when not in use.

A Method Statement shall be submitted to the Consulting Engineer detailing the design, location and construction of the fuel storage area as well as for the filling and dispensing from storage tanks and for the type of absorbing/ breaking-down or encapsulating material to be used.

#### 4. 1.2 *Refuelling*

Where reasonably practical, plant shall be refuelled at a designated re-fuelling area/depot or at a workshop as applicable. If this is not reasonably practical then the surface under the refuelling area shall be protected and appropriately bunded against pollution to the reasonable satisfaction of the Consulting Engineer prior to any refuelling activities.

If fuel is dispensed then suitably labelled containers shall be used, and the proper dispensing equipment shall be used. The container shall not be tipped in order to dispense fuel. The Contractor shall ensure that the appropriate fire-fighting equipment is present during refuelling operations.

The Contractor shall ensure that there is always a supply of absorbent material readily available to absorb/breakdown or where possible, be designed to encapsulate minor hydrocarbon spillages. The quantities of such materials shall be able to handle a minimum of 200l of hydrocarbon liquid spill. Prior to any refuelling or maintenance activities, the Consulting Engineer must approve this material.

#### **4.1.3** *Used oil and hydrocarbon contaminated materials*

Used oil shall be stored at a central location on Site prior to removal off Site for disposal at an approved disposal or recycling site.

Old oil filters and oil, petrol and diesel-soaked material shall be treated as hazardous waste. The Contractor shall remove all oil, petrol, and diesel-soaked sand immediately and shall dispose of it as hazardous waste or treat it on site with material that breaks-down or encapsulates such spillages as approved by the Consulting Engineer.

## **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. The Contractor shall provide the necessary ablution facilities for all personnel prior to the commencement of work and shall ensure that personnel make use of the facilities.

Toilet facilities shall be supplied by the Contractor for the workers at a ratio of at least 1 toilet per 15 workers in areas approved by the Consulting Engineer. No toilets will be erected within 100m of any residential areas, within 20m of the edge of the Site, within 50m of any "no go" areas or any drainage systems, including wetlands. Toilets shall be situated within 200m of any area where work is taking place in numbers sufficient to meet the ratio depicted

above for the workers in the area. Mobile toilets (e.g. trailer mounted) should be considered for Sites, where workers may be expected to cover large distances every day.

The facilities shall be maintained in a hygienic state and serviced regularly. Toilet paper shall be provided. Temporary/portable toilets shall be secured to the ground to prevent them toppling due to wind or any other cause, to the satisfaction of the Consulting Engineer.

Discharge into the environment and burial of waste is strictly prohibited. The Contractor shall ensure that no spillage occurs when the toilets are cleaned or emptied and that the contents are removed from the Site. Toilets shall be emptied before the Contractors' holidays or any other temporary site closure.

### **4.3. Eating areas**

The Contractor shall designate eating areas subject to the approval of the Consulting Engineer. No cooking is allowed outside of the Contractor's camp area on Site.

At meal times all workers must eat in designated eating areas. More than one area may be required for large Sites. These areas shall have shade for the workers. The eating areas may be in existing structures or in temporary/transportable structures that shall be well-constructed using wood or metal for the frame and screened on the top and sides with shade cloth/canvas or other material to the satisfaction of the Consulting Engineer. These areas shall be well demarcated and in locations approved by the Engineer and shall not be within 50m of any "no go" areas or any major drainage systems, on or adjacent to the Site.

Sufficient bins as specified in Section 3.3 of this SES shall be present in these areas. All disposable food packaging must be disposed of in the bins after every meal.

The feeding or leaving of food for animals is strictly prohibited.

### **4.4. Site structures**

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

The Contractor shall supply and maintain adequate and suitable sheds for the storage of materials. Sheds for the storage of materials that may deteriorate or corrode if exposed to the weather shall be weatherproof, adequately ventilated and provided with raised floors.

#### **4.5. 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.

#### **4.6. Workshop, equipment maintenance and storage**

Where practical, all maintenance of equipment and vehicles on Site shall be performed in a workshop. If it is necessary to do maintenance outside of the workshop area, the Contractor shall obtain the approval of the Consulting Engineer prior to commencing such activities. No maintenance, including emergency maintenance, of plant can take place within 50m of any "no go" area or drainage system.

The Contractor shall ensure that in his workshop and other plant maintenance facilities, including those areas where, after obtaining the Consulting Engineer's approval, the Contractor carries out emergency plant maintenance, there is no contamination of the soil or vegetation. The workshop shall have a smooth impermeable (concrete or thick plastic covered with sand) floor. The floor shall be bunded and sloped towards an oil trap or sump to contain any spillages. 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).

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 and nitrate containing and low silding-type detergents.

A Method Statement must be submitted to the Consulting Engineer detailing the design of the binding of the workshop and how run-off from the workshop will be managed as well as how drip trays used under plant will be managed.

#### **4.7. Noise**

The Contractor shall take precautions to minimize noise generated on Site (e.g. Install and maintain silencers on machinery).

The Contractor shall comply with the Noise Induced Hearing Loss Regulations published under the Occupational Health and Safety Act.

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 set, 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. Refer to IDZ Zone rules for references.

#### **4.8. Dust Control**

The Contractor shall be responsible for the continued control of dust arising from his operations. The Contractor shall inform the Engineer 48 hours in advance of anticipated 'unavoidable' dust generating activities. The Contractor shall take all reasonable measures to minimize the generation of dust as a result of construction activities to the satisfaction of the Consulting Engineer. Appropriate dust suppression measures include: spraying or dampening with water, using a commercial dust binder (such as Hydro am or Dustex), rotovating straw bales, planting of open cleared space and the scheduling of dust-generating activities. If the conditions are such that the Contractor cannot satisfactorily dampen the dust, then the Consulting Engineer may halt operations until the conditions are more suitable for lower dust generating construction.

Dampening of all gravel haul and access roads with water must be ongoing and special attention must be given to roads and gravel roads should be dampened in order to abate dust generation close to residential areas. Should dust still be a problem on any specific road, the allowable speed will be reduced to 20km/h. If dust is still a problem the road should be treated with a commercial dust binder, as required, to form a cohesive layer that will control the dust on the road.



Areas that are to have the topsoil stripped for construction purposes must be limited and only stripped when work is about to take place.

Other activities and situations that may result in a dust nuisance include: site clearance and other earth moving operations, open cleared space, stockpiles of topsoil or sand and activities associated with concrete batching plants.

A Method Statement detailing how dust will be managed for different operations on the site must be submitted to the Consulting Engineer for his approval before any work that could result in dust being generated is undertaken.

## 5 CONSTRUCTION

### 5.1. Method Statements

The following Method Statements, as well as any required by the Project Specification, shall be provided by the Contractor and submitted to the Consulting Engineer for approval, and final verification and acceptance by the CDC.

#### 5.1.1 *Solid waste management (Clause 3.3)*

Expected solid waste types, quantities, methods, frequency of collection and disposal as well as location of disposal sites.

#### 5.1.2 *Contaminated water (Clause 3.6)*

Methods of minimizing, controlling, collecting and disposing of contaminated water.

#### 5.1.3 *Contractors SHE Officer (Clause 5.2)*

The name and letter of appointment of the Contractors SHE Officer must be given to the Consulting Engineer and the terms of reference for the work to be undertaken by the SHE Officer must be detailed including time on site, CV, roles and responsibility, interaction with the Contractor and environmental offices, etc.

#### 5.1.4 *Site division (Clause 5.4)*

The location, layout and method of establishment of the construction camp (including all buildings, offices, lay down yards, vehicle wash areas, fuel storage areas, batching areas and other infrastructure required for the running of the project). The environmental aspects need to be covered rather than technical engineering MS.

Other Method Statements that will be required during the course of construction are to be provided by the Contractor a minimum of 10 days prior to commencement of the works or activities to which they apply (no work can commence on site before these Method Statements have been approved):

**5.1.5** *Emergency procedures (Clause 5. 10)*

Emergency procedures for fire and accidental leaks and spillages of hazardous substances (including fuel and oil). Include details of risk reduction measures to be implemented including firefighting equipment, fire prevention procedures and spill kits (materials and compounds used to reduce the extent of spills and to breakdown or encapsulate hydrocarbons.

**5.1.6** *Importing of material (Clause 3.1)*

Detail the source of any gravel, soil, aggregate or sand imported onto site and precautions taken to ensure no vegetative contamination.

**5.1.7** *Hazardous substances (Clause 3.5)*

Details of any hazardous substances/materials to be used, together with the transport, storage, handling, and disposal procedures for the substances.

Details of the design, location, and construction of the fuel storage area as well as for the filling and dispensing from storage tanks must also be supplied.

**5.1.8** *Workshop and drip trays (Clause 4.6)*

Location, layout, design and pollution control for Workshop as well as management of drip trays under plant.

**5.1.9** *Dust (Clause 4.8)*

Details on the methods for managing dust on the site.

**5.1.10** *Environmental awareness training (Clause 5.3)*

Number, dates, trainer, and logistics for the initial awareness courses for the Contractor's employees and for the management Staff.

**5.1.11** *Access Routes (Clause 5. 7)*

Details, including a drawing showing where and how the access points and routes will be located and managed.

Any additional Method Statements as required by the Consulting Engineer or the Project Specification must be provided by the Contractor. The Contractor shall not commence the activity until the Method Statement has been approved in writing and shall, except in the case of emergency activities, allow a period of 10 working days for approval of the Method Statement.

The Engineer may require changes to a Method Statement if the proposal does not comply with the specification or if, in the reasonable opinion of the Consulting Engineer, 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 or any legislation.

Approved Method Statements shall be readily available on the Site and shall be communicated to all relevant personnel and subcontractors. 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. No claim for delay or additional cost incurred by the Contractor shall be entertained due to inadequacy of a Method Statement.

Details of the following appointments are required within 7 days of commencing work on site:

**5.1.12** *Fire Warden (Clause 5.9)*

The name and appointment letter of the Fire Warden must be given to the Consulting Engineer.

**5.1.13** *Open space management controls:*

The Principal contractor must be mindful of the CDC open space area "No Go Area" that is in close proximity to the approved construction footprint. The contractor should conduct awareness training outlining the importance of the open space areas. The open space must be temporarily demarcated from the construction footprint using orange mesh netting and signage. A method statement with the approved construction footprint drawing must be submitted to the Principal Engineer outlining how the contractor intends to mitigate the risk of entering the open space area. Failure to adhere to the approved method statement requirements would result into penalties as per the FIDIC Conditions of Contract.

**5.1.14** *Bush clearing and earthworks.*

## **5.2. Contractor's SHE Officer**

The Contractor shall appoint a full-time Contractor's SHE 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 submit the name of the Contractor's SHE Officer as well his CV, roles and responsibilities to the Consulting Engineer for his approval before work can commence on site.

## **5.3. Environmental awareness training**

Environmental awareness training courses in the form of tool box talks shall be run for visitors on site. Two types of course shall be run, one for the Contractor's and Subcontractor's management and one for all site staff and labourers. Courses shall be run in the morning 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 on completion that clearly indicates participant's names, a copy of which shall be handed to the Consulting Engineer.

The Contractor shall allow for sufficient sessions to train all personnel. Subsequent sessions shall be run for any new personnel coming onto site.

Notwithstanding the specific provisions of this clause, it is incumbent upon the Contractor to convey the sentiments of the EMP and method statements to all personnel and Subcontractors involved with the Works.

## **5.4. Site division**

The Contractor shall restrict all his activities, materials, equipment and personnel to within the area specified.

A Method Statement detailing the location, layout and method of establishment of the construction camp (including all buildings, offices, lay down yards, vehicle wash areas, fuel storage areas, batching areas and other infrastructure required for the running of the project) shall be submitted to the Consulting Engineer. No accommodation for any staff is permitted on the Site.

### **5.5. Site demarcation**

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 Consulting Engineer. Such fences shall, if so specified, be erected before undertaking designated activities.

### **5.6. "No go" areas**

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

### **5.7. 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 and 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 or as directed by the Consulting Engineer.

The Contractor shall supply the Consulting Engineer with a Method Statement detailing the location and management of all access points and roads.

### **5.8. Construction personnel information posters**

The Contractor shall erect and maintain information posters for the information of his employees depicting actions to be taken to ensure compliance with the Environmental Specifications. Construction personnel information posters shall be laminated and erected in all eating areas, workshops and site offices. The Contractor shall ensure that the construction personnel information posters are not damaged in any way, and shall replace them if any part becomes illegible.

Examples of these posters will be supplied to the Contractor by the Consulting Engineer in electronic format.

## **5.9. Fire control**

The Contractor shall take all the necessary precautions to ensure that fires are not started as a result of his activities on Site. No open fires shall be permitted on the Site. Any fires that occur shall be reported to the Consulting Engineer immediately. Smoking shall not be permitted in those areas where there 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 support the rapid spreading of an initial flame

The Contractor shall appoint a Fire Warden 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 procedures to be followed. The Contractor shall forward the name of the Fire Warden to the Consulting Engineer for his approval within 7 days of being on site.

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 natural areas, and at least one fire extinguisher of the appropriate type when welding or other "hot" activities are undertaken. The Contractor shall be liable for any expenses incurred by any organisations called to assist with fighting fires that were started as a result of his activities or personnel, and for any cost relating to the rehabilitation of burnt areas, or consequential damages.

## **5.10. Emergency procedures**

Emergency procedures, including the names and contact details of responsible personnel and emergency services shall be made available to all staff and shall be clearly displayed at relevant locations at the Site. The Contractor shall advise the Consulting Engineer of any emergencies on Site, together with a record of action taken, within 24 hours of the emergency occurring.

Telephone numbers of emergency services shall also be posted conspicuously in the Contractor's office near the telephone.

The Contractor shall submit a Method Statement covering the procedures for the following emergencies:

**5.10.1 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 procedures to be followed in the event of a fire.

**5.10.2 Accidental leaks and spillages:**

The Contractor shall ensure that his employees are aware of the procedures to be followed for dealing with spills and leaks, which shall include notifying the Consulting Engineer and the relevant authorities. The Contractor shall ensure that all the necessary materials and equipment for dealing with spills and leaks are available on Site at all times. Treatment and remediation of the spill areas shall be undertaken to the reasonable satisfaction of the Consulting Engineer.

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 or where possible, be designed to encapsulate minor hydrocarbon spillages. The quantities of such materials shall be able to handle a minimum of 200 t of hydrocarbon liquid spill.

Any spills must be cleared and the contaminated soil/sludge disposed of in an appropriate manner, approved by the Consulting Engineer, or at a licensed hazardous waste disposal site.

**5.11. Community relations**

If so required by the Project Specification, the Contractor shall erect and maintain information boards in the positions, quantities, designs and dimensions specified. Such boards shall include contact details for complaints by members of the public in accordance with details provided by the Consulting Engineer.

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 and note the date and time that the complaint was resolved.

The Consulting Engineer shall be responsible for responding to queries and/or complaints and may request assistance from the Contractor's Management Staff.

#### **5.12. 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 Consulting Engineer. Any features affected by the Contractor in contravention of this clause shall be restored/rehabilitated to the satisfaction of the Consulting Engineer.

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

#### **5.13. 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.

The search and rescue of rare, endemic or endangered species prior to Site clearance must be carried out in accordance with the Vegetation Specifications. The removal and stockpiling of topsoil must also be carried out in accordance with the Vegetation Specifications.

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

#### **5.14. Storm water management**

Natural run-off must be diverted to storm water drains where these are available. The Contractor shall take appropriate measures to prevent sand, silt and silt-laden waters from entering storm water drains, or any surface water course. The Contractor shall take reasonable measures to control the erosive effects of storm water runoff particularly where excavation and construction activities form temporary channels. Suitable energy breaking devices, cut-off drains, diversions and retention ponds shall be employed to ensure that storm water runoff from the Site is dissipated and does not exceed the capacity of the surrounding storm water system and excessive suspended solids are settled before they enter the storm water system or any surface water course .

If required in the Project Specification, the Contractor shall submit a Method Statement to the Consulting Engineer detailing how storm water will be managed on Site.



#### **5.15. Erosion and sedimentation control**

The Contractor shall take all reasonable measures to limit erosion and sedimentation due to 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 Consulting Engineer. Where erosion and/or sedimentation occur due to the fault of the Contractor, rehabilitation shall be carried out to the reasonable requirements of the Consulting Engineer and at the expense of the Contractor.

#### **5.16. Aesthetics**

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

#### **5.17. 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.

#### **5.18. Temporary site closure**

If the Site is closed for a period exceeding 5 days, the Contractor's SHE Officer in consultation with the Consulting Engineer shall carry out the following checklist procedure and ensure that the following conditions pertain and report on compliance with this clause:

##### **5.18.1** *Fuels / flammables / hazardous materials stores*

- Fuel stores are as low in volume as practicable.
- There are no leaks.
- The outlet is secure and locked.
- The bund is empty.
- Fire extinguishers are serviced and accessible.

- The area is secure from accidental damage through vehicle collision and the like.
- Emergency and contact numbers are available and displayed.
- There is adequate ventilation in enclosed spaces.
- There are no stores or containers within the 1:50 year flood line.

#### 5.18.2 *Safety*

- Site safety checks have been carried out in accordance with the Occupational Health and Safety Act (No. 85 of 1993) prior to site closure.
- An inspection schedule and log for use by security or contracts staff is developed.
- All trenches and manholes are secured.
- Applicable notice boards are in place and secured.
- Emergency and Management contact details are prominently displayed.
- Security personnel have been briefed and have the facilities to contact or be contacted by relevant management and emergency personnel.
- Night hazards such as reflectors, lighting, traffic signage etc. have been checked.
- Fire hazards identified and the local authority notified of any potential threats e.g. large brush stockpiles, fuels etc.
- Scaffolds are secure.
- Structures vulnerable to high winds secure.

#### 5.18.3 *Erosion*

- Wind and dust mitigation measures such as straw, brush packs, irrigation etc. is in place.
- Excavated and filled slopes and stockpiles are at a stable angle and capable of accommodating normal expected water flows.
- Re-vegetated areas have a watering schedule and the supply to such areas is secured.
- There are sufficient detention ponds or channels in place.

#### 5.18.4 *Water contamination and pollution*

- Hazardous fuel stores are secure.

- Cement and materials stores are secure.
- Toilets are empty and secured.
- Refuse bins are empty and secured.
- Bunding is clean and treated with appropriate material that will absorb/breakdown and where possible be designed to encapsulate minor hydrocarbon spillage.
- Drip trays are empty & secure.

#### **5.19. Protection of archaeological and palaeontological sites**

If any possible palaeontological/archaeological material is found during excavations, including shell middens, Stone Age tools, fossil bones and other artefacts, graves and wrecked vessels, the Contractor shall stop work immediately and inform the Consulting Engineer. The Consulting Engineer will inform the South African Heritage Resources Agency (SAHRA) and arrange for a palaeontologist/archaeologist to inspect, and if necessary excavate, the material, subject to acquiring the requisite permits from SAHRA:

40A Somerset Street  
Old Gaol  
Grahamstown  
6139

PO Box 599,  
Grahamstown,  
6140

Email: [sahraec@iafrica.com](mailto:sahraec@iafrica.com)  
Telephone: (046) 622 4615 or (046) 622 6657  
Facsimile: (046) 622 3928

## **6 TOLERANCES**

Refer to Contract document.

## **7 MEASUREMENT AND PAYMENT**

### **7.1. Basic Principles**

Except as noted below and in the Project Specification 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.

## 7.2. Scheduled Items

### 7.2.1 *Protection of stock piles from blowing or washing away:*

The spraying or covering of stockpiles, including the supply of the spray or cover material, as required, shall be measured as a lump sum.

### 7.2.2 *Storage of fuel and oils:*

The supply, construction, installation, transport, upkeep and removal of all facilities required for storage and management of fuel and oils will be measured as a lump sum.

### 7.2.3 *Cement laden water management:*

The supply, construction, installation, transport, upkeep and removal of all facilities required for the management of wastewater from concrete operations will be measured as a lump sum.

### 7.2.4 *Contaminated water management:*

The supply, construction, installation, transport, upkeep and removal of all facilities required for managing contaminated water will be measured as a lump sum.

### 7.2.5 *Storm water management:*

The supply, construction, installation, transport, upkeep and removal of all facilities required for managing storm water run-off from the site will be measured as a lump sum.

### 7.2.5 *Bunding and management of run-off from workshop areas and supply of drip trays for stationary and unparked plant:*

The supply, construction, installation, transport, upkeep and removal of all facilities required for bunding and managing the run-off from workshop areas as well as all drip trays required will be measured as a lump sum.

### 7.2.6 *Dust management:*

The supply, application, transport, upkeep and removal of all materials required to ensure that dust is adequately controlled will be measured as a lump sum.

**7.2.7 Fire Control:**

The supply, transport, upkeep and removal of all material required for fire control will be measured as a lump sum.

**7.2.8 Provision of venue and staff attendance at the environmental awareness training course:**

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

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

**7.2.9 Eating areas:**

The supply, construction, installation, transport, upkeep and removal at the end of the construction of all eating areas structures shall be measured as a sum.

**7.2.10 Ablutions:**

The supply, maintenance, regular emptying and removal of toilets shall be measured as a sum.

**7.2.11 Site demarcation:**

The supply, installation and removal at the end of the construction of all temporary fences shall be measured by length for each type of fence scheduled.

**7.2.12 Construction personnel information posters:**

The supply, installation and removal at the end of the construction of all construction information posters shall be measured by number of posters for each type of poster scheduled.

**7.2.13 Solid waste (including hazardous waste) management**

The supply of bins and skips as well as transport of waste to appropriate waste disposal facilities shall be measured as a sum.

**7.2.14 Spill kits**

The supply, use and replenishment of spill kits, to be used at fuel storage areas and refuelling areas shall be measured as a sum.

**7.2.15 Method Statements: Additional Work:**

No separate measurement and payment will be made for the provision of Method Statements but, where the Consulting Engineer requires a change beyond the requirements of the Specification on the basis of his opinion that the proposal may result in, or carries a greater than warranted risk of damage to the environment, then any additional work required, provided it could not reasonably have been foreseen by an experienced Contractor, shall be valued in accordance with the Contract Document.

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

**7.2.17** *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 related to the Project Specification.